NOTICE

All drawings located at the end of the document.

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FINAL PHASE I RFI/RI REPORT
WALNUT CREEK
PRIORITY DRAINAGE
OPERABLE UNIT 6

VOLUME 2

SECTION 4.0
TEXT, TABLES, AND FIGURES

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ABBREVIATIONS, ACRONYMS, AND INITIALISMS

1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,1,1-TCA	1,1,1-trichloroethane
1,2-DCA	1,2-dichloroethane
1,2-DCE	1,2-dichloroethene
ac-ft	acre-feet
AEC	Atomic Energy Commission
af	manmade deposits
AGS	above-ground surface
Am-241	americium-241
AMSL	above mean sea level
AOC	Area of Concern
ARARs	applicable or relevant and appropriate requirements
BGS	below-ground surface
BSL	Background Screening Level
Ca^{+2}	calcium
$CaCO_3$	calcium carbonate
CCl_4	carbon tetrachloride
CDPHE	Colorado Department of Public Health and Environment
CDH	Colorado Department of Health
CEARP	Comprehensive Environmental Assessment & Response Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	cubic feet per second
CHC	chlorinated hydrocarbons
$CHCl_3$	chloroform
Cis-1,2-DCE	cis-1,2-dichloroethene
CLC	common laboratory contaminants
cm/sec	centimeters per second
cm	centimeter
COC	chemicals of concern
COI	chemicals of interest
CRQL	contract required quantitation limit
Cs-137	cesium-137
CSM	conceptual site model
ct	central tendency
DCN	document change notice
d/m/l	disintegrations per minute per liter
DLG	Digital Line Graph
DOE	U.S. Department of Energy
DQO	Data Quality Objective
DRCOG	Denver Regional Council of Governments
ECD	Electron Capture Detector
ECOC	ecological chemicals of concern
EM	electromagnetic
EMD	Environmental Management Department
EMRGs	Environmental Management Radiological Guidelines
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration

ERA	Ecological Risk Assessment
ERDA	Energy Research and Development Administration
ERP	Environmental Restoration Program
FDM	Fugitive Dust Model
FIDLER	field instrument for the detection of low-energy radiation
FSP	field sampling plan
ft	feet or foot
GAC	granular activated carbon
gal	gallon
GS	gauging station
HCO^{3-}	bicarbonate
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HPGe	high purity germanium
HRR	Historical Release Report
HSP	Health and Safety Plan
ID	internal diameter
IHSS	Individual Hazardous Substance Site
in/hr	inches per hour
IRIS	Integrated Risk Information System
K; (K^+)	hydraulic conductivity; (symbol for potassium)
Ka	Cretaceous Arapahoe Formation
Kl	Cretaceous Laramie Formation
LHSU	lower hydrostratigraphic unit
m	meter
mCi	millicurie
meq/l	milliequivalents per liter
Mgal	millions of gallons
ml	milliliter
mm	millimeter
MSL	mean sea level
Na+	sodium
NAAQS	National Ambient Air Quality Standards
NPDES	National Pollutant Discharge Elimination System
OU	operable unit
OVM	organic vapor monitor
PA	protected area
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PCOC	potential chemicals of concern
pCi/g	picocuries per gram
PID	photoionization detector
Pu-239/240	plutonium-239/240
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAPjP	Quality Assurance Project Plan
Qc	Quaternary colluvium
QC	quality control
Q_{ls}	Quarternary landslides

Qrf	Quaternary Rocky Flats Alluvium
Qt	Quaternary Terrace Alluvium
Qvf	Quaternary Valley-Fill Alluvium
Ra-226	radium-226
RAD screen	radiological screen
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RFA	Rocky Flats Alluvium
RfCs	reference air concentrations
RfDs	noncarcinogenic reference doses
RFEDS	Rocky Flats Environmental Database System
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RFP	Rocky Flats Plant
RI	remedial investigation
RME	reasonable maximum exposure
SEAM	Superfund Exposure Assessment Manual
SFs	carcinogenic slope factors
SO_4^{2-}	sulfate
SOP	Standard Operating Procedure
ft^2	square feet
sq mi	square mile
Sr-89,90	strontium-89,90
STP	Sewage Treatment Plant
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAL	target analyte list
TCE	trichloroethene
TCL	Target Compound List
TDS	total dissolved solids
TM	Technical Memorandum
TOC	total organic carbon
μg/kg	micrograms per kilogram
μg/l	microgram per liter
U-233/234	uranium-233/234
U-235	uranium-235
U-238	uranium-238
UHSU	upper hydrostratigraphic unit
USACE	U.S. Army Corps of Engineers
USCS	Unified Soil Classification System
UTL	upper tolerance limit
VOC	volatile organic compound
WARP	Well Abandonment and Replacement Program
W&I	Walnut and Indiana
Work Plan	Operable Unit 6 Walnut Creek Priority Drainage

4.0 NATURE AND EXTENT OF CONTAMINATION

4.1 INTRODUCTION

Section 4.0 presents the nature and extent of potential contamination in the OU6 IHSSs as specified in the OU6 Phase I Work Plan (DOE 1992a). The analytical data used to characterize the nature and extent are described followed by a discussion of the chemical results for potential contaminants in surface soils and dry sediments, subsurface soils, UHSU groundwater, surface water, and sediments.

Section 4.2 describes the analytical data used in the OU6 characterization. The analytical data for each environmental medium that was sampled are discussed. A discussion of potential laboratory and other non-site related contaminants is included.

Section 4.3 presents the methodology used for the comparison of OU6 data to background data for metals and radionuclides. The background comparison is part of the risk assessment process and supports the identification of PCOCs, COCs, source areas, and areas of concern.

Sections 4.4 through 4.8 present the OU6 analytical data for the environmental media by IHSS. Section 4.4 presents surface soil and dry sediment data. Section 4.5 presents the subsurface soils data. Section 4.6 presents the groundwater data. Section 4.7 presents the surface water data. Section 4.8 presents the sediment data.

Section 4.9 presents additional PCB and radionuclide pond sediment data collected during the OU6 Ecological Risk Assessment program.

The potential source areas are the OU6 IHSSs which include the Sludge Dispersal Area (IHSS 141), A-Series Ponds (IHSSs 142.1 through 142.4), B-Series Ponds (IHSSs 142.5 through 142.9), Walnut and Indiana (W&I) Ponds (IHSS 142.12), Old Outfall Area (IHSS 143), Soil Dump Area (IHSS 156.2), Triangle Area (IHSS 165), Trenches A, B, and C (IHSSs 166.1, 166.2, and 166.3), North and South Spray Field Areas (IHSSs 167.1 and 167.3), and the East Spray Field Area (IHSS 216.1). The following discussion provides a brief overview of the historical operation of the OU6 IHSSs. A more thorough history is presented in Section 1.3.2 of this report.

The Sludge Dispersal Area, IHSS 141, is located along the eastern perimeter of the security area of the RFETS. Two corrugated metal buildings located on the western half of the site house the drying beds for the RFETS Sewage Treatment Plant, which is located near the western perimeter of the site. Prior to 1983, the Sludge Dispersal Area may have received airborne radioactive particles from dried sludge packaging operations at the treatment plant. The area may also have been contaminated by spillage of dried or drying sludge from drying beds which were located just west of the site as shown in a 1964 aerial photograph. Between 1969 and 1972 laundry effluent was sent to the drying beds. By the end of 1972, only effluent sludges were sent to the drying beds since all other waste waters were channeled

through the Sewage Treatment Plant. An overflow incident in June 1972 contributed to elevated levels of plutonium in the effluent which may have subsequently ended up in the drying beds.

A-Series Ponds (IHSSs 142.1 through 142.4, respectively) are located in North Walnut Creek, northeast of the main security area. The A-Series ponds are used to capture and control surface water runoff from the northern part of the RFETS production facilities and from North Walnut Creek. Historically, the ponds may have received effluent from a number of sources including untreated waste water, industrial wastes, and surface water. Between 1952 and 1979, Pond A-1 was used to hold laundry waste water that may have contained nitrates and radioactive substances, including plutonium and uranium. Pond A-1 also received process liquid waste, cooling tower blowdown and steam condensate discharges which may have contained chromates and algicides. The water from Pond A-1 was discharged into Pond A-2, after its construction in 1978, where the water was then disposed of by natural and spray evaporation. The discharges from the laundry and other production facilities to North Walnut Creek were discontinued. Currently, upstream flow is diverted around Ponds A-1 and A-2. Ponds A-1 and A-2 are used for spill control management and detention of local surface water runoff and seepage.

Pond A-3, constructed in 1971, was used to detain surface water runoff from the northern facilities and the creek prior to being discharged downstream. Pond A-4 was constructed in 1980 to receive water from Pond A-3 and water pumped from Pond B-5. If necessary, the discharge in Pond A-4 is treated by a granulated activated carbon (GAC) system and discharged downstream into Walnut Creek.

Over the last several years, numerous investigations, concerned primarily with radioactivity levels, have been conducted on the water and sediment quality of the A-Series Ponds. A 1979 study concluded that plutonium was in the pond sediments and in the water as suspended material. In 1980, a study was conducted to determine the vertical distribution of plutonium in the sediments. The study showed that the sediment had no significant vertical variation in plutonium concentration with depth, probably due to the shallow pond depth. The study also showed the concentration of plutonium in Pond A-1 was relatively low compared to the B-Series Ponds. A study in 1986 confirmed the presence of plutonium in Pond A-1 and indicated that Pond A-2 had similar concentrations of plutonium and higher concentrations of uranium. Pond A-3 also showed elevated concentrations of uranium, and Pond A-4 water quality was similar to background concentrations.

B-Series Ponds (IHSSs 142.5 through 142.9, respectively) are located in the South Walnut Creek drainage, east of the security area of RFETS. The B-Series Ponds are used to manage surface water runoff from the eastern and central portions of the production facilities.

Between 1952 and 1973, decontaminated process and laundry waste waters were released to South Walnut Creek and flowed through Ponds B-1 to B-4. The wastes may have contained nitrate, plutonium, and uranium. In addition, Ponds B-1 and B-4 received sanitary effluent from the sewage treatment plant. Reconstruction activities between 1971 and 1973 caused upstream sediment to migrate to Pond B-1, which may have increased the plutonium inventory in that pond.

Presently, Ponds B-1 and B-2 are used for spill control management and to detain local surface water runoff and seepage. Pond B-3 receives effluent from the Sewage Treatment Plant at RFETS and local surface water runoff. The water is then discharged to Pond B-4 and subsequently to Pond B-5. Pond B-5 was constructed in 1979 and was used as an overflow pond for Pond B-4. In addition, Pond B-5 has periodically received water pumped from Pond C-2 since 1991.

Various investigations of the water and sediment quality within the B-Series Ponds were conducted in conjunction with the investigations described above for the A-Series Ponds. The investigations indicated that plutonium was present in most of the ponds, with the highest concentrations in Pond B-1. The plutonium concentrations in the B-Series Ponds were also typically higher than those detected in the A-Series Ponds.

Walnut and Indiana Pond (IHSS 142.12) is located approximately 2,500 ft east of the confluence of the North and South Walnut Creeks and immediately west (upstream) of Indiana Street. This pond is used to measure the flow of Walnut Creek using two Parcel flumes. In addition, the pond is used to settle out sediments transported in North and South Walnut Creeks. When discharge from the pond into Walnut Creek is occurring, the effluent is sampled on a daily basis.

The Old Outfall (IHSS 143) is located northwest of the Guard Station within the security area. The outfall acted as a catchment basin receiving liquids from various sources, mainly the laundry waste water holding tanks from Building 771. The laundry waste water was discharged to the outfall if levels of plutonium were low (i.e., below 3,300 disintegrations per minute per liter). In 1956 and 1958, soils contaminated with plutonium were discovered; however, it is not known if the contaminated areas were remediated. In 1957, a waste line was installed to convey the laundry waste water to Building 774. However, during 1957 and 1965, periodic equipment problems caused the discharge of waste water to the Old Outfall area and subsequently into North Walnut Creek. In addition to the laundry waste water, the Old Outfall received discharges from the analytical laboratory, radiography sinks, the personnel decontamination room, and surface water runoff from the buildings and surrounding area. In 1968, a broken sewer line caused the sewage lift station tank to overflow onto the Old Outfall area. In 1970, hot spots of radioactive materials were detected in the soils and as a result contaminated soil was removed from an area of approximately 75 ft^2 located between the outfall and the stream. In 1971, another remedial action was performed to remove approximately 800 ft^2 of soil contaminated with plutonium.

The Soil Dump Area (IHSS 156.2) is located within the buffer zone, immediately adjacent to the northeastern boundary of the RFETS security area. The IHSS is located on an interfluve separating the North and South Walnut Creeks. The area covers approximately 225,000 ft^2. This area received between 50 to 70 dump truck loads of soil excavated during the construction of Parking Area No. 334. The excavated soils from the parking area had been originally excavated from around and near Building 774 and may have contained low levels of plutonium. Asphalt debris and concrete are also found within the Soil Dump Area.

The Triangle Area (IHSS 165) is located within the RFETS security area between the Northeast Perimeter Road on the north and Spruce Avenue on the south. The area covers approximately 250,000 ft^2. The western two-thirds of this site is located within the Security Area. The area is partially vegetated and has been covered with an unknown amount of gravel fill. This area was used as a storage site for miscellaneous wastes between 1966 and 1975. The site was first used to store the drums removed from a field north of Building 883 due to construction of a new decontamination facility. Various scrap materials were stored in the drums including graphite molds, crucibles, incinerator ash heels, crucible heels, raschig rings, and combustible wastes. The drums were stored until they could be processed for plutonium in Building 771. By the end of 1968, about 5,000 drums had been stored in the Triangle Area. High winds damaged a number of the drums in December 1968. In May 1969, wastes from a fire in Building 776 were drummed and stored in the Triangle Area. These wastes may have contained plutonium. On five separate occasions, in 1969, 1971, and three times in 1973, leaking drums were discovered at the site. In each instance, contaminated soil was removed. By 1975, all containers were removed from the area and shipped to approved disposal facilities. The area has not been used for storage of radioactive materials since then, however some equipment and piping is currently stored in the area. By early 1980, additional soil indicating a radioactivity above background was removed.

Trenches A, B, and C (IHSSs 166.1 through 166.3, respectively) are located north of the RFETS security area on a plateau separating North Walnut Creek and the unnamed tributary to the north. Little documentation is available concerning the operational history of the trenches, but they most likely received sludge from the RFETS Sewage Treatment Plant. The primary chemicals in the sludges are believed to be radionuclides.

Trench A (IHSS 166.1) is located about 100 ft southeast of the present landfill. This trench is estimated to have been active from 1964 until 1974. This trench may have received uranium and/or plutonium contaminated sludge from the RFETS Sewage Treatment Plant. No other wastes were known to have been placed in the trench.

Trench B (IHSS 166.2) is located approximately 125 ft south of Trench A. Operation of this trench began around 1959. The closure date of this trench is unknown, however it is estimated to have operated through 1988. Similar to Trench A, this site is believed to have received only sludge from the RFETS Sewage Treatment Plant.

Trench C (IHSS 166.3) consists of two separate trenches. The first trench is located between Trench A and Trench B, and the second trench is located approximately 300 ft east of Trench A. Trench C was active between 1964 and 1974. It is assumed that these trenches also received sewage sludge, but the operational history is uncertain.

The North Area Spray Field (IHSS 167.1) is partially located on the plateau area that bounds the unnamed tributary on North Walnut Creek. The North Area Spray Field is located near the Original Landfill OU7. The North Area Spray Field was used to spray and evaporate the water that collected in

the East and West Landfill Ponds and the water in Pond B-3. The exact periods during which this IHSS was operational is not precisely known; however, it is believe that spray irrigation occurred shortly after the present landfill became active in 1968. The ponds were used to impound leachate from the landfill and to intercept groundwater that may have been contaminated by leachate. During operation of this spray field, surface water drainage was draining into the unnamed tributary of North Walnut Creek, and subsequently into Walnut Creek. Operation of this spray field was discontinued and spray evaporation was moved to the Pond Area Spray Field. The field is presently not used and is covered by grasses common to the Rocky Flats Area.

The original location of the South Area Spray Field (F167.3) is south of the Landfill Pond on the plateau between an unnamed tributary and North Walnut Creek. During the course of the OU6 characterization activities, the HRR (DOE 1992a) relocated the South Area Spray Field further north, adjacent to the landfill pond. The original IHSS 167.3 location has been designated as the Former South Area Spray Field (F167.3) in order to distinguish it from the current IHSS 167.3 being addressed as part of OU7. Although F167.3 is being retained for completeness, this location is not formally considered an IHSS. The original location of the South Area Spray Field is presently covered by grasses common to the area.

The East Area Spray Field (IHSS 216.1) is located within the buffer zone, northeast of the security area. This spray field became operational in 1989 to provide an additional area for evaporation of the water from Pond B-3, which consisted of surface water runoff and effluent from the RFETS Sewage Treatment Plant. The use of this spray field was stopped shortly after it became operational due to excessive runoff draining toward South Walnut Creek.

4.2 DESCRIPTION OF ANALYTICAL DATA USED

Analytical data used to characterize OU6 were obtained from environmental samples collected during the OU6 Phase I field sampling program, and RFETS sitewide sampling program. The samples were collected from August 1992 through May 1993 for all media, except for groundwater. The data presented in this section are strictly abiotic. Section 4.2.1 summarizes the environmental media that were collected during the Phase I investigation for the chemical evaluation of OU6. Section 4.2.2 briefly describes the groundwater sampling program and analytical methods. Section 4.2.3 briefly describes where the analytical data are stored (i.e., RFEDS), and directs the reader to detailed discussions regarding the acquisition and evaluation of the RFEDS data. Section 4.2.4 reviews suspect contaminants, those organic analytes considered laboratory contaminants (i.e. acetone, methylene chloride, phthalate esters).

4.2.1 Summary of Media Collected

The sampling program and the specific samples collected for chemical evaluation of surface soils, subsurface soils, groundwater, surface water, and sediments at OU6 are described in Sections 2.1 and 2.2. Samples were generally analyzed for VOCs, SVOCs, pesticides/PCBs, metals, radionuclides, and

inorganics (i.e., wet-chemistry parameters). Table 2.1-4 contains the sampled media by IHSS and identifies the analytical parameters collected for each medium.

4.2.2 Groundwater

Groundwater samples were collected from a large group of accessible monitoring wells in OU6, which are sampled on a quarterly basis under a plant-wide groundwater monitoring program. This group of sampled wells in OU6 included monitoring wells installed during the Phase I investigation and wells installed during other investigations conducted from 1991 through 1993 within the OU6 boundaries. The data used to evaluate OU6 were taken from 311 samples collected from first quarter 1991 through fourth quarter 1993. In general, the groundwater samples were analyzed for VOCs, SVOCs, pesticides/PCBs, metals (total and dissolved), radionuclides (total and dissolved), and inorganics. Groundwater sampling was conducted in accordance with SOP GW.06 (Section 2.1.4).

4.2.3 Analytical Data Overview

The analytical data used to characterize OU6 are stored in the RFEDS. The RFEDS is a large relational database, used to store all analytical data generated for the operable units at the RFETS. Analytical data are transferred into the RFEDS upon receipt from the laboratory, and again, upon receipt from the validator. The process by which these chemical data were acquired from the RFEDS, subsequently evaluated, and used for OU6, is described in Appendix E, Section E6.3. The analytical data qualifiers assigned by the laboratories and codes assigned by the validator are defined in Appendix E, Sections E6.1 and E6.2, respectively. Section E5.3 describes how the detection limits are interpreted for the various analytical methods performed. Finally, the analytical data were subjected to a quality assurance/quality control (QA/QC) review to determine whether or not the DQOs set for OU6 were met. This review is presented in Appendix E, Sections E.3.0 through E.7.0.

4.2.4 Suspect Contaminants

This section presents the evaluation of reported concentrations of a chemical in an environmental sample to determine whether or not the chemical was introduced by means of sampling and/or analytical procedures. Extraneous contaminants introduced into environmental samples this way are monitored by collecting, preparing, and analyzing QC samples along with the environmental samples. Common laboratory contaminants (CLCs) are synonymous with suspect contaminants. Control samples may include equipment rinsate blanks (collected in the field), trip blanks, and method blanks (prepared in the laboratory). The OU6 Work Plan (DOE 1992a) included several field QC samples, which are discussed in detail in Sections E4.2 and E.7.0 of Appendix E.

The OU6 organic compounds data (VOCs, SVOCs and pesticides/PCBs) were validated by a subcontracted validator, in accordance with the National Functional Guidelines for Organic Data Review (EPA 1991). Section V of the Functional Guidelines identifies the criteria for assessing blank (field or laboratory) contamination.

Data were evaluated to determine whether common laboratory contaminants (CLCs) originated in the laboratory or were present in the environmental samples when received by the laboratory. If a CLC was detected in a laboratory method blank, and the respective contaminant was also detected in the associated environmental sample(s), then the environmental sample(s) was qualified with a "B" (blank) contamination by the laboratory.

Twenty-two of the OU6 validated, analytical results were qualified with a "B" (method blank contamination). The validator assessed only the laboratory contamination (i.e., method blanks; applied the 5X and 10X rules as specified in Section V of the Functional Guidelines). The 10X rule was applied only for acetone, 2-butanone, and methylene chloride of the VOCs target analyte list (TAL). Only phthalate esters (i.e., butyl benzylphthalate) of the SVOCs TAL had the 10X rule applied. No pesticide/PCB TAL compounds had the 10X rule applied for blank contamination. The equipment rinsate and trip blank detects had the 5X and 10X rule applied to the 22 "B" qualified results. More information can be found in Section E7.2.3 (Representativeness) in Appendix E.

Toluene was detected in numerous subsurface soil and pond sediment samples collected during the OU6 Phase I investigation. The presence of toluene in these samples may be considered suspect due to the sampling SOP that was followed during the OU6 investigation. The SOP specified the use of black electrical tape. Following the OU6 Phase I sampling program, an investigation into the chemical makeup of the tape revealed significant concentrations of toluene present in the epoxy. As a result of this investigation, the black electrical tape was omitted from the SOP. More details regarding this anomaly are presented in Section E7.2.3 (Representativeness) of Appendix E. Toluene data were used as reported.

4.3 BACKGROUND COMPARISON FOR METALS AND RADIONUCLIDES

Concentrations of metals and radionuclides measured in soil, groundwater, surface water, and sediment samples collected in OU6 were compared to background concentrations in order to identify OU6 analytes whose concentrations are statistically higher than background levels. These analytes were then identified as PCOCs for further evaluation. The background data used for comparison were reported in the Background Geochemical Characterization Report (DOE 1993e), except for the surface soil data, which were not available in the 1993 report. The background surface soil data were collected in the Rock Creek Area during the 1991 OU1 Phase III investigation (DOE 1992i) and the 1993 OU2 Phase II investigation (DOE 1993d). Analytical results from each medium sampled were pooled and the background comparison was performed on an OU-wide basis.

Three major steps were involved in performing background comparisons: (1) data aggregation, (2) statistical background comparisons, and (3) professional judgement of statistical results. Each of these steps is discussed below.

4.3.1 Data Aggregation

The chemical data were grouped by medium into seven categories:

- Surface soil
- Subsurface soil in the UHSU
- Groundwater (UHSU)
- Stream surface water (baseflow)
- Pond surface water
- Stream sediment
- Pond sediment

In general, each medium has 29 analytes for metals and 13 analytes for radionuclides, as total or dissolved concentrations or activities. There are a total of 20 media-analyte groups to be evaluated in the background comparisons, as shown on Table 4.3-1.

Most OU6 media-analyte groups were compared directly to the corresponding background groups. Exceptions were pond sediment and pond surface water due to the lack of background pond data. Background data from seep/spring sampling locations (rather than from background stream locations) were adopted for comparison to OU6 pond data because of the similarity of the flow conditions for ponds and seeps/springs (both have relatively long residence time).

The dry sediment samples were collected in the flood plain area upstream of each pond, using surface soil sampling techniques because of the similarity in physical properties. PCOCs selected for surface soil samples are applied to the dry sediment samples, although dry sediment samples were not used in background comparison.

4.3.2 Statistical Background Comparison

Background comparisons were performed according to the procedures given in the "Guidance Document, Statistical Comparison of Site Background Data in Support of RFI/RI Investigations" (EG&G 1994e), which was primarily based on the methodology proposed by Gilbert (Gilbert 1993). The formal statistical tests were the Gehan test, Slippage test, Quantile test, and t-test. Analytical results were also compared to the upper tolerance limit (UTL) of background to identify high concentrations outside of background range. The conditions for applying each of the tests are briefly discussed below.

Formal Statistical Tests

Four formal statistical tests were performed to test the difference between the background and OU6 site populations. If any of the four statistical tests were significant, the analyte was considered to be a PCOC. Significance was defined as a p-value less than or equal to 0.05, the Type I (false positive)

error rate. Nondetects of metals were treated as described below for each test. All the radionuclide results were treated as detects.

1. Gehan Test

The Gehan test (Gilbert 1993) is a non-parametric ranking test. It was performed for all the media-analyte groups. For non-detects, the reporting limits were used for ranking purposes.

2. Slippage Test

The slippage test (Rosenbaum 1954), a non-parametric test, was performed by comparing the OU6 measurements to the maximum background measurement (detect or non-detect). The p-value for the probability of the number of site measurements greater than the maximum background measurement was calculated. Reporting limits were used for non-detects.

3. Quantile Test

The Quantile test (Gilbert and Simpson 1992), a non-parametric test, was performed by first ranking the combined background and OU6 measurements from largest to smallest. If there were no non-detects among the top 20 percent of the combined background and OU6 measurements, the probability of the number of site measurements within the top 20 percent of the data set was calculated. If there were any non-detects among the top 20 percent of the measurements, no Quantile test was performed.

4. T-test

The t-test, a parametric statistical test, was performed under the conditions that: (1) non-detects in each of the data sets represent less than 20 percent of the measurements, and (2) EITHER each of the data sets contains at least 20 data points, OR both of the data sets are normally distributed.

For simplicity, the t-test was only performed when condition (1) and the first option of condition (2) were met. Non-detect results for metals were replaced by one-half the reporting limits.

The homogeneity of the variance was tested following Levene's test (EPA 1992). If the variances from both data sets were the same, the standard t-test was performed. If the variances were not the same, the unequal variance t-test (Helsel and Hirsch 1992) was performed.

Upper Tolerance Limit Comparison

For each media-analyte in the background data, a UTL with 99 percent confidence and 99 percent coverage ($UTL_{99/99}$) was calculated, assuming the background data were normally distributed (EG&G 1994e). In calculating the UTL, if non-detects were less than 80 percent of the data, one-half the reporting limit was used as the result for non-detect samples. Otherwise, the maximum background measurement, instead of the $UTL_{99/99}$, was used in the comparisons. For the radionuclides, all the results were treated as detects (EG&G 1994e).

Each of the OU6 measurements was compared to the $UTL_{99/99}$. If one or more OU6 measurements exceeded the background $UTL_{99/99}$, the analyte was considered as a PCOC for further evaluation, even if the analyte did not exceed background levels according to the formal statistical evaluation.

4.3.3 Background Comparison Results

The number of inorganic PCOCs in each media-analyte group resulting from the background comparisons is summarized in Table 4.3-1. Out of 374 media-analytes, 142 media-analytes were identified as above background based on the formal statistical tests. An additional 32 media-analytes were identified as above background based on the $UTL_{99/99}$ comparison alone.

The background comparison summaries for each media-analyte group and PCOC determination are presented on Tables 4.3-2 through 4.3-21. Box-plots and histograms generated for graphical review, according to the Guidance Document (EG&G 1994e), are contained in Appendix D7. Plots were generated only for the data sets that contained less than 50 percent of non-detects.

4.3.4 Professional Judgement for Statistical Results

Professional judgement was applied for those media-analytes that were below background according to the formal statistical tests but failed the $UTL_{99/99}$ comparison. The professional judgement consisted of performing a log-normal $UTL_{99/99}$ comparison if the background data were log-normally distributed.

According to the background comparison methodology (EG&G 1994e), the $UTL_{99/99}$ was calculated assuming a normal distribution of background data. However, log-normal distribution may better describe some geochemical data, as indicated in the Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities (EPA 1992). Log-normal-based $UTL_{99/99}$ results were calculated for media-analytes that passed the formal statistical tests but failed to pass the normal-based $UTL_{99/99}$ comparison. If a media-analyte passed the log-normal-based $UTL_{99/99}$ comparison, probability plots were generated for both normal and log-normal distributions. If the probability plots indicated that the data better fit a log-normal distribution, the media-analyte was eliminated from the PCOC list.

The results of the log-normal-based $UTL_{99/99}$ comparisons are presented in the remark column of Tables 4.3-2 through 4.3-21. Based on the results of the log-normal $UTL_{99/99}$ comparison, ten analytes

were eliminated as PCOCs, as shown on Tables 4.3-2 through 4.3-21. Log-normal and normal probability plots (20 plots total) for the analytes eliminated as PCOCs are contained in Appendix D8.

4.3.5 Background Screening Levels

The concentrations or activities of inorganic PCOCs in each media-analyte group were compared to Background Screening Levels (BSLs), using guidance from CDPHE and EPA. The BSL number was calculated using background data, and represents the sum of the background mean plus two standard deviations. Inorganic PCOCs with concentrations or activities above the BSLs are addressed in the following nature and extent discussions specific to the inorganic analytes.

Subsequent to the screening process of identifying PCOCs, special-case and chemicals of interest (COIs) were retained for special consideration and evaluation in the risk assessment.

Vinyl chloride was identified as a special-case PCOC in groundwater. Special-case PCOCs were based on frequency of detection (less than 5 percent) and reported concentrations greater than 1,000 times the RBC.

COIs are compounds that are probably not environmental contaminants (i.e., naturally occurring) but were retained for consideration and evaluation because of their potential toxicity at environmental levels.

Antimony, arsenic, beryllium, and manganese were retained as COIs in groundwater. Arsenic was retained as a COI in stream/dry sediments.

Hazard/risk results for the special-case and COI compounds are presented in the uncertainties section of the risk assessment, Appendix J, of the Phase I RFI/RI Report.

4.4 SURFACE SOILS AND DRY SEDIMENTS

The nature and extent of contamination in surface soils and dry sediments within OU6 IHSSs were evaluated using data collected during the OU6 Phase I investigation, as discussed in Section 2.1.3. Table 2.1-4 shows the analytical program for the surface soil and dry sediment samples collected in specified IHSSs.

Spatial distribution of surface soil and dry sediment data, shown with laboratory qualifiers and validation codes (Figure 4.4-1), are presented in plan view on maps for analyte groups by IHSS areas (Figures 4.4-2 through 4.4-17). Figure 4.4-1 also provides abbreviation definitions used on Figures 4.4-2 through 4.4-17. The analyte groups presented on the maps are: (1) SVOCs, (2) pesticides/PCBs, (3) metals, and (4) radionuclides. The OU6 Phase I analytical parameters are listed on Table 2.1-5. Total Organic Carbon (TOC) and nitrate were not routinely sampled, therefore

available results are discussed in the text and shown on the tables, as appropriate, but are not presented on maps for this medium.

SVOC and pesticide/PCB maps show all detected concentrations (detections) in the surface soil and dry sediment samples. Metal and radionuclide maps only show PCOC concentrations or activities detected above the BSL.

PCOC metals and PCOC radionuclides have been identified by performing statistical background comparisons, as discussed in Section 4.3.2. PCOCs for surface soil samples are listed on Tables 4.3-2 and 4.3-3. PCOCs selected for the surface soils, as well as the calculated surface soil BSLs, are applied to the dry sediments as discussed in Section 4.3.1. Analytical results for OU6 surface soil and dry sediment samples are compiled in Appendix D1.

For discussion purposes, OU6 IHSSs with surface soil sample data have been grouped by proximity to each other. These IHSS groups are as follows:

IHSS Group Name	Associated IHSSs
Spray Field Areas	167.1 and 167.3 (historical)
Old Outfall Area	143
Soil Dump and East Spray Field Areas	156.2 and 216.1
Sludge Dispersal and Triangle Areas	141 and 165

No surface soil samples were collected for the pond IHSSs 142.1-12; however, dry sediment samples were collected in locations upstream of the A-Series Ponds (IHSSs 142.1-4) and the B-Series Ponds (IHSSs 142.5-9). Additionally, no surface soil samples were collected to characterize the horizontal extent of contamination in Trenches A through C (IHSSs 166.1-3). Waste disposal at these IHSSs, if present, occurred inside the trenches and was covered with clean fill, thus little or no potential for surface contamination exists.

The following sections each begin with a brief description of the IHSS location, the sampling sites used to characterize the IHSS, and chemical analyses performed, followed by a discussion of the nature and extent of the detected chemicals within each analyte group. Tables 4.4-1 through 4.4-16 present the percent detection, concentration or activity range with laboratory qualifiers, and mean concentration or activity of the analytes detected (as previously defined) for each IHSS, as well as BSLs for PCOCs. For PCOC inorganic constituents and radionuclides, only those detected at concentrations or activities above the BSL are discussed in the following sections.

4.4.1 Spray Field Areas

Two areas used for spray evaporation include the North Spray Field (IHSS 167.1) and the South Spray Field (IHSS 167.3). The distribution of chemicals in the surface soil samples from IHSSs 167.1 and 167.3 are discussed below.

North Spray Field Area (IHSS 167.1)

The North Spray Field Area (IHSS 167.1) is located north of the Landfill Pond and south of McKay Bypass Canal (Figure 1.3-3). Twenty-four surface soil sites were sampled to characterize the horizontal extent of contamination in the North Spray Field Area (SS600492 through SS602692, and 77192), as shown on Figure 4.4-2. Chemical analyses performed on the surface soil samples included metals, radionuclides, and TOC. No VOC, SVOC, pesticide/PCB, or nitrate analyses were performed on surface soil samples collected from IHSS 167.1.

PCOC Metals—Five metals were detected in concentrations at or slightly above their respective BSLs in one or more of the surface soil samples collected in IHSS 167.1, as presented on Table 4.4-1 and shown on Figure 4.4-2. These metals are calcium, cobalt, lead, mercury, and nickel.

Most metals occurred as single detections above the BSL; however, lead occurred above the BSL in 6 of 24 samples analyzed. Lead detections above the BSL occurred in samples collected from sites located nearest the dirt road bordering the western half IHSS 167.1, with the maximum concentration of 6.01E+01 milligrams per kilogram (mg/kg) found at site SS602392.

PCOC Radionuclides—Americium-241 (Am-241), gross alpha, and plutonium-239/240 (Pu-239/240) were infrequently detected at activities above their respective BSLs in surface soil samples collected at IHSS 167.1, as presented on Table 4.4-1.

The activities of Am-241, gross alpha, and Pu-239/240 are shown on Figure 4.4-3. Elevated activities were found primarily in the western half of the IHSS, with maximum activities of 1.15E+00 picocuries per gram (pCi/g)(Am-241), 5.79E+01 pCi/g (gross alpha), and 1.85E+00 pCi/g (Pu-239/240).

Other Parameters—TOC concentrations ranged from 7.52E+03 to 2.03E+04 mg/kg in the surface soil samples collected from IHSS 167.1. The maximum concentration was found at site SS601492, located in the southwestern portion of IHSS 167.1.

South Spray Field Area (Historical IHSS 167.3)

The South Spray Field Area (IHSS 167.3) is located due south of the Landfill Pond (Figure 1.3-3). The location of IHSS 167.3 was revised in the HRR (DOE 1992b) after the completion of the OU6 field sampling activities. The sample collection points shown on Figure 4.4-2 are located due south and outside of the IHSS boundaries as defined in the HRR. Therefore, the following discussion

addresses the nature and extent of contamination in the sampled area and is not necessarily indicative of conditions within the revised IHSS 167.3 boundary.

Chemical analyses performed on the surface soil samples from eight sites (SS605392 through SS606092) in the sampled area included metals, radionuclides, and TOC. No VOC, SVOC, pesticide/PCB, or nitrate analyses were performed on surface soil samples collected from the sampled area.

PCOC Metals—Calcium, lead, and zinc were detected at concentrations above their respective BSLs in one or more of the surface soil samples collected in the sampled area, as presented on Table 4.4-2 and shown on Figure 4.4-2.

Lead was detected above the BSL in all soil samples, with a maximum concentration of 6.87E+01 mg/kg found at site SS605492, located in the northeastern portion of the sampled area. A single, high concentration of zinc (1.19E+02 mg/kg) occurred along the eastern border of the sampled area at site SS605692.

PCOC Radionuclides—Am-241 and Pu-239/240 were detected at activities above their respective BSLs in surface soil samples collected in the sampled area, as presented on Table 4.4-2 and shown on Figure 4.4-3.

Slightly elevated Am-241 activities detected above the BSL were widespread in the sampled area, increasing slightly toward the northeast. Elevated Pu-239/240 activities detected above the BSL occurred primarily in the southern and eastern portions of the sampled area. Maximum activities were 6.41E-02 pCi/g (Am-241) and 2.95E-01 pCi/g (Pu-239/240), found at northeastern site SS605492 and southeastern site SS606092, respectively.

Other Parameters—TOC concentrations ranged from 1.61E+04 to 1.74E+04 mg/kg in the surface soil samples collected from historical IHSS 167.3. The maximum concentration was found at site SS606092, located in the southeastern portion of the sampled area.

4.4.2 Old Outfall Area (IHSS 143)

The Old Outfall Area (IHSS 143), as defined in the HRR (DOE 1992b), is located northwest of Building 771 in the northwest corner of the PA (Figure 1.3-3). As discussed in Section 2.2.3, the actual location of the Old Outfall Area extends to the north of IHSS 143, as shown on Figure 4.4-4. Four surface soil sites were sampled to characterize the horizontal extent of contamination in the newly defined IHSS area (SS600092 through SS600392), as shown on Figure 4.4-4. Chemical analyses performed on the surface soil samples included SVOCs, pesticides/PCBs, metals, radionuclides, TOCs, and nitrates. No VOC analysis was performed on the surface soil samples collected in the Old Outfall Area.

Old Outfall Area (IHSS 143)

SVOCs—Eighteen SVOCs were detected in the surface soil samples collected in the Old Outfall Area, as presented on Table 4.4-3 and shown on Figure 4.4-4. Three of the SVOCs, benzoic acid, bis(2-ethylhexyl)phthalate, and dibenzofuran, were detected at estimated maximum concentrations of 4.50E+02 micrograms per kilogram (µg/kg), 2.20E+02 µg/kg, and 8.50E+01 µg/kg, respectively.

The remaining 15 SVOCs detected in surface soil samples collected from the Old Outfall Area are polynuclear aromatic hydrocarbons (PAHs). PAHs were detected at all sites, ranging in concentrations from an estimated 6.00E+01 µg/kg (benzo(ghi)perylene) at site SS600392 to 3.20E+03 µg/kg (benzo(b)fluoranthene) at site SS600192.

Pesticides/PCBs—No pesticides or PCBs were detected in the surface soil samples from the Old Outfall Area.

PCOC Metals—Nickel, vanadium, and zinc were detected at concentrations slightly above their respective BSLs in one or two of the surface soil samples collected from the Old Outfall Area, as presented on Table 4.4-3 and shown on Figure 4.4-5. The maximum concentrations detected for these metals all occurred at site SS600392.

PCOC Radionuclides—Pu-239/240 was detected at an activities above the BSL in 2 of 4 surface soil samples collected from the Old Outfall Area, as presented on Table 4.4-3 and shown on Figure 4.4-6. These detections were found in the two eastern sample sites, where the maximum Pu-239/240 activity (5.18E-01 pCi/g) was found at site SS600192.

Other Analytes and Parameters—No nitrate concentrations exceeded the BSL of 5.76E+00 mg/kg in the surface soil samples collected from the Old Outfall Area. TOC concentrations ranged from 1.73E+03 to 2.38E+04 mg/kg in the surface soil samples collected from the Old Outfall Area. The maximum TOC concentration was found at site SS600392.

4.4.3 Soil Dump and East Spray Field Areas

This IHSS group includes the Soil Dump Area (IHSS 156.2) and the East Spray Field Area (IHSS 216.1). The distribution of chemicals in surface soils from these IHSSs are discussed in the following sections.

Soil Dump Area (IHSS 156.2)

The Soil Dump Area (IHSS 156.2) is located northeast of the Triangle Area (IHSS 165), on the west end of the ridge that separates the North Walnut Creek and South Walnut Creek drainages (Figure 1.3-3). Twenty-two surface soil sites were sampled to characterize the horizontal extent of contamination in IHSS 156.2 (SS602892, SS602992, and SS606792 through SS608692), as shown on

Figure 4.4-7. Chemical analyses performed on the surface soil samples included metals, radionuclides, and TOC. No VOC, SVOC, pesticide/PCB, or nitrate analyses were performed on surface soil samples collected from IHSS 156.2.

PCOC Metals—Eleven metals were detected at concentrations above their respective BSLs in one or more of the surface soil samples collected in IHSS 156.2, as presented on Table 4.4-4 and shown on Figure 4.4-7. These metals are antimony, calcium, chromium, copper, iron, magnesium, mercury, nickel, strontium, vanadium, and zinc.

Most metals (except for strontium and vanadium) occurred at concentrations at or slightly above their BSLs, and were randomly distributed throughout the IHSS. Strontium was detected above the BSL in 18 of 22 samples analyzed, with most occurring at concentrations slightly above the BSL. The maximum concentration (2.55E+02 mg/kg) for strontium was found at site SS607792, located in the north central area of the IHSS. Vanadium was detected at concentrations above the BSL in 8 of 22 samples analyzed. Most vanadium detections occurred at concentrations slightly above the BSL, with the maximum concentration (6.51E+01 mg/kg) found at site SS608092, located in the north central area of the IHSS.

PCOC Radionuclides—Am-241, gross alpha, and Pu-239/240 were detected at activities above their respective BSLs in surface soil samples collected at IHSS 156.2, as presented on Table 4.4-4 and shown on Figure 4.4-8. Gross alpha was detected once, at an activity only slightly above the BSL.

Am-241 and Pu-239/240 were detected above their BSLs in 13 of 21 and 8 of 21 samples analyzed, respectively. The maximum activity (3.01E-01 pCi/g) of Am-241 occurred at site SS607692, located on the southeastern border of IHSS 156.2. The maximum activity (1.85E+00 pCi/g) of Pu-239/240 was found at site SS608292, also located on the southeastern border of IHSS 156.2. Elevated activities of Am-241 and Pu-239/240 occurred in samples randomly distributed in all but the northeastern portion of IHSS 156.2, where no detections for Am-241 and Pu-239/240 above their BSLs were found.

Other Parameters—TOC concentrations ranged from 1.87E+03 to 2.15E+04 mg/kg in the surface soil samples collected from IHSS 156.2. The maximum concentration occurred at site SS602992, located along the northwestern border of IHSS 156.2.

East Spray Field Area (IHSS 216.1)

The East Spray Field Area (IHSS 216.1) is located on the ridge between the North Walnut Creek and South Walnut Creek drainages east of IHSS 156.2 (Figure 1.3-3). Six surface soil sites were sampled to characterize the horizontal extent of contamination in IHSS 216.1 (SS608792 through SS609292), as shown on Figure 4.4-7. Chemical analyses performed on the surface soil samples included metals, radionuclides, and TOC. No VOC, SVOC, pesticide/PCB, or nitrate analyses were performed on surface soil samples collected from IHSS 216.1.

PCOC Metals—Calcium, lead, and strontium were detected at concentrations slightly above their respective BSLs in one or more of the surface soil samples collected in IHSS 216.1, as presented on Table 4.4-5 and shown on Figure 4.4-7.

Lead and strontium were each detected once above the BSL, in samples from sites SS609292 and SS609192, respectively, located in the western portion of IHSS 216.1. Calcium was detected above the BSL in 3 of 6 samples analyzed, with occurrences randomly distributed within the IHSS.

PCOC Radionuclides—Am-241, gross alpha, gross beta, and Pu-239/240 were detected at activities above their BSLs in surface soil samples collected at IHSS 216.1, as presented on Table 4.4-5 and shown on Figure 4.4-8.

Am-241 was detected above the BSL in all six samples analyzed, with the maximum activity (1.92E-01 pCi/g) found at site SS609292, located in the southeast corner of IHSS 216.1. Pu-239/240 was detected above the BSL in all four samples analyzed, with the maximum activity (7.58E-01 pCi/g) also found at site SS609292. Am-241 activities decrease slightly toward the north-northeast boundary of the IHSS, whereas Pu-239/240 activities are randomly distributed.

An elevated activity of gross alpha (1.86E+02 pCi/g) was detected above the BSL at site SS609092, located in the southwestern corner of IHSS 216.1. Gross beta was detected once at an activity slightly above the BSL.

Other Parameters—TOC concentrations ranged from 1.14E+04 to 1.71E+04 mg/kg in the surface soil samples collected from IHSS 216.1. The maximum concentration was found at site SS608992.

4.4.4 Sludge Dispersal and Triangle Areas

This IHSS group includes the Sludge Dispersal Area (IHSS 141) and the Triangle Area (IHSS 165). The distribution of chemicals in surface soils from these IHSSs are discussed in the following sections.

Sludge Dispersal Area (IHSS 141)

The Sludge Dispersal Area (IHSS 141) is located east of the PA and due south of the IHSS 156.2 (Figure 1.3-3). Forty surface soil sites were sampled to characterize the horizontal extent of contamination in IHSS 141 (SS609792 through SS609992, SS610492 through SS610692, SS611192 through SS611392, SS612092, SS612192, SS613092 through SS615292, and SS620792 through SS621092), as shown on Figure 4.4-9. Chemical analyses performed on the surface soil samples included pesticides/PCBs, metals, radionuclides, and nitrates. No VOC, SVOC or TOC analyses were performed on surface soil samples collected from IHSS 141.

Pesticides/PCBs—No pesticides or PCBs were detected in the surface soil samples collected in IHSS 141.

PCOC Metals—Fourteen metals were detected at concentrations above their respective BSLs in one or more of the surface soil samples collected in IHSS 141, as presented on Table 4.4-6 and shown on Figure 4.4-9. These metals are calcium, chromium, cobalt, copper, iron, lead, magnesium, mercury, nickel, silver, sodium, strontium, vanadium, and zinc.

Most metals occurred at concentrations slightly above their BSL. Elevated concentrations of copper, mercury, silver, vanadium, and zinc were found predominately in the northern portion of IHSS 141, where maximum concentrations of silver (5.27E+01 mg/kg) and zinc (6.50E+02 mg/kg) were found.

Chromium, cobalt, iron, lead, and nickel were detected at concentrations slightly above their BSLs at frequencies of 2.5 to 7.5 percent. Calcium, magnesium, mercury, sodium, and vanadium were detected at maximum concentrations approximately 2 times their BSLs at frequencies of 5 to 60 percent.

Copper and strontium were detected at concentrations above their BSLs at frequencies of 42.5 percent and 15 percent, respectively. Copper detections above the BSL occurred in samples located in the eastern half and northern portions of IHSS 141, while strontium detections above the BSL only occurred in the eastern half of the IHSS. The maximum concentrations for copper (6.16E+01 mg/kg) and strontium (1.04E+02 mg/kg) were found at site SS612992, located along the northern border of IHSS 141.

Silver and zinc were detected at concentrations above their BSLs at frequencies of 7.5 percent and 50 percent, respectively. The maximum concentrations for silver (5.27E+01 mg/kg) and zinc (6.50E+02 mg/kg) occurred at site SS612192, located in the northern portion of IHSS 141.

PCOC Radionuclides—Am-241, gross alpha, gross beta, and Pu-239/240 were detected at activities above their respective BSLs in surface soil samples collected at IHSS 141, as presented on Table 4.4-6 and shown on Figure 4.4-10.

Elevated activities of Am-241 and Pu-239/240 were frequently detected above the BSLs and are widely distributed in IHSS 141. Maximum activities of Am-241 (1.84E+00 pCi/g) and Pu-239/240 (1.04E+01 pCi/g) occurred at site SS610592, located in the southwestern portion of IHSS 141. Elevated activities of gross alpha and gross beta occurred in a few south central sites in the IHSS, with maximum activities of 1.46E+02 pCi/g and 7.17E+01 pCi/g, respectively.

Other Analytes—Nitrate was detected at a concentration slightly above the BSL at one site (SS609792), located in the southwestern portion of IHSS 141.

Triangle Area (IHSS 165)

The Triangle Area (IHSS 165) is located southwest of IHSS 156.2 in the eastern portion of the PA (Figure 1.3-3). Fifteen surface soil sites were sampled to characterize the horizontal extent of

contamination in IHSS 165 (SS603092 through SS603292, SS606192 through SS606692, and SS620092 through SS620592), as shown on Figure 4.4-9. Chemical analyses performed on the surface soil samples included pesticides/PCBs, metals, radionuclides, and TOC. No VOC, SVOC or nitrate analyses were performed on surface soil samples collected from IHSS 165.

Pesticides/PCBs—Aroclor-1254, a PCB, was detected once in the surface soil samples, at a concentration of 4.25E+02 µg/kg (Table 4.4-7). This single detection occurred at site SS606592, located along the northern border of IHSS 165 (Figure 4.4-11).

PCOC Metals—Five metals were detected at concentrations above their respective BSLs in one or more of the surface soil samples collected in IHSS 165, as presented on Table 4.4-7 and shown on Figure 4.4-9. These metals are calcium, chromium, lead, nickel, and zinc.

PCOC metals were infrequently detected at concentrations at or slightly above the BSLs (except for chromium and zinc), and were randomly distributed throughout IHSS 165. Single, elevated concentrations of chromium (3.51E+01 mg/kg) and zinc (1.17E+02 mg/kg) occurred at sites SS606592 and SS606692, respectively. Both sites are located in the northern portion of the IHSS.

PCOC Radionuclides—Four radionuclides were detected at activities above their BSLs in surface soil samples collected in IHSS 165, as presented on Table 4.4-7 and shown on Figure 4.4-10. These radionuclides are Am-241, gross alpha, gross beta, and Pu-239/240.

Am-241 and Pu-239/240 were frequently detected at elevated levels above the BSLs, with maximum activities of 3.24E+00 pCi/g and 1.52E+01 pCi/g, respectively. Elevated activities of Am-241 are found throughout the IHSS. The elevated Pu-239/240 activities are predominately in the north-northeast portions of the IHSS.

Gross alpha and gross beta were infrequently detected above their BSLs. The maximum activity for gross alpha (4.08E+01 pCi/g) and the single activity for gross beta (4.63E+01 pCi/g) occurred in a sample collected from site SS620392, located just outside of the northwestern corner of IHSS 165. Gross alpha detections above the BSL only occurred in the western half of the IHSS.

Other Parameters—TOC concentrations ranged from 1.03E+03 to 1.83E+04 mg/kg in the surface soil samples collected from IHSS 165. The maximum concentration was found at site SS606692, located in the north central portion of this IHSS.

4.4.5 A-Series Ponds (Dry Sediments)

The A-Series Ponds (IHSSs 142.1 through 142.4) have been constructed in the North Walnut Creek drainage located northeast of the PA at RFETS (Figure 1.3-3). The ponds are numbered sequentially, increasing in a downstream direction, from west to east along North Walnut Creek.

Two dry sediment samples were collected upstream of each pond (eight total) to characterize the horizontal extent of contamination in the A-Series Ponds. Dry sediment sampling sites will be referred to as "site" in the following sections. Chemical analyses performed on the dry sediment samples included SVOCs, pesticides/PCBs, metals, radionuclides, and nitrates. No VOC or TOC analyses were performed on dry sediment samples collected from IHSSs 142.1 through 142.4.

Statistical data for detected SVOCs, and PCOC metals and radionuclides detected above their BSLs at IHSSs 142.1 through 142.4 are presented on Tables 4.4-8 through 4.4-11, respectively. Spatial distribution of these data for SVOCs, PCOC metals, and PCOC radionuclides are shown on Figures 4.4-12, 4.4-13, and 4.4-14, respectively.

A-Series Ponds

SVOCs—Eleven SVOCs were detected in the dry sediment samples collected upstream of the A-Series Ponds (Figure 4.4-12). All of the SVOCs, except for bis(2-ethylhexyl)phthalate, are PAHs. Bis(2-ethylhexyl)phthalate was frequently detected in the dry sediment samples, with estimated concentrations in the range of 6.70E+01 to 3.50E+02 µg/kg.

The remaining 10 SVOCs detected are PAHs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. The PAH concentrations ranged from an estimated 5.10E+01 µg/kg [benzo(a)anthracene] to 5.60E+02 µg/kg (fluoranthene). Site SED65592 (upstream of Pond A-3) contained all 10 PAHs and the maximum PAH concentration detected (fluoranthene at 5.60E+02 µg/kg). Of the dry sediment samples collected upstream of the ponds, those associated with Pond A-3 contained the largest number of PAHs and the highest PAH concentrations, whereas those associated with Pond A-2 contained only one PAH (fluoranthene).

Pesticides/PCBs—A single detection (1.30E+01 µg/kg) of delta-BHC, a pesticide, occurred in a dry sediment sample collected upstream of Pond A-2, as shown on Figure 4.4-12.

PCOC Metals—Seven metals were detected at concentrations above their respective BSLs in dry sediment samples collected upstream of each pond, as shown on Figure 4.4-13. These metals are calcium, copper, iron, mercury, nickel, strontium, and zinc. Of these, zinc was the only metal found in samples collected upstream of all ponds, at elevated levels in the range of 1.21E+02 to 2.93E+02 mg/kg. The maximum concentration (2.93E+02 mg/kg) of zinc occurred at a site upstream of Pond A-1. Zinc concentrations generally decrease downstream. The remaining metals were primarily detected at concentrations slightly above their respective BSLs, and were randomly distributed throughout the sampled sites.

PCOC Radionuclides—Am-241 and Pu-239/240 were detected at activities above their respective BSLs in dry sediment samples collected upstream of each pond, as shown on Figure 4.4-14. Elevated activities of Am-241 occurred in samples upstream of Ponds A-3 and A-4 only, at maximum activities

of 3.27E-01 pCi/g and 4.44E-01 pCi/g, respectively. Elevated activities of Pu-239/240 occurred in all dry sediment samples, with activities in the range of 5.27E-01 pCi/g (Pond A-3) to 4.44E+00 pCi/g (Pond A-2). Pu-239/240 activities are highest at sites upstream of Pond A-2 and lowest at sites upstream of Pond A-3.

Other Analytes—No nitrate concentrations were detected above the BSL (3.92E+01 mg/kg) in dry sediment samples collected upstream of the A-Series Ponds.

4.4.6 B-Series Ponds (Dry Sediments)

The B-Series Ponds (IHSSs 142.5 through 142.9) have been constructed in the South Walnut Creek drainage, east of the eastern perimeter of the PA at RFETS (Figure 1.3-3). The ponds are numbered sequentially, increasing in a downstream direction, from west to east along South Walnut Creek.

Two dry sediment samples were collected upstream of each pond (10 total) to characterize the horizontal extent of contamination in the B-Series Ponds. Dry sediment sampling sites will be referred to as "site" in the following sections. Chemical analyses performed on the dry sediment samples included SVOCs, pesticides/PCBs, metals, radionuclides, and nitrates. No VOC or TOC analyses were performed on dry sediment samples collected from IHSSs 142.5 through 142.9.

Statistical data for detected SVOCs, and PCOC metals and radionuclides detected above their BSLs at IHSSs 142.5 through 142.9 are presented on Tables 4.4-12 through 4.4-16, respectively. Spatial distribution of these data for SVOCs, PCOC metals, and PCOC radionuclides are shown on Figures 4.4-12, 4.4-13, and 4.4-14, respectively.

B-Series Ponds

SVOCs—Fifteen SVOCs were detected only in the dry sediment samples collected upstream of Ponds B-1, B-2, and B-4 (Figure 4.4-15). All of the SVOCs, except for diethyl phthalate, are PAHs. Diethyl phthalate was only detected at a sample site upstream of Pond B-2, with an estimated concentration of 4.60E+02 µg/kg.

The remaining 14 SVOCs detected are PAHs: acenapthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, ideno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. PAHs were detected in both samples collected upstream of Pond B-1 and in one sample collected upstream of Pond B-4. The PAH concentrations ranged from an estimated 8.00E+01 to 9.00E+02 µg/kg, both occurring in the Pond B-4 sample.

Pesticides/PCBs—No pesticide or PCB concentrations were detected in dry sediment samples collected upstream of IHSSs 142.5 through 142.9.

PCOC Metals—Five metals were detected at concentrations above their respective BSLs in dry sediment samples collected upstream of each pond, as shown on Figure 4.4-16. These metals are calcium, iron, nickel, strontium, and zinc.

Of these metals, calcium and zinc were the only metals found in samples collected upstream of all ponds. The highest concentrations (1.91E+02 and 2.86E+02 mg/kg) of zinc occurred upstream of Pond B-1. Nickel occurred only in a sample collected upstream of Pond B-1, at a slightly elevated concentration (2.64E+01 mg/kg). Strontium was detected above the BSL in samples upstream of all ponds except Pond B-3, with a maximum concentration of 9.24E+01 mg/kg found in a sample collected upstream of Pond B-2. The remaining metals occurred randomly at the various sampling sites, with concentrations slightly above their BSLs.

PCOC Radionuclides—Am-241 and Pu-239/240 were detected at activities above their respective BSLs in dry sediment samples collected upstream of each pond, as shown on Figure 4.4-17. Elevated levels of Am-241 and Pu-239/240 were ubiquitous, with activities ranging from 6.27E-02 to 1.29E+00 pCi/g (Am-241), and 1.48-01 to 3.10E+00 pCi/g (Pu-239/240). The maximum activity (1.29E+00 pCi/g) of Am-241 occurred in a sample upstream of Pond B-1, with activities decreasing in each consecutive pond. The maximum activity (3.10E+00 pCi/g) of Pu-239/240 occurred in a sample upstream of Pond B-4. Pu-239/240 activities show no apparent trend downstream.

Other Analytes—No nitrate concentrations were detected above the BSL (3.92E+01 mg/kg) in dry sediment samples collected upstream of IHSSs 142.7 through 142.9. Dry sediment samples collected upstream of IHSSs 142.5 and 142.6 for nitrate analyses were rejected during the validation process.

4.5 SUBSURFACE SOILS

The nature and extent of contamination in subsurface soils within OU6 IHSSs were evaluated using data collected during the OU6 Phase I investigation. Two methodologies used for sampling boreholes were composite and discrete sampling, as discussed in Section 2.1.3. Table 2.1-4 shows the analytical program for the subsurface soil samples collected in specified IHSSs.

Spatial distribution of subsurface soil data is presented in plan view on maps for analyte groups by IHSS areas (Figures 4.5-1 through 4.5-22). Figure 4.4-1 provides abbreviation and qualifier definitions used on Figures 4.5-1 through 4.5-22. The analyte groups presented on the maps are: (1) VOCs, (2) SVOCs and pesticides/PCBs, (3) metals, and (4) radionuclides. The OU6 Phase I analytical parameters are listed on Table 2.1-5. TOC and nitrate were not routinely sampled; therefore, available results are discussed in the text but are not presented on maps for this medium.

The organic compound maps show all detected concentrations (detections) in the subsurface soil samples. Metal and radionuclide maps only show PCOC concentrations or activities detected above the BSL.

PCOC metals and PCOC radionuclides have been identified by performing statistical background comparisons, as discussed in Section 4.3.2. PCOCs for subsurface soil samples are listed on Tables 4.3-4 and 4.3-5. Analytical results for OU6 subsurface soil samples are compiled in Appendix D2.

Subsurface soil samples were collected in specific OU6 IHSSs, as detailed on Table 2.1-4. No subsurface soil samples were collected for the pond IHSSs (142.1-12) since no boreholes were drilled and sampled beneath these IHSSs. Two monitoring wells (75092 and 75292) were drilled downgradient of Ponds A-4 and B-5, respectively, and analytical data from subsurface soil samples collected during the drilling of these borings will be reported in this section. However, no discussion on the nature and extent of contamination for the pond IHSSs will be included in this section.

For discussion purposes, OU6 IHSSs with subsurface soil sample data have been grouped by proximity to each other. These IHSS groups are as follows:

IHSS Group Name	Associated IHSSs
Trenches	166.1, 166.2, and 166.3
Spray Field Areas	167.1 and 167.3 (historical)
Old Outfall Area	143
Soil Dump and East Spray Field Areas	156.2 and 216.1
Sludge Dispersal and Triangle Areas	141 and 165

The following sections each begin with a brief description of the IHSS location, the boreholes used to characterize the IHSS, and chemical analyses performed, followed by a discussion of the nature and extent of the detected chemicals within each analyte group. Tables 4.5-1 through 4.5-13 present the percent detection, concentration or activity range, and mean concentration or activity of the analytes detected (as previously defined) for each IHSS, as well as BSLs for PCOCs. For PCOC inorganic constituents and radionuclides, only those detected at concentrations or activities above the BSL are discussed in the following sections.

4.5.1 Trenches

This IHSS group includes Trench A (IHSS 166.1), Trench B (IHSS 166.2), and Trench C, west and east (IHSS 166.3). Trenches A, B, and C are located north of the RFETS security area, on a plateau that separates North Walnut Creek and the unnamed tributary to the north (Figure 1.3-3). From north to south, the trenches are named Trench A, Trench C west, and Trench B. Trench C east is located east of Trench A.

Chemical analyses performed on the subsurface soil samples included VOCs, metals, and radionuclides. No SVOC, pesticide/PCB, TOC, or nitrate analyses were performed on subsurface soil

samples collected within IHSSs 166.1-3. The distribution of chemicals in subsurface soils from these IHSSs are discussed in the following sections.

The presence of two VOCs (toluene and 2-butanone) was ubiquitous in the subsurface soil samples collected within IHSSs 166.1-3. Two other VOCs, acetone and methylene chloride, were detected occasionally in laboratory method blanks. These four VOCs are referred to as suspect VOCs, as presented in Section 4.2.2, and their detections are shown on Figures 4.5-1 and 4.5-2.

Trench A (IHSS 166.1)

Eight boreholes were drilled and sampled to characterize the vertical extent of contamination in Trench A (66892 through 67492, and 68292), as shown on Figure 4.5-1.

VOCs—Eight VOCs were detected in the subsurface soil samples collected within IHSS 166.1, as presented on Table 4.5-1. Four of the VOCs are suspect VOCs (2-butanone, acetone, methylene chloride, and toluene), and are shown on Figure 4.5-1. The suspect VOCs were frequently detected at low concentrations (from 1.00E+00J to 4.60E+01 µg/kg) throughout IHSS 166.1. Of the remaining four VOCs [4-methyl-2-pentanone, benzene, chloroform ($CHCl_3$), and TCE], shown on Figure 4.5-3, only TCE occurred rather frequently at slightly elevated concentrations (6.00E+00J to 2.10E+01 µg/kg). A spatial review of the TCE detections indicated that TCE is localized in the center of Trench A. The TCE detections are found at depths greater than 7 ft, decreasing with depth in boreholes 66892 and 66992 as presented in the following table:

Borehole	VOC Sample Interval (Ft Below Ground Surface)	TCE Concentration (µg/kg)
66892	10.1 to 10.3	9.00E+00
66892	12.1 to 12.3	6.00E+00
66992	9.8 to 10	8.00E+00
66992	10.9 to 11.1	6.00E+00
67029	8.4 to 8.6	12.00E+00
67192	7.4 to 7.6	2.10E+01

Water was not encountered during drilling of these boreholes. However, water level measurements show that the depth to groundwater ranged from 3 to 9 ft at well 7287 and from 1 to 8 ft at well B206489 during the period from 1988 to 1993. These wells are located within Trench A and are shown on Plate 3.5-1. Based on depths of the TCE detections in subsurface soil samples, these sampled intervals are typically saturated by groundwater, thus the groundwater in the vicinity of Trench A may act as a contaminant source to subsurface soils in the area. Groundwater quality around Trench A is discussed in Section 4.6.

PCOC Metals—Barium, calcium, and chromium were detected at concentrations above their respective BSLs in one or more of the subsurface soil samples collected in IHSS 166.1, as presented on Table 4.5-1 and shown on Figure 4.5-4. Elevated concentrations of barium and chromium were found in composite samples only from depths between approximately 6 to 12.4 ft. Barium concentrations increased to the east, with the maximum concentration (5.51E+02 mg/kg) found in borehole 67192. Chromium has a single concentration (1.30E+02 mg/kg) above the BSL, occurring in borehole 66892. Calcium detected at concentrations above the BSL was confined to composite samples from depths of 0 to 6 ft where caliche was found.

PCOC Radionuclides—Pu-239/240 and uranium-235 (U-235) were each detected at an activity slightly above their BSL in composite samples from depths of approximately 6 ft or less, as presented on Table 4.5-1 and shown on Figure 4.5-5.

Trench B (IHSS 166.2)

Seven boreholes were drilled and sampled to characterize the vertical extent of contamination in Trench B (67592 through 68192). Subsurface soil sample analytical results from monitoring well 77392, installed about 250 ft east of the easternmost soil boring in Trench B, are included in the data used for evaluation of Trench B. The locations of these boreholes and monitoring well are shown on Figure 4.5-1.

VOCs—Three suspect VOCs (2-butanone, methylene chloride, and toluene) were detected in the subsurface soil samples collected in and around IHSS 166.2, as presented on Table 4.5-2 and shown on Figure 4.5-1. Elevated concentrations of these VOCs occurred frequently at Trench B sampling sites, with maximum concentrations of 1.60E+03 µg/kg (2-butanone), 5.40E+01B µg/kg (methylene chloride), and 4.00E+02 µg/kg (toluene).

PCOC Metals—Barium and calcium were detected at concentrations above their respective BSLs in one or more of the subsurface soil samples collected in IHSS 166.2, as presented on Table 4.5-2 and shown on Figure 4.5-4. Elevated concentrations of barium (from 3.32E+02 to 7.08E+02 mg/kg) were found only in the composite samples from depths between 5.6 ft and 12.3 ft, and concentrations increased from west to east in the IHSS.

PCOC Radionuclides—Am-241 and U-235 were detected once at an activity slightly above their respective BSLs in subsurface soil samples collected at IHSS 166.2, as presented on Table 4.5-2 and shown on Figure 4.5-5.

Trench C, West and East (IHSS 166.3)

Six boreholes were drilled and sampled to characterize the vertical extent of contamination in Trench C west (68392 through 68892), Figure 4.5-3. Five boreholes and one monitoring well (68992 through 69392, and 76992), shown on Figure 4.5-3, were drilled and sampled to characterize Trench C east.

However, these boreholes were located due north of the IHSS boundary, based on aerial photographs and geophysical survey data (Section 2.2.6). Therefore, the data collected represents the sampled area and are not necessarily indicative of conditions within the IHSS 166.3 east boundaries. The analytes detected are summarized on Table 4.5-3 (Trench C west) and Table 4.5-4 (Trench C east).

VOCs—Four VOCs were detected in subsurface soil samples collected in and around IHSS 166.3 (west and east), as shown on Figures 4.5-2 and 4.5-3. Two suspect VOCs (2-butanone and toluene) were most frequently detected, commonly at low concentrations (1.00E+00J to 9.70E+02 µg/kg). VOC maximum concentrations were higher in Trench C east (from 3.00E+01J to 9.70E+02 µg/kg) than in Trench C west (from 9.00E+00 to 2.30E+02 µg/kg). Single detections of styrene and benzene occurred at low estimated concentrations (1.0E+00J) in a sample from each Trench C west and east, respectively.

PCOC Metals—Barium, calcium, and strontium were detected at concentrations above their respective BSLs in IHSS 166.3, west and east, as shown on Figure 4.5-4. A single elevated concentration of barium was found in IHSS 166.3 west (2.97E+03 mg/kg) and in IHSS 166.3 east (6.47E+01 mg/kg). These occurrences were found in composite samples from depths of approximately 6 to 12 ft, located on the west end of each trench. Calcium detections above the BSL were ubiquitous in Trench C west and east, predominately occurring in samples collected at depths of 6 ft or less where caliche is commonly found. Strontium was only found in samples collected at depths of less than 6 ft, at estimated concentrations slightly above the BSL.

PCOC Radionuclides—Am-241 and Pu-239/240 were detected at activities above their respective BSLs in one or more of the subsurface soil samples collected in and around IHSS 166.3, as shown on Figure 4.5-5. Occurrences of Am-241 and Pu-239/240 were found at depths of less than 6.2 ft in all but one sample. Maximum activities of Am-241 and Pu-239/240 were 2.29E-02 pCi/g and 8.55E-02 pCi/g, respectively.

4.5.2 Spray Field Areas

Two areas used for spray evaporation include the North Spray Field (IHSS 167.1) and the South Spray Field (167.3). The distribution of chemicals in the surface soils from IHSSs 167.1 and 167.3 are discussed below.

North Spray Field Area (IHSS 167.1)

The North Spray Field Area (IHSS 167.1) is located north of the Landfill Pond and south of McKay Bypass Canal (Figure 1.3-3). Twenty-two boreholes were drilled and sampled to a depth of 4 ft to characterize the vertical extent of contamination in the North Spray Field Area (61192 through 61492 and 61692 through 63392), as shown on Figure 4.5-6. Additionally, during the drilling of monitoring well 77192, soil samples were collected to a depth of 7.5 ft and the samples analyzed for VOCs only (Figure 4.5-6). Chemical analyses performed on the subsurface soil samples collected in the boreholes

included metals, radionuclides, and TOC. No SVOC, pesticide/PCB, or nitrate analyses were performed on subsurface soil samples collected from IHSS 167.1. The analytes detected are summarized on Table 4.5-5.

VOCs—Toluene was the only VOC detected in the subsurface soil samples collected from well 77192 (Figure 4.5-6), occurring in low concentrations (1.00E+00J to 3.00E+00J µg/kg) at all three depths sampled.

PCOC Metals—Five metals were detected at concentrations above their respective BSLs in one or more of the subsurface soil samples collected in IHSS 167.1, as shown on Figure 4.5-7. These metals are barium, calcium, chromium, lead, and zinc.

Metal detections were infrequent and limited to a few sites predominately located in the western half of the IHSS. A few samples, all collected at depths between 2 ft and 4 ft, contained elevated concentrations of barium (8.66E+02 mg/kg), chromium (2.17E+02 mg/kg), and zinc (2.87E+02 mg/kg). Calcium occurred in samples collected from 2 to 4 ft in depth, at sites clustered in the western portion of the IHSS. Lead was detected at concentrations slightly above the BSL and were randomly distributed within IHSS 167.1.

PCOC Radionuclides—Six radionuclides were detected at activities above their respective BSLs in subsurface soil samples collected at IHSS 167.1, as shown on Figure 4.5-8. These radionuclides are Am-241, gross alpha, Pu-239/240, uranium-233/234 (U-233/234), U-235, and uranium-238 (U-238).

Most radionuclides were infrequently detected in activities at or slightly above the BSLs. Elevated activities of gross alpha (1.43E+02 pCi/g), Pu-239/240 (7.16E-02 pCi/g), and U-238 (1.41E+02 pCi/g) were found in subsurface soil samples from a few sites. Three of the 4 uranium isotope (U-233/234, U-235, and U-238) detections above the BSLs were found in borehole 62092 in composite samples from depths of 2 to 4 ft. The remaining uranium detection was in borehole 62892, also from a composite sample at a depth of 2 to 4 ft. These boreholes are both located on the easternmost border of IHSS 167.1.

Other Parameters—TOC concentrations ranged from 4.91E+02 to 1.88E+04 mg/kg in the subsurface soil samples collected from IHSS 167.1. The maximum concentration was found at borehole 61392, located in the northern apex of IHSS 167.1.

South Spray Field Area (Historical IHSS 167.3)

The South Spray Field Area (IHSS 167.3) is located due south of the Landfill Pond (Figure 1.3-3). The location of IHSS 167.3 was revised in the HRR (DOE 1992b) after the completion of the OU6 field sampling activities, as discussed in Section 1.3.2. The sample collection points shown on Figure 4.5-6 are located due south and outside of the IHSS boundaries as defined in the HRR.

Therefore, the following discussion addresses the nature and extent of contamination in the sampled area and is not necessarily indicative of conditions within the revised IHSS 167.3 boundary.

Eight boreholes were drilled (66092 through 66792) and one monitoring well was installed (76792) and all were sampled to characterize the vertical extent of contamination in the sampled area south of IHSS 167.3. Chemical analyses performed on the subsurface soil samples from the sampled area included VOCs, metals, radionuclides, and TOC. No SVOC, pesticide/PCB, or nitrate analyses were performed on subsurface soil samples collected from the sampled area. The analytes detected are summarized on Table 4.5-6.

VOCs—Three suspect VOCs (2-butanone, methylene chloride, and toluene) were detected in the subsurface soil samples collected within the sampled area. All VOC detections were found in borehole 76792, located in the northern portion of the sampled area. VOC concentrations are generally low (5.00E+00J to 9.10E+01 µg/kg), as shown on Figure 4.5-6. However, a maximum concentration of 7.40E+02 µg/kg for 2-butanone was found in a composite sample taken from a depth of 2 to 4 ft.

PCOC Metals—Calcium, chromium, and strontium were detected at concentrations above their respective BSLs in one or more of the subsurface soil samples collected in the sampled area, as shown on Figure 4.5-7. Except for frequent occurrences of calcium, chromium and strontium detections above the BSL are limited to a few samples. A maximum concentration (3.41E+02 mg/kg) of strontium was found in a composite sample from a depth of 2 to 4 ft in borehole 66692.

PCOC Radionuclides—Am-241 and Pu-239/240 were detected above their BSLs in subsurface soil samples collected in the sampled area, as shown on Figure 4.5-8. Slightly elevated activities of Am-241 and Pu-239/240 were found primarily in the southern half of the sampled area, with maximum activities of 3.20E-02 pCi/g and 1.04E-01 pCi/g, respectively. Pu-239/240 activities decrease with depth in the composite samples from the sampled area.

Other Parameters—TOC concentrations ranged from 1.05E+03 to 1.56E+04 mg/kg in the subsurface soil samples collected from the sampled area near IHSS 167.3. The maximum concentration was found at borehole 66692 in a composite sample from a depth of 0 to 2 ft.

4.5.3 Old Outfall Area (IHSS 143)

The Old Outfall Area (IHSS 143), as defined in the HRR (DOE 1992b), is located northwest of Building 771 in the northwest corner of the PA (Figure 1.3-3). As discussed in Section 2.2.3, the actual location of the Old Outfall Area extends to the north of IHSS 143, as shown on Figure 4.5-9.

Six boreholes were drilled in the newly defined IHSS area and a seventh borehole was drilled to the southwest of IHSS 143. These boreholes were sampled to characterize the vertical extent of contamination in and around the Old Outfall Area (60092 through 60692; 60592 became monitoring well 77492), as shown on Figure 4.5-9. Chemical analyses performed on the subsurface soil samples

included VOCs, SVOCs, pesticides/PCBs, metals, radionuclides, TOCs, and nitrates. The analytes detected in the discrete and composite subsurface soil samples are summarized on Table 4.4-7.

With up to 8 to 10 ft of fill in the Old Outfall Area as a result of soil remediation in 1972 (DOE 1992b), composite samples were collected from the top of prefill soils to depths of approximately 10 to 12 ft. Only borehole 60092 was sampled from the surface to total depth. Discrete samples for VOCs were collected from both fill and prefill soils. The distribution of chemicals in subsurface soils from the sampled area in and around IHSS 143 are discussed in the following sections.

Old Outfall Area (IHSS 143)

VOCs—Four suspect VOCs (2-butanone, acetone, methylene chloride, and toluene) were detected in samples collected in both fill and prefill (undisturbed) subsurface soils in the Old Outfall Area, as presented in Table 4.5-7 and shown on Figure 4.5-9.

Toluene detections were ubiquitous throughout the sampled area, with a maximum concentration of 1.06E+03 µg/kg (toluene). Acetone detections occurred frequently with a maximum concentration of 8.90E+01 µg/kg. Methylene chloride and 2-butanone were detected at low concentrations in the range of 2.00E+00J to 1.80E+01J µg/kg. Maximum concentrations of the VOCs occurred in samples collected from prefill (undisturbed) soils.

SVOCs—Twelve SVOCs were detected in the subsurface soil samples collected in the Old Outfall Area, as presented on Table 4.5-7. Two of the SVOCs [bis(2-ethylhexyl)phthalate and di-n-octyl phthalate] are known as suspect SVOCs. These two SVOCs were detected at maximum concentrations of 4.10E+02J µg/kg [bis(2-ethylhexyl)phthalate] and 6.80E+01J µg/kg (di-n-octyl phthalate), each in composite samples collected at depths of 6.5 ft to 10.7 ft, as shown on Figure 4.5-9. Bis(2-ethylhexyl)phthalate was also detected in laboratory method blanks.

Nine of the SVOCs detected are PAHs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene (Figure 4.5-10). The PAH concentrations ranged from 5.20E+01J µg/kg (benzo(k)fluoranthene) to 4.60E+02 µg/kg (pyrene). Borehole 60092 contained the maximum PAH concentration detected (4.600E+02 µg/kg) and the greatest number of PAHs detected (nine total). No PAHs were detected in borehole 60692. Fewer PAHs were detected in subsurface soil samples collected in the Old Outfall Area than in the surface soil samples from the same sampled area.

The remaining SVOC, benzoic acid, was detected in all samples analyzed, with the maximum concentration (1.07E+03 µg/kg) occurring in a composite sample from borehole 60292, at a depth of 6.5 to 10.7 ft. Benzoic acid was also detected in laboratory method blanks.

Pesticides/PCBs—The only detection of pesticides/PCBs was aroclor-1254 (a PCB) at a concentration of 9.40E+02 µg/kg. This aroclor-1254 detection occurred in a subsurface soil sample collected in the fill at a depth of 0 to 6.6 ft (Figure 4.5-10).

PCOC Metals—Barium, calcium, and strontium were detected at concentrations above their respective BSLs only in the subsurface soil samples from boreholes 60192 and 60492, as presented on Table 4.5-7 and shown on Figure 4.5-11. A single, elevated concentration (1.15E+03 mg/kg) of barium occurred in a composite sample collected from a depth of 6.7 to 11.8 ft in borehole 60492. Maximum concentrations of calcium (1.31E+05 mg/kg) and strontium (2.79E+02J mg/kg) occurred in composite samples collected from depths of 6.7 to 11.8 ft from borehole 60492.

PCOC Radionuclides—Am-241 and U-238 were detected at activities slightly above their respective BSLs in subsurface soil samples collected at the Old Outfall Area, as presented on Table 4.5-7 and shown on Figure 4.5-12. The activity of Am-241 increases slightly with depth, as shown in borehole 60092. Slightly elevated activities (1.77E-01 and 2.61E-01 pCi/g) for Pu-239/240 occurred in composite samples from depths greater than 6.5 ft (prefill soils).

Other Analytes and Parameters—Nitrate was infrequently detected in concentrations above the BSL, with a maximum concentration (1.45E+01 mg/kg) occurring in a composite sample from borehole 60592 at a depth of 7 to 9.7 ft. TOC concentrations ranged from 1.70E+03 to 6.02E+03 mg/kg in the subsurface soil samples from the Old Outfall Area. The maximum concentration (6.02E+03 mg/kg) was found at borehole 60192 in a composite sample from a depth of 6.6 to 11.9 ft.

4.5.4 Soil Dump and East Spray Field Areas

This IHSS group includes the Soil Dump Area (IHSS 156.2) and the East Spray Field Area (IHSS 216.1). The distribution of chemicals in surface soils from these IHSSs are discussed in the following sections.

The presence of four VOCs (2-butanone, acetone, methylene chloride, and toluene) was widespread in the subsurface soil samples collected in the Soil Dump and East Spray Field Areas. Acetone and methylene chloride were also detected in laboratory method blanks. These four VOCs are referred to as suspect VOCs, as presented in Section 4.2.2, and their detections are shown on Figures 4.5-13 and 4.5-14.

Soil Dump Area (IHSS 156.2)

The Soil Dump Area (IHSS 156.2) is located northeast of the Triangle Area (IHSS 165), on the west end of the ridge that separates the North Walnut Creek and South Walnut Creek drainages (Figure 1.3-3).

Twenty-two boreholes were drilled and sampled to characterize the vertical extent of contamination in the Soil Dump Area (63592, 63692, 73592 through 74992, 77592 through 77992), as shown on Figure 4.5-13. Additionally, during the drilling of monitoring well 75892, subsurface soil samples were collected and analyzed (Figure 4.5-13). Chemical analyses performed on the subsurface soil samples included VOCs, metals, and radionuclides. No SVOC, pesticide/PCB, TOC, or nitrate analyses were performed on subsurface soil samples collected from IHSS 156.2. The analytes detected in these composite subsurface soil samples are summarized on Table 4.5-8.

VOCs—Seven VOCs were detected in the subsurface soil samples collected within IHSS 156.2, as presented on Table 4.5-8. Four suspect VOCs (2-butanone, acetone, methylene chloride, and toluene) are shown on Figure 4.5-13. The suspect VOCs were detected at elevated concentrations widely distributed throughout IHSS 156.2 and found at nearly all sample depths. Maximum concentrations ranged from 2.20E+03 µg/kg (2-butanone) to 4.00E+02 µg/kg (toluene).

The remaining VOCs (4-methyl-2-pentanone, chlorobenzene, and total xylenes) occurred as single detections at low concentrations (2.00E+00J to 7.40E+01 µg/kg), as shown on Figure 4.5-15.

PCOC Metals—Five metals were detected at concentrations above their respective BSLs in one or more subsurface soil samples collected in IHSS 156.2, as shown on Figure 4.5-16. These metals are barium, calcium, lead, strontium, and zinc.

Infrequent occurrences of elevated concentrations of barium, lead, strontium, and zinc were found randomly distributed in IHSS 156.2 and predominately from sample depths of 6 ft or greater. Maximum concentrations are: 8.64E+02 mg/kg (barium), 8.49E+01J mg/kg (lead), 4.20E+02J mg/kg (strontium), and 7.06E+02 mg/kg (zinc). Elevated concentrations of calcium (up to 2.03E+05 mg/kg) likely result from natural occurrences of caliche in the soils.

PCOC Radionuclides—Am-241, Pu-239/240, and U-235 were detected at activities above their respective BSLs in subsurface soil samples collected within IHSS 156.2, as shown on Figure 4.5-17. Am-241 and Pu-239/240 occurred randomly throughout IHSS 156.2 in composite samples from depths between 0 and 20.5 ft, with most occurrences in samples from depths of 6 ft or less. Maximum activities of 3.10E-01 pCi/g (Am-241) and 8.80E-01 pCi/g (Pu-239/240) were found in samples from depths of 0 to 5.9 ft. Activity levels generally decreased with depth. U-235 was infrequently detected at activities slightly above the BSL.

East Spray Field Area (IHSS 216.1)

The East Spray Field Area (IHSS 216.1) is located on the ridge between the North Walnut Creek and South Walnut Creek drainages east of IHSS 156.2 (Figure 1.3-3). Six boreholes were drilled to depths of four ft and sampled to characterize the vertical extent of contamination in IHSS 216.1 (78092 through 78592), as shown on Figure 4.5-14. Chemical analyses performed on the subsurface soil samples included VOCs, metals, radionuclides, and TOC. No SVOC, pesticide/PCB, or nitrate

analyses were performed on subsurface soil samples collected from IHSS 216.1. The analytes detected in the discrete and composite subsurface soil samples are summarized on Table 4.5-9.

VOCs—Three suspect VOCs (2-butanone, acetone, and toluene) were detected at elevated concentrations in subsurface soil samples collected within IHSS 216.1, as shown on Figure 4.5-14. These VOCs were ubiquitous in the IHSS, with concentrations increasing in the downgradient direction (eastern portion of IHSS). Maximum concentrations were found in the range of 6.30E+02J µg/kg (toluene) to 5.10E+03 µg/kg (acetone).

PCOC Metals—Barium, calcium, and strontium were detected at concentrations above their respective BSLs in one or more of the subsurface soil samples collected within IHSS 216.1, as shown on Figure 4.5-16. An elevated concentration of barium (7.83E+02 mg/kg) was found only in a sample collected from a depth of 0 to 2 ft. Strontium was infrequently detected at concentrations above the BSL, with a maximum concentration of 5.06E+02 mg/kg. Calcium occurred at concentrations attributed to natural variations within the soils.

PCOC Radionuclides—Am-241 and Pu-239/240 were detected at activities above their BSLs in subsurface soil samples collected within IHSS 216.1, as shown on Figure 4.5-17. Pu-239/240 was only detected in composite samples from 0 to 2 ft, with a maximum activity of 2.06E-01 pCi/g found in the southeastern corner of the IHSS. Also found only in composite samples of 0 to 2 ft, low activity levels (slightly above the BSL) of Am-241 were randomly distributed in IHSS 216.1.

Other Parameters—TOC concentrations ranged from 1.11E+03 to 1.29E+04 µg/g in the subsurface soil samples collected from IHSS 216.1. The maximum concentration (1.29E+04 µg/g) was found at borehole 78592 in a composite sample from a depth of 0 to 2 ft.

4.5.5 Sludge Dispersal and Triangle Areas

This IHSS group includes the Sludge Dispersal Area (IHSS 141) and the Triangle Area (IHSS 165). The distribution of chemicals in subsurface soils from these IHSSs are discussed in the following sections.

Sludge Dispersal Area (IHSS 141)

The Sludge Dispersal Area (IHSS 141) is located east of the PA and due south of the IHSS 156.2 (Figure 1.3-3). During the drilling of monitoring well 75992 in the Phase I field investigation, subsurface soil samples were collected to a depth of 14.2 ft, as shown on Figure 4.5-18. Chemical analyses performed on the subsurface soil samples from borehole 75992 included only VOCs. No SVOC, pesticide/PCB, metal, radionuclide, nitrate, or TOC analyses were performed on subsurface soil samples. VOCs detected are summarized on Table 4.5-10.

Previous Investigation—The Vadose Zone Monitoring, Sanitary Treatment Plant Sludge Drying Beds, Buildings 910 and 995 Report (DOE 1993d) concluded the following information about the subsurface soil constituents beneath IHSS 141.

1. Chemical analyses of soil samples collected from beneath the Building 995 sludge drying beds indicate that some of the soil samples (9 out of 22) had trace metal concentrations slightly higher than the background upper tolerance limit for similar soils at the RFETS. Chemical analyses for selected anions, VOCs, SVOCs, gross alpha, and gross beta indicated that all 22 soil samples had concentrations, either below the background UTL or the detection limit. In general, the soils beneath the Building 995 sludge drying beds are not contaminated with large quantities of trace metals at the locations sampled.

2. No contamination of soil-water was evident beneath the Building 995 sludge drying beds, based upon chemical analyses of five soil-water samples collected between September and December 1992.

A discussion of the VOC detections in IHSS 141 is presented here.

VOCs—Two suspect VOCs (2-butanone and toluene) were detected in the subsurface samples collected from well 75992, located in the southeastern corner of IHSS 141. 2-Butanone was detected between 5.8 ft and 14.2 ft, with a maximum concentration of 2.00E+03 µg/kg. Toluene was detected in composite samples collected from multiple depths between 0.2 to 9.1 ft, at a maximum concentration of 1.80E+02J µg/kg.

Triangle Area (IHSS 165)

The Triangle Area (IHSS 165) is located southwest of IHSS 156.2 in the eastern portion of the PA (Figures 1.3-3). Thirteen boreholes were drilled and sampled to characterize the vertical extent of contamination in IHSS 165 (72292 through 73492), as shown on Figure 4.5-18. Additionally, subsurface soil samples were collected and analyzed during the drilling of monitoring well 76192 (Figure 4.5-18). Chemical analyses performed on the subsurface soil samples included VOCs, SVOCs, metals, and radionuclides. No pesticide/PCB, TOC, or nitrate analyses were performed on subsurface soil samples collected from IHSS 165. The analytes detected in the discrete and composite subsurface soil samples are summarized on Table 4.5-11.

The presence of four VOCs (2-butanone, acetone, methylene chloride, and toluene) and one SVOC, bis(2-ethylhexyl)phthalate, was widespread in the subsurface soil samples collected in the Triangle Area (IHSS 165). Two SVOCs, di-n-octyl phthalate and diethyl phthalate, were each detected once in the subsurface samples analyzed in IHSS 165. All of the organic compounds presented above are referred to as suspect organic compounds, as presented in Section 4.2.2, and their detections are shown on Figure 4.5-18.

VOCs—Five VOCs were detected in the subsurface soil samples collected within IHSS 165, as presented on Table 4.5-11. Four of the VOCs are suspect VOCs (2-butanone, acetone, methylene chloride, and toluene), and are shown on Figure 4.5-18. Acetone and toluene were detected throughout IHSS 165. Maximum concentrations of methylene chloride and toluene were 5.00E+00BJ µg/kg and 1.10E+03 µg/kg, respectively. Detections of 2-butanone were prevalent in samples from well 76192, where concentrations increased with depth to a maximum of 5.60E+02 µg/kg at a depth of 11.1 to 11.4 ft. Borehole 76192 is located in the far eastern end of IHSS 165.

Benzene occurred as a single detection in a well 76192 sample taken from a depth of 1.75 to 2 ft, with an estimated concentration of 3.00E+00 µg/kg, as shown on Figure 4.5-19. Well 76192 is located on the eastern end of IHSS 165.

SVOCs—Seventeen SVOCs were detected in the subsurface soil samples collected in IHSS 165, as presented on Table 4.5-11. Nearly all SVOC detections were found in the southwestern portion of IHSS 165. Three of the 17 SVOCs [bis(2-ethylhexyl)phthalate, di-n-octyl phthalate, and diethyl phthalate] are known as suspect SVOCs, and are shown on Figure 4.5-18. Estimated concentrations of these suspect SVOCs ranged from 4.00E+01 to 3.90E+02 µg/kg. Bis(2-ethylhexyl)phthalate was also detected in laboratory method blanks.

Nine of the SVOCs detected are PAHs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene (Figure 4.5-19). PAH detections were found only in samples from depths of 6 ft or less, and all concentrations were estimated below the contract required quantitation limit (CRQL). The PAH concentrations ranged from 3.80E+01 to 3.40E+02 µg/kg. Borehole 72792 contained all of the detected PAHs (nine total) and the maximum PAH concentration detected (3.40E+02 µg/kg). A spatial review of the PAH detections in the boreholes indicates the detections are located on the west and south ends of the IHSS.

The remaining five SVOCs infrequently detected are 1,4-dichlorobenzene, 2-chlorophenol, benzoic acid, pentachlorophenol, and phenol. Maximum concentrations of these five SVOCs are: 6.40E+01J µg/kg (1,4-dichlorobenzene), 5.50E+01J µg/kg (2-chlorophenol), 2.60E+02J µg/kg (benzoic acid), 6.60E+02J µg/kg (pentachlorophenol), and 5.50E+01J µg/kg (phenol).

PCOC Metals—Five metals were detected at concentrations above their BSLs in one or more of the subsurface soil samples collected within IHSS 165, as shown on Figure 4.5-20. These metals are barium, calcium, lead, strontium, and vanadium. All detections occurred at a few sites and in samples from various depths.

Of the metals detected, single elevated concentrations of barium (1.05E+03 mg/kg) and lead (4.75E+01J mg/kg) were found in neighboring samples in the western portion of IHSS 165. An

elevated concentration (1.18E+02 mg/kg) of vanadium occurred in a composite sample from a depth of 6.2 to 12 ft in borehole 73392, located in the northern portion of IHSS 165. Calcium concentrations may reflect the presence of caliche in the soils. Strontium occurred once at a concentration slightly above the BSL.

PCOC Radionuclides—Four radionuclides were detected at activities above their respective BSLs in subsurface soil samples collected within IHSS 165, as shown on Figure 4.5-21. These radionuclides are Am-241, Pu-239/240, U-235, and U-238.

Only Am-241 and Pu-239/240 occurred at elevated activities, found primarily in composite samples from depths of 0 to 6 ft. Maximum activities of Am-241 and Pu-239/240 are 4.40E-01 pCi/g and 5.30E-01 pCi/g, respectively. Although few samples deeper than 6 ft contained detections above the BSL, the Am-241 activities decreased with depth.

4.5.6 Ponds A-4 and B-5

Ponds A-4 and B-5 are located along the North Walnut Creek and South Walnut Creek drainages, respectively, east-northeast of the PA at RFETS (Figure 1.3-3). Each of these ponds are the easternmost, downstream pond of the A and B-Series Ponds.

A monitoring well was installed downgradient of each Pond A-4 and B-5, and sampled during the Phase I field investigation (75092 and 75292), as shown on Figure 4.5-22. Chemical analyses performed on the subsurface soil samples included only VOCs. No SVOC, pesticide/PCB, metal, radionuclide, nitrate, or TOC analyses were performed on these subsurface soil samples. Because these boreholes are not located in the IHSSs for Ponds A-4 and B-5, there is no discussion on the nature and extent of contamination relative to Ponds A-4 and B-5. Analytical data from these two monitoring wells are reported in the following sections.

Pond A-4 (IHSS 142.4)

VOC analytical results from subsurface soil samples taken in monitoring well 75092 are reported below.

VOCs—Toluene was detected in all samples analyzed, with a maximum concentration of 2.00E+02 µg/kg, as presented on Table 4.5-12 and shown on Figure 4.5-22. These concentrations decreased with depth in composite samples from depths between 1.5 to 9.4 ft.

Pond B-5 (IHSS 142.9)

VOC analytical results from subsurface soil samples taken in monitoring well 75292 are reported below.

VOCs—Toluene was detected in all samples analyzed, with a maximum concentration of 1.80E+01 µg/kg, as presented on Table 4.5-13 and shown on Figure 4.5-22. These concentrations generally decreased with depth in composite samples from depths between 0 to 8 ft.

4.6 GROUNDWATER

Two hydrostratigraphic units, the UHSU and LHSU, have been defined at OU6 as discussed in Section 3.6.2. The unconsolidated surface deposits and weathered bedrock units of the UHSU are the focus of discussion in this section because of the potential for contamination of these units due to RFETS site-related activities and the potential for contaminant migration within these units. The nature and extent of contamination in the LHSU will not be discussed in this report. The geochemistry and hydraulic properties of the UHSU and LHSU indicate that the interactions between the two units are minimal (EG&G 1995c).

The nature and extent of contamination in UHSU groundwater within OU6 was evaluated using data collected from wells screened in colluvium, Valley-Fill Alluvium, RFA, and the Arapahoe No. 1 Sandstone. This evaluation included data from: (1) historical wells installed during previous OUinvestigations (1986-1991), (2) wells installed during the 1992 OU6 Phase I investigation, and (3) wells installed as part of the 1992 Well Abandonment and Replacement Program (WARP). Data from wells installed in adjacent OUs were reviewed and used, when appropriate, in the evaluation of the nature and extent of UHSU groundwater contamination.

For discussion purposes, OU6 has been divided into six areas (Area 1 through Area 6), as shown on Figure 4.6-1. All areas, except Area 6, generally contain similar groundwater flow directions, as discussed in Section 3.6.2.1.1, and incorporate OU6 IHSSs. These areas are as follows:

- Area 1: Unnamed Tributary Drainage
- Area 2: North Walnut Creek Drainage
- Area 3: South Walnut Creek Drainage
- Area 4: Upgradient Drainage
- Area 5: W&I Drainage
- Area 6: Old Outfall Area (IHSS 143)

Analyses performed on the groundwater samples from these areas included VOCs, SVOCs, pesticides/PCBs, metals (total and dissolved), radionuclides (total and dissolved), nitrates/nitrites, and TOC. Table 2.1-4 shows the analytical program for groundwater samples collected as a result of the OU6 Phase I investigation.

Spatial distribution of groundwater data (Figure 4.4-1), is presented in plan view on maps for analyte groups by areas defined above (Figures 4.6-2 through 4.6-39). Figure 4.4-1 also provides abbreviation definitions used on Figures 4.6-2 through 4.6-39. The analyte groups presented on the maps are: (1) organic compounds, (2) total metals, (3) dissolved metals, (4) total radionuclides, (5) dissolved

radionuclides, and (6) nitrate/nitrite. The OU6 Phase I analytical parameters are listed on Table 2.1-5. TOC was not routinely sampled, therefore, available results are discussed in the text and shown on the tables, as appropriate, but are not presented on the maps for this medium. Groundwater maps include analytical data received between first quarter 1991, through fourth quarter 1993.

The organic compound maps show all detected concentrations (detections) in the groundwater samples. Metal and radionuclide (total and dissolved) maps only show PCOC concentrations or activities above the BSL.

PCOC metals and PCOC radionuclides have been identified by performing statistical background comparisons, as discussed in Section 4.3.2. PCOCs for groundwater samples are listed on Tables 4.3-6 through 4.3-9. Analytical results for OU6 groundwater samples are compiled in Appendix D3.

The following sections present a discussion of potential contamination impact on OU6 groundwater from adjacent OUs, and the analytical results of OU6 groundwater samples. Each section begins with a brief description of the drainage location, the sampling sites used to characterize the areas, and chemical analyses performed, followed by a discussion of the nature and extent of the detected chemicals within each analyte group. Tables 4.6-1 through 4.6-6 present the percent detection, concentration or activity range with laboratory qualifiers, and mean concentration or activity of the analytes detected (as previously defined) for each area, as well as the BSLs for PCOCs. For PCOC inorganic constituents and radionuclides, only those detected at concentrations or activities above the BSL are discussed in the following sections.

4.6.1 Historical Review of Potential Sources to OU6 Groundwater

Groundwater and surface water within OU6 may be impacted by contaminants from adjacent OUs, as indicated in several RFETS reports. This section summarizes some findings and conclusions from previous reports that address sources of contamination, types of contaminants, and specific areas of OU6 potentially affected by adjacent OU2, OU4, and OU7. The reports reviewed include:

- Solar Evaporation Pond Radiochemical Impacts on the North Walnut Creek Drainage and Necessary Corrective Actions (EG&G 1990b).
- Final 1991 Annual RCRA Groundwater Monitoring Report for Regulated Units at Rocky Flats Plant (EG&G 1992d)
- Draft Final Well Evaluation Report (EG&G 1993d)
- Draft Phase II RFI/RI Report, 903 Pad, Mound and East Trenches Area, Operable Unit No. 2 (DOE 1993d)

The Solar Evaporation Ponds (IHSS 101), located in the northeastern portion of the PA, are designated as a RCRA regulated unit assigned to OU4 (Figure 4.6-1). This IHSS is west of the Triangle Area (IHSS 165) and upslope of North Walnut Creek drainage. A french drain system was installed as a corrective action to prevent migration of contaminants from the Solar Evaporation Ponds to the North Walnut Creek drainage. The Solar Evaporation Pond Radiochemical Impacts Report (EG&G 1990b) stated that the french drain system was preventing the migration of radiochemicals in the UHSU groundwater to the North Walnut Creek drainage. However, this same report identified three breaches in the french drain system that may have allowed surface unit contaminants to bypass this containment system. These breaches have been repaired.

The Final 1991 Annual RCRA Groundwater Monitoring Report (EG&G 1992d) indicated that groundwater flow from the solar ponds diverges along two major flowpaths: one northeast toward North Walnut Creek and the other east-southeast toward South Walnut Creek. The report stated that downgradient, UHSU monitoring wells have been impacted by leakage from the solar ponds, and identified the contaminant types as VOCs, inorganic analytes (primarily nitrate/nitrite), radionuclides (predominately U-233/234 and U-238), and total dissolved solids. These elevated analyte levels found north and downgradient of the french drain suggest this containment may be ineffective in deterring contaminant migration toward the North Walnut Creek and South Walnut Creek drainages.

Increased concentrations of VOCs, radionuclides, metals and inorganics typical of landfill leachates (EG&G 1992d) were detected in the UHSU groundwater to the south-southeast of the present Landfill (IHSS 114), located west of the Landfill Pond in OU7 (Figure 4.6-1). These contaminants may be due to one or more of the following: (1) IHSSs 166.1-3 impact on groundwater, (2) inadequate functioning groundwater intercept system at the southern edge of the landfill, (3) wastes emplaced beyond the limits of the intercept system (EG&G 1992d), or (4) contaminant migration from OU10.

Three OU2 IHSSs that may have impacted the quality of groundwater and surface water within OU6 include the Mound Site (IHSS 113), Trench T-3 (IHSS 110), and Trench T-4 (IHSS 111.1) (DOE 1993e), as shown on Figure 4.6-1.

Cis-1,2-dichloroethene (cis-1,2-DCE), PCE, and TCE were identified at concentrations greater than 10 µg/l in wells located downgradient of the OU2 Mound Site and upgradient of OU6 Sludge Dispersal Area (IHSS 141). Groundwater plumes containing PCE and TCE extend from the Mound Site northward toward the South Walnut Creek drainage (DOE 1993d). The migration of contaminants occurs as groundwater flows through the Arapahoe No. 1 Sandstone toward South Walnut Creek where this unit subcrops beneath hillside colluvium. The contaminated groundwater flows in the colluvium and/or discharges at seeps as surface flow toward the South Walnut Creek drainage.

Numerous VOCs [CCl_4, $CHCl_3$, 1,1-DCE, 1,1,1-TCA, 1,2-DCE, PCE and TCE] were detected in wells located downgradient of OU2 Trenches T-3 and T-4 and upgradient of OU6 Ponds B-1 and B-2. Groundwater plumes containing volatiles are believed to extent from the Trenches Area northward

toward the South Walnut Creek drainage near Ponds B-1 and B-2 (DOE 1993d). The migration of contaminants occurs as groundwater flows through the Arapahoe No. 1 Sandstone to the colluvium along the south hillside of South Walnut Creek and/or discharges at seeps as surface flow toward Ponds B-1 and B-2.

4.6.2 OU6 UHSU Groundwater

The distribution of chemicals in groundwater samples collected from wells located in each of the six areas presented in Section 4.6 are discussed in the following sections.

Area 1: Unnamed Tributary Drainage

The unnamed tributary drainage within OU6 (Area 1), located north of the North Walnut Creek drainage, extends from the western end of OU6 near IHSSs 166 and 167 toward the northeast to its confluence with North Walnut Creek (Figure 4.6-1). Analytical data from 11 UHSU monitoring wells installed prior to the Phase I investigation were used to characterize the groundwater in Area 1. Locations of the eight alluvial wells (0586, 0686, 4087, 4287, 7087, 7187, 7287, and B206489) and three bedrock wells (B206589, B206689, and B206889) are shown on Figure 4.6-2. Analytes detected in groundwater samples from these wells are summarized on Table 4.6-1. Four OU6 Phase I UHSU monitoring wells (76792, 76992, 77192, 77392), installed in or near IHSSs 166 and 167 (Sections 2.2.6 and 2.2.7), were not included in the evaluation of Area 1 because the wells remained dry as of fourth quarter 1993. Chemical analyses performed on groundwater samples included VOCs, metals (total and dissolved), radionuclides (total and dissolved), and nitrates/nitrites. No SVOC, pesticide/PCB or TOC analyses were performed on groundwater samples collected from Area 1.

The number of sampling events per well in Area 1 between first quarter 1991, through fourth quarter 1993, are summarized below. The variability shown in the number of sampling events for total and dissolved PCOC metals and radionuclides is due in part to the different analytical programs performed on the groundwater samples collected during 1991 through 1993. This variability affects the number of detections (above BSLs) shown on the figures for total metals and radionuclides relative to dissolved metals and radionuclides for a specific well. Direct comparisons between total and dissolved analyte concentrations or activities are not possible, therefore are not presented in the following sections. Completeness of the analytical data is discussed in Appendix E, Section E7.2.5.

		PCOC Metals		PCOC Radionuclides		
Well	**VOCs**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Nitrates/ Nitrites**
0586	12	0	2	7	2	6
0686	2	1	1	1	1	1
4087	5	0	2	4	3	4
4287	5	2	5	4	5	5
7087	11	2	5	7	5	10
7187	12	6	12	12	12	12
7287	12	5	8	11	9	10
B206489	11	3	6	9	6	8
B206589	11	7	11	11	11	11
B206689	11	1	5	5	4	9
B206889	11	0	0	5	0	8

VOCs—Fourteen VOCs were detected in groundwater samples collected from Area 1 wells. All groundwater samples in Area 1 were analyzed by the VOACLP Method, which is discussed in Appendix E, Section E7.2.4. Two VOCs (acetone and methylene chloride) are referred to as suspect organic compounds, as presented in Section 4.2.2, and their detections are shown on Figure 4.6-2. The remaining VOCs are shown on Figure 4.6-3.

Acetone and methylene chloride were infrequently detected in groundwater samples from Area 1, at maximum concentrations of 1.70E+01 µg/l and 3.20E+01J µg/l, respectively. Methylene chloride was also detected in a laboratory method blank associated with the sample containing the maximum concentration.

Eight of the VOCs detected are chlorinated hydrocarbons (CHCs): 1,1,1-TCA, 1,1-DCA, 1,2-DCE, CCl_4, $CHCl_3$, methylene chloride, PCE, and TCE. Methylene chloride was discussed in the previous paragraph. The remaining seven CHCs were detected at low concentrations (up to 1.30E+01 µg/l), with the exception of TCE detected at a maximum concentration of 1.50E+02 µg/l in a sample from well 7287, located in the center of Trench A (IHSS 166.1).

The remaining five VOCs include benzene, carbon disulfide, ethylbenzene, toluene, and total xylenes. These VOCs were infrequently detected in the groundwater samples from Area 1, at low concentrations ranging from 3.00E-01J to 1.00E+01 µg/l (toluene). Wells 7287 and B206489, each located within Trench A (IHSS 166.1), contained the greatest number of VOCs detected at the highest frequencies.

TCE was detected in subsurface soil samples (Section 4.5.1.1) at depths greater than 7 ft where groundwater levels have been measured as shallow as 1 ft and 3 ft in wells B206489 and 7287, respectively. TCE concentrations ranged from 1.60E+01 to 1.50E+02 µg/l in wells 7287 and B206489, respectively, during the period from March 1991 to October 1993. These TCE concentrations in groundwater samples are higher than the TCE concentrations (6.00E+00 to 2.10E+01 µg/kg) detected in the subsurface soil samples reported in Section 4.5.1.1. In addition, other CHC detections (1,1,1-TCA, 1,1-DCA, 1,2-DCE, CCl_4, $CHCl_3$, and PCE) were found in groundwater samples from wells 7287 and B206489, but were not detected in the subsurface soil samples from Trench A. Potential sources for groundwater contamination in the vicinity of Trench A is discussed in Section 4.6.1.

PCOC Total Metals—Twenty-five total metals were detected at concentrations above their respective BSLs in one or more of the unfiltered groundwater samples collected from wells in Area 1, as shown on Figure 4.6-4. Most total metals had limited occurrences above the BSLs, with concentrations ranging from 2.50E-01 µg/l (mercury) to 6.56E+05 µg/l (iron). Well 7287, located in Trench A, contained the greatest number (23 total) of total metals detected above the BSLs, detected at high frequencies and concentrations. In general, the wells located nearest the Trenches Area contain most of the total metal detections above the BSLs.

PCOC Dissolved Metals—Thirteen dissolved metals were detected at concentrations above their respective BSLs in one or more of the filtered groundwater samples collected from wells in Area 1, as shown on Figure 4.6-5. Filtered groundwater samples from these wells generally contained lower concentrations (many at or slightly above the BSLs) of dissolved metals as compared to the total metal concentrations occurring in unfiltered samples (Figure 4.6-4). The dissolved metal concentrations ranged from 8.20E+00 µg/l (cadmium) to 8.97E+05 µg/l (sodium). The easternmost wells (0686 and 0586) in Area 1 contained the greatest number of dissolved metal occurrences. Well 7287, located within Trench A, contains the most zinc detections (seven) above the BSL found in Area 1 wells, including the maximum zinc concentration of 2.12E+02 µg/l.

PCOC Total Radionuclides—Total Am-241 and total cesium-137 (Cs-137) were detected at activities above their respective BSLs, each detected in one unfiltered groundwater sample collected from Area 1 wells, as shown on Figure 4.6-6. The slightly elevated activities were 6.07E-02 picocuries per liter (pCi/l) (Am-241) and 1.06E+00 pCi/l (Cs-137).

PCOC Dissolved Radionuclides—Four dissolved radionuclides [radium-226 (Ra-226), strontium-89,90 (Sr-89,90), U-233/234, and U-235] were detected at activities above their respective BSLs in one or more filtered groundwater samples collected from Area 1 wells, as shown on Figure 4.6-7. These slightly elevated activities were predominately found in samples from one well, B206589, located east of Trench A. Maximum activities are: 8.10E-01 pCi/l (Ra-226), 1.80E+00 pCi/l (Sr-89,90), 6.30E+01 pCi/l (U-233/234), and 2.10E+00 pCi/l (U-235).

Other Analytes—Nitrates/nitrites were detected at concentrations above the BSL in one UHSU bedrock well, B206889, located east of IHSS 167.3 (Figure 4.6-8). The nitrate/nitrite concentrations ranged between 1.30E+02 and 1.90E+02 mg/l.

Area 2: North Walnut Creek Drainage

The North Walnut Creek drainage within OU6 (Area 2) is located north of the PA and extends toward the northeast to the confluence with the unnamed tributary (Figure 4.6-1). Analytical data from 11 UHSU monitoring wells installed prior to the Phase I investigation were used to characterize the groundwater in Area 2. Locations of the two colluvial wells (B208289 and B208589), eight alluvial wells (1186, 1286, 1386, 1586, 1786, 1886, B210489, and 41091), and one bedrock well (B208789) are shown on Figure 4.6-9. Analytes detected in groundwater samples from these wells are summarized on Table 4.6-2. One OU6 Phase I UHSU bedrock monitoring well (75092), installed near the Pond A-4 dam (Section 2.2.2), was sampled for groundwater; however, no data were received from RFEDS by the data cutoff date for inclusion in the evaluation of Area 2. Chemical analyses performed on groundwater samples included VOCs, SVOCs, metals (total and dissolved), radionuclides (total and dissolved), and nitrates/nitrites. No pesticide/PCB or TOC analyses were performed on groundwater samples collected from Area 2.

The number of sampling events per well in Area 2 between first quarter 1991, through fourth quarter 1993, are summarized below. The variability shown in the number of sampling events for total and dissolved PCOC metals and radionuclides is due in part to the different analytical programs performed on the groundwater samples collected during 1991 through 1993. This variability affects the number of detections (above BSLs) shown on the figures for total metals and radionuclides relative to dissolved metals and radionuclides for a specific well. Direct comparisons between total and dissolved analyte concentrations or activities are not possible, therefore are not presented in the following sections. Completeness of the analytical data is discussed in Appendix E, Section E7.2.5.

			PCOC Metals		PCOC Radionuclides		
Well	**VOCs**	**SVOCs**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Nitrates/ Nitrites**
1186	8	0	5	7	9	8	8
1286	3	0	3	3	3	3	3
1386	12	0	2	8	11	8	10
1586	12	0	7	12	12	12	12
1786	12	0	7	11	12	12	12
1886	1	0	0	0	0	0	0
41091	9	3	4	5	7	6	9
B208289	6	0	0	0	0	0	5
B208589	2	0	2	2	2	2	2
B208789	4	0	1	1	4	2	4
B210489	10	0	7	11	10	10	10

VOCs—Sixteen VOCs were detected in groundwater samples collected from Area 2 wells. The groundwater samples in Area 2 were analyzed by the following methods: VOACLP, VOA502.2, and VOA524.2. These methods are discussed under data comparability in Appendix E, Section E7.2.4. Table E7-4 in Appendix E lists the VOCs detected with the various analytical method detection limits utilized for groundwater samples, including those from Area 2.

Three VOCs (2-butanone, acetone, and methylene chloride), referred to as suspect organic compounds as presented in Section 4.2.2, were infrequently detected at low concentrations (up to 2.70E+01J µg/l) and are shown on Figure 4.6-9.

The remainder of the VOCs detected consisted of: carbon disulfide, 4-methyl-2-pentanone, alkyl benzenes (benzene, benzene 1,2,4-trimethyl, ethylbenzene, m-xylene, p-xylene, styrene, toluene, and total xylenes), and CHCs ($CHCl_3$, PCE, and TCE). These VOCs were infrequently detected at low concentrations (1.00E-01J to 1.60E+01 µg/l), as shown on Figure 4.6-10. VOCs were most frequently detected in samples collected from three wells: well 1386, located upgradient of Pond A-1 and wells 1186 and 41091, each located downgradient of Pond A-4.

SVOCs—Two SVOCs [bis(2-ethylhexyl)phthalate and diethyl phthalate], referred to as suspect organic compounds as presented in Section 4.2.2, were each detected once in well 41091, located downgradient of Pond A-4 (Figure 4.6-10). Well 41091 was the only well in Area 2 that was analyzed for SVOCs. The estimated concentrations of bis(2-ethylhexyl)phthalate and diethyl phthalate are 4.00E+00 µg/l and 2.00E+00 µg/l, respectively.

PCOC Total Metals—Twenty-five total metals were detected at concentrations above their respective BSLs in one or more unfiltered groundwater samples collected from wells in Area 2, as shown on Figure 4.6-11. The total metal concentrations ranged from 3.60E-01 µg/l (mercury) to 7.15E+05 µg/l (calcium). Well 1786 contained the greatest number (24) of total metals detected generally at the highest frequencies and concentrations. Additionally, wells B210489 and 1586 (upstream of Pond A-1), and well 1286 (Pond A-3) had a high frequency of detections for total metals.

PCOC Dissolved Metals—Fourteen dissolved metals were detected at concentrations above their respective BSLs in filtered groundwater samples collected from wells in Area 2, as shown on Figure 4.6-12. Filtered groundwater samples from Area 2 contained fewer dissolved metal detections (above the BSL) than the total metal detections (above the BSL) for Area 2. Concentrations were in the range of 5.20E+00 µg/l (cadmium) to 6.59E+05 µg/l (calcium). Wells 1786, B210489, and 1586 contained the greatest number of dissolved metals detected in filtered groundwater samples. These wells, located along North Walnut Creek upstream of Pond A-1, were most frequently sampled for groundwater of the wells in Area 2.

PCOC Total Radionuclides—Four total radionuclides were detected at activities above their respective BSLs in one or more unfiltered groundwater samples collected from wells in Area 2, as shown on Figure 4.6-13. These total radionuclides are Am-241, Cs-137, Pu-239/240, and Ra-226. Elevated activities for Am-241 (up to 1.09E+00 pCi/l), Cs-137 (up to 4.50E+00 pCi/l), and Pu-239/240 (up to 3.65E+00 pCi/l) occurred primarily in samples collected from wells 1786 and 1286. Well 1286, located near the inlet to Pond A-3, had the greatest number of radionuclide detections (above the BSL) and contained the maximum activities for all of the radionuclides, except Ra-226. Total Ra-226 occurred at a single activity (7.20E-01 pCi/l) above the BSL in a groundwater sample from well 1186, located downstream of Pond A-4.

PCOC Dissolved Radionuclides—Six dissolved radionuclides were detected at activities above their respective BSLs in one or more of the filtered groundwater samples collected from wells in Area 2, as shown on Figure 4.6-14. These dissolved radionuclides are gross alpha, gross beta, Pu-239/240, Ra-226, Sr-89,90, and U-235. Except for Ra-226, the dissolved radionuclides were infrequently detected at activities slightly to moderately above their BSLs, and generally occurred in samples from wells located upstream of Pond A-1. Well 1786, located northeast of the PA and upstream of Pond A-1, contained the greatest number of dissolved radionuclide detections (above the BSL) and contained the maximum activities for all of the radionuclides, except Ra-226.

Dissolved Ra-226 was frequently detected at activities above the BSL, occurring in samples from most of the wells in Area 2. A maximum activity (1.20E+00 pCi/l) of Ra-226 occurred in a groundwater sample collected from well 1186, located downstream of Pond A-4.

Other Analytes—Nitrates/nitrites were detected at concentrations above the BSL, occurring only in groundwater samples collected from wells upstream of Pond A-1, as shown on Figure 4.6-15. The

maximum nitrate/nitrite concentration (1.76E+03 mg/l) occurred in a groundwater sample from well B210489, located northeast of the PA and upgradient of Pond A-1.

Area 3: South Walnut Creek Drainage

The South Walnut Creek drainage within OU6 (Area 3), located south of North Walnut Creek drainage, extends from west of IHSS 141 toward the northeast to the confluence with Walnut Creek (Figure 4.6-1). Analytical data from five UHSU monitoring wells installed prior to the Phase I investigation were used to characterize the groundwater in Area 3. The location of the four alluvial wells (3586 through 3886) and one bedrock well (02691) are shown on Figure 4.6-16. Analytes detected in groundwater samples from these wells are summarized on Table 4.6-3. Two OU6 Phase I UHSU monitoring wells (75292 and 75992), installed near the Pond B-5 dam and along the southeastern border of IHSS 141 (Sections 2.2.2 and 2.2.1, respectively), were not included in the evaluation of Area 3. Well 75292 was sampled for groundwater; however, no data were received from RFEDS by the data cutoff date for inclusion in the evaluation of Area 3. Well 75992 remained dry as of fourth quarter, 1993. Chemical analyses performed on groundwater samples included VOCs, SVOCs, pesticides/PCBs, metals (total and dissolved), radionuclides (total and dissolved), and nitrates/nitrites. No TOC analyses were performed on groundwater samples collected from Area 3.

The number of sampling events per well in Area 3 between first quarter, 1991, through fourth quarter, 1993, are summarized below. The variability shown in the number of sampling events for total and dissolved PCOC metals and radionuclides is due in part to the different analytical programs performed on the groundwater samples collected during 1991 through 1993. This variability affects the number of detections (above BSLs) shown on the figures for total metals and radionuclides relative to dissolved metals and radionuclides for a specific well. Direct comparisons between total and dissolved analyte concentrations or activities are not possible, therefore are not presented in the following sections. Completeness of the analytical data is discussed in Appendix E, Section E7.2.5.

				PCOCs Metals		PCOCs Radionuclides		
Well	VOCs	SVOCs	Pesticides/ PCBs	Total	Dissolved	Total	Dissolved	Nitrates/ Nitrites
3586	10	0	0	5	10	11	11	11
3686	8	0	0	0	1	6	1	7
3786	12	0	0	0	1	6	3	8
3886	8	0	0	1	6	8	5	7
02691	9	1	1	5	9	9	9	9

VOCs—Seventeen VOCs were detected in the groundwater samples collected from Area 3 wells. The groundwater samples in Area 3 were analyzed by the following methods: VOACLP, VOA502.2, and VOA524.2. These methods are discussed under data comparability in Appendix E, Section E7.2.4. Table E7-4 in Appendix E lists the VOCs detected with the various analytical method detection limits utilized for groundwater samples, including those from Area 3. Two of the VOCs (acetone and methylene chloride) are referred to as suspect organic compounds, as presented in Section 4.2.2, and their detections are shown on Figure 4.6-16. The remaining VOC detections are shown on Figure 4.6-17.

Acetone and methylene chloride were infrequently detected at low concentrations in groundwater samples from Area 3 wells, with a maximum concentration of 1.40E+01 µg/l (methylene chloride) found in well 02691, located east of the PA and upgradient of Pond B-1. Methylene chloride was also detected in laboratory method blanks associated with samples from wells 3686 and 3886.

Eleven of the VOCs detected are CHCs: 1,1,1-TCA, 1,1-DCA, 1,1-DCE, 1,2-DCA, 1,2-DCE, chloromethane, methylene chloride, PCE, trans-1,2-DCE, TCE, and vinyl chloride. Methylene chloride was discussed in the previous paragraph. The remaining 10 CHCs were detected at concentrations ranging from 1.00E-01 to 8.60E+02 µg/l. The maximum concentration (vinyl chloride at 8.60E+02 µg/l) occurred in a sample from well 3586, located east of the PA and upgradient of Pond B-1. The remaining five VOCs include: 2-hexanone, 4-isopropyltoluene, 4-methyl-2-pentanone, benzene, and toluene. These VOCs were each detected once, at concentrations ranging from 1.30E-01 to 5.00E+00 µg/l (2-hexanone). The greatest number of VOCs detected (13 total) occurred in groundwater samples collected from well 3586. A single detected concentration (1.50E-01J µg/l) of toluene was the only occurrence of VOCs in groundwater samples collected from wells near or downgradient of the B-Series Ponds.

SVOCs—No SVOCs were detected in groundwater samples collected from well 02691, the only well in Area 3 with samples analyzed for SVOCs.

Pesticides/PCBs—No pesticides/PCBs were detected in groundwater samples collected from well 02691, the only well in Area 3 with samples analyzed for pesticides/PCBs.

PCOC Total Metals—Ten total metals were detected at concentrations above their respective BSLs in unfiltered groundwater samples collected from wells in Area 3, as shown on Figure 4.6-18. The total metal concentrations ranged from 2.40E-01 µg/l (mercury) to 2.31E+05 µg/l (calcium). Most metal concentrations were slightly above the BSLs; however elevated levels of manganese (4.17E+03 µg/l) and strontium (2.02E+03 µg/l) occurred in wells 3586 and 3886, respectively. Most total metal detections (above the BSLs) in Area 3 occurred in samples from only two wells (3586 and 02691), located east of the PA and upgradient of Pond B-1. The greatest number of total metals detected, at high frequencies, were found in samples from well 3586.

PCOC Dissolved Metals—Twelve dissolved metals were detected at concentrations above their respective BSLs in filtered groundwater samples collected from wells in Area 3, as shown on Figure 4.6-19. The dissolved metal concentrations ranged from 1.29E+01 µg/l (chromium) to 3.22E+05 µg/l (calcium). Wells 3586 and 3886, located east of the PA and upgradient of Pond B-1, contained the greatest number of dissolved metals detected (above the BSLs) in groundwater samples from Area 3 wells. The high frequency of dissolved metals detected above the BSL in well 3586 may result from a higher relative frequency of sampling events.

PCOC Total Radionuclides—Sr-89,90 was the only total radionuclide detected at an activity above the BSL in unfiltered groundwater samples collected from wells in Area 3, as shown on Figure 4.6-20. A single detection of Sr-89,90 occurred at an activity of 1.22E+00 pCi/l in a sample from well 02691, located east of the PA and upgradient of Pond B-1.

PCOC Dissolved Radionuclides—Four dissolved radionuclides were detected at activities slightly above their respective BSLs in one or more of the filtered groundwater samples collected from wells in Area 3, as shown on Figure 4.6-21. These dissolved radionuclides are gross beta, Ra-226, Sr-89,90, and U-235. All but two of the dissolved radionuclide detections (above the BSL) occurred in groundwater samples from well 02691.

Other Analytes—No nitrates/nitrites were detected in concentrations above the BSL of 3.31E+01 mg/l in groundwater samples collected from wells in Area 3.

Area 4: Upgradient Drainage

The Upgradient Drainage (Area 4) is located on the ridge between North Walnut Creek and South Walnut Creek, upgradient of the A and B-Series Ponds (Figure 4.6-1). Analytical data from five UHSU monitoring wells installed prior to the Phase I investigation and one Phase I monitoring well were used to characterize the groundwater in Area 4. Five of the six wells designated for this area are located in IHSS 165. Locations of the colluvial well (B208089), four alluvial wells (2986, P209789, P218389, and P219489), and one OU6 Phase I bedrock well (76292) are shown on Figure 4.6-22. Analytes detected in groundwater samples from these wells are summarized on Table 4.6-4. Two additional OU6 Phase I UHSU monitoring wells (75892 and 76192) were installed in or near IHSSs 156.2 and 165 (Sections 2.2.4 and 2.2.5, respectively). Well 76192 was sampled for groundwater; however, no data were received from RFEDS by the data cutoff date for inclusion in the evaluation of Area 4. Well 75892 remained dry as of fourth quarter, 1993. Chemical analyses performed on groundwater samples included VOCs, SVOCs, pesticides/PCBs, metals (total and dissolved), radionuclides (total and dissolved), and nitrates/nitrites. No TOC analyses were performed on groundwater samples collected from Area 4.

The number of sampling events per well in Area 4 between first quarter 1991, through fourth quarter 1993, are summarized below. The variability shown in the number of sampling events for total and dissolved PCOC metals and radionuclides is due in part to the different analytical programs performed

on the groundwater samples collected during 1991 through 1993. This variability affects the number of detections (above BSLs) shown on the figures for total metals and radionuclides relative to dissolved metals and radionuclides for a specific well. Direct comparisons between total and dissolved analyte concentrations or activities are not possible, therefore are not presented in the following sections. Completeness of the analytical data is discussed in Appendix E, Section E7.2.5.

				PCOC Metals		PCOC Radionuclides		
Well	**VOCs**	**SVOCs**	**Pesticides/ PCBs**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Nitrates/ Nitrites**
2986	2	0	0	0	0	1	0	2
B208089	10	0	0	2	3	7	3	7
P209789	11	0	0	7	11	10	11	11
P218389	1	1	1	0	0	1	0	1
P219489	1	1	0	0	0	1	0	1
76292	3	3	3	1	2	2	0	2

VOCs—Nine VOCs were detected in the groundwater samples collected from Area 4 wells. The groundwater samples in Area 4 were analyzed by the following methods: VOACLP, VOA502.2, and VOA524.2. These methods are discussed under data comparability in Appendix E, Section E7.2.4. Table E7-4 in Appendix E lists the VOCs detected with the various analytical method detection limits utilized for groundwater samples, including those from Area 4. Two of the VOCs (acetone and methylene chloride) are referred to as suspect organic compounds, as presented in Section 4.2.2, and their detections are shown on Figure 4.6-22. Acetone and methylene chloride were single detections, with low concentrations of 1.00E+00 µg/l and 2.00E-01 µg/l, respectively. The remaining VOC detections are shown on Figure 4.6-23.

Four of the VOCs detected are alkyl benzenes: benzene, ethylbenzene, toluene, and total xylenes. The alkyl benzenes were detected at low concentrations ranging from 1.00E+00 to 1.60E+01 µg/l, with the maximum concentration (toluene at 1.60E+01 µg/l) occurring in a sample from well B208089 (northwest of IHSS 156.2).

Four of the VOCs detected are CHCs: $CHCl_3$, methylene chloride, PCE, and TCE. Methylene chloride was previously discussed. The remaining three CHCs were detected at low concentrations ranging from 2.00E-01 to 4.00E+00 µg/l. All VOC detections, except for one ($CHCl_3$), occurred in samples from only two wells (B208089 and P209789) in Area 4. In well P209789, located in the southwestern corner of IHSS 165, PCE and TCE were frequently detected at low concentrations (up to 4.00E+00 µg/l).

SVOCs—No SVOCs were detected in groundwater samples collected from wells P218389 and P219489, the only wells in Area 4 with samples analyzed for SVOCs.

Pesticides/PCBs—No pesticides/PCBs were detected in groundwater samples collected from wells P218389 and 76292, the only wells in Area 4 with samples analyzed for pesticides/PCBs.

PCOC Total Metals—Nine total metals were detected at concentrations above their respective BSLs in unfiltered groundwater samples collected from wells in Area 4, as shown on Figure 4.6-24. The total metal concentrations ranged from 1.60E+01 µg/l (lead) to 2.53E+05 µg/l (sodium). The greatest number of total metals detected (above the BSL) occurred in groundwater samples from wells B208089 and 76292, located northwest of IHSS 156.2, and in the northern portion of IHSS 165, respectively. Well P209789, also located in IHSS 165, contained samples with some total metals detected above the BSL.

PCOC Dissolved Metals—Eight dissolved metals were detected at concentrations above their respective BSLs in filtered groundwater samples collected from wells in Area 4, as shown on Figure 4.6-25. The dissolved metal concentrations ranged from 1.51E+01 µg/l (chromium) to 1.42E+05 µg/l (calcium). Well P209789 contains the greatest number of dissolved metals detected at concentrations above the BSL in groundwater from wells in Area 4. A few dissolved metals were also detected at concentrations above the BSLs at wells 76292 and P208089.

PCOC Total Radionuclides—Ra-226 was the only total radionuclide detected at an activity above the BSL in unfiltered groundwater samples collected from wells in Area 4, as shown on Figure 4.6-26. A single detection of Ra-226 occurred at an activity of 1.20E+00 pCi/l in a sample from well 76292 (IHSS 165).

PCOC Dissolved Radionuclides—Two dissolved radionuclides (Ra-226 and Sr-89,90) were detected at activities slightly above their BSLs each in one of the filtered groundwater samples collected from well P209789 in Area 4, as shown on Figure 4.6-27.

Other Analytes—Nitrates/nitrites were detected at concentrations above the BSL only in the groundwater samples collected from wells P209789 and P219489, located in and near IHSS 165, as shown on Figure 4.6-28. The maximum concentration (9.55E+01 mg/l) occurred in a groundwater sample from well P209789. Well P209789 also contained the greatest frequency of VOCs, dissolved metals, and dissolved radionuclides; the presence of these chemicals in the groundwater samples from this well may be influenced by contaminants coming from the Solar Evaporation Ponds.

Area 5: W&I Drainage

The W&I drainage (Area 5) is located along Walnut Creek, downgradient of Ponds A-4 and B-5 and west of Indiana Avenue (Figure 4.6-1). Analytical data from two UHSU monitoring wells installed prior to the Phase I investigation were used to characterize the groundwater in the W&I drainage. It is

suspected that the chemicals detected in these wells are higher than expected due to contaminants introduced to the groundwater during drilling and well installation. The location of the two alluvial wells (0486 and 41691) are shown on Figure 4.6-29. Analytes detected in groundwater samples from these wells are summarized on Table 4.6-5. Chemical analyses performed on groundwater samples included VOCs, SVOCs, pesticides/PCBs, metals (total and dissolved), radionuclides (total and dissolved), and nitrates/nitrites. No TOC analyses were performed on groundwater samples collected from Area 5.

The number of sampling events per well in Area 5 between first quarter 1991 through fourth quarter 1993, are summarized below. The variability shown in the number of sampling events for total and dissolved PCOC metals and radionuclides is due in part to the different analytical programs performed on the groundwater samples collected during 1991 through 1993. This variability affects the number of detections (above BSLs) shown on the figures for total metals and radionuclides relative to dissolved metals and radionuclides for a specific well. Direct comparisons between total and dissolved analyte concentrations or activities are not possible, therefore are not presented in the following sections. Completeness of the analytical data is discussed in Appendix E, Section E7.2.5.

				PCOC Metals		PCOC Radionuclides		
Well	**VOCs**	**SVOCs**	**Pesticides/ PCBs**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Nitrates/ Nitrites**
0486	8	0	0	6	8	9	8	7
41691	9	2	1	5	9	9	9	9

VOCs—Two VOCs (methylene chloride and toluene) were detected in the groundwater samples collected from Area 5 wells. The groundwater samples in Area 5 were analyzed by two methods: VOACLP and VOA502.2. These methods are discussed under data comparability in Appendix E, Section E7.2.4. Table E7-4 in Appendix E lists the VOCs detected with the various analytical method detection limits utilized for groundwater samples, including those from Area 5. Single detections of methylene chloride (1.00E+01 µg/l) and toluene (1.30E-01J µg/l) occurred in groundwater samples from wells 0486 and 41691 (Figures 4.6-29 and 4.6-30), respectively.

SVOCs—Bis(2-ethylhexyl)phthalate was the only SVOC detection, occurring in a groundwater sample from well 41691, at a low concentration of 3.00E+00J µg/l (Figure 4.6-29). Well 41691 was the only well in Area 5 with samples analyzed for SVOCs.

Pesticides/PCBs—No pesticides/PCBs were detected in groundwater samples collected from well 41691, the only well in Area 5 with samples analyzed for pesticides/PCBs.

PCOC Total Metals—Twenty-one total metals were frequently detected at concentrations above their respective BSLs in unfiltered groundwater samples collected from two wells in Area 5, as shown on

Figure 4.6-31. The total metal concentrations ranged from 3.60E-01 µg/l (mercury) to 1.91E+05 µg/l (iron). The greatest number of total metals detected above the BSL (20 total) at the highest frequencies were found in well 41691.

PCOC Dissolved Metals—Four dissolved metals were detected at concentrations above their respective BSLs in filtered groundwater samples collected from two wells in Area 5, as shown on Figure 4.6-32. These dissolved metals are chromium, manganese, potassium, and zinc. Well 0486 contained the single detections above the BSL for dissolved chromium (1.68E+01 µg/l) and dissolved zinc (3.14E+02 µg/l). Well 0486 also contained the maximum concentrations for dissolved manganese (1.01E+03 µg/l) and dissolved potassium (5.72E+03 µg/l).

PCOC Total Radionuclides—Four total radionuclides were detected at activities above their respective BSLs in one or more unfiltered groundwater samples collected from wells in Area 5, as shown on Figure 4.6-33. These total radionuclides are Am-241, Pu-239/240, Ra-226, and Sr-89,90. Samples collected from well 0486 contained all four total radionuclides, including the single detections (above the BSL) of Ra-226 and Sr-89,90 (both at 1.10E+00 pCi/l). Samples from well 41691 contained the maximum activities of Am-241 (3.20E+00 pCi/l) and Pu-239/240 (2.20E+00 pCi/l). These two wells are located downgradient of the W&I Pond.

PCOC Dissolved Radionuclides—Four dissolved radionuclides were detected at activities above their respective BSLs in one or two of the groundwater samples collected from wells in Area 5, as shown on Figure 4.6-34. These dissolved radionuclides are gross beta, Pu-239/240, Ra-226, and Sr-89,90. No BSL was applied for dissolved Pu-239/240 in groundwater samples due to an inadequate sample size necessary to perform the calculation.

All dissolved radionuclides, except Sr-89,90, occurred in groundwater samples from well 41691, with activities of 9.00E+01 pCi/l (gross beta), 3.50E-03J pCi/l (Pu-239/240), and 1.10E+00 pCi/l (Ra-226). Sr-89,90 occurred as a single detection above the BSL (1.05E+00 pCi/l) in a groundwater sample from well 0486.

Other Analytes—No nitrates/nitrites were detected in concentrations above the BSL of 3.31E+01 mg/l in groundwater samples collected from wells in Area 5.

Area 6: Old Outfall Area (IHSS 143)

The Old Outfall Area (Area 6), as defined in the HRR (DOE 1992a), is located northwest of Building 771 in the northwest corner of the PA (Figure 4.6-1). As discussed in Section 2.2.3, the actual location of the Old Outfall Area extends to the north of IHSS 143, as shown on Figure 4.6-35. Analytical data collected from OU6 Phase I UHSU monitoring well, 77492, was used to characterize the groundwater in Area 6. Well 77492 is located approximately 50 ft north of IHSS 143 (Figure 4.6-35). Analytes detected in groundwater samples from this well are summarized on Table 4.6-6. Chemical analyses performed on groundwater samples from this well included VOCs,

SVOCs, pesticides/PCBs, metals (total and dissolved), radionuclides (total and dissolved), nitrates/nitrites, and TOC.

The number of sampling events for well 77492 in Area 6 between first quarter 1991, through fourth quarter 1993, are summarized below. Completeness of the analytical data is discussed in Appendix E, Section E7.2.5.

				PCOC Metals		PCOC Radionuclides		
Well	**VOCs**	**SVOCs**	**Pesticides/ PCBs**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Nitrates/ Nitrites**
77492	3	3	3	2	3	3	1	2

VOCs—Eight VOCs were detected in groundwater samples collected from well 77492 in Area 6. The groundwater samples from well 77492 were analyzed by the following methods: VOACLP and VOA524.2. These methods are discussed under data comparability in Appendix E, Section E7.2.4. Table E7-4 in Appendix E lists the VOCs detected with the various analytical method detection limits utilized for groundwater samples, including those from well 77492.

All of the VOCs detected are CHCs: 1,1-DCA, 1,1-DCE, CCl_4, cis-1,2-DCE, $CHCl_3$, methylene chloride, PCE, and TCE. The CHC concentrations ranged from 1.00E-01 µg/l (TCE) to 8.00E+00 µg/l (CCl_4). In general, the number of CHCs detected and the concentrations of these CHCs decreased with time, as shown by sampling dates and reported analytical results on Figure 4.6-35.

SVOCs—Bis(2-ethylhexyl)phthalate was the only SVOC detected in the groundwater samples collected from well 77492 in Area 6, as shown on Figure 4.6-35. Bis(2-ethylhexyl)phthalate was a single detection at an estimated concentration of 8.00E+00 µg/l.

Pesticides/PCBs—No pesticides/PCBs were detected in groundwater samples collected from well 77492 in Area 6.

PCOC Total Metals—Twenty total metals were detected at concentrations above their respective BSLs in unfiltered groundwater samples collected from well 77492 in Area 6, as shown on Figure 4.6-36. The total metal concentrations ranged from 3.40E-01 µg/l (mercury) to 5.54E+05 µg/l (calcium). The number of metals detected at concentrations above the BSL and the concentrations detected decreased over time, as shown by the analytical results reported for two sampling events (Figure 4.6-36).

PCOC Dissolved Metals—Five dissolved metals were detected at concentrations above their respective BSLs in filtered groundwater samples collected from well 77492 in Area 6, as shown on

Figure 4.6-37. The dissolved metal concentrations ranged from 2.04E+02 µg/l (barium) to 1.62E+05 µg/l (calcium). Significantly fewer dissolved metals were detected above their BSLs in the filtered groundwater samples when compared to the total metals occurrences in the unfiltered groundwater samples. The dissolved metal concentrations were generally low; however, elevated concentrations of manganese (up to 2.77E+03 µg/l) were consistently detected in the groundwater samples. No apparent trend occurs in the dissolved metal concentrations over time (Figure 4.6-37).

PCOC Total Radionuclides—Two total radionuclides (Am-241 and Ra-226) were each detected once at activities above their respective BSLs in the unfiltered groundwater samples collected from well 77492 in Area 6, as shown on Figure 4.6-38. The single activities detected above the BSL were 4.00E-02 pCi/l (Am-241) and 8.80E+00 pCi/l (Ra-226).

PCOC Dissolved Radionuclides—Ra-226 was the only dissolved radionuclide detected at an activity above the BSL in a filtered groundwater sample collected from well 77492, as shown on Figure 4.6-39. Dissolved Ra-226 was detected at an activity of 6.90E-01 pCi/l.

Other Analytes and Parameters—No nitrates/nitrites were detected at concentrations above the method detection limit in the groundwater samples collected in well 77492 from Area 6. A TOC concentration of 1.00E+01 mg/l occurred in a groundwater sample collected from well 77492.

4.7 SURFACE WATER

The nature and extent of contamination in stream and pond surface water within OU6 were evaluated using data collected during the OU6 Phase I investigation, as discussed in Section 2.1.3.3. Surface water samples consisted of three types: (1) surface water collected within OU6 drainages during baseflow conditions, (2) surface water collected within OU6 drainages during a storm event, and (3) pond surface water collected in each of the A and B-Series Ponds and W&I Pond. Table 2.1-4 shows the analytical program for the surface water samples collected in OU6 drainages and specified IHSSs.

Spatial distribution of surface water data (Figure 4.4-1), is presented in plan view on maps for analyte groups by drainage and IHSS areas (Figures 4.7-1 through 4.7-23). Figure 4.4-1 also provides abbreviation definitions used on Figures 4.7-1 through 4.7-23. The analyte groups presented on the maps are: (1) organic compounds, (2) total metals, (3) dissolved metals, (4) total radionuclides, and (5) dissolved radionuclides. The OU6 Phase I analytical parameters are listed on Table 2.1-5. TOC and nitrate/nitrite were not routinely sampled, therefore available results are discussed in the text and shown on the tables, as appropriate, but are not presented on maps for this medium.

The organic compound maps show all detected concentrations (detections) in the surface water samples. Metal and radionuclide (total and dissolved) maps only show PCOC concentrations or activities above the BSL.

PCOC metals and PCOC radionuclides have been identified by performing statistical background comparisons, as discussed in Section 4.3.2. PCOCs for stream and pond surface water samples are listed on Tables 4.3-10 through 4.3-17. Analytical results for OU6 surface water samples are compiled in Appendix D4.

For discussion purposes, OU6 surface water data have been grouped by drainages (non-IHSS areas) and Pond IHSSs (142.1-12). These groups are as follows:

Group Name	Associated Drainages or IHSSs
Non-IHSS Surface Water (Baseflow)	North Walnut Creek upstream of OU6, North Walnut and South Walnut Creek Drainages, and McKay Ditch and W&I Effluent
Non-IHSS Surface Water (Storm Event)	North Walnut Creek upstream of OU6, North Walnut and South Walnut Creek Drainages
A-Series Pond Surface Water	142.1, 142.2, 142.3, and 142.4
B-Series Pond Surface Water	142.5, 142.6, 142.7, 142.8, and 142.9
W&I Pond Surface Water	142.12

The following sections each begin with a brief description of the drainage or IHSS location, the sampling sites used to characterize the various drainages or IHSSs, and chemical analyses performed, followed by a discussion of the nature and extent of the detected chemicals within each analyte group. Tables 4.7-1 through 4.7-17 present the percent detection, concentration or activity range with laboratory qualifiers, and mean concentration or activity of the analytes detected (as previously defined) for each area, as well as the BSLs for PCOCs. For PCOC inorganic constituents and radionuclides, only those detected at concentrations or activities above the BSL are discussed in the following sections.

4.7.1 Non-IHSS Surface Water (Baseflow)

The four drainage areas within OU6 that comprise this group include North Walnut Creek upstream of OU6, North Walnut Creek drainage, South Walnut Creek drainage, and the McKay Ditch and W&I Effluent (Figure 1.3-3). Surface water associated with these drainages is potentially affected by contaminated runoff originating in other OUs (e.g., OU2 and OU7) as well as OU6, as discussed in Section 4.6.1. Contributions from OU6 to these drainages are limited to surface water runoff from areas of OU6 with contaminated soils and contaminated groundwater to seeps on the hillsides of the unnamed tributary and possibly North Walnut Creek and South Walnut Creek drainages.

Stream surface water was sampled during baseflow conditions at 11 sites previously established within the four drainage areas as a result of other OU6 investigations, and are shown on Figure 4.7-1.

Chemical analyses performed on the surface water samples included VOCs, SVOCs, metals (total and dissolved), radionuclides (total and dissolved), TOC, and nitrates/nitrites. No pesticide/PCB analyses were performed on surface water samples collected in these drainages.

North Walnut Creek Upstream of OU6

The North Walnut Creek upstream of OU6 surface water sampling sites are located along North Walnut Creek prior to entering OU6. Two sites, SW67093 and SW67493, were sampled to characterize the nature and extent of contamination in this area (Figure 4.7-1), and the analytes detected are summarized on Table 4.7-1.

VOCs—Methylene chloride was the only VOC detected in the surface water samples collected in the area upstream of OU6, as shown on Figure 4.7-1. Methylene chloride was detected in both samples, at very low concentrations (2.00E+00J and 3.00E+00J µg/l).

SVOCs—No SVOCs were detected in surface water samples collected from North Walnut Creek upstream of OU6.

PCOC Total Metals—Total aluminum and total sodium were each detected once at a concentration slightly above their respective BSLs in the unfiltered surface water samples collected from North Walnut Creek upstream of OU6, as shown on Figure 4.7-2.

PCOC Dissolved Metals—Dissolved sodium was detected once at a concentration slightly above the BSL in the filtered surface water samples collected from North Walnut Creek upstream of OU6, as shown on Figure 4.7-3.

PCOC Total Radionuclides—No total radionuclides were detected at activities above their respective BSLs in unfiltered surface water samples collected from North Walnut Creek upstream of OU6.

PCOC Dissolved Radionuclides—No dissolved radionuclides were detected at activities above their respective BSLs in filtered surface water samples collected from North Walnut Creek upstream of OU6.

Other Analytes and Parameters—No nitrate/nitrite concentrations were detected above the BSL of 1.56E+00 mg/l in the surface water samples collected from North Walnut Creek upstream of OU6. TOC concentrations of 6.50E+00 and 6.58E+00 mg/l were found in surface water samples from sites SW67093 and SW67493, respectively.

North Walnut Creek Drainage

The North Walnut Creek drainage surface water sampling sites are located along North Walnut Creek, north of the PA extending toward the northeast to the confluence with the unnamed tributary. Five

sites (SW67193, SW67393, SW67893, SW68093, and SW68192) were sampled to characterize the nature and extent of contamination in the North Walnut Creek drainage (Figure 4.7-1), and the analytes detected are summarized on Table 4.7-2.

VOCs—Methylene chloride was the only VOC detected in the surface water samples collected in North Walnut Creek, as shown on Figure 4.7-1. Methylene chloride was detected in two samples, at very low concentrations (2.50E+00J and 3.00E+00J µg/l).

SVOCs—No SVOCs were detected in surface water samples collected from the North Walnut Creek drainage in OU6.

PCOC Total Metals—Six total metals were detected at concentrations above their respective BSLs in one or more of the unfiltered surface water samples collected from North Walnut Creek, as shown on Figure 4.7-2. These total metals are barium, calcium, magnesium, potassium, sodium, and strontium.

A single, slightly elevated concentration (2.06E+02 µg/l) of total barium was detected above the BSL in a surface water sample, at site SW68193 located in a side drainage just upstream of Pond A-1. In general, the remaining total metals (except strontium) were frequently detected at concentrations slightly above their BSLs. However, maximum concentrations for calcium (8.34E+04 µg/l), magnesium (1.88E+04 µg/l), potassium (6.99E+03 µg/l), and sodium (4.71E+04 µg/l) are at elevated levels. A single detection of strontium occurred at a concentration at the BSL.

PCOC Dissolved Metals—Five dissolved metals were detected at concentrations above their BSLs in one or more of the filtered surface water samples collected from North Walnut Creek, as shown on Figure 4.7-3. These dissolved metals are barium, calcium, magnesium, potassium, and sodium.

A single, slightly elevated concentration (2.02E+02 µg/l) of dissolved barium was detected above the BSL in a surface water sample, at site SW68193 located in a side drainage just upstream of Pond A-1. The remaining dissolved metals were frequently detected at concentrations slightly to moderately above their BSLs, with maximum concentrations of 8.30E+04 µg/l (calcium), 1.86E+04 µg/l (magnesium), 7.76E+03 µg/l (potassium), and 5.02E+04 µg/l (sodium).

PCOC Total Radionuclides—Four total radionuclides were detected at activities above their BSLs in one or more of the unfiltered surface water samples collected from North Walnut Creek, as shown on Figure 4.7-4. These total radionuclides are tritium, U-233/234, U-235, and U-238.

Single detections of total tritium and total U-235 at activities slightly above their BSLs occurred at two sites directly upstream of Pond A-1. Elevated activities of total U-233/234 and total U-238 frequently occurred in the surface water samples from North Walnut Creek. Maximum concentrations of U-233/234 (4.90E+00 pCi/l) and U-238 (4.00E+00 pCi/l) were found in a sample collected at site SW68193, located in a side drainage immediately upstream of Pond A-1.

PCOC Dissolved Radionuclides—No dissolved radionuclides were detected at activities above their BSLs in filtered surface water samples collected from the North Walnut Creek drainage in OU6.

Other Analytes and Parameters—Nitrate/nitrite concentrations were detected above the BSL of 1.56E+00 mg/l in two surface water samples collected from North Walnut Creek, with concentrations of 2.08E+00 and 2.53E+00 mg/l. The maximum concentration (2.53E+00 mg/l) occurred at site SW67393, located immediately upstream of Pond A-1. TOC concentrations ranged from 5.35E+00 to 1.17E+01 mg/l in the five surface water samples collected along North Walnut Creek. The maximum concentration (1.17E+01 mg/l) occurred at site SW67393.

South Walnut Creek Drainage

The South Walnut Creek drainage surface water sampling sites are located along South Walnut Creek, from east of the PA extending downstream of Pond B-4. Two sites, SW67593 and SW67693, were sampled to characterize the nature and extent of contamination in the South Walnut Creek drainage (Figure 4.7-1), and the analytes detected are summarized on Table 4.7-3.

VOCs—Two VOCs, 1,2-DCE and $CHCl_3$, were each detected once in surface water samples collected in South Walnut Creek, as shown on Figure 4.7-1. These VOCs occurred at very low concentrations (up to 4.00E+00J µg/l).

SVOCs—No SVOCs were detected in the surface water samples collected from the South Walnut Creek drainage in OU6.

PCOC Total Metals—Six total metals were detected at concentrations above their respective BSLs in one or both of the unfiltered surface water samples collected from South Walnut Creek, as shown on Figure 4.7-2. These total metals are barium, calcium, magnesium, potassium, sodium, and strontium.

A single, elevated concentration (7.38E+02 µg/l) of total strontium was detected above the BSL in a surface water sample. In general, the remaining total metals were detected at concentrations slightly to moderately above their BSLs. Maximum concentrations are: 1.41E+02 µg/l (barium), 1.11E+05 µg/l (calcium), 2.67E+04 µg/l (magnesium), 6.44E+03 µg/l (potassium), and 7.82E+04 µg/l (sodium). Maximum concentrations detected for calcium, magnesium, and sodium and the single detections for barium and strontium were found at site SW67593, located at GS10 just west of IHSS 141 (Sludge Dispersal Area).

PCOC Dissolved Metals—Four dissolved metals (calcium, magnesium, potassium, and sodium) were detected at concentrations slightly to moderately above their respective BSLs in both of the filtered surface water samples collected from South Walnut Creek, as shown on Figure 4.7-3. Maximum concentrations for all dissolved metals detected, except potassium, occurred at site SW67593.

PCOC Total Radionuclides—Three total radionuclides (U-233/234, U-235, and U-238) were detected at activities above their BSLs in one of the unfiltered surface water samples collected at site SW67593, as shown on Figure 4.7-4. Total U-233/234 and total U-238 occurred at elevated activities of 4.80E+00 pCi/l and 5.10E+00 pCi/l, respectively.
The activity for total U-235 was slightly above the BSL.

PCOC Dissolved Radionuclides—No dissolved radionuclides were detected at activities above their BSLs in filtered surface water samples collected from the South Walnut Creek drainage in OU6.

Other Analytes and Parameters—Nitrate/nitrite concentrations were detected above the BSL of 1.56E+00 mg/l in both surface water samples collected from South Walnut Creek, with concentrations of 1.84E+00 and 4.12E+00 mg/l. The maximum concentration (4.12E+00 mg/l) occurred at site SW67593. TOC concentrations of 7.04 mg/l and 8.37 mg/l were found in samples from sites SW67693 and SW67593, respectively.

McKay Ditch and W&I Effluent

The McKay Ditch and W&I Effluent surface water sampling sites are located along McKay Ditch upstream of the confluence with Walnut Creek and downstream of the W&I Pond on Walnut Creek, respectively. Two sites, SW67793 and SW68293, were sampled to characterize the nature and extent of contamination in the McKay Ditch and Walnut Creek areas (Figure 4.7-1), and the analytes detected are summarized on Table 4.7-4.

VOCs—No VOCs were detected in surface water samples collected from the McKay Ditch and the W&I Effluent.

SVOCs—No SVOCs were detected in surface water samples collected from the McKay Ditch and the W&I Effluent.

PCOC Total Metals—Four total metals (calcium, magnesium, potassium, and sodium) were detected at concentrations slightly above their respective BSLs in one unfiltered surface water sample collected at site SW67993, located near the W&I effluent, as shown on Figure 4.7-2.

PCOC Dissolved Metals—Four dissolved metals (calcium, magnesium, potassium, and sodium) were detected at concentrations slightly to moderately above their respective BSLs in one filtered surface water sample collected at site SW67993, as shown on Figure 4.7-3.

PCOC Total Radionuclides—No total radionuclides were detected above their BSLs in unfiltered surface water samples collected from McKay Ditch and the W&I Effluent.

PCOC Dissolved Radionuclides—No dissolved radionuclides were detected above their BSLs in filtered surface water samples collected from McKay Ditch and the W&I Effluent.

Other Analytes and Parameters—A single nitrate/nitrite concentration was detected above the BSL of 1.56E+00 mg/l in surface water samples collected from McKay Ditch and the W&I Effluent. This nitrate/nitrite detection occurred at site SW67993, at a concentration of 1.63E+00 mg/l. TOC concentrations of 7.38E+00 and 1.27E+01 mg/l occurred in surface water samples from sites SW67993 and SW68293, respectively.

4.7.2 Non-IHSS Surface Water (Storm Event)

The three drainage areas within OU6 that comprise this group include North Walnut upstream of OU6, North Walnut Creek drainage, and South Walnut Creek drainage (Figure 1.3-3). The McKay Ditch and W&I Effluent drainage area was not sampled during the storm event. Surface water associated with these drainages is potentially affected by contaminated runoff originating in other OUs (e.g., OU2 and OU7) as well as OU6, as discussed in Section 4.6.1. Contributions from OU6 to these drainages are limited to surface water runoff from areas of OU6 with contaminated soils and contaminated groundwater to seeps on the hillsides of the unnamed tributary and possibly North Walnut Creek and South Walnut Creek drainages.

Stream surface water was sampled during a storm event on May 17, 1993, at eight sites previously established within the three drainage areas as a result of other OU6 investigations, and are shown on Figure 4.7-5. These same sites were used to collect surface water samples during baseflow conditions, discussed in Section 4.7.1. Chemical analyses performed on the surface water samples included VOCs, SVOCs, metals (total and dissolved), radionuclides (total and dissolved), nitrates/nitrites, and TOC. No pesticide/PCB analyses were performed on surface water samples collected in these drainages.

North Walnut Creek Upstream of OU6

The North Walnut Creek upstream of OU6 surface water sampling sites are located along North Walnut Creek prior to entering OU6. Two sites, SW68593 and SW68793, were sampled to characterize the nature and extent of contamination in this area (Figure 4.7-5), and the analytes detected are summarized on Table 4.7-5.

VOCs—Acetone was the only VOC detected in the surface water samples (storm) collected in the area upstream of OU6, as shown on Figure 4.7-5. Acetone was detected at an estimated concentration of 3.00E+00 µg/l.

SVOCs—No SVOCs were detected in surface water samples (storm) collected from North Walnut Creek upstream of OU6.

PCOC Total Metals—Six total metals were detected at concentrations above their respective BSLs in the unfiltered surface water samples (storm) collected from North Walnut Creek upstream of OU6, as shown on Figure 4.7-6. These total metals are aluminum, barium, magnesium, potassium, sodium, and zinc.

All of these total metals occurred at elevated levels, with maximum concentrations of 7.66E+04J µg/l (aluminum), 5.83E+02 µg/l (barium), 1.96E+04 µg/l (magnesium), 1.75E+04 µg/l (potassium), 3.75E+04 µg/l (sodium), and 3.40E+02 µg/l (zinc). The maximum concentrations of all total metals, except sodium, were found at site SW68593, located northwest of the PA, along North Walnut Creek.

PCOC Dissolved Metals—Dissolved magnesium and dissolved sodium were each detected at a concentration slightly above their respective BSLs, at surface water sampling (storm) site SW68793, located directly north of the PA fence and IHSS 143, as shown on Figure 4.7-7.

PCOC Total Radionuclides—Four total radionuclides were detected at activities above their respective BSLs in both unfiltered surface water samples (storm) collected from North Walnut Creek upstream of OU6, as shown on Figure 4.7-8. These total radionuclides are gross alpha, gross beta, U-233/234, and U-238.

All of these total radionuclides occurred at elevated levels, with maximum activities of 9.30E+01 pCi/l (gross alpha), 2.40E+02 pCi/l (gross beta), 4.10E+00 pCi/l (U-233/234), 4.20E+00 pCi/l (U-238). Maximum activities of these four total radionuclides were found at site SW68593. U-233/234 and U-238 activities in the method blank exceeded the minimal detectable activity (MDA).

PCOC Dissolved Radionuclides—No dissolved radionuclides were detected at activities above their respective BSLs in the filtered surface water samples (storm) collected from North Walnut Creek upstream of OU6.

Other Analytes and Parameters—No nitrate/nitrite concentrations were detected above the BSL of 1.56E+00 mg/l in the surface water samples (storm) collected from North Walnut Creek upstream of OU6. TOC concentrations of 1.00E+01 and 1.90E+01 mg/l were found in surface water samples from sites SW68593 and SW68793, respectively.

North Walnut Creek Drainage

The North Walnut Creek drainage surface water sampling sites are located along North Walnut Creek, north of the PA extending toward the northeast to the confluence with the unnamed tributary. Three sites (SW69093, SW69293, and SW69392) were sampled to characterize the nature and extent of contamination in the North Walnut Creek drainage (Figure 4.7-5), and the analytes detected are summarized on Table 4.7-6.

VOCs—No VOCs were detected in surface water samples (storm) collected from the North Walnut Creek drainage in OU6.

SVOCs— Two SVOCs (benzoic acid and diethyl phthalate) were each detected once at very low concentrations, 3.00E+00J µg/l and 3.00E+00J µg/l, respectively, in the surface water samples (storm) collected from North Walnut Creek, as shown on Figure 4.7-5.

PCOC Total Metals—Eight total metals were detected at concentrations above their respective BSLs in one or more of the unfiltered surface water samples (storm) collected from North Walnut Creek, as shown on Figure 4.7-6. These total metals are aluminum, arsenic, barium, calcium, magnesium, potassium, strontium, and zinc.

All of these total metals occurred at elevated levels, with maximum concentrations or single detections above the BSL all found at site SW69093, located in a side drainage just upstream of Pond A-1. Maximum concentrations are: 4.48E+05J µg/l (aluminum), 1.33E+01 µg/l (arsenic), 4.49E+03 µg/l (barium), 2.33E+05 (calcium), 1.31E+05 µg/l (magnesium), 7.92E+04 µg/l (potassium), 1.76E+03J µg/l (strontium), and 2.45E+03 µg/l (zinc).

PCOC Dissolved Metals—Three dissolved metals (barium, magnesium, and potassium) were each detected at a concentration above their respective BSLs at filtered surface water sampling (storm) site SW69093, as shown on Figure 4.7-7.

Dissolved barium and dissolved potassium occurred at elevated levels 6.04E+00 µg/l and 6.08E+03 µg/l, respectively. Dissolved magnesium occurred at a concentration slightly above the BSL.

PCOC Total Radionuclides—Four total radionuclides were each detected once at an activity above their respective BSLs, in an unfiltered surface water sample (storm) from site SW69093, as shown on Figure 4.7-8. These total radionuclides are gross beta, U-233/234, U-235, and U-238.

The single detections (above the BSLs) of these four total radionuclides occurred at elevated levels: 3.45E+02 pCi/l (gross beta), 1.65E+01 pCi/l (U-233/234), 9.00E-01 pCi/l (U-235), and 1.85E+01 pCi/l (U-238). U-233/234 and U-238 activities in the method blank exceeded the MDA.

PCOC Dissolved Radionuclides—No dissolved radionuclides were detected at activities above their respective BSLs in filtered surface water samples (storm) collected from the North Walnut Creek drainage in OU6.

Other Analytes and Parameters—A single nitrate/nitrite concentration was detected above the BSL of 1.56E+00 mg/l in surface water samples collected from North Walnut Creek. This nitrate/nitrite detection occurred at site SW69093, at a concentration of 1.80E+00 mg/l. TOC concentrations ranged

from 9.00E+00 to 2.55E+01 mg/l in three surface water samples (storm) collected along North Walnut Creek, with the maximum concentration (2.55E+01 mg/l) found at site SW69093.

South Walnut Creek Drainage

The South Walnut Creek drainage surface water sampling (storm) sites are located along South Walnut Creek, from east of the PA extending downstream of Pond B-4. Three sites (SW68693, SW68893, and SW68993) were sampled to characterize the nature and extent of contamination in the South Walnut Creek drainage (Figure 4.7-5), and the analytes detected are summarized on Table 4.7-7.

VOCs—Three VOCs (acetone, PCE and TCE) were each detected once, at very low concentrations (2.00E+00J to 5.00E+00J µg/l), in surface water samples (storm) collected in South Walnut Creek, as shown on Figure 4.7-5.

SVOCs—Diethyl phthalate was the only SVOC detected in the surface water samples (storm) collected in South Walnut Creek, as shown on Figure 4.7-5. Diethyl phthalate was detected at an estimated concentration of 2.00E+00 µg/l.

PCOC Total Metals—Three total metals (aluminum, potassium, and zinc) were detected at concentrations above their respective BSLs in one or more of the unfiltered surface water samples (storm) collected in South Walnut Creek, as shown on Figure 4.7-6. These total metals occurred at elevated concentrations of 7.86E+03J µg/l (aluminum), 5.57E+03 µg/l (potassium), and 3.08E+02 µg/l (zinc), found at site SW68893 (except for potassium) located just outside of the southwestern corner of IHSS 141.

PCOC Dissolved Metals—Dissolved potassium was detected once at a concentration (5.17E+03 µg/l) above the BSL in a filtered surface water sample (storm) collected at site SW68693, located downstream of Pond B-4 (Figure 4.7-7).

PCOC Total Radionuclides—No total radionuclides were detected at activities above their respective BSLs in the unfiltered surface water samples (storm) collected from the South Walnut Creek drainage in OU6.

PCOC Dissolved Radionuclides—No dissolved radionuclides were detected at activities above their respective BSLs in the filtered surface water samples (storm) collected from the South Walnut Creek drainage in OU6.

Other Analytes and Parameters—A single nitrate/nitrite concentration was detected above the BSL of 1.56E+00 mg/l in surface water samples collected from South Walnut Creek. This nitrate/nitrite detection occurred at a concentration of 1.90E+00 mg/l, at site SW68693 located downstream of Pond B-4. TOC concentrations ranged from 8.00E+00 to 1.00E+01 mg/l in three surface water

samples (storm) collected in South Walnut Creek. The maximum TOC concentration (1.00E+01 mg/l) was found at site SW68893, located just outside of the southwestern corner of IHSS 141.

4.7.3 A-Series Pond Surface Water

This IHSS group includes the A-Series Ponds (IHSSs 142.1 through 142.4) which have been constructed in the North Walnut Creek drainage located northeast of the PA at RFETS (Figure 1.3-3). The ponds are numbered sequentially, increasing in a downstream direction, from west to east along North Walnut Creek. Construction and usage histories of the A-Series Ponds are discussed in Section 1.3.2.3.

Five composite surface water samples were collected in each pond to characterize the nature and extent of contamination in the A-Series Ponds. The sampling method and specific site selections for collection of pond surface water are discussed in Sections 2.1.3.3 and 2.2.2. Chemical analyses performed on the surface water samples included VOCs, SVOCs, metals (total and dissolved), radionuclides (total and dissolved), and nitrates. No pesticide/PCB or TOC analyses were performed on surface water samples collected in these ponds. For PCOC inorganic constituents and radionuclides, only those concentrations or activities above the BSL are discussed. The distribution of chemicals in surface water from these IHSSs are discussed in the following section.

Statistical data for detected organic compounds, and PCOC metals and radionuclides detected above their BSLs at IHSSs 142.1 through 142.4 are presented on Tables 4.7-8 through 4.7-11, respectively. Spatial distribution of these data for organic compounds, PCOC metals, and PCOC radionuclides are shown on Figures 4.7-9 through 4.7-13.

Methylene chloride and di-n-butyl phthalate detections in the A-Series Ponds are referred to as suspect organic compounds, as presented in Section 4.2.2 and shown on Figure 4.7-9.

A-Series Ponds

VOCs—Methylene chloride was the only VOC detected in surface water samples collected in the A-Series Ponds (Figure 4.7-9). A single detected concentration (2.00E+00J µg/l) of methylene chloride occurred at site SW60892, located on the eastern end of Pond A-2.

SVOCs—Di-n-butyl phthalate was the only SVOC detected in surface water samples collected in the A-Series Ponds (Figure 4.7-9). Di-n-butyl phthalate, frequently detected in samples collected in Pond A-3 and in one sample collected in Pond A-2, was found at very low concentrations of 1.00E+00J to 2.00E+00J µg/l.

PCOC Total Metals—Two total metals (magnesium and sodium) were detected at concentrations above their respective BSLs in unfiltered surface water samples collected in the A-Series Ponds, as shown on Figure 4.7-10.

Total magnesium was frequently detected in Ponds A-1 and A-2 only, at concentrations slightly above the BSLs in the range of 2.66E+04 to 2.75E+04 µg/l. Total sodium was frequently detected above the BSL in all of the A-Series Ponds. Elevated concentrations of total sodium were commonly found in Ponds A-1 and A-2, with a maximum concentration of 1.78E+05 µg/l (Pond A-2 inlet).

PCOC Dissolved Metals—Four dissolved metals were detected at concentrations above their respective BSLs in filtered surface water samples collected in the A-Series Ponds, as shown on Figure 4.7-11. These dissolved metals are lead, magnesium, potassium, and sodium.

Dissolved lead occurred infrequently in Ponds A-1 and A-2, with concentrations slightly above the BSL (Pond A-2) except for a single elevated concentration (6.50E+00 µg/l) found in a sample from a southeastern site (SW60292) in Pond A-1. Dissolved magnesium was frequently detected in samples from Ponds A-1 and A-2 only, at concentrations slightly above the BSL ranging from 1.79E+04 to 2.95E+04 µg/l.

Dissolved potassium and dissolved sodium were frequently detected above the BSL in samples collected in all ponds, except for Pond A-3 where no dissolved potassium was detected above the BSL. Maximum concentrations for dissolved potassium and dissolved sodium were 8.73E+03 µg/l and 1.92E+05 µg/l, respectively.

PCOC Total Radionuclides—Four total radionuclides were detected at activities above their respective BSLs in one or more of the unfiltered surface water samples collected in the A-Series Ponds, as shown on Figure 4.7-12. These total radionuclides are gross beta, U-233/234, U-235, and U-238.

Total gross beta was detected at activities above the BSL in samples from all A-Series Ponds, although Pond A-3 only contained a single detection above the BSL. The maximum activity (1.43E+01 pCi/l) occurred at site SW60392, located in the deepest part of Pond A-1 in a water depth of approximately 1.5 ft.

Total U-233/234 was detected once in Pond A-1 only, at an activity slightly above the BSL. Total U-235 was infrequently detected at activities above the BSL in Ponds A-1 and A-3 only, with a maximum activity of 3.70E-01J pCi/l occurring at site SW60392 (Pond A-1). Total U-238 was frequently detected at activities above the BSL in Ponds A-1 and A-2, with only a single detection above the BSL in Pond A-3. The maximum activity of 4.48E+00 pCi/l occurred in a sample from site SW60492 located near the influent end of Pond A-1.

PCOC Dissolved Radionuclides—Two dissolved radionuclides [cesium-137 (Cs-137) and U-238] were detected at activities above their respective BSLs only in the filtered surface water samples collected in Ponds A-1 and A-2, as shown on Figure 4.7-13. Pond A-3 contained only a single activity of U-238 above the BSL. Maximum activities of Cs-137 (4.81E-01J pCi/l) and U-238 (4.31E+00 pCi/l) occurred in samples from Pond A-1. Activity levels of Cs-137 and U-238, where

present, generally decreased in downstream ponds, with no radionuclide activities occurring above the BSLs in Pond A-4.

Other Analytes—No nitrates were detected at concentrations above the method detection limit (Pond A-2) or above the BSL of 5.25E+00 mg/l (Ponds A-1, A-3, and A-4) in the surface water samples collected from the A-Series Ponds.

4.7.4 B-Series Pond Surface Water

This IHSS group includes the B-Series Ponds (IHSSs 142.5 through 142.9) which have been constructed in the South Walnut Creek drainage, east of the eastern perimeter of the PA at RFETS (Figure 1.3-3). The ponds are numbered sequentially, increasing in a downstream direction, from west to east along South Walnut Creek. Construction and usage histories of the B-Series Ponds are discussed in Section 1.3.2.4.

Five composite surface water samples were collected in each pond to characterize the nature and extent of contamination in the B-Series Ponds. An additional composite sample was collected at a depth between 24 and 54 inches in Pond B-2 only because water depth was greater than 2 ft. The sampling method and specific site selections for collection of pond surface water are discussed in Sections 2.1.3.3 and 2.2.2. Chemical analyses performed on the surface water samples included VOCs, SVOCs, metals (total and dissolved), radionuclides (total and dissolved), and nitrates. No pesticide/PCB or TOC analyses were performed on surface water samples collected in these ponds. The distribution of chemicals in surface water from these IHSSs are discussed in the following sections.

Statistical data for detected organic compounds, and PCOC metals and radionuclides detected above their BSLs at IHSSs 142.5 through 142.9 are presented on Tables 4.7-12 through 4.7-16, respectively. Spatial distribution of these data for organic compounds, PCOC metals, and PCOC radionuclides are shown on Figures 4.7-14 through 4.7-19.

Acetone and di-n-butyl phthalate detections in the B-Series Ponds are referred to as suspect organic compounds, as presented in Section 4.2.2 and shown on Figure 4.7-14. The remaining organic compound detections are shown on Figure 4.7-15.

B-Series Ponds

VOCs—Five VOCs were detected in the surface water samples collected in the B-Series Ponds. Acetone was detected in Pond B-2 with a maximum concentration of 1.80E+01 µg/l.

Except for $CHCl_3$, the remaining VOCs (1,2-DCA, 1,2-DCE, PCE, and TCE) were detected primarily in Ponds B-1 and B-2, at very low concentrations in the range of 1.00E+00J µg/l (1,2-DCA) to

1.20E+01 µg/l (PCE). $CHCl_3$ detections were ubiquitous in Ponds B-3 and B-4, at very low concentrations (up to 2.00E+00J µg/l).

SVOCs—Di-n-butyl phthalate was the only SVOC detected in surface water samples collected in the B-Series Ponds (Figure 4.7-14). Two detections of di-n-butyl phthalate occurred in Pond B-4, at a low concentration of 1.00E+00J µg/l.

PCOC Total Metals—Total sodium was detected at concentrations above the BSL in all of the unfiltered surface water samples collected in the B-Series Ponds, as shown on Figure 4.7-16. The concentrations detected were in the range of 2.28E+04 to 7.77E+04 µg/l, with the highest concentrations found in Ponds B-1 and B-2. Total potassium was detected at concentrations slightly above the BSL in samples from Pond B-4 only.

PCOC Dissolved Metals—Four dissolved metals were detected at concentrations above their respective BSLs in filtered surface water samples collected in the B-Series Ponds, as shown on Figure 4.7-17. These dissolved metals are lead, magnesium, potassium, and sodium. Dissolved sodium was detected at concentrations above the BSL in all samples collected in the B-Series Ponds, occurring at concentrations in the range of 2.36E+04 to 8.09E+04 µg/l. The concentrations of the dissolved sodium generally decrease in downstream ponds. Dissolved magnesium was detected at concentrations slightly above the BSL in samples collected in Ponds B-1 and B-2 only. Dissolved potassium was frequently detected at concentrations above the BSL in samples from Ponds B-3, B-4, and B-5 only. The highest concentrations of dissolved potassium, including the maximum concentration (1.12E+04 µg/l), occurred in Pond B-4. One sample from each of Ponds B-2 and B-5 contained slightly elevated concentrations of dissolved lead, at 4.90E+00J and 4.60E+00J µg/l, respectively.

PCOC Total Radionuclides—Four total radionuclides (gross beta, U-233/234, U-235, and U-238) were detected at activities above their respective BSLs in one or more unfiltered surface water samples collected in the B-Series Ponds, as shown on Figure 4.7-18. Slightly elevated activities (up to 1.50E+01 pCi/l in Pond B-4) of total gross beta occurred in all ponds, except Pond B-2 (activity at BSL). The remaining total radionuclides (U-233/234, U-235, and U-238) were detected at activities slightly to moderately above their BSLs in Pond B-2 samples only, with the exception of two samples in Pond B-2 containing U-235 activities up to 5.60E-01 pCi/l.

PCOC Dissolved Radionuclides—Only Ponds B-1 and B-2 contained dissolved radionuclides [Cs-137, strontium-89,90 (Sr-89,90), and U-238] detected at activities above their respective BSLs, as shown on Figure 4.7-19. Maximum activities of Sr-89,90 (2.50E+00 pCi/l) and U-238 (1.89E+00 pCi/l) occurred in samples from Pond B-1, whereas the maximum activity of Cs-137 (6.10E-01 pCi/l) occurred in a sample from Pond B-2.

Other Analytes—Nitrate was detected at concentrations above the BSL only in the surface water samples collected in Pond B-3, at concentrations ranging from 5.40E+00 to 7.80E+00 mg/l.

4.7.5 W&I Pond Surface Water (IHSS 142.12)

The W&I Pond (IHSS 142.12) is located along Walnut Creek, east of the confluence with McKay Ditch and west of Indiana Avenue (Figure 1.3-3). Purpose and usage history of the W&I Pond is discussed in Section 1.3.2.5. Five composite surface water were collected at sites SW64592 through SW64992 to characterize the nature and extent of contamination in the W&I Pond (Figure 4.7-20). The sampling method and specific site selections for collection of pond surface water are discussed in Sections 2.1.3.3 and 2.2.2. Chemical analyses performed on the pond surface water samples included VOCs, SVOCs, metals (total and dissolved), radionuclides (total and dissolved), and nitrates. No pesticides/PCBs or TOC analyses were performed on surface water samples collected in W&I Pond. For PCOC inorganic constituents and radionuclides, only those concentrations or activities above the BSL are discussed. The distribution of chemicals in pond surface water from this IHSS is discussed in the following section.

Statistical data for detected organic compounds, and PCOC metals and radionuclides detected above their BSLs at IHSS 142.12 are presented on Table 4.7-17. Spatial distribution of these data for organic compounds, PCOC metals, and PCOC radionuclides are shown on Figures 4.7-20 through 4.7-23.

W&I Pond

VOCs—No VOCs were detected in surface water samples collected in the W&I Pond.

SVOCs—No SVOCs were detected in surface water samples collected in the W&I Pond.

PCOC Total Metals—Sodium was the only total metal detected at concentrations slightly above the BSL in all unfiltered surface water samples collected in the W&I Pond (Figure 4.7-21).

PCOC Dissolved Metals—Dissolved sodium was the only dissolved metal detected at concentrations slightly above the BSL in four filtered surface water samples collected in the W&I Pond (Figure 4.7-22).

PCOC Total Radionuclides—Gross beta was the only total radionuclide detected at activities above the BSL in three unfiltered surface water samples collected in the W&I Pond (Figure 4.7-23). The maximum activity (7.10E+00 pCi/l) was found at site SW64792, located at the effluent end of W&I Pond.

PCOC Dissolved Radionuclides—No dissolved radionuclides were detected at activities above their respective BSLs in filtered surface water samples collected in the W&I Pond.

Other Analytes—No nitrates were detected at concentrations above the method detection limit in surface water samples collected in the W&I Pond.

4.8 SEDIMENTS

The nature and extent of contamination in stream and pond sediments within OU6 were evaluated using data collected during the OU6 Phase I investigation, as discussed in Section 2.1.3.3. All sediment samples were composite samples and consisted of three types: (1) wet sediments collected within the OU6 drainages, referred to as stream sediments, (2) dry sediments collected upstream of each of the A and B-Series Ponds, and (3) pond sediments collected in each of the A and B-Series Ponds and the W&I Pond. The nature and extent of contamination in the dry sediment samples are presented with surface soil samples in Section 4.4, as previously discussed in Section 4.3.1. Table 2.1-4 shows the analytical program for the stream and pond sediment samples collected in OU6 drainages and specified IHSSs.

Spatial distribution of sediment data, shown with laboratory qualifiers and validation codes (Figure 4.4-1), is presented in plan view on maps for analyte groups by drainage and IHSS areas (Figures 4.8-1 through 4.8-17). Figure 4.4-1 also provides abbreviation definitions used on Figures 4.8-1 through 4.8-17. The analyte groups presented on the maps are: (1) organic compounds, (2) organic compounds including pesticides/PCBs, (3) metals, and (4) radionuclides. The OU6 Phase I analytical parameters are listed on Table 2.1-5. TOC and nitrate/nitrite were not routinely sampled, therefore available results are discussed in the text and shown on the tables, as appropriate, but are not presented on maps for this medium.

The organic compound and pesticide/PCB maps show all detected concentrations (detections) in the sediment samples. Metal and radionuclide maps only show PCOC concentrations or activities detected above the BSL.

PCOC metals and PCOC radionuclides have been identified by performing statistical background comparisons, as discussed in Section 4.3.2. PCOCs for stream and pond sediment samples are listed on Tables 4.3-18 through 4.3-21. Analytical results for OU6 stream and pond sediment samples are compiled in Appendix D4.

For discussion purposes, OU6 stream and pond sediment data have been grouped by drainages (non-IHSS areas) and Pond IHSSs (142.1-12), respectively. These groups are as follows:

Group Name	Associated Drainages or IHSSs
Non-IHSS Stream Sediments	North Walnut Creek upstream of OU6, North Walnut and South Walnut Creek drainages, and McKay Ditch and W&I Effluent
A-Series Pond Sediments	142.1, 142.2, 142.3, and 142.4
B-Series Pond Sediments	142.5, 142.6, 142.7, 142.8, and 142.9
W&I Pond Sediments	142.12

Additional pond sediment samples were collected in the A and B-Series Ponds during October, 1994, after completion of the OU6 Phase I field investigation performed in 1992 and 1993. The primary purpose of these samples was to provide a preliminary evaluation of the potential ecotoxicological risk of PCB-contaminated sediments in the Walnut Creek drainage. These data were not included in the background comparison (Section 4.3), however the analytical results are compared with OU6 Phase I pond sediment data utilizing PCOCs (Tables 4.3-18 through 4.3-21) and BSLs previously determined. A brief discussion of the distribution of analytes detected in these pond sediment samples is provided in Sections 4.8.2.1 (A-Series Ponds) and 4.8.3.1 (B-Series Ponds). Analytical results for these additional pond sediment samples are compiled in Appendix D9.

The following sections each begin with a brief description of the drainage or IHSS location, the sampling sites used to characterize the various drainages or IHSSs, and chemical analyses performed, followed by a discussion of the nature and extent of the detected chemicals within each analyte group. Tables 4.8-1 through 4.8-14 present the percent detection, concentration or activity range with laboratory qualifiers, and mean concentration or activity of the analytes detected (as previously defined) for each area, as well as the BSLs for PCOCs. For PCOC inorganic constituents and radionuclides, only those detected at concentrations or activities above the BSL are discussed in the following sections.

4.8.1 Non-IHSS Stream Sediments

The four drainage areas within OU6 that comprise this group include North Walnut Creek upstream of OU6, North Walnut Creek drainage, South Walnut Creek drainage, and the McKay Ditch and W&I Effluent on Walnut Creek (Figure 1.3-3). Stream sediment was sampled at 15 sites located within the four drainage areas defined above, and shown on Figure 4.8-1. Chemical analyses performed on the sediment samples included VOCs, SVOCs, pesticides/PCBs, metals, radionuclides, TOC, and nitrates/nitrites. For PCOC inorganic constituents and radionuclides, only those above the BSL are discussed.

Two VOCs (acetone and methylene chloride) and three SVOCs [bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, and di-n-butyl phthalate] detected in the OU6 stream sediments are referred to as suspect organic compounds, as presented in Section 4.2.2 and shown on Figure 4.8-1. The remaining organic compound detections are shown on Figure 4.8-2.

North Walnut Creek Upstream of OU6

The North Walnut Creek upstream of OU6 sediment sampling sites are located along North Walnut Creek prior to entering OU6. Two sites, SED69492 and SED69692, were sampled to characterize the nature and extent of contamination in this area (Figure 4.8-1).

VOCs—No VOCs were detected in stream sediment samples collected from North Walnut Creek upstream of OU6.

SVOCs—Thirteen SVOCs were detected in the stream sediment samples collected from North Walnut Creek upstream of OU6, as presented on Table 4.8-1. Two suspect SVOCs (butyl benzyl phthalate and di-n-butyl phthalate) are shown on Figure 4.8-1. These two SVOCs were each detected once, at estimated concentrations of 1.20E+02 µg/kg (butyl benzyl phthalate) and 7.50E+01 µg/kg (di-n-butyl phthalate).

Ten of the SVOCs detected are PAHs: anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene (Figure 4.8-2). The PAH concentrations ranged from 6.50E+01J µg/kg (anthracene) to 3.80E+02J µg/kg (fluoranthene). All but one PAH detection had concentrations considered to be estimated, or "J" qualified, and less than the CRQL. All 10 PAHs, including the maximum concentration (fluoranthene at 3.80E+02J µg/kg), were detected at site SED69692.

The remaining SVOC, benzoic acid, was detected in both samples at estimated concentrations of 9.50E+01J µg/kg and 1.30E+02J µg/kg, with the maximum concentration (1.30E+02J µg/kg) found at site SED69692, located north of the PA.

Pesticides/PCBs—No pesticides or PCBs were detected in stream sediment samples collected from North Walnut Creek upstream of OU6.

PCOC Metals—No metals were detected above the BSLs in stream sediment samples collected from North Walnut Creek upstream of OU6.

PCOC Radionuclides—No radionuclides were detected above the BSLs in stream sediment samples collected from North Walnut Creek upstream of OU6.

Other Analytes and Parameters—No nitrate/nitrite concentrations were detected above the BSL of 3.92E+01 mg/kg in stream sediment samples collected from North Walnut Creek upstream of OU6. TOC concentrations of 7.79E+03 mg/kg and 2.19E+04 mg/kg occurred in stream sediment samples from sites SED69692 and SED69492, respectively.

North Walnut Creek Drainage

The North Walnut Creek drainage sediment sampling sites are located along North Walnut Creek, north of the PA extending toward the northeast to the confluence with the unnamed tributary. Six sites were sampled to characterize the nature and extent of contamination in the North Walnut Creek drainage (SED68192, SED68492, SED68592 through SED68792, and SED68992), as shown on Figure 4.8-1.

VOCs—Two suspect VOCs (acetone and methylene chloride) were each detected once in a stream sediment sample collected from site SED68192, located at SW091B in a side drainage upstream of

Pond A-1, as shown on Figure 4.8-1. The concentrations found at this site were 6.30E+01 µg/kg (acetone) and 7.00E+00J µg/kg (methylene chloride), as presented on Table 4.8-2.

SVOCs—Eight SVOCs were detected in the stream sediments collected from North Walnut Creek drainage, as presented on Table 4.8-2. One suspect SVOC [bis(2-ethylhexyl)phthalate] was detected at an estimated, maximum concentration of 1.90E+02 µg/kg (Figure 4.8-1). This concentration was found at site SED68492, located at GS13 upstream of Pond A-1.

Six of the SVOCs detected are PAHs: benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene (Figure 4.8-2). The PAH concentrations ranged from 4.50E+01J to 1.80E+02J µg/kg (both are fluoranthene). All detections of PAHs had concentrations considered to be estimated or J qualified, and less than the CRQL. All six PAHs, including the maximum concentration (fluoranthene at 1.80E+02J µg/kg), were detected at site SED68492. Only two other sites contained a single PAH (fluoranthene) detection.

The remaining SVOC, benzoic acid, was detected once at an estimated concentration of 5.10E+02 µg/kg. This single detection was found at site SED68192, located in a side drainage upstream of Pond A-1.

Pesticides/PCBs—No pesticides or PCBs were detected in stream sediment samples collected from the North Walnut Creek within OU6.

PCOC Metals—Four metals were detected at concentrations above their respective BSLs in stream sediment samples from North Walnut Creek, as shown on Figure 4.8-3. These metals are calcium, iron, manganese, and potassium.

Each metal was detected once above the BSL; three metals (iron, manganese, and potassium) at sites located upstream of Pond A-1 and one metal (calcium) at a site located downstream of Pond A-3. A slightly elevated concentration of manganese (1.00E+03 mg/kg) occurred in a sediment sample collected at a site upstream of Pond A-1, whereas the other metals' concentrations were slightly above their BSLs, as presented on Table 4.8-2.

PCOC Radionuclides—Tritium was detected above the BSL once in a stream sediment sample collected from North Walnut Creek, as presented on Table 4.8-2 and shown on Figure 4.8-4. Tritium was detected at an activity of 7.65E+02 pCi/l in a sample from site SED68792, located downstream of Pond A-4.

Other Analytes and Parameters—Nitrate/nitrite was detected once at a concentration above the BSL. This concentration (5.29E+01 mg/kg) occurred at site SED68792, located downstream of Pond A-4. TOC concentrations ranged from 1.48E+03 to 1.22E+04 mg/kg in the sediment samples collected along North Walnut Creek. The maximum concentration (1.22E+04 mg/kg) was found at site SED68492, located upstream of Pond A-1.

South Walnut Creek Drainage

The South Walnut Creek drainage sediment sampling sites are located along the creek and the Central Avenue diversion ditch, east of the PA and south of North Walnut Creek. Five sites were sampled to characterize the nature and extent of contamination in the South Walnut Creek drainage (SED68892 and SED69792 through SED70092), as shown on Figure 4.8-1.

VOCs—No VOCs were detected in stream sediment samples collected from the South Walnut Creek drainage.

SVOCs—Seventeen SVOCs were detected in the stream sediments collected from South Walnut Creek, as presented on Table 4.8-3. One suspect SVOC, di-n-butyl phthalate, was detected at estimated concentrations in the range of 4.60E+01 to 6.80E+01 µg/kg, as shown on Figure 4.8-1. The maximum concentration (6.80E+01 µg/kg) was found at site SED69892, located west of IHSS 141 and upstream of Pond B-1.

Fourteen of the SVOCs detected are PAHs: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene (Figure 4.8-2). The PAH concentrations ranged from 4.60E+01J µg/kg (naphthalene) to 1.00E+04 µg/kg (fluoranthene). All 14 PAHs occurred at a single site, SED70092, located on the Central Avenue diversion ditch at surface water sampling site SW022.

The remaining SVOCs, benzoic acid and dibenzofuran, were each detected once at estimated concentrations of 1.10E+02 µg/kg and 3.70E+01 µg/kg, respectively. These single detections were found at sites SED69792 and SED70092, respectively.

Pesticides/PCBs—No pesticides or PCBs were detected in stream sediment samples collected from the South Walnut Creek drainage.

PCOC Metals—Calcium was the only metal detected at a concentration above the BSL in the stream sediment samples collected from the South Walnut Creek drainage. A single concentration (9.57E+04 mg/kg) above the BSL for calcium and the sample site (SED70092) are presented on Table 4.8-3 and shown on Figure 4.8-3.

PCOC Radionuclides—Tritium was the only radionuclide detected at an activity above the BSL in stream sediment samples collected from South Walnut Creek, as presented on Table 4.8-3 and shown on Figure 4.8-4. Tritium was detected in samples from sites SED68892 and SED69992, with the maximum concentration (1.12E+04 pCi/l) occurring at site SED69992, located on the south slope of South Walnut Creek upstream of Pond B-5.

Other Analytes and Parameters—No nitrate/nitrite concentrations were detected above the BSL of 3.92E+01 mg/kg in the sediment samples collected from the South Walnut Creek drainage. TOC concentrations ranged of 4.58E+03 to 1.77E+04 mg/kg in the sediment samples collected along South Walnut Creek, with the maximum concentration (1.77E+04 mg/kg) found at site SED69992.

McKay Ditch and W&I Effluent

The McKay Ditch and W&I Effluent sediment sampling sites are located along McKay Ditch upstream of the confluence with Walnut Creek and downstream of the W&I Pond on Walnut Creek, respectively. Two sites, SED69292 and SED69392, were sampled to characterize the nature and extent of contamination in the McKay Ditch and Walnut Creek areas (Figure 4.8-1).

VOCs—No VOCs were detected in stream sediment samples collected from the McKay Ditch and W&I Effluent.

SVOCs—Four SVOCs were detected in the stream sediment samples collected from the McKay Ditch and Walnut Creek, as presented on Table 4.8-4. Two suspect SVOCs [bis(2-ethylhexyl)phthalate and di-n-butyl phthalate] are shown on Figure 4.8-1. Bis(2-ethylhexyl)phthalate was detected once at an estimated concentration (1.70E+02 µg/kg) occurring at site SED69292 along McKay Ditch. Di-n-butyl phthalate was detected once at an estimated concentration (4.50E+01 µg/kg) occurring at site SED69392, located at the W&I Effluent.

The remaining two SVOCs, benzoic acid and benzyl alcohol, were each detected once, at estimated concentrations of 1.70E+02 µg/kg and 4.10E+01 µg/kg, respectively. These detections are shown on Figure 4.8-2.

Pesticides/PCBs—No pesticides or PCBs were detected in stream sediment samples collected from the McKay Ditch and W&I Effluent.

PCOC Metals—No metals were detected above the BSL in stream sediment samples collected from the McKay Ditch and W&I Effluent.

PCOC Radionuclides—No radionuclides were detected above the BSL in stream sediment samples collected from the McKay Ditch and W&I Effluent.

Other Analytes and Parameters—No nitrate/nitrite concentrations were detected above the BSL of 3.92E+01 mg/kg in the sediment samples collected from the McKay Ditch and W&I Effluent. TOC concentrations of 4.76E+03 and 7.55E+03 mg/kg occurred in stream sediment samples from sites SED69392 and SED69292, respectively.

4.8.2 A-Series Pond Sediments

This IHSS group includes the A-Series Ponds (IHSSs 142.1 through 142.4) which have been constructed in the North Walnut Creek drainage located northeast of the PA at RFETS (Figure 1.3-3). The ponds are numbered sequentially, increasing in a downstream direction, from west to east along North Walnut Creek. Construction and usage histories of the A-Series Ponds are discussed in Section 1.3.2.3.

Five composite sediment samples were collected to a depth of two ft or less in each pond to characterize the nature and extent of contamination in the A-Series Ponds. The sampling method and specific site selections for collection of pond sediment are discussed in Sections 2.1.3.3 and 2.2.2. Table 2.2.2 lists the sediment sampling intervals for the A-Series Ponds. Chemical analyses performed on the pond sediment samples included VOCs, SVOCs, pesticides/PCBs, metals, radionuclides, TOC, and nitrates. For PCOC inorganic constituents and radionuclides, only those above the BSL are discussed. The distribution of chemicals in pond sediments from these IHSSs are discussed in the following section.

Statistical data for detected organic compounds, and PCOC metals and radionuclides detected above their BSLs at IHSSs 142.1 through 142.4 are presented on Tables 4.8-5 through 4.8-8, respectively. Spatial distribution of these data for organic compounds, PCOC metals, and PCOC radionuclides are shown on Figures 4.8-5 through 4.8-8.

Four VOCs (2-butanone, acetone, methylene chloride, and toluene) and three SVOCs [bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, and di-n-octyl phthalate] detected in the A-Series Ponds are referred to as suspect organic compounds, as presented in Section 4.2.2 and shown on Figure 4.8-5. The remaining organic compound concentrations are shown on Figure 4.8-6.

A-Series Ponds

VOCs—Six VOCs were detected in the sediment samples collected in the A-Series Ponds. Four suspect VOCs (acetone, methylene chloride, 2-butanone and toluene) were detected in all ponds, except for the absence of 2-butanone concentrations in Pond A-4 (Figure 4.8-5). VOC concentrations in sediment samples collected in the A-Series Ponds were generally low; however, maximum estimated concentrations for acetone (3.30E+03 µg/kg), methylene chloride (8.30E+03 µg/kg), and toluene (8.60E+02 µg/kg) were found in a sample taken from a site (SED60792) located in the center of Pond A-2. Single detections at low, estimated concentrations of 4-methyl-2-pentanone (6.00E+00 µg/kg) and benzene (3.00E+00 µg/kg) occurred at sites in Ponds A-1 and A-4, respectively, as shown on Figure 4.8-6.

SVOCs—Sixteen SVOCs were detected in the pond sediment samples collected from the A-Series Ponds. The SVOC detections are mostly PAHs (12 total), which were found in all ponds, except Pond A-4. These PAHs are: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene,

benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene (Figure 4.8-6). The PAH concentrations ranged from 5.80E+01J µg/kg [benzo(a)anthracene] to 7.90E+02J µg/kg (fluoranthene). All PAHs, except anthracene, and the maximum concentration (fluoranthene at 7.90E+02J µg/kg) were detected at site SED60092, located on the eastern end of Pond A-1.
Three suspect SVOCs [bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, and di-n-octyl phthalate] were detected at concentrations presented on Tables 4.8-5 through 4.8-8, and shown on Figure 4.8-5. The occurrence of bis(2-ethylhexyl)phthalate was ubiquitous, with concentrations in the range of 9.00E+01J µg/kg (Pond A-1) to 7.80E+03 µg/kg (Pond A-2). Benzoic acid was detected in Pond A-2 only, at concentrations in the range of 1.80E+02J to 3.30E+02J µg/kg (Figure 4.8-6).

Pesticides/PCBs—Aroclor-1254 (a PCB) was detected in all sediment samples collected from Pond A-1 and in a single sediment sample from Pond A-2, at concentrations in the range of 3.20E+02 µg/kg (Pond A-1) to 5.90E+02 µg/kg (Pond A-2) (Tables 4.8-5 and 4.8-6). Aldrin (a pesticide) was detected at a concentration of 5.40E+01 µg/kg in a single sediment sample from Pond A-2. These pesticide/PCB concentrations are shown on Figure 4.8-6.

PCOC Metals—Six metals were detected at concentrations above their respective BSLs in sediment samples collected in the A-Series Ponds, as shown on Figure 4.8-7. These metals are antimony, chromium, magnesium, potassium, vanadium, and zinc.

Five of the six metals detected above the BSLs were found in samples from Ponds A-3 and A-4, whereas zinc and potassium occurrences were only found in Ponds A-1 and A-2. Generally, metal concentrations were slightly or moderately above their BSLs (Tables 4.8-5 through 4.8-8). However, slightly elevated concentrations of zinc (maximum of 4.09E+02 mg/kg) occurred in all ponds except Pond A-1.

PCOC Radionuclides—Six radionuclides were detected at activities above their respective BSLs in sediment samples collected in the A-Series Ponds, as shown on Figure 4.8-8. These radionuclides are Am-241, gross alpha, Pu-230/240, strontium-89,90, U-233/234, and U-238.
Pond A-1 contained the greatest number and the most frequent detections of PCOC activities above the BSLs. Pond A-1 contained elevated activities of Am-241 (3.25E+00 to 1.32E-01 pCi/g) and Pu-239/240 (1.77E+01 to 3.62E+01 pCi/g). None of the sediment samples collected in Ponds A-3 and A-4 contained activities of Am-241 or Pu-239/240 above their BSLs. In Pond A-3, a single activity (1.59E+00 pCi/g) of U-233/234 was the only radionuclide detected above the BSL. Maximum activities for gross alpha, strontium-89,90, U-233/234, and U-238 are, respectively: 7.07E+01 pCi/g, 1.80E+00J pCi/g, 2.48E+00 pCi/g, and 2.55E+00 pCi/g.

Other Analytes and Parameters—The nitrate results from the sediment samples collected in the A-Series Ponds were rejected in the validation process (Pond A-1), not detected at concentrations above the method detection limit (Ponds A-2 and A-3), or not detected at a concentration above the BSL of 3.73E+01 mg/kg (Pond A-4).

TOC concentrations ranged from 4.78E+03 to 2.70E+04 mg/kg in sediment samples collected in the A-Series Ponds, with the maximum concentration (2.70E+04 mg/kg) found in Pond A-2.

Additional A-Series Pond Sediment Data

Additional A-Series Pond (IHSSs 142.1 through 142.4) sediment sampling was conducted during the ERA in June through July, 1994. Five samples were collected from each of the A-Series Ponds from the same sample locations that the OU6 RI samples were collected. One 0-6 inch composited sample was collected from each location and the samples were analyzed for PCBs and radionuclides. These additional data were used to assist in the characterization of the nature and extent of contamination in the A-Series Ponds. Statistical data for detected PCBs and radionuclides detected above the BSLs are presented in Tables 4.8-15 through 4.8-17. Spatial distribution of these data for PCBs and radionuclides are shown on Figures 4.8-18 and 4.8-19, respectively.

PCBs—Aroclor-1254 was the only PCB detected in the A-Series Ponds. It was detected in all five sediment samples collected from Pond A-1 ranging in concentrations from 4.40E+01JA µg/kg to 8.80E+01JA µg/kg. It was detected in three samples in Pond A-2 ranging in concentrations from 8.90E+01JA µg/kg to 1.60E+02JA µg/kg. There was only one detection of Aroclor-1254 in Pond A-3 at 4.50E+01JA µg/kg. There were no PCB detections in Pond A-4. The PCB concentrations are presented on Figure 4.8-18.

Radionuclides—Thirty-three radionuclides were detected at activities above their respective BSLs in sediment samples collected from Ponds A-1 and A-2. These radionuclides include Am-241, Pu-239/240, U-233/234, U-235, and U-238. These radionuclides were not detected in Ponds A-3 and A-4. Am-241, U-233/234, U-235, and U-238 were detected above their respective BSLs in Pond A-1. Am-241 occurred in three locations ranging in activities from 7.68E-01V to 8.76E-01V pCi/g. U-233/234 was detected in three locations ranging in activities from 1.88E+00V to 2.36E+00V pCi/g. U-238 occurred in all five sample locations in Pond A-1 ranging in activities from 2.00E+00V to 4.52E+00V pCi/g. Pu-239/240 was not detected above its BSL in Pond A-1.

Am-241, Pu-239/240, U-233/234, U-235, and U-238 were detected above their respective BSLs in Pond A-2. Am-241 was detected in five sediment samples ranging in activities from 9.62E-01 pCi/g to 2.61E+00 pCi/g. Pu-239/240 was detected in four sediment samples ranging in activities from 4.13E+00 pCi/g to 1.03E+01 pCi/g. U-233/234 was detected in five sediment samples ranging in activities from 3.22E+00 pCi/g to 3.58E+00 pCi/g. U-235 was detected in three sediment samples ranging in activities from 1.49E-01 pCi/g to 1.95E-01 pCi/g. U-238 was detected in five sediment samples ranging in activities from 3.00E+00 pCi/g to 6.02E+00 pCi/g.

4.8.3 B-Series Pond Sediments

This IHSS group includes the B-Series Ponds (IHSSs 142.5 through 142.9) which have been constructed in the South Walnut Creek drainage, east of the eastern perimeter of the PA at RFETS

(Figure 1.3-3). The ponds are numbered sequentially, increasing in a downstream direction, from west to east along South Walnut Creek. Construction and usage histories of the B-Series Ponds are discussed in Section 1.3.2.4.

Five composite sediment samples were collected in each pond to characterize the nature and extent of contamination in the B-Series Ponds. Additional composite sediment samples from depths of 2 to 4 ft were collected in Ponds B-1 (two), B-3 (two), and B-4 (three) because sediment depth was greater than 2 ft. The sampling method and specific site selections for collection of pond sediment are discussed in Sections 2.1.3.3 and 2.2.2. Table 2.2.2 lists the sediment sampling intervals for the B-Series Ponds. Chemical analyses performed on the pond sediment samples included VOCs, SVOCs, pesticides/PCBs, metals, radionuclides, TOC, and nitrates. For PCOC inorganic constituents and radionuclides, only those above the BSL are discussed. The distribution of chemicals in pond sediments from these IHSSs are discussed in the following sections.

Statistical data for detected organic compounds, and PCOC metals and radionuclides detected above their BSLs at IHSSs 142.5 through 142.9 are presented on Tables 4.8-9 through 4.8-13, respectively. Spatial distribution of these data for organic compounds, PCOC metals, and PCOC radionuclides are shown on Figures 4.8-9 through 4.8-15.

Four VOCs (2-butanone, acetone, methylene chloride, and toluene) and three SVOCs [bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, and di-n-octyl phthalate] detected in the B-Series Ponds are referred to as suspect compounds, as presented in Section 4.2.2 and shown on Figure 4.8-9. The remaining organic compound detections are shown on Figures 4.8-10 and 4.8-11.

B-Series Ponds

VOCs—Five VOCs were detected in the sediment samples collected in the B-Series Ponds. Two suspect VOCs (2-butanone and toluene) were detected in all ponds (Figure 4.8-9). VOC concentrations in sediment samples collected in the B-Series Ponds were generally low; however, maximum estimated concentrations for 2-butanone (1.30E+02 µg/kg), acetone (8.10E+02 µg/kg), methylene chloride (9.00E+00J µg/kg), and toluene (1.10E+03 µg/kg) occurred in samples collected from Ponds B-1 and B-2 (Tables 4.8-9 through 4.8-13). Acetone was also detected in laboratory method blanks.

The remaining VOC, benzene, was detected once in each of Ponds B-4 and B-5, with a maximum concentration of 1.00E+01J µg/kg (Pond B-4). Benzene was also detected in a laboratory method blank.

SVOCs—Twenty-three SVOCs were detected in the sediment samples collected in the B-Series Ponds. The SVOC detections are mostly PAHs (15 total), with the greatest number of PAHs found in Ponds B-1 (14 total) and B-4 (12 total), as shown on Figures 4.8-10 and 4.8-11. These PAHs are: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene,

benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. The PAH concentrations ranged from 5.40E+01J µg/kg [benzo(b)fluoranthene; Pond B-3] to 3.80E+03 µg/kg (pyrene; Pond B-1). In Ponds B-1, B-3, and B-4, sediment samples collected at depths from 0 to 2 ft generally contained more detections of PAHs than those sediment samples collected at 2 to 4 ft. PAH concentrations increased with depth in Ponds B-1 and B-4, however the PAH concentrations decreased with depth in Pond B-3.

Other SVOC detections included three suspect phthalates [bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, and di-n-octyl phthalate], 1,2,3-trichlorobenzene, 2-methylnaphthalene, benzoic acid, dibenzofuran, and phenol. Bis(2-ethylhexyl)phthalate detections were ubiquitous and often found at elevated concentrations (maximum at 8.80E+04 µg/kg). Elevated concentrations of benzoic acid (maximum at 4.60E+03J µg/kg) occurred in Ponds B-1 and B-2 only. Benzoic acid was also detected in laboratory method blanks. The remaining SVOCs were all single detections, found only in Pond B-1.

Pesticides/PCB—Aroclor-1254 (a PCB) was frequently detected in sediment samples from all ponds, except Pond B-5, with concentrations in the range of 2.30E+02 to 1.00E+04 µg/kg (Pond B-1). Aroclor-1260 (a PCB) was only detected in Pond B-3, with a maximum concentration of 8.60E+02 µg/kg. Single detections of pesticides, heptaclor and gamma-BHC(Lindane), were found at low concentrations in Ponds B-1 (3.90E+01 µg/kg) and B-4 (2.50E+01 µg/kg), respectively. Most pesticide/PCB detections occurred in samples from depths of 0 to 2 ft, as shown on Figure 4.8-10.

PCOC Metals—Seven metals were detected at concentrations above their respective BSLs in sediment samples collected in the B-Series Ponds, as shown on Figures 4.8-12 and 4.8-13. These metals are antimony, chromium, copper, magnesium, potassium, silver, or zinc.

Ponds B-1, B-3, and B-4 each contained five metals detected above the BSL. Silver and zinc were frequently detected at elevated concentrations and occurred at both sample depths (0 to 2 ft and 2 to 4 ft). Zinc concentrations were in the range of 1.08E+02 to 1.27E+03 mg/kg, and silver concentrations were in the range of 1.27E+01 to 3.45E+02 mg/kg. Maximum concentrations for silver and zinc occurred in a sediment sample from a depth of 2 to 4 ft collected at site SED62292 in Pond B-1. Silver concentrations decrease with each consecutive pond, but increase with depth of sample in Ponds B-1 and B-4. Slightly elevated concentrations of chromium (maximum at 9.61E+01 mg/kg) were found in sediment samples from Ponds B-1 and B-3. The remainder of the metals (antimony, copper, magnesium and potassium) were infrequently detected at concentrations slightly to moderately above the BSLs.

PCOC Radionuclides—Eight radionuclides were detected at activities above their respective BSLs in sediment samples collected in the B-Series Ponds, as shown on Figures 4.8-14 and 4.8-15. These radionuclides are Am-241, gross alpha, gross beta, Pu-239/240, radium-228 (Ra-228), U-233/234, U-235, and U-238.

Ponds B-1 through B-3 contained the greatest number of radionuclides detected above the BSLs, many detected at elevated activities. Am-241 and Pu-239/240 were found in all ponds except Pond B-5, with maximum activities of 3.89E+02 pCi/g (Pond B-1, sample depth 2 to 4 ft) and 1.80E+02 pCi/g (Pond B-3, sample depth 0 to 2 ft), respectively. Other radionuclides frequently detected in Ponds B-1 through B-4 included: gross alpha (1.74E+03 pCi/g), gross beta (9.82E+01 pCi/g), U-235 (1.30E+00 pCi/g), U-238 (4.31E+01 pCi/g), and U-233/234 (9.56E+00 pCi/g). In general, radionuclide activities increase with depth in Ponds B-1 and B-4, but decrease with depth in Pond B-3. Maximum activities of the radionuclides listed above occurred primarily in Pond B-1 samples. A single activity of Ra-228 was the only radionuclide detected above the BSL in Pond B-5.

Other Analytes and Parameters—The nitrate results from the sediment samples collected in the B-Series Ponds were rejected in the validation process (Ponds B-3 through B-5), not detected at concentrations above the method detection limit (Pond B-1), or not detected at a concentration above the BSL of 3.73E+01 mg/kg (Pond B-2).

TOC concentrations ranged from 3.02E+03 to 5.44E+04 mg/kg in sediment samples collected in the B-Series Ponds, with the maximum concentration (5.44E+04 mg/kg) found in Pond B-2.

Additional B-Series Pond Sediment Data

Additional B-Series Pond sediment sampling was conducted in June and July to support the OU6 ERA 1994. Five samples were collected from each of the B-Series Ponds from the same sample locations used for the OU6 RI sampling. One 0-6 inch composited sample was collected from each location within the B-Series Ponds. A total of 25 samples were collected and analyzed for PCBs and radionuclides. Statistical data for detected PCBs and radionuclides detected above the BSLs are presented in Tables 4.8-19 through 4.8-23. Spatial distribution of the PCB and radionuclides data are presented on Figures 4.8-20 and 4.8-21, respectively.

PCBs—Thirty PCBs were detected in the pond sediments in Ponds B-1 through B-4. There were no PCBs detected in Pond B-5. The PCBs detected include Aroclor-1248, Aroclor-1254, and Aroclor-1260.

Aroclor-1248 was detected in five sediment samples in Pond B-1 ranging in concentrations from 8.80E+01JA µg/kg to 4.70E+02 µg/kg. Aroclor-1254 was also detected in five sediment samples ranging from 4.10E+02JA µg/kg to 1.60E+03 µg/kg.

Aroclor-1248 was detected in four sediment samples in Pond B-2 ranging in concentrations from 3.90E+02JA µg/kg to 1.50E+03 µg/kg. Aroclor-1254 was detected in five sediment samples in Pond B-2 ranging in concentrations from 9.30E+02 µg/kg to 3.80E+03 µg/kg.

Aroclor-1254 was detected in five sediment samples in Pond B-3 ranging in concentrations from 2.30E+02JA µg/kg to 1.30E+03 µg/kg. Aroclor-1260 was detected once in Pond B-3 at a concentration of 2.60E+02JA µg/kg.

Aroclor-1254 was detected in five sediment samples in Pond B-4 ranging in concentrations from 1.20E+02JA µg/kg to 2.20E+02JA µg/kg.

Radionuclides—Forty-eight radionuclides were detected at activities above their respective BSLs in sediment samples collected from Ponds B-1 and B-2. These radionuclides included Am-241, Pu-239/240, U-233/234, U-235, and U-238. These radionuclides were not detected above their respective BSLs in Ponds B-3 through B-5.

Am-241 was detected above its BSL in all ten sediment samples collected from Ponds B-1 and B-2. Its concentrations ranged from 1.00E+01 pCi/g to 6.54E+01 pCi/g in Pond B-1, and from 2.66E+01 pCi/g to 1.32 E+02 pCi/g in Pond B-2.

Pu-239/240 was detected above its BSL in all ten sediment samples collected from Ponds B-1 and B-2. Concentrations ranged from 2.42E+01 pCi/g to 2.14E+02 pCi/g in Pond B-1, and from 1.30E+02 pCi/g to 6.43E+02 pCi/g in Pond B-2.

U-233/234 was detected above its BSL in all ten sediment samples collected from Ponds B-1 and B-2. Concentrations ranged from 2.49E+00 pCi/g to 8.04 E+00 pCi/g in Pond B-1, and from 4.33 E+00 pCi/g to 9.31E+00 pCi/g in Pond B-2.

U-235 was detected above its BSL in eight sediment samples collected from Ponds B-1 and B-2 (four in each pond). Concentrations ranged from 2.02E-01 pCi/g to 6.34E-01 pCi/g in Pond B-1, and from 1.80E-01 pCi/g to 6.46E-01 pCi/g in Pond B-2.

U-238 was detected above its BSL in all ten sediment samples collected from Ponds B-1 and B-2. Concentrations ranged from 3.07E+00 pCi/g to 9.90E+00 pCi/g in Pond B-1, and from 4.47E+00 pCi/g to 2.69E+01 pCi/g in Pond B-2.

4.8.4 W&I Pond Sediments (IHSS 142.12)

The W&I Pond (IHSS 142.12) is located along Walnut Creek, east of the confluence with McKay Ditch and west of Indiana Avenue (Figure 1.3-3). Purpose and usage history of the W&I Pond is discussed in Section 1.3.2.5. Pond sediment was sampled at five sites to characterize the vertical extent of contamination in the W&I Pond (SED64592 through SED64992), as shown on Figure 4.8-16. The sampling method and specific site selections for collection of pond sediment are discussed in Sections 2.1.3.3 and 2.2.2. Table 2.2.2 lists the sediment sampling intervals for the W&I Pond.

Chemical analyses performed on the pond sediment samples included VOCs, SVOCs, pesticides/PCBs, metals, radionuclides, TOC, and nitrates. The distribution of chemicals in pond sediments from this IHSS is discussed in the following section.

Four VOCs (2-butanone, acetone, methylene chloride, and toluene) and one SVOC [bis(2-ethylhexyl)phthalate] detected in the W&I Pond are referred to as suspect compounds, as presented in Section 4.2.2 and shown on Figure 4.8-16. The remaining organic compound detections are shown on Figure 4.8-17.

W&I Pond

VOCs—Three suspect VOCs (2-butanone, acetone, and toluene) were detected in the sediment samples collected in the W&I Pond, as presented on Table 4.8-14. Maximum concentrations for these VOCs are 5.10E+01 µg/kg (2-butanone), 2.10E+02 µg/kg (acetone), and 1.80E+01 µg/kg (toluene).

SVOCs—Three SVOCs were detected in the sediment samples collected from the W&I Pond, as presented on Table 4.8-14. One suspect SVOC, bis(2-ethylhexyl)phthalate, was frequently detected (Figure 4.8-16) in the pond sediment samples, with a maximum, estimated concentration of 1.30E+02 µg/kg.

Benzoic acid was also frequently detected, with a maximum, estimated concentration of 5.00E+02 µg/kg. Phenol was detected once, at an estimated concentration of 1.10E+02 µg/kg.

Pesticides/PCBs—No pesticides or PCBs were detected in sediment samples collected from the W&I Pond.

PCOC Metals—No metals were detected above the BSL in sediment samples collected from the W&I Pond.

PCOC Radionuclides—No radionuclides were detected above the BSL in sediment samples collected from the W&I Pond.

Other Analytes and Parameters—No nitrate concentrations were detected above the BSL (3.73E+01 mg/kg) in sediment samples collected from the W&I Pond. TOC concentrations ranged from 5.06E+03 to 1.12E+04 mg/kg in the sediment samples collected in the W&I Pond, with the maximum concentration (1.12E+04 mg/kg) found at site SED64792, located along the northern shore of W&I Pond.

TABLE 4.3-1
Rocky Flats Environmental Technology Site
OU6 Background Comparison Summary

Media	Background Data**	OU6 Data	Analyte Group	No. of Analytes in Comparison	No. of Analytes Significant in Tests	No. of Analytes Greater than UTL 99/99	No. of PCOCs
Surface Soil	Rock Creek Surface Soil	Surface Soil and Dry Sediment	Metals	28	9	15	16
			Radionuclides (Rads)	7	2	5	4
Subsurface Soil	UHSU Subsurface Soil	Subsurface Soil	Metals	28	3	8	7
			Rads	8	5	6	6
Groundwater	UHSU* Groundwater	Historic and New Wells	Total Metals	29	25	26	25
			Filtered Metals	28	13	17	17
	UHSU Groundwater	Historic and New Wells	Total Rads	11	4	5	5***
			Filtered Rads	11	7	6	8***
Stream Surface Water (baseflow)	Stream Surface* Water	Stream Baseflow Surface Water	Total Metals	29	9	6	9
			Filtered Metals	28	9	5	9
	Stream Surface Water	Stream Baseflow Surface Water	Total Rads	10	6	3	6***
			Filtered Rads	6	2	0	2
Pond Surface Water	Seep/Spring* Surface Water	Pond Surface Water	Total Metals	29	3	1	3
			Filtered Metals	28	4	4	4
	Seep/Spring Surface Water	Pond Surface Water	Total Rads	10	4	2	4
			Filtered Rads	7	2	2	3***
Stream Sediment	Stream Sediment	Stream Sediment	Metals	26	11	2	11
			Rads	12	3	1	3***
Pond Sediment	Seep/Spring Sediment	Pond Sediment	Metals	27	11	7	12
			Rads	12	10	8	10

* In these background data files, non-detect records with extremely high reporting limits were not used.
** Background data files are from "1993 Background Geochemical Characterization Report (DOE 1993)," except for surface soil.
*** Some sample sizes too small to draw conclusion.

TABLE 4.3-2
OU6 Background Comparison Summary of Surface Soil Metals
(Concentration Unit:mg/kg)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	18	119	1.00	1.00	0.2320	0.7081	0.9976	1.0000	N	21915.4	3	NO	Not a PCOC by PJ (1)
ANTIMONY	18	103	0.00	0.54	1.0000		0.0174		Y	50.0	0	YES	
ARSENIC	18	119	1.00	1.00	0.4222	0.8522	0.8614	0.7828	N	12.9	0	NO	
BARIUM	18	119	1.00	1.00	1.0000	0.9975	0.9914	0.9912	N	528.0	0	NO	
BERYLLIUM	18	119	0.50	0.87	1.0000		0.4654		N	5.2	0	NO	
CADMIUM	17	119	0.35	0.47	0.8750		0.3602		N	5.0	1	NO	Not a PCOC by PJ (1)
CALCIUM	18	119	1.00	1.00	0.0001	0.0119	0.0001	0.0001	Y	13573.3	24	YES	
CESIUM	18	114	0.50	0.91	1.0000		0.2843		N	630.8	0	NO	
CHROMIUM	18	119	1.00	0.99	0.6532	0.9848	0.9998	1.0000	N	24.8	1	YES	
COBALT	18	119	1.00	1.00	1.0000	0.1921	0.0028	0.0057	Y	24.8	0	YES	
COPPER	18	119	1.00	1.00	0.0099	0.0119	0.0007	0.0001	Y	27.3	7	YES	
IRON	18	119	1.00	1.00	0.6532	0.4417	0.9190	0.8919	N	28160.4	3	YES	
LEAD	18	119	1.00	1.00	0.0909	0.4743	0.9995	1.0000	N	61.4	4	YES	
LITHIUM	18	119	1.00	0.97	0.1707		0.9889	0.9997	N	20.0	0	NO	
MAGNESIUM	18	119	1.00	1.00	0.4222	0.7081	0.3266	0.2969	N	7011.5	3	YES	
MANGANESE	18	119	1.00	1.00	1.0000	0.9557	0.9998	0.9999	N	2253.5	0	NO	
MERCURY	18	119	0.00	0.41	0.8686		0.0303		Y	0.2	1	YES	
MOLYBDENUM	18	119	0.06	0.01	1.0000		0.0185		Y	40.0	0	YES	
NICKEL	18	118	1.00	0.95	0.1228	0.4348	0.0308	0.1363	Y	26.9	0	YES	
POTASSIUM	18	119	1.00	0.92	0.8686	1.0000	1.0000	1.0000	N	5256.8	0	NO	
SELENIUM	18	119	0.72	0.27	1.0000		0.2903		N	1.4	0	NO	
SILICON	0	0	0.00	0.00									NO site measurement
SILVER	18	119	0.00	0.09	0.8686		0.2388		N	10.0	1	YES	
SODIUM	18	119	0.50	1.00	0.6532		0.0547		N	1108.0	3	YES	
STRONTIUM	18	119	1.00	1.00	0.2320	0.0769	0.0714	0.0397	Y	90.1	6	YES	
THALLIUM	18	118	0.28	0.42	1.0000		0.6887		N	2.0	0	NO	
TIN	18	119	0.50	0.03	1.0000		1.0000		N	75.9	0	NO	
VANADIUM	18	119	1.00	1.00	0.2700	0.2375	0.4443	0.5916	N	55.6	4	YES	
ZINC	18	119	1.00	1.00	0.0099	0.0119	0.1244	0.0028	Y	86.6	11	YES	

(1) Professional judgment based on log-normal UTL comparison
mg/kg - milligram per kilogram
Bkgd - Background

TABLE 4.3-3
OU6 Background Comparison
Summary of Surface Soil Radionuclides
(Concentration Unit: pCi/g)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	15	105	1.00	1.00	0.0001	0.0277	0.0001		Y	0.060	63	YES	
CESIUM-137	12	18	1.00	1.00	1.0000	1.0000	1.0000		N	3.699	0	NO	
GROSS ALPHA	9	134	1.00	1.00	0.4760	0.9174	0.9847		N	42.220	3	YES	
GROSS BETA	18	134	1.00	1.00	0.3111	0.8711	0.9778		N	54.120	2	YES	
PLUTONIUM-239/240	18	118	1.00	1.00	0.0001	0.0114	0.0001		Y	0.133	73	YES	
RADIUM-226	10	0	0.00	0.00									NO site measurement
RADIUM-228	10	0	0.00	0.00									NO site measurement
STRONTIUM-89,90	9	18	1.00	1.00	1.0000	1.0000	0.9992		N	2.217	0	NO	
TRITIUM (1)	0	27	0.00	0.00									NO Bkgd measurement
URANIUM,TOTAL	0	0	0.00	0.00									NO measurements
URANIUM-233/234	13	125	1.00	1.00	0.2893	0.7453	0.9844		N	1.826	1	NO	Not a PCOC by PJ (2)
URANIUM-235	13	125	1.00	1.00	0.4433	0.7453	0.5160		N	0.179	0	NO	
URANIUM-238	13	125	1.00	1.00	0.4922	0.9064	0.9788		N	2.086	0	NO	

(1) Concentration unit: picocuries per liter (pCi/l)
(2) Professional judgment based on log-normal UTL comparison
pCi/g - picocuries per gram
Bkgd - Background

TABLE 4.3-4
OU6 Background Comparison Summary of Subsurface Soil Metals
(Concentration Unit: mg/kg)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	98	231	1.00	1.00	1.0000	1.0000	1.0000	1.0000	N	45083.1	0	NO	
ANTIMONY	66	210	0.18	0.07	1.0000		0.1658		N	47.0	0	NO	
ARSENIC	99	231	0.81	0.99	1.0000	0.8480	0.3116	0.7957	N	17.0	0	NO	
BARIUM	99	231	0.92	1.00	0.1153	0.0006	0.0001	0.0004	Y	371.1	17	YES	
BERYLLIUM	99	231	0.91	0.84	1.0000	1.0000	1.0000	1.0000	N	18.2	0	NO	
CADMIUM	81	211	0.48	0.08	1.0000		1.0000		N	2.0	0	NO	
CALCIUM	99	231	0.90	1.00	0.0385	0.0001	0.0001	0.0001	Y	53248.1	52	YES	
CESIUM	95	221	0.78	0.68	1.0000		1.0000		N	1014.9	0	NO	
CHROMIUM	99	231	1.00	0.98	0.7000	1.0000	1.0000	0.9998	N	89.1	3	YES	
COBALT	99	231	0.34	0.95	1.0000		0.9996		N	38.1	0	NO	
COPPER	99	231	0.97	1.00	1.0000	0.9931	0.9998	0.9978	N	49.0	1	NO	Not a PCOC by PJ (1)
IRON	99	231	1.00	1.00	1.0000	0.9999	1.0000	0.9999	N	52385.2	0	NO	
LEAD	99	231	1.00	1.00	0.4894	0.9548	0.1262	0.2347	N	31.0	2	YES	
LITHIUM	99	209	0.48	0.87	1.0000		1.0000		N	41.9	0	NO	
MAGNESIUM	99	231	0.71	1.00	1.0000	0.8663	0.5539		N	12147.1	0	NO	
MANGANESE	99	231	1.00	1.00	1.0000	0.9998	0.9998	0.9813	N	1194.0	0	NO	
MERCURY	86	231	0.38	0.31	1.0000		1.0000		N	2.1	0	NO	
MOLYBDENUM	99	231	0.18	0.02	1.0000		0.9848		N	67.6	0	NO	
NICKEL	96	231	0.96	0.66	1.0000	1.0000	1.0000		N	79.9	0	NO	
POTASSIUM	98	230	0.40	0.60	1.0000		1.0000		N	8362.3	0	NO	
SELENIUM	82	211	0.27	0.09	1.0000		1.0000		N	7.1	0	NO	
SILICON													NO site measurement
SILVER	83	230	0.43	0.00	1.0000		1.0000		N	33.1	0	NO	
SODIUM	99	231	0.18	1.00	1.0000		0.9989		N	3680.0	0	NO	
STRONTIUM	99	231	0.43	1.00	0.7000		0.0003		Y	269.9	6	YES	
THALLIUM	75	223	0.05	0.29	1.0000		0.8231		N	20.0	0	NO	
TIN	92	231	0.23	0.03	1.0000		1.0000		N	383.7	0	NO	
VANADIUM	99	231	0.98	1.00	1.0000	0.9998	1.0000	0.9982	N	112.8	1	YES	
ZINC	98	231	1.00	1.00	0.7021	0.9259	0.8970	0.6826	N	182.9	4	YES	

(1) Professional judgment based on log-normal UTL comparison
mg/kg - milligrams per kilogram
Bkgd - Background

TABLE 4.3-5
OU6 Background Comparison Summary of
Subsurface Soil Radionuclides
(Concentration Unit: pCi/g)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	28	208	1.00	1.00	0.0001	0.0009	0.0001	0.0228	Y	0.022	21	YES	
CESIUM-137	99	0											NO site measurement
GROSS ALPHA	99	209	1.00	1.00	0.4597	1.0000	1.0000	1.0000	N	51.423	2	YES	
GROSS BETA	99	223	1.00	1.00	1.0000	1.0000	1.0000	1.0000	N	42.022	0	NO	
PLUTONIUM-239/240	99	206	1.00	1.00	0.0001	0.0001	0.0001	0.0001	Y	0.025	43	YES	
RADIUM-226	83	0											NO site measurement
RADIUM-228	83	0											NO site measurement
STRONTIUM-89,90	99	0											NO site measurement
TRITIUM (1)	99	12	1.00	1.00	1.0000	0.9479	0.9564		N	503.616	0	NO	
URANIUM,TOTAL	0	0											NO site measurement
URANIUM-233/234	99	230	1.00	1.00	1.0000	0.0256	0.0344	0.2701	Y	3.441	0	YES	
URANIUM-235	99	230	1.00	1.00	1.0000	0.4617	0.0001	0.0009	Y	0.153	1	YES	
URANIUM-238	99	230	1.00	1.00	0.6991	0.8497	0.3157	0.2637	N	1.807	2	YES	

(1) Concentration Unit: picocuries per liter (pCi/l)
pCi/g - picocuries per gram
Bkgd - Background

TABLE 4.3-6
OU6 Background Comparison Summary of UHSU Groundwater Total Metals
(Concentration Unit: ug/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)99/99	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	149	106	0.95	0.95	0.0001	0.0001	0.0001	0.0007	Y	25624.6	18	YES	
ANTIMONY	141	92	0.38	0.16	0.0090		0.0211		Y	55.8	7	YES	
ARSENIC	138	106	0.28	0.52	0.0147		0.0001		Y	8.8	6	YES	
BARIUM	149	107	0.74	0.98	0.0001	0.0001	0.0001		Y	300.4	32	YES	
BERYLLIUM	148	100	0.12	0.30	0.0002		0.0001		Y	5.0	9	YES	
CADMIUM	148	106	0.20	0.26	0.0049		0.0177		Y	11.1	6	YES	
CALCIUM	149	107	1.00	1.00	0.0001	0.0001	0.0001	0.0001	Y	145353.0	32	YES	
CESIUM	142	97	0.25	0.02	1.0000		0.1380		N	934.7	0	NO	
CHROMIUM	145	107	0.48	0.75	1.0000	0.0001	0.0001		Y	186.4	7	YES	
COBALT	148	107	0.16	0.45	0.0020		0.0001		Y	50.0	7	YES	
COPPER	148	107	0.74	0.54	0.0001		0.0001		Y	45.3	20	YES	
IRON	149	106	0.98	0.95	0.0019	0.0001	0.0001	0.0012	Y	31518.5	18	YES	
LEAD	141	107	0.70	0.73	0.0002	0.0001	0.0001		Y	19.3	21	YES	
LITHIUM	149	107	0.77	0.93	0.0008		0.0001		Y	172.3	17	YES	
MAGNESIUM	149	107	0.97	1.00	0.0001	0.0001	0.0001	0.0001	Y	33005.6	42	YES	
MANGANESE	149	107	0.89	0.94	0.0001	0.0001	0.0001	0.0001	Y	626.4	30	YES	
MERCURY	148	107	0.20	0.10	0.0008		0.9745		Y	0.2	9	YES	
MOLYBDENUM	150	107	0.34	0.27	1.0000		0.0738		N	195.1	0	NO	
NICKEL	146	107	0.38	0.66	0.1779		0.0001		Y	97.5	12	YES	
POTASSIUM	150	107	0.71	0.94	0.0001		0.0001		Y	5178.8	39	YES	
SELENIUM	145	106	0.30	0.58	0.4223	0.0001	0.0001		Y	127.5	18	YES	
SILICON	84	66	0.99	1.00	0.0011	0.0001	0.0258	0.0005	Y	61390.0	12	YES	
SILVER	147	104	0.16	0.20	0.0003		0.0017		Y	10.0	9	YES	
SODIUM	149	107	0.99	1.00	0.0001	0.0001	0.0001	0.0001	Y	144226.0	26	YES	
STRONTIUM	146	106	0.89	1.00	0.0001	0.0001	0.0001	0.0001	Y	1085.4	33	YES	
THALLIUM	146	107	0.24	0.05	1.0000		0.5107		N	9.0	0	NO	
TIN	149	106	0.35	0.19	0.1718		0.2361		N	179.2	3	NO	Not a PCOC by PJ (1)
VANADIUM	149	107	0.77	0.74	0.0003		0.0001		Y	68.2	19	YES	
ZINC	149	107	0.91	0.83	0.0008	0.0001	0.0001	0.0142	Y	179.2	22	YES	

(1) Professional judgment based on log-normal UTL comparison
ug/l - microgram per liter
Bkgd - Background

TABLE 4.3-7
OU6 Background Comparison Summary of UHSU Groundwater Dissolved Metals
(Concentration Unit: ug/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	248	191	0.77	0.43	1.0000		0.5488		N	1816.5	1	YES	
ANTIMONY	248	189	0.48	0.20	0.0011		0.1747		Y	51.2	8	YES	
ARSENIC	219	191	0.07	0.12	1.0000		0.6269		N	15.0	0	NO	
BARIUM	256	191	0.71	0.97	0.0001		0.0001		Y	176.5	30	YES	
BERYLLIUM	212	191	0.10	0.05	1.0000		0.9994		N	5.0	0	NO	
CADMIUM	240	189	0.22	0.11	0.1935		0.9885		N	5.1	4	YES	
CALCIUM	257	191	1.00	1.00	0.0001	0.0001	0.0001	0.0001	Y	148383.0	50	YES	
CESIUM	211	174	0.21	0.05	1.0000		0.9990		N	1122.4	0	NO	
CHROMIUM	250	189	0.36	0.26	0.0026		0.2697		Y	15.0	15	YES	
COBALT	231	191	0.18	0.14	1.0000		0.9689		N	50.0	0	NO	
COPPER	250	190	0.39	0.29	1.0000		0.7052		N	53.8	4	YES	
IRON	256	188	0.76	0.45	1.0000		0.5773		N	1682.7	6	YES	
LEAD	250	191	0.23	0.04	1.0000		0.9999		N	15.8	0	NO	
LITHIUM	250	191	0.74	0.91	0.0001		0.0001		Y	190.7	25	YES	
MAGNESIUM	254	191	0.94	1.00	0.0001	0.0001	0.0001	0.0001	Y	33721.2	65	YES	
MANGANESE	256	191	0.61	0.65	0.0001	0.0001	0.0012		Y	282.1	42	YES	
MERCURY	206	191	0.10	0.01	1.0000		1.0000		N	0.7	0	NO	
MOLYBDENUM	241	189	0.37	0.21	1.0000		0.3284		N	188.1	0	NO	
NICKEL	236	191	0.33	0.37	0.0034		0.0001		Y	35.4	7	YES	
POTASSIUM	252	191	0.72	0.85	0.4312		0.0001		Y	4683.9	25	YES	
SELENIUM	219	191	0.32	0.59	1.0000	0.0001	0.0001		Y	136.8	29	YES	
SILICON													NO Bkgd measurement
SILVER	236	190	0.29	0.10	1.0000		0.9965		N	2586.6	0	NO	
SODIUM	255	191	0.99	1.00	0.0001	0.0001	0.0001	0.0001	Y	156322.0	47	YES	
STRONTIUM	253	191	0.92	1.00	1.0000	0.0001	0.0001	0.0001	Y	1968.2	31	YES	
THALLIUM	213	191	0.22	0.04	1.0000		0.9961		N	72.1	0	NO	
TIN	236	190	0.43	0.18	1.0000		0.9664		N	1734.3	0	NO	
VANADIUM	249	191	0.65	0.36	1.0000		0.8380		N	40.7	0	NO	
ZINC	256	191	0.79	0.51	0.0327		0.9799		Y	64.8	11	YES	

Bkgd - background
ug/l - microgram per liter

TABLE 4.3-8
OU6 Background Comparison Summary of UHSU Groundwater Total Radionuclides (Concentration Unit: pCi/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	183	131	1.00	1.00	0.0020	0.0018	0.0151		Y	0.037	16	YES	
CESIUM-137	156	68	1.00	1.00	0.0912	0.3756	0.1002		N	1.065	2	YES	
GROSS ALPHA	23	7	1.00	1.00	1.0000	0.1201	0.0775		N	390.578	0	NO	
GROSS BETA	23	7	1.00	1.00	1.0000	0.1201	0.1056		N	221.307	0	NO	
PLUTONIUM-239/240	194	138	1.00	1.00	0.0003	0.0001	0.0001		Y	0.064	12	YES	
RADIUM-226	6	6	1.00	1.00	0.0303	0.0909	0.0547		Y	1.295	1	YES	
RADIUM-228	0	3	0.00	0.00									NO Bkgd measurement
STRONTIUM-89,90(1)	32	3	1.00	1.00	0.0857	0.0952	0.0259		Y	1.154	1	YES	
TRITIUM	84	238	1.00	1.00	1.0000	0.3271	0.1193		N	12982.300	0	NO	
URANIUM,TOTAL	0	0	0.00	0.00									NO measurements
URANIUM-233/234(1)	35	4	1.00	1.00	1.0000	1.0000	0.3730		N	144.836	0	NO	
URANIUM-235(1)	35	4	1.00	1.00	1.0000	1.0000	0.7981		N	5.233	0	NO	
URANIUM-238(1)	22	4	1.00	1.00	1.0000	0.6759	0.1776		N	114.171	0	NO	

(1) Sample size is too small
Bgkd - background
pCi/l - picocuries per liter

TABLE 4.3-9
OU6 Background Comparison Summary of UHSU Groundwater Dissolved Radionuclides (Concentration Unit: pCi/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	2	4	1.00	1.00	0.4000	0.4000	0.3217		N	10.068	0	NO(1)	
CESIUM-137	38	12	1.00	1.00	1.0000	0.7636	0.6161		N	2.143	0	NO	
GROSS ALPHA	213	167	1.00	1.00	1.0000	0.0001	0.0001		Y	100.522	0	YES	
GROSS BETA	196	177	1.00	1.00	1.0000	0.0001	0.0001		Y	39.774	4	YES	
PLUTONIUM-239/240	1	4	1.00	1.00	0.8000	0.8000	0.7602		N	0.011	1	YES(1)	
RADIUM-226	36	85	1.00	1.00	0.0001	0.0001	0.0001		Y	0.626	18	YES	
RADIUM-228	6	18	1.00	1.00	0.5543	0.8609	0.9713		N	5.935	1	NO	Not a PCOC by PJ (2)
STRONTIUM-89,90	180	128	1.00	1.00	0.4156	0.0004	0.0007		Y	1.210	4	YES	
TRITIUM	165	0	0.00	0.00									NO site measurement
URANIUM,TOTAL	0	0	0.00	0.00									NO measurements
URANIUM-233/234	207	172	1.00	1.00	1.0000	0.0001	0.0001		Y	79.470	0	YES	
URANIUM-235	207	172	1.00	1.00	1.0000	0.0001	0.0001		Y	2.006	2	YES	
URANIUM-238	177	172	1.00	1.00	1.0000	0.0001	0.0001		Y	55.240	0	YES	

(1) Sample size is too small
(2) Professional judgment based on log-normal UTL comparison
pCi/l - picocuries per liter
Bkgd - Background

TABLE 4.3-10
OU6 Background Comparison Summary of Stream (Baseflow) Surface Water Total Metals
(Concentration Unit: ug/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	132	11	0.83	1.00	1.0000	0.3921	0.0043		Y	4699.9	0	YES	
ANTIMONY	112	11	0.20	0.00									NO HIT
ARSENIC	103	11	0.29	0.73	1.0000		0.0435		Y	9.1	0	YES	
BARIUM	124	11	0.68	1.00	1.0000		0.0001		Y	169.4	1	YES	
BERYLLIUM	109	11	0.15	0.00									NO HIT
CADMIUM	101	11	0.14	0.00									NO HIT
CALCIUM	145	11	1.00	1.00	0.0045	0.0001	0.0001		Y	55307.7	3	YES	
CESIUM	113	11	0.14	0.00									NO HIT
CHROMIUM	113	11	0.20	0.00									NO HIT
COBALT	109	11	0.17	0.00									NO HIT
COPPER	114	11	0.44	0.27	1.0000		0.4530		N	22.1	0	NO	
IRON	149	11	0.94	1.00	1.0000	0.9215	0.2061		N	9666.2	0	NO	
LEAD	124	11	0.36	0.73	1.0000		0.8096		N	9.8	0	NO	
LITHIUM	118	11	0.44	0.00									NO HIT
MAGNESIUM	140	11	0.83	1.00	0.0049	0.0001	0.0001		Y	10897.7	6	YES	
MANGANESE	141	11	0.84	1.00	1.0000	0.6996	0.1874		N	1101.9	0	NO	
MERCURY	115	11	0.13	0.00									NO HIT
MOLYBDENUM	118	11	0.20	0.09	1.0000		0.1801		N	173.1	0	NO	
NICKEL	113	11	0.14	0.00									NO HIT
POTASSIUM	121	11	0.60	0.55	0.0833		0.0001		Y	4913.8	3	YES	
SELENIUM	113	11	0.22	0.18	1.0000		0.4412		N	8.0	0	NO	
SILICON	67	11	1.00	1.00	1.0000	0.9347	0.5712		N	16195.3	0	NO	
SILVER	109	11	0.17	0.00									NO HIT
SODIUM	146	11	0.99	1.00	0.0045	0.0001	0.0001		Y	38087.4	7	YES	
STRONTIUM	128	11	0.65	1.00	1.0000		0.0001		Y	666.1	1	YES	
THALLIUM	118	11	0.15	0.00									NO HIT
TIN	111	11	0.22	0.00									NO HIT
VANADIUM	114	11	0.29	0.18	1.0000		0.2615		N	44.2	0	NO	
ZINC	142	11	0.72	0.73	1.0000	0.3915	0.0139		Y	213.2	0	YES	

ug/l - microgram per liter
Bkgd - Background

TABLE 4.3-11
OU6 Background Comparison Summary of Stream (Baseflow) Surface Water Dissolved Metals
(Concentration Unit: ug/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	125	11	0.45	0.27	1.0000		0.5388		N	584.4	0	NO	
ANTIMONY	86	11	0.31	0.00									NO HIT
ARSENIC	83	11	0.13	0.55	1.0000		0.0014		Y	10.0	0	YES	
BARIUM	135	11	0.59	1.00	1.0000		0.0001		Y	187.1	1	YES	
BERYLLIUM	79	11	0.09	0.00									NO HIT
CADMIUM	67	11	0.12	0.00									NO HIT
CALCIUM	144	11	1.00	1.00	0.0046	0.0001	0.0001		Y	56374.7	4	YES	
CESIUM	87	11	0.16	0.00									NO HIT
CHROMIUM	79	11	0.09	0.00									NO HIT
COBALT	76	11	0.05	0.00									NO HIT
COPPER	114	11	0.41	0.45	1.0000		0.4230		N	23.7	0	NO	
IRON	144	11	0.74	0.64	1.0000	1.0000	0.9891		N	746.3	0	NO	
LEAD	102	11	0.30	0.00									NO HIT
LITHIUM	108	11	0.37	0.09	1.0000		0.2047		N	92.0	0	NO	
MAGNESIUM	141	11	0.79	1.00	0.0048	0.0001	0.0001		Y	10936.8	6	YES	
MANGANESE	142	11	0.75	0.91	1.0000	0.3915	0.2650		N	328.2	0	NO	
MERCURY	72	11	0.11	0.00									NO HIT
MOLYBDENUM	82	11	0.20	0.27	1.0000		0.0013		Y	250100.0	0	YES	
NICKEL	75	11	0.07	0.00									NO HIT
POTASSIUM	115	11	0.52	0.64	0.0070		0.0001		Y	4541.4	4	YES	
SELENIUM	74	11	0.30	0.27	1.0000		0.6942		N	14.0	0	NO	
SILICON	0	11		1.00									NO Bkgd measurement
SILVER	88	11	0.11	0.09	1.0000		0.1669		N	25.0	0	NO	
SODIUM	144	11	1.00	1.00	0.0001	0.0001	0.0001		Y	38138.4	7	YES	
STRONTIUM	129	11	0.71	1.00	1.0000		0.0001		Y	1155.0	0	YES	
THALLIUM	87	11	0.11	0.00									NO HIT
TIN	93	11	0.23	0.00									NO HIT
VANADIUM	96	11	0.14	0.36	1.0000		0.0041		Y	50.0	0	YES	
ZINC	130	11	0.64	0.82	1.0000		0.7194		N	109.5	0	NO	

Bkgd - background
ug/l - microgram per liter

TABLE 4.3-12
OU6 Background Comparison Summary of Stream (Baseflow) Surface Water Total Radionuclides (Concentration Unit: pCi/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	106	11	1.00	1.00	1.0000	0.9520	0.4144		N	0.0250	0	NO	
CESIUM-137	93	0	0.00	0.00									NO site measurement
GROSS ALPHA	85	10	1.00	1.00	1.0000	0.0251	0.0006		Y	27.273	0	YES	
GROSS BETA	84	10	1.00	1.00	1.0000	0.0040	0.0002		Y	29.281	0	YES	
PLUTONIUM-239/240	105	11	1.00	1.00	1.0000	1.0000	0.9001		N	0.028	0	NO	
RADIUM-226	4	2	1.00	1.00	1.0000	1.0000	0.5000		N	16.559	0	NO(1)	
RADIUM-228	0	0	0.00	0.00									NO measurements
STRONTIUM-89,90	75	11	1.00	1.00	1.0000	0.7234	0.3442		N	4.763	0	NO	
TRITIUM	73	11	1.00	1.00	1.0000	0.0009	0.0045		Y	695.370	0	YES	
URANIUM,TOTAL	0	0	0.00	0.00									NO measurements
URANIUM-233/234	79	11	1.00	1.00	0.0137	0.0001	0.0001		Y	2.098	3	YES	
URANIUM-235	75	11	1.00	1.00	0.1279	0.1687	0.0282		Y	0.269	1	YES	
URANIUM-238	55	11	1.00	1.00	0.0001	0.0009	0.0001		Y	1.695	5	YES	

(1) Sample size is too small
pCi/l - picocuries per liter
Bkgd - Background

TABLE 4.3-13
OU6 Background Comparison Summary of Stream (Baseflow) Surface Water Dissolved Radionuclides (Concentration Unit: pCi/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	34	11	1.00	1.00	1.0000	1.0000	0.9859		N	0.504	0	NO	
CESIUM-137	10	0	0.00	0.00									NO site measurement
GROSS ALPHA	61	0	0.00	0.00									NO site measurement
GROSS BETA	61	0	0.00	0.00									NO site measurement
PLUTONIUM-239/240	36	11	1.00	1.00	1.0000	1.0000	0.9987		N	0.792	0	NO	
RADIUM-226	3	0	0.00	0.00									NO site measurement
RADIUM-228	2	0	0.00	0.00									NO site measurement
STRONTIUM-89,90	87	11	1.00	1.00	1.0000	0.9393	0.7552		N	2.336	0	NO	
TRITIUM	56	0	0.00	0.00									NO site measurement
URANIUM,TOTAL	0	0	0.00	0.00									NO measurements
URANIUM-233/234	56	11	1.00	1.00	1.0000	0.0001	0.0001		Y	13.871	0	YES	
URANIUM-235	56	11	1.00	1.00	1.0000	0.6625	0.5203		N	0.764	0	NO	
URANIUM-238	56	11	1.00	1.00	1.0000	0.0001	0.0001		Y	10.679	0	YES	

pCi/l - picocuries per liter
Bkgd - background

TABLE 4.3-14
OU6 Background Comparison Summary of Pond Surface Water Total Metals
(Concentration Unit: ug/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	44	49	0.91	0.98	1.0000	1.0000	1.0000	0.9937	N	176057.0	0	NO	
ANTIMONY	30	51	0.37	0.06	1.0000		0.9952		N	448.7	0	NO	
ARSENIC	40	51	0.65	0.41	1.0000		0.9996		N	727.5	0	NO	
BARIUM	40	51	0.83	1.00	1.0000	1.0000	1.0000	0.9992	N	6697.9	0	NO	
BERYLLIUM	34	51	0.38	0.04	1.0000		0.9983		N	14.6	0	NO	
CADMIUM	29	51	0.34	0.22	1.0000		1.0000		N	73.2	0	NO	
CALCIUM	48	51	1.00	1.00	1.0000	1.0000	1.0000	0.9997	N	521669.0	0	NO	
CESIUM	29	51	0.28	0.12	1.0000		0.9735		N	1942.1	0	NO	
CHROMIUM	36	51	0.44	0.16	1.0000		1.0000		N	196.6	0	NO	
COBALT	31	51	0.39	0.35	1.0000		0.9999		N	375.2	0	NO	
COPPER	40	47	0.58	0.19	1.0000		1.0000		N	385.9	0	NO	
IRON	46	51	0.98	1.00	1.0000	1.0000	1.0000	0.9900	N	1915387.0	0	NO	
LEAD	41	50	0.71	0.78	1.0000	1.0000	0.9995		N	796.4	0	NO	
LITHIUM	31	51	0.55	1.00	1.0000		0.8200		N	125.0	0	NO	
MAGNESIUM	46	51	0.87	1.00	1.0000	0.0657	0.0655	0.0188	Y	35266.9	0	YES	
MANGANESE	47	51	0.87	1.00	1.0000	0.9756	0.3282	0.9898	N	18404.9	0	NO	
MERCURY	29	51	0.21	0.33	1.0000	0.5002	0.3482		N	1.1	0	NO	
MOLYBDENUM	29	51	0.31	0.75	1.0000		0.9538		N	197.2	0	NO	
NICKEL	31	51	0.42	0.47	1.0000		1.0000		N	476.0	0	NO	
POTASSIUM	37	51	0.54	1.00	1.0000	0.0478	0.0002		Y	13719.0	0	YES	
SELENIUM	32	49	0.38	0.22	1.0000		0.9575		N	16.6	0	NO	
SILICON	11	51	1.00	1.00	1.0000	1.0000	1.0000		N	23029.6	0	NO	
SILVER	28	47	0.36	0.06	1.0000		0.9996		N	107.1	0	NO	
SODIUM	48	51	0.98	1.00	0.0001	0.0001	0.0001	0.0001	Y	27145.6	30	YES	
STRONTIUM	37	51	0.70	1.00	1.0000		0.9900		N	2167.9	0	NO	
THALLIUM	35	51	0.11	0.00									NO HIT
TIN	31	51	0.42	0.20	1.0000		0.9996		N	794.7	0	NO	
VANADIUM	37	51	0.57	0.49	1.0000		1.0000		N	1096.5	0	NO	
ZINC	46	51	0.89	0.76	1.0000	1.0000	1.0000		N	1625.9	0	NO	

ug/l - microgram per liter
Bkgd - Background

TABLE 4.3-15
OU6 Background Comparison Summary of Pond Surface Water Dissolved Metals
(Concentration Unit: ug/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	42	48	0.26	0.67	1.0000		0.6986		N	185.1	0	NO	
ANTIMONY	29	51	0.31	0.18	1.0000		0.9963		N	123.9	0	NO	
ARSENIC	34	51	0.18	0.37	1.0000		0.1529		N	18.0	0	NO	
BARIUM	46	51	0.43	1.00	1.0000		1.0000		N	188.6	0	NO	
BERYLLIUM	21	51	0.00	0.06	1.0000		0.5000		N	5.0	0	NO	
CADMIUM	26	51	0.00	0.10	1.0000		0.5000		N	5.0	0	NO	
CALCIUM	49	51	1.00	1.00	1.0000	1.0000	1.0000	0.9997	N	159463.0	0	NO	
CESIUM	30	51	0.13	0.18	1.0000		0.9959		N	2500.0	0	NO	
CHROMIUM	27	51	0.07	0.08	1.0000		0.8954		N	14.8	0	NO	
COBALT	30	51	0.07	0.33	1.0000		0.8347		N	50.0	0	NO	
COPPER	40	44	0.25	0.02	1.0000		0.8546		N	26.0	0	NO	
IRON	48	50	0.71	0.96	1.0000	1.0000	1.0000		N	14947.5	0	NO	
LEAD	41	50	0.22	0.46	0.5495		0.0143		Y	4.7	2	YES	
LITHIUM	42	51	0.33	1.00	1.0000		0.3195		N	96.2	0	NO	
MAGNESIUM	46	51	0.74	1.00	0.0721	0.0001	0.0001		Y	23399.8	14	YES	
MANGANESE	43	51	0.88	1.00	1.0000	0.9968	0.6805	0.9943	N	728.6	0	NO	
MERCURY	22	51	0.27	0.22	1.0000		0.9575		N	4.4	0	NO	
MOLYBDENUM	33	51	0.21	0.69	1.0000		0.8586		N	213.8	0	NO	
NICKEL	23	51	0.13	0.53	1.0000		0.9178		N	40.0	0	NO	
POTASSIUM	38	51	0.42	1.00	0.0001	0.0001	0.0001		Y	6911.4	28	YES	
SELENIUM	27	48	0.19	0.15	1.0000		0.8495		N	19.0	0	NO	
SILICON	0	51		1.00									NO Bkgd measurement
SILVER	31	50	0.16	0.02	1.0000		0.8868		N	12.5	0	NO	
SODIUM	49	51	1.00	1.00	0.0001	0.0001	0.0001	0.0001	Y	29793.3	28	YES	
STRONTIUM	44	51	0.80	1.00	1.0000	1.0000	0.9745		N	1763.4	0	NO	
THALLIUM	26	51	0.04	0.00									NO HIT
TIN	35	51	0.17	0.16	1.0000		0.9964		N	200.0	0	NO	
VANADIUM	37	51	0.16	0.45	1.0000		0.9821		N	50.0	0	NO	
ZINC	45	51	0.47	0.55	1.0000		0.8665		N	82.9	0	NO	

Bkgd - background
ug/l - microgram per liter

TABLE 4.3-16
OU6 Background Comparison Summary of Pond Surface Water Total Radionuclides (Concentration Unit: pCi/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	37	49	1.00	1.00	1.0000	0.5703	0.1674		N	0.080	0	NO	
CESIUM-137	37	18	1.00	1.00	1.0000	1.0000	0.9796		N	7.157	0	NO	
GROSS ALPHA	36	48	1.00	1.00	1.0000	1.0000	0.9284		N	340.129	0	NO	
GROSS BETA	10	51	1.00	1.00	0.0001	0.0725	0.0001		Y	9.742	13	YES	
PLUTONIUM-239/240	33	51	1.00	1.00	1.0000	0.9825	0.9268		N	2.849	0	NO	
RADIUM-226	12	0	0.00	0.00									NO site measurement
RADIUM-228	5	0	0.00	0.00									NO site measurement
STRONTIUM-89,90	32	51	1.00	1.00	0.2267	0.4931	0.1420		N	1.614	0	NO	
TRITIUM	31	46	1.00	1.00	1.0000	0.5178	0.4917		N	4277.820	0	NO	
URANIUM,TOTAL	0	0	0.00	0.00									NO measurements
URANIUM-233/234	33	51	1.00	1.00	1.0000	0.0352	0.0001		Y	4.988	0	YES	
URANIUM-235	32	51	1.00	1.00	0.0161	0.0266	0.0032		Y	0.307	4	YES	
URANIUM-238	28	51	1.00	1.00	1.0000	0.0995	0.0008		Y	4.885	0	YES	

pCi/l - picocuries per liter
Bkgd - Background

TABLE 4.3-17
OU6 Background Comparison Summary of Pond Surface Water Dissolved Radionuclides (Concentration Unit: pCi/l)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	8	51	1.00	1.00	1.0000	0.9904	0.8733		N	1.755	0	NO	
CESIUM-137	3	18	1.00	1.00	0.0075	0.4211	0.0104		Y	4.708	0	YES(1)	
GROSS ALPHA	13	0	0.00	0.00									NO site measurement
GROSS BETA	14	0	0.00	0.00									NO site measurement
PLUTONIUM-239/240	8	51	1.00	1.00	1.0000	0.9539	0.9662		N	1.016	0	NO	
RADIUM-226	2	0	0.00	0.00									NO site measurement
RADIUM-228	1	0	0.00	0.00									NO site measurement
STRONTIUM-89,90	20	49	1.00	1.00	0.1697	0.9761	0.9430		N	2.013	1	YES	
TRITIUM	13	0	0.00	0.00									NO site measurement
URANIUM,TOTAL	0	0	0.00	0.00									NO measurements
URANIUM-233/234	13	49	1.00	1.00	0.1013	0.1760	0.0640		N	4.192	0	NO	
URANIUM-235	12	49	1.00	1.00	0.8033	0.9861	0.8972		N	0.712	0	NO	
URANIUM-238	13	48	1.00	1.00	0.0155	0.0294	0.0091		Y	3.032	7	YES	

(1) Sample size is too small
pCi/l - picocuries per liter
Bkgd - Background

TABLE 4.3-18
OU6 Background Comparison Summary of Stream Sediment Metals
(Concentration Unit: mg/kg)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	59	15	1.00	1.00	1.0000	0.6358	0.0705		N	20880.1	0	NO	
ANTIMONY	52	15	0.17	0.13	1.0000		0.4121		N	60.0	0	NO	
ARSENIC	59	15	0.49	0.93	1.0000		0.0007		Y	10.1	0	YES	
BARIUM	57	15	1.00	1.00	1.0000	0.8810	0.0197		Y	250.8	0	YES	
BERYLLIUM	57	15	0.53	0.53	1.0000		0.5367		N	11.6	0	NO	
CADMIUM	51	15	0.29	0.07	1.0000		0.9908		N	3.5	0	NO	
CALCIUM	59	15	1.00	1.00	0.2027	0.0092	0.0001		Y	17888.3	1	YES	
CESIUM	56	15	0.86	0.47	1.0000	1.0000	0.9998		N	513.5	0	NO	
CHROMIUM	59	15	0.83	1.00	1.0000	0.8947	0.4866		N	31.1	0	NO	
COBALT	59	15	0.88	1.00	1.0000		0.0021		Y	19.3	0	YES	
COPPER	59	15	0.80	0.60	1.0000	0.6871	0.7164		N	36.0	0	NO	
IRON	59	15	1.00	1.00	1.0000	0.1471	0.0001		Y	27966.4	0	YES	
LEAD	59	15	1.00	1.00	1.0000	0.6358	0.0602		N	134.3	0	NO	
LITHIUM	57	15	0.91	0.93	1.0000		0.7018		N	41.3	0	NO	
MAGNESIUM	59	15	1.00	1.00	1.0000	0.0436	0.0014		Y	5262.0	0	YES	
MANGANESE	59	15	0.80	1.00	1.0000	0.0436	0.0024		Y	905.0	1	YES	
MERCURY	49	15	0.86	0.27	1.0000		1.0000		N	0.5	0	NO	
MOLYBDENUM	0	0	0.00	0.00									NO site measurement
NICKEL	57	15	0.88	0.47	1.0000		0.3626		N	24.2	0	NO	
POTASSIUM	58	15	1.00	0.93	1.0000	0.0100	0.0002		Y	3112.5	0	YES	
SELENIUM	58	15	0.40	0.13	1.0000		0.8914		N	3.5	0	NO	
SILICON	0	0	0.00	0.00									NO site measurement
SILVER	54	15	0.48	0.07	1.0000		0.9170		N	12.0	0	NO	
SODIUM	59	15	0.69	0.87	1.0000		0.0806		N	1745.1	0	NO	
STRONTIUM	58	15	0.88	1.00	1.0000		0.0079		Y	294.8	0	YES	
THALLIUM	50	15	0.40	0.33	1.0000		0.8391		N	2.3	0	NO	
TIN	0	0	0.00	0.00									NO site measurement
VANADIUM	57	15	0.70	1.00	1.0000		0.0128		Y	63.4	0	YES	
ZINC	59	15	0.95	1.00	1.0000	0.0144	0.0005		Y	307.8	0	YES	

mg/kg - milligrams per kilogram
Bkgd - Background

TABLE 4.3-19
OU6 Background Comparison Summary of Stream Sediment Radionuclides (Concentration Unit: pCi/g)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	37	15	1.00	1.00	1.0000	0.3923	0.0031		Y	1.770	0	YES	
CESIUM-137	35	15	1.00	1.00	1.0000	0.9821	0.5551		N	1.541	0	NO	
GROSS ALPHA	45	15	1.00	1.00	1.0000	1.0000	0.6776		N	88.058	0	NO	
GROSS BETA	43	15	1.00	1.00	1.0000	1.0000	1.0000		N	67.337	0	NO	
PLUTONIUM-239/240	45	15	1.00	1.00	1.0000	0.0355	0.0059		Y	5.658	0	YES	
RADIUM-226	21	1	1.00	1.00	1.0000	1.0000	0.3466		N	2.216	0	NO(1)	
RADIUM-228	20	1	1.00	1.00	1.0000	1.0000	0.4344		N	4.547	0	NO(1)	
STRONTIUM-89,90	43	8	1.00	1.00	1.0000	0.5572	0.6464		N	1.087	0	NO	
TRITIUM(2)	42	15	1.00	1.00	0.2632	0.0460	0.5576		Y	1047.685	1	YES	
URANIUM,TOTAL	0	0											NO site measurement
URANIUM-233/234	47	15	1.00	1.00	1.0000	1.0000	0.9942		N	5.293	0	NO	
URANIUM-235	49	15	1.00	1.00	1.0000	1.0000	0.9351		N	0.212	0	NO	
URANIUM-238	36	15	1.00	1.00	1.0000	1.0000	0.9530		N	4.817	0	NO	

(1) Sample size is too small

(2) Concentration Unit: pCi/l - picocuries per liter

pCi/g - picocuries per gram

Bkgd - Background

TABLE 4.3-20
OU6 Background Comparison Summary of Pond Sediments Metals
(Concentration Unit: mg/kg)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit $(UTL)_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
ALUMINUM	20	57	1.00	1.00	0.4000	0.3476	0.1135	0.2025	N	29553.4	0	NO	
ANTIMONY	18	28	0.44	0.39	0.6087		0.3327		N	55.0	1	YES	
ARSENIC	20	57	0.90	1.00	1.0000		0.5749	0.9802	N	66.7	0	NO	
BARIUM	20	57	1.00	1.00	1.0000	0.9300	0.5577	0.8872	N	794.9	0	NO	
BERYLLIUM	16	57	0.81	0.98	0.3629		0.1331		N	5.6	4	NO	Not a PCOC by PJ (1)
CADMIUM	16	56	0.88	0.39	0.6025		0.9911		N	8.8	1	NO	Not a PCOC by PJ (1)
CALCIUM	20	57	1.00	1.00	0.7403	0.9300	0.4400	0.7545	N	80941.3	0	NO	
CESIUM	17	57	1.00	0.93	1.0000		1.0000		N	1259.1	0	NO	
CHROMIUM	18	57	1.00	1.00	0.0377	0.0704	0.0172		Y	31.2	6	YES	
COBALT	19	57	0.95	1.00	1.0000	0.8358	0.0340	0.3018	Y	35.1	0	YES	
COPPER	19	57	1.00	1.00	1.0000	0.6377	0.0047	0.3555	Y	174.7	0	YES	
IRON	19	57	1.00	1.00	1.0000	0.9440	0.0235	0.8936	Y	143862.0	0	YES	
LEAD	19	57	1.00	1.00	1.0000	0.9859	0.7115	0.8849	N	261.1	0	NO	
LITHIUM	18	57	1.00	0.98	1.0000		0.9875		N	106.7	0	NO	
MAGNESIUM	20	57	1.00	1.00	0.0785	0.0365	0.0001	0.0001	Y	6328.5	0	YES	
MANGANESE	20	57	0.70	1.00	1.0000	0.9300	0.0238		Y	1993.1	0	YES	
MERCURY	15	56	1.00	0.43	0.7887	0.9467	0.9994		N	1.7	0	NO	
MOLYBDENUM													NO site measurement
NICKEL	17	56	1.00	0.70	0.7671	0.5169	0.1637		N	44.3	1	NO	Not a PCOC by PJ (1)
POTASSIUM	18	56	1.00	0.89	0.0496	0.0662	0.0008		Y	3872.2	0	YES	
SELENIUM	19	57	0.89	0.05	1.0000		1.0000		N	5.3	0	NO	
SILICON													NO site measurement
SILVER	15	57	0.87	0.39	0.0054	0.0191	0.3114		Y	11.5	19	YES	
SODIUM	20	57	0.85	1.00	1.0000	0.5983	0.0119	0.5326	Y	2610.3	0	YES	
STRONTIUM	20	57	1.00	1.00	1.0000	0.9962	0.8340	0.9479	N	621.7	0	NO	
THALLIUM	13	56	0.69	0.39	1.0000		1.0000		N	13.6	0	NO	
TIN	19	56	0.95	0.02	1.0000		0.9953		N	103.3	0	NO	
VANADIUM	19	57	1.00	1.00	0.7500	0.6377	0.0028	0.0762	Y	83.0	0	YES	
ZINC	20	57	1.00	1.00	0.0001	0.0042	0.0001	0.0001	Y	143.0	19	YES	

(1) Professional judgment based on log-normal UTL comparison.
mg/kg - milligram per kilogram
Bkgd - Background

TABLE 4.3-21
OU6 Background Comparison Summary of Pond Sediment Radionuclides
(Concentration Unit: pCi/g)

ANALYTE	Number of Measurements		Detection Frequency		Slippage p-Value	Quantile p-Value	Gehan p-Value	t-test p-Value	Any Tests Significant? (y/n)	Background Upper Tolerance Limit (UTL)$_{99/99}$	Number of Measurements Greater than than UTL	Potential Chemical of Concern	REMARK
	Bkgd	OU6 Site	Bkgd	OU6 Site									
AMERICIUM-241	14	48	1.00	1.00	0.0005	0.0232	0.0001		Y	1.472	22	YES	
CESIUM-137	13	46	1.00	1.00	1.0000	0.9833	0.9966		N	3.510	0	NO	
GROSS ALPHA	15	55	1.00	1.00	0.0062	0.0225	0.0016		Y	78.829	9	YES	
GROSS BETA	14	56	1.00	1.00	0.0688	0.4299	0.0006		Y	45.966	3	YES	
PLUTONIUM-239/240	16	47	1.00	1.00	0.0018	0.0134	0.0001		Y	7.678	17	YES	
RADIUM-226	9	5	1.00	1.00	0.0005	0.0050	0.0013		Y	1.973	0	YES	
RADIUM-228	9	5	1.00	1.00	0.0005	0.0275	0.0013		Y	2.884	0	YES	
STRONTIUM-89,90	14	25	1.00	1.00	0.6410	0.7033	0.0188		Y	2.649	0	YES	
TRITIUM (1)	13	41	1.00	1.00	0.4298	0.1853	0.7110		N	769.750	2	NO	Not a PCOC by PJ (2)
URANIUM,TOTAL	0	0	0.00	0.00									NO HIT
URANIUM-233/234	16	50	1.00	1.00	0.0001	0.0121	0.0001		Y	2.389	8	YES	
URANIUM-235	17	50	1.00	1.00	0.2194	0.0712	0.0015		Y	0.248	5	YES	
URANIUM-238	14	50	1.00	1.00	0.0016	0.0270	0.0001		Y	2.540	8	YES	

(1) Concentration Unit: pCi/l - picocuries per liter
(2) Professional judgment based on log-normal UTL comparison.
pCi/g - picocuries per gram
Bkgd - Background

TABLE 4.4-1
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 167.1 (NORTH SPRAY FIELD AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	24	2	8.3%	1.08E+04 - 1.32E+04	1.20E+04
Cobalt	1.64E+01	24	1	4.2%	2.03E+01	2.03E+01
Lead	4.96E+01	24	6	25.0%	5.45E+01 - 6.01E+01	5.81E+01
Mercury	1.27E-01	24	1	4.2%	1.30E-01	1.30E-01
Nickel	1.97E+01	24	1	4.2%	2.06E+01	2.06E+01
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	24	2	8.3%	3.93E-02 - 1.15E+00	5.93E-01
Gross alpha	2.88E+01	24	2	8.3%	3.30E+01 - 5.79E+01	4.56E+01
Plutonium-239/240	9.40E-02	22	5	22.7%	1.00E-01 - 1.85E+00	4.62E-01
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	24	24	100.0%	7.52E+03 - 2.03E+04G	1.53E+04

Locations: SS600592, SS600492, SS600692, SS600992, SS601792, SS601692, SS601592, SS602392, SS602492, SS601492, SS601892, SS602292, SS601992, SS602592, SS602692, SS600792, SS600892, SS601092, SS601192, 77192, SS601392, SS601292, SS602192, SS602092.

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) G qualifier for inorganics indicates a native analyte reported at greater than four times the spike added concentration.
(5) The calculation for the mean concentration includes G qualified data. Real and duplicate sample results have been averaged.

mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-2
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 167.3 (HISTORICAL SOUTH SPRAY FIELD AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	8	1	12.5%	1.33E+04	1.33E+04
Lead	4.96E+01	8	8	100.0%	4.97E+01 - 6.87E+01	5.80E+01
Zinc	7.14E+01	8	1	12.5%	1.19E+02	1.19E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	7	6	85.7%	4.44E-02 - 6.41E-02	5.35E-02
Plutonium-239/240	9.40E-02	4	4	100.0%	1.57E-01 - 2.95E-01	2.04E-01
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	8	8	100.0%	1.61E+04 - 1.74E+04G	1.69E+04

Locations: SS605392, SS605492, SS605592, SS605692, SS605792, SS605892, SS605992, SS606092.

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) G qualifier for inorganics indicates a native analyte reported at greater than four times the spike added concentration.
(5) The calculation for the mean concentration includes G qualified data. Real and duplicate sample results have been averaged.

mg/kg - milligrams per kilogram
N/A = Not Applicable
pCi/g - picocuries per gram
PCOC - Potential Chemical of Concern

TABLE 4.4-3
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 143 (OLD OUTFALL AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Acenaphthene	N/A	4	2	50.0%	1.80E+02J - 5.10E+02	3.45E+02
Anthracene	N/A	4	2	50.0%	2.40E+02J - 6.60E+02	4.50E+02
Benzo(a)anthracene	N/A	4	3	75.0%	1.40E+02J - 1.80E+03	8.83E+02
Benzo(a)pyrene	N/A	4	3	75.0%	9.20E+01J - 2.30E+03	1.12E+03
Benzo(b)fluoranthene	N/A	4	4	100.0%	2.85E+02J - 3.20E+03	1.24E+03
Benzo(ghi)perylene	N/A	4	3	75.0%	6.00E+01J - 8.90E+02	4.33E+02
Benzo(k)fluoranthene	N/A	4	3	75.0%	1.20E+02J - 1.20E+03	5.97E+02
Benzoic acid	N/A	4	4	100.0%	2.40E+02J - 4.50E+02J	3.16E+02
Bis(2-ethylhexyl)phthalate	N/A	4	2	50.0%	1.40E+02J - 2.20E+02	1.80E+02
Chrysene	N/A	4	3	75.0%	1.70E+02J - 1.60E+03J	8.27E+02
Dibenzo(a,h)anthracene	N/A	4	2	50.0%	9.00E+01J - 2.0E+02J	1.45E+02
Dibenzofuran	N/A	4	1	25.0%	8.50E+01J	8.50E+01
Fluoranthene	N/A	4	4	100.0%	2.20E+02J - 3.10E+03	1.19E+03
Fluorene	N/A	4	2	50.0%	7.70E+01J - 2.40E+02J	1.59E+02
Indeno(1,2,3-cd)pyrene	N/A	4	2	50.0%	3.60E+02J - 9.20E+02	6.25E+02
Naphthalene	N/A	4	1	25.0%	1.20E+02J	1.20E+02
Phenanthrene	N/A	4	4	100.0%	1.50E+02J - 1.80E+03	7.38E+02
Pyrene	N/A	4	4	100.0%	1.50E+02J - 2.90E+03	1.08E+03
PCOC Metals above background (mg/kg)						
Nickel	1.97E+01	4	2	50.0%	1.98E+01 - 2.03E+01	2.00E+01
Vanadium	4.37E+01	4	1	25.0%	4.55E+01	4.55E+01
Zinc	7.14E+01	4	1	25.0%	8.54E+01	8.54E+01
PCOC Radionuclides above background (pCi/g)						
Plutonium-239/240	9.40E-02	4	2	50.0%	2.62E-01 - 5.18E-01	3.90E-01
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	4	4	100.0%	1.73E+03 - 2.38E+04	8.14E+03

Locations: SS600092, SS600192, SS600292, SS600392

TABLE 4.4-3
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 143 (OLD OUTFALL AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at the RFEDs by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
N/A = Not Applicable
pCi/g - picocuries per gram
PCOC - Potential Chemical of Concern

TABLE 4.4-4
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 156.2 (SOIL DUMP AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
PCOC Metals above background (mg/kg)						
Antimony	3.51E+01	21	2	9.5%	3.89E+01 - 4.36E+01	4.13E+01
Calcium	9.34E+03	22	22	100.0%	9.58E+03 - 5.99E+04	2.41E+04
Chromium	2.00E+01	22	1	4.5%	2.38E+01	2.38E+01
Copper	2.02E+01	22	4	18.2%	2.06E+01 - 3.17E+01	2.40E+01
Iron	2.18E+04	22	1	4.5%	2.29E+04	2.29E+04
Magnesium	4.95E+03	22	2	9.1%	5.44E+03 - 5.80E+03	5.62E+03
Mercury	1.27E-01	22	1	4.5%	1.40E-01	1.40E-01
Nickel	1.97E+01	22	4	18.2%	1.97E+01 - 2.12E+01	2.06E+01
Strontium	6.30E+01	22	18	81.8%	6.31E+01E - 2.55E+02	9.06E+01
Vanadium	4.37E+01	22	8	36.4%	4.40E+01 - 6.51E+01	4.96E+01
Zinc	7.14E+01	22	1	4.5%	7.23E+01	7.23E+01
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	21	13	61.9%	4.18E-02 - 3.01E-01	1.09E-01
Gross alpha	2.88E+01	21	1	4.8%	3.53E+01	3.53E+01
Plutonium-239/240	9.40E-02	21	8	38.1%	9.71E-02 - 1.85E+00	3.99E-01
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	22	22	100.0%	1.87E+03 - 2.15E+04G	5.12E+03

Locations: SS602892, SS602992, SS606792, SS606892, SS606992, SS607092, SS607192, SS607292, SS607392, SS607492, SS607592, SS607692, SS607792, SS607892, SS607992, SS608092, SS608192, SS608292, SS608392, SS608492, SS608592, SS608692.

Note: Analytical data is reported in scientific notation.

TABLE 4.4-4
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 156.2 (SOIL DUMP AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) G qualifier for inorganics indicates a native analyte reported at greater than four times the spike added concentration.
(5) The calculation for the mean concentration includes G qualified data. Real and duplicate sample results have been averaged.

mg/kg - milligrams per kilogram
N/A - Not Applicable
pCi/g - picocuries per gram
PCOC - Potential Chemical of concern

TABLE 4.4-5
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 216.1 (EAST SPRAY FIELD AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	6	3	50.0%	1.10E+04 - 1.64E+04	1.34E+04
Lead	4.96E+01	6	1	16.7%	5.71E+01	5.71E+01
Strontium	6.30E+01	6	1	16.7%	7.30E+01	7.30E+01
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	6	6	100.0%	5.82E-02 - 1.92E-01	1.36E-01
Gross alpha	2.88E+01	6	2	33.3%	2.97E+01 - 1.86E+02	1.08E+02
Gross beta	4.33E+01	6	1	16.7%	4.38E+01	4.38E+01
Plutonium-239/240	9.40E-02	4	4	100.0%	3.77E-01 - 7.58E-01	4.85E-01
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	6	6	100.0%	1.14E+04 - 1.71E+04G	1.50E+04

Locations: SS608792, SS608892, SS608992, SS609092, SS609192, SS609292.

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) G qualifier for inorganics indicates a native analyte reported at greater than four times the spike added concentration.
(5) The calculation for the mean concentration includes G qualified data. Real and duplicate sample results have been averaged.

mg/kg - milligrams per kilogram
pCi/g - picocuries per gram
N/A - Not Applicable
PCOC - Potential Chemical of Concern

TABLE 4.4-6
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 141 (SLUDGE DISPERSAL AREA)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range	Mean Concentration or Activity (4)
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	40	24	60.0%	9.52E+03 - 2.30E+04	1.28E+04
Chromium	2.00E+01	40	1	2.5%	2.06E+01	2.06E+01
Cobalt	1.64E+01	40	2	5.0%	1.86E+01 - 1.88E+01	1.87E+01
Copper	2.02E+01	40	17	42.5%	2.03E+01 - 6.16E+01	3.16E+01
Iron	2.18E+04	40	3	7.5%	3.29E+04 - 3.46E+04	3.39E+04
Lead	4.96E+01	40	2	5.0%	5.08E+01 - 6.20E+01	5.64E+01
Magnesium	4.95E+03	40	4	10.0%	6.83E+03 - 1.14E+04	9.83E+03
Mercury	1.27E-01	40	2	5.0%	1.30E-01 - 3.40E-01	2.35E-01
Nickel	1.97E+01	40	3	7.5%	1.97E+01 - 2.25E+01	2.11E+01
Silver	7.12E+00	40	3	7.5%	7.80E+00 - 5.27E+01	2.31E+01
Sodium	7.11E+02	40	3	7.5%	1.15E+03 - 1.65E+03	1.36E+03
Strontium	6.30E+01	40	6	15.0%	6.31E+01 - 1.04E+02	7.69E+01
Vanadium	4.37E+01	40	3	7.5%	6.72E+01 - 7.59E+01	7.29E+01
Zinc	7.14E+01	40	20	50.0%	7.26E+01 - 6.50E+02	1.28E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	21	21	100.0%	2.53E-01 - 1.84E+00	6.51E-01
Gross alpha	2.88E+01	39	1	2.6%	1.46E+02	1.46E+02
Gross beta	4.33E+01	30	2	6.7%	6.09E+01 - 7.17E+01	6.63E+01
Plutonium-239/240	9.40E-02	32	31	96.9%	1.42E-01 - 1.04E+01	1.57E+00
Other Analytes above background (mg/kg)						
Nitrate	5.76E+00	35	1	2.9%	6.62E+00	6.62E+00

Locations: SS609792, SS609892, SS609992, SS610492, SS610592, SS610692, SS611192, SS611292, SS611392, SS612092, SS612192, SS612892, SS612992, SS613092, SS613192, SS613292, SS613392, SS613492, SS613592, SS613692, SS613792, SS613892, SS613992, SS614092, SS614192, SS614292, SS614392, SS614492, SS614592, SS614692, SS614792, SS614892, SS614992, SS615092, SS615192, SS615292, SS620792, SS620892, SS620992, SS621092.

Note: Analytical data is reported in scientific notation.

TABLE 4.4-6
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 141 (SLUDGE DISPERSAL AREA)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range	Mean Concentration or Activity (4)

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by January 14, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) Real and duplicate sample results have been averaged.

mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-7
ANALYTES DETECTED IN SURFACE SOILS AT IHSS 165 (TRIANGLE AREA)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Pesticides/PCBs (µg/kg)						
Aroclor-1254	N/A	15	1	6.7%	4.25E+02	4.25E+02
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	15	4	26.7%	1.02E+04 - 3.94E+04	1.93E+04
Chromium	2.00E+01	15	1	6.7%	3.51E+01	3.51E+01
Lead	4.96E+01	15	1	6.7%	5.14E+01	5.14E+01
Nickel	1.97E+01	14	1	7.1%	2.09E+01	2.09E+01
Zinc	7.14E+01	15	5	33.3%	7.47E+01 - 1.17E+02	8.82E+01
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	12	11	91.7%	6.71E-02 - 3.24E+00	1.34E+00
Gross alpha	2.88E+01	14	4	28.6%	2.97E+01 - 4.08E+01	3.47E+01
Gross beta	4.33E+01	14	1	7.1%	4.63E+01	4.63E+01
Plutonium-239/240	9.40E-02	14	12	85.7%	9.45E-02 - 1.52E+01	2.76E+00
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	15	15	100.0%	1.03E+03 - 1.83E+04G	7.02E+03

Locations: SS603092, SS603192, SS603292, SS606192, SS606292, SS606392, SS606492, SS606592, SS606692, SS620092, SS620192, SS620292, SS620392, SS620492, SS620592.

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) G qualifier for inorganics indicates a native analyte reported at greater than four times the spike added concentration.
(5) Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries/gram
PCOC = Potential Chemical of Concern

TABLE 4.4-8
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.1 (POND A-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Bis(2-ethylhexyl)phthalate	N/A	2	2	100.0%	6.70E+01J - 1.30E+02J	9.90E+01
Fluoranthene	N/A	2	2	100.0%	9.30E+01J - 1.30E+02J	1.12E+02
Phenanthrene	N/A	2	1	50.0%	8.10E+01	8.10E+01
Pyrene	N/A	2	2	100.0%	6.40E+01J - 9.20E+01J	7.80E+01
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	2	2	100.0%	1.10E+04 - 1.32E+04	1.21E+04
Mercury	1.27E-01	2	1	50.0%	1.30E-01B	1.30E-01
Zinc	7.14E+01	2	2	100.0%	8.03E+01 - 2.93E+02	1.87E+02
PCOC Radionuclides above background (pCi/g)						
Plutonium-239/240	9.40E-02	2	2	100.0%	5.98E-01 - 3.64E+00	2.12E+00

Locations: SED65092 and SED65192

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result and B qualifier for metals represents estimated result.
(5) The calculation for the mean concentration includes J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-9
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.2 (POND A-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Bis(2-ethylhexyl)phthalate	N/A	2	2	100.0%	8.70E+01J - 9.10E+01J	8.90E+01
Fluoranthene	N/A	2	1	50.0%	6.20E+01J	6.20E+01
Pesticides/PCBs (µg/kg)						
delta-BHC	N/A	2	1	50.0%	1.30E+01	1.30E+01
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	2	1	50.0%	1.34E+04	1.34E+04
Iron	2.18E+04	2	1	50.0%	2.23E+04	2.23E+04
Mercury	1.27E-01	2	1	50.0%	1.80E-01B	1.80E-01
Nickel	1.97E+01	2	1	50.0%	2.52E+01	2.52E+01
Strontium	6.30E+01	2	1	50.0%	6.97E+01	6.97E+01
Zinc	7.14E+01	2	1	50.0%	1.89E+02	1.89E+02
PCOC Radionuclides above background (pCi/g)						
Plutonium-239/240	9.40E-02	2	2	100.0%	2.85E+00 - 4.44E+00	3.65E+00

Locations: SED65292 and SED65392

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for metals represents estimated result.
(5) The calculation for the mean concentration includes J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-10
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.3 (POND A-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Benzo(a)anthracene	N/A	2	2	100.0%	5.10E+01J - 1.90E+02J	1.21E+02
Benzo(a)pyrene	N/A	2	1	50.0%	2.60E+02J	2.60E+02
Benzo(b)fluoranthene	N/A	2	2	100.0%	1.10E+02J - 4.00E+02J	2.55E+02
Benzo(ghi)perylene	N/A	2	1	50.0%	1.10E+02J	1.10E+02
Benzo(k)fluoranthene	N/A	2	1	50.0%	1.70E+02J	1.70E+02
Bis(2-ethylhexyl)phthalate	N/A	2	1	50.0%	3.50E+02J	3.50E+02
Chrysene	N/A	2	2	100.0%	7.40E+01J - 2.30E+02J	1.52E+02
Fluoranthene	N/A	2	2	100.0%	1.90E+02J - 5.60+02	3.75E+02
Indeno(1,2,3-cd)pyrene	N/A	2	1	50.0%	1.10E+02J	1.10E+02
Phenanthrene	N/A	2	2	100.0%	9.40E+01J - 2.90E+02J	1.92E+02
Pyrene	N/A	2	2	100.0%	1.20E+02J - 3.70E+02J	2.45E+02
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	2	2	100.0%	9.92E+03 - 1.24E+04	1.12E+04
Copper	2.02E+01	2	1	50.0%	2.28E+01	2.28E+01
Mercury	1.27E-01	2	1	50.0%	1.50E-01	1.50E-01
Nickel	1.97E+01	2	2	100.0%	1.97E+01 - 2.06E+01	2.02E+01
Zinc	7.14E+01	2	2	100.0%	1.21E+02 = 1.64E+02	1.43E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	2	2	100.0%	2.50E-01 - 3.27E-01	2.88E-01
Plutonium-239/240	9.40E-02	2	2	100.0%	5.28E-01 - 7.26E-01	6.27E-01

Locations: SED65492 and SED65592

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.

TABLE 4.4-10
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.3 (POND A-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries -per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-11
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.4 (POND A-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Bis(2-ethylhexyl)phthalate	N/A	2	2	100.0%	7.15E+01J - 1.00E+02J	8.58E+01
Fluoranthene	N/A	2	2	100.0%	9.50E+01J - 1.40E+02J	1.18E+02
Phenanthrene	N/A	2	1	50.0%	5.90E+01J	5.90E+01
Pyrene	N/A	2	1	50.0%	7.85E+01J	7.85E+01
PCOC Metals above background (mg/kg)						
Zinc	7.14E+01	2	1	50.0%	7.27E+01	7.27E+01
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	2	2	100.0%	1.85E-01 - 4.37E-01	3.11E-01
Plutonium-239/240	9.40E-02	2	2	100.0%	1.03E+00 - 1.37E+00	1.20E+00

Locations: SED65692 and SED65792

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes all J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-12
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.5 (POND B-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Acenapthene	N/A	2	2	100.0%	9.80E+01J - 1.22E+02J	1.10E+02
Anthracene	N/A	2	1	50.0%	1.70E+02J	1.70E+02
Benzo(a)anthracene	N/A	2	2	100.0%	2.00E+02J - 2.25E+02	2.13E+02
Benzo(a)pyrene	N/A	2	1	50.0%	2.30E+02J	2.30E+02
Benzo(b)fluoranthene	N/A	2	2	100.0%	2.80E+02J - 3.40E+02J	3.10E+02
Benzo(ghi)perylene	N/A	2	2	100.0%	1.00E+02J - 1.40E+02J	1.20E+02
Benzo(k)fluoranthene	N/A	2	2	100.0%	9.80E+01J - 1.30E+02J	1.14E+02
Chrysene	N/A	2	2	100.0%	2.30E+02J - 2.65E+02J	2.48E+02
Fluoranthene	N/A	2	2	100.0%	6.30E+02 - 6.90E+02	6.60E+02
Indeno(1,2,3-cd)pyrene	N/A	2	1	50.0%	1.30E+02J	1.30E+02
Naphthalene	N/A	2	2	100.0%	8.00E+01J - 1.20E+02J	1.00E+02
Phenanthrene	N/A	2	2	100.0%	5.50E+02J - 6.10E+02	5.80E+02
Pyrene	N/A	2	2	100.0%	4.30E+02J - 4.95E+02J	4.63E+02
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	2	2	100.0%	1.51E+04 - 1.55E+04	1.53E+04
Iron	2.18E+04	2	1	50.0%	3.24E+04	3.24E+04
Nickel	1.97E+01	2	1	50.0%	2.64E+01	2.64E+01
Strontium	6.30E+01	2	1	50.0%	7.37E+01	7.37E+01
Zinc	7.14E+01	2	2	100.0%	1.91E+02 - 2.86E+02	2.39E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	2	2	100.0%	7.93E-01 - 1.29E+00	1.04E+00
Plutonium-239/240	9.40E-02	2	2	100.0%	7.28E-01 - 9.75E-01	8.52E-01

Locations: SED65892 and SED65992

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.

TABLE 4.4-12
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.5 (POND B-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes Jqualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-13
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.6 (POND B-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Diethyl phthalate	N/A	2	1	50.0%	4.60E+02J	4.60E+02
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	2	1	50.0%	1.44E+04	1.44E+04
Strontium	6.30E+01	2	1	50.0%	9.24E+01	9.24E+01
Zinc	7.14E+01	2	1	50.0%	8.90E+01	8.90E+01
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	1	1	100.0%	3.68E-01	3.68E-01
Plutonium-239/240	9.40E-02	2	2	100.0%	8.51E-01 - 1.25E+00	1.05E+00

Locations: SED66092 and SED66192

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes all J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-14
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.7 (POND B-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range	Mean Concentration or Activity (4)
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	2	1	50.0%	1.07E+04	1.07E+04
Zinc	7.14E+01	2	1	50.0%	8.91E+01	8.91E+01
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	2	2	100.0%	3.95E-01 - 6.73E-01	5.34E-01
Plutonium-239/240	9.40E-02	2	2	100.0%	7.28E-01 - 1.30+00	1.02E+00

Locations: SED66292 and SED66392

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) The calculation for the mean concentration includes all qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.4-15
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.8 (POND B-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Acenapthene	N/A	2	1	50.0%	1.10E+02J	1.10E+02
Anthracene	N/A	2	1	50.0%	1.30E+02J	1.30E+02
Benzo(a)anthracene	N/A	2	1	50.0%	2.80E+02J	2.80E+02
Benzo(a)pyrene	N/A	2	1	50.0%	3.80E+02J	3.80E+02
Benzo(b)fluoranthene	N/A	2	1	50.0%	5.00E+02	5.00E+02
Benzo(ghi)perylene	N/A	2	1	50.0%	1.50E+02J	1.50E+02
Benzo(k)fluoranthene	N/A	2	1	50.0%	1.80E+02J	1.80E+02
Chrysene	N/A	2	1	50.0%	3.50E+02J	3.50E+02
Fluoranthene	N/A	2	1	50.0%	9.00E+02	9.00E+02
Fluorene	N/A	2	1	50.0%	8.00E+01J	8.00E+01
Indeno(1,2,3-cd)pyrene	N/A	2	1	50.0%	1.90E+02J	1.90E+02
Phenanthrene	N/A	2	1	50.0%	7.20E+02J	7.20E+02
Pyrene	N/A	2	1	50.0%	6.10E+02J	6.10E+02
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	2	2	100.0%	1.71E+04 - 2.41E+04	2.06E+04
Strontium	6.30E+01	2	1	50.0%	8.28E+01	8.28E+01
Zinc	7.14E+01	2	1	50.0%	1.03E+02	1.03E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	2	2	100.0%	7.46E-02 - 3.27E-01	2.01E-01
Plutonium-239/240	9.40E-02	2	2	100.0%	1.48E-01 - 3.10E+00	1.62E+00

Locations: SED66492 and SED66592

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections,

TABLE 4.4-15
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.8 (POND B-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per /gram
PCOC = Potential Chemical of Concern

TABLE 4.4-16
ANALYTES DETECTED IN SURFACE SOILS (DRY SEDIMENTS) AT IHSS 142.9 (POND B-5)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range	Mean Concentration or Activity (4)
PCOC Metals above background (mg/kg)						
Calcium	9.34E+03	2	1	50.0%	1.59E+04	1.59E+04
Strontium	6.30E+01	2	1	50.0%	7.32E+01	7.32E+01
Zinc	7.14E+01	2	1	50.0%	1.10E+02	1.10E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	3.90E-02	2	2	100.0%	6.27E-02 - 1.22E-01	9.22E-02
Plutonium-239/240	9.40E-02	1	1	100.0%	2.08E-01	2.08E-01

Locations: SED66692 and SED66792

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) The calculation for the mean concentration includes all qualified data. Real and duplicate sample results have been averaged.

mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.5-1
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 166.1 (TRENCH A)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	46	9	19.6%	3.00E+00J - 4.50E+01	1.80E+01
4-Methyl-2-pentanone	N/A	46	2	4.3%	1.00E+00J - 2.00E+00J	1.50E+00
Acetone	N/A	46	4	8.7%	1.60E+01 - 2.00E+01	1.80E+01
Benzene	N/A	46	1	2.2%	6.00E+00BJ	6.00E+00
Chloroform	N/A	46	1	2.2%	2.00E+00J	2.00E+00
Toluene	N/A	46	43	93.5%	1.00E+00J - 4.60E+01	6.00E+00
Trichloroethene	N/A	46	6	13.0%	6.00E+00J - 2.10E+01	1.00E+01
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	16	3	18.8%	3.54E+02 - 5.51E+02	4.40E+02
Calcium	3.94E+04	16	4	25.0%	3.94E+04 - 7.24E+04	4.91E+04
Chromium	6.82E+01	16	1	6.3%	1.30E+02	1.30E+02
PCOC Radionuclides above background (pCi/g)						
Plutonium-239/240	1.80E-02	10	1	10.0%	2.60E-02J	2.60E-02
Uranium-235	1.14E-01	16	1	6.3%	1.30E-01J	1.30E-01

Locations: 66892, 66992, 67092, 67192, 67292, 67392, 67492, 68292

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample, and B qualifier for metals represents estimated result.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

TABLE 4.5-1
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 166.1 (TRENCH A)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.5-2
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 166.2 (TRENCH B)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	43	14	32.6%	1.00E+01J - 1.60E+03	5.74E+02
Methylene chloride	N/A	43	1	2.3%	5.40E+01B	5.40E+01
Toluene	N/A	43	34	79.1%	2.00E+00J - 4.00E+02	1.14E+02
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	14	4	28.6%	3.32E+02 - 7.08E+02	5.02E+02
Calcium	3.94E+04	14	1	7.1%	6.71E+04	6.71E+04
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	8	1	12.5%	1.60E-02J	1.60E-02
Uranium-235	1.14E-01	14	1	7.1%	1.20E-01J	1.20E-01

Locations: 67592, 67692, 67792, 67892, 67992, 68092, 68192, 77392

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

mg/kg = milligrams/kilogram
µg/kg = micrograms/kilogram
pCi/g = picocuries/gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.5-3
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 166.3 (TRENCH C, WEST)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	35	2	5.7%	8.20E+01 - 1.40E+02	1.11E+02
Styrene	N/A	35	1	2.9%	1.00E+00J	1.00E+00
Toluene	N/A	35	33	94.3%	1.00E+00J - 2.30E+02J	3.30E+01
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	12	1	8.3%	2.97E+03	2.97E+03
Calcium	3.94E+04	12	7	58.3%	4.21E+04 - 1.31E+05	9.97E+04
Strontium	2.10E+02	12	3	25.0%	2.48E+02 - 2.64E+02	2.57E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	13	2	15.4%	1.50E-02J - 2.29E-02	1.89E-02
Plutonium-239/240	1.80E-02	10	3	30.0%	2.55E-02 - 8.55E-02	4.68E-02

Locations: 68392, 68492, 68592, 68692, 68792, 68892

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per /gram
PCOC = Potential Chemical of Concern

TABLE 4.5-4
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 166.3 (TRENCH C, EAST)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	27	5	18.5%	1.40E+01 - 9.70E+02	4.66E+02
Benzene	N/A	33	1	3.0%	1.00E+00J	1.00E+00
Toluene	N/A	33	33	100.0%	5.00E+00J - 5.90E+02	6.10E+01
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	10	1	10.0%	6.47E+02	6.47E+02
Calcium	3.94E+04	10	5	50.0%	4.07E+04 - 8.24E+04	5.89E+04
Strontium	2.10E+02	10	1	10.0%	2.50E+02	2.50E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	8	1	12.5%	1.90E-02J	1.90E-02
Plutonium-239/240	1.80E-02	10	3	30.0%	2.61E-02 - 3.68E-02	3.14E-02

Locations: 68992, 69092, 69192, 69292, 69392, 76992

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries per gram
PCOC = Potential Chemical of Concern

TABLE 4.5-5
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 167.1 (NORTH SPRAY FIELD AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
Toluene	N/A	3	3	100.0%	1.00E+00J - 3.00E+00J	2.30E+00
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	44	1	2.3%	8.66E+02	8.66E+02
Calcium	3.94E+04	44	4	9.1%	4.79E+04 - 1.01E+05	6.35E+04
Chromium	6.82E+01	44	3	6.8%	8.27E+01 - 2.17E+02	1.30E+02
Lead	2.49E+01	44	5	11.4%	2.52E+01 - 2.75E+01	2.65E+01
Zinc	1.39E+02	44	2	4.5%	2.14E+02 - 2.87E+02	2.51E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	42	14	33.3%	1.21E-02 - 2.47E-02	1.61E-02
Gross alpha	4.35E+01	43	2	4.7%	5.58E+01 - 1.43E+02	9.94E+01
Plutonium-239/240	1.80E-02	42	5	11.9%	1.83E-02 - 7.16E-02	5.30E-02
Uranium-233/234	2.64E+00	43	1	2.3%	3.05E+00	3.05E+00
Uranium-235	1.14E-01	42	1	2.4%	1.37E-01	1.37E-01
Uranium-238	1.49E+00	43	2	4.7%	2.77E+00 - 1.41E+02	7.19E+01
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	44	44	100.0%	4.91E+02 - 1.88E+04G	4.79E+03

Locations: 61192-61492, 61692-63392, and 77192

Note: Analytical data is reported in scientific notation.

Analytical data is reported in scientific notation.
(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result and G qualifier for organics indicates a native analyte reported at greater than four times the spike added concentration.
(5) The calculation for the mean concentration includes J and G qualified data. Real and duplicate sample results have been averaged.

µg/kg - micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g - picocuries per gram
PCOC - Potential Chemical of Concern

TABLE 4.5-6
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 167.3 (HISTORICAL SOUTH SPRAY FIELD AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	3	2	66.7%	2.30E+02 - 7.40E+02	4.85E+02
Methylene chloride	N/A	3	1	33.3%	5.00E+00J	5.00E+00
Toluene	N/A	3	3	100.0%	1.20E+01J - 9.10E+01	4.30E+01
PCOC Metals above background (mg/kg)						
Calcium	3.94E+04	16	12	75.0%	6.27E+04 - 1.91E+05	1.22E+05
Chromium	6.82E+01	16	1	6.3%	7.20E+01	7.20E+01
Strontium	2.10E+02	16	2	12.5%	2.61E+02 - 3.41E+02	3.01E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	16	5	31.3%	1.30E-02J - 3.20E-02	1.90E-02
Plutonium-239/240	1.80E-02	16	5	31.3%	1.90E-02J - 1.04E-01	5.20E-02
Other Parameters (mg/kg)						
TOC	N/A	16	16	100.0%	1.05E+03 - 1.56E+04	8.68E+03

Locations: 66092-66792, and 76792

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

µg/kg - micrograms per kilogram

TABLE 4.5-6
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 167.3 (HISTORICAL SOUTH SPRAY FIELD AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)

mg/kg - milligrams per kilogram
N/A - Not Applicable
pCi/g - picocuries per gram
PCOC - Potential Chemical of Concern

TABLE 4.5-7
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 143 (OLD OUTFALL AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	23	3	13.0%	5.00E+00J - 1.80E+01J	1.10E+01
Acetone	N/A	23	4	17.4%	1.30E+01 - 8.90E+01	4.02E+01
Methylene chloride	N/A	23	6	26.1%	2.00E+00J - 1.30E+01J	4.67E+00
Toluene	N/A	23	23	100.0%	2.00E+00J - 1.06E+03	2.58E+02
Semivolatile Organic Compounds (µg/kg)						
Benzo(a)anthracene	N/A	8	1	12.5%	2.00E+02J	2.00E+02
Benzo(a)pyrene	N/A	8	2	25.0%	6.50E+01J - 1.70E+02J	1.18E+02
Benzo(b)fluoranthene	N/A	8	2	25.0%	1.40E+02J - 2.10E+02J	1.75E+02
Benzo(k)fluoranthene	N/A	8	2	25.0%	5.20E+01J - 9.50E+01J	7.40E+01
Benzoic acid	N/A	8	8	100.0%	3.10E+02J - 1.07E+03BJ	5.61E+02
Bis(2-ethylhexyl)phthalate	N/A	8	6	75.0%	3.90E+02BJ - 4.10E+02BJ	3.98E+02
Chrysene	N/A	8	2	25.0%	6.30E+01J - 2.00E+02J	1.32E+02
Di-n-octyl phthalate	N/A	8	1	12.5%	6..80E+01J	6.80E+01
Fluoranthene	N/A	8	5	62.5%	7.00E+01J - 4.50E+02	1.85E+02
Indeno(1,2,3-cd)pyrene	N/A	8	1	12.5%	8.80E+01J	8.80E+01
Phenanthrene	N/A	8	3	37.5%	6.30E+01J - 2.30E+02J	1.31E+02
Pyrene	N/A	8	5	62.5%	5.40E+01J - 4.60E+02J	1.62E+02
Pesticides/PCBs (µg/kg)						
Aroclor-1254	N/A	8	1	12.5%	9.40E+02	9.40E+02
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	8	1	12.5%	1.15E+03	1.15E+03
Calcium	3.94E+04	8	2	25.0%	5.58E+04 - 1.31E+05	9.34E+04
Strontium	2.10E+02	8	1	12.5%	2.79E+02	2.79E+02

TABLE 4.5-7
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 143 (OLD OUTFALL AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	2	2	100.0%	1.21E-02 - 3.61E-02	2.41E-02
Plutonium-239/240	1.80E-02	6	2	33.3%	1.77E-01 - 2.61E-01	2.19E-01
Uranium-238	1.49E+00	8	1	12.5%	1.52E+00	1.52E+00
Other Parameters and Analytes (mg/kg)						
Total Organic Carbon	N/A	8	8	100.0%	1.70E+03 - 6.02E+03	2.80E+03
Nitrate	3.24E+00	8	2	25.0%	8.23E+00 - 1.45E+01	1.14E+01

Location: 60092, 60192, 60292, 60392, 60492, 60592/77492, 60692
Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result and B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
N/A - Not Applicable
PCB - polychlorinated biphenyl
pCi/g - picocuries per gram
PCOC - Potential Chemical of Concern

TABLE 4.5-8
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 156.2 (SOIL DUMP AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	103	33	32.0%	8.00E+00J - 2.20E+03	7.66E+02
4-Methyl-2-pentanone	N/A	103	1	1.0%	4.00E+00J	4.00E+00
Acetone	N/A	103	5	4.9%	1.20E+01 - 1.00E+02B	3.98E+02
Chlorobenzene	N/A	103	1	1.0%	7.40E+01	7.40E+01
Methylene chloride	N/A	103	1	1.0%	7.00E+00BJA	7.00E+00
Toluene	N/A	103	91	88.3%	2.00E+00J - 4.00E+03	8.80E+01
Total xylenes	N/A	103	1	1.0%	2.00E+00J	2.00E+00
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	76	7	9.2%	2.96E+02 - 8.64E+02	5.05E+02
Calcium	3.94E+04	76	27	35.5%	3.96E+04 - 2.03E+05	9.14E+04
Lead	2.49E+01	76	1	1.3%	8.49E+01	8.49E+01
Strontium	2.10E+02	76	6	7.9%	2.10E+02 - 4.20E+02	2.93E+02
Zinc	1.39E+02	76	2	2.6%	1.89E+02 - 7.06E+02	4.48E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	72	21	29.2%	1.20E-02 - 3.10E-01B	3.40E-02
Plutonium-239/240	1.80E-02	65	21	32.3%	1.80E-02J - 8.80E-01	1.13E-01
Uranium-235	1.14E-01	76	3	3.9%	1.30E-01BJ - 1.60E-01	1.50E-01

Locations: 63592, 63692, 73592, 73692, 73792, 73892, 73992, 74092, 74192, 74292, 74392, 74492, 74592, 74692, 74792, 74892, 74992, 75892, 77592, 77692, 77792, 77892, 77992

Note: Analytical data is reported in scientific notation.

TABLE 4.5-8
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 156.2 (SOIL DUMP AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequatesample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample, and B qualifier for metals represents estimated result.
(5) The calculation for the mean concentration includes J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
N/A - Not Applicable
pCi/g - picocuries per gram
PCOC - Potential Chemical of Concern

TABLE 4.5-9
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 216.1 (EAST SPRAY FIELD AREA)

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range (4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	6	6	100.0%	7.00E+02 - 3.70E+03	2.09E+03
Acetone	N/A	6	5	83.3%	2.80E+03 - 5.10E+03	3.60E+03
Toluene	N/A	6	5	83.3%	6.10E+01 - 6.30E+02J	3.72E+02
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	12	1	8.3%	7.83E+02	7.83E+02
Calcium	3.94E+04	12	6	50.0%	4.41E+04 - 1.37E+05	9.11E+04
Strontium	2.10E+02	12	2	16.7%	2.13E+02 - 5.06E+02	3.60E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	10	3	30.0%	2.20E-02 - 3.49E-02	2.71E-02
Plutonium-239/240	1.80E-02	12	6	50.0%	2.43E-02 - 2.06E-01	8.33E-02
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	12	12	100.0%	1.11E+03 - 1.29E+04	5.44E+03

Locations: 78092, 78192, 78292, 78392, 78492, 78592

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result and B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
N/A - Not Applicable
pCi/g - picocuries per gram
PCOC - Potential Chemical of Concern

TABLE 4.5-10
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 141 (SLUDGE DISPERSAL AREA)

Analyte	Number of Samples (1)	Number of Detections	Percent Detections	Concentration or Activity Range(2)	Mean Concentration or Activity (3)
Volatile Organic Compounds (µg/kg)					
2-Butanone	4	3	75.0%	7.45E+02J - 2.00E+03	1.35E+03
Toluene	4	3	75.0%	1.06E+02J - 1.80E+02J	1.39E+02

Location: 75992

Note: Analytical data is reported in scientific notation.

(1) "Number of Samples" may be less than the number of total samples collected as a result of inadequate size, validation rejection code, or data not received at RFEDS by the January 14, 1994 cutoff.
(2) J qualifier represents estimated result.
(3) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

µg/kg - micrograms per kilogram

TABLE 4.5-11
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 165 (TRIANGLE AREA)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	77	4	5.2%	1.00E+00 - 5.60E+02	2.45E+02
Acetone	N/A	77	17	22.1%	1.10E+01 - 5.80E+01	2.85E+01
Benzene	N/A	77	1	1.3%	3.00E+00J	3.00E+00
Methylene chloride	N/A	77	11	14.3%	1.00+00J - 5.00E+00BJ	2.18E+00
Toluene	N/A	77	68	88.3%	1.00+00J - 1.10E+03	6.20E+01
Semivolatile Organic Compounds (µg/kg)						
1,4-Dichlorobenzene	N/A	26	1	3.8%	6.40E+01J	6.40E+01
2-Chlorophenol	N/A	26	2	7.7%	4.40E+01 - 5.50E+01J	5.00E+01
Benzo(a)anthracene	N/A	26	1	3.8%	9.90E+01J	9.90E+01
Benzo(a)pyrene	N/A	25	2	8.0%	3.80E+01 - 1.30E+02J	8.40E+01
Benzo(b)fluoranthene	N/A	26	3	11.5%	5.70E+02 - 1.70E+02J	1.14E+02
Benzo(k)fluoranthene	N/A	26	1	3.8%	6.00+01J	6.00E+01
Benzoic acid	N/A	26	5	19.2%	4.40E+01J - 2.60E+02J	1.64E+02
Bis(2-ethylhexyl)phthalate	N/A	26	10	38.5%	4.00E+01J - 3.90E+02BJ	1.58E+02
Chrysene	N/A	26	1	3.8%	1.20E+02J	1.20E+02
Di-n-Octyl phthalate	N/A	26	1	3.8%	7.20E+01J	7.20E+01
Diethyl phthalate	N/A	26	1	3.8%	3.00E+02J	3.00E+02
Fluoranthene	N/A	26	5	19.2%	7.10E+01J - 3.40E+02J	1.45E+02
Indeno(1,2,3-cd) pyrene	N/A	26	1	3.8%	9.90E+01J	9.90E+01
Pentachlorophenol	N/A	26	1	3.8%	6.60E+02J	6.60E+02
Phenanthrene	N/A	26	3	11.5%	4.50E+01J - 1.70E+02J	9.40E+01
Phenol	N/A	26	1	3.8%	5.50E+01J	5.50E+01
Pyrene	N/A	26	6	23.1%	5.10E+01J - 1.90E+02J	9.70E+01
PCOC Metals above background (mg/kg)						
Barium	2.89E+02	23	2	8.7%	3.73E+02 - 1.05E+03	7.12E+02
Calcium	3.94E+04	23	3	13.0%	1.01E+05 - 1.47E+05	1.19E+05
Lead	2.49E+01	23	2	8.7%	2.60E+01 - 4.75E+01	3.68E+01
Strontium	2.10E+02	23	1	4.3%	2.23E+02	2.23E+02

TABLE 4.5-11
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 165 (TRIANGLE AREA)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Vanadium	8.85E+01	23	1	4.3%	1.18E+02	1.18E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	1.20E-02	21	10	47.6%	1.20E-02 - 4.40E-01	9.20E-02
Plutonium-239/240	1.80E-02	21	7	33.3%	1.84E-02 - 5.30E-01	1.61E-01
Uranium-235	1.14E-01	23	1	4.3%	1.19E-01	1.19E-01
Uranium-238	1.49E+00	23	1	4.3%	1.60E+00B	1.60E+00

Locations: 72292, 72392, 72492, 72592, 72692, 72792, 72892, 72992, 73092, 73192/76292, 73292, 73392, 73492, 76192

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample, and B qualifier for metals represents estimated result.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/g = picocuries/gram
PCOC = Potential Chemical of Concern

TABLE 4.5-12
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 142.4 (POND A-4)

Analyte	Number of Samples (1)	Number of Detections	Percent Detections	Concentration or Activity Range	Mean Concentration or Activity(2)
Volatile Organic Compounds (µg/kg)					
Toluene	4	4	100.0%	3.30E+01 - 2.00E+02	1.33E+02

Location: 75092 (Monitoring well located in drainage, downgradient of Pond A-4)

Note: Analytical data is reported in scientific notation.

(1) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(2) The calculation for the mean concentration includes all qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram

TABLE 4.5-13
ANALYTES DETECTED IN SUBSURFACE SOILS AT IHSS 142.9 (POND B-5)

Analyte	Number of Samples (1)	Number of Detections	Percent Detections	Concentration or Activity Range	Mean Concentration or Activity (2)
Volatile Organic Compounds (µg/kg)					
Toluene	3	3	100.0%	8.00E+00 - 1.80E+01	1.40E+01

Location: 75292 (Monitoring well located in drainage, down gradient of Pond B-5)

Note: Analytical data is reported in scientific notation.

(1) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(2) The calculation for the mean concentration includes all qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram

TABLE 4.6-1
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 1 (UNNAMED TRIBUTARY DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
1,1,1-Trichloroethane	N/A	107	16	15.0%	2.00E+00J-7.00E+00	4.00E+00
1,1-Dichloroethane	N/A	107	15	14.0%	5.00E-01J-5.00E+00	3.50E+00
1,2-Dichloroethene	N/A	100	16	16.0%	1.00E+00J-6.00E+00	3.00E+00
Acetone	N/A	87	4	4.6%	1.00E+00J-1.70E+01	9.00E+00
Benzene	N/A	106	4	3.8%	5.00E-01J-2.00E+00J	1.40E+00
Carbon disulfide	N/A	100	1	1.0%	4.00E+00J	4.00E+00
Carbon tetrachloride	N/A	103	8	7.8%	2.00E+00J-8.00E+00	4.00E+00
Chloroform	N/A	101	19	18.8%	1.00E+00J-8.00E+00	2.30E+00
Ethylbenzene	N/A	106	3	2.8%	3.00E-01J-9.00E-01J	6.00E-01
Methylene chloride	N/A	104	11	10.6%	6.00E-01J-3.20E+01	4.20E+00
Tetrachloroethene	N/A	107	23	21.5%	8.00E-01J-1.30E+01	2.90E+00
Toluene	N/A	107	10	9.3%	1.00E+00J-1.00+01	3.00E+00
Total xylenes	N/A	102	4	3.9%	9.00E-01J-4.00E+00J	3.00E+00
Trichloroethene	N/A	107	23	21.5%	1.60E+01-1.50E+02J	4.00E+01
PCOC Total Metals above background (µg/l)						
Aluminum	1.90E+04	27	3	11.1%	2.20E+04-4.56E+05	2.09E+05
Antimony	4.72E+01	23	1	4.3%	6.14E+01	6.14E+01
Arsenic	7.29E+00	27	1	3.7%	9.90E+00	9.90E+00
Barium	2.42E+02	27	5	18.5%	2.61E+02-5.10E+04	1.61E+03
Beryllium	3.45E+00	25	2	8.0%	1.41E+01-3.20E+01	2.31E+01
Cadmium	4.46E+00	27	2	7.4%	1.53E+01-1.90E+01	1.72E+01
Calcium	1.18E+05	27	3	11.1%	1.82E+05-3.00E+05	2.34E+05
Chromium	1.35E+02	27	3	11.1%	2.25E+02-5.80E+02N	4.57E+02
Cobalt	3.67E+01	27	2	7.4%	1.13E+02-2.28E+02	1.71E+02
Copper	3.52E+01	27	7	25.9%	3.80E+01-6.43E+03	1.41E+03
Iron	2.33E+04	27	3	11.1%	2.87E+04-6.56E+05	3.09E+05
Lead	1.46E+01	27	2	7.4%	9.70E+01-1.93E+02	1.45E+02
Lithium	1.31E+02	27	2	7.4%	266E+02-3.99E+02	3.33E+02
Magnesium	2.62E+04	27	10	37.0%	2.69E+04-1.18E+05	4.53E+04

TABLE 4.6-1
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 1 (UNNAMED TRIBUTARY DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Manganese	4.67E+02	27	2	7.4%	2.77E+03-6.20E+03	4.49E+03
Mercury	2.05E-01	27	3	11.1%	2.50E-01-1.40E+00	6.40E-01
Nickel	7.40E+01	27	4	14.8%	8.46E+01-1.07E+03	4.58E+02
Potassium	4.18E+03	27	3	11.1%	4.90E+03B-3.89E+04	1.95E+04
Selenium	9.19E+01	27	2	7.4%	2.20E+02-2.70E+02N	2.45E+02
Silicon	4.74E+04	16	3	18.8%	5.86E+04N-2.88E+05	1.78E+05
Silver	6.68E+00	27	7	25.9%	6.95E+01-3.04E+03	8.21E+02
Sodium	1.10E+05	27	1	3.7%	5.49E+05	5.49E+05
Strontium	8.55E+02	26	5	19.2%	8.65E+02-2.78E+03	1.45E+03
Vanadium	5.23E+01	27	3	11.1%	5.63E+01-7.54E+02N	4.17E+02
Zinc	1.37E+02	27	7	25.9%	1.52E+02-8.00E+03	1.91E+03
PCOC Dissolved Metals above background (µg/l)						
Cadmium	4.38E+00	57	1	1.8%	8.20E+00	8.20E+00
Calcium	1.21E+05	57	3	5.3%	1.72E+05-3.85E+05	2.64E+05
Chromium	1.23E+01	56	6	10.7%	1.31E+01-1.57E+01	1.44E+01
Copper	4.09E+01	57	3	5.3%	6.63E+01-8.19E+01	7.58E+01
Lithium	1.45E+02	57	3	5.3%	2.40E+02-6.50E+02	4.72E+02
Magnesium	2.66E+04	57	16	28.1%	2.68E+04-2.57E+05	5.51E+04
Manganese	2.08E+02	57	2	3.5%	2.16E+02-2.53E+02	2.35E+02
Nickel	2.94E+01	57	5	8.8%	3.01E+01B-1.90E+02	8.64E+01
Potassium	3.75E+03	57	1	1.8%	4.30E+03	4.30E+03
Selenium	9.87E+01	57	7	12.3%	1.01E+02S-2.89E+02S	1.70E+02
Sodium	1.19E+05	57	5	8.8%	2.02E+05-8.97E+05	5.08E+05
Strontium	1.49E+03	57	3	5.3%	1.92E+03-7.00E+03	4.53E+03
Zinc	4.98E+01	57	10	17.5%	5.81E+01-2.12E+02	1.09E+02
PCOC Total Radionuclides above background (pCi/l)						
Americium-241	2.80E-02	36	1	2.8%	6.07E-02	6.07E-02
Cesium-137	7.82E-01	19	1	5.3%	1.06E+00	1.06E+00

TABLE 4.6-1
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 1 (UNNAMED TRIBUTARY DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCOC Dissolved Radionuclides above background (pCi/l)						
Radium-226	4.81E-01	19	8	42.1%	4.84E-01J-8.10E-01B	6.04E-01
Strontium-89,90	9.50E-01	37	2	5.4%	1.77E+00-1.80E+00	1.79E+00
Uranium-233/234	5.78E+01	55	1	1.8%	6.30E+01B	6.30E+01
Uranium-235	1.47E+00	55	2	3.6%	1.90E+00-2.10E+00	2.00E+00
Other Analytes above background (mg/l)						
Nitrate/nitrite	3.31E+01	84	8	9.5%	1.30E+02-1.90E+02	1.55E+02

Locations: 0586, 0686, 4087, 4287, 7087, 7187, 7287, B206489, B206589, B206689, B206889.

Note: Analytical data reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a results of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, N qualifier represents spike recoveries in the matrix spike sample did not meet advisory limits, S qualifier represents the reported value was determined by the method of standard addition (MSA), B qualifier for organics indicates analyte was detected in blank sample, and B qualifier for metals represents estimated result.
(5) The calculation for the mean concentration includes all J,N,S and B qualified data. Real and duplicate sample results have been averaged.

mg/l = micrograms per liter
µg/l = milligrams per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.6-2
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 2 (NORTH WALNUT CREEK DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity(5)
Volatile Organic Compounds (µg/l)						
2-Butanone	N/A	45	1	2.2%	1.00E+00J	1.00E+00
4-Methyl-2-pentanone	N/A	75	1	1.3%	2.00E+00J	2.00E+00
Acetone	N/A	74	2	2.7%	7.00E+00J-2.70E+01	1.70E+01
Benzene	N/A	77	3	3.9%	2.00E-01J-2.00E+00J	8.00E-01
Benzene 1,2,4 - trimethyl	N/A	7	1	14.3%	2.00E-01J	2.00E-01
Carbon disulfide	N/A	75	1	1.3%	4.00E-01J	4.00E-01
Chloroform	N/A	77	1	1.3%	2.00E-01	2.00E-01
Ethylbenzene	N/A	77	2	2.6%	2.00E-01J-1.00E+00J	6.00E-01
m-xylene	N/A	1	1	100.0%	1.00E-01J	1.00E-01
Methylene chloride	N/A	74	6	8.1%	6.00E-01J-2.00E+00J	1.40E+00
p-xylene	N/A	1	1	100.0%	1.00E-01J	1.00E-01
Styrene	N/A	113	1	0.9%	1.10E-01	1.10E-01
Tetrachloroethene	N/A	77	1	1.3%	2.00E+00J	2.00E+00
Toluene	N/A	77	4	5.2%	2.30E-01-1.60E+01	4.30E+00
Total xylenes	N/A	76	2	2.6%	7.00E-01-7.00E+00J	3.90E+00
Trichloroethene	N/A	77	6	7.8%	2.00E-01J-2.00E+00J	1.20E+00
Semivolatile Organic Compounds (µg/l)						
Bis(2-ethylhexyl)phthalate	N/A	3	1	33.3%	4.00E+00J	4.00E+00
Diethyl phthalate	N/A	3	1	33.3%	2.00E+00J	2.00E+00
PCOC Total Metals above background (µg/l)						
Aluminum	1.90E+04	38	6	15.8%	2.39E+04-1.96E+05	8.57E+04
Antimony	4.72E+01	31	5	16.1%	4.76E+01BN-1.79E+02	1.12E+02
Arsenic	7.29E+00	37	4	10.8%	8.60E+00BN-1.80E+01N	1.29E+01
Barium	2.42E+02	38	17	44.7%	2.43E+02-2.09E+03	5.16E+02
Beryllium	3.45E+00	34	4	11.8%	5.60E+00-1.49E+01	1.04E+01
Cadmium	4.46E+00	38	6	15.8%	5.80E+00-3.29E+01	1.52E+01
Calcium	1.18E+05	38	27	71.1%	1.29E+05-7.15E+05	3.99E+05
Chromium	1.35E+02	38	1	2.6%	2.16E+02	2.16E+02

TABLE 4.6-2
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 2 (NORTH WALNUT CREEK DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity(5)
Cobalt	3.67E+01	38	3	7.9%	3.89E+01B-1.11E+02	6.83E+01
Copper	3.52E+01	38	6	15.8%	3.99E+01-3.14E+02	1.22E+02
Iron	2.33E+04	38	5	13.2%	3.36E+04-2.50E+05	1.08E+05
Lead	1.46E+01	38	8	21.1%	1.82E+01-2.54E+02	7.45E+01
Lithium	1.31E+02	38	17	44.7%	1.31E+02-4.56E+02	2.75E+02
Magnesium	2.62E+04	38	33	86.8%	2.82E+04-2.35E+05	1.09E+05
Manganese	4.67E+02	38	6	15.8%	6.06E+02-3.32E+03	1.25E+03
Mercury	2.05E-01	38	2	5.3%	3.60E-01-1.40E+00	8.80E-01
Nickel	7.40E+01	38	5	13.2%	7.68E+01-2.64E+02	1.39E+02
Potassium	4.18E+03	38	13	34.2%	4.21E+03B-3.50E+04	1.08E+04
Selenium	9.19E+01	38	16	42.1%	1.43E+02S-4.75E+02	2.54E+02
Silicon	4.34E+04	22	3	13.6%	1.09E+05-1.74E+05	1.52E+05
Silver	6.68E+00	37	1	2.7%	3.92E+01	3.92E+01
Sodium	1.10E+05	38	24	63.2%	1.11E+05-4.45E+05	2.63E+05
Strontium	8.55E+02	38	29	76.3%	8.95E+02-6.96E+03	3.55E+03
Vanadium	5.23E+01	38	6	15.8%	7.38E+01N-4.6E+02	2.02E+02
Zinc	1.37E+02	38	5	13.2%	1.86E+02-1.53E+03	5.70E+02
PCOC Dissolved Metals above background (mg/l)						
Antimony	4.32E+01	57	6	10.5%	6.82+01 - 1.62E+02	1.12E+02
Barium	1.50E+02	44	24	54.5%	1.73E+02B-2.86E+02	2.49E+02
Cadmium	4.38E+00	57	3	5.3%	5.20+00-1.39E+01	1.01E+01
Calcium	1.21E+05	59	40	67.8%	1.23E+05-6.59E+05	3.89E+05
Chromium	1.23E+01	58	9	15.5%	1.26E+01-4.60E+01	2.79E+01
Copper	4.09E+01	58	1	1.7%	6.15E+01	6.15E+01
Lithium	1.45E+02	59	22	37.3%	1.61E+02-4.08E+02	2.97E+02
Magnesium	2.66E+04	59	52	88.1%	2.71E+04-2.09E+05	1.01E+05
Manganese	2.08E+02	59	4	6.8%	2.30E+02-5.92E+02	3.74E+02
Nickel	2.94E+01	59	3	5.1%	3.29E+01B-2.60E+02	1.49E+02
Potassium	3,754.812	59	18	30.5%	3.77E+03B-6.61E+03	4.92E+03
Selenium	9.87E+01	59	22	37.3%	1.51E+02SN-4.60E+02	2.66E+02

TABLE 4.6-2
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 2 (NORTH WALNUT CREEK DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity(5)
Sodium	1.19E+05	59	30	50.8%	1.22E+05-4.54E+05	287,766
Strontium	1.49E+03	59	24	40.7%	1.51E+03-6.34E+03	5.31E+03
PCOC Total Radionuclides above background (pCi/l)						
Americium-241	2.80E-02	44	4	9.1%	3.80E-02-1.09E+00X	3.64E-01
Cesium-137	7.82E-01	25	2	8.0%	1.82+00-4.5E+00	3.16E+00
Plutonium-239/240	4.70E-02	46	4	8.7%	1.00E-01-3.65E+00X	1.16E+00
Radium-226	6.11E-01	1	1	100.0%	7.20E-01	7.20E-01
PCOC Dissolved Radionuclides above background (pCi/l)						
Gross alpha	7.30E+01	55	1	1.8%	7.45E+01	7.45E+01
Gross beta	2.94E+01	61	5	8.2%	3.22E+01-4.41E+01	3.88E+01
Plutonium-239/240	not available (6)	2	1	50.0%	1.36E-01	1.36E-01
Radium-226	4.81E-01	47	23	48.9%	4.90E-01J-1.20E+00	6.60E-01
Strontium-89,90	9.50E-01	43	2	4.7%	9.95E-01J-1.30E+00	1.16E+00
Uranium-235	1.47E+00	57	7	12.3%	1.50E+00-2.02E+00	1.69E+00
Other Parameters above background (mg/l)						
Nitrate/nitrite	3.31E+01	75	37	49.3%	36.0-1,760.0	3.59E+02

Locations: 1186, 1286, 1386, 1586, 1786, 1886, 41091, B208289, B208589, B208789, B210489.

Note: Analytical data presented in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.

TABLE 4.6-2
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 2 (NORTH WALNUT CREEK DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity(5)

(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample, B qualifier for metals represents estimated result, E qualifier for inorganics represents reported value is estimated due to interference, N qualifier for metals represents spike recoveries in the matrix spike sample did not meet advisory limits, S qualifier for metals represents the reported value was determined by method of standard addition (MSA), and X qualifier represents open and defined by laboratory.
(5) The calculation for the mean concentration includes all J, E, N, S, X, and B qualified data. Real and duplicate sample results have been averaged.
(6) Sample size was too small to perform this calculation.

mg/l = milligrams per liter
µg/l = micrograms per liter
pCi/l = picocuries pwer liter
NA = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.6-3
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 3 (SOUTH WALNUT CREEK DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
1,1,1-Trichloroethane	N/A	47	10	21.3%	3.00E+00J-1.20E+01	6.00E+00
1,1-Dichloroethane	N/A	47	10	21.3%	3.70E+01-6.20E+01	5.00E+01
1.1-Dichloroethene	N/A	48	3	6.3%	1.00E+00J-5.00E+00	3.00E+00
1,2-Dichloroethane	N/A	46	3	6.5%	1.00E+00J-2.00E+00J	1.70E+00
1,2-Dichloroethene	N/A	32	9	28.1%	3.00E+00J-7.40E+01	2.30E+01
2-Hexanone	N/A	32	1	3.1%	5.00E+00J	5.00E+00
4-Isopropyltoluene	N/A	10	1	10.0%	1.30E-01J	1.30E-01
4-Methyl-2-pentanone	N/A	32	1	3.1%	1.00E+00J	1.00E+00
Acetone	N/A	35	2	5.7%	6.00E+00J-8.00E+00	7.00E+00
Benzene	N/A	46	1	2.2%	9.00E-01J	9.00E-01
Chloromethane	N/A	45	1	2.2%	2.50E-01J	2.50E-01
Methylene chloride	N/A	44	9	20.5%	1.00E+00J-1.40E+01	9.00E+00
Tetrachloroethene	N/A	46	7	15.2%	1.00E-01-2.20E+00	5.00E-01
Toluene	N/A	47	1	2.1%	1.50E-01J	1.50E-01
trans-1,2-dichloroethene	N/A	15	1	6.7%	9.00E+00	9.00E+00
Trichloroethene	N/A	47	4	8.5%	1.70E-01-6.00E+00	3.10E+00
Vinyl chloride	N/A	46	10	21.7%	2.00E+02X-8.60E+02D	4.61E+02
PCOC Total Metals above background (µg/l)						
Barium	2.42E+02	11	4	36.4%	2.49E+02-3.37E+02	2.90E+02
Calcium	1.18E+05	11	5	45.5%	1.24E+05-2.31E+05	1.52E+05
Lead	1.46E+01	11	2	18.2%	1.54E+01-1.73E+01	1.64E+01
Magnesium	2.62E+04	11	5	45.5%	3.16E+04-6.17E+04	3.89E+04
Manganese	4.67E+02	11	6	54.5%	4.81E+02-4.17E+03	2.69E+03
Mercury	2.05E-01	11	1	9.1%	2.40E-01N	2.40E-01
Potassium	4.18E+03	11	5	45.5%	4.88E+03-1.34E+04E	7.95E+03
Sodium	1.10E+05	11	5	45.5%	1.59E+05-1.83E+05	1.70E+05
Strontium	8.55E+02	11	2	18.2%	9.00E+02-2.02E+03	1.46E+03
Zinc	1.37E+02	11	1	9.1%	1.38E+02	1.38E+02
PCOC Dissolved Metals above background (µg/l)						
Antimony	4.32E+01	26	3	11.5%	4.58E+01B-6.58E+01	5.73E+01
Barium	1.50E+02	26	7	26.9%	1.50E+02B-1.71E+02B	1.65E+02

TABLE 4.6-3
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 3 (SOUTH WALNUT CREEK DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Calcium	1.21E+05	26	17	65.4%	1.26E+05-3.22E+05	1.76E+05
Chromium	1.23E+01	26	6	23.1%	1.29E+01-3.61E+01	1.90E+01
Iron	1.21E+03	26	7	26.9%	1.22E+03-2.50E+03	1.54E+03
Magnesium	2.66E+04	26	17	65.4%	3.13E+04-9.88E+04	4.86E+04
Manganese	2.08E+02	26	11	42.3%	2.41E+02-4.52E+03	3.45E+03
Nickel	2.94E+01	26	1	3.8%	2.87E+02	2.87E+02
Potassium	3.75E+03	26	4	15.4%	4.26E+03B-9.45E+03	5.88E+03
Sodium	1.19E+05	26	17	65.4%	1.20E+05-2.89E+05	1.84E+05
Strontium	1.49E+03	26	7	26.9%	1.53E+03-2.93E+03	2.18E+03
Zinc	4.98E+01	26	1	3.8%	2.59E+02	2.59E+02
PCOC Total Radionuclides above background (pCi/l)						
Strontium-89,90	7.67E-01	1	1	100.0%	1.22E+00	1.22E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Gross beta	2.94E+01	29	1	3.4%	3.16E+01	3.16E+01
Radium-226	4.81E-01	9	5	55.6%	4.90E-01-8.00E-01E	6.50E-01
Strontium-89,90	9.50E-01	23	2	8.7%	1.13E+00-1.40E+00	1.27E+00
Uranium-235	1.47E+00	29	1	3.4%	1.57E+00	1.57E+00

Locations: 3586, 3686, 3786, 3886, 02691.

Note: Analytical data reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, D qualifier represents dilution result, B qualifier for metals represents estimated result, E qualifier for inorganics represents reported value is estimated due to interference, X qualifier represents open and defined by laboratory.
(5) The calculation for the mean concentration includes all J, D, B, E, and X qualified data. Real and duplicate sample results have been averaged.

µg/l = micrograms per liter
pCi/g = picocuries per gram

N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.6-4
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 4 (UPGRADIENT DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Acetone	N/A	26	1	3.8%	1.00E+01	1.00E+01
Benzene	N/A	27	1	3.7%	3.00E+00J	3.00E+00
Ethylbenzene	N/A	28	1	3.6%	1.00E+00J	1.00E+00
Methylene chloride	N/A	28	1	3.6%	2.00E-01	2.00E-01
Tetrachloroethene	N/A	28	9	32.1%	1.00E-01-3.00E+00J	1.80E+00
Toluene	N/A	28	2	7.1%	8.00E+00J-1.60E+01	1.20E+01
Total xylenes	N/A	26	1	3.8%	1.40E+01	1.40E+01
Trichloroethene	N/A	28	5	17.9%	1.00E-01-4.00E+00J	2.00E+00
PCOC Total Metals above background (µg/l)						
Aluminum	1.90E+04	10	1	10.0%	1.92E+04	1.92E+04
Barium	2.42E+02	10	1	10.0%	3.94E+02	3.94E+02
Calcium	1.18E+05	10	3	30.0%	1.24E+05-1.43E+05	1.32E+05
Lead	1.46E+01	10	1	10.0%	1.60E+01	1.60E+01
Magnesium	2.62E+04	10	8	80.0%	3.02E+04-4.99E+04	3.83E+04
Manganese	4.67E+02	10	1	10.0%	5.29E+02	5.29E+02
Potassium	4.18E+03	10	2	20.0%	6.91E+03-9.15E+03	8.03E+03
Sodium	1.10E+05	10	1	10.0%	2.53E+05	2.53E+05
Strontium	8.55E+02	10	5	50.0%	8.90E+02-1.96E+03	1.31E+03
PCOC Dissolved Metals above background (µg/l)						
Barium	1.50E+02	16	7	43.8%	1.51E+02B-2.43E+02	1.86E+02
Calcium	1.21E+05	16	3	18.8%	1.34E+05-1.42E+05	1.39E+05
Chromium	1.23E+01	16	1	6.3%	1.51E+01	1.51E+01
Magnesium	2.66E+04	16	11	68.8%	3.03E+04-5.95E+04	4.00E+04
Manganese	2.08E+02	16	3	18.8%	2.47E+02-8.30E+02	4.58E+02
Potassium	3.75E+03	16	1	6.3%	3.94E+03	3.94E+03
Sodium	1.19E+05	16	1	6.3%	1.20E+05	1.20E+05

TABLE 4.6-4
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 4 (UPGRADIENT DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Strontium	1.49E+03	16	1	6.3%	1.64E+03	1.64E+03
PCOC Total Radionuclides above background (pCi/l)						
Radium-226	6.11E-01	2	1	50.0%	1.20E+00	1.20E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Radium-226	4.81E-01	6	1	16.7%	9.50E-01	9.50E-01
Strontium-89,90	9.50E-01	11	1	9.1%	1.07E+00	1.07E+00
Other Analytes above background (mg/l)						
Nitrate/nitrite	3.31E+01	24	11	45.8%	3.80E+01-9.50E+01	5.92E+01

Locations: 2986, B208089, P209789, P218389, P219489, 76292.

Note: Analytical data reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL
(4) J qualifier represents estimated result, B qualifier for metals represents estimated result, and E qualifier for inorganics represents reported value is estimated due to interference.
(5) The calculation for the mean concentration includes all J, E, and B qualified data. Real and duplicate sample results have been averaged.

mg/l = milligrams per kilograms
µg/l = micrograms per kilogram
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.6-5
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 5 (WALNUT AND INDIANA DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Methylene chloride	N/A	20	1	5.0%	1.00E+01	1.00E+01
Toluene	N/A	21	1	4.8%	1.30E-01J	1.30E-01
Semivolatile Organic Compounds (µg/l)						
Bis(2-ethylhexyl)phthalate	N/A	2	1	50.0%	3.00E+00J	3.00E+00
PCOC Total Metals above background (µg/l)						
Aluminum	1.90E+04	11	8	72.7%	2.10E+04-1.17E+05	4.33E+04
Antimony	4.72E+01	9	3	33.3%	5.38E+01B-1.94E+02	1.22E+02
Arsenic	7.29E+00	11	1	9.1%	8.00E+00B	8.00E+00
Barium	2.42E+02	11	10	90.9%	2.72E+02-1.32E+03	5.28E+02
Beryllium	3.45E+00	11	2	18.2%	3.90E+00B-8.90E+00	6.40E+00
Cadmium	4.46E+00	11	1	9.1%	6.20E+00	6.20E+00
Chromium	1.35E+02	11	4	36.4%	1.57E+02-2.47E+02	2.07E+02
Cobalt	3.67E+01	11	2	18.2%	4.67E+01B-8.11E+01	6.39E+01
Copper	3.52E+01	11	5	45.5%	4.45E+01-1.89E+02	8.72E+01
Iron	2.33E+04	11	9	81.8%	2.55E+04N-1.91E+05	6.00E+04
Lead	1.46E+01	11	10	90.9%	1.58E+01-9.66E+01S	3.58E+01
Magnesium	2.62E+04	11	2	18.2%	3.03E+04-4.18E+04	3.61E+04
Manganese	4.67E+02	11	11	100.0%	7.54E+02-3.19E+03	1.77E+03
Mercury	2.05E-01	11	2	18.2%	3.60E-01-7.20E-01	5.40E-01
Nickel	7.40E+01	11	5	45.5%	7.49E+01-1.99E+02	1.26E+02
Potassium	4.18E+03	11	11	100.0%	5.25E+03-2.25E+04	1.02E+04
Silicon	4.74E+04	6	4	66.7%	4.86E+04-1.25E+05	7.46E+04
Silver	6.68E+00	11	1	9.1%	1.03E+01	1.03E+01
Strontium	8.55E+02	11	1	9.1%	9.31E+02	9.31E+02
Vanadium	5.23E+01	11	7	63.6%	6.68E+01-3.12E+02	1.24E+02
Zinc	1.37E+02	11	2	18.2%	1.52E+02-3.12E+02	2.32E+02
PCOC Dissolved Metals above background (µg/l)						
Chromium	1.23E+01	17	1	5.9%	1.68E+01	1.68E+01
Manganese	2.08E+02	17	17	100.0%	3.63E+02-1.01E+03	6.99E+02
Potassium	3.75E+03	17	17	100.0%	3.76E+03B-5.72E+03	4.72E+03
Zinc	4.98E+01	17	1	5.9%	3.14E+02	3.14E+02

TABLE 4.6-5
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 5 (WALNUT AND INDIANA DRAINAGE)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCOC Total Radionuclides above background (pCi/l)						
Americium-241	2.80E-02	16	11	68.8%	2.81E-02-3.20E+00	4.03E-01
Plutonium-239/240	4.70E-02	14	11	78.6%	5.25E-02-2.20E+00	5.50E-01
Radium-226	6.11E-01	3	1	33.3%	1.10E+00	1.10E+00
Strontium-89,-90	7.67E-01	1	1	100.0%	1.10E+00	1.10E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Gross beta	2.94E+01	17	1	5.9%	9.00E+01C	9.00E+01
Plutonium-239/240	not available	2	2	100.0%	1.00E-03-3.45E-03J	2.00E-03
Radium-226	4.81E-01	2	1	50.0%	1.10E+00	1.10E+00
Strontium-89,90	9.50E-01	14	1	7.1%	1.05E+00	1.05E+00

Locations: 0486, 41691.

Note: Analytical data reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for metals represents estimated result, E qualifier for inorganics represents reported value is estimated due to interference, S qualifier for metals represents the reported value was determined by method of standard addition (MSA), N qualifier for metals represents spike recoveries in the matrix spike sample did not meet advisory limits, and C qualifier for radionuclides indicates elevated total dissolved solids in sample.
(5) The calculation for the mean concentration includes all C, J, B, E, N, and S qualified data. Real and duplicate sample results have been averaged.

µg/l = micrograms per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.6-6
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 6 (IHSS 143)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
1,1-Dichloroethane	N/A	3	1	33.3%	6.00E-01	6.00E-01
1,1-Dichloroethene	N/A	3	1	33.3%	2.00E-01	2.00E-01
Carbon tetrachloride	N/A	3	3	100.0%	2.00E+00J-8.00E+00	4.00E+00
cis-1,2-Dichloroethene	N/A	3	2	66.7%	2.00E-01	2.00E-01
Chloroform	N/A	3	2	66.7%	6.00E-01-3.00E+00	1.80E+00
Methylene chloride	N/A	3	1	33.3%	6.00E-01	6.00E-01
Tetrachloroethene	N/A	3	1	33.3%	7.00E-01	7.00E-01
Trichloroethene	N/A	3	2	66.7%	1.00E-01	1.00E-01
Semivolatile Organic Compounds (µg/l)						
Bis(2-ethylhexyl)phthalate	N/A	3	1	33.3%	8.00E+00J	8.00E+00
PCOC Total Metals above background (µg/l)						
Aluminum	1.90E+04	1	1	100.0%	9.77E+04	9.77E+04
Arsenic	7.29E+00	2	2	100.0%	1.42E+01N-1.64E+01N	1.53E+01
Barium	2.42E+02	2	2	100.0%	8.38E+02-2.47E+03	1.65E+03
Beryllium	3.45E+00	2	2	100.0%	7.70E+00-2.66E+01	1.72E+01
Calcium	1.18E+05	2	2	100.0%	2.71E+05-5.54E+05	4.13E+05
Chromium	1.35E+02	2	1	50.0%	2.16E+02	2.16E+02
Cobalt	3.67E+01	2	1	50.0%	9.32E+01	9.32E+01
Copper	3.52E+01	2	2	100.0%	5.43E+01-1.85E+02	1.20E+02
Iron	2.33E+04	1	1	100.0%	8.67E+04	8.67E+04
Lead	1.46E+01	2	2	100.0%	4.55E+01-1.76E+02	1.11E+02
Lithium	1.31E+02	2	1	50.0%	1.71E+02	1.71E+02
Magnesium	2.62E+04	2	2	100.0%	4.54E+04-7.11E+04	5.83E+04
Manganese	4.67E+02	2	2	100.0%	3.42E+03-5.05E+03	4.24E+03
Mercury	2.05E-01	2	2	100.0%	3.40E-01-1.50E+00	9.20E-01
Nickel	7.40E+01	2	1	50.0%	2.20E+02	2.20E+02
Potassium	4.18E+03	2	2	50.0%	1.22E+04-2.67E+04	1.95E+04
Silicon	4.74E+04	1	1	100.0%	1.50E+05	1.50E+05
Strontium	8.55E+02	2	2	100.0%	1.17E+03-1.79E+03	1.48E+03
Vanadium	5.23E+01	2	2	100.0%	1.28E+02-3.65E+02	2.47E+02
Zinc	1.37E+02	2	2	100.0%	2.14E+02-6.71E+02	4.43E+02

TABLE 4.6-6
ANALYTES DETECTED IN OU6 UHSU GROUNDWATER - AREA 6 (IHSS 143)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCOC Dissolved Metals above background (µg/l)						
Barium	1.50E+02	3	3	100.0%	2.04E+02-2.28E+02	2.19E+02
Calcium	1.21E+05	3	3	100.0%	1.40E+05-1.62E+05	1.52E+05
Iron	1.21E+03	3	3	100.0%	1.76E+03-3.22E+03	2.54E+03
Magnesium	2.66E+04	3	3	100.0%	2.71E+04-3.18E+04	2.96E+04
Manganese	2.08E+02	3	3	100.0%	2.22E+03-2.77E+03	2.46E+03
PCOC Total Radionuclides above background (pCi/l)						
Americium-241	2.80E-02	2	1	50.0%	4.00E-02	4.00E-02
Radium-226	6.11E-01	1	1	100.0%	8.80E+00B	8.80E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Radium-226	4.81E-01	1	1	100.0%	6.90E-01	0.6900
Other Parameters (mg/l)						
Total Organic Carbon	N/A	1	1	100.0%	1.00E+01	1.00E+01

Location: 77492

Note: Analtyical data reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for metals represents estimated result and N qualifier for metals represents spile recoveries in the matrix spike sample did not meet advisory limits.
(5) The calculation for the mean concentration includes all J, B, and N qualified data. Real and duplicate sample results have been averaged.

µg/l = micrograms per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-1
ANALYTES DETECTED IN SURFACE WATER (BASEFLOW) NORTH WALNUT CREEK UPSTREAM OF OU6

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Methylene chloride	N/A	2	2	100.0%	2.00E+00J - 3.00E+00J	2.50E+00
PCOC Total Metals above background (µg/l)						
Aluminum	3.53E+03	2	1	50.0%	3.70E+03	3.70E+03
Sodium	3.16E+04	2	1	50.0%	3.29E+04	3.29E+04
PCOC Dissolved Metals above background (µg/l)						
Sodium	3.19E+04	2	1	50.0%	3.60E+04	3.60E+04
Other Parameters (mg/l)						
Total Organic Carbon	N/A	2	2	100.0%	6.50E+00 - 6.58E+00	6.54E+00

Locations: SW67093 and SW67493

Note: Analytical data are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes J-qualified data. Real and duplicate sample results have been averaged.

µg/l = micrograms per liter
mg/l = milligrams per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-2
ANALYTES DETECTED IN SURFACE WATER (BASEFLOW) IN THE NORTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Methylene chloride	N/A	5	2	40.0%	2.50E+00J -3.00E+00J	2.80E+00
PCOC Total Metals above background (µg/l)						
Barium	1.41E+02	5	1	20.0%	2.06E+02	2.06E+02
Calcium	4.61E+04	5	4	80.0%	4.87E+03 - 8.34E+03	5.95E+04
Magnesium	9.13E+03	5	5	100.0%	1.01E+04 - 1.88E+04	1.29E+04
Potassium	4.04E+03	5	1	20.0%	6.99E+03	6.99E+03
Sodium	3.16E+04	5	4	80.0%	3.85E+04 - 4.71E+04	4.20E+04
Strontium	5.19E+02	5	1	20.0%	5.24E+02	5.24E+02
PCOC Dissolved Metals above background (µg/l)						
Barium	1.53E+02	5	1	20.0%	2.02E+02	2.02E+02
Calcium	4.69E+04	5	4	80.0%	4.81E+04 - 8.30E+04	6.06E+04
Magnesium	9.13E+03	5	5	100.0%	9.96E+03 - 1.86E+04	1.31E+04
Potassium	3.80E+03	5	2	40.0%	5.18E+03 - 7.76E+03	6.47E+03
Sodium	3.19E+04	5	4	80.0%	4.13E+04 - 5.02E+04	4.46E+04
PCOC Total Radionuclides above background (pCi/l)						
Tritium	4.94E+02	5	1	20.0%	5.10E+02	5.10E+02
Uranium-233/234	1.59E+00	5	4	80.0%	1.70E+00 - 4.90E+00	2.60E+00
Uranium-235	1.99E-01	5	1	20.0%	3.90E-01J	3.90E-01
Uranium-238	1.23E+00	5	5	100.0%	1.30E+00 - 4.00E+00	2.40E+00
Other Parameters and Analytes above background (mg/l)						
Total Organic Carbon	N/A	5	5	100.0%	5.35E+00 - 1.17+01	8.09E+00
Nitrate/Nitrite	1.56E+00	5	2	40.0%	2.08E+00 - 2.53E+00	2.31E+00

Locations: SW67193, SW67393, SW67893, SW68093, and SW68193

Note: Analytical data is reported in scientific notatation.

TABLE 4.7-2
ANALYTES DETECTED IN SURFACE WATER (BASEFLOW) IN THE NORTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes qualified data. Real and duplicate sample results have been averaged.

µg/l = micrograms per liter
mg/l = milligrams per liter
N/A - Not Applicable
pCi/l = picocuries per liter
PCOC = Potential Chemical of Concern

TABLE 4.7-3
ANALYTES DETECTED IN SURFACE WATER (BASEFLOW) IN THE SOUTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
1,2-Dichloroethene	N/A	2	1	50.0%	4.00E+00J	4.00E+00
Chloroform	N/A	2	1	50.0%	1.00E+00J	1.00E+00
PCOC Total Metals above background (µg/l)						
Barium	1.41E+02	2	1	50.0%	1.41E+02B	1.41E+02
Calcium	4.61E+04	2	2	100.0%	6.02E+04-1.11E+05	8.56E+04
Magnesium	9.13E+03	2	2	100.0%	12.8E+04-2.67E+04	1.98E+04
Potassium	4.04E+03	2	1	50.0%	6.44E+03	6.44E+03
Sodium	3.16E+04	2	2	100.0%	4.53E+04-7.82E+04	6.18E+04
Strontium	5.19E+02	2	1	50.0%	7.38E+02	7.38E+02
PCOC Dissolved Metals above background (µg/l)						
Calcium	4.69E+04	2	2	100.0%	6.12E+04-9.28E+04	7.70E+04
Magnesium	9.13E+03	2	2	100.0%	1.30E+04-2.68E+04	1.99E+04
Potassium	3.80E+03	2	2	100.0%	4.15E+03B-6.37E+03	5.26E+03
Sodium	3.19E+04	2	2	351-720	4.68E+04-8.04E+04	6.36E+04
PCOC Total Radionuclides above background (pCi/l)						
Uranium-233/234	1.59E+00	2	1	50.0%	4.80E+00	4.80E+00
Uranium-235	1.99E-01	2	1	50.0%	2.3E-01BJ	2.30E-01
Uranium-238	1.23E+00	2	1	50.0%	5.10E+00	5.10E+00
Other Parameters and Analytes above background (mg/l)						
Total Organic Carbon	N/A	2	2	100.0%	7.04E+00-8.37E+00	7.71E+00
Nitrate/Nitrite	1.56E+00	2	2	100.0%	1.84E+00-4.12E+00	2.98E+00

Locations: SW67593 and SW67693

Note: Analytical data are reported in scientific notation.

TABLE 4.7-3
ANALYTES DETECTED IN SURFACE WATER (BASEFLOW) IN THE SOUTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(1)The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.

(2)"Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding BSL.
(4) J qualifier represents estimated result, and B qualifier for metals represents estimated results.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

mg/l = milligrams per liter
µg/l = micrograms per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-4
ANALYTES DETECTED IN SURFACE WATER (BASEFLOW) IN THE McKAY DITCH AND W AND I EFFLUENT

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range	Mean Concentration or Activity (4)
PCOC Total Metals above background (µg/l)						
Calcium	4.61E+04	2	1	50.0%	4.74E+04	4.74E+04
Magnesium	9.13E+03	2	1	50.0%	1.00E+04	1.00E+04
Potassium	4.04E+03	2	1	50.0%	6.50E+03	6.50E+03
Sodium	3.16E+04	2	1	50.0%	3.89E+04	3.89E+04
PCOC Dissolved Metals above background (µg/l)						
Calcium	4.69E+04	2	1	50.0%	4.79E+04	4.79E+04
Magnesium	9.13E+03	2	1	50.0%	1.02E+04	1.02E+04
Potassium	3.80E+03	2	1	50.0%	7.23E+03	7.23E+03
Sodium	3.19E+04	2	1	50.0%	4.03E+04	4.03E+04
Other Parameters and Analytes above background (mg/l)						
Total Organic Carbon	N/A	2	2	100.0%	7.38E+00-1.27E+01	1.00E+01
Nitrate/Nitrite	1.56E+00	2	1	50.0%	1.63E+00	1.63E+00

Locations: SW68293 and SW67993

Note: Analytical data are reported in scientific notation.
(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) Real and duplicate sample results have been averaged.

mg/l = milligrams per liter
µg/l = micrograms per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-5
ANALYTES DETECTED IN SURFACE WATER (STORM EVENT) NORTH WALNUT CREEK UPGRADIENT OF OU6

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Acetone	N/A	2	1	50.0%	3J	3
PCOC Metals above background Unfiltered (µg/l)						
Aluminum	3,525.000	2	2	100.0%	7,200N-76,600N	41,900
Barium	140.600	2	2	100.0%	182B-583	383
Magnesium	9,134.400	2	2	100.0%	13,200-19,600	16,400
Potassium	4,042.400	2	1	50.0%	17,500	17,500
Sodium	31,645.700	2	1	50.0%	37,500	37,500
Zinc	159.300	2	1	50.0%	340	340
PCOC Metals above background Filtered (µg/l)						
Magnesium	9,132.100	2	1	50.0%	11,600	11,600
Sodium	31,872.400	2	1	50.0%	38,000	38,000
PCOC Radionuclides above background Unfiltered (pCi/l)						
Gross alpha	19.691	2	2	100.0%	45-93	69
Gross beta	21.844	2	2	100.0%	30-240	135
Uranium-233/234	1.586	2	2	100.0%	2.8B-4.1B	3.5
Uranium-238	1.228	2	2	100.0%	2.6B-4.2B	3.4
Other Parameters (mg/l)						
Total Organic Carbons	N/A	2	2	100.0%	10.00-19.00	14.50

Locations: SW68593 and SW68793

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2)"Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.

TABLE 4.7-5
ANALYTES DETECTED IN SURFACE WATER (STORM EVENT) NORTH WALNUT CREEK UPGRADIENT OF OU6

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(4) J qualifier represents estimated result, B qualifier for metals represents estimated result and N qualifier for metals represents spikes recoveries in the matrix spike sample did not meet advisory limits.
(5) The calculation for the mean concentration includes all J, N and B qualified data. Real and duplicate sample results have been averaged.

mg/l =
µg/l =
pCi/l =
N/A = Not Applicable
PCOC = Potential Contaminant of Concern

TABLE 4.7-6
ANALYTES DETECTED IN SURFACE WATER (STORM EVENT) IN THE NORTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/l)						
Benzoic acid	N/A	3	1	33.3%	3J	3
Diethyl phthalate	N/A	3	1	33.3%	2J	2
PCOC Metals above background Unfiltered (µg/l)						
Aluminum	3,525.000	3	3	100.0%	5,580N-447,500N	153,233
Arsenic	7.400	3	1	33.3%	13.3	13.3
Barium	140.600	3	1	33.3%	4,490	4,490
Calcium	46,074.800	3	1	33.3%	232,500	232,500
Magnesium	9,134.400	3	1	33.3%	131,000	131,000
Potassium	4,042.400	3	1	33.3%	79,200	79,200
Strontium	519.200	3	1	33.3%	1,755	1,755
Zinc	159.300	3	2	66.7%	185-2,450	1318
PCOC Metals above background Filtered (µg/l)						
Barium	152.700	3	1	33.3%	604	604
Magnesium	9,132.100	3	1	33.3%	9,800	9,800
Potassium	3,800.000	3	1	33.3%	6,080	6,080
PCOC Radionuclides above background Unfiltered (pCi/l)						
Gross beta	21.844	3	1	33.3%	345	345
Uranium-233/234	1.586	3	1	33.3%	16.5B	16.5
Uranium-235	0.199	3	1	33.3%	0.9	0.9
Uranium-238	1.228	3	1	33.3%	18.5B	18.5
Other Parameters and Analytes above background (mg/l)						
Total Organic Carbon	N/A	3	3	100.0%	9.00-25.50	14.83
Nitrate/Nitrite	1.564	3	1	100.0%	1.80	1.80

Locations: SW69093, SW69293, and SW69393

(1) The [illegible]ground Screening Level (BSL) was calculated using background data, a[illegible]presents the sum of the background mean plus two standard deviations. [illegible]

TABLE 4.7-6
ANALYTES DETECTED IN SURFACE WATER (STORM EVENT) IN THE NORTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size rejection code, or data not received at RFEDS by the January 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, N qualifier for metals represents spike recoveries in the matrix spike sample did not meet advisory limits, B qualifier for metals represents estimated result.
(5) The calculation for the mean concentration includes J, N, and B qualified data. Real and duplicate sample results have been averaged.

mg/g =
µg/l =
pCi/l =
N/A = Not Applicable
PCOC = Potential Contaminant of Concern

TABLE 4.7-7
ANALYTES DETECTED IN SURFACE WATER (STORM EVENT) IN THE SOUTH WALNUT CREEK DRAINAGE

Analyte	BSL (1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Acetone	N/A	3	1	33.3%	5J	5
Tetrachloroethene	N/A	3	1	33.3%	2J	2
Trichloroethene	N/A	3	1	33.3%	2J	2
Semivolatile Organic Compounds (µg/l)						
Diethyl phthalate	N/A	3	1	33.3%	2J	2
PCOC Metals above background (Unfiltered) (µg/l)						
Aluminum	3,525.000	3	1	33.3%	7,860N	7,860
Potassium	4,042.400	3	2	66.7%	4,080B-5,570	4,825
Zinc	159.300	3	1	33.3%	308	308
PCOC Metals above Background (Filtered) (µg/l)						
Potassium	3,800.000	3	1	33.3%	5,170	5,170
Other Parameters and Analytes above Background (mg/l)						
Total Organic Carbon	N/A	3	3	100.0%	8.00-10.00	8.67
Nitrate/Nitrite	1.564	3	1	33.3%	1.90	1.90

Locations: SW68693, SW68893, and SW68993

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for metals represents estimated result, and N qualifier for metals represents spike recoveries in the matrix spike sample did not meet advisory limits.
(5) The calculation for the mean concentration includes all J, N and B qualified data. Real and duplicate sample results have been averaged.

mg/l =
µg/l =
N/A = Not Applicable

TABLE 4.7-8
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.1 (POND A-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCOC Total Metals above background (µg/l)						
Magnesium	2.63E+04	5	3	60.0%	2.66E+04 - 2.72E+04	2.70E+04
Sodium	2.18E+04	5	5	100.0%	3.47E+04 - 1.75E+05	1.45E+05
PCOC Dissolved Metals above background (µg/l)						
Lead	3.70E+00	4	1	25.0%	6.50E+00	6.50E+00
Magnesium	1.74E+04	5	5	100.0%	1.79E+04 - 2.95E+04	2.55E+04
Potassium	5.17E+03	5	4	80.0%	7.26E+03 - 8.25E+03	7.58E+03
Sodium	2.35E+04	5	5	100.0%	3.69E+04 - 1.92E+05	1.49E+05
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	5	100.0%	5.34E+00 - 1.43E+01	8.88E+00
Uranium-233/234	3.22E+00	5	1	20.0%	3.69E+00	3.69E+00
Uranium-235	1.90E-01	5	2	40.0%	3.00E-01J - 3.7E+01J	3.35E-01
Uranium-238	3.07E+00	5	4	80.0%	3.56E+00 - 4.48E+00	4.00E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Cesium-137	1.49E-01	5	5	100.0%	2.13E-01J - 4.81E-01J	3.36E-01
Uranium-238	1.69E+00	4	4	100.0%	3.50E+00 - 4.31E+00	3.82E+00

Locations: SW60092, SW60192, SW60292, SW60392, and SW60492

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

mg/l = milligrams per liter
µg/l = micrograms per liter
pCi/l = picocuries per liter

N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-9
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.2 (POND A-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Methylene chloride	N/A	5	1	20.0%	2.00E+00J	2.00E+00
Semivolatile Organic Compounds (µg/l)						
Di-n-butyl phthalate	N/A	5	1	20.0%	1.00E+00J	1.00E+00
PCOC Total Metals above background (µg/l)						
Magnesium	2.63E+04	5	4	80.0%	2.66E+04 - 2.75E+04	2.71E+04
Sodium	2.18E+04	5	5	100.0%	1.64E+05 - 1.78E+05	1.70E+05
PCOC Dissolved Metals above background (µg/l)						
Lead	3.70E+00	5	2	40.0%	3.80E+00 - 3.90E+00	3.85E+00
Magnesium	1.74E+04	5	5	100.0%	2.73E+04 - 2.80E+04	2.76E+04
Potassium	5.17E+03	5	5	100.0%	7.42E+03 - 7.94E+03	7.69E+03
Sodium	2.35E+04	5	5	100.0%	1.71E+05 - 1.87E+05	1.76E+05
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	4	80.0%	9.06E+00 - 1.20E+01	1.02E+01
Uranium-238	3.07E+00	5	5	100.0%	3.30E+00 - 4.10E+00	3.64E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Cesium-137	1.49E-01	3	1	33.3%	3.59E-01J	3.59E-01
Uranium-238	1.69E+00	5	5	100.0%	2.88E+00 - 3.20E+00	3.02E+00

Locations: SW60592, SW60692, SW60792, SW60892, and SW60992

Note: Analytical data are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

µg/l = micrograms per liter
pCi/l = picocuries per liter

N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-10
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.3 (POND A-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/l)						
Di-n-butyl phthalate	N/A	5	3	60.0%	1.00E+00J-2.00E+00J	1.00E+00
PCOC Total Metals above background (µg/l)						
Sodium	2.18E+04	5	5	100.0%	2.31E+04 - 3.66E+04	2.61E+04
PCOC Dissolved Metals above background (µg/l)						
Sodium	2.35E+04	5	4	80.0%	2.35E+04 - 3.59E+04	2.69E+04
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	1	20.0%	7.10E+00	7.10E+00
Uranium-235	1.90E-01	5	1	20.0%	2.40E-01J	2.40E-01
Uranium-238	3.07E+00	5	1	20.0%	3.70E+00	3.70E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Uranium-238	1.69E+00	5	1	20.0%	4.20E+00	4.20E+00

Locations: SW61092, SW61192, SW61292, SW61392, and SW61492

Note: Analytical data are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

mg/l =milligrams per liter
µg/l = microgram per liter
pCi/l - picocuries per liter

N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-11
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.4 (POND A-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range	Mean Concentration or Activity (4)
PCOC Total Metals above background (µg/l)						
Sodium	2.18E+04	5	5	100.0%	3.44E+04 - 3.64E+04	3.51E+04
PCOC Dissolved Metals above background (µg/l)						
Potassium	5.17E+03	5	5	100.0%	8.50E+03 - 8.73E+03	8.62E+03
Sodium	2.35E+04	5	5	100.0%	3.49E+04 - 3.58E+04	3.54E+04
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	5	100.0%	8.20E+00 - 1.00E+01	8.90E+00

Locations: SW61592, SW61692, SW61792, SW61892, and SW61992

Note: Analytical data are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) Real and duplicate sample results have been averaged.

mg/l = milligrams per liter
µg/l = micrograms per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC - Potential Chemical of Concern

TABLE 4.7-12
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.5 (POND B-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
1,2-Dichloroethane	N/A	5	1	20.0%	1.00E+00J	1.00E+00
Tetrachloroethene	N/A	5	2	40.0%	6.00E+00 - 1.20E+01	9.00E+00
PCOC Total Metals above background (µg/l)						
Sodium	2.18E+04	5	5	100.0%	7.38E+04 - 7.77E+04	7.53E+04
PCOC Dissolved Metals above background (µg/l)						
Magnesium	1.74E+04	5	5	100.0%	1.87E+04 - 2.02E+04	1.95E+04
Sodium	2.35E+04	5	5	100.0%	7.63E+04 - 8.09E+04	7.87E+04
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	4	80.0%	5.47E+00 - 8.00E+00C	6.29E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Cesium-137	1.49E-01	4	2	50.0%	1.72E-01J - 3.54E-01J	2.63E-01
Strontium-89,90	1.30E+00	5	2	40.0%	1.37E+00 - 2.50E+00	1.94E+00
Uranium-238	1.69E+00	4	2	50.0%	1.74E+00 - 1.89E+00	1.81E+00

Locations: SW62092, SW62192, SW62292, SW62392, and SW62492

Note: Analytical data are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, C qualifier for radionuclides indicates elevated total dissolved solids in the sample.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

mg/l = milligrams per liter
µg/l = micrograms per liter
pCi/l = picocuries per liter

N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-13
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.6 (POND B-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
1,2-Dichloroethene	N/A	5	3	60.0%	2.00E+00J - 3.00E+00J	2.00E+00
Acetone	N/A	5	2	40.0%	9.00E+00J - 1.80E+01	1.35E+01
Trichloroethene	N/A	5	4	80.0%	2.00E+00J - 4.00E+00J	2.00E+00
PCOC Total Metals above background (µg/l)						
Sodium	2.18E+04	6	6	100.0%	5.57E+04 - 6.56E+04	5.92E+04
PCOC Dissolved Metals above background (µg/l)						
Lead	3.70E+00	6	1	16.7%	4.90E+00	4.90E+00
Magnesium	1.74E+04	6	6	100.0%	1.84E+04 - 2.48E+04	2.33E+04
Sodium	2.35E+04	6	6	100.0%	5.68E+04 - 6.49E+04	6.06E+04
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	6	1	16.7%	5.20E+00	5.20E+00
Uranium-233/234	3.22E+00	6	1	16.7%	3.57E+00	3.57E+00
Uranium-235	1.90E-01	6	2	33.3%	2.19E-01J - 3.37E-01J	2.78E-01
Uranium-238	3.07E+00	6	1	16.7%	3.20E+00	3.20E+00
PCOC Dissolved Radionuclides above background (pCi/l)						
Cesium-137	1.49E-01	6	3	50.0%	2.22E-01J - 6.10E-01J	4.05E-01
Uranium-238	1.69E+00	6	3	50.0%	1.80E+00 - 1.87E+00	1.83E+00

Locations: SW62592, SW62692, SW62792, SW62892 (6), and SW62992

Notes: Analytical data are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.

TABLE 4.7-13
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.6 (POND B-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.
(6) A shallow and a deep sample suite were collected from site SW62892. The deep sample suite, SWU6061WC, was collected at 4.5 feet below the pond surface and the shallow sample suite, SWU6028WC, was collected above the 4.5 foot depth.

µg/l = micrograms per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-14
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.7 (POND B-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Chloroform	N/A	5	5	100.0%	1.00E+00J	1.00E+00
PCOC Total Metals above background (µg/l)						
Sodium	2.18E+04	5	5	100.0%	22.28E+04-2.60E+04	2.48E+04
PCOC Dissolved Metals above background (µg/l)						
Potassium	5.17E+03	5	5	100.0%	7.33E+03-9.42E+03	8.74E+03
Sodium	2.35E+04	5	5	100.0%	2.36E+04-2.73E+04	2.58E+04
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	5	100.0%	7.70E+00-1.00E+01	9.22E+00
Other Analytes above background (mg/l)						
Nitrate	5.25E+00	5	5	100.0%	5.40E+00-7.8E+00	5.55E+00

Locations: SW63092, SW63192, SW63292, SW63392, and SW63492

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J and B qualified data. Real and duplicate sample results have been averaged.

mg/l = milligrams per liter
µg/l = micrograms per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-15
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.8 (POND B-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/l)						
Chloroform	N/A	5	5	100.0%	8.00E-01J - 2.00E+00J	1.40E+00
Trichloroethene	N/A	5	1	20.0%	6.00E+00	6.00E+00
Semivolatile Organic Compounds (µg/l)						
Di-n-butyl phthalate	N/A	5	2	40.0%	1.00E+00J	1.00E+00
PCOC Total Metals above background (µg/l)						
Potassium	9.80E+03	5	4	80.0%	1.02E+04 - 1.12E+04	1.07E+04
Sodium	2.18E+04	5	5	100.0%	2.58E+04 - 3.76E+04	2.86E+04
PCOC Dissolved Metals above background (µg/l)						
Magnesium	1.74E+04	5	1	20.0%	2.03E+04	2.03E+04
Potassium	5.17E+03	5	4	80.0%	1.11E+04 - 1.20E+04	1.14E+04
Sodium	2.35E+04	5	5	100.0%	2.77E+04 - 3.94E+04	3.08E+04
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	4	80.0%	1.10E+01 - 1.50E+01	12
Uranium-235	1.90E-01	5	2	40.0%	4.00E-01 - 5.60E-01	4.80E-01

Locations: SW63592, SW63692, SW63792, SW63892, and SW63992

Notes: Analytical are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.

(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J and B qualified data. Real and duplicate sample results have been averaged.

TABLE 4.7-15
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.8 (POND B-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

mg/l = milligrams per liter
µg/l = micrograms per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-16
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.9 (POND B-5)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCOC Total Metals above background (µg/l)						
Sodium	2.18E+04	5	5	100.0%	2.50E+04 - 2.77E+04	2.66E+04
PCOC Dissolved Metals above background (µg/l)						
Lead	3.70E+00	5	1	20.0%	4.60E+00	4.60E+00
Potassium	5.17E+03	5	5	100.0%	8.41E+03 - 8.99E+03	8.76E+03
Sodium	2.35E+04	5	5	100.0%	2.48E+04 - 2.85E+04	2.74E+04
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	5	100.0%	7.00E+00 - 1.40E+01	1.00E+01

Locations: SW64092, SW64192, SW64292, SW64392, and SW64492

Note: Analytical data are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceedingthe BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J and B qualified data. Real and duplicate sample results have been averaged.

mg/l = milligrams per liter
µg/l = micrograms per liter
pCi/l = picocuries per liter

N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.7-17
ANALYTES DETECTED IN POND SURFACE WATER AT IHSS 142.12 (W AND I POND)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCOC Total Metals above background (µg/l)						
Sodium	2.18E+04	5	5	100.0%	2.32E+04 - 2.41E+04	2.37E+04
PCOC Dissolved Metals above background (µg/l)						
Sodium	2.35E+04	5	4	80.0%	2.36E+04 - 2.67E+04	2.46E+04
PCOC Total Radionuclides above background (pCi/l)						
Gross beta	5.14E+00	5	3	60.0%	5.30E+00 - 7.10E+00	6.20E+00

Locations: SW64592, SW64692,SW64792, SW64892, and SW64992

Note: Analytical data are reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes B qualified data. Real and duplicate sample results have been averaged.

µg/l = micrograms per liter
pCi/l = picocuries per liter
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-1
ANALYTES DETECTED IN STREAM SEDIMENTS NORTH WALNUT CREEK UPSTREAM OF OU6

Analyte	Number of Samples (1)	Number of Detections	Percent Detections		Mean Concentration or Activity (3)
Semivolatile Organic Compounds(µg/kg)					
Anthracene	2	1	50.0%	6.50E+01J	6.50E+01
Benzo(a)anthracene	2	2	100.0%	7.80E+01J - 1.70E+02J	1.24E+02
Benzo(a)pyrene	2	2	100.0%	1.60E+02J - 2.00E+02J	1.80E+02
Benzo(b)fluoranthene	2	1	50.0%	2.00E+02J	2.00E+02
Benzo(k)fluoranthene	2	1	50.0%	7.40E+01J	7.40E+21
Benzoic acid	2	2	100.0%	9.50E+01J - 1.30E+02J	1.13E+02
Butyl benzyl phthalate	2	1	50.0%	1.20E+02J	1.20E+02
Chrysene	2	2	100.0%	9.10E+01J - 1.80E+02	1.36E+02
Di-n-butyl phthalate	2	1	50.0%	7.50E+01	7.50E+02
Fluoranthene	2	2	100.0%	1.60E+02J - 3.80E+02J	2.70E+02
Indeno(1,2,3-cd)pyrene	2	1	50.0%	6.60E+01J	6.60E+21
Phenanthrene	2	2	100.0%	1.10E+02J - 2.60E+02J	1.85E+02
Pyrene	2	2	100.0%	1.60E+02J - 3.50E+02J	2.55E+22
Other Parameters (mg/kg)					
Total Organic Carbon	2	2	100.0%	7.79E+03 - 2.19E+04	1.48E+24

Locations: SED69492 and SED69692

Note: Analytical data is reported in scientific notation.

(1) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(2) J qualifier represents estimated result.
(3) The calculation for the mean concentration includes all J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram

TABLE 4.8-2
ANALYTES DETECTED IN STREAM SEDIMENTS AT NORTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
Acetone	N/A	5	1	20.0%	6.30E+01	6.30E+01
Methylene chloride	N/A	5	1	20.0%	7.00E+00J	7.00E+00
Semivolatile Organic Compounds(µg/kg)						
Benzo(a)pyrene	N/A	6	1	16.7%	1.10E+02J	1.10E+02
Benzo(b)fluoranthene	N/A	6	1	16.7%	1.40E+02J	1.40E+02
Benzoic acid	N/A	6	1	16.7%	5.10E+02J	5.10E+02
Bis(2-ethylhexyl)phthalate	N/A	6	3	50.0%	4.30E+01J - 1.90E+02J	9.50E+01
Chrysene	N/A	6	1	16.7%	1.00E+02J	1.00E+02
Fluoranthene	N/A	6	3	50.0%	4.50E+01J - 1.80E+02J	1.04E+02
Phenanthrene	N/A	6	1	16.7%	1.10E+02J	1.10E+02
Pyrene	N/A	6	1	16.7%	1.60E+02J	1.60E+02
PCOC Metals above background (mg/kg)						
Calcium	1.30E+04	6	1	16.7%	1.51E+04	1.51E+04
Iron	2.14E+04	6	1	16.7%	2.15E+04	2.15E+04
Manganese	6.68E+02	6	1	16.7%	1.00E+03	1.00E+03
Potassium	2.35E+03	6	1	16.7%	2.66E+03	2.66E+03
PCOC Radionuclides above background (pCi/l)						
Tritium	7.24E+02	6	1	16.7%	7.65E+02	7.65E+02
Other Parameters and Analytes above background (mg/kg)						
Total Organic Carbon	N/A	6	6	100.0%	1.48E+03 - 1.22E+04	7.26E+03
Nitrate/Nitrite	3.92E+01	6	1	16.7%	5.29E+01	5.29E+01

Locations: SED68192, SED68492, SED 68592, SED68692, SED68792, and SED68992
Note: Analytical data is reported in scientific notation.

TABLE 4.8-2
ANALYTES DETECTED IN STREAM SEDIMENTS AT NORTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes all J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/l = picocuries per liter
PCOC = Potential Chemical of Concern

TABLE 4.8-3
ANALYTES DETECTED IN STREAM SEDIMENTS AT SOUTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Semivolatile Organic Compounds (µg/kg)						
Acenaphthene	N/A	5	1	20.0%	1.30E+02J	1.30E+02
Anthracene	N/A	5	2	40.0%	1.10E+02J-1.50E+02J	1.30E+02
Benzo(a)anthracene	N/A	5	2	40.0%	3.60E+02J - 4.30E+02	3.95E+02
Benzo(a)pyrene	N/A	5	2	40.0%	4.10E+02J - 4.80E+02	4.45E+02
Benzo(b)fluoranthene	N/A	5	2	40.0%	5.50E+02 - 6.50E+02	6.00E+02
Benzo(ghi)perylene	N/A	5	2	40.0%	1.20E+02J - 1.60E+02J	1.40E+02
Benzo(k)fluoranthene	N/A	5	2	40.0%	1.90E+02J - 2.30E+02J	2.10E+02
Benzoic acid	N/A	5	1	20.0%	1.10E+02J	1.10E+02
Chrysene	N/A	5	2	40.0%	4.30E+02J 5.10E+02	4.70E+02
Di-n-butyl phthalate	N/A	5	3	60.0%	4.60E+01J - 6.80E+01J	5.90E+21
Dibenzofuran	N/A	5	1	20.0%	3.70E+01J	3.70E+21
Fluoranthene	N/A	5	2	40.0%	8.70E+02 - 1.00E+03	9.35E+02
Fluorene	N/A	5	1	20.0%	8.90E+01	8.90E+21
Indeno(1,2,3-cd)pyrene	N/A	5	2	40.0%	1.50E+02J - 1.80E+02J	1.65E+02
Naphthalene	N/A	5	1	20.0%	4.60E+01J	4.60E+21
Phenanthrene	N/A	5	2	40.0%	6.00E+02 - 7.50E+02	6.75E+02
Pyrene	N/A	5	2	40.0%	7.60E+02 - 9.60E+02	8.60E+02
PCOC Metals above background (mg/kg)						
Calcium	1.30E+04	5	1	20.0%	9.57E+04	9.57E+04
PCOC Radionuclides above background (pCi/l)						
Tritium	7.24E+02	5	2	40.0%	8.38E+02 - 1.12E+04	6.02E+03
Other Parameters (mg/kg)						
Total Organic Carbons	N/A	5	5	100.0%	4.58E+03 - 1.77E+04	9.57E+03

Locations: SED68892, SED69792, SED69892, SED69992, and SED70092

TABLE 4.8-3
ANALYTES DETECTED IN STREAM SEDIMENTS AT SOUTH WALNUT CREEK DRAINAGE

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result.
(5) The calculation for the mean concentration includes all J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
N/A = Not Applicable
pCi/l = picocuries per liter
PCOC = Potential Chemical of Concern

TABLE 4.8-4
ANALYTES DETECTED IN STREAM SEDIMENTS McKAY DITCH AND W AND I POND EFFLUENT

Analyte	Number of Samples (1)	Number of Detections	Percent Detections	Concentration or Activity Range(2)	Mean Concentration or Activity (3)
Semivolatile Organic Compounds(µg/kg)					
Benzoic acid	2	1	50.0%	1.70E+02J	1.70E+02
Benzyl alcohol	2	1	50.0%	4.10E+01J	4.10E+01
Bis(2-ethylhexyl)phthalate	2	1	50.0%	1.70E+02J	7.00E+01
Di-n-butyl phthalate	2	1	50.0%	4.50E+01	4.50E+01
Other Parameters (mg/kg)					
Total Organic Carbon	2	2	100.0%	4.76E+03 - 7.55E+03	6.16E+03

Locations: SED69292 and SED69392

Note: Analytical data is reported in scientific notation.

(1) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(2) J qualifier represents estimated result.
(3) The calculation for the mean concentration includes all J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram

TABLE 4.8-5
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.1 (POND A-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (ug/kg)						
2-Butanone	N/A	5	4	80.0%	6.00E+00J - 1.30E+01	1.00E+01
4-Methyl-2-pentanone	N/A	5	1	20.0%	6.00E+00J	6.00E+00
Acetone	N/A	5	5	100.0%	5.30E+01B - 1.10E+02B	7.80E+01
Methylene chloride	N/A	5	5	100.0%	9.00E+00BJ - 9.00E+01	2.80E+01
Toluene	N/A	5	5	100.0%	9.70E+01 - 2.10E+02	1.55E+02
Semivolatile Organic Compounds (ug/kg)						
Acenaphthene	N/A	5	1	20.0%	8.90E+01J	8.90E+01
Anthracene	N/A	5	2	40.0%	6.80E+01J - 8.80E+01J	7.80E+01
Benzo(a)anthracene	N/A	5	4	80.0%	1.85E+02J - 2.70E+02J	2.16E+02
Benzo(a)pyrene	N/A	5	4	80.0%	1.90E+02J - 3.10E+02J	2.36E+02
Benzo(b)fluoranthene	N/A	5	3	60.0%	2.70E+02J - 4.20E+02J	3.30E+02
Benzo(ghi)perylene	N/A	5	3	60.0%	1.45E+02J - 2.10E+02J	1.68E+02
Benzo(k)fluoranthene	N/A	5	4	80.0%	9.90E+01J - 2.00E+02J	1.52E+02
Bis(2-ethylhexyl)phthalate	N/A	5	4	80.0%	9.00E+01J - 4.85E+02J	2.81E+02
Butyl benzyl phthalate	N/A	5	1	20.0%	1.20E+02J	1.20E+02
Chrysene	N/A	5	5	100.0%	7.30E+01J - 3.50E+02J	2.29E+02
Di-n-octyl phthalate	N/A	5	2	40.0%	6.60E+01J - 2.10E+02J	1.38E+02
Fluoranthene	N/A	5	5	100.0%	2.40E+02J - 7.90E+02J	5.52E+02
Indeno(1,2,3-cd)pyrene	N/A	5	3	60.0%	1.40E+02J - 2.00E+02J	1.63E+02
Phenanthrene	N/A	5	5	100.0%	1.70E+02J - 5.20E+02J	3.78E+02
Pyrene	N/A	5	5	100.0%	1.70E+02J - 7.10E+02	4.65E+02
Pesticides/PCBs (ug/kg)						
Aroclor-1254	N/A	5	5	100.0%	3.20E+02 - 5.90E+02	4.06E+02
PCOC Metals above background (mg/kg)						
Potassium	2.60E+03	5	2	40.0%	2.81E+03 - 3.54E+03	3.18E+03
Zinc	1.02E+02	5	2	40.0%	1.07E+02 - 7.10E+02	1.09E+02
PCOC Radionuclides above background (pCi/g)						

TABLE 4.8-5
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.1 (POND A-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Americium-241	7.41E-01	5	5	100.0%	3.25E+00 - 1.32+02	9.31E+00
Gross alpha	4.77E+01	5	3	60.0%	5.80E+01- 7.07E+01	6.57E+01
Plutonium-239/240	4.04E+00	4	4	100.0%	1.76E+01 - 3.62E+01	2.90E+01
Uranium-233/234	1.58E+00	5	4	80.0%	1.81E+00 - 2.48E+00	2.11E+00
Uranium-238	1.56E+00	5	4	80.0%	1.75E+00 - 2.14E+00	1.93E+00
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	5	5	100.0%	1.02E+04 - 1.30E+04	1.16E+04

Locations: SED60092, SED60192, SED60292, SED60392, and SED60492

Note: Analytical data is reported in scientific notatation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-6
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.2 (POND A-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	5	2	40.0%	9.00E+00J - 2.60E+01	1.80E+01
Acetone	N/A	5	4	80.0%	4.70E+01B - 3.30E+03B	9.32E+02
Methylene chloride	N/A	5	5	100.0%	5.00E+00BJ - 8.30E+03B	1.67E+03
Toluene	N/A	5	4	80.0%	4.00E+00J - 8.60E+02J	3.82E+02
Semivolatile Organic Compounds (µg/kg)						
Benzo(a)anthracene	N/A	5	1	20.0%	5.80E+01J	5.80E+01
Benzo(a)pyrene	N/A	5	1	20.0%	7.50E+01J	7.50E+01
Benzoic acid	N/A	5	4	80.0%	1.80E+02J - 3.30E+02J	2.55E+02
Bis(2-ethylhexyl)phthalate	N/A	5	5	100.0%	1.10E+02J - 7.80E+03	2.60E+03
Chrysene	N/A	5	1	20.0%	7.10E+01J	7.10E+01
Fluoranthene	N/A	5	1	20.0%	1.60E+02J	1.60E+02
Phenanthrene	N/A	5	1	20.0%	1.20E+02J	1.20E+02
Pyrene	N/A	5	3	60.0%	7.10E+01J - 1.30E+02J	9.50E+01
Pesticides/PCBs (µg/kg)						
Aldrin	N/A	5	1	20.0%	5.40E+01	5.40E+01
Aroclor-1254	N/A	5	1	20.0%	5.90E+02	5.90E+02
PCOC Metals above background (mg/kg)						
Potassium	2.60E+03	5	1	20.0%	2.74E+03	2.74E+03
Zinc	1.02E+02	5	1	20.0%	4.09E+02	4.09E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	4	3	75.0%	1.07E+00 - 1.74E+00	1.30E+00
Plutonium-239/240	4.04E+00	5	1	20.0%	5.65E+00	5.65E+00
Uranium-233/234	1.58E+00	5	1	20.0%	1.83E+00	1.83E+00
Uranium-238	1.56E+00	5	3	60.0%	2.13E+00 - 2.55E+00	2.28E+00
Other Parameters (mg/kg)						

TABLE 4.8-6
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.2 (POND A-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Total Organic Carbon	N/A	5	5	100.0%	7.47E+03 - 2.70E+04	1.84E+04

Locations: SED60592, SED60692, SED60792, SED60892, and SED60992

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceedingthe BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-7
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.3 (POND A-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	5	3	60.0%	2.00E+00J - 4.00E+00J	3.00E+00
Acetone	N/A	5	5	100.0%	2.90E+01B - 6.30E+01B	4.20E+01
Methylene chloride	N/A	5	5	100.0%	8.00E+00BJ - 9.00E+00BJ	9.00E+00
Toluene	N/A	5	5	100.0%	6.00E+00J - 6.20E+01	3.60E+01
Semivolatile Organic Compounds (µg/kg)						
Benzo(a)pyrene	N/A	5	3	60.0%	1.50E+02J - 2.40E+02J	1.87E+02
Benzo(b)fluoranthene	N/A	5	4	80.0%	2.40E+02J - 3.70E+02J	2.78E+02
Bis(2-ethylhexyl)phthalate	N/A	5	2	40.0%	2.20E+02J - 5.70E+02	3.95E+02
Chrysene	N/A	5	5	100.0%	7.70E+01J - 2.50E+02J	1.69E+02
Fluoranthene	N/A	5	5	100.0%	1.70E+02J - 5.40E+02J	3.72E+02
Phenanthrene	N/A	5	4	80.0%	1.70E+02J - 2.60E+02J	2.08E+02
Pyrene	N/A	5	5	100.0%	1.40E+02J - 4.60E+02J	3.12E+02
PCOC Metals above background (mg/kg)						
Chromium	2.12E+01	5	2	40.0%	2.59E+01 - 2.99E+01	2.79E+01
Magnesium	4.47E+03	5	3	60.0%	4.74E+03 - 5.34E+03	5.08E+03
Potassium	2.60E+03	5	2	40.0%	2.62E+03 - 3.44E+03	3.03E+03
Vanadium	5.60E+01	5	2	40.0%	6.01E+01 - 6.27E+01	6.14E+01
Zinc	1.02E+02	5	4	80.0%	1.22E+02 - 1.55E+02	1.39E+02
PCOC Radionuclides above background (pCi/g)						
Uranium-233/234	1.58E+00	5	1	20.0%	1.59E+00	1.59E+00
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	5	5	100.0%	3.89E+03 - 9.09E+03	6.66E+03

Locations: SED61092, SED61192, SED61292, SED61392, and SED61492

TABLE 4.8-7
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.3 (POND A-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-8
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.4 (POND A-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
Acetone	N/A	5	5	100.0%	1.90E+01 - 4.60E+01B	3.10E+01
Benzene	N/A	5	1	20.0%	3.00E+00J	3.00E+00
Methylene chloride	N/A	5	5	100.0%	7.00E+00BJ - 17.00E+BJ	1.10E+01
Toluene	N/A	5	3	60.0%	2.00E+00 - 8.00E+00	5.00E+00
Semivolatile Organic Compounds (µg/kg)						
Bis(2-ethylhexyl)phthalate	N/A	5	2	40.0%	1.70E+02J - 9.50E+02J	5.60E+02
PCOC Metals above background (mg/kg)						
Antimony	3.40E+01	4	1	25.0%	4.14E+01	4.14E+01
Chromium	2.12E+01	5	1	20.0%	2.38E+01	2.38E+01
Magnesium	4.47E+03	5	1	20.0%	5.22E+03	5.22E+03
Vanadium	5.60E+01	5	1	20.0%	5.77E+01	5.77E+01
Zinc	1.02E+02	5	2	40.0%	1.15E+02 - 1.69E+02	1.42E+02
PCOC Radionuclides above background (pCi/g)						
Strontium-89,90	1.40E+00	5	2	40.0%	1.56E+00 - 1.80E+00J	1.68E+00
Uranium-233/234	1.58E+00	5	1	20.0%	1.68E+00	1.68E+00
Uranium-238	1.56E+00	5	2	40.0%	1.57E+00 - 1.67E+00	1.62E+00
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	4	4	100.0%	5.73E+03 - 8.85E+03	7.26E+03

Locations: SED61592, SED61692, SED61792, SED61892, and SED61992

Note: Analytical data is reported in scientific notatation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.

TABLE 4.8-8
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.4 (POND A-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-9
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.5 (POND B-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	5	2	40.0%	1.30E+01J - 2.10E+01	1.70E+01
Acetone	N/A	5	4	80.0%	2.05E+02B - 3.90E+02	2.69E+02
Methylene chloride	N/A	5	1	20.0%	9.00E+00J	9.00E+00J
Toluene	N/A	5	5	100.0%	8.65E+01 - 1.10E+03	3.95E+02
Semivolatile Organic Compounds (µg/kg)						
1,2,3-Trichlorobenzene	N/A	7	1	14.3%	1.30E+02J	1.30E+02
2-Methylnaphthalene	N/A	7	1	14.3%	1.70E+02J	1.70E+02
Acenaphthene	N/A	7	3	42.9%	9.90E+01J - 3.15E+02J	2.18E+02
Anthracene	N/A	7	3	42.9%	1.70E+02J - 3.80E+02J	2.97E+02
Benzo(a)anthracene	N/A	7	6	85.7%	7.70E+01J - 1.10E+03	6.38E+02
Benzo(a)pyrene	N/A	7	5	71.4%	1.50E+02J - 8.70E+02	4.15E+02
Benzo(b)fluoranthene	N/A	7	5	71.4%	7.20E+02J - 3.10E+03	1.75E+03
Benzo(k)fluoranthene	N/A	7	5	71.4%	2.20E+02J - 1.00E+03	6.34E+02
Bis(2-ethylhexyl)phthalate	N/A	7	7	100.0%	5.90E+02J - 8.80E+04D	2.70E+04
Chrysene	N/A	7	6	85.7%	1.30E+02J - 1.90E+03	1.06E+03
Dibenzo(a,h)anthracene	N/A	7	1	14.3%	1.50E+02J	1.50E+02
Dibenzofuran	N/A	7	1	14.3%	1.80E+02J	1.80E+02
Fluoranthene	N/A	7	7	100.0%	1.40E+02J - 3.50E+03	1.88E+03
Fluorene	N/A	7	2	28.6%	3.10E+02J - 4.60E+02J	3.85E+02
Indeno(1,2,3-cd)pyrene	N/A	7	2	28.6%	3.20E+02J - 3.60E+02J	3.40E+02
Naphthalene	N/A	7	1	14.3%	3.90E+02J	3.90E+02
Phenanthrene	N/A	7	6	85.7%	1.00E+02J - 2.60E+03	1.32E+03
Phenol	N/A	7	1	14.3%	2.90E+02	2.90E+02
Pyrene	N/A	7	7	100.0%	3.10E+02J - 3.80E+03	1.52E+03
Pesticides/PCBs (µg/kg)						
Aroclor-1254	N/A	7	5	71.4%	9.55E+02 - 1.00E+04	4.89E+03
Heptachlor	N/A	7	1	14.3%	3.90E+01	3.90E+01

TABLE 4.8-9
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.5 (POND B-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCOC Metals above background (mg/kg)						
Chromium	2.12E+01	7	5	71.4%	2.28E+01 - 9.61E+01	5.47E+01
Copper	1.03E+02	7	1	14.3%	1.25E+02	1.25E+02
Potassium	2.60E+03	7	3	42.9%	2.71E+03B - 3.12E+03	2.86E+03
Silver	6.90E+00	7	6	85.7%	4.19E+01 - 3.45E+02	1.69E+02
Zinc	1.02E+02	7	7	100.0%	1.20E+02 - 1.27E+03	4.30E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	7	7	100.0%	7.86E+00 - 3.89E+02	1.45E+02
Gross alpha	4.77E+01	7	6	85.7%	1.26E+02 - 1.74E+03	6.78E+02
Gross beta	3.39E+01	7	6	85.7%	3.63E+01 - 9.82E+01	5.95E+01
Plutonium-239/240	4.04E+00	2	2	100.0%	2.07E+01 - 9.20E+01	5.63E+01
Uranium-233/234	1.58E+00	7	7	100.0%	1.61E+00 - 2.52E+01	1.19E+01
Uranium-235	1.43E-01	7	6	85.7%	2.73E-01 - 1.30E+00	7.23E-01
Uranium-238	1.56E+00	7	7	100.0%	2.04E+01-4.39E+01	1.99E+01
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	7	7	100.0%	1.30E+04 - 3.75E+04	2.58E+04

Locations: SED62092, SED62192, SED62292, SED62392, and SED62492

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceedingthe BSL.
(4) J qualifier represents estimated result, D qualifier represents dilution result, and B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J, D, and B qualified data. Real and duplicate sample results have been averaged.

mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-10
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.6 (POND B-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	4	3	75.0%	3.20E+01 - 1.30E+02	7.30E+01
Acetone	N/A	4	3	75.0%	4.90E+01B - 8.10E+02B	3.62E+02
Toluene	N/A	4	4	100.0%	8.00E+00J - 1.30E+02	7.00E+01
Semivolatile Organic Compounds (µg/kg)						
Benzo(a)anthracene	N/A	4	3	75.0%	8.80E+01J - 1.20E+02	1.02E+02
Benzo(a)pyrene	N/A	4	1	25.0%	1.30E+02J	1.30E+02
Benzo(k)fluoranthene	N/A	4	1	25.0%	6.20E+01J	6.20E+01
Bis(2-ethylhexyl)phthalate	N/A	4	4	100.0%	3.30E+02J - 9.00E+03	5.03E+03
Chrysene	N/A	4	2	50.0%	1.40E+02J - 2.00E+02J	1.70E+02
Fluoranthene	N/A	4	3	75.0%	1.60E+02J - 2.70E+02J	3.10E+02
Phenanthrene	N/A	4	3	75.0%	1.00E+02J - 3.30E+02J	2.13E+02
Pyrene	N/A	4	3	75.0%		2.13E+02
Pesticides/PCBs (µg/kg)						
Aroclor-1254	N/A	5	4	80.0%	4.00E+02 - 6.60E+03	2.71E+03
PCOC Metals above background (mg/kg)						
Magnesium	4.47E+03	5	2	40.0%	4.80E+03 - 5.65E+03	5.23E+03
Silver	6.90E+00	5	4	80.0%	1.52E+01 - 2.07+02	9.60E+01
Zinc	1.02E+02	5	4	80.0%	1.08E+02 - 1.40E+02	1.22E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	5	5	100.0%	4.58E+00 - 2.31E+01	1.14E+01
Gross alpha	4.77E+01	5	5	100.0%	5.60E+01 - 1.39E+02	8.50E+01
Gross beta	3.39E+01	5	3	60.0%	3.46E+01 - 4.02E+01	3.77E+01
Plutonium-239/240	4.04E+00	5	5	100.0%	1.31E+01 - 4.12E+01	2.68E+01
Uranium-233/234	1.58E+00	5	5	100.0%	2.26E+00 - 9.56E+00	4.69E+00
Uranium-235	1.43E-01	5	3	60.0%	1.50E-01 - 3.06E-01	2.48E-01
Uranium-238	1.56E+00	5	5	100.0%	2.39E+00 - 7.42E+00	3.96E+00

TABLE 4.8-10
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.6 (POND B-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	5	5	100.0%	1.30E+04 - 5.44E+04	2.97E+04

Locations: SED62592, SED62692, SED62792, SED62892, and SED62992

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-11
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.7 (POND B-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	5	2	40.0%	7.00E+00J - 2.20E+01J	1.50E+01
Toluene	N/A	5	5	100.0%	8.90E+01 - 6.70E+02	3.28E+02
Semivolatile Organic Compounds (µg/kg)						
Anthracene	N/A	7	1	14.3%	8.00E+02J	8.00E+02
Benzo(a)anthracene	N/A	7	1	14.3%	1.70E+02J	1.70E+02
Benzo(a)pyrene	N/A	7	1	14.3%	2.60E+02J	2.60E+02
Benzo(b)fluoranthene	N/A	7	5	71.4%	5.40E+01J - 7.70E+02J	3.22E+02
Bis(2-ethylhexyl)phthalate	N/A	7	7	100.0%	3.70E+02J - 9.10E+03	3.45E+03
Chrysene	N/A	7	2	28.6%	3.20E+02J - 5.10E+02J	4.15E+02
Fluoranthene	N/A	7	6	85.7%	9.60E+01J - 1.20E+03	4.11E+02
Phenanthrene	N/A	7	3	42.9%	1.50E+02J - 6.50E+02J	3.87E+02
Pyrene	N/A	7	4	57.1%	9.10E+01`J - 1.20E+03	5.25E+02
Pesticides/PCBs (µg/kg)						
Aroclor-1254	N/A	7	5	71.4%	2.70E+02 - 2.90E+03	1.40E+03
Aroclor-1260	N/A	7	2	28.6%	6.20E+02 -8.60E+02	7.40E+02
PCOC Metals above background (mg/kg)						
Antimony	3.40E+01	2	1	50.0%	6.85E+01	6.85E+01
Chromium	2.12E+01	7	2	28.6%	3.68E+01 - 3.78E+01	3.73E+01
Potassium	2.60E+03	7	2	28.6%	3.12E+03 - 3.17E+03	3.15E+03
Silver	6.90E+00	7	7	100.0%	1.27E+01 - 2.40E+02	9.86E+01
Zinc	1.02E+02	7	3	42.9%	1.24E+02 - 3.46E+02	2.53E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	7	7	100.0%	1.65E+00 - 6.31E+01	1.89E+01
Gross alpha	4.77E+01	7	4	57.1%	4.81E+01 - 1.72E+02	1.11E+02
Gross beta	3.39E+01	7	2	28.6%	3.55E+01 - 3.94E+01	3.79E+01
Plutonium-239/240	4.04E+00	6	6	100.0%	5.56E+00 - 1.80E+02	6.13E+01
Uranium-233/234	1.58E+00	6	5	83.3%	1.84E+00 - 7.84E+00	4.36E+00

TABLE 4.8-11
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.7 (POND B-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Uranium-235	1.43E-01	6	2	33.3%	2.75E-01J - 4.77E-01	3.76E-01
Uranium-238	1.56E+00	6	6	100.0%	1.56E+00 - 1.24E+01	4.90E+00
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	7	7	100.0%	3.02E+03 - 2.36E+04	1.14E+04

Note: Analytical data is reported in scientific notatation.

Locations: SED63092, SED63192, SED63292, SED63392 and SED63492

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-12
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.8 (POND B-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	5	3	60.0%	3.00E+00J - 1.10E+01J	7.00E+00
Acetone	N/A	5	1	20.0%	6.10E+01B	6.10E+01
Benzene	N/A	5	1	20.0%	1.00E+01BJ	1.00E+01
Toluene	N/A	5	4	80.0%	2.00E+00J - 3.60E+02	9.90E+01
Semivolatile Organic Compounds (µg/kg)						
Acenaphthene	N/A	8	1	12.5%	5.90E+02J	5.90E+02
Anthracene	N/A	8	5	62.5%	7.90E+01J - 1.00E+02J	8.90E+01
Benzo(a)anthracene	N/A	8	6	75.0%	2.40E+02J - 4.30E+02J	3.34E+02
Benzo(a)pyrene	N/A	8	8	100.0%	2.90E+02J - 5.70E+02J	4.09E+02
Benzo(b)fluoranthene	N/A	8	8	100.0%	4.40E+02J - 1.50E+03	7.90E+02
Benzo(ghi)perylene	N/A	8	3	37.5%	2.00E+02J - 3.60E+02J	3.77E+02
Benzo(k)fluoranthene	N/A	8	8	100.0%	2.00E+02J - 3.60E+02J	2.87E+02
Bis(2-ethylhexyl)phthalate	N/A	8	8	100.0%	6.50E+02 - 5.00E+03	2.05E+03
Butyl benzyl phthalate	N/A	8	2	25.0%	6.60E+01J - 1.01E+02J	8.40E+01
Chrysene	N/A	8	8	100.0%	3.30E+02J - 6.50E+02J	4.84E+02
Di-n-octyl phthalate	N/A	8	3	37.5%	7.40E+01J - 2.50E+02J	1.58E+02
Fluoranthene	N/A	8	8	100.0%	7.50E+02 - 1.40E+03	1.06E+03
Indeno(1,2,3-cd)pyrene	N/A	8	3	37.5%	2.00E+02J - 6.60E+02J	3.87E+02
Phenanthrene	N/A	8	8	100.0%	4.20E+02J - 7.60E+02J	5.56E+02
Pyrene	N/A	8	8	100.0%	5.80E+02J - 1.20E+03J	8.88E+02
Pesticides/PCBs (µg/kg)						
Aroclor-1254	N/A	8	5	62.5%	2.30E+02 - 1.10E+03	5.26E+02
Gamma-BHC(Lindane)	N/A	8	1	12.5%	2.50E+01	2.50E+01
PCOC Metals above background (mg/kg)						
Chromium	2.12E+01	8	1	12.5%	2.61E+01	2.61E+01
Magnesium	4.47E+03	8	1	12.5%	4.78E+03	4.78E+03
Potassium	2.60E+03	8	2	25.0%	2.76E+03 - 3.06E+03	2.91E+03
Silver	6.90E+00	8	2	25.0%	1.96E+01 - 1.02E+02	6.08E+01

TABLE 4.8-12
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.8 (POND B-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Zinc	1.02E+02	8	8	100.0%	1.27E+02 - 3.19E+02	2.01E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	8	4	50.0%	2.18E+00 - 7.45E+00	3.91E+00
Gross alpha	4.77E+01	8	1	12.5%	4.89E+01	4.90E+01
Plutonium-239/240	4.04E+00	8	4	50.0%	8.37E+00 - 2.41E+01	1.33E+01
Uranium-233/234	1.58E+00	8	1	12.5%	2.18E+00	2.18E+00
Uranium-235	1.43E-01	8	1	12.5%	1.43E-01J	1.43E-01
Uranium-238	1.56E+00	8	2	25.0%	2.01E+00 - 2.75E+00	2.38E+00
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	4	4	100.0%	7.02E+03 - 1.63E+04	1.10E+04

Locations: SED63592, SED63692, SED63792, SED63892, and SED63992

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g - picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-13
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.9 (POND B-5)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
Volatile Organic Compounds (µg/kg)						
2-Butanone	N/A	5	3	60.0%	2.00E+00J - 2.10E+01J	9.00E+00
Acetone	N/A	5	1	20.0%	8.70E+01B	8.70E+01B
Benzene	N/A	5	1	20.0%	4.00E+00J	4.00E+00
Toluene	N/A	5	5	100.0%	1.20E+01 - 4.70E+01	2.40E+01
Semivolatile Organic Compounds (µg/kg)						
Bis(2-ethylhexyl)phthalate	N/A	5	2	40.0%	1.80E+02J - 2.70E+02J	2.25E+02
Di-n-octyl phthalate	N/A	5	1	20.0%	2.40E+02J	2.40E+02
Fluoranthene	N/A	5	2	40.0%	9.70E+01J - 1.90E+02J	1.44E+02
Pyrene	N/A	5	2	40.0%	8.60E+01J - 1.60E+02J	1.23E+02
PCOC Metals above background (mg/kg)						
Chromium	2.12E+01	5	1	20.0%	2.14E+01	2.14E+01
Magnesium	4.47E+03	5	1	20.0%	4.84E+03	4.84E+03
Zinc	1.02E+02	5	2	40.0%	1.17E+02 - 1.74E+02	1.45E+02
PCOC Radionuclides above background (pCi/g)						
Radium-228	1.81E+00	5	1	20.0%	1.84E+00	1.84E+00
Other Parameters (mg/kg)						
Total Organic Carbon	N/A	5	5	100.0%	4.87E+03 - 1.01E+04	6.72E+03

Locations: SED64092, SED64192, SED64292, SED64392, and SED64492

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.

(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections,

TABLE 4.8-13
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.9 (POND B-5)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)

concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-14
ANALYTES DETECTED IN POND SEDIMENT AT IHSS 142.12 (W AND I POND)

Analyte	Number of Samples (1)	Number of Detections (2)	Percent Detections	Concentration or Activity Range(3)	Mean Concentration or Activity (4)
Volatile Organic Compounds (µg/kg)					
2-Butanone	5	4	80.0%	8.00E+00J - 5.10E+01	3.10E+01
Acetone	5	1	20.0%	2.10E+02B	2.10e+02B
Toluene	5	4	80.0%	1.30E+01 - 1.80E+01	1.60E+01
Semivolatile Organic Compounds (µg/kg)					
Benzoic acid	5	4	80.0%	2.40E+02J - 5.00E+02J	3.95E+02
Bis(2-ethylhexyl)phthalate	5	4	80.0%	6.75E+01J - 1.30E+02	9.60E+01
Phenol	5	1	20.0%	1.10E+02J	1.10E+02
Other Parameters (mg/kg)					
Total Organic Carbon	5	5	100.0%	5.06E+03 - 1.12E+04	8.36E+03

Locations: SED64592, SED64692, SED64792, SED64892, and SED64992

(1) "Number of Samples" may be less than the number of total samples taken as a result of inadequate size, validation rejection code, or data not received at RFEDS by the January 1, 1994 cutoff.
(2) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(3) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(4) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
pCi/g = picocuries per gram

TABLE 4.8-15
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.1 (POND A-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCBs (ug/kg)						
Aroclor-1254	N/A	5	5	100.0%	4.40E+01JA - 8.80E+01JA	7.54E+01
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	5	3	60.0%	7.68E-01 - 8.76E-01	8.31E-01
Uranium-233/234	1.58E+00	5	3	60.0%	1.88E+00 - 2.36E+00	2.11E+00
Uranium-238	1.56E+00	5	5	100.0%	2.00E+00 - 4.52E+00	3.17E+00

Locations: SED60092, SED60192, SED60292, SED60392, and SED60492

Note: Analytical data is reported in scientific notatation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-16
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.2 (POND A-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCBs (ug/kg)						
Aroclor-1254	N/A	5	3	60.0%	8.90E+01JA - 1.60E+02JA	1.26E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	5	5	100.0%	9.62E-01 - 2.61E+00	1.56E+00
Plutonium-239/240	4.04E+00	5	4	80.0%	4.13E+00 - 1.03E+01	6.36E+00
Uranium-233/234	1.58E+00	5	5	100.0%	2.29E+00 - 3.58E+00	3.21E+00
Uranium-238	1.56E+00	5	5	100.0%	3.00E+00 - 6.02E+00	4.56E+00

Locations: SED60592, SED60692, SED60792, SED60892, and SED60992

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceedingthe BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes J qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-17
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.3 (POND A-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCBs (µg/kg)						
Aroclor-1254	N/A	5	1	20.0%	4.50E+01JA	4.50E+01JA

Locations: SED61092, SED61192, SED61292, SED61392, and SED61492

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-18
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.5 (POND B-1)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCBs (µg/kg)						
Aroclor-1248	N/A	5	5	100.0%	8.80E+01JA - 4.70E+02	2.54E+02
Aroclor-1254	N/A	5	5	100.0%	3.20E+02JA - 1.60E+03	8.68E+02
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	5	5	100.0%	1.00E+01 - 6.54E+01	3.28E+01
Plutonium-239/240	4.04E+00	5	5	100.0%	2.42E+01 - 2.14E+02	1.11E+02
Uranium-233/234	1.58E+00	5	5	100.0%	2.49E+00 - 8.04E+00	4.48E+00
Uranium-235	1.43E-01	5	4	80.0%	2.02E-01 - 6.34E-01	3.68E-01
Uranium-238	1.56E+00	5	5	100.0%	3.07E+00 - 9.90E+00	6.41E+00

Locations: SED62092, SED62192, SED62292, SED62392, and SED62492

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceedingthe BSL.
(4) J qualifier represents estimated result, D qualifier represents dilution result, and B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J, D, and B qualified data. Real and duplicate sample results have been averaged.

mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-19
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.6 (POND B-2)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCBs (µg/kg)						
Aroclor-1248	N/A	5	4	80.0%	3.90E+02 - 1.50E+03	7.23E+02
Aroclor-1254	N/A	5	5	100.0%	9.30E+02 - 3.80E+03	2.05E+03
PCOC Radionuclides above background (pCi/g)						
Americium-241	7.41E-01	5	5	100.0%	2.66E+01 -1.32E+02	7.31E+01
Plutonium-239/240	4.04E+00	5	5	100.0%	1.30E+02 - 6.43E+02	4.23E+02
Uranium-233/234	1.58E+00	5	5	100.0%	4.33E+00 - 1.22E+01	7.57E+00
Uranium-235	1.43E-01	5	4	80.0%	1.80E-01 - 6.46E_01	4.04E-01
Uranium-238	1.56E+00	5	5	100.0%	4.47E+00 - 2.69E+01	1.39E+01

Locations: SED62592, SED62692, SED62792, SED62892, and SED62992

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-20
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.7 (POND B-3)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCBs (µg/kg)						
Aroclor-1254	N/A	5	5	100.0%	2.30E+02JA - 1.30E+03	5.72E+02
Aroclor-1260	N/A	5	1	20.0%	2.60E+02JA	7.40E+02

Note: Analytical data is reported in scientific notatation.

Locations: SED63092, SED63192, SED63292, SED63392 and SED63492

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

TABLE 4.8-21
ANALYTES DETECTED IN POND SEDIMENTS AT IHSS 142.8 (POND B-4)

Analyte	BSL(1)	Number of Samples (2)	Number of Detections (3)	Percent Detections	Concentration or Activity Range(4)	Mean Concentration or Activity (5)
PCBs (µg/kg)						
Aroclor-1254	N/A	5	5	100.0%	1.20E+02JA - 2.20E+02JA	1.88E+02

Locations: SED63592, SED63692, SED63792, SED63892, and SED63992

Note: Analytical data is reported in scientific notation.

(1) The Background Screening Level (BSL) was calculated using background data, and represents the sum of the background mean plus two standard deviations.
(2) "Number of Samples" may be less than the number of total samples collected as a result of inadequate sample size, validation rejection code, or data not received at RFEDS by the January 15, 1994 cutoff.
(3) For metals and radionuclides, only PCOCs have been reviewed and are presented on this table. Number of detections, percent detections, concentration/activity range, and mean concentration refer only to results exceeding the BSL.
(4) J qualifier represents estimated result, B qualifier for organics indicates analyte was detected in blank sample.
(5) The calculation for the mean concentration includes all J and B qualified data. Real and duplicate sample results have been averaged.

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g - picocuries per gram
N/A = Not Applicable
PCOC = Potential Chemical of Concern

ANALYTE ABBREVIATIONS

VOLATILE ORGANIC COMPOUNDS

1,1,1,2-PCA	1,1,1,2-TETRACHLOROETHANE
1,1,2,2-PCA	1,1,2,2-TETRACHLOROETHANE
1,1,1-TCA	1,1,1-TRICHLOROETHANE
1,1-DCA	1,1-DICHLOROETHANE
1,1-DCE	1,1-DICHLOROETHENE
1,2-DCA	1,2-DICHLOROETHANE
1,2-DCE	1,2-DICHLOROETHENE
CCL_4	CARBON TETRACHLORIDE
$CHCL_3$	CHLOROFORM
Cis-1,2-DCE	Cis-1,2-DICHLOROETHENE
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE

METALS AND OTHER ANALYTES

Al	ALUMINUM
Ag	SILVER
As	ARSENIC
Ba	BARIUM
Be	BERYLLIUM
Ca	CALCIUM
Cd	CADMIUM
Co	COBALT
Cr	CHROMIUM
Cu	COPPER
Fe	IRON
Hg	MERCURY
K	POTASSIUM
Li	LITHIUM
Mg	MAGNESIUM
Mn	MANGANESE
Na	SODIUM
Ni	NICKEL
Pb	LEAD
Sb	ANTIMONY
Se	SELENIUM
Si	SILICON
Sn	TIN
Sr	STRONTIUM
V	VANADIUM
Zn	ZINC

RADIONUCLIDES

Am-241	AMERICIUM-241
Cs-137	CESIUM-137
Pu-239	PLUTONIUM-239
Pu-239/240	PLUTONIUM-239/240
Ra-226	RADIUM-226
Ra-228	RADIUM-228
Sr-89,90	STRONTIUM-89,90
U-233/234	URANIUM-233/234
U-235	URANIUM-235
U-238	URANIUM-238

LABORATORY QUALIFIERS

B = ORGANICS (VOLATILES, SEMIVOLATILES, PESTICIDES) INDICATES CHEMICAL WAS IN BOTH THE SAMPLE AND METHOD BLANK

B = INORGANIC (METALS & INORGANICS) DETECTED CONCENTRATION WAS LESS THAN CRDL

B = RADIONUCLIDES – THE ACTIVITY IN THE METHOD BLANK EXCEEDED THE MDA

C = PESTICIDE RESULT WHERE IDENTIFICATION WAS CONFIRMED BY GC/MS

C = RADIONUCLIDES INDICATED ELEVATED TDS

D = ORGANICS – ANALYSIS WAS PERFORMED AT A DILUTION

E = ORGANICS – CHEMICAL EXCEEDS LINEAR CALIBRATION RANGE OF THE INSTRUMENT

E = INORGANIC – REPORTED VALUE IS ESTIMATED DUE TO INTERFERENCE

F = ALPHA SPECTROMETRY – FWHM EXCEEDED ACCEPTANCE LIMITS

G = INORGANICS – NATIVE ANALYTE WAS REPORTED GREATER THAN FOUR TIMES THE SPIKE ADDED CONCENTRATION

J = ORGANICS – POSITIVELY IDENTIFIED – RESULT IS CONSIDERED TO BE ESTIMATED

J = INORGANICS & RADIONUCLIDES – ESTIMATED QUANTIFICATION

N = METALS – SPIKE RECOVERIES IN THE MATRIX SPIKE SAMPLE DID NOT MEET ADVISORY LIMITS

S = METALS – THE REPORTED VALUE WAS DETERMINED BY THE METHOD OF STANDARD ADDITION (MSA)

W = METALS – POST DIGESTION SPIKE DID NOT MEET CONTROL LIMITS

X = OPEN AND DEFINED BY LABORATORY (SEE SECTION 4.2.2 FOR SPECIFIC APPLICATIONS)

Y = RADIONUCLIDES – CHEMICAL YIELD EXCEEDED ACCEPTANCE LIMITS

* = METALS – MATRIX DUPLICATE ANALYSIS DID NOT MEET ADVISORY LIMITS

VALIDATION CODES AND QUALIFIERS

A = RESULT ACCEPTED WITH QUALIFICATIONS

JA = RESULT ACCEPTED, BUT WAS ESTIMATED

J = ESTIMATED RESULT DUE TO OUTSIDE HOLDING TIME, IMPROPERLY PRESERVED, QUALITY CONTROL PARAMETER OUTSIDE CONTROL LIMIT

V = VALID RESULT

VA = VALID RESULT WITH QUALIFICATIONS

NOTE:

* PLACEMENT OF ASTERISK FOLLOWING VALIDATION CODE INDICATES THE RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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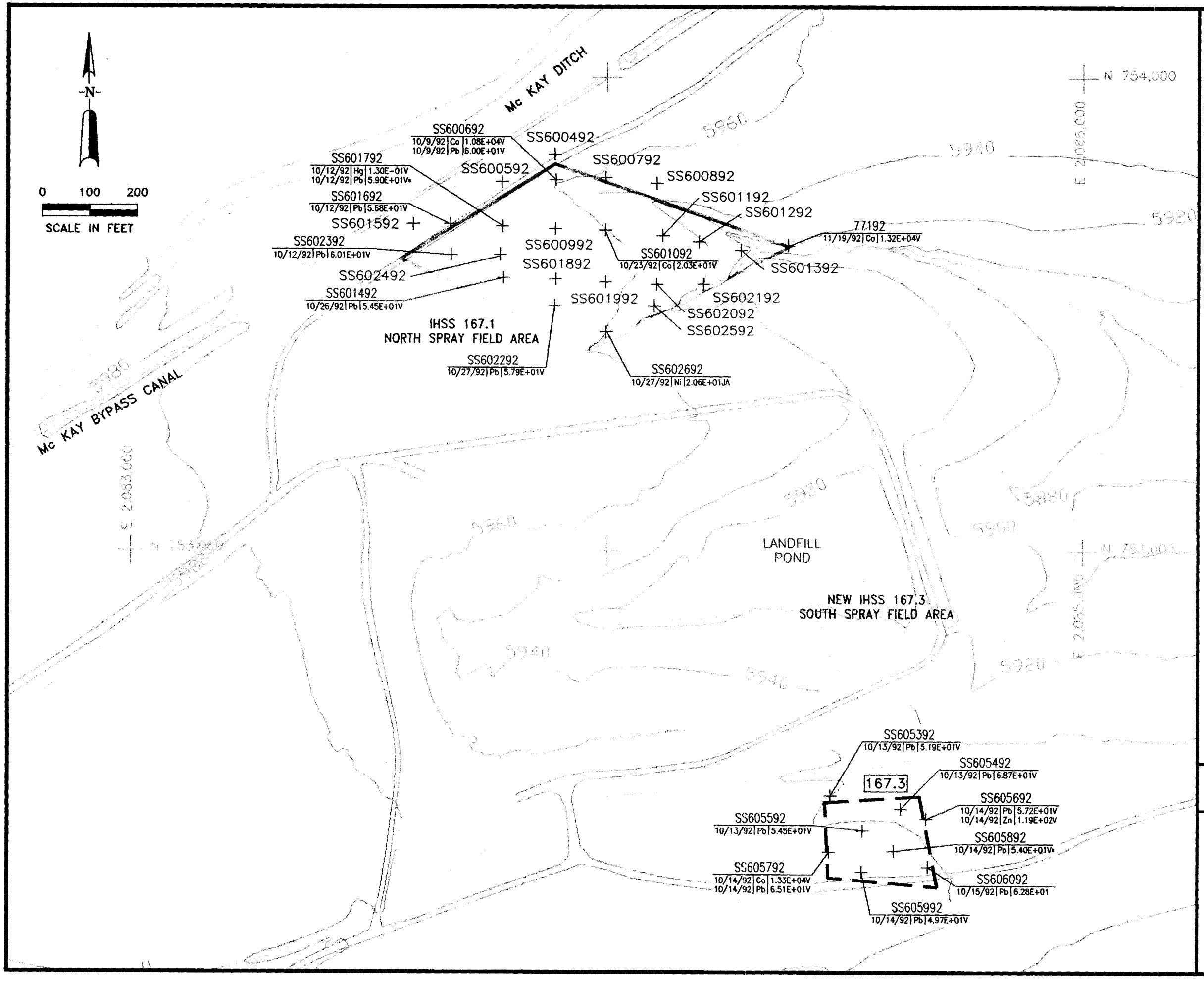
ANALYTE ABBREVIATIONS, LABORATORY QUALIFIERS, AND VALIDATION CODES

FIGURE 4.4-1

JUNE 1995



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

HISTORICAL IHSS BOUNDARY (DOE 1987)

167.3

+ SURFACE SOIL SAMPLE SITE
SS602592

SS602592 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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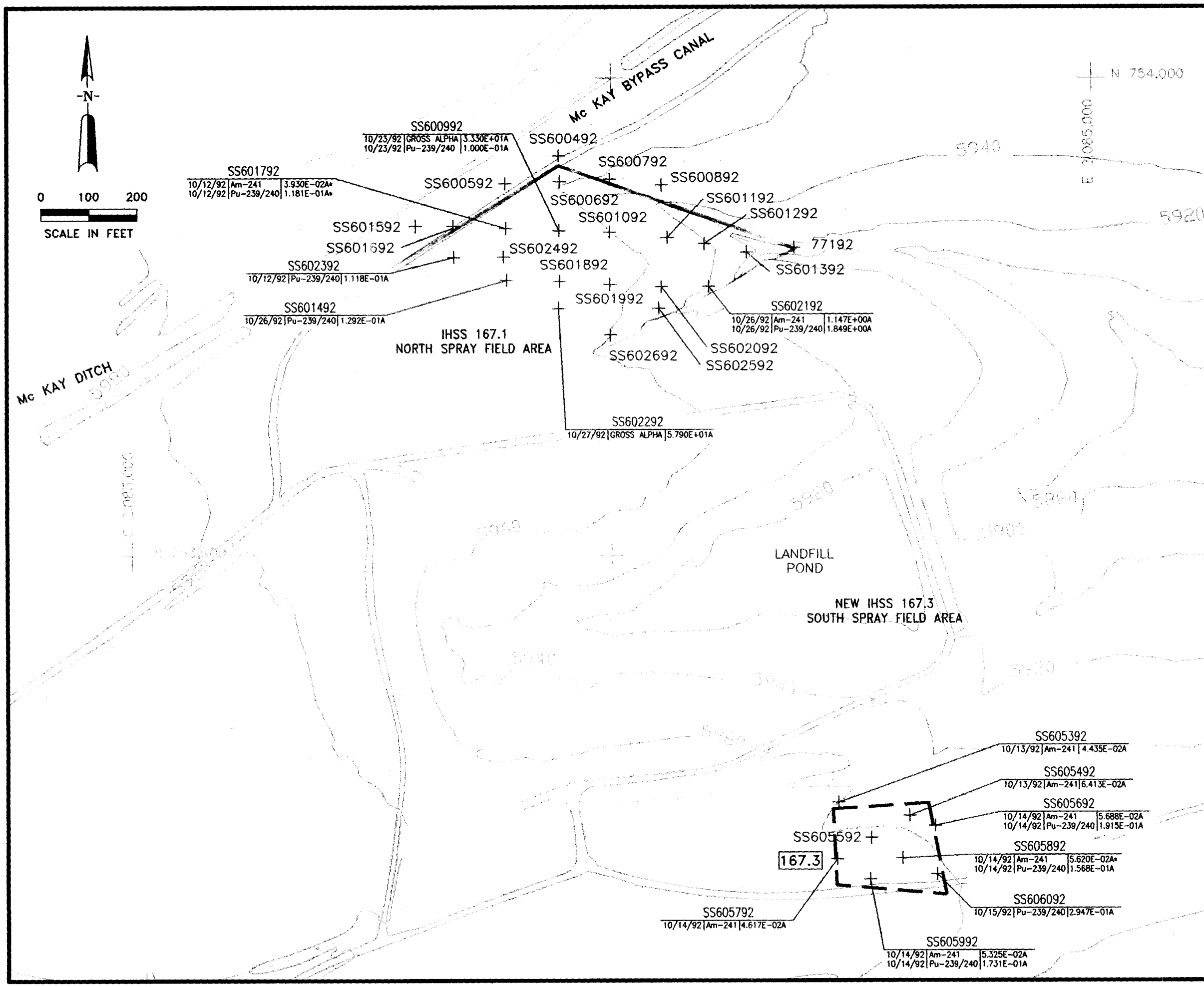
PCOC METALS
(IHSSs 167.1 AND 167.3)
SURFACE SOILS

FIGURE 4.4-2 JUNE 1995

4/7/95 OU6RI185 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

HISTORICAL IHSS BOUNDARY (DOE 1987)

167.3

SURFACE SOIL SAMPLE SITE

SS602592

SS602592 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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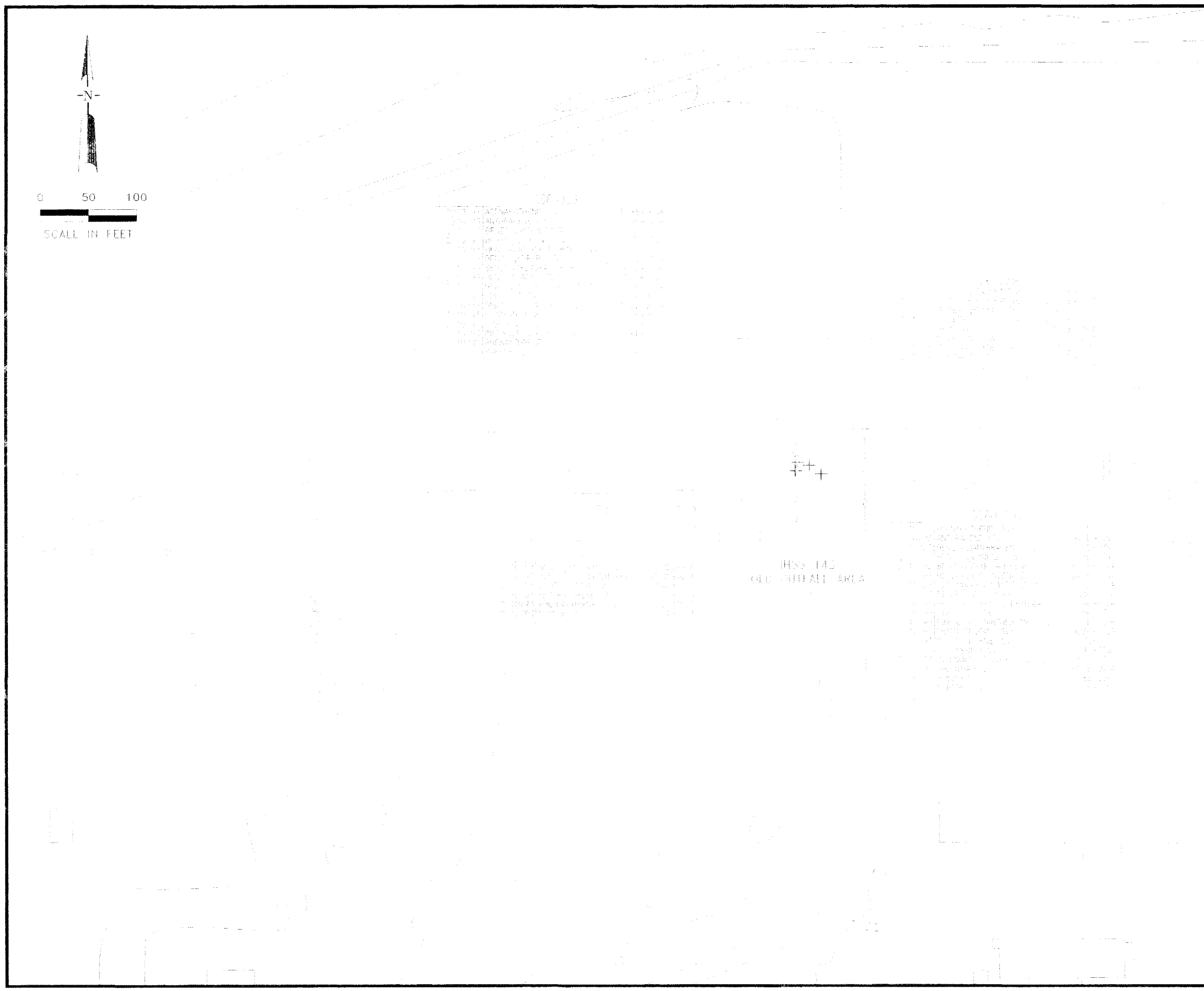
PCOC RADIONUCLIDES
(IHSSs 167.1 AND 167.3)
SURFACE SOILS

FIGURE 4.4-3 JUNE 1995

4/7/95 OU6RI156 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (DOE 1992b)

BOUNDARY OF OLD OUTFALL AREA BASED ON INTERPRETATION OF AERIAL

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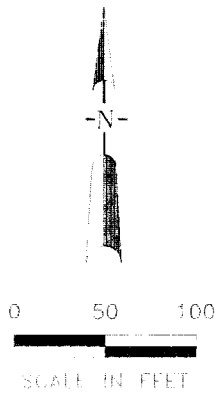
SEMIVOLATILE
ORGANIC COMPOUNDS
(IHSS 143)
SURFACE SOILS

FIGURE 4.4-4



INDIVIDUAL HAZARDOUS
SUBSTANCE SITE (IHSS 143)

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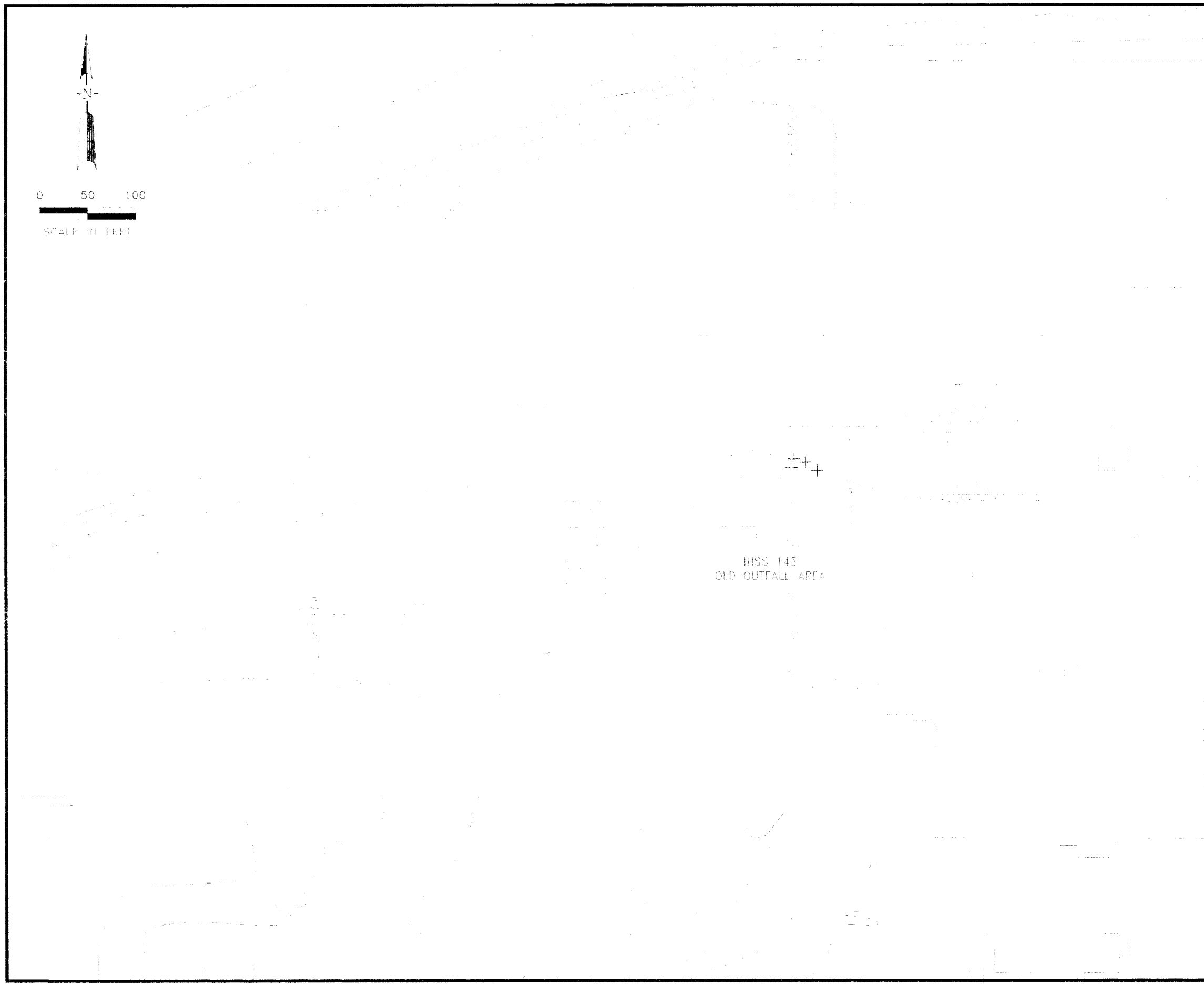
PCOC METALS
(IHSS 143)
SURFACE SOILS

FIGURE 4.4-5



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (DOE 1992b)

BOUNDARY OF OLD OUTFALL AREA RAINBOW

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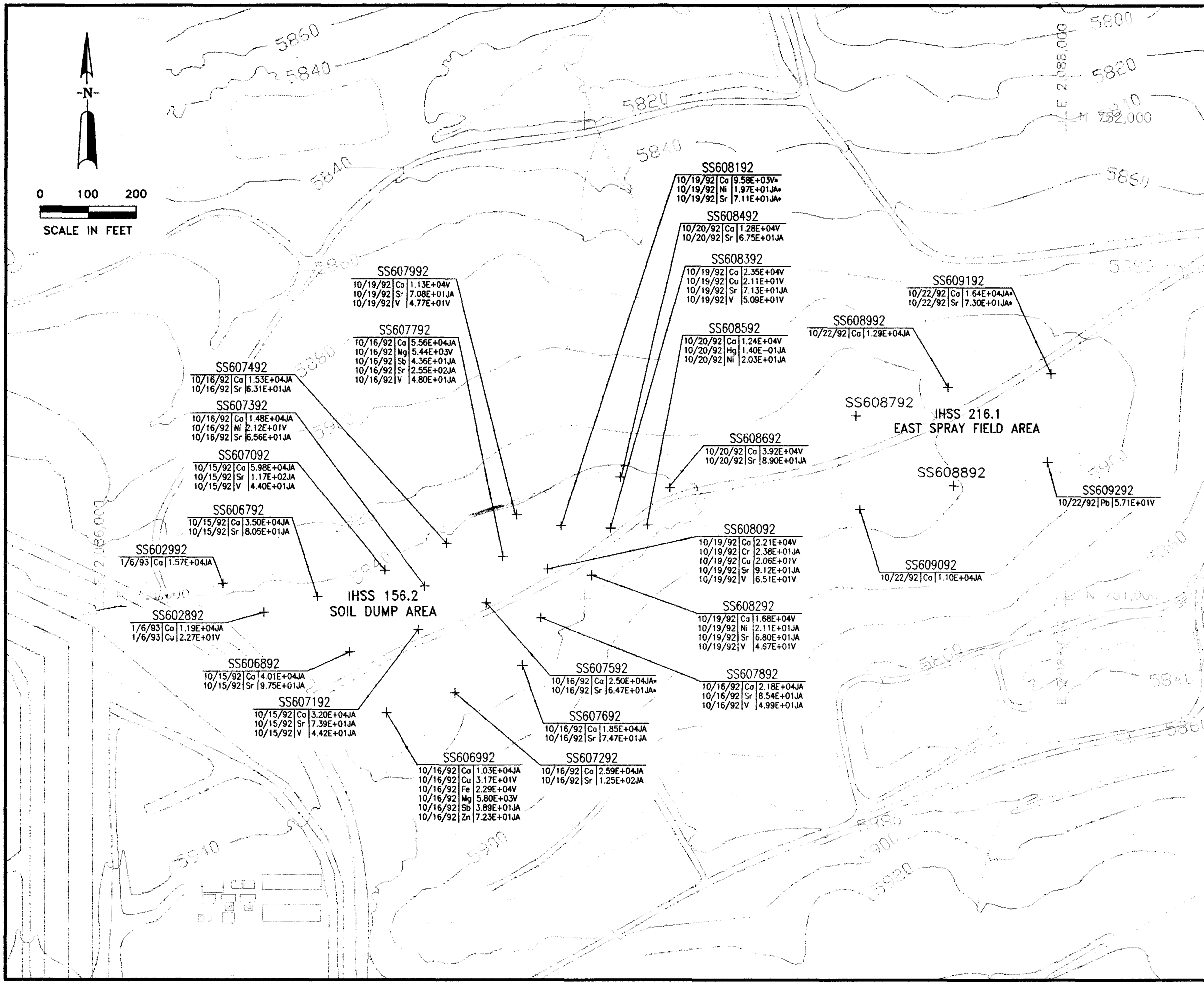
PCOC RADIONUCLIDES
(IHSS 143)
SURFACE SOILS

FIGURE 4.4-6



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

+ SURFACE SOIL SAMPLE SITE
SS602992

SS602992 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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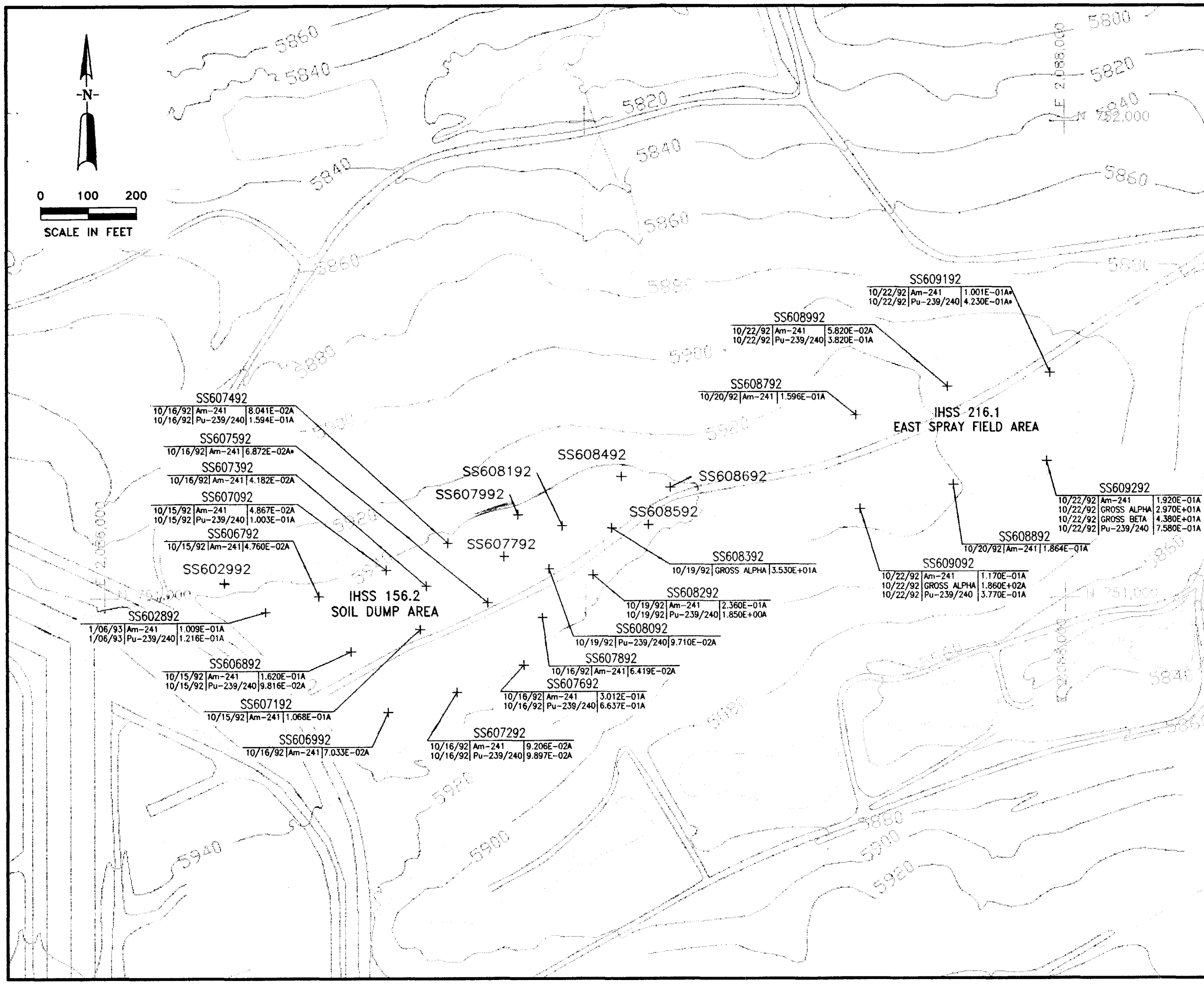
PCOC METALS
(IHSSs 156.2 AND 216.1)
SURFACE SOILS

FIGURE 4.4-7 JUNE 1995

4/7/95 OU6RI184 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

\+ SURFACE SOIL SAMPLE SITE
SS602992

SS608892 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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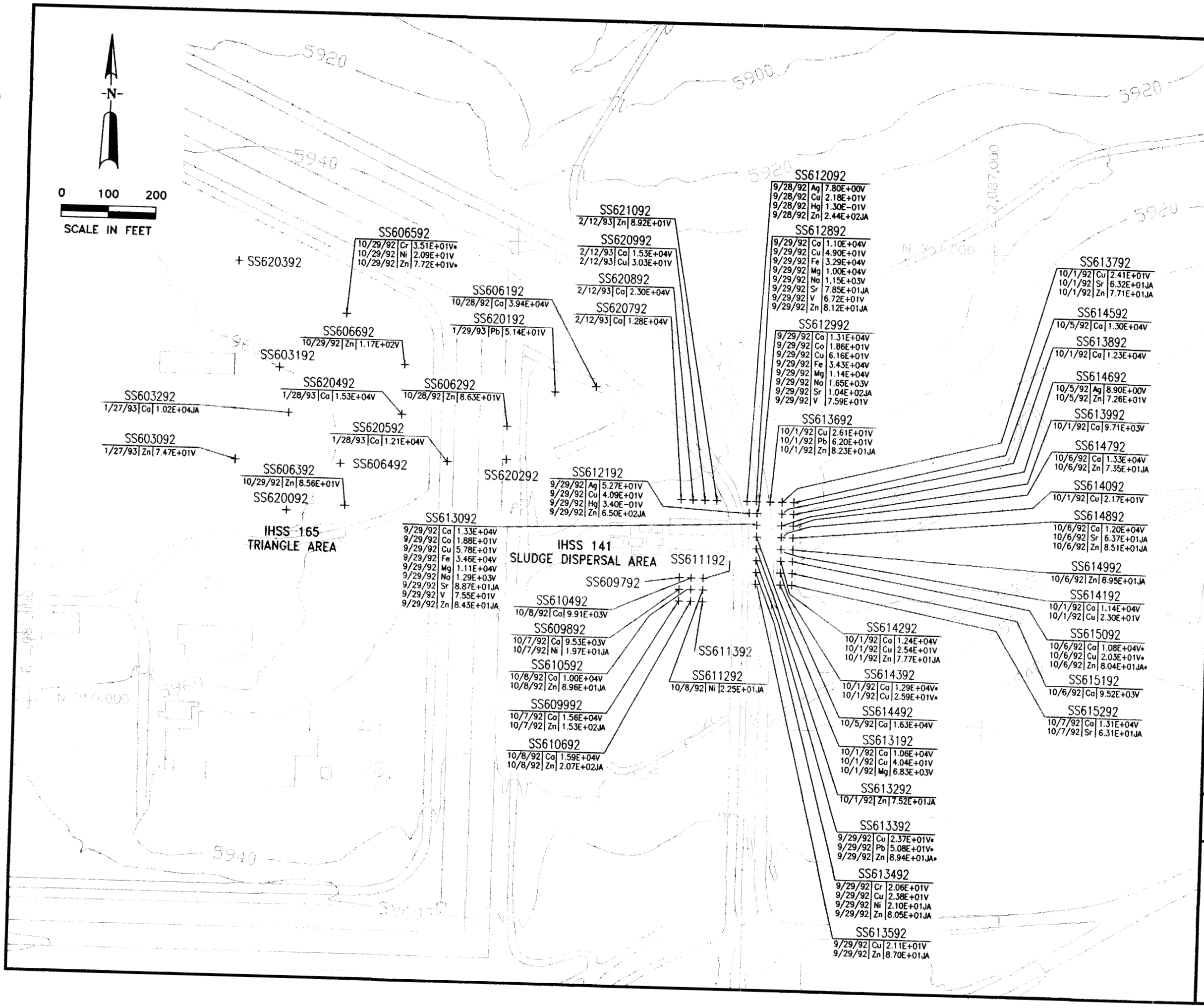
PCOC RADIONUCLIDES
(IHSSs 156.2 AND 216.1)
SURFACE SOILS

FIGURE 4.4-8 JUNE 1995

4/7/95 OU6RI155 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

+ SURFACE SOIL SAMPLE SITE
SS612192

SS612192 ← LOCATION
2/26/92
SAMPLE DATE
ANALYTE
ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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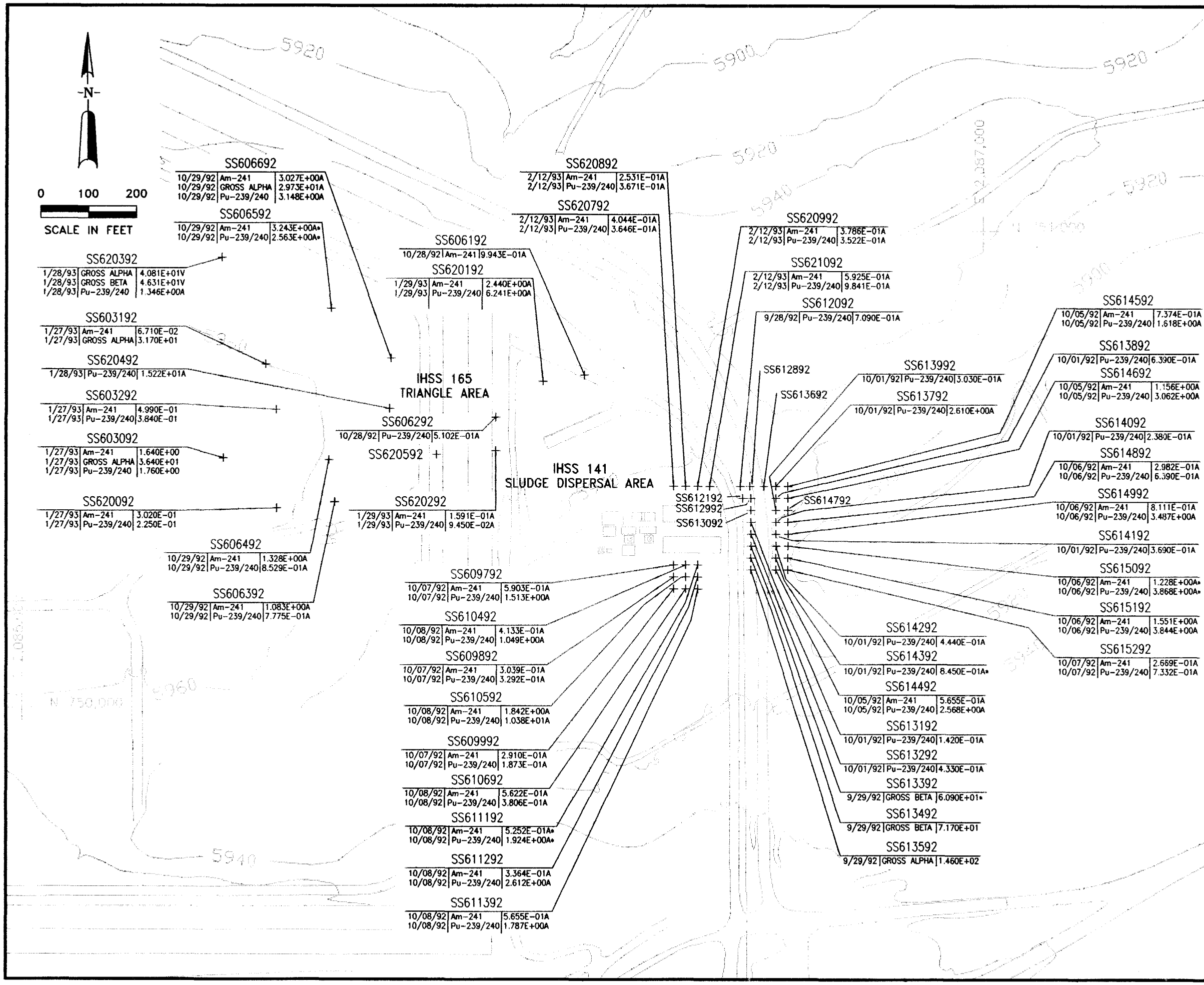
PCOC METALS
(IHSSs 141 AND 165)
SURFACE SOILS

FIGURE 4.4-9 JUNE 1995

4/11/95 OU6RI182 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

\+ SURFACE SOIL SAMPLE SITE
SS612192

SS612192 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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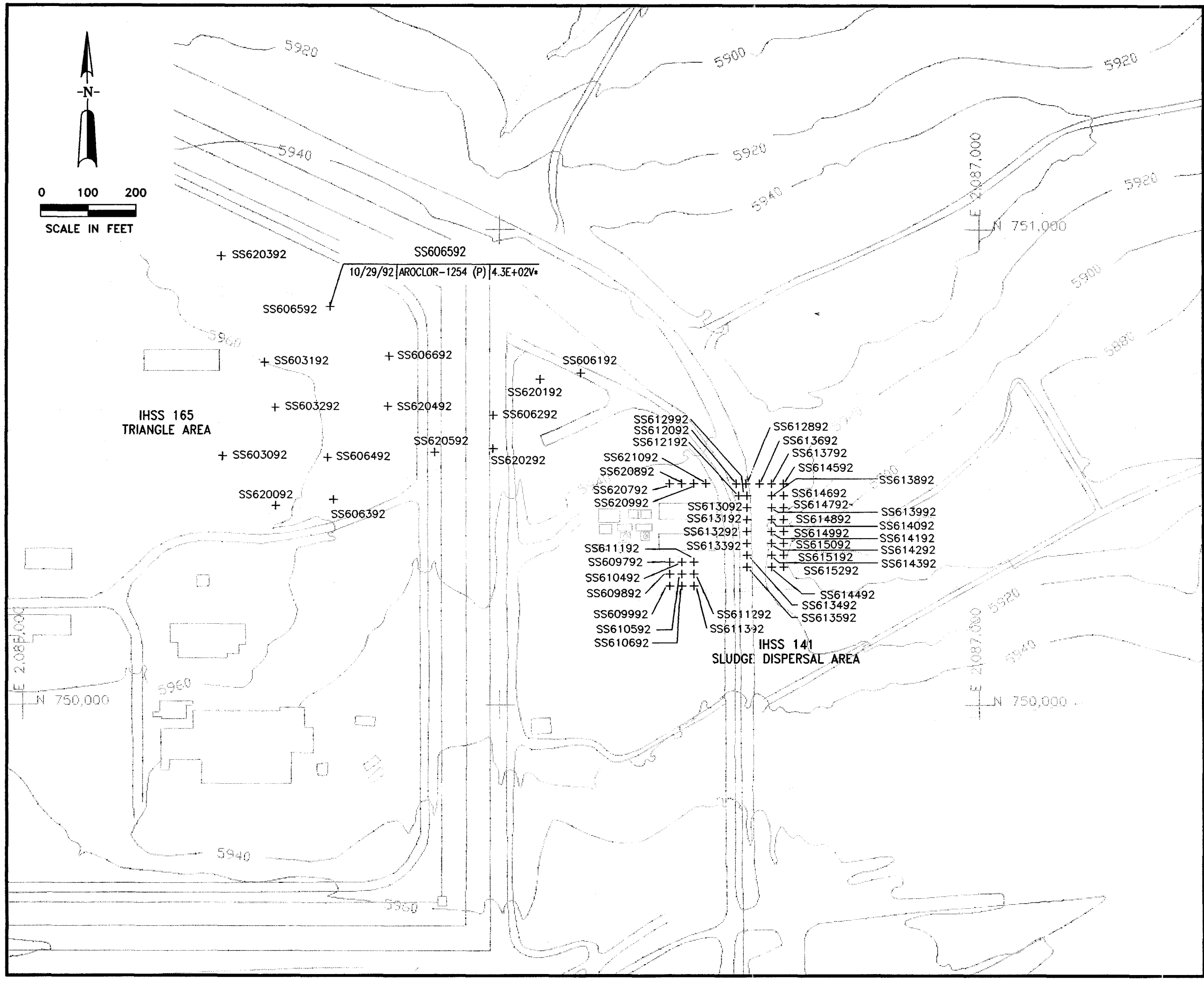
PCOC RADIONUCLIDES
(IHSSs 141 AND 165)
SURFACE SOILS

FIGURE 4.4-10 JUNE 1995

4/11/95 OU6RI149 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

+ SURFACE SOIL SAMPLE SITE

SS606592

SS606592 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(P) – PESTICIDES/PCBs

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4–1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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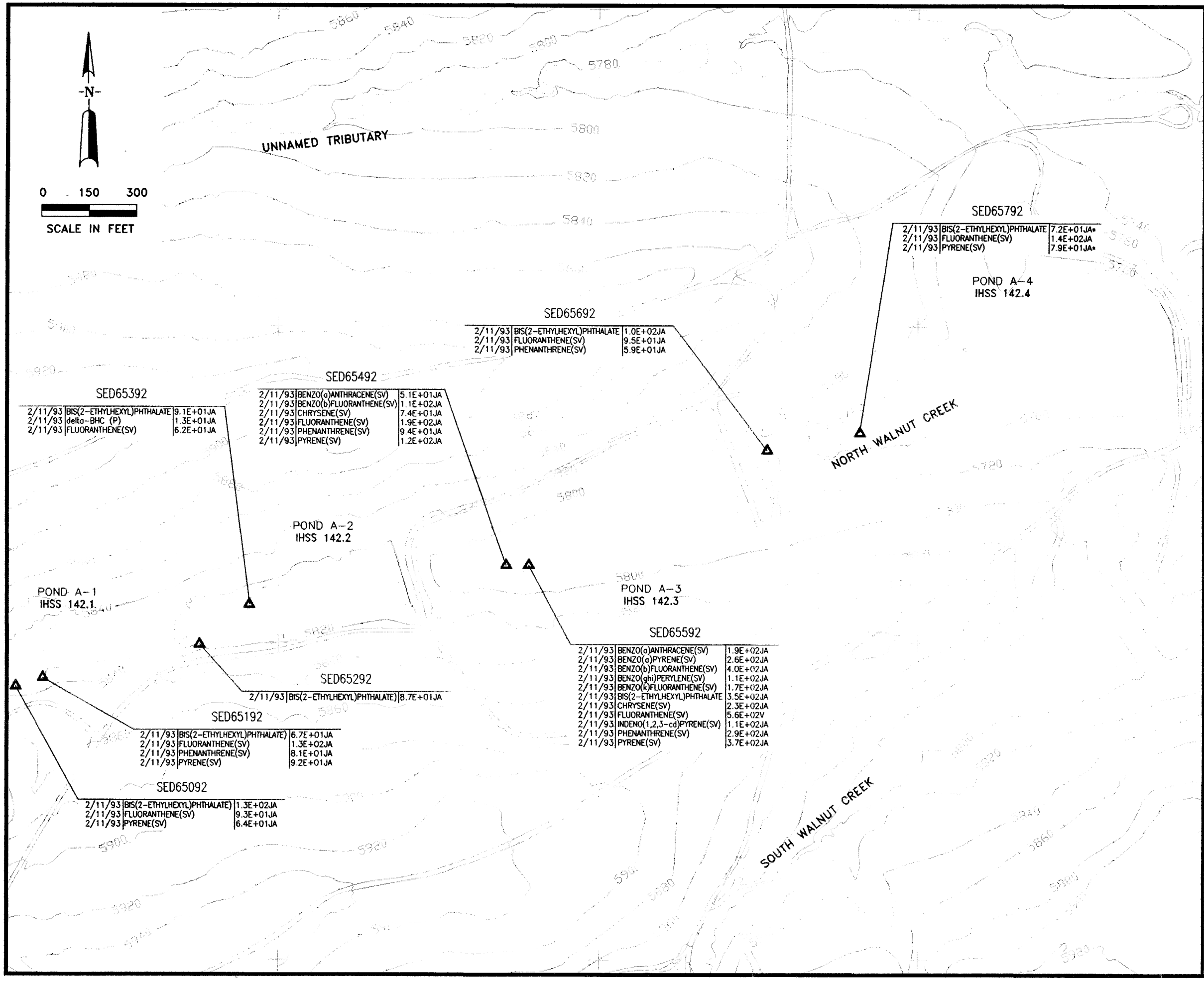
PESTICIDES/PCBs
(IHSSs 141 AND 165)
SURFACE SOILS

FIGURE 4.4–11 JUNE 1995

4/11/95 OU6RI068 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED65792 — DRY SEDIMENT SAMPLING LOCATION

SED65792 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(P) – PESTICIDE/PCB

(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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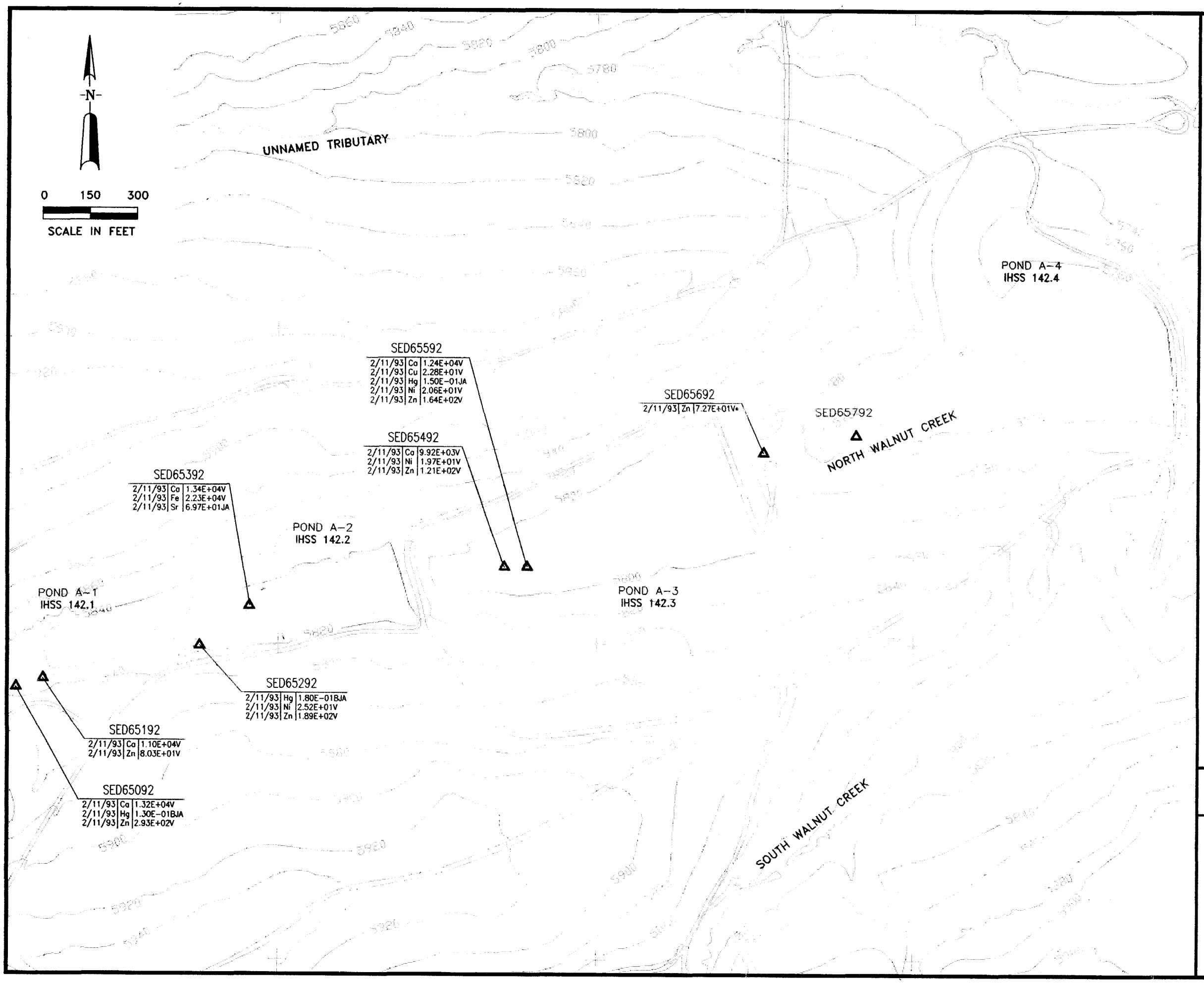
PESTICIDES/PCBs AND SEMIVOLATILE ORGANIC COMPOUNDS (IHSS 142.1–142.4) SURFACE SOILS (DRY SEDIMENTS)

FIGURE 4.4-12 JUNE 1995

4/11/95 OU6RI099 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED65792 — DRY SEDIMENT SAMPLING LOCATION

SED65792 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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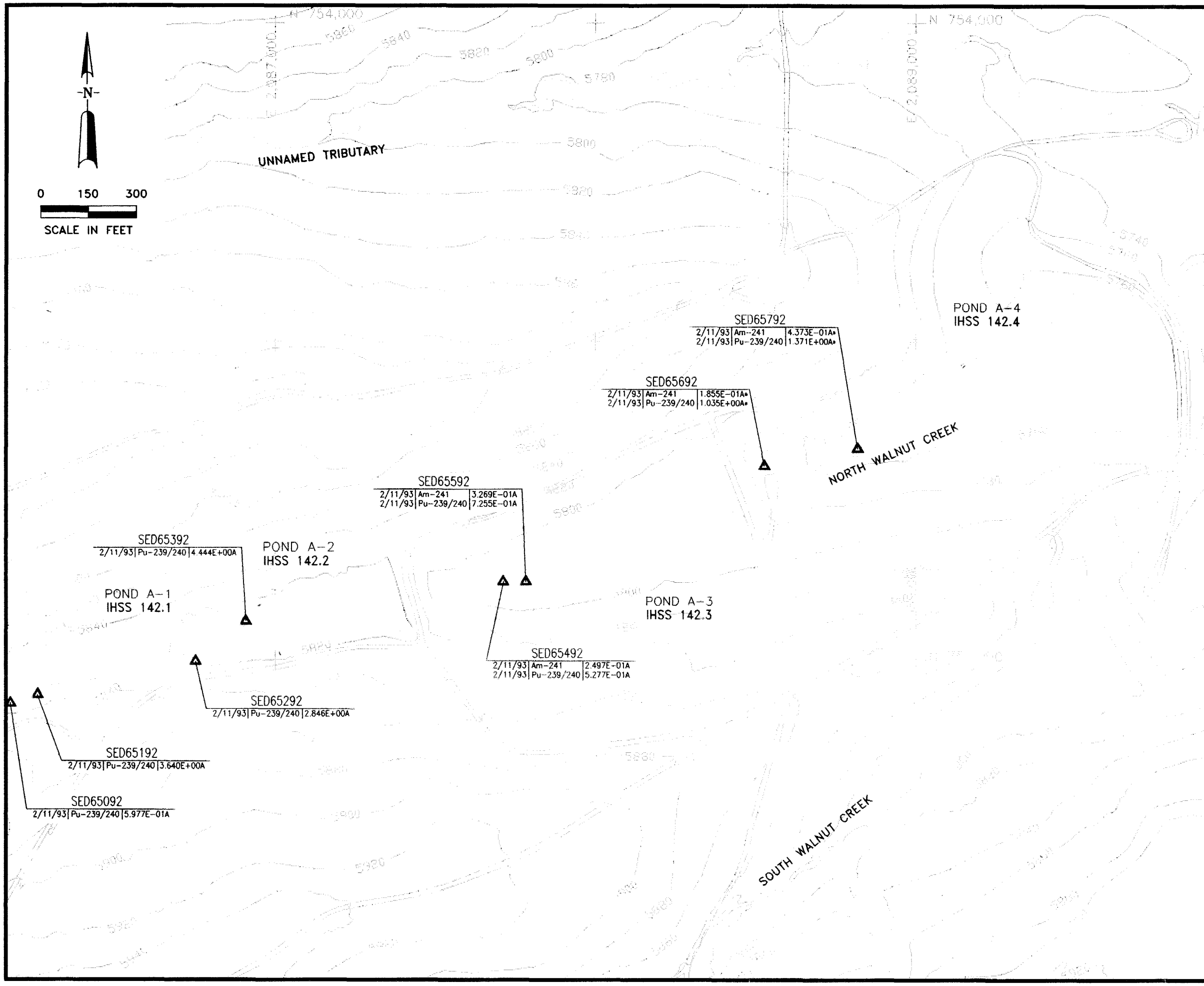
PCOC METALS
(IHSS 142.1-142.4)
SURFACE SOILS
(DRY SEDIMENTS)

FIGURE 4.4-13 JUNE 1995

4/11/95 OU6RI180 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

DRY SEDIMENT SAMPLE SITE (SURFACE SOIL)
SED65692

SED65692 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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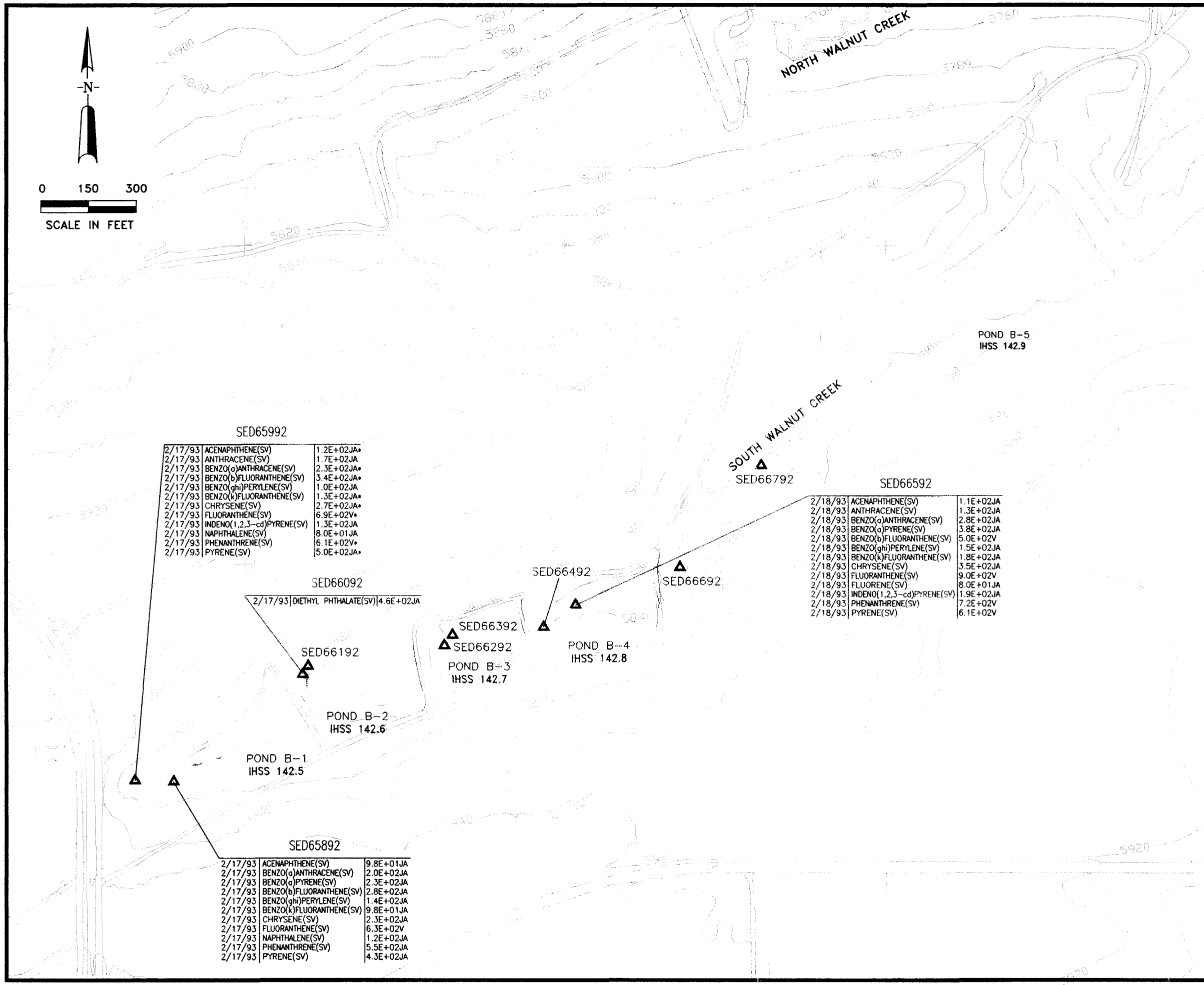
PCOC RADIONUCLIDES
(IHSSs 142.1 – 142.4)
SURFACE SOILS
(DRY SEDIMENTS)

FIGURE 4.4-14 JUNE 1995

4/21/95 OU6RI150 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED65792 — DRY SEDIMENT SAMPLING LOCATION

SED65992 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(SV) - SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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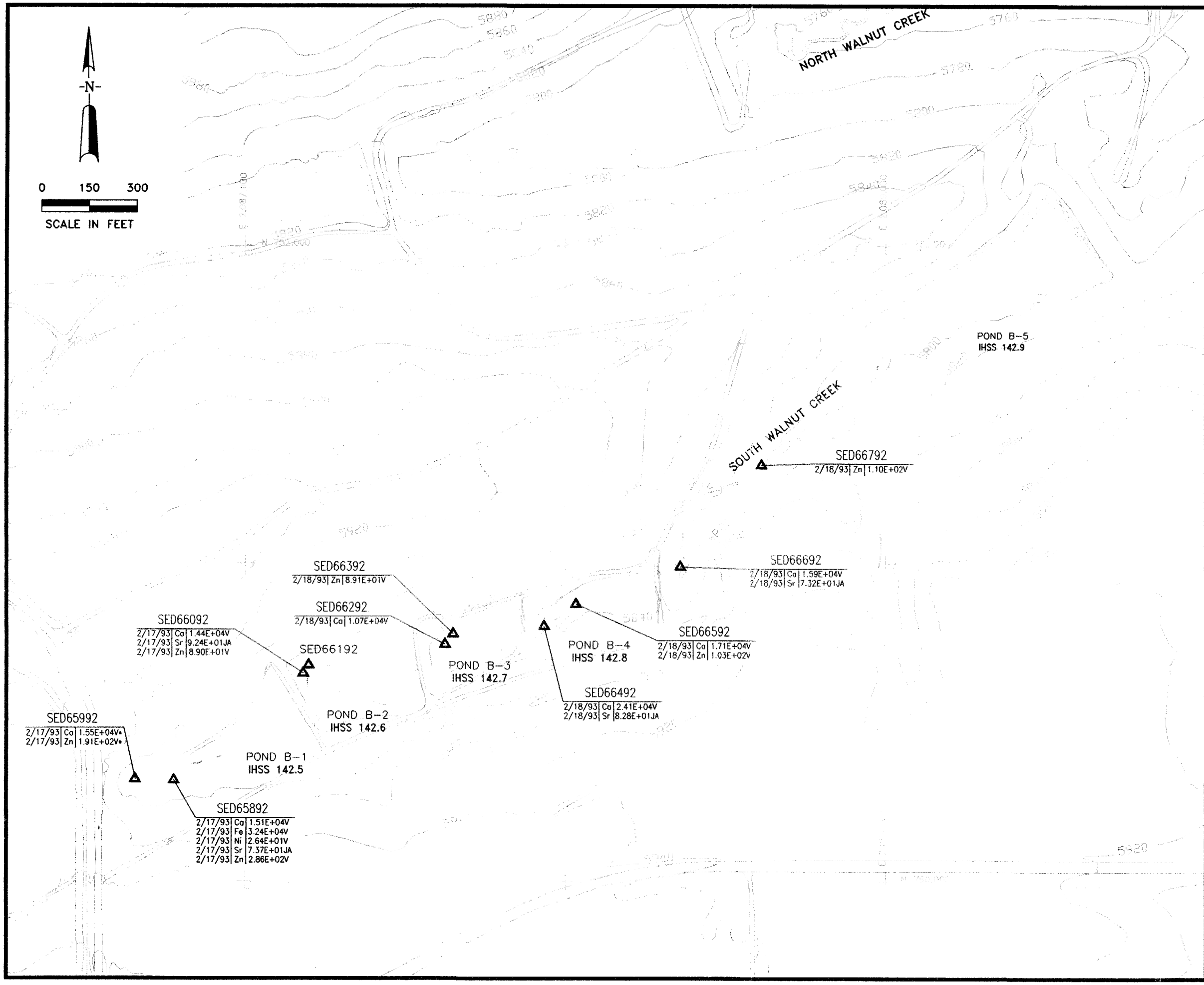
SEMIVOLATILE
ORGANIC COMPOUNDS
(IHSS 142.5-142.9)
SURFACE SOILS
(DRY SEDIMENTS)

FIGURE 4.4-15 JUNE 1995

OU6RI098 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED66792 — DRY SEDIMENT SAMPLING LOCATION

SED66792 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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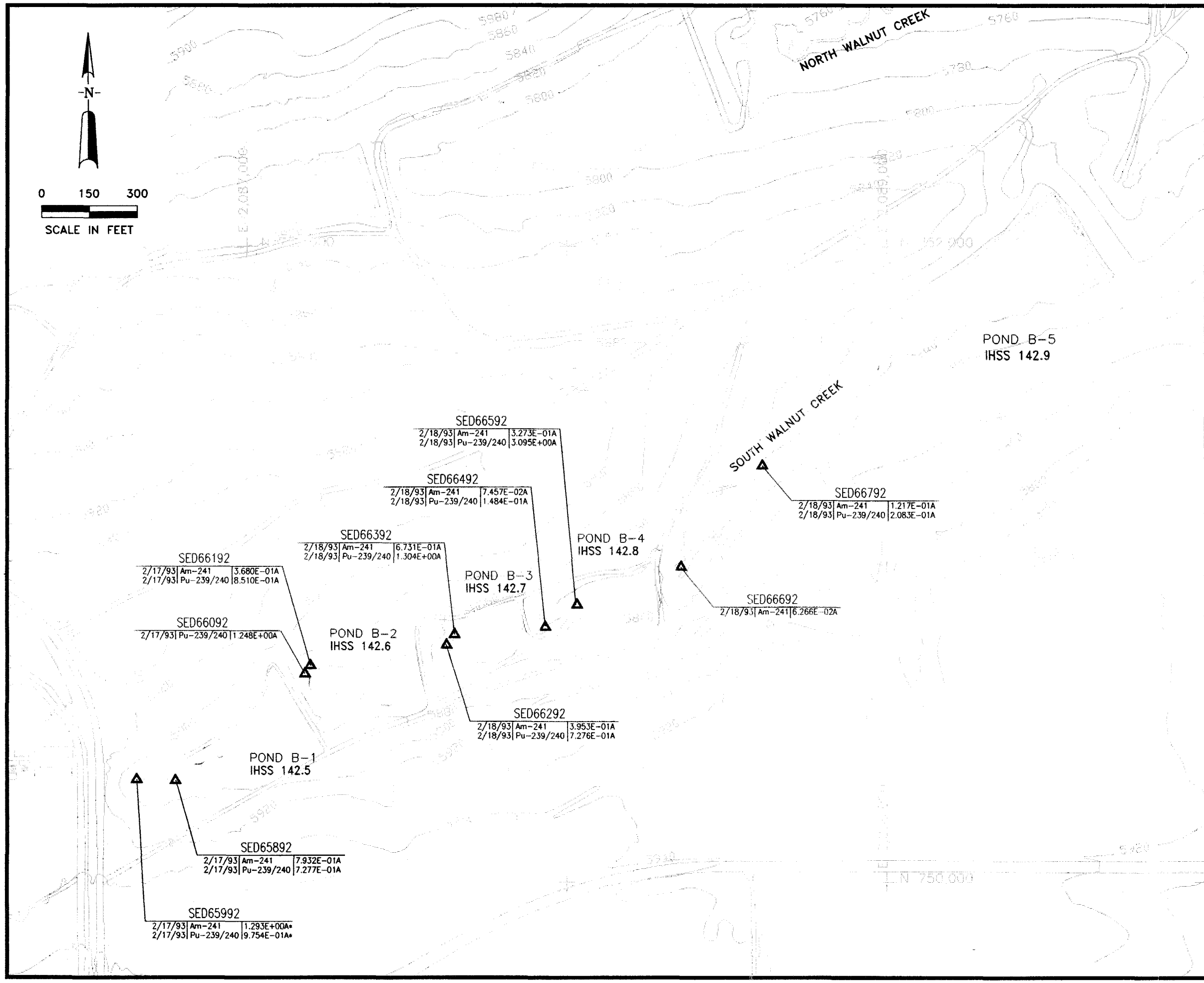
PCOC METALS
(IHSS 142.5-142.9)
SURFACE SOILS
(DRY SEDIMENTS)

FIGURE 4.4-16 JUNE 1995

4/13/95 OU6RI181 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED66792 DRY SEDIMENT SAMPLE SITE (SURFACE SOILS)

SED66792 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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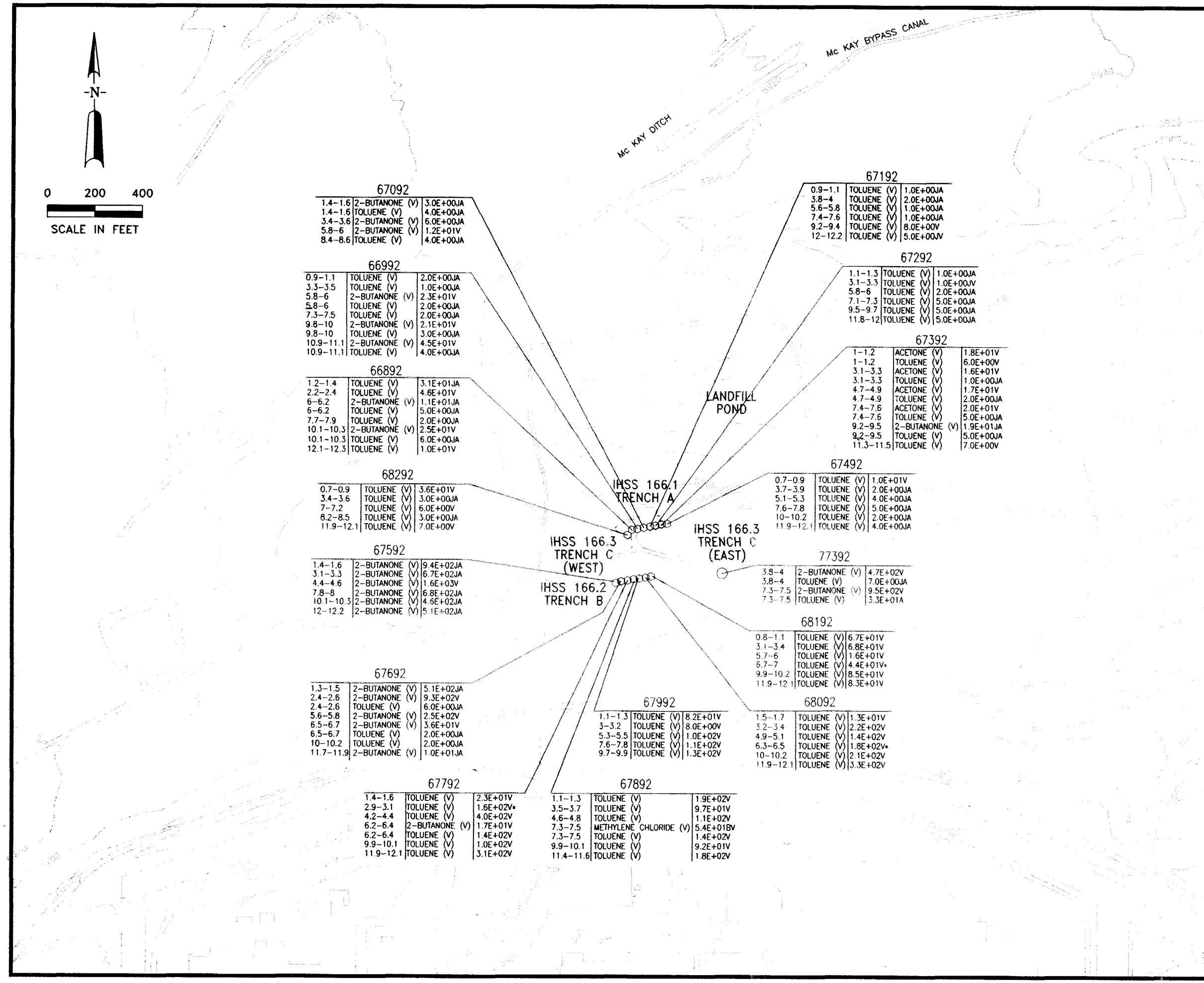
PCOC RADIONUCLIDES
(IHSSs 142.5 - 142.9)
SURFACE SOILS
(DRY SEDIMENTS)

FIGURE 4.4-17 JUNE 1995

4/13/95 OU6RI151 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

67392 ○ BOREHOLE

77392 ○ MONITORING WELL (ALLUVIAL)

68092 ← LOCATION

0.7-0.9

SAMPLE INTERVAL (ft) — ANALYTE — ANALYTE CONCENTRATION (ug/kg) AND LAB QUALIFIERS AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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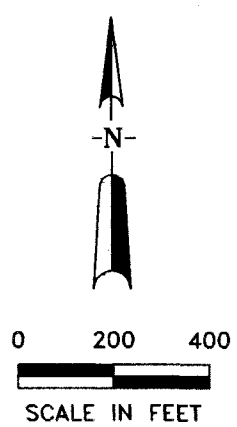
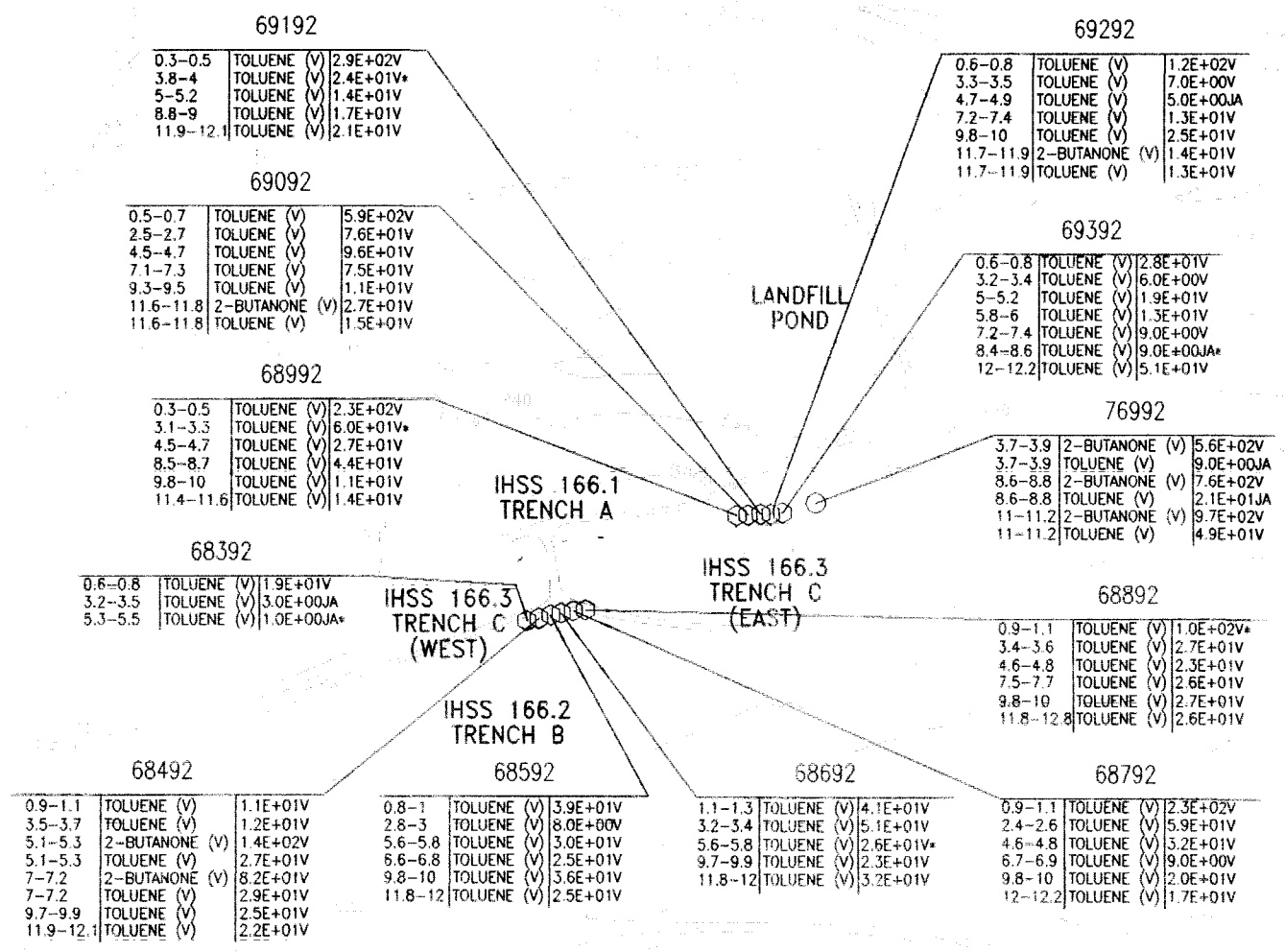
SUSPECT VOCs: 2-BUTANONE, ACETONE, AND TOLUENE (IHSSs 166.1 AND 166.2) SUBSURFACE SOILS

FIGURE 4.5-1 JUNE 1995

OU6RI075 1=400





EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

76292 ⬡ BOREHOLE

76992 ○ MONITORING WELL (ALLUVIAL)

68892 ← LOCATION

4.6–4.8

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (ug/kg) AND LAB QUALIFIERS AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4–1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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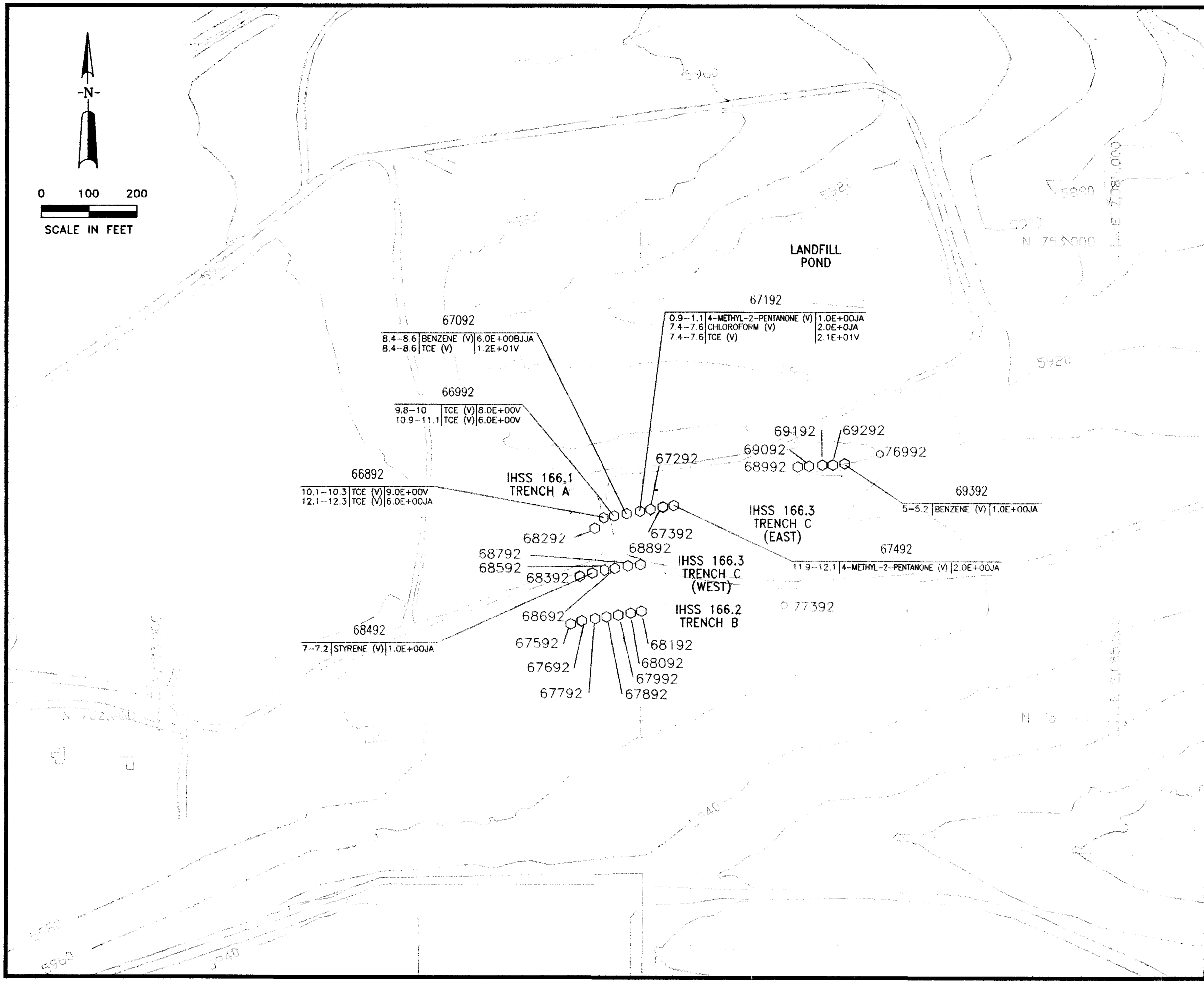
SUSPECT VOCs:
2–BUTANONE AND TOLUENE
(IHSS 166.3)
SUBSURFACE SOILS

FIGURE 4.5–2 JUNE 1995

OU6RI083 1=400



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

67192 ⬡ BOREHOLE

77392 ○ MONITORING WELL (ALLUVIAL)

69392 ← LOCATION

2–8 | | |

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4–1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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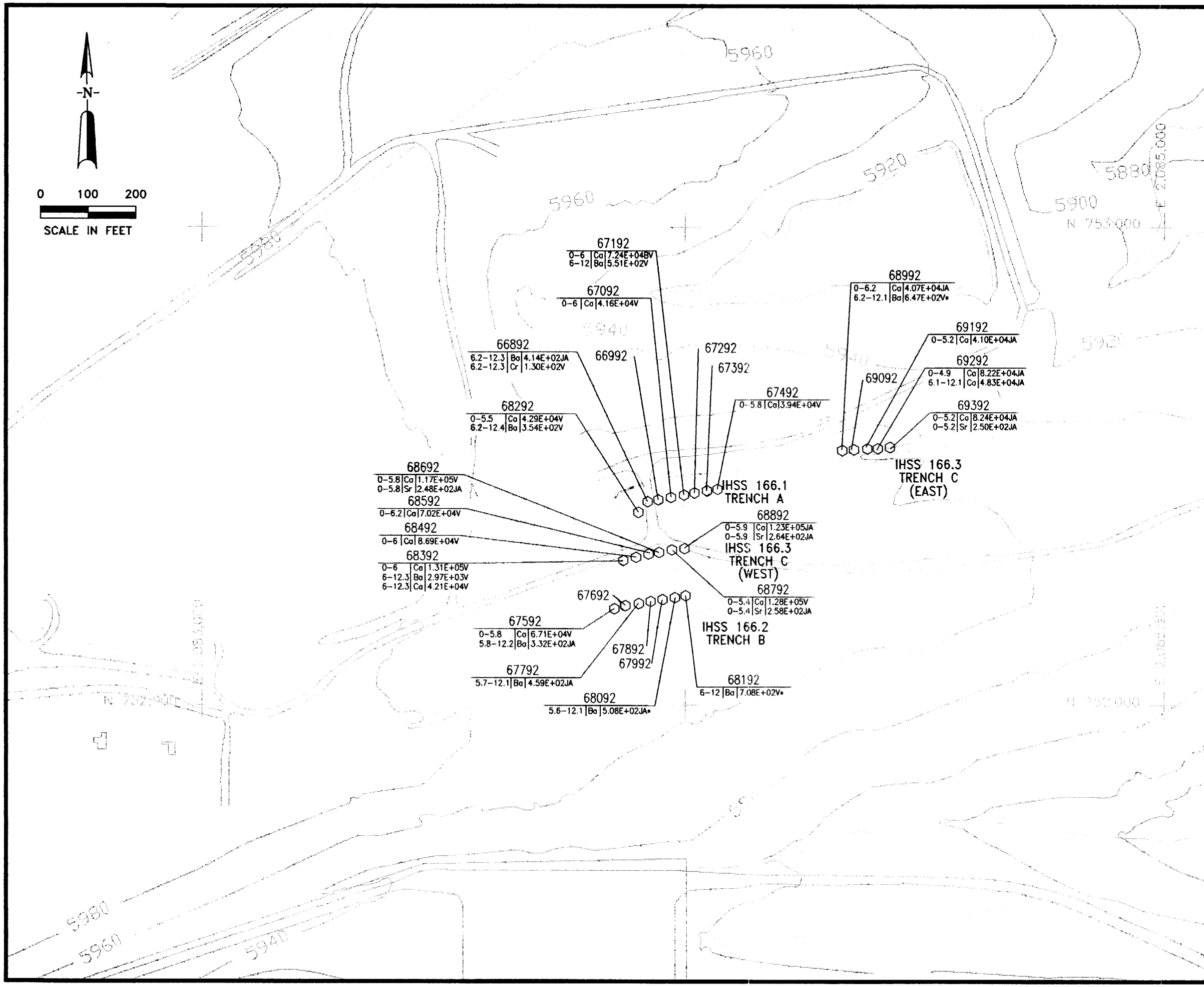
VOLATILE ORGANIC COMPOUNDS
(IHSSs 166.1 – 166.3)
SUBSURFACE SOILS

FIGURE 4.5–3 JUNE 1995

4/17/95 OU6RI080 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

68692 ⬡ BOREHOLE

68692 ← LOCATION
0-2

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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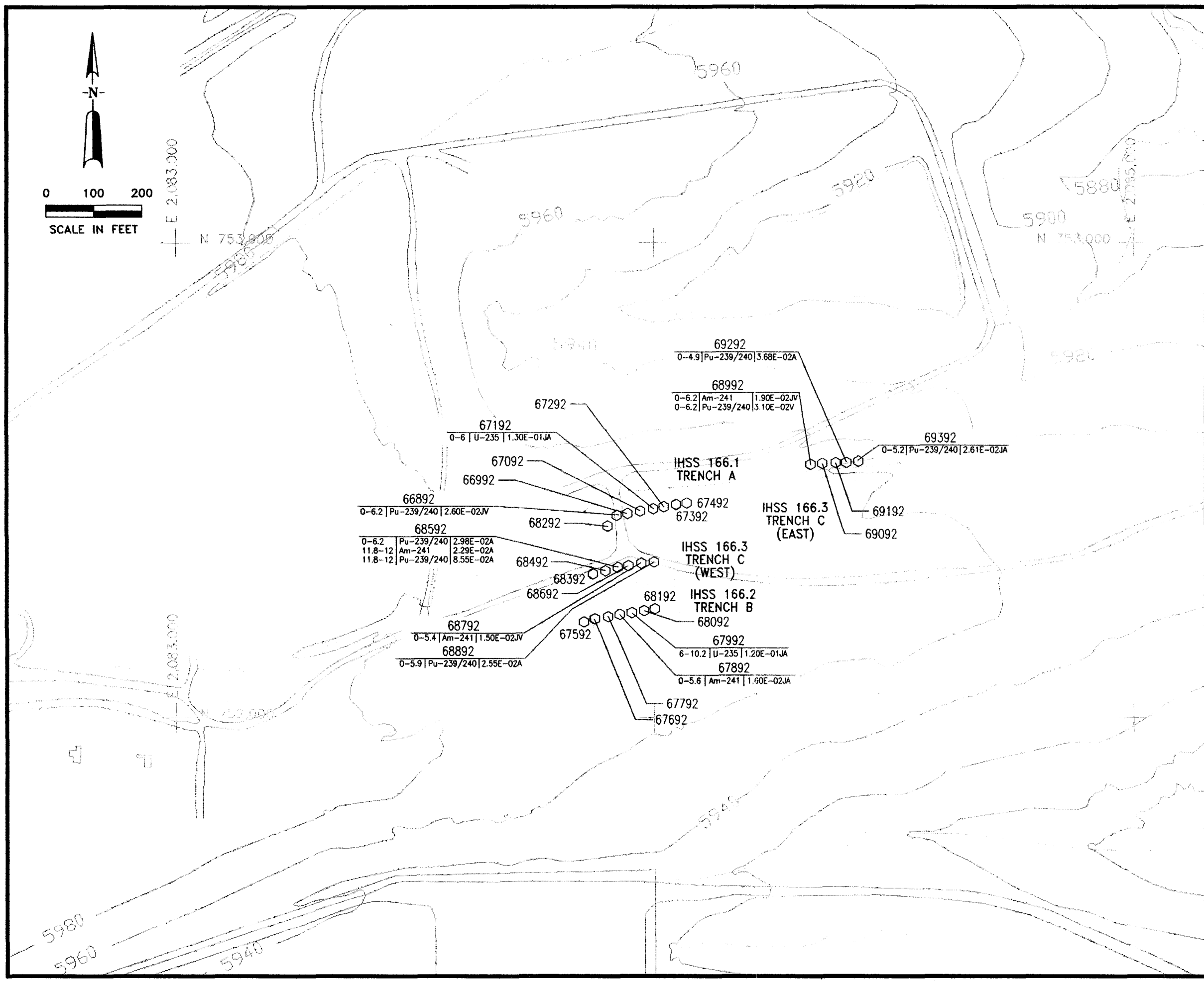
PCOC METALS
(IHSSs 166.1 – 166.3)
SUBSURFACE SOILS

FIGURE 4.5-4 JUNE 1995

4/17/95 OU6RI114 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

68692 ⬡ BOREHOLE

68592 ← LOCATION

0-2 ↑ SAMPLE INTERVAL (ft)

↑ ANALYTE

↑ ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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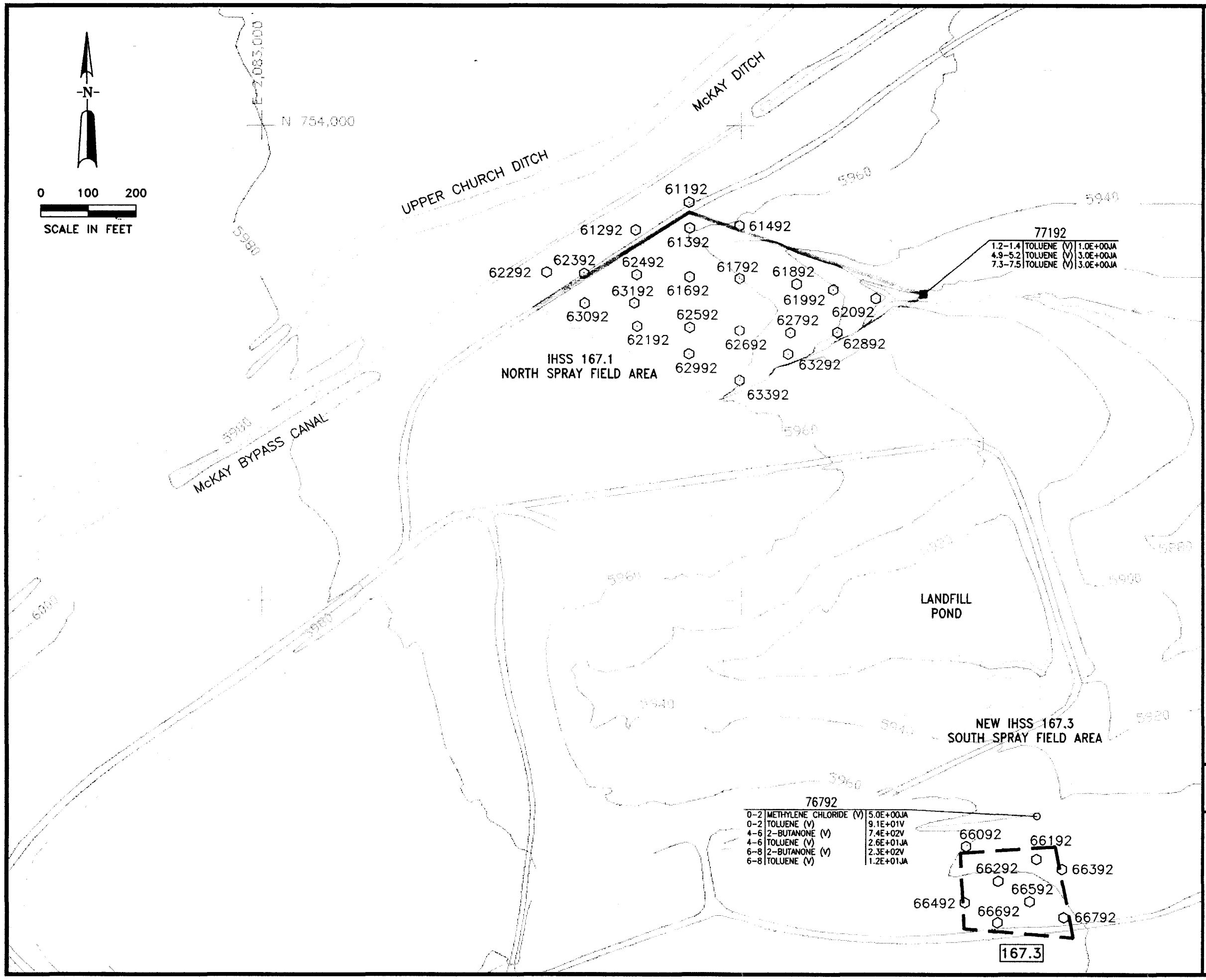
PCOC RADIONUCLIDES
(IHSSs 166.1 – 166.3)
SUBSURFACE SOILS

FIGURE 4.5-5 JUNE 1995

4/17/95 OU6RI119 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

167.3 — HISTORICAL IHSS BOUNDARIES (DOE 1987)

62892 ○ — BOREHOLE

77192 ■ — MONITORING WELL (COLLUVIAL)

76792 ○ — MONITORING WELL (ALLUVIAL)

77192 ← LOCATION

0-2 — SAMPLE INTERVAL (ft)

ANALYTE

ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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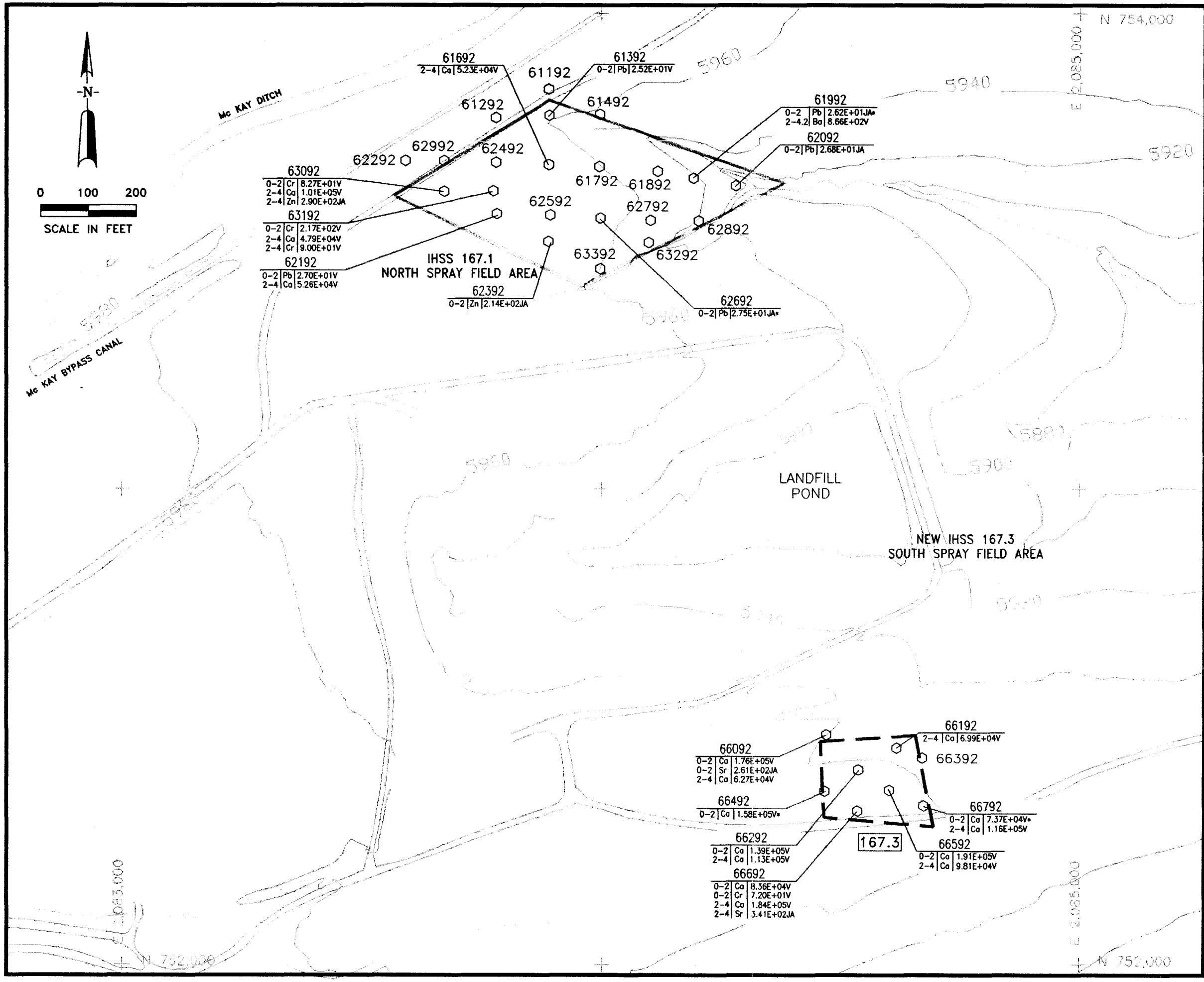
SUSPECT VOCs: 2-BUTANONE, METHYLENE CHLORIDE, AND TOLUENE (IHSSs 167.1 AND 167.3) SUBSURFACE SOILS

FIGURE 4.5-6 JUNE 1995

4/17/95 OU6RI076 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

HISTORICAL IHSS BOUNDARIES (DOE 1987)

167.3

62892 ⬡ BOREHOLE

62892 ← LOCATION
0-2
SAMPLE INTERVAL (ft)
ANALYTE
ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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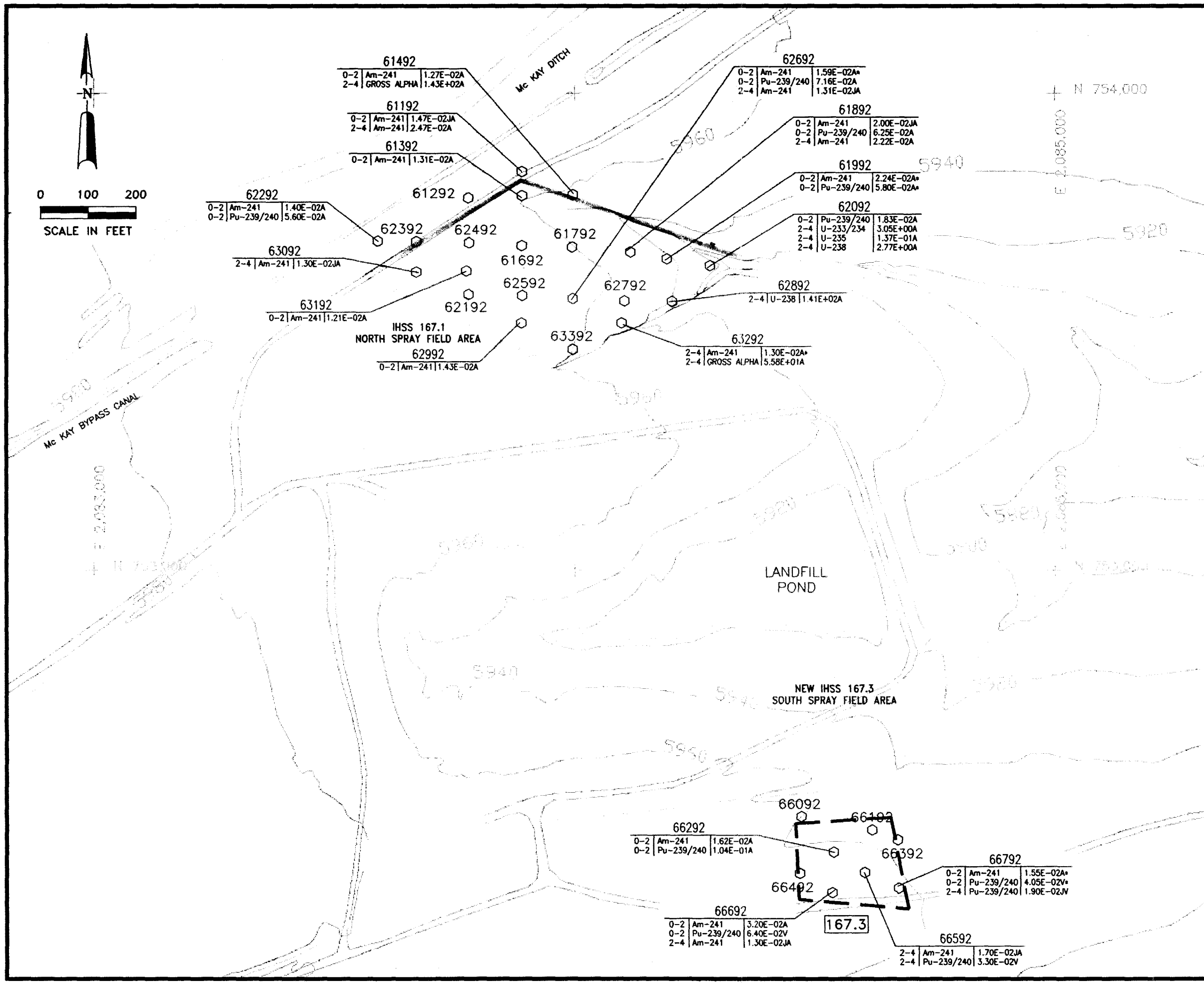
PCOC METALS
(IHSSs 167.1 AND 167.3)
SUBSURFACE SOILS

FIGURE 4.5-7 JUNE 1995

4/17/95 OU6RI115 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

HISTORICAL IHSS BOUNDARIES (DOE 1987)

167.3

62892 ⬡ BOREHOLE

62892 ← LOCATION

0-2

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE ACTIVITIES (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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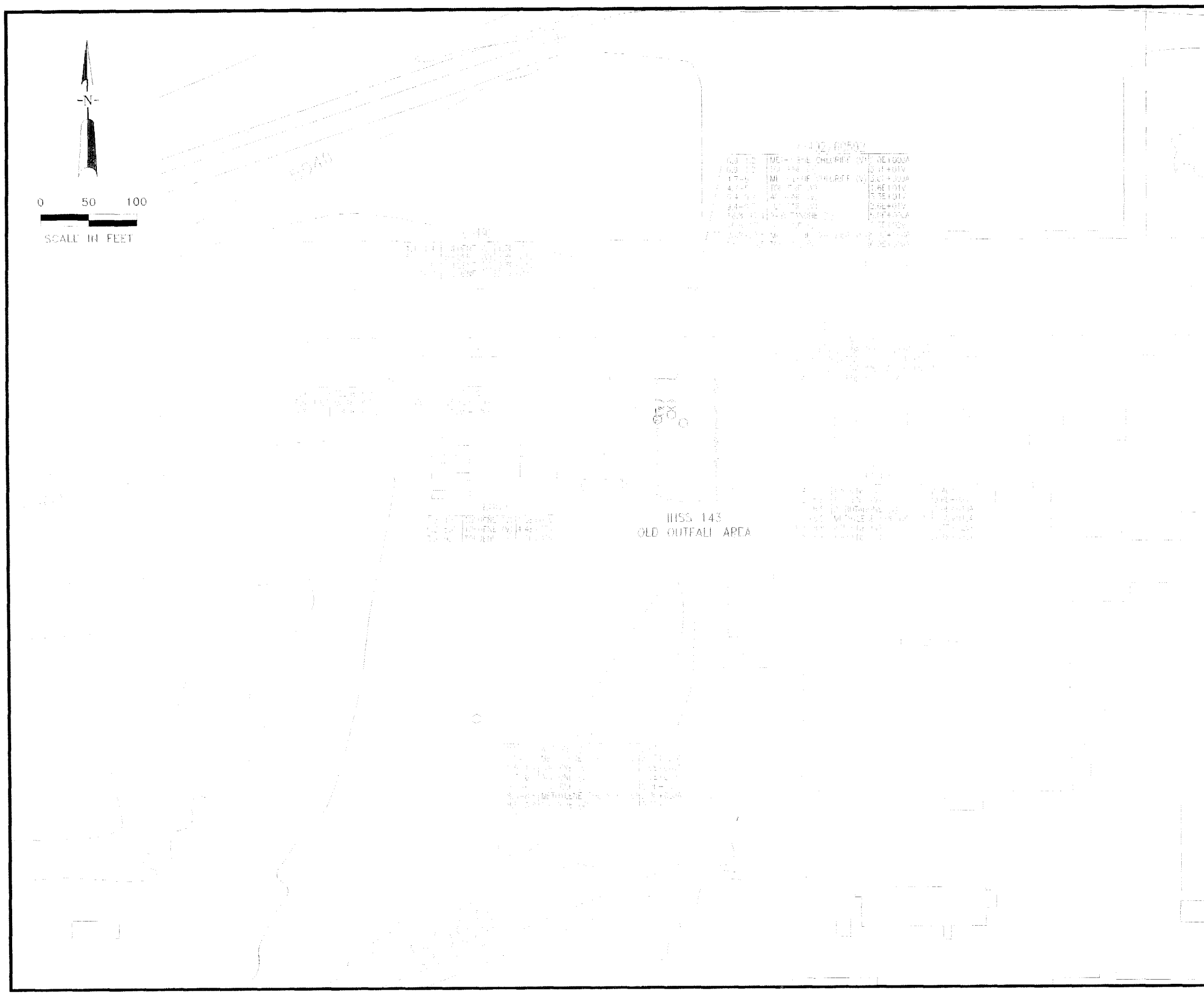
PCOC RADIONUCLIDES
(IHSSs 167.1 AND 167.3)
SUBSURFACE SOILS

FIGURE 4.5-8 JUNE 1995

4/17/95 OU6RI120 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (DOE 1992b)

BOUNDARY OF OLD OUTFALL AREA BASED ON INTERPRETATION OF AERIAL PHOTOGRAPHS (SECTION 2.2.3)

BOREHOLE

MONITORING WELL & BOREHOLE

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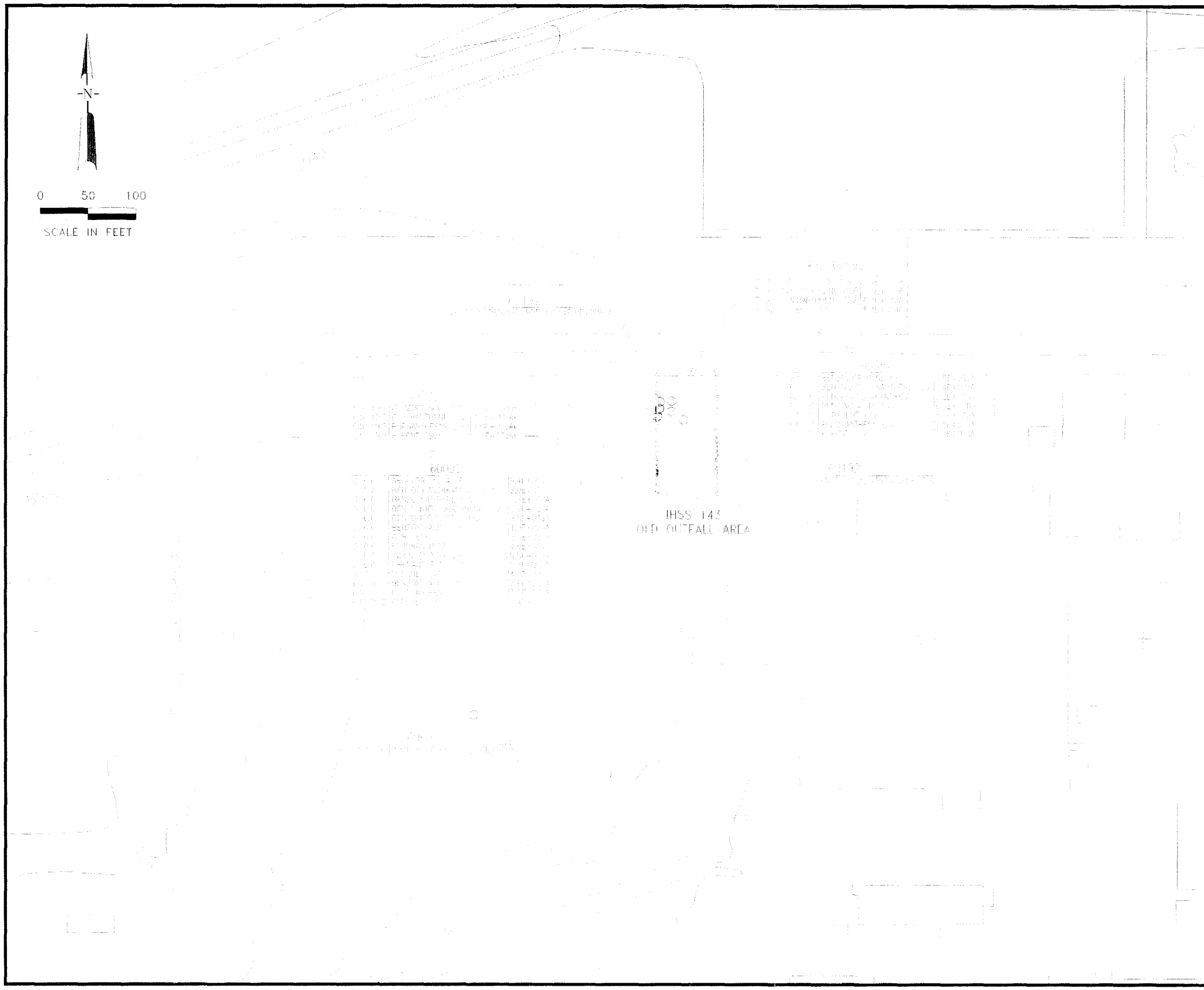
PHASE I RFI/RI REPORT

SUSPECT ORGANIC COMPOUNDS:
2-BUTANONE, ACETONE,
DI-N-OCTYL PHTHALATE
METHYLENE CHLORIDE, AND TOLUENE
(IHSS 143)
SUBSURFACE SOILS

FIGURE 4.5-9



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (DOE 1992b)

BOUNDARY OF OLD OUTFALL AREA BASED ON INTERPRETATION OF AERIAL PHOTOGRAPHS (SECTION 2.2.4)

HOPEHOLE

MONITORING WELL & SERIES (SECTION)

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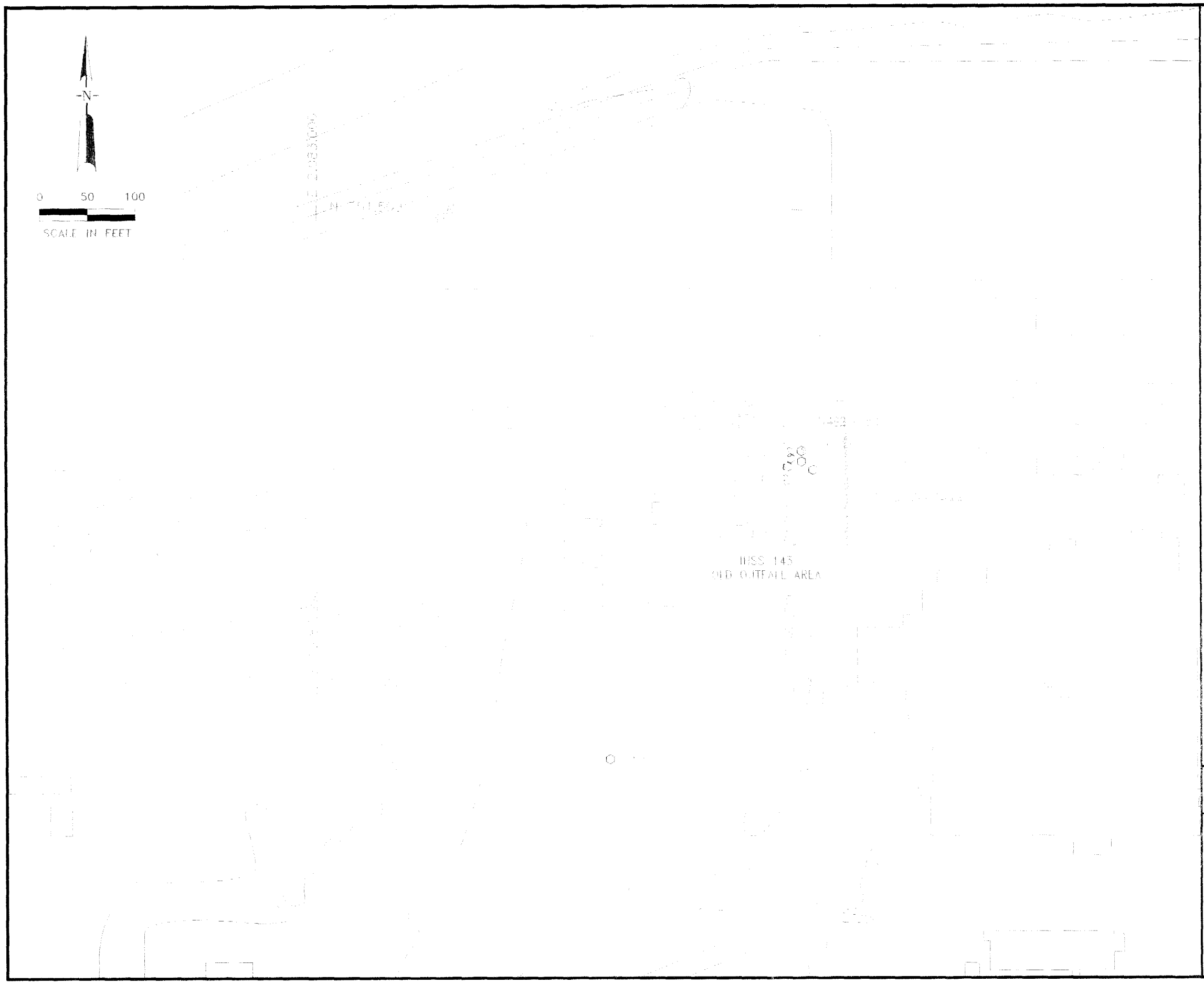
SEMIVOLATILE ORGANIC COMPOUNDS
AND PESTICIDES/PCBs
(IHSS 143)
SUBSURFACE SOILS

FIGURE 4.5-10

JUNE 1995

4/15/95 OU6NI077 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (DOE 1992b)

BOUNDARY OF OLD OUTFALL AREA BASED ON INTERPRETATION OF AERIAL PHOTOGRAPHS (SECTION 2.1.5)

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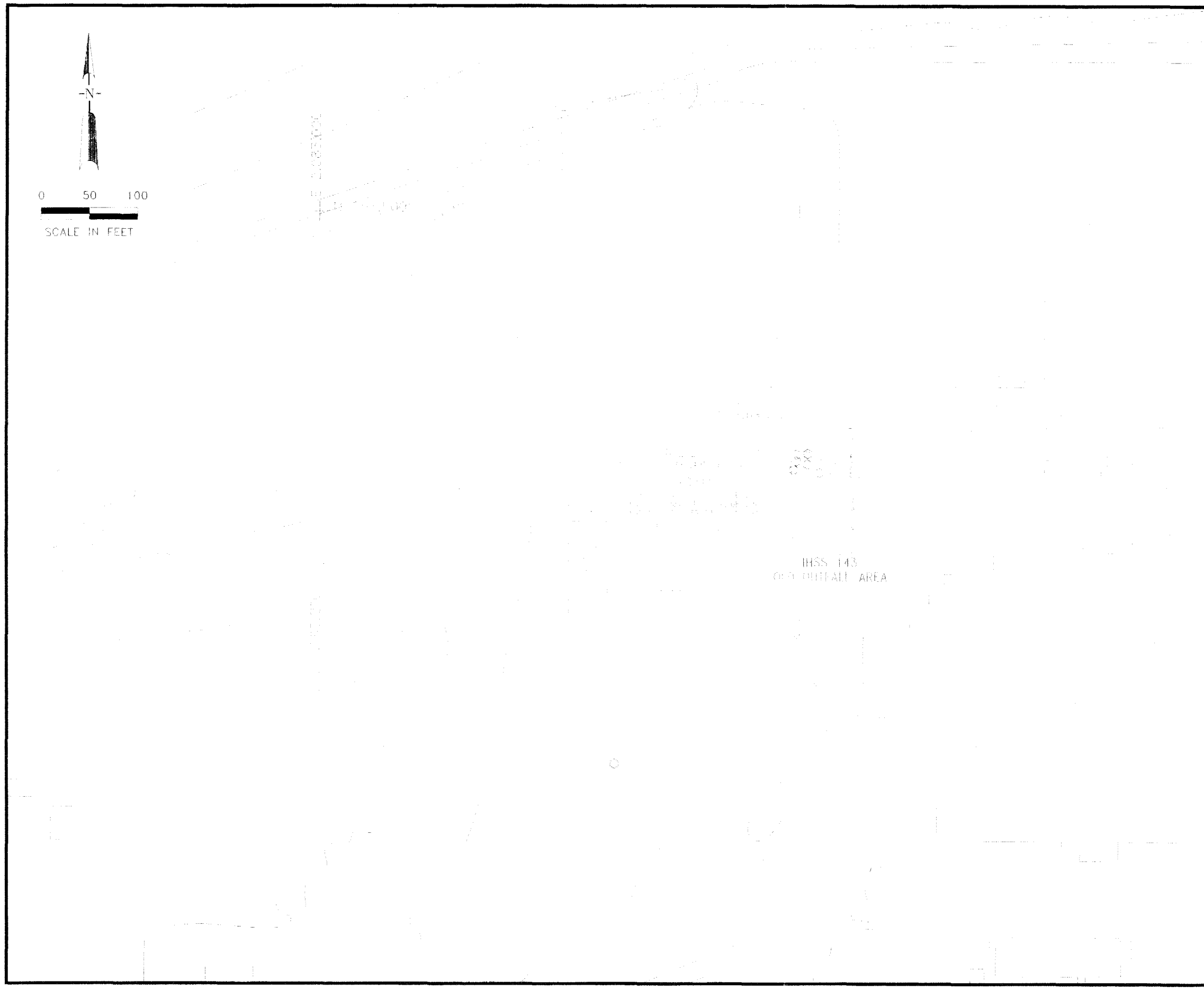
FCOC METALS
(IHSS 143)
SUBSURFACE SOILS

FIGURE 4.5-11 JUNE 1995



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (DOE 1990/6)

BOUNDARY OF OLD OUTFALL AREA BASED ON INTERPRETATION OF AERIAL PHOTOGRAPHS (SECTION 5.3.7)

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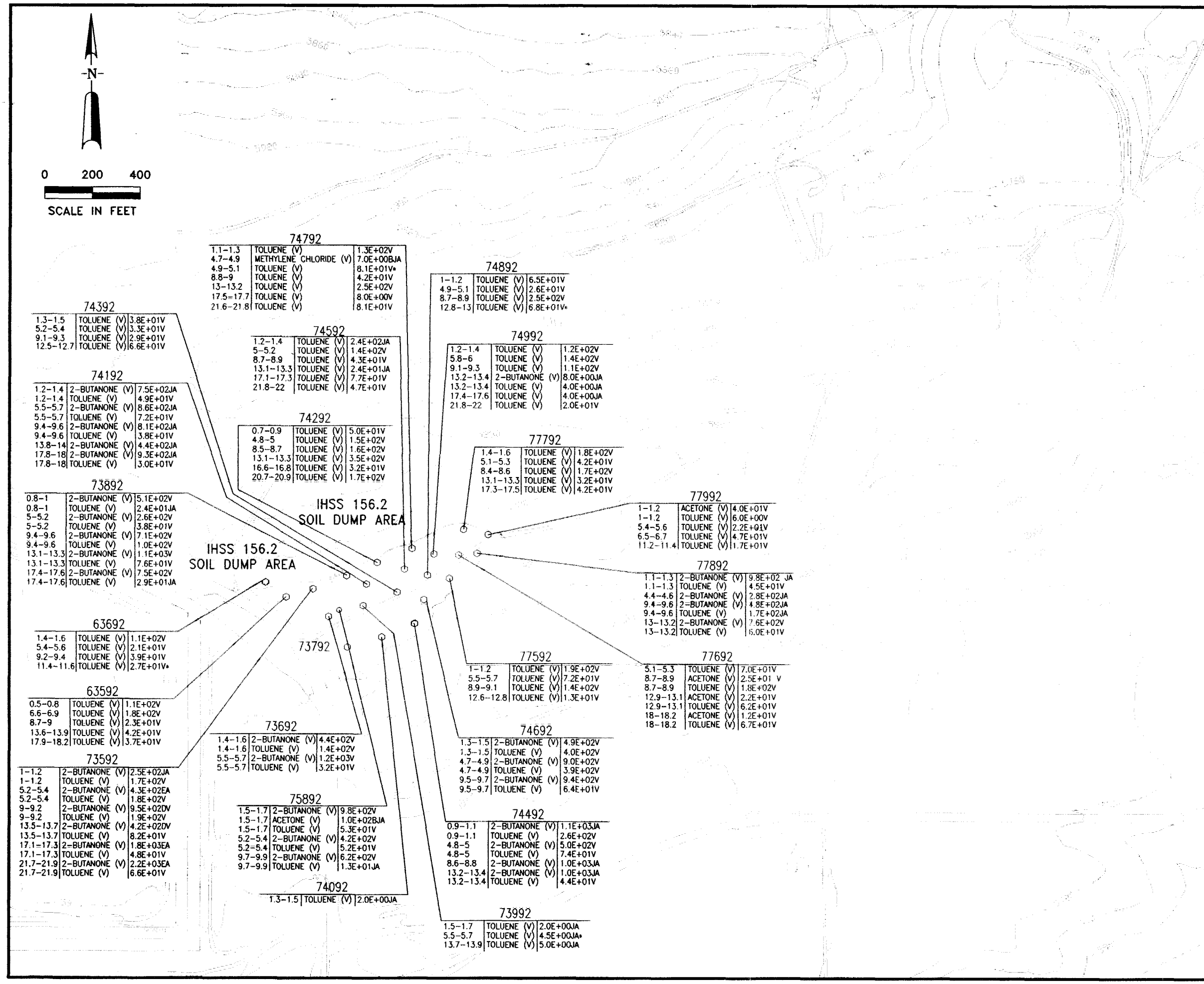
PCOC RADIONUCLIDES
(IHSS 143)
SUBSURFACE SOILS

FIGURE 4.5-12



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

74092 ○ BOREHOLE

75892 ○ MONITORING WELL (ALLUVIAL)

77592 ← LOCATION

1.2-1.4

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) - VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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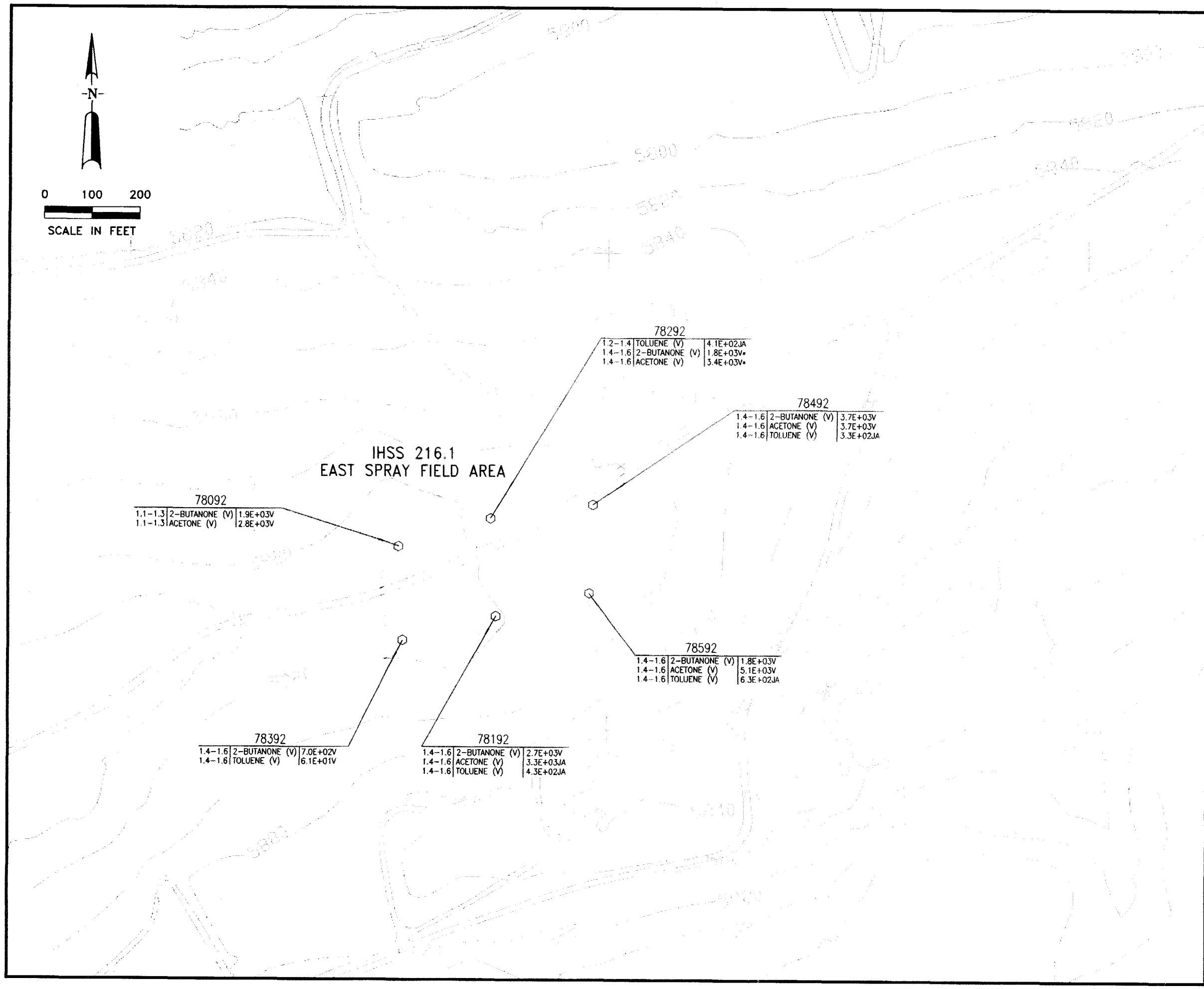
SUSPECT VOCs: 2-BUTANONE, ACETONE, METHYLENE CHLORIDE, AND TOLUENE (IHSS 156.2) SUBSURFACE SOILS

FIGURE 4.5-13 JUNE 1995

OU6RI074 1=400



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

78492 ⬡ BOREHOLE

SS600292 ← LOCATION

1.4-1.6

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (ug/kg) AND LAB QUALIFIERS AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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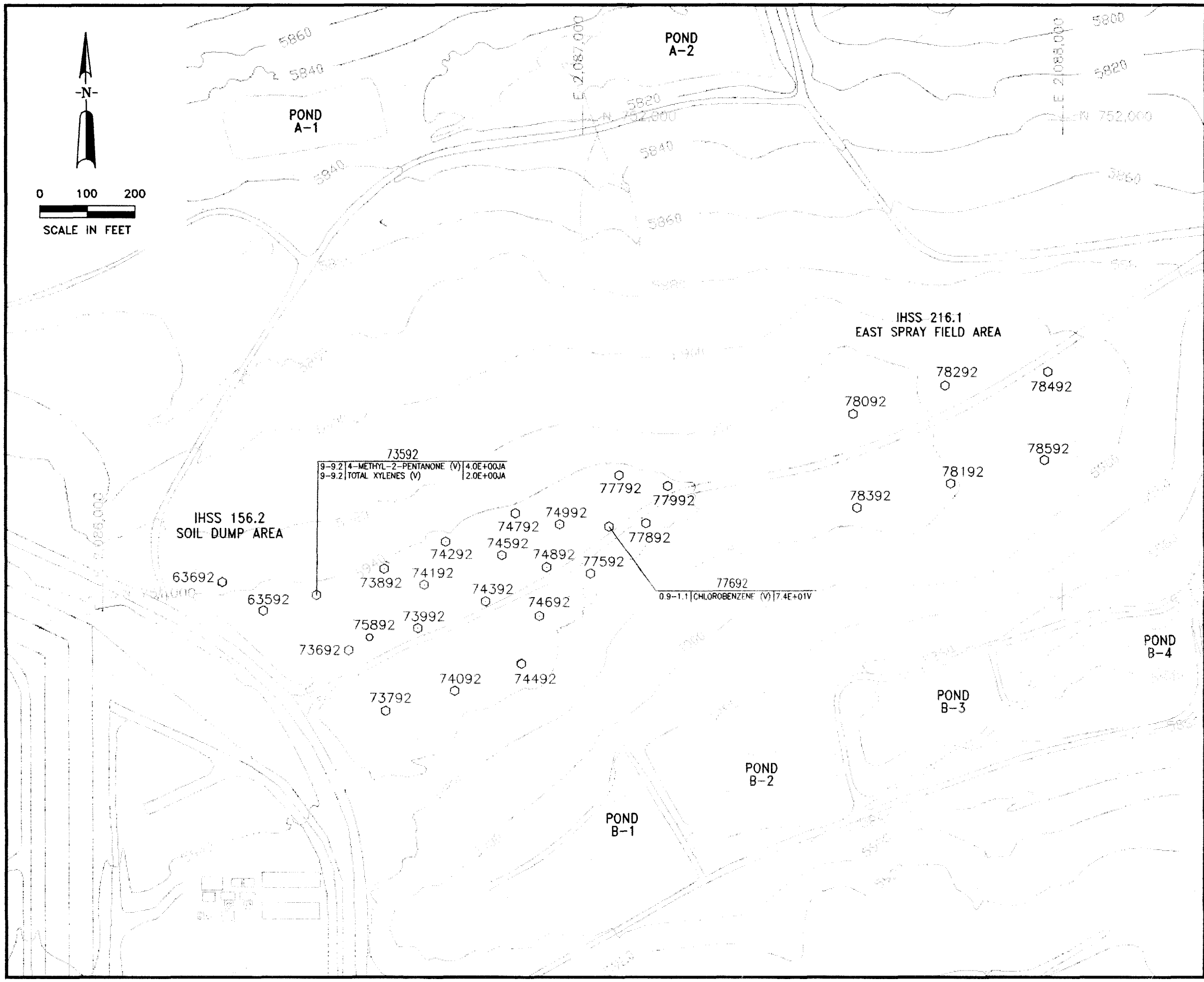
OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

SUSPECT VOCs: 2-BUTANONE, ACETONE, AND TOLUENE (IHSS 216.1) SUBSURFACE SOILS

FIGURE 4.5-14 JUNE 1995

OU6RI082 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

73592 ○ BOREHOLE

75892 ○ MONITORING WELL (ALLUVIAL)

73592 ← LOCATION

9-9.2 — SAMPLE INTERVAL (ft)

ANALYTE

ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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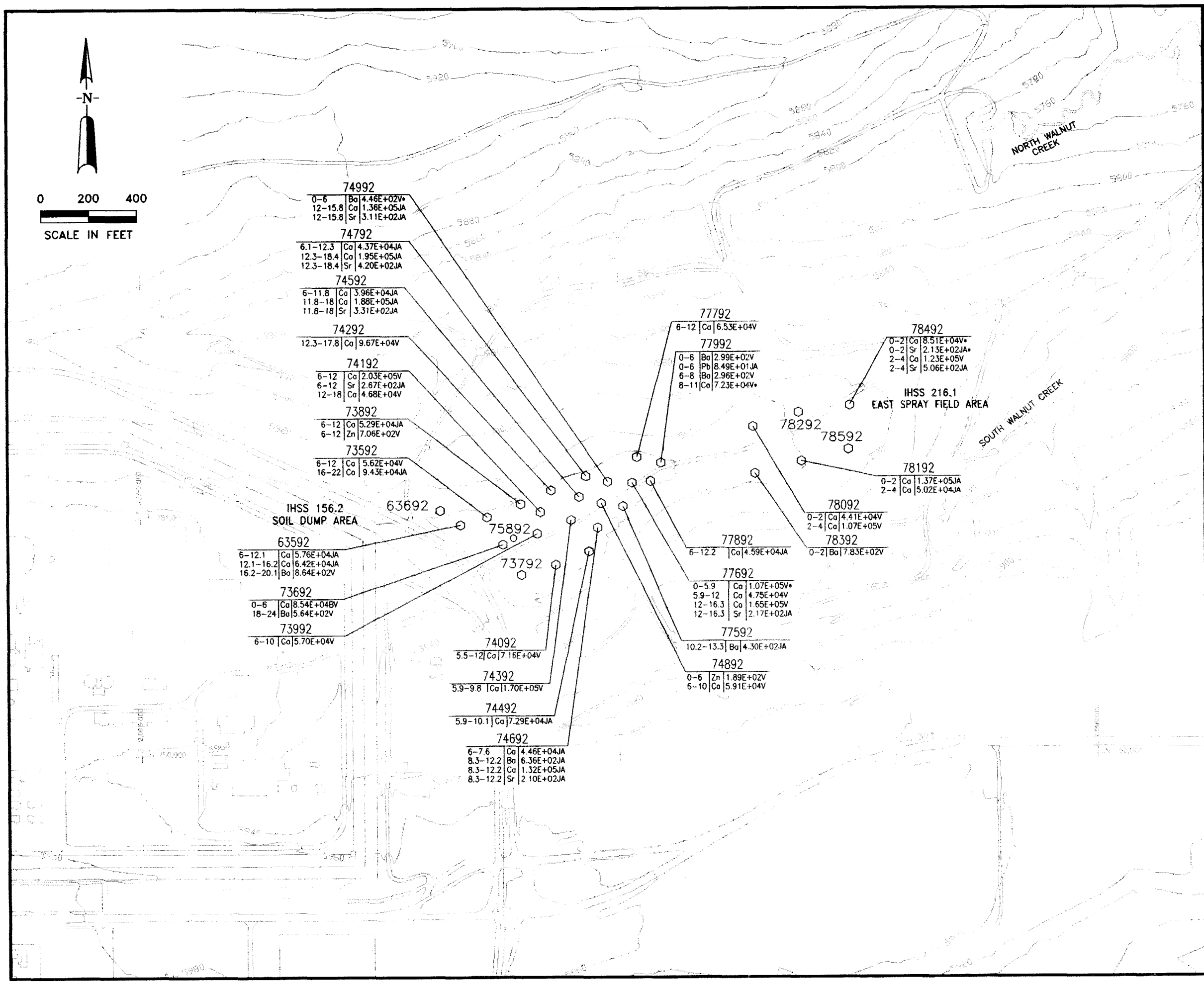
PHASE I RFI/RI REPORT

VOLATILE ORGANIC COMPOUNDS
(IHSSs 156.2 AND 216.1)
SUBSURFACE SOILS

FIGURE 4.5-15 JUNE 1995

4/17/95 OU6RI078 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

73592 ○ BOREHOLE

75892 ○ MONITORING WELL (ALLUVIAL)

78392 ← LOCATION

0-2

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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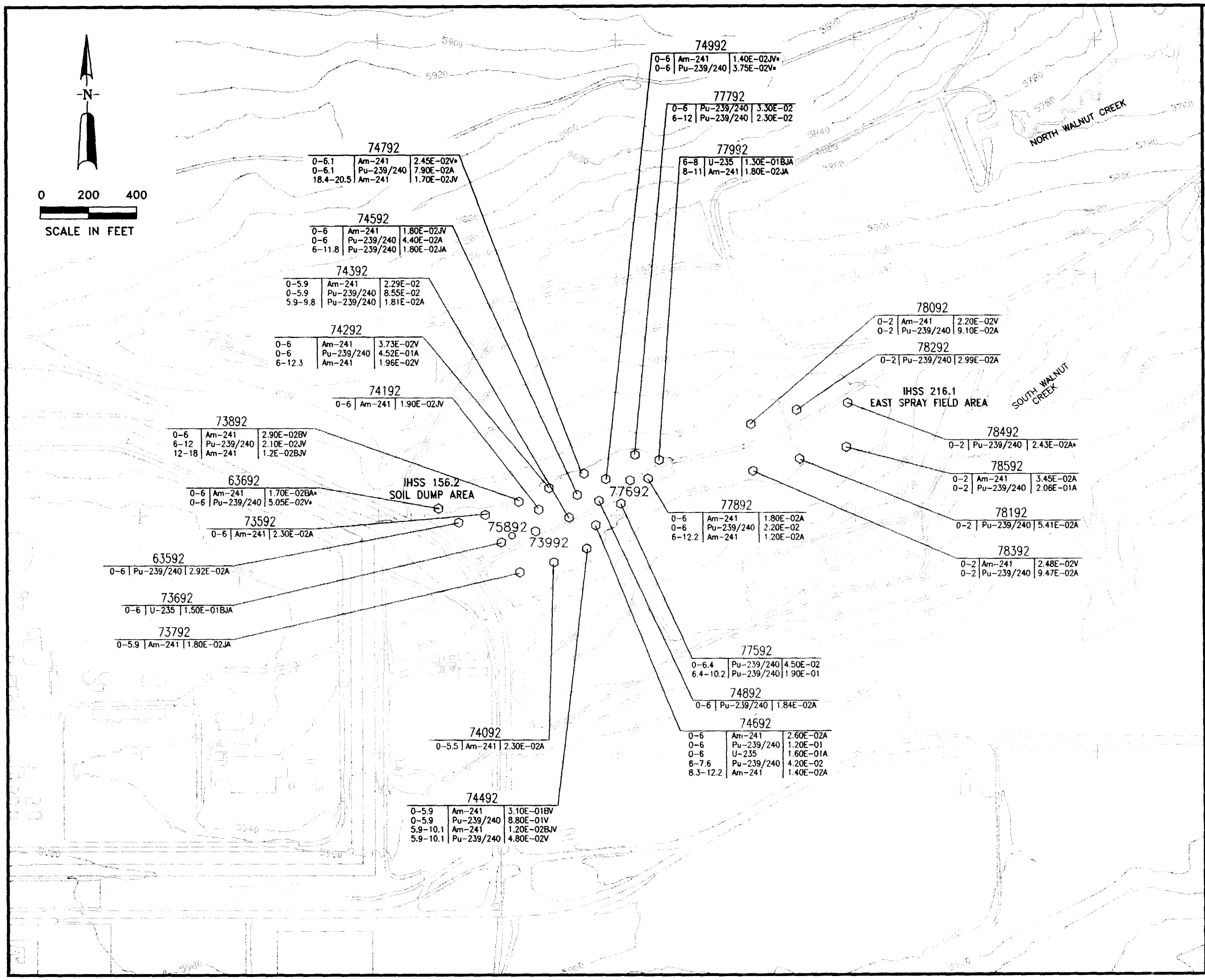
PCOC METALS
(IHSSs 156.2 AND 216.1)
SUBSURFACE SOILS

FIGURE 4.5-16 JUNE 1995

4/17/95 OU6RI112 1=400



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

73592 ○ BOREHOLE

75892 ○ MONITORING WELL (ALLUVIAL)

78392 ← LOCATION

0-2

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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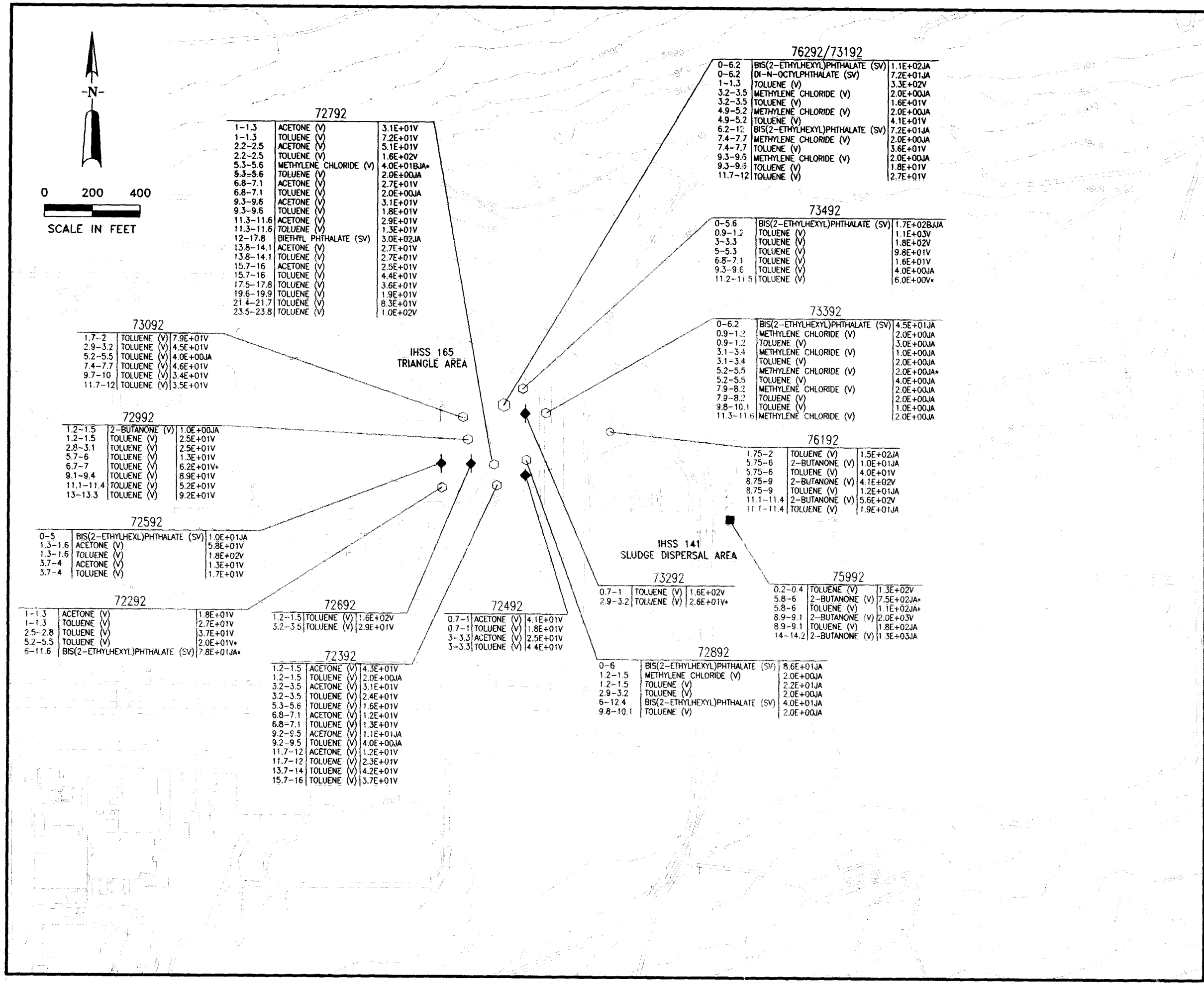
PCOC RADIONUCLIDES
(IHSSs 156.2 AND 216.1)
SUBSURFACE SOILS

FIGURE 4.5-17 JUNE 1995

4/18/95 OU6RI117 1=400



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

72392 ⬡ BOREHOLE

76292 ✱ MONITORING WELL (BEDROCK)

75992 ■ MONITORING WELL (COLLUVIAL)

76192 ○ MONITORING WELL (ALLUVIAL)

72692 ◆ SOIL CORE

73392 ← LOCATION

0-6

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(SV) - SEMIVOLATILE
(V) - VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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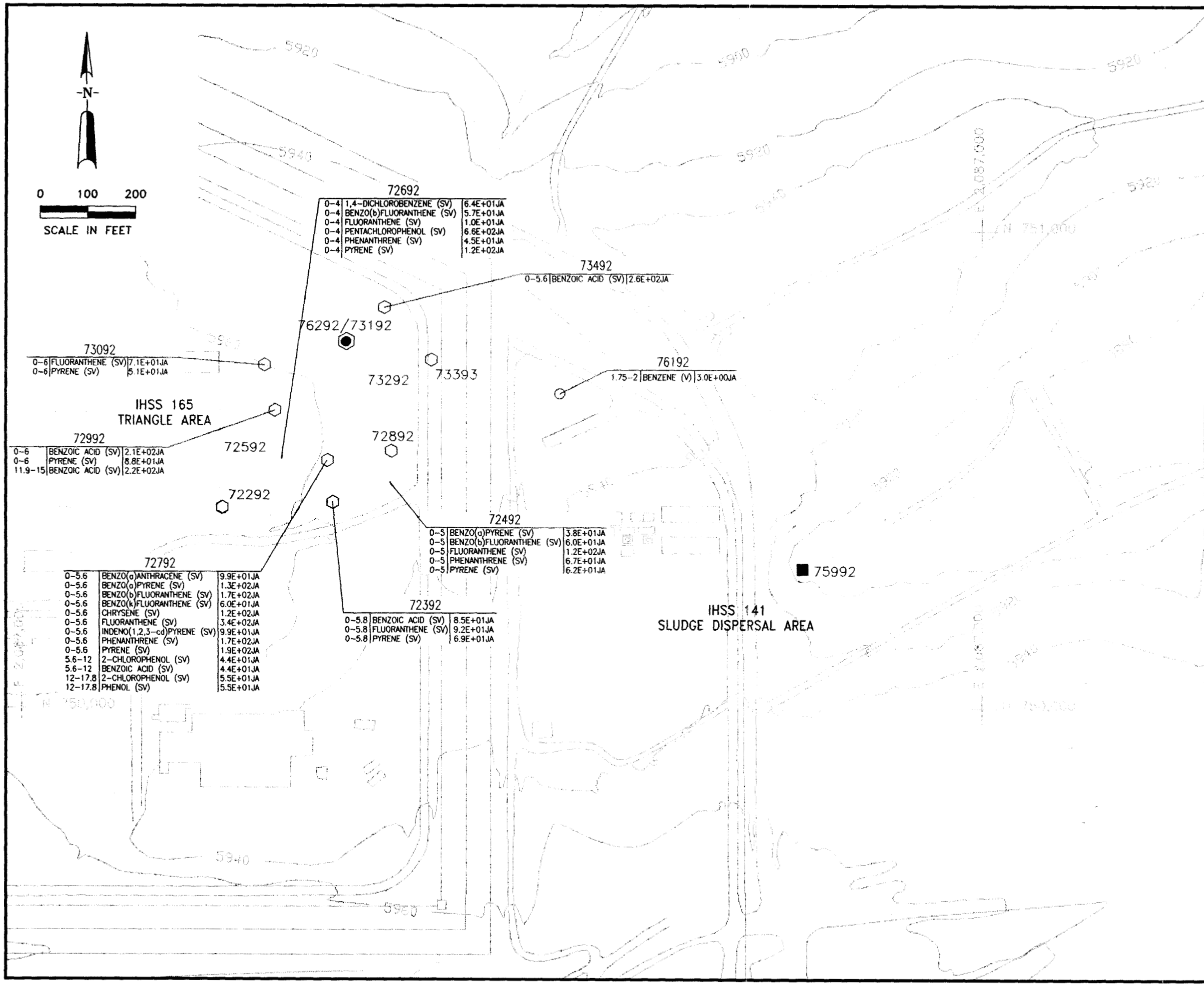
SUSPECT ORGANIC COMPOUNDS:
2-BUTANONE, ACETONE, BIS (2-ETHYLHEXYL) PHTHALATE, DI-N-OCTYLPHTHALATE, DIETHYL PHTHALATE, METHYLENE CHLORIDE, AND TOLUENE
(IHSSs 141 AND 165)
SUBSURFACE SOILS

FIGURE 4.5-18 JUNE 1995

OU6RI071 1=400



EXPLANATION

	INDIVIDUAL HAZARDOUS SUBSTANCE SITES
72392 ⬡	BOREHOLE
76292/73192 ◉	MONITORING WELL (BEDROCK)/BOREHOLE
75992 ■	MONITORING WELL (COLLUVIAL)
76192 ○	MONITORING WELL (ALLUVIAL)
72492	SOIL CORE

76192 ← LOCATION

1.75-2 — SAMPLE INTERVAL (ft)

ANALYTE

ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(SV) – SEMIVOLATILE
(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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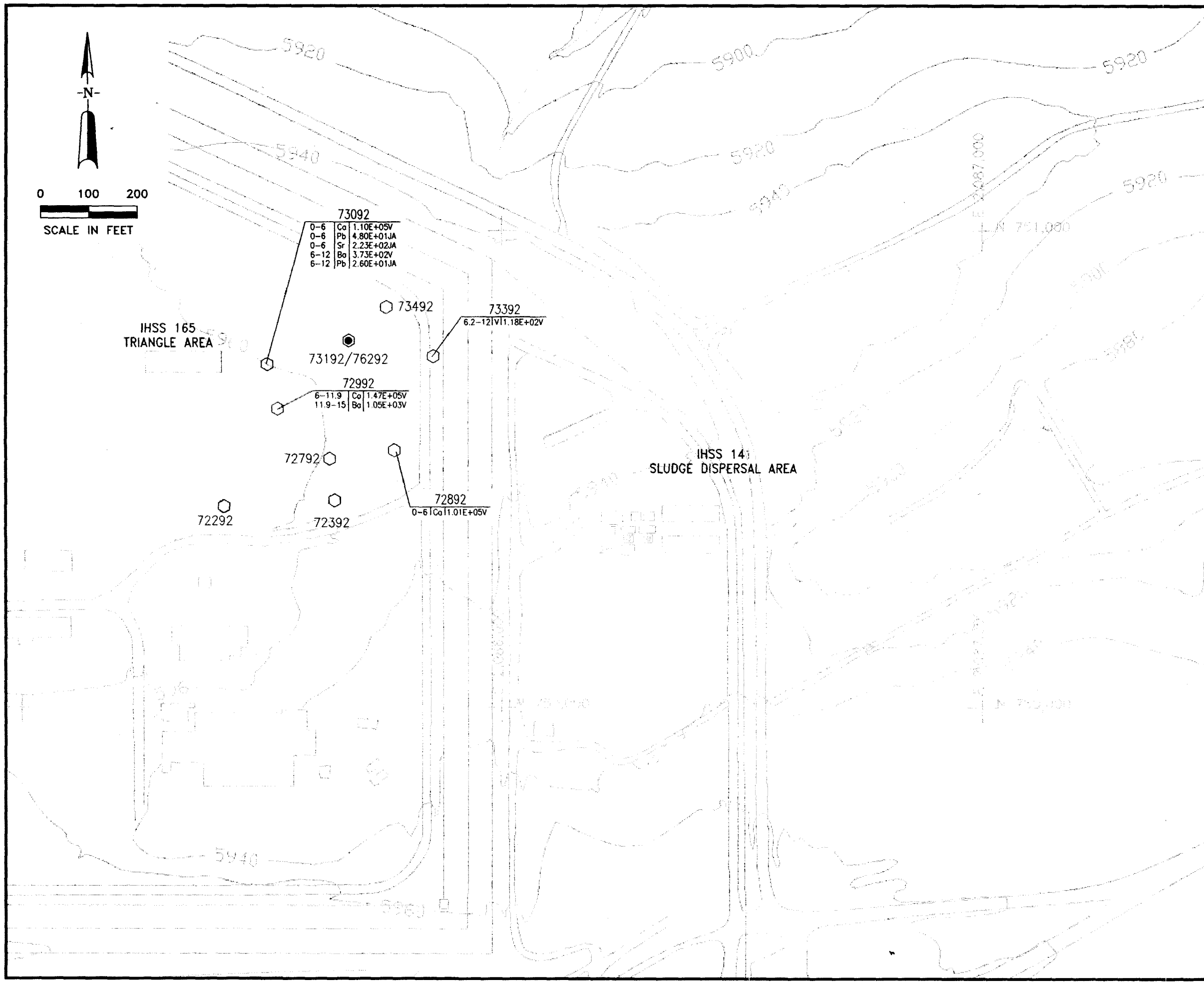
ORGANIC COMPOUNDS
(IHSSs 141 AND 165)
SUBSURFACE SOILS

FIGURE 4.5-19 JUNE 1995

9/17/95 OU6RI079 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

73392 BOREHOLE

73192/76292 MONITORING WELL & BOREHOLE (BEDROCK)

73392 ← LOCATION

0-2

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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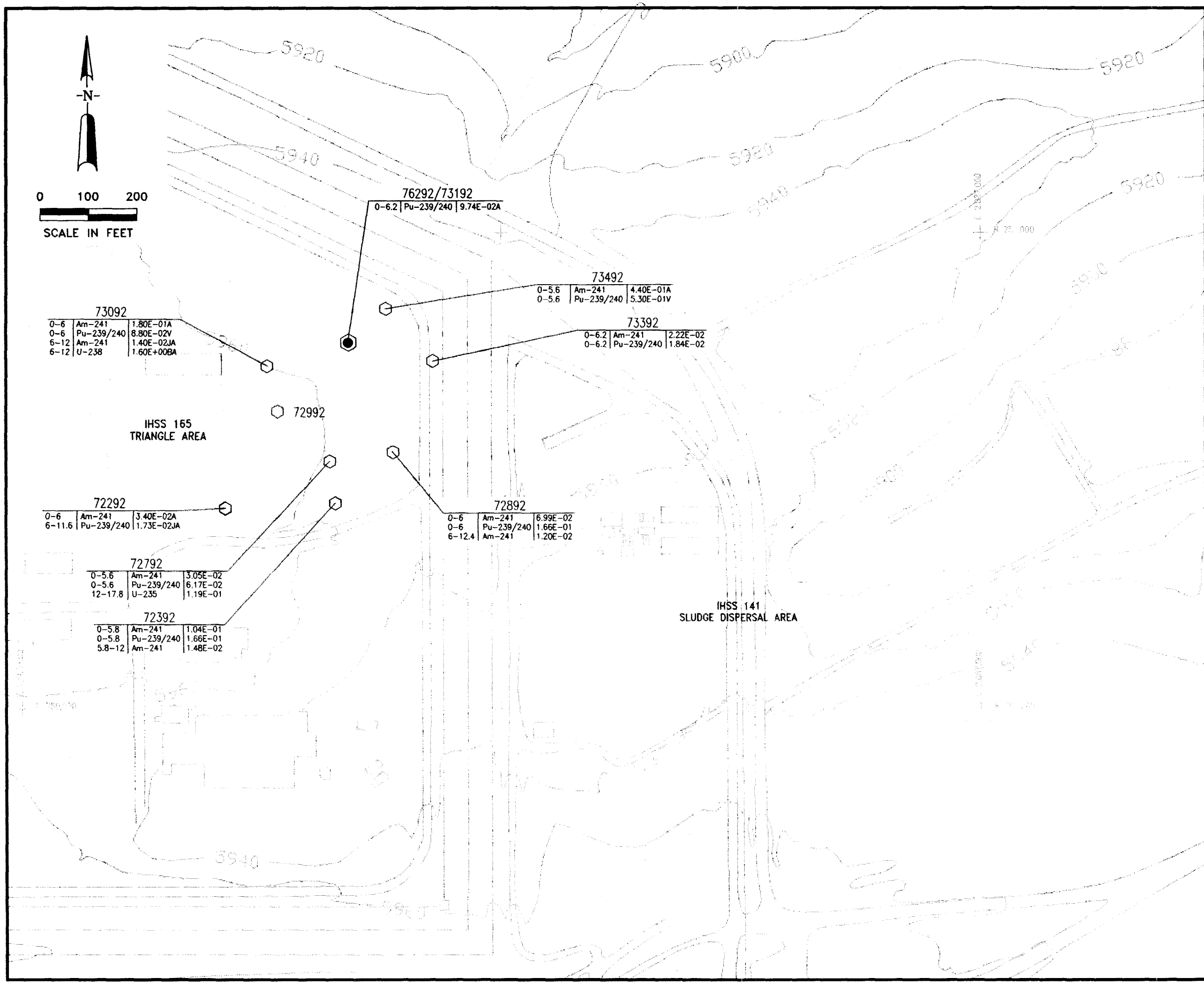
PCOC METALS
(IHSSs 141 AND 165)
SUBSURFACE SOILS

FIGURE 4.5-20 JUNE 1995

4/17/95 OU6RI113 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

73392 BOREHOLE

76292/73192 BEDROCK MONITORING WELL/BOREHOLE

73392 ← LOCATION

0-2

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

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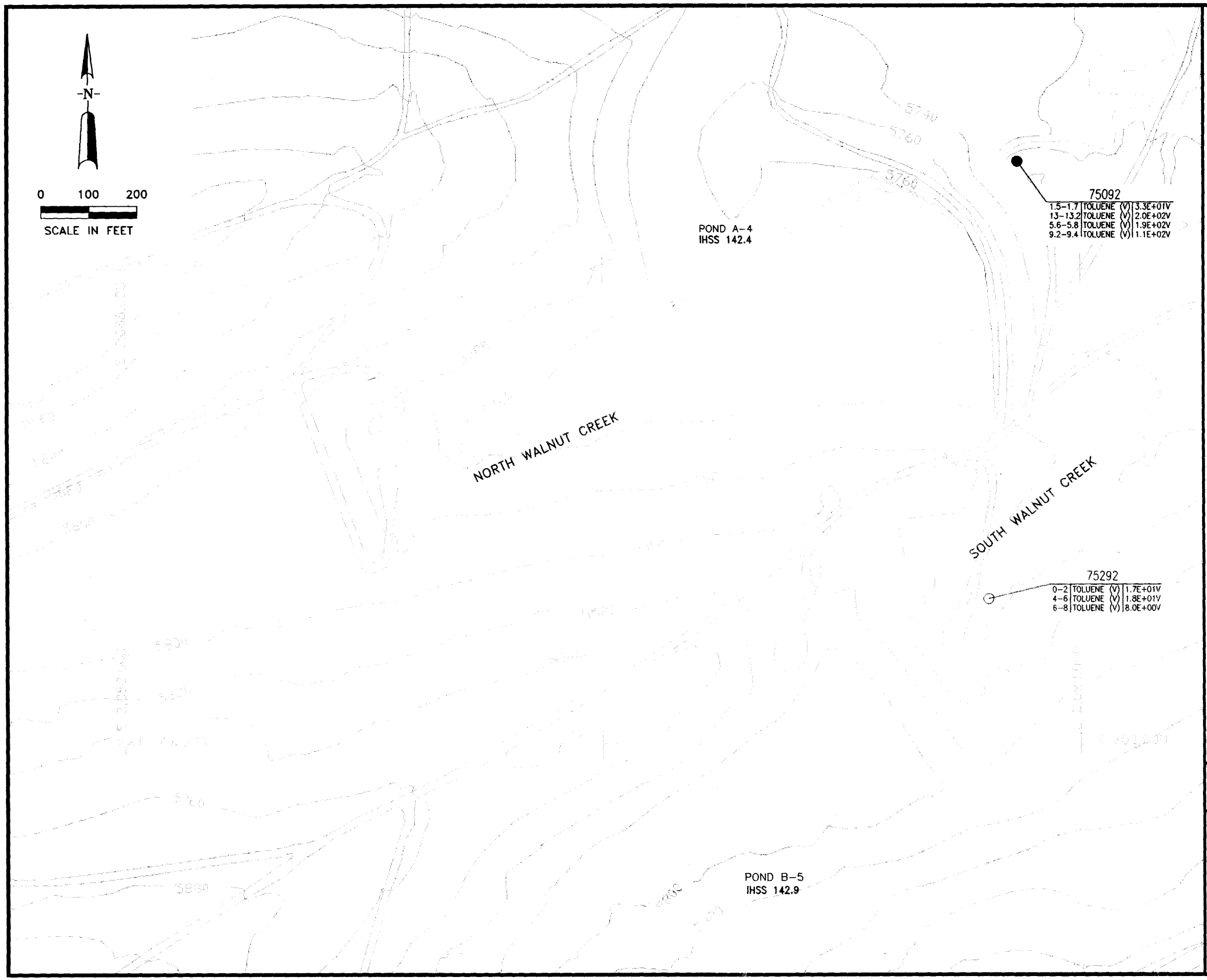
PCOC RADIONUCLIDES
(IHSSs 141 AND 165)
SUBSURFACE SOILS

FIGURE 4.5-21 JUNE 1995

4/17/95 OU6RI118 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

75292 ○ MONITORING WELL (ALLUVIAL)

75092 ● MONITORING WELL (BEDROCK)

75292 ← LOCATION

0-2 | | |

SAMPLE INTERVAL (ft) | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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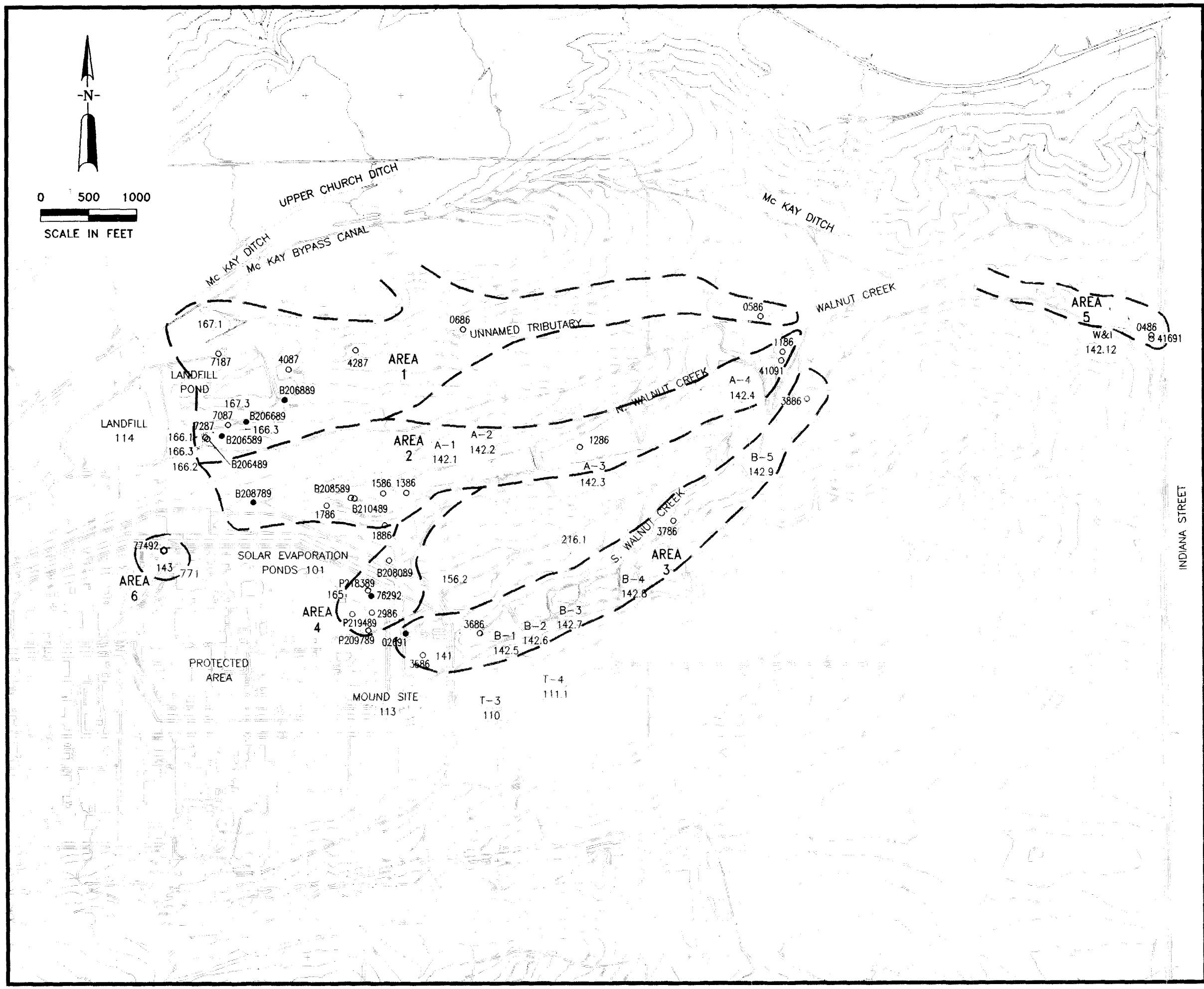
SUSPECT VOC: TOLUENE
(IHSSs 142.4 AND 142.9)
SUBSURFACE SOILS

FIGURE 4.5-22 JUNE 1995

4/17/95 OU6RI072 1=200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

1886 ■ UHSU MONITORING WELL (COLLUVIAL)

75892 ○ UHSU MONITORING WELL (ALLUVIAL)

76292 ● UHSU MONITORING WELL (BEDROCK)

APPROXIMATE BOUNDARY OF GROUNDWATER AREAS

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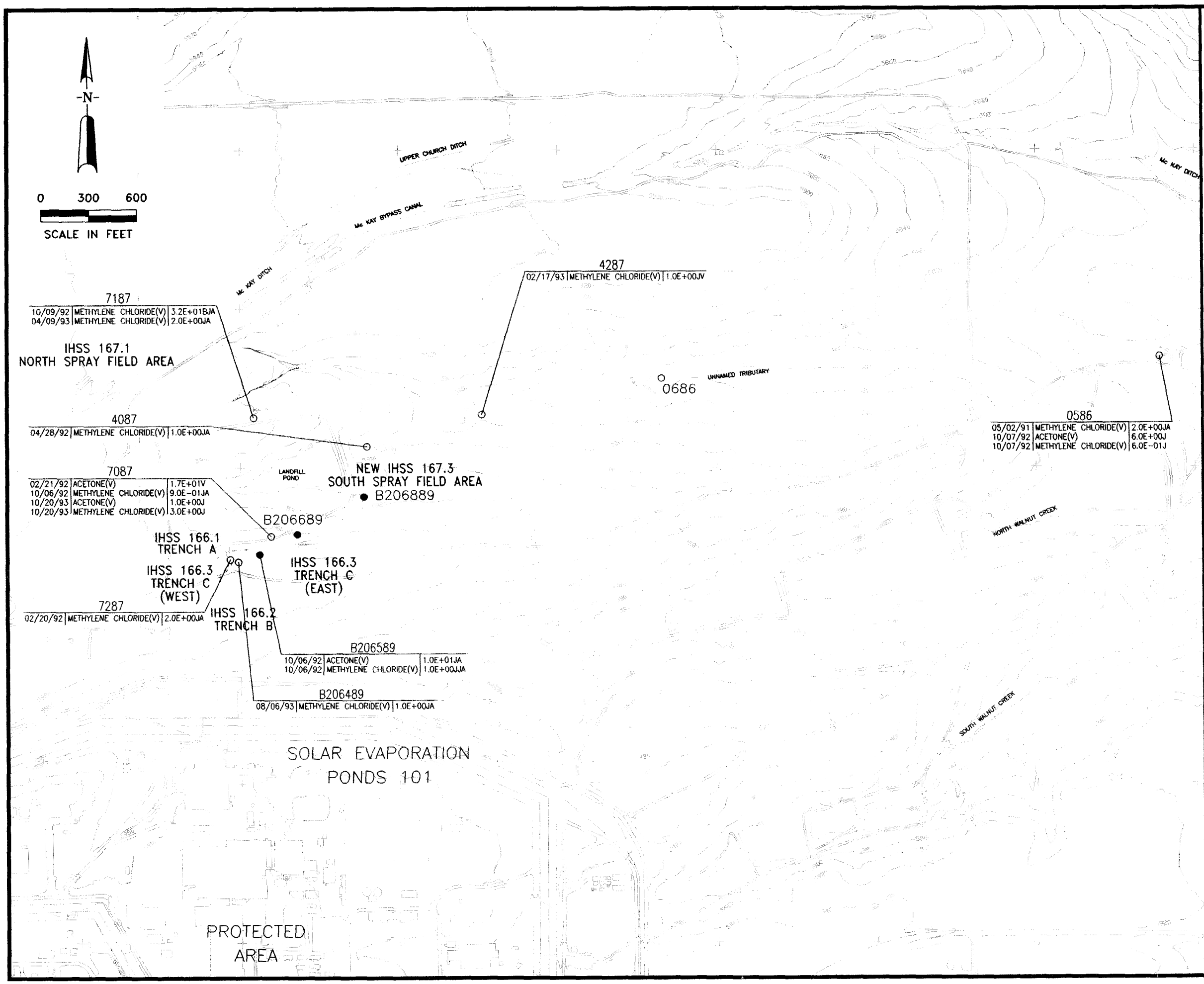
LOCATION MAP
AREA 1 THROUGH AREA 6
(GROUNDWATER)

FIGURE 4.6-1 JUNE 1995

OU6RI223 1=1000



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

0586 ○ UHSU MONITORING WELL (ALLUVIAL)

B206889 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

0586 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l). LAB QUALIFIERS, AND VALIDATION CODES

(V) - VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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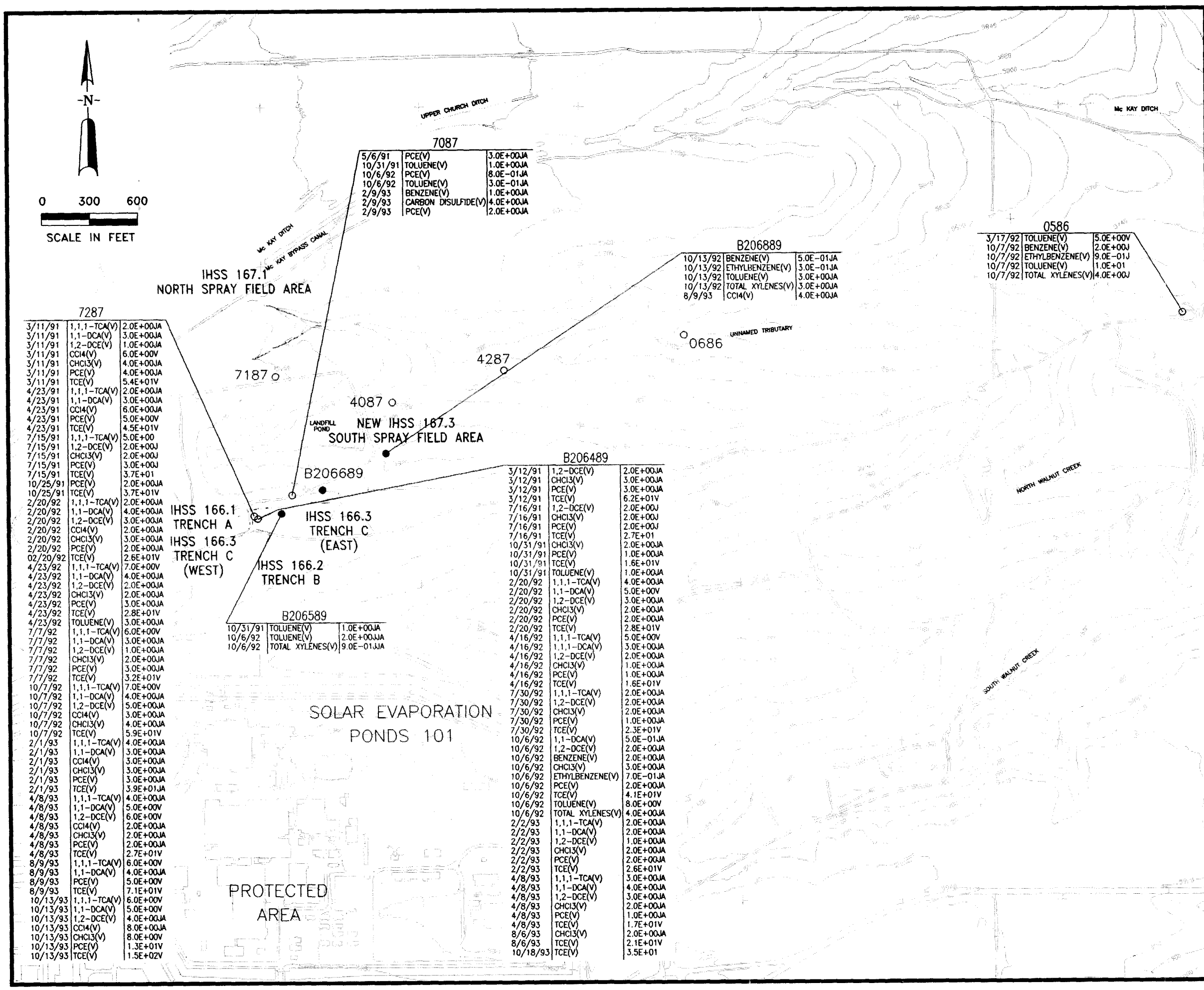
PHASE I RFI/RI REPORT

SUSPECT ORGANIC COMPOUNDS:
ACETONE AND METHYLENE CHLORIDE
AREA 1 (UNNAMED TRIBUTARY DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 - 4th QUARTER 1993

FIGURE 4.6-2 JUNE 1995

4/27/95 OU6RI144 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

0586 ○ UHSU MONITORING WELL (ALLUVIAL)

B206889 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

0586 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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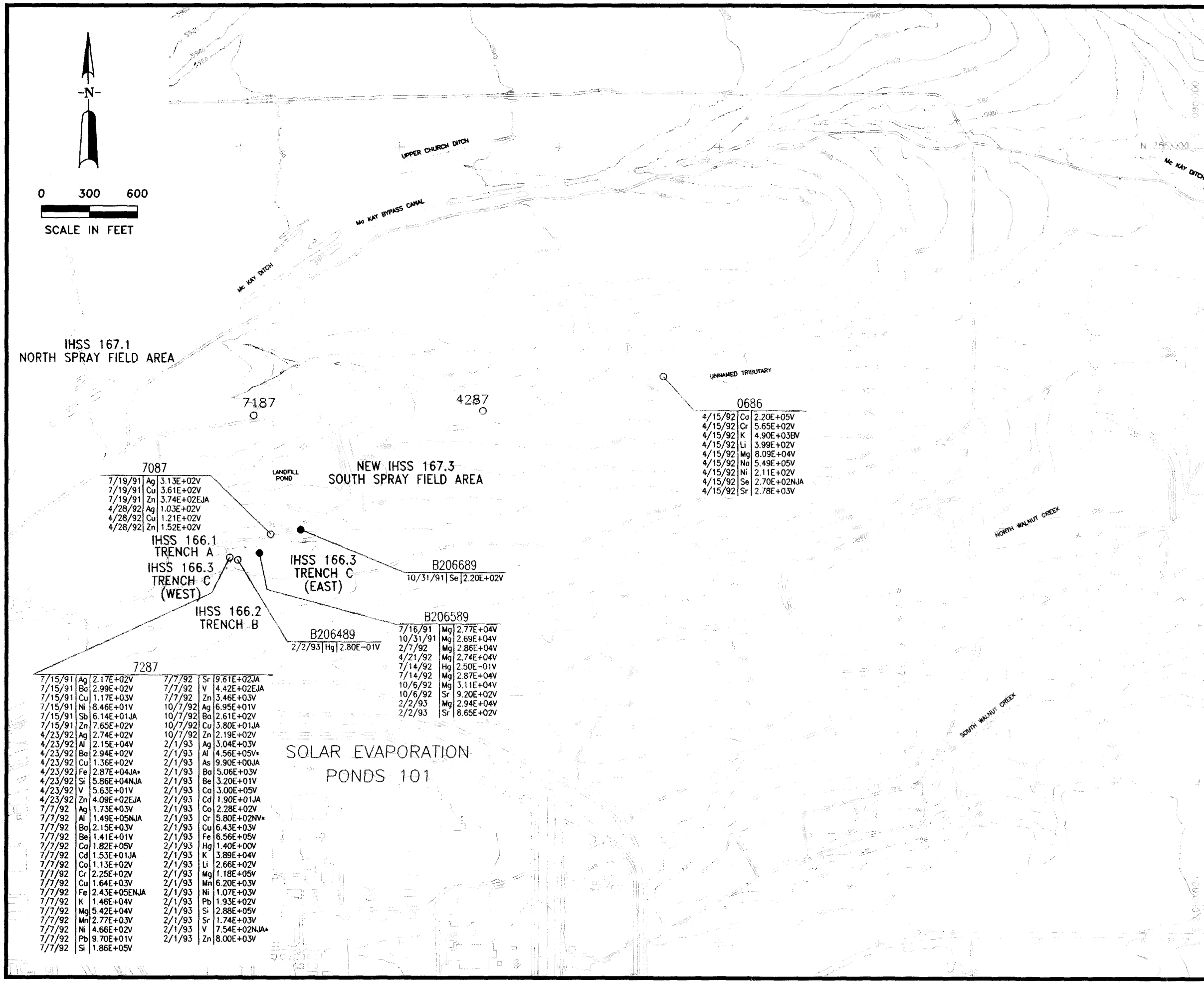
PHASE I RFI/RI REPORT

ORGANIC COMPOUNDS
AREA 1 (UNNAMED TRIBUTARY DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-3 JUNE 1995

4/27/95 OU6RI139 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

0586 ○ UHSU MONITORING WELL (ALLUVIAL)

B206889 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

0686 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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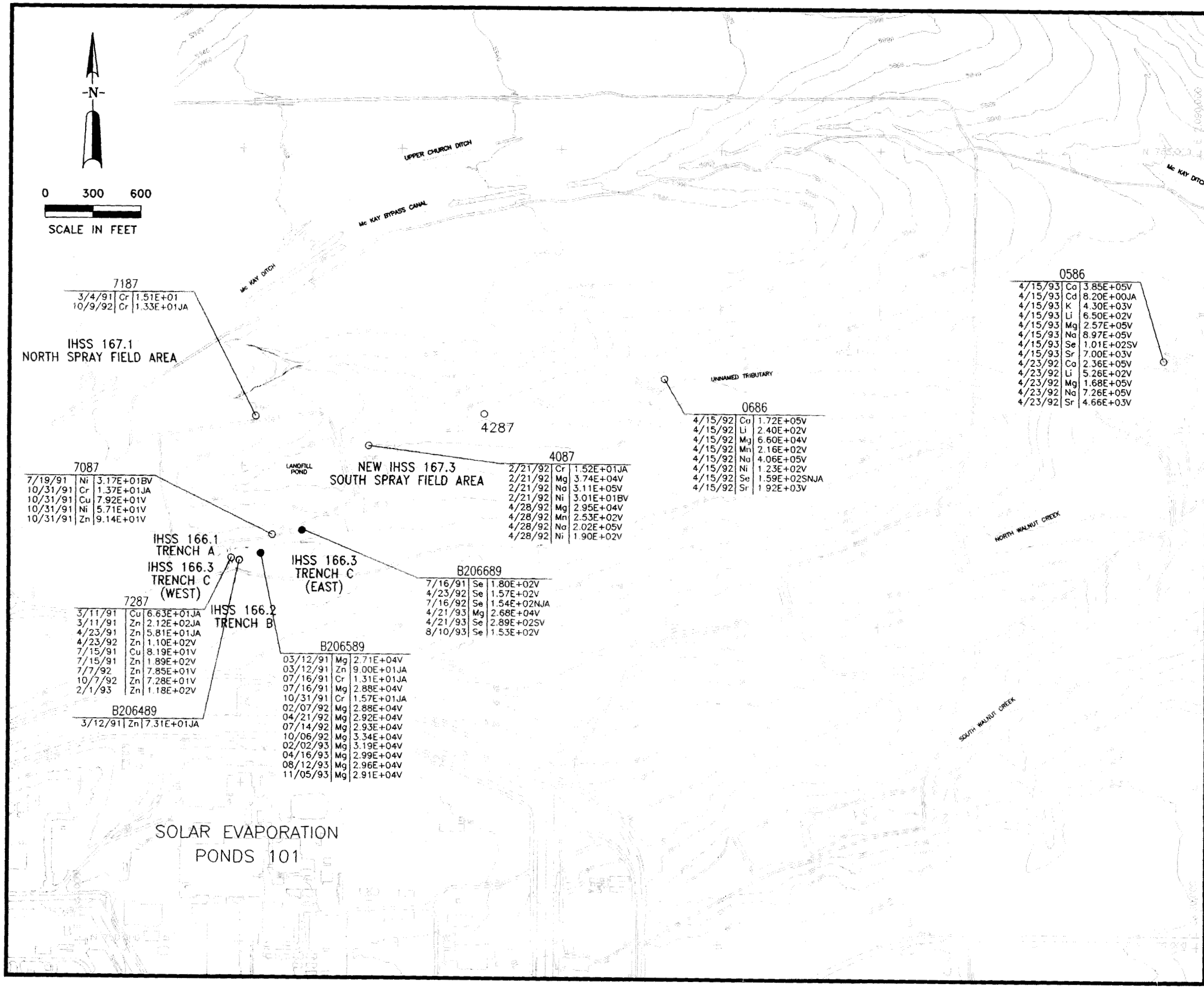
TOTAL METALS
AREA 1 (UNNAMED TRIBUTARY DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-4 JUNE 1995

4/27/95 OU6RI209 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

0586 ○ UHSU MONITORING WELL (ALLUVIAL)

B206889 ● USHU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

0586 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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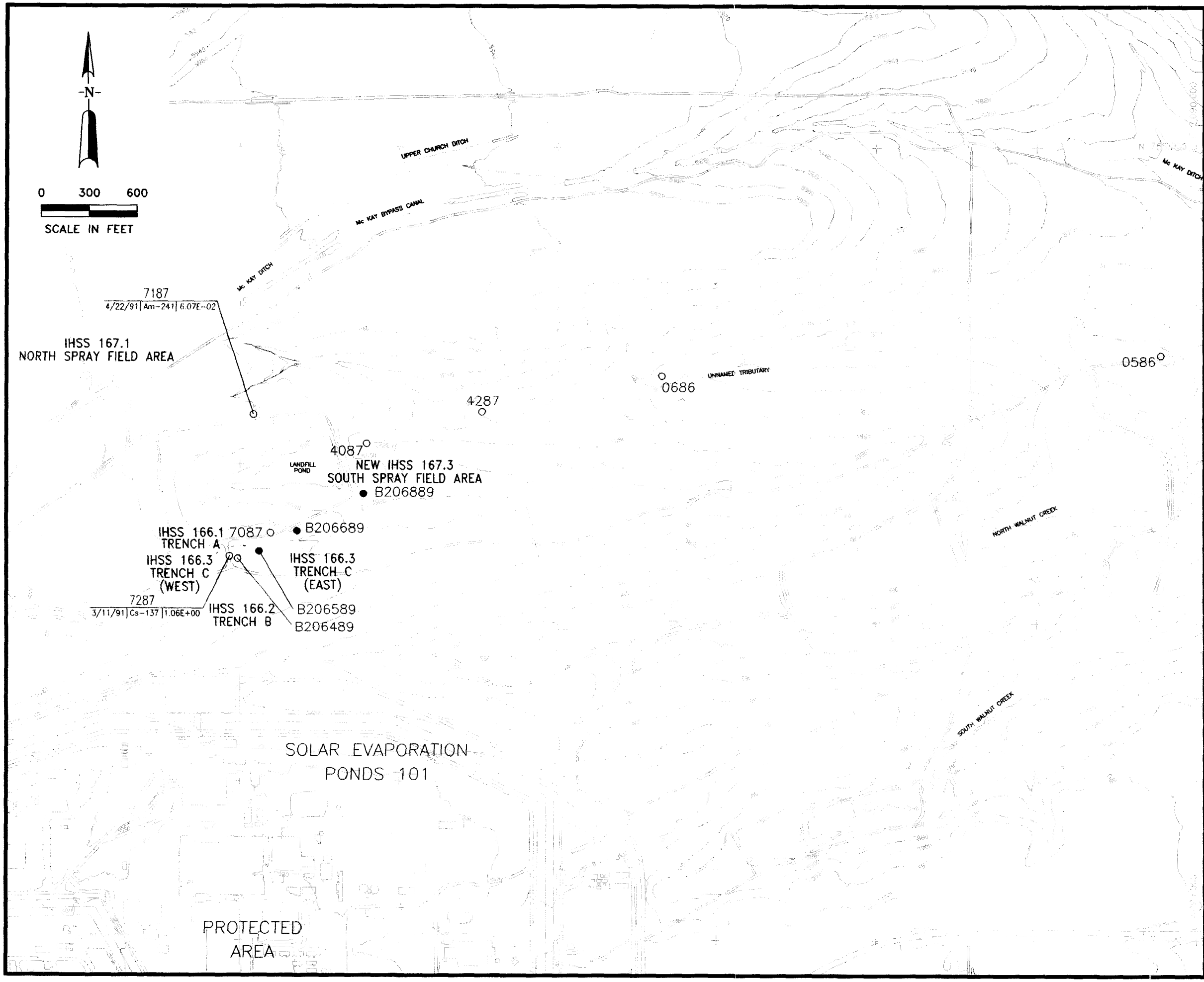
DISSOLVED METALS
AREA 1 (UNNAMED TRIBUTARY DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-5 JUNE 1995

OU6RI197 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

0586 ○ UHSU MONITORING WELL (ALLUVIAL)

B206889 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

78392 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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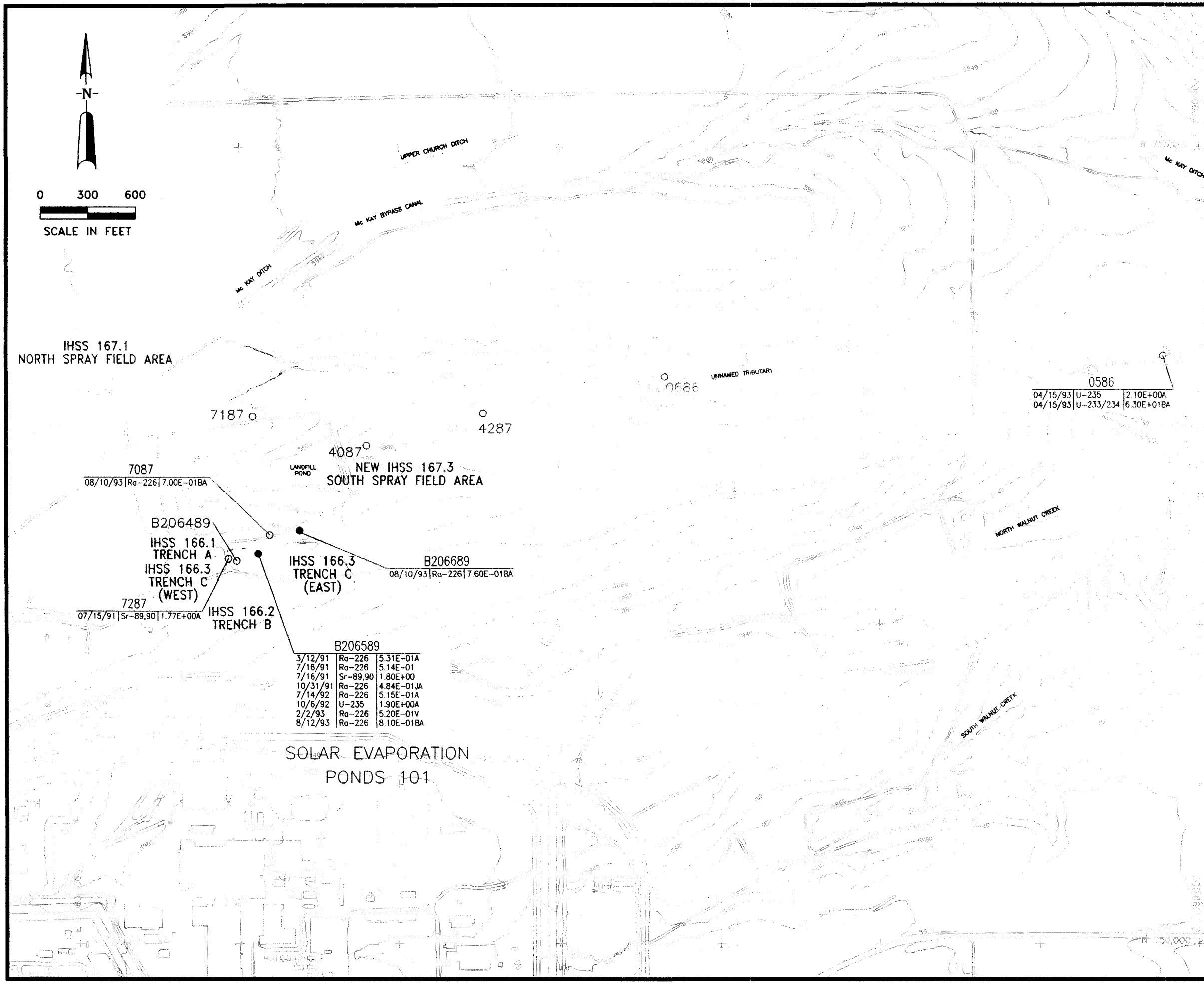
TOTAL RADIONUCLIDES
AREA 1 (UNNAMED TRIBUTARY DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-6 JUNE 1995

4/27/95 OU6RI191 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

0586 ○ UHSU MONITORING WELL (ALLUVIAL)

B206889 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

77192 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

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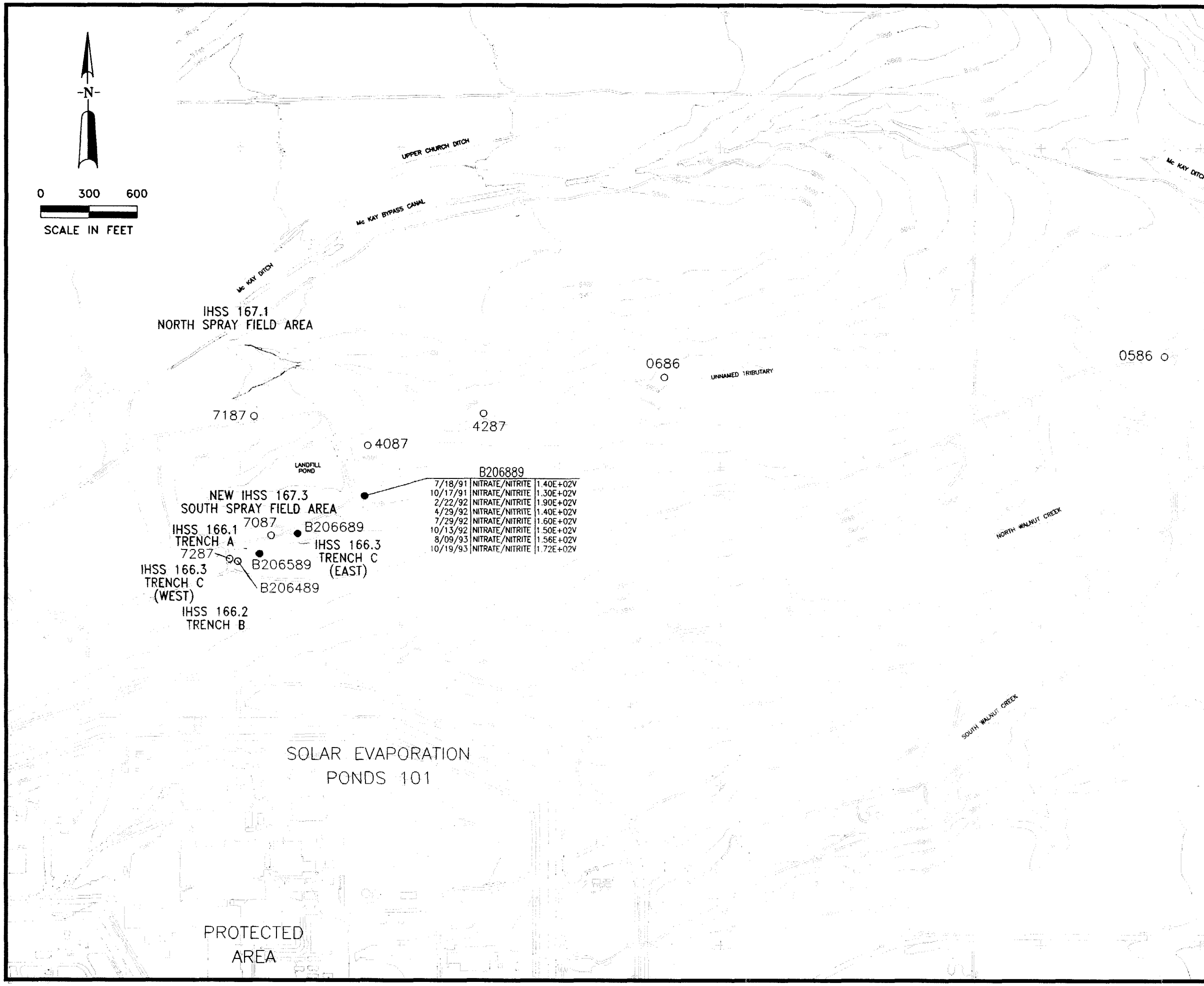
DISSOLVED RADIONUCLIDES
AREA 1 (UNNAMED TRIBUTARY DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-7 JUNE 1995

4/27/95 OU6RI202 1=600



B206889

7/18/91	NITRATE/NITRITE	1.40E+02V
10/17/91	NITRATE/NITRITE	1.30E+02V
2/22/92	NITRATE/NITRITE	1.90E+02V
4/29/92	NITRATE/NITRITE	1.40E+02V
7/29/92	NITRATE/NITRITE	1.60E+02V
10/13/92	NITRATE/NITRITE	1.50E+02V
8/09/93	NITRATE/NITRITE	1.56E+02V
10/19/93	NITRATE/NITRITE	1.72E+02V

EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

0586 ○ UHSU MONITORING WELL (ALLUVIAL)

B206889 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

0586 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (mg/l). LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/l (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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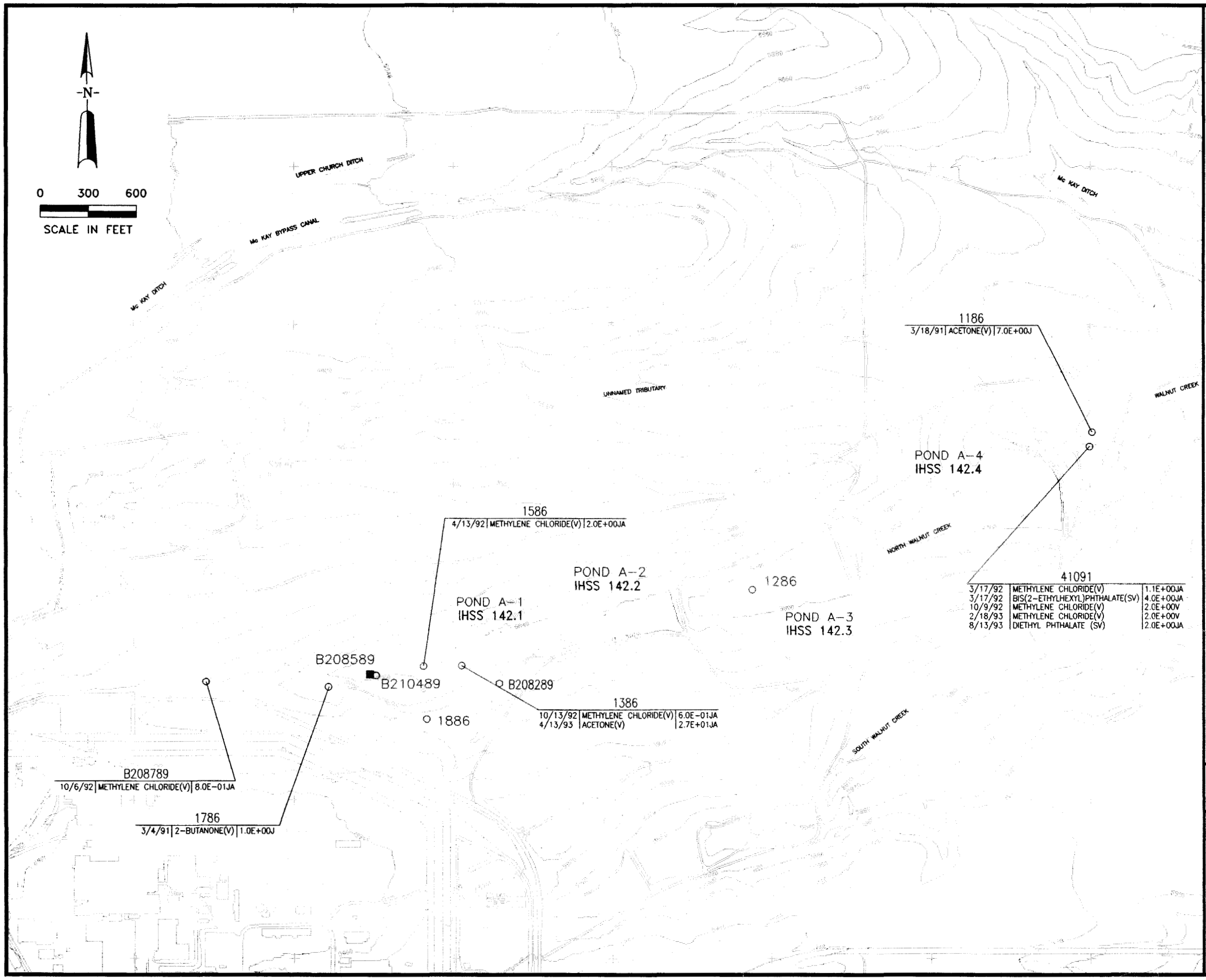
NITRATE/NITRITE
AREA 1 (UNNAMED TRIBUTARY DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-8 JUNE 1995

4/27/95 OU6RI214 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

1186 ○ UHSU MONITORING WELL (ALLUVIAL)

B208589 ■ UHSU MONITORING WELL (COLLUVIAL)

B208289 ○ UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

41091 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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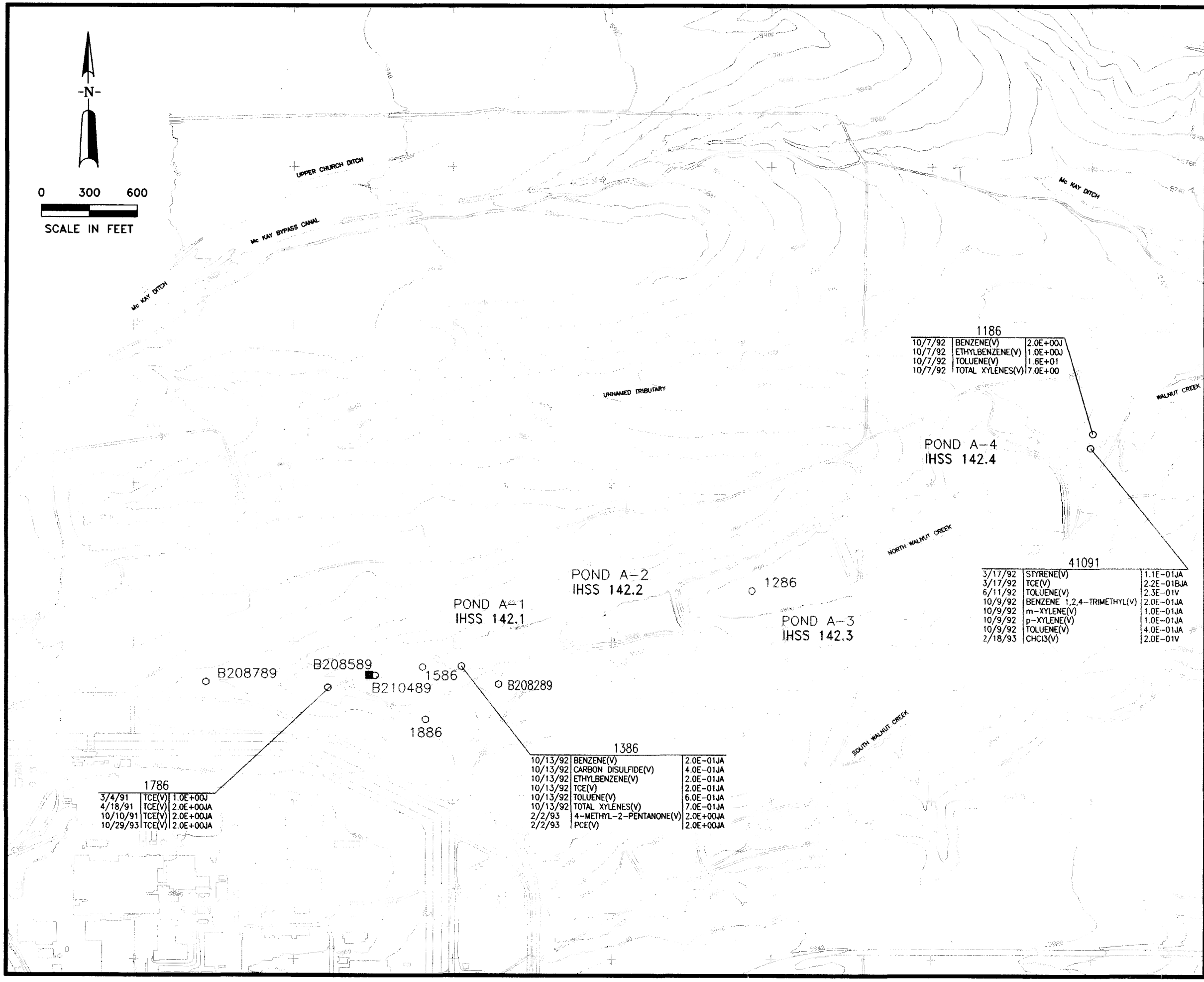
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

SUSPECT ORGANIC COMPOUNDS: ACETONE, BIS(2-ETHYLHEXYL) PHTHALATE, DIETHYL PHTHALATE, AND METHYLENE CHLORIDE
AREA 2 (NORTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-9 JUNE 1995

5/1/95 OU6RI145 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

1186 ○ UHSU MONITORING WELL (ALLUVIAL)

B208589 ■ UHSU MONITORING WELL (COLLUVIAL)

B208289 ○ UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

41091 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.
3. PESTICIDE/PCB ANALYSES WERE PERFORMED ONLY AT LOCATION 41091.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

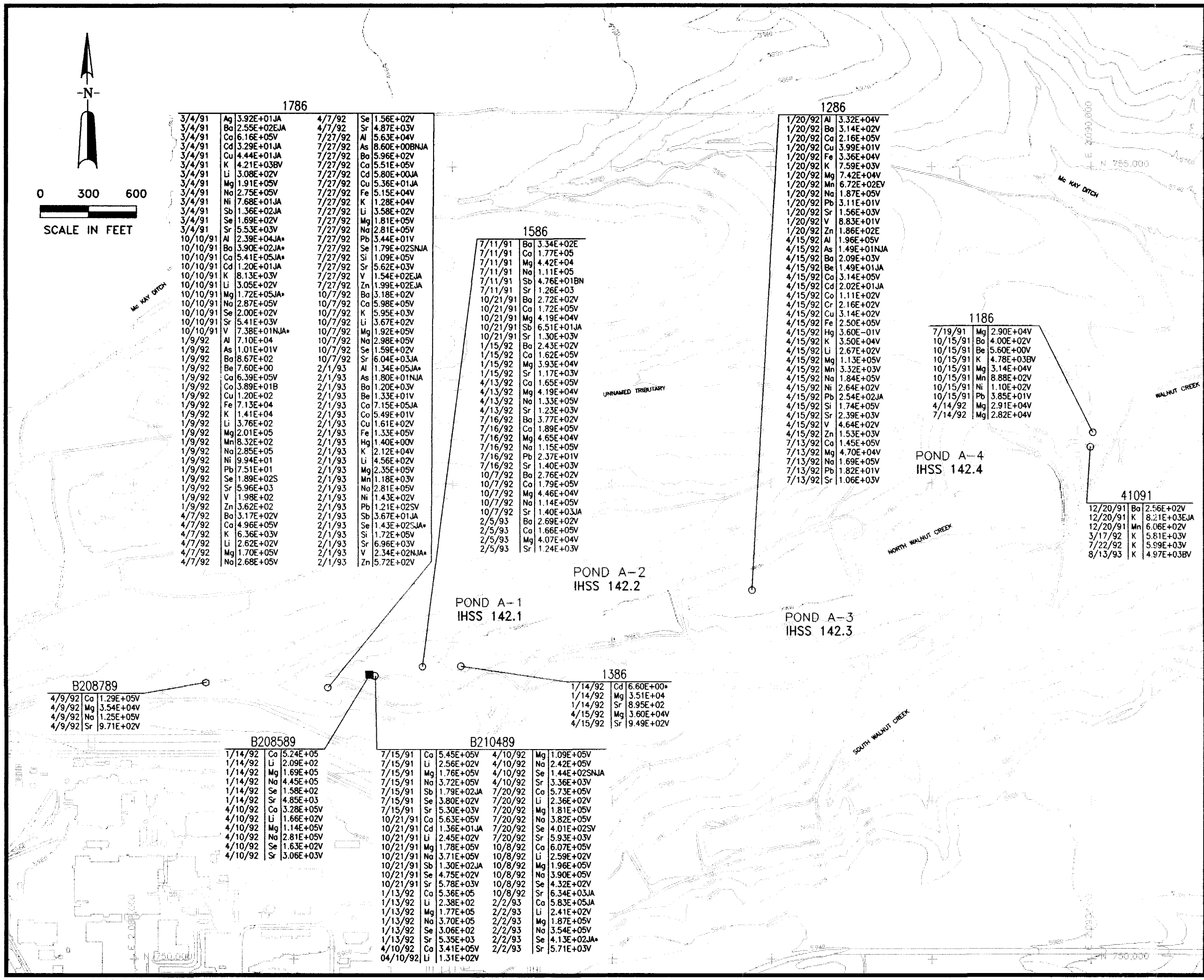
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

ORGANIC COMPOUNDS
AREA 2 (NORTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-10 JUNE 1995

OU6RI140 1=600



1786

3/4/91	Ag	3.92E+01JA	4/7/92	Se	1.56E+02V
3/4/91	Ba	2.55E+02EJA	4/7/92	Sr	4.87E+03V
3/4/91	Ca	6.16E+05V	7/27/92	Al	5.63E+04V
3/4/91	Cd	3.29E+01JA	7/27/92	As	8.60E+00BNJA
3/4/91	Cu	4.44E+01JA	7/27/92	Ba	5.96E+02V
3/4/91	K	4.21E+03BV	7/27/92	Ca	5.51E+05V
3/4/91	Li	3.08E+02V	7/27/92	Cd	5.80E+00JA
3/4/91	Mg	1.91E+05V	7/27/92	Cu	5.36E+01JA
3/4/91	Na	2.75E+05V	7/27/92	Fe	5.15E+04V
3/4/91	Ni	7.68E+01JA	7/27/92	K	1.28E+04V
3/4/91	Sb	1.36E+02JA	7/27/92	Li	3.58E+02V
3/4/91	Se	1.69E+02V	7/27/92	Mg	1.81E+05V
3/4/91	Sr	5.53E+03V	7/27/92	Na	2.81E+05V
10/10/91	Al	2.39E+04JA*	7/27/92	Pb	3.44E+01V
10/10/91	Ba	3.90E+02JA*	7/27/92	Se	1.79E+02SNJA
10/10/91	Ca	5.41E+05JA*	7/27/92	Si	1.09E+05V
10/10/91	Cd	1.20E+01JA	7/27/92	Sr	5.62E+03V
10/10/91	K	8.13E+03V	7/27/92	V	1.54E+02EJA
10/10/91	Li	3.05E+02V	7/27/92	Zn	1.99E+02EJA
10/10/91	Mg	1.72E+05JA*	10/7/92	Ba	3.18E+02V
10/10/91	Na	2.87E+05V	10/7/92	Ca	5.98E+05V
10/10/91	Se	2.00E+02V	10/7/92	K	5.95E+03V
10/10/91	Sr	5.41E+03V	10/7/92	Li	3.67E+02V
10/10/91	V	7.38E+01NJA*	10/7/92	Mg	1.92E+05V
1/9/92	Al	7.10E+04	10/7/92	Na	2.98E+05V
1/9/92	As	1.01E+01V	10/7/92	Se	1.59E+02V
1/9/92	Ba	8.67E+02	10/7/92	Sr	6.04E+03JA
1/9/92	Be	7.60E+00	2/1/93	Al	1.34E+05JA*
1/9/92	Ca	6.39E+05V	2/1/93	As	1.80E+01NJA
1/9/92	Co	3.89E+01B	2/1/93	Ba	1.20E+03V
1/9/92	Cu	1.20E+02	2/1/93	Be	1.33E+01V
1/9/92	Fe	7.13E+04	2/1/93	Ca	7.15E+05JA
1/9/92	K	1.41E+04	2/1/93	Co	5.49E+01V
1/9/92	Li	3.76E+02	2/1/93	Cu	1.61E+02V
1/9/92	Mg	2.01E+05	2/1/93	Fe	1.33E+05V
1/9/92	Mn	8.32E+02	2/1/93	Hg	1.40E+00V
1/9/92	Na	2.85E+05	2/1/93	K	2.12E+04V
1/9/92	Ni	9.94E+01	2/1/93	Li	4.56E+02V
1/9/92	Pb	7.51E+01	2/1/93	Mg	2.35E+05V
1/9/92	Se	1.89E+02S	2/1/93	Mn	1.18E+03V
1/9/92	Sr	5.96E+03	2/1/93	Na	2.81E+05V
1/9/92	V	1.98E+02	2/1/93	Ni	1.43E+02V
1/9/92	Zn	3.62E+02	2/1/93	Pb	1.21E+02SV
4/7/92	Ba	3.17E+02V	2/1/93	Sb	3.67E+01JA
4/7/92	Ca	4.96E+05V	2/1/93	Se	1.43E+02SJA*
4/7/92	K	6.36E+03V	2/1/93	Si	1.72E+05V
4/7/92	Li	2.62E+02V	2/1/93	Sr	6.96E+03V
4/7/92	Mg	1.70E+05V	2/1/93	V	2.34E+02NJA*
4/7/92	Na	2.68E+05V	2/1/93	Zn	5.72E+02V

1586

7/11/91	Ba	3.34E+02E
7/11/91	Ca	1.77E+05
7/11/91	Mg	4.42E+04
7/11/91	Na	1.11E+05
7/11/91	Sb	4.76E+01BN
7/11/91	Sr	1.26E+03
10/21/91	Ba	2.72E+02V
10/21/91	Ca	1.72E+05V
10/21/91	Mg	4.19E+04V
10/21/91	Sb	6.51E+01JA
10/21/91	Sr	1.30E+03V
1/15/92	Ba	2.43E+02V
1/15/92	Ca	1.62E+05V
1/15/92	Mg	3.93E+04V
1/15/92	Sr	1.17E+03V
4/13/92	Ca	1.65E+05V
4/13/92	Mg	4.19E+04V
4/13/92	Na	1.33E+05V
4/13/92	Sr	1.23E+03V
7/16/92	Ba	3.77E+02V
7/16/92	Ca	1.89E+05V
7/16/92	Mg	4.65E+04V
7/16/92	Na	1.15E+05V
7/16/92	Pb	2.37E+01V
7/16/92	Sr	1.40E+03V
10/7/92	Ba	2.76E+02V
10/7/92	Ca	1.79E+05V
10/7/92	Mg	4.46E+04V
10/7/92	Na	1.14E+05V
10/7/92	Sr	1.40E+03JA
2/5/93	Ba	2.69E+02V
2/5/93	Ca	1.66E+05V
2/5/93	Mg	4.07E+04V
2/5/93	Sr	1.24E+03V

1286

1/20/92	Al	3.32E+04V
1/20/92	Ba	3.14E+02V
1/20/92	Ca	2.16E+05V
1/20/92	Cu	3.99E+01V
1/20/92	Fe	3.36E+04V
1/20/92	K	7.59E+03V
1/20/92	Mg	7.42E+04V
1/20/92	Mn	6.72E+02EV
1/20/92	Na	1.87E+05V
1/20/92	Pb	3.11E+01V
1/20/92	Sr	1.56E+03V
1/20/92	V	8.83E+01V
1/20/92	Zn	1.86E+02E
4/15/92	Al	1.96E+05V
4/15/92	As	1.49E+01NJA
4/15/92	Ba	2.09E+03V
4/15/92	Be	1.49E+01JA
4/15/92	Ca	3.14E+05V
4/15/92	Cd	2.02E+01JA
4/15/92	Co	1.11E+02V
4/15/92	Cr	2.16E+02V
4/15/92	Cu	3.14E+02V
4/15/92	Fe	2.50E+05V
4/15/92	Hg	3.60E-01V
4/15/92	K	3.50E+04V
4/15/92	Li	2.67E+02V
4/15/92	Mg	1.13E+05V
4/15/92	Mn	3.32E+03V
4/15/92	Na	1.84E+05V
4/15/92	Ni	2.64E+02V
4/15/92	Pb	2.54E+02JA
4/15/92	Si	1.74E+05V
4/15/92	Sr	2.39E+03V
4/15/92	V	4.64E+02V
4/15/92	Zn	1.53E+03V
7/13/92	Ca	1.45E+05V
7/13/92	Mg	4.70E+04V
7/13/92	Na	1.69E+05V
7/13/92	Pb	1.82E+01V
7/13/92	Sr	1.06E+03V

1186

7/19/91	Mg	2.90E+04V
10/15/91	Ba	4.00E+02V
10/15/91	Be	5.60E+00V
10/15/91	K	4.78E+03BV
10/15/91	Mg	3.14E+04V
10/15/91	Mn	8.88E+02V
10/15/91	Ni	1.10E+02V
10/15/91	Pb	3.85E+01V
4/14/92	Mg	2.91E+04V
7/14/92	Mg	2.82E+04V

41091

12/20/91	Ba	2.56E+02V
12/20/91	K	8.21E+03EJA
12/20/91	Mn	6.06E+02V
3/17/92	K	5.81E+03V
7/22/92	K	5.99E+03V
8/13/93	K	4.97E+03BV

B208789

4/9/92	Ca	1.29E+05V
4/9/92	Mg	3.54E+04V
4/9/92	Na	1.25E+05V
4/9/92	Sr	9.71E+02V

1386

1/14/92	Cd	6.60E+00*
1/14/92	Mg	3.51E+04
1/14/92	Sr	8.95E+02
4/15/92	Mg	3.60E+04V
4/15/92	Sr	9.49E+02V

B208589

1/14/92	Ca	5.24E+05
1/14/92	Li	2.09E+02
1/14/92	Mg	1.69E+05
1/14/92	Na	4.45E+05
1/14/92	Se	1.58E+02
1/14/92	Sr	4.85E+03
4/10/92	Ca	3.28E+05V
4/10/92	Li	1.66E+02V
4/10/92	Mg	1.14E+05V
4/10/92	Na	2.81E+05V
4/10/92	Se	1.63E+02V
4/10/92	Sr	3.06E+03V

B210489

7/15/91	Ca	5.45E+05V	4/10/92	Mg	1.09E+05V
7/15/91	Li	2.56E+02V	4/10/92	Na	2.42E+05V
7/15/91	Mg	1.76E+05V	4/10/92	Se	1.44E+02SNJA
7/15/91	Na	3.72E+05V	4/10/92	Sr	3.36E+03V
7/15/91	Sb	1.79E+02JA	7/20/92	Ca	5.73E+05V
7/15/91	Se	3.80E+02V	7/20/92	Li	2.36E+02V
7/15/91	Sr	5.30E+03V	7/20/92	Mg	1.81E+05V
10/21/91	Ca	5.63E+05V	7/20/92	Na	3.82E+05V
10/21/91	Cd	1.36E+01JA	7/20/92	Se	4.01E+02SV
10/21/91	Li	2.45E+02V	7/20/92	Sr	5.93E+03V
10/21/91	Mg	1.78E+05V	10/8/92	Ca	6.07E+05V
10/21/91	Na	3.71E+05V	10/8/92	Li	2.59E+02V
10/21/91	Sb	1.30E+02JA	10/8/92	Mg	1.96E+05V
10/21/91	Se	4.75E+02V	10/8/92	Na	3.90E+05V
10/21/91	Sr	5.78E+03V	10/8/92	Se	4.32E+02V
1/13/92	Ca	5.36E+05	10/8/92	Sr	6.34E+03JA
1/13/92	Li	2.38E+02	2/2/93	Ca	5.83E+05JA
1/13/92	Mg	1.77E+05	2/2/93	Li	2.41E+02V
1/13/92	Na	3.70E+05	2/2/93	Mg	1.87E+05V
1/13/92	Se	3.06E+02	2/2/93	Na	3.54E+05V
1/13/92	Sr	5.35E+03	2/2/93	Se	4.13E+02JA*
4/10/92	Ca	3.41E+05V	2/2/93	Sr	5.71E+03V
04/10/92	Li	1.31E+02V			

EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

1186 ○ UHSU MONITORING WELL (ALLUVIAL)

B208589 ■ UHSU MONITORING WELL (COLLUVIAL)

B208289 ○ UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

1186 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

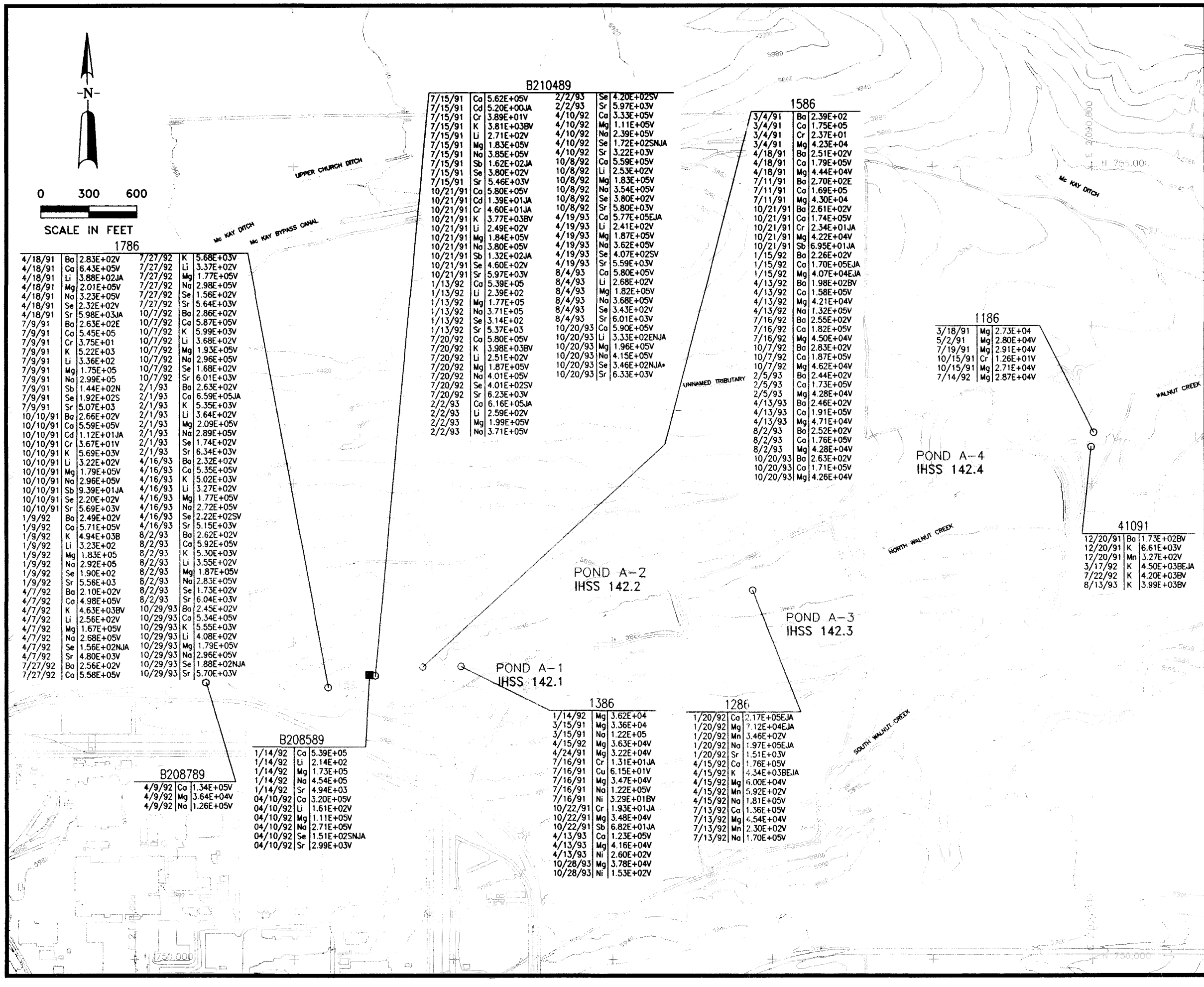
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

TOTAL METALS
AREA 2 (NORTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-11 JUNE 1995

5/1/95 OU6RI205 1=600



1786

4/18/91	Ba	2.83E+02V	7/27/92	K	5.68E+03V
4/18/91	Ca	6.43E+05V	7/27/92	Li	3.37E+02V
4/18/91	Li	3.88E+02JA	7/27/92	Mg	1.77E+05V
4/18/91	Mg	2.01E+05V	7/27/92	Na	2.98E+05V
4/18/91	Na	3.23E+05V	7/27/92	Se	1.56E+02V
4/18/91	Se	2.32E+02V	7/27/92	Sr	5.64E+03V
4/18/91	Sr	5.98E+03JA	10/7/92	Ba	2.86E+02V
7/9/91	Ba	2.63E+02E	10/7/92	Ca	5.87E+05V
7/9/91	Ca	5.45E+05	10/7/92	K	5.99E+03V
7/9/91	Cr	3.75E+01	10/7/92	Li	3.68E+02V
7/9/91	K	5.22E+03	10/7/92	Mg	1.93E+05V
7/9/91	Li	3.36E+02	10/7/92	Na	2.96E+05V
7/9/91	Mg	1.75E+05	10/7/92	Se	1.68E+02V
7/9/91	Na	2.99E+05	10/7/92	Sr	6.01E+03V
7/9/91	Sb	1.44E+02N	2/1/93	Ba	2.63E+02V
7/9/91	Se	1.92E+02S	2/1/93	Ca	6.59E+05JA
7/9/91	Sr	5.07E+03	2/1/93	K	5.35E+03V
10/10/91	Ba	2.66E+02V	2/1/93	Li	3.64E+02V
10/10/91	Ca	5.59E+05V	2/1/93	Mg	2.09E+05V
10/10/91	Cd	1.12E+01JA	2/1/93	Na	2.89E+05V
10/10/91	Cr	3.67E+01V	2/1/93	Se	1.74E+02V
10/10/91	K	5.69E+03V	2/1/93	Sr	6.34E+03V
10/10/91	Li	3.22E+02V	4/16/93	Ba	2.32E+02V
10/10/91	Mg	1.79E+05V	4/16/93	Ca	5.35E+05V
10/10/91	Na	2.96E+05V	4/16/93	K	5.02E+03V
10/10/91	Sb	9.39E+01JA	4/16/93	Li	3.27E+02V
10/10/91	Se	2.20E+02V	4/16/93	Mg	1.77E+05V
10/10/91	Sr	5.69E+03V	4/16/93	Na	2.72E+05V
1/9/92	Ba	2.49E+02V	4/16/93	Se	2.22E+02SV
1/9/92	Ca	5.71E+05V	4/16/93	Sr	5.15E+03V
1/9/92	K	4.94E+03B	8/2/93	Ba	2.62E+02V
1/9/92	Li	3.23E+02	8/2/93	Ca	5.92E+05V
1/9/92	Mg	1.83E+05	8/2/93	K	5.30E+03V
1/9/92	Na	2.92E+05	8/2/93	Li	3.55E+02V
1/9/92	Se	1.90E+02	8/2/93	Mg	1.87E+05V
1/9/92	Sr	5.56E+03	8/2/93	Na	2.83E+05V
4/7/92	Ba	2.10E+02V	8/2/93	Se	1.73E+02V
4/7/92	Ca	4.98E+05V	8/2/93	Sr	6.04E+03V
4/7/92	K	4.63E+03BV	10/29/93	Ba	2.45E+02V
4/7/92	Li	2.56E+02V	10/29/93	Ca	5.34E+05V
4/7/92	Mg	1.67E+05V	10/29/93	K	5.55E+03V
4/7/92	Na	2.68E+05V	10/29/93	Li	4.08E+02V
4/7/92	Se	1.56E+02NJA	10/29/93	Mg	1.79E+05V
4/7/92	Sr	4.80E+03V	10/29/93	Na	2.96E+05V
7/27/92	Ba	2.56E+02V	10/29/93	Se	1.88E+02NJA
7/27/92	Ca	5.58E+05V	10/29/93	Sr	5.70E+03V

B210489

7/15/91	Ca	5.62E+05V	2/2/93	Se	4.20E+02SV
7/15/91	Cd	5.20E+00JA	2/2/93	Sr	5.97E+03V
7/15/91	Cr	3.89E+01V	4/10/92	Ca	3.33E+05V
7/15/91	K	3.81E+03BV	4/10/92	Mg	1.11E+05V
7/15/91	Li	2.71E+02V	4/10/92	Na	2.39E+05V
7/15/91	Mg	1.83E+05V	4/10/92	Se	1.72E+02SNJA
7/15/91	Na	3.85E+05V	4/10/92	Sr	3.22E+03V
7/15/91	Sb	1.62E+02JA	10/8/92	Ca	5.59E+05V
7/15/91	Se	3.80E+02V	10/8/92	Li	2.53E+02V
7/15/91	Sr	5.46E+03V	10/8/92	Mg	1.83E+05V
10/21/91	Ca	5.80E+05V	10/8/92	Na	3.54E+05V
10/21/91	Cd	1.39E+01JA	10/8/92	Se	3.80E+02V
10/21/91	Cr	4.60E+01JA	10/8/92	Sr	5.80E+03V
10/21/91	K	3.77E+03BV	4/19/93	Ca	5.77E+05EJA
10/21/91	Li	2.49E+02V	4/19/93	Li	2.41E+02V
10/21/91	Mg	1.84E+05V	4/19/93	Mg	1.87E+05V
10/21/91	Na	3.80E+05V	4/19/93	Na	3.62E+05V
10/21/91	Sb	1.32E+02JA	4/19/93	Se	4.07E+02SV
10/21/91	Se	4.60E+02V	4/19/93	Sr	5.59E+03V
10/21/91	Sr	5.97E+03V	8/4/93	Ca	5.80E+05V
1/13/92	Ca	5.39E+05	8/4/93	Li	2.68E+02V
1/13/92	Li	2.39E+02	8/4/93	Mg	1.82E+05V
1/13/92	Mg	1.77E+05	8/4/93	Na	3.68E+05V
1/13/92	Na	3.71E+05	8/4/93	Se	3.43E+02V
1/13/92	Se	3.14E+02	8/4/93	Sr	6.01E+03V
1/13/92	Sr	5.37E+03	10/20/93	Ca	5.90E+05V
7/20/92	Ca	5.80E+05V	10/20/93	Li	3.33E+02ENJA
7/20/92	K	3.98E+03BV	10/20/93	Mg	1.96E+05V
7/20/92	Li	2.51E+02V	10/20/93	Na	4.15E+05V
7/20/92	Mg	1.87E+05V	10/20/93	Se	3.46E+02NJA*
7/20/92	Na	4.01E+05V	10/20/93	Sr	6.33E+03V
7/20/92	Se	4.01E+02SV			
7/20/92	Sr	6.23E+03V			
2/2/93	Ca	6.16E+05JA			
2/2/93	Li	2.59E+02V			
2/2/93	Mg	1.99E+05V			
2/2/93	Na	3.71E+05V			

1586

3/4/91	Ba	2.39E+02
3/4/91	Ca	1.75E+05
3/4/91	Cr	2.37E+01
3/4/91	Mg	4.23E+04
4/18/91	Ba	2.51E+02V
4/18/91	Ca	1.79E+05V
4/18/91	Mg	4.44E+04V
7/11/91	Ba	2.70E+02E
7/11/91	Ca	1.69E+05
7/11/91	Mg	4.30E+04
10/21/91	Ba	2.61E+02V
10/21/91	Ca	1.74E+05V
10/21/91	Cr	2.34E+01JA
10/21/91	Mg	4.22E+04V
10/21/91	Sb	6.95E+01JA
1/15/92	Ba	2.26E+02V
1/15/92	Ca	1.70E+05EJA
1/15/92	Mg	4.07E+04EJA
4/13/92	Ba	1.98E+02BV
4/13/92	Ca	1.58E+05V
4/13/92	Mg	4.21E+04V
4/13/92	Na	1.32E+05V
7/16/92	Ba	2.55E+02V
7/16/92	Ca	1.82E+05V
7/16/92	Mg	4.50E+04V
10/7/92	Ba	2.83E+02V
10/7/92	Ca	1.87E+05V
10/7/92	Mg	4.62E+04V
2/5/93	Ba	2.44E+02V
2/5/93	Ca	1.73E+05V
2/5/93	Mg	4.28E+04V
4/13/93	Ba	2.46E+02V
4/13/93	Ca	1.91E+05V
4/13/93	Mg	4.71E+04V
8/2/93	Ba	2.52E+02V
8/2/93	Ca	1.76E+05V
8/2/93	Mg	4.28E+04V
10/20/93	Ba	2.63E+02V
10/20/93	Ca	1.71E+05V
10/20/93	Mg	4.26E+04V

1186

3/18/91	Mg	2.73E+04
5/2/91	Mg	2.80E+04V
7/19/91	Mg	2.91E+04V
10/15/91	Cr	1.26E+01V
10/15/91	Mg	2.71E+04V
7/14/92	Mg	2.87E+04V

41091

12/20/91	Ba	1.73E+02BV
12/20/91	K	6.61E+03V
12/20/91	Mn	3.27E+02V
3/17/92	K	4.50E+03BEJA
7/22/92	K	4.20E+03BV
8/13/93	K	3.99E+03BV

B208589

1/14/92	Ca	5.39E+05
1/14/92	Li	2.14E+02
1/14/92	Mg	1.73E+05
1/14/92	Na	4.54E+05
1/14/92	Sr	4.94E+03
04/10/92	Ca	3.20E+05V
04/10/92	Li	1.61E+02V
04/10/92	Mg	1.11E+05V
04/10/92	Na	2.71E+05V
04/10/92	Se	1.51E+02SNJA
04/10/92	Sr	2.99E+03V

B208789

4/9/92	Ca	1.34E+05V
4/9/92	Mg	3.64E+04V
4/9/92	Na	1.26E+05V

1386

1/14/92	Mg	3.62E+04
3/15/91	Mg	3.36E+04
3/15/91	Na	1.22E+05
4/15/92	Mg	3.63E+04V
4/24/91	Mg	3.22E+04V
7/16/91	Cr	1.31E+01JA
7/16/91	Cu	6.15E+01V
7/16/91	Mg	3.47E+04V
7/16/91	Na	1.22E+05V
7/16/91	Ni	3.29E+01BV
10/22/91	Cr	1.93E+01JA
10/22/91	Mg	3.48E+04V
10/22/91	Sb	6.82E+01JA
4/13/93	Ca	1.23E+05V
4/13/93	Mg	4.16E+04V
4/13/93	Ni	2.60E+02V
10/28/93	Mg	3.78E+04V
10/28/93	Ni	1.53E+02V

1286

1/20/92	Ca	2.17E+05EJA
1/20/92	Mg	7.12E+04EJA
1/20/92	Mn	3.46E+02V
1/20/92	Na	1.97E+05EJA
1/20/92	Sr	1.51E+03V
4/15/92	Ca	1.76E+05V
4/15/92	K	4.34E+03BEJA
4/15/92	Mg	6.00E+04V
4/15/92	Mn	5.92E+02V
4/15/92	Na	1.81E+05V
7/13/92	Ca	1.36E+05V
7/13/92	Mg	4.54E+04V
7/13/92	Mn	2.30E+02V
7/13/92	Na	1.70E+05V

EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

1186 ○ UHSU MONITORING WELL (ALLUVIAL)

B208589 ■ UHSU MONITORING WELL (COLLUVIAL)

B208289 ○ UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

78392 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

• INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

U.S. DEPARTMENT OF ENERGY
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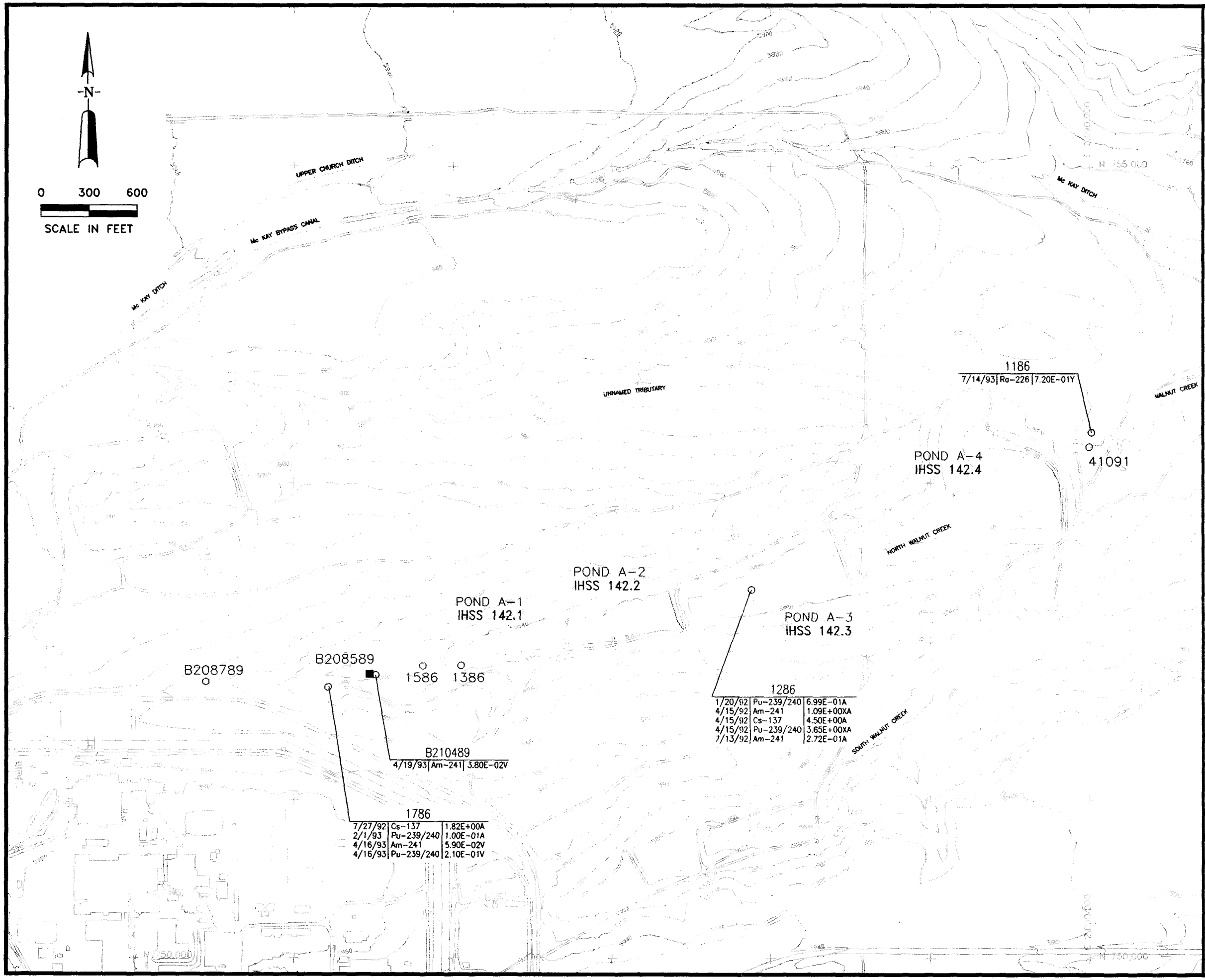
DISSOLVED METALS
AREA 2 (NORTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-12 JUNE 1995

3/1/95 OU6RI192 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

1186 ○ UHSU MONITORING WELL (ALLUVIAL)

B208589 ■ UHSU MONITORING WELL (COLLUVIAL)

B208289 ○ UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

1186 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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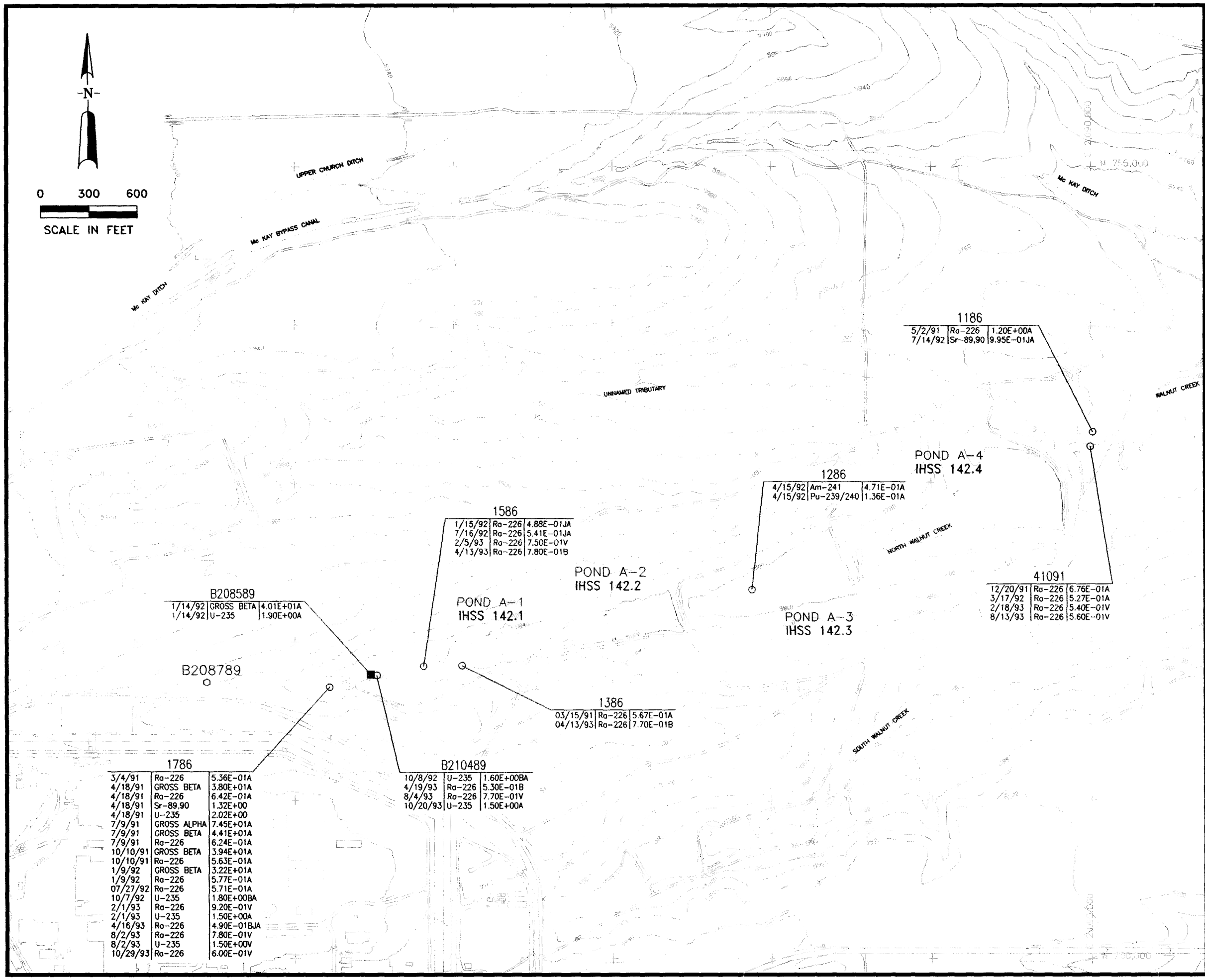
TOTAL RADIONUCLIDES
AREA 2 (NORTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-13 JUNE 1995

5/1/95 OU6RI186 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

1186 ○ UHSU MONITORING WELL (ALLUVIAL)

B208589 ■ UHSU MONITORING WELL (COLLUVIAL)

B208289 ○ UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

78392 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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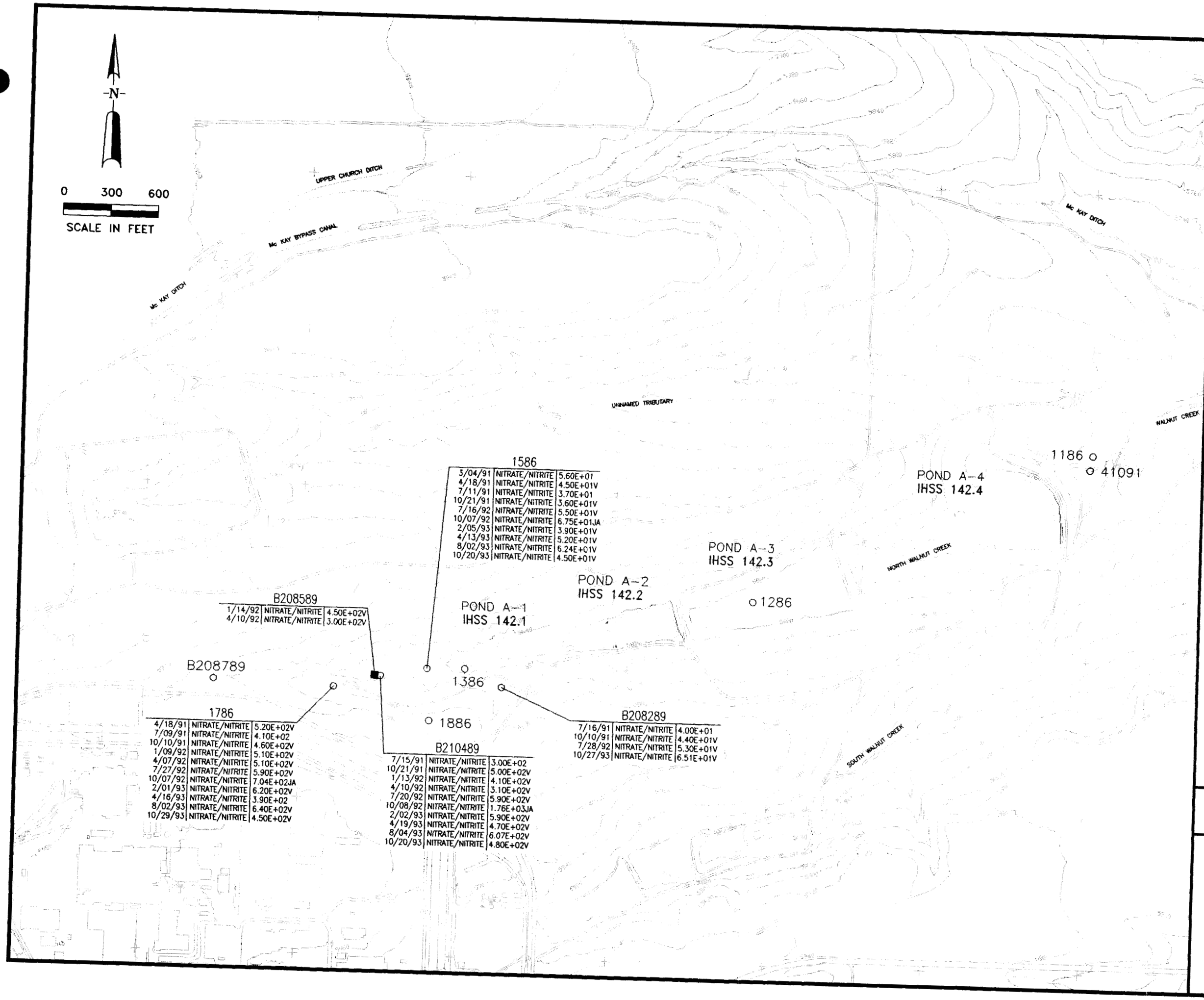
DISSOLVED RADIONUCLIDES
AREA 2 (NORTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-14 JUNE 1995

9/1/95 OU6RI198 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

1186 ○ UHSU MONITORING WELL (ALLUVIAL)

B208589 ■ UHSU MONITORING WELL (COLLUVIAL)

B208289 ○ UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

41091 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (mg/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/l (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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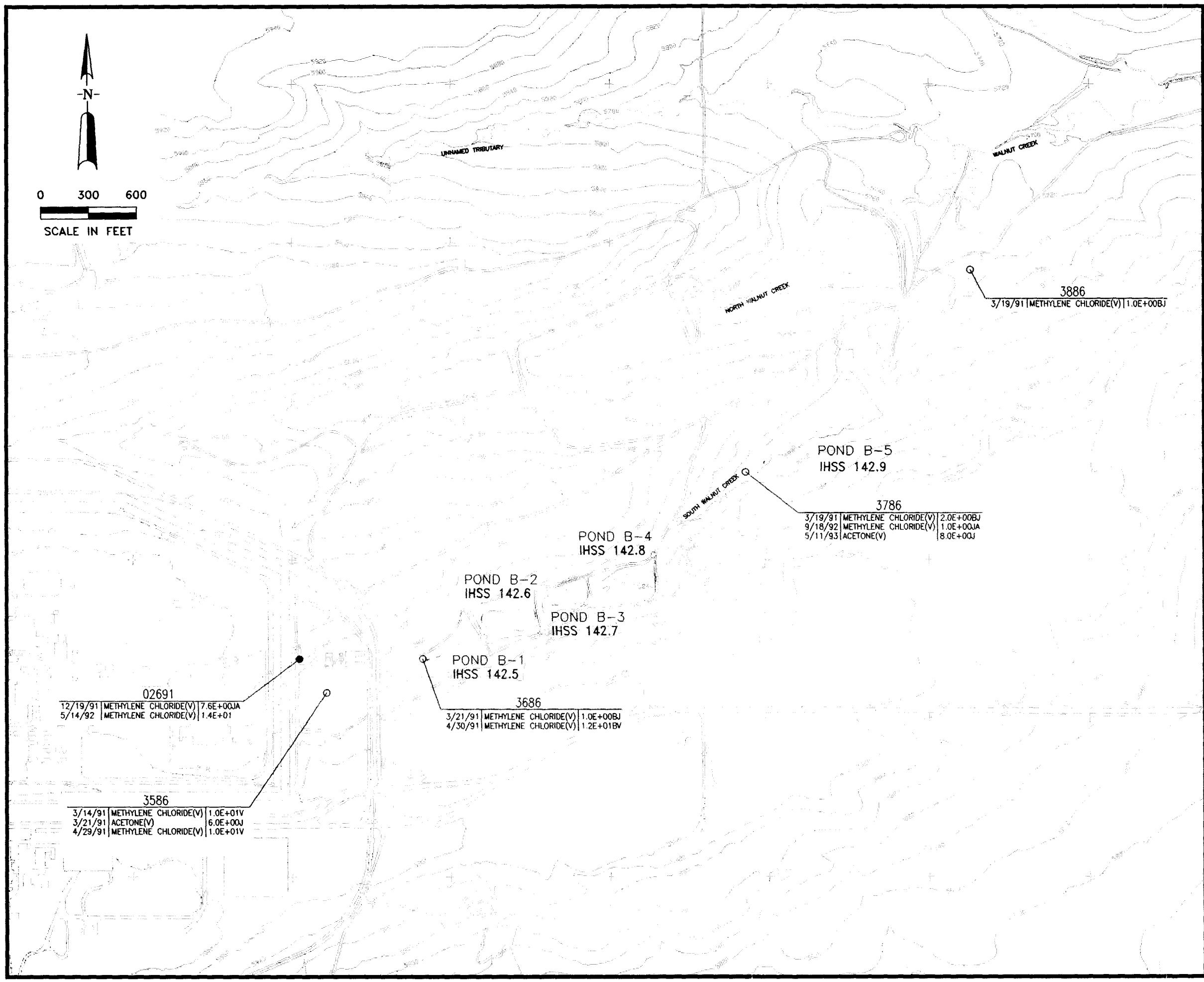
NITRATE/NITRITE
AREA 2 (NORTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-15 JUNE 1995

5/1/95 OU6RI215 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

3586 ○ UHSU MONITORING WELL (ALLUVIAL)

02691 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

02691 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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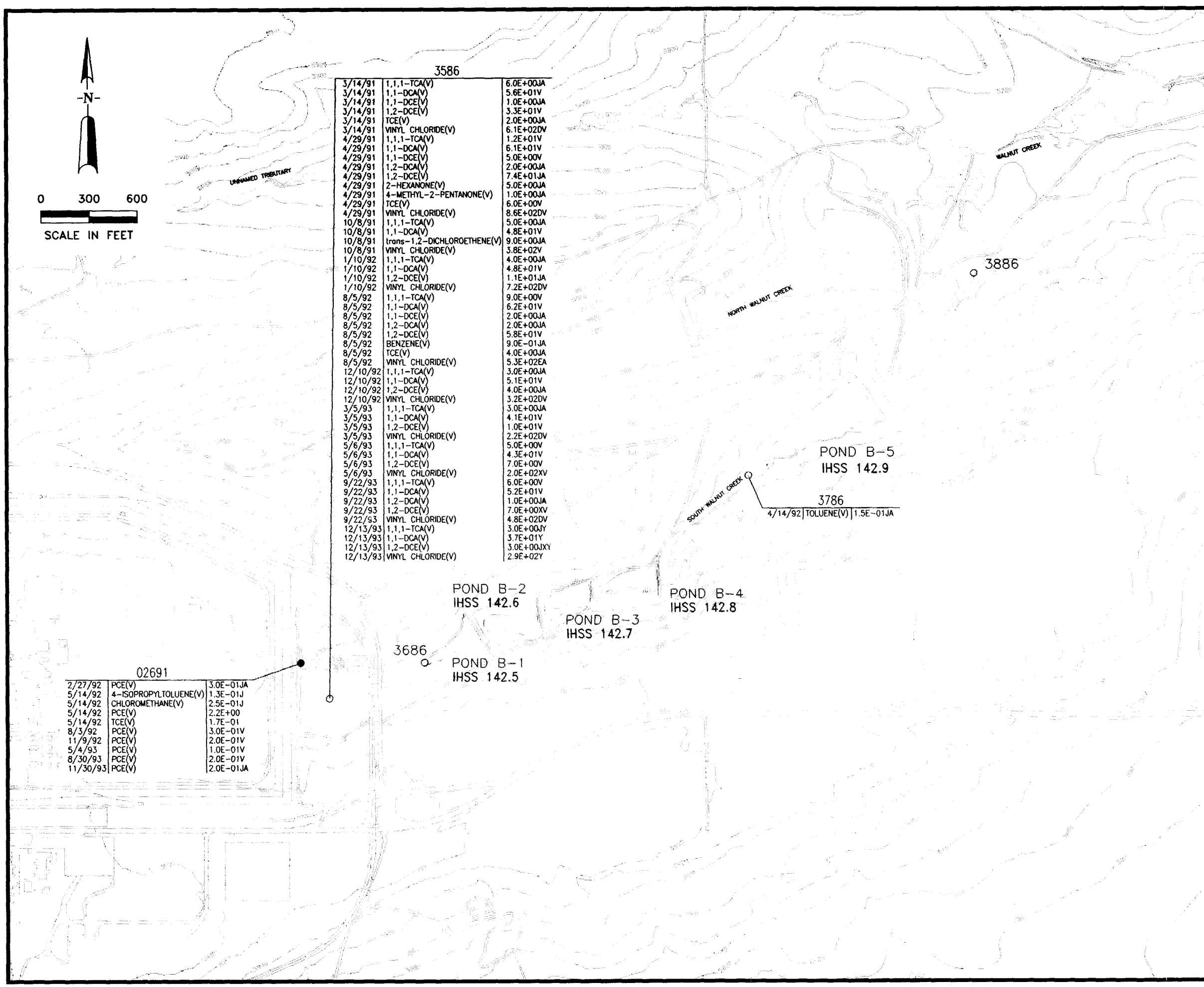
SUSPECT ORGANIC COMPOUNDS:
ACETONE AND METHYLENE CHLORIDE
AREA 3 (SOUTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-16 JUNE 1995

OU6RI143 1=600



3586

3/14/91	1,1,1-TCA(V)	6.0E+00JA
3/14/91	1,1-DCA(V)	5.6E+01V
3/14/91	1,1-DCE(V)	1.0E+00JA
3/14/91	1,2-DCE(V)	3.3E+01V
3/14/91	TCE(V)	2.0E+00JA
3/14/91	VINYL CHLORIDE(V)	6.1E+02DV
4/29/91	1,1,1-TCA(V)	1.2E+01V
4/29/91	1,1-DCA(V)	6.1E+01V
4/29/91	1,1-DCE(V)	5.0E+00V
4/29/91	1,2-DCA(V)	2.0E+00JA
4/29/91	1,2-DCE(V)	7.4E+01JA
4/29/91	2-HEXANONE(V)	5.0E+00JA
4/29/91	4-METHYL-2-PENTANONE(V)	1.0E+00JA
4/29/91	TCE(V)	6.0E+00V
4/29/91	VINYL CHLORIDE(V)	8.6E+02DV
10/8/91	1,1,1-TCA(V)	5.0E+00JA
10/8/91	1,1-DCA(V)	4.8E+01V
10/8/91	trans-1,2-DICHLOROETHENE(V)	9.0E+00JA
10/8/91	VINYL CHLORIDE(V)	3.8E+02V
1/10/92	1,1,1-TCA(V)	4.0E+00JA
1/10/92	1,1-DCA(V)	4.8E+01V
1/10/92	1,2-DCE(V)	1.1E+01JA
1/10/92	VINYL CHLORIDE(V)	7.2E+02DV
8/5/92	1,1,1-TCA(V)	9.0E+00V
8/5/92	1,1-DCA(V)	6.2E+01V
8/5/92	1,1-DCE(V)	2.0E+00JA
8/5/92	1,2-DCA(V)	2.0E+00JA
8/5/92	1,2-DCE(V)	5.8E+01V
8/5/92	BENZENE(V)	9.0E-01JA
8/5/92	TCE(V)	4.0E+00JA
8/5/92	VINYL CHLORIDE(V)	5.3E+02EA
12/10/92	1,1,1-TCA(V)	3.0E+00JA
12/10/92	1,1-DCA(V)	5.1E+01V
12/10/92	1,2-DCE(V)	4.0E+00JA
12/10/92	VINYL CHLORIDE(V)	3.2E+02DV
3/5/93	1,1,1-TCA(V)	3.0E+00JA
3/5/93	1,1-DCA(V)	4.1E+01V
3/5/93	1,2-DCE(V)	1.0E+01V
3/5/93	VINYL CHLORIDE(V)	2.2E+02DV
5/6/93	1,1,1-TCA(V)	5.0E+00V
5/6/93	1,1-DCA(V)	4.3E+01V
5/6/93	1,2-DCE(V)	7.0E+00V
5/6/93	VINYL CHLORIDE(V)	2.0E+02XV
9/22/93	1,1,1-TCA(V)	6.0E+00V
9/22/93	1,1-DCA(V)	5.2E+01V
9/22/93	1,2-DCA(V)	1.0E+00JA
9/22/93	1,2-DCE(V)	7.0E+00XV
9/22/93	VINYL CHLORIDE(V)	4.8E+02DV
12/13/93	1,1,1-TCA(V)	3.0E+00JY
12/13/93	1,1-DCA(V)	3.7E+01Y
12/13/93	1,2-DCE(V)	3.0E+00JXY
12/13/93	VINYL CHLORIDE(V)	2.9E+02Y

02691

2/27/92	PCE(V)	3.0E-01JA
5/14/92	4-ISOPROPYLTOLUENE(V)	1.3E-01J
5/14/92	CHLOROMETHANE(V)	2.5E-01J
5/14/92	PCE(V)	2.2E+00
5/14/92	TCE(V)	1.7E-01
8/3/92	PCE(V)	3.0E-01V
11/9/92	PCE(V)	2.0E-01V
5/4/93	PCE(V)	1.0E-01V
8/30/93	PCE(V)	2.0E-01V
11/30/93	PCE(V)	2.0E-01JA

EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

3586 ○ MONITORING WELL (ALLUVIAL)

02691 ● MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

3586 ← LOCATION

2/26/92

SAMPLE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) - VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.
3. PESTICIDE/PCB ANALYSES WERE PERFORMED AT ONLY LOCATION 02691.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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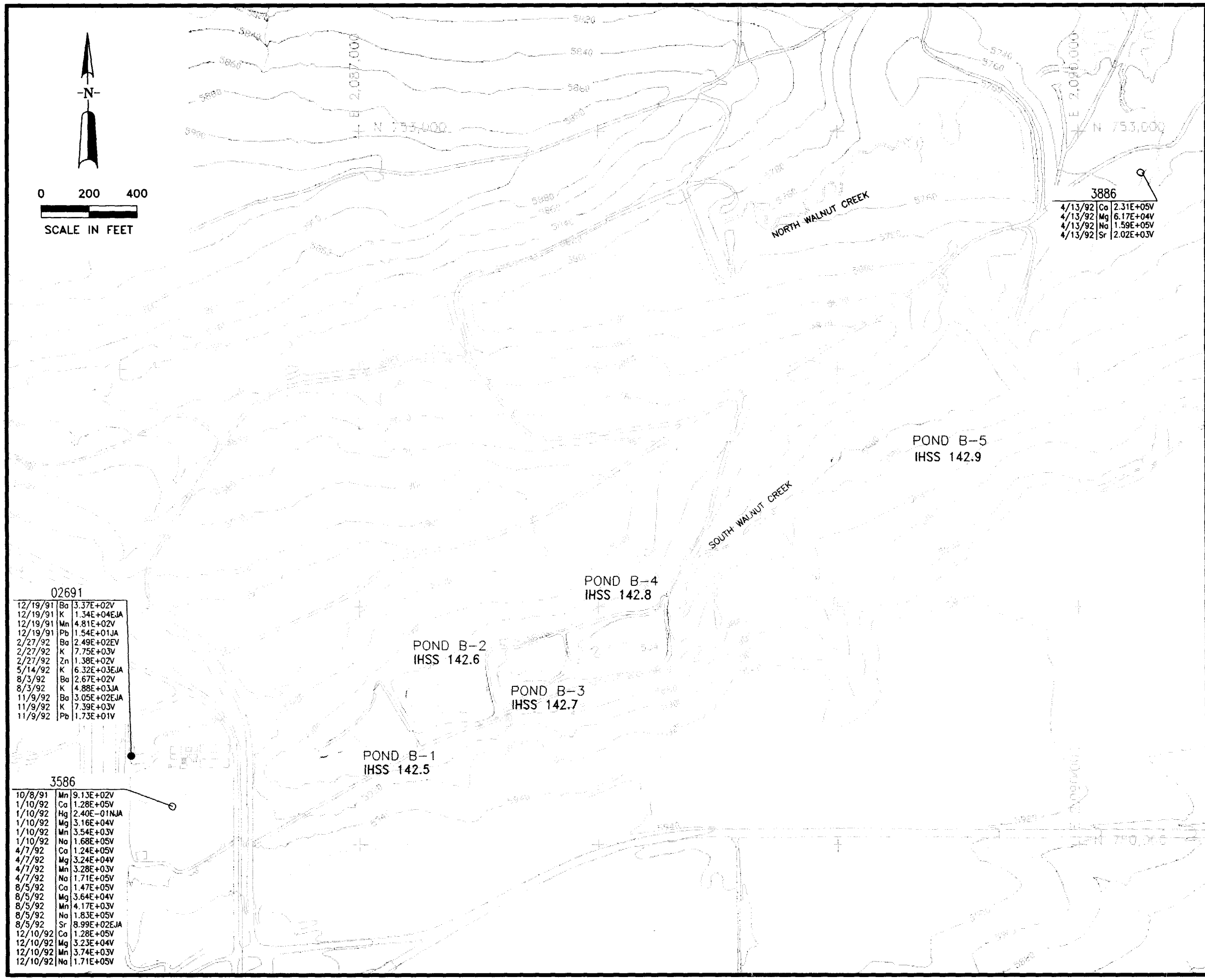
ORGANIC COMPOUNDS
AREA 3 (SOUTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 - 4th QUARTER 1993

FIGURE 4.6-17 JUNE 1995

OU6RI138 1=600



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

3586 ○ MONITORING WELL (ALLUVIAL)

02691 ● MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

3686 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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OPERABLE UNIT NO. 6
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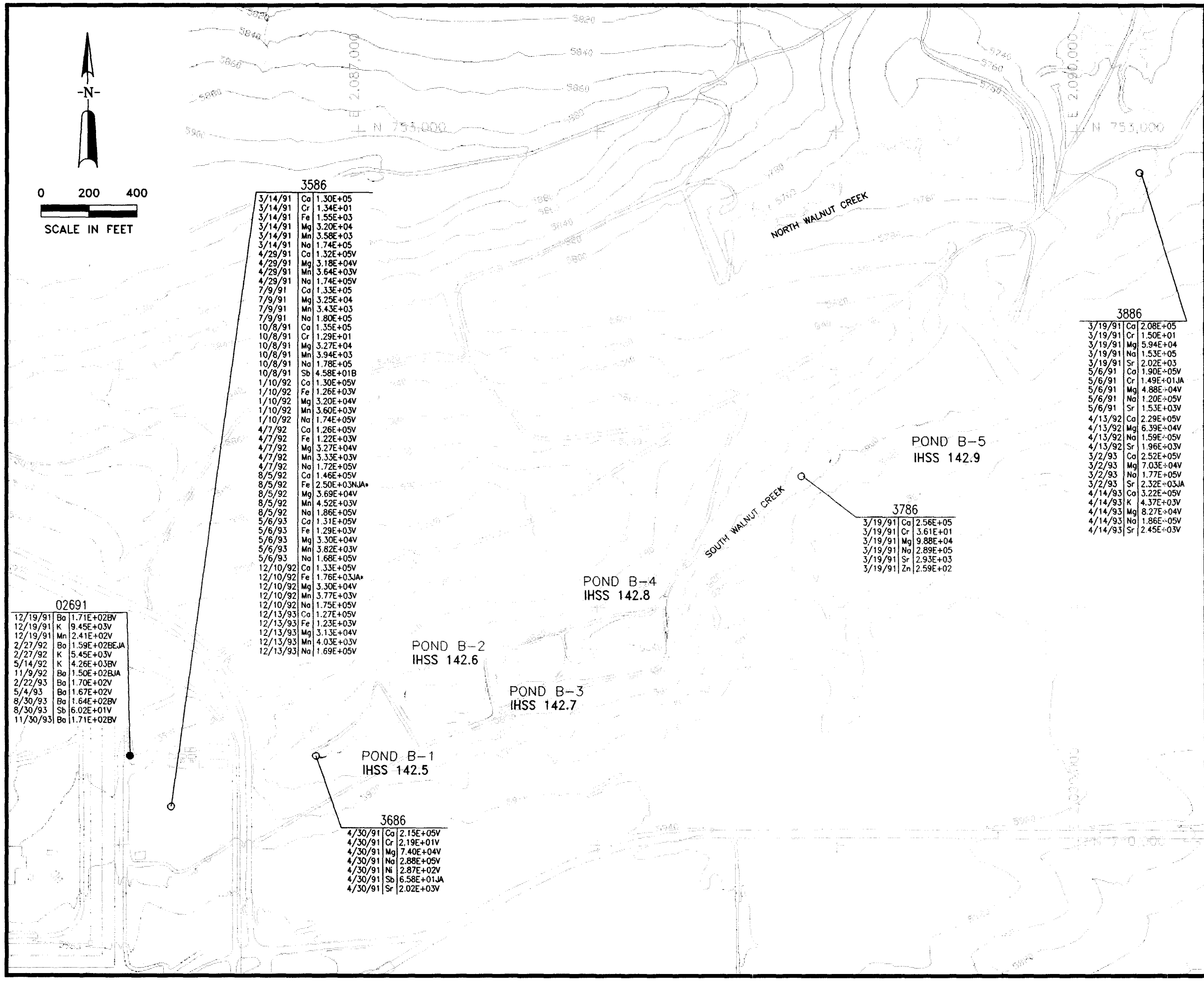
TOTAL METALS
AREA 3 (SOUTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-18 JUNE 1995

5/1/95 OU6RI204 1=400



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

3586 ○ MONITORING WELL (ALLUVIAL)

02691 ● MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

02691 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

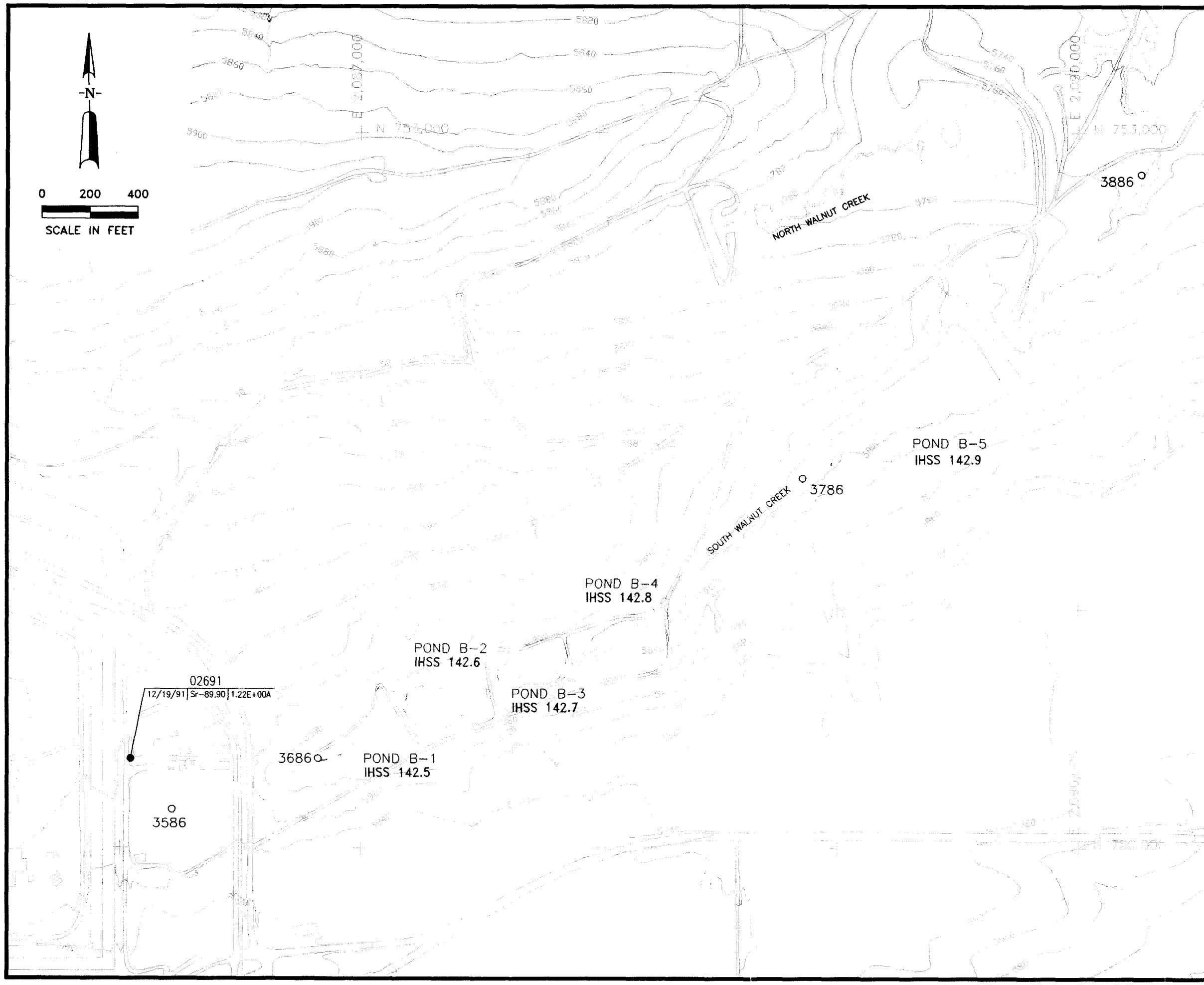
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

DISSOLVED METALS
AREA 3 (SOUTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-19 JUNE 1995

5/1/95 OU6RI193 1=400



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

3586 ○ MONITORING WELL (ALLUVIAL)

02691 ● MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

02691 ← LOCATION

2/26/92 | | |

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

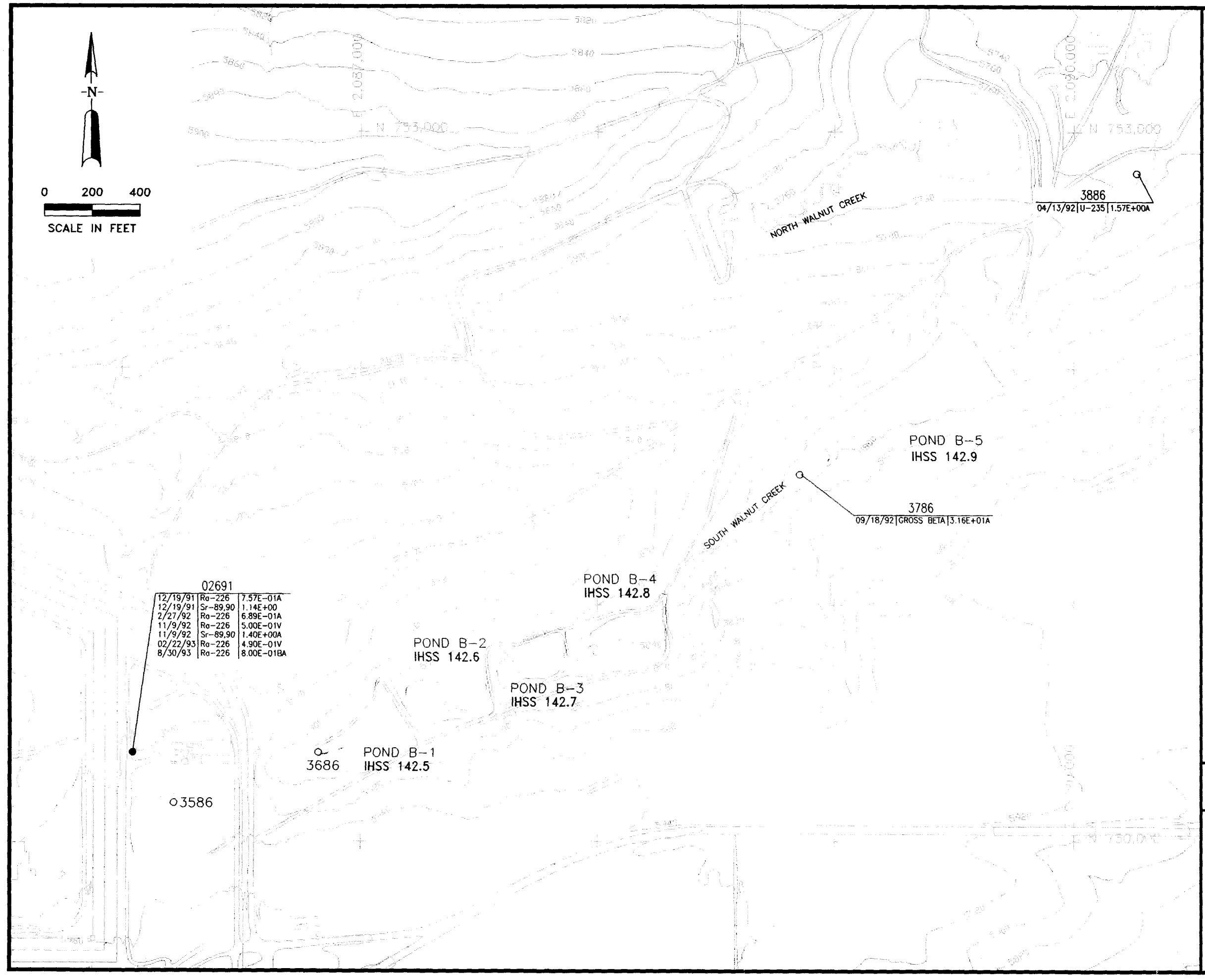
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

TOTAL RADIONUCLIDES
AREA 3 (SOUTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-20 JUNE 1995

5/1/95 OU6RI187 1=400



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

3586 ○ MONITORING WELL (ALLUVIAL)

02691 ● MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

02691 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

U.S. DEPARTMENT OF ENERGY
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OPERABLE UNIT NO. 6
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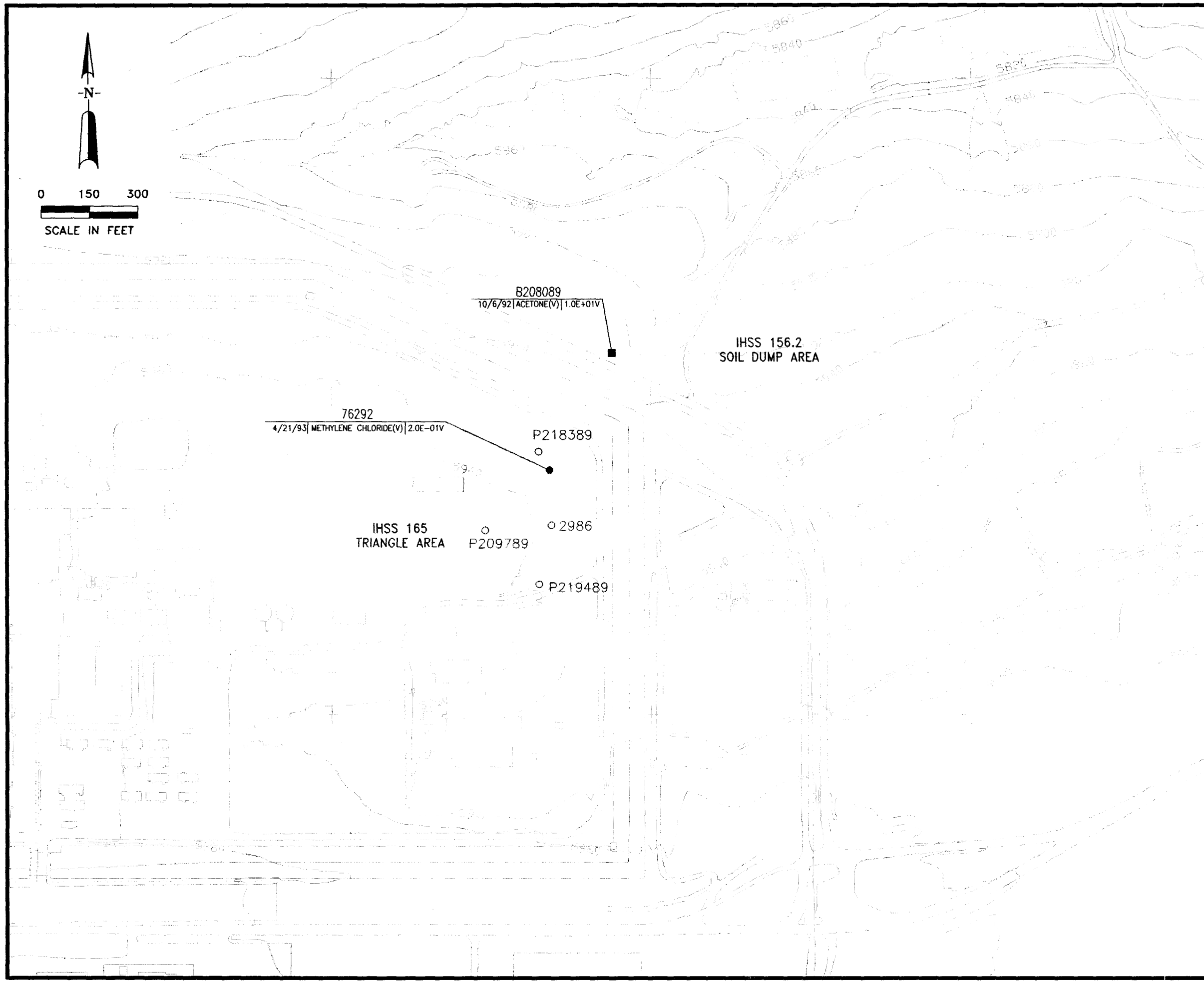
DISSOLVED RADIONUCLIDES
AREA 3 (SOUTH WALNUT CREEK DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-21 JUNE 1995

5/1/95 OU6RI199 1=400



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

B208089 ■ UHSU MONITORING WELL (COLLUVIAL)

2986 ○ UHSU MONITORING WELL (ALLUVIAL)

76292 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

B208089 ← LOCATION

2/26/92 | | |

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

U.S. DEPARTMENT OF ENERGY
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OPERABLE UNIT NO. 6
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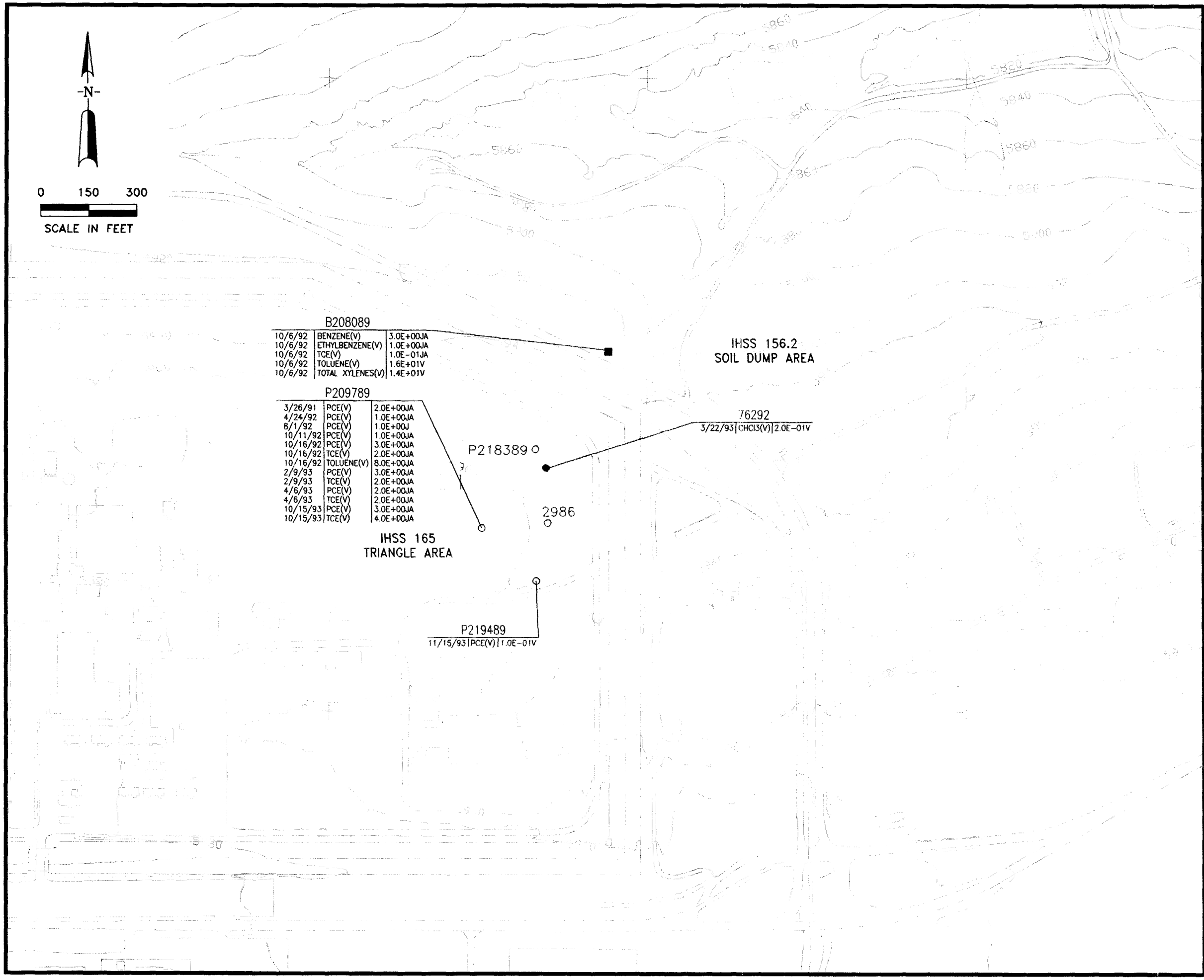
SUSPECT ORGANIC COMPOUNDS:
ACETONE AND METHYLENE CHLORIDE
AREA 4 (UPGRADIENT DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-22 JUNE 1995

OU6RI142 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

B208089 ■ UHSU MONITORING WELL (COLLUVIAL)

75892 ○ UHSU MONITORING WELL (ALLUVIAL)

76292 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

76292 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.
3. PESTICIDE/PCB ANALYSES WERE PERFORMED AT ONLY LOCATIONS 76292 AND P218389.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

U.S. DEPARTMENT OF ENERGY
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OPERABLE UNIT NO. 6
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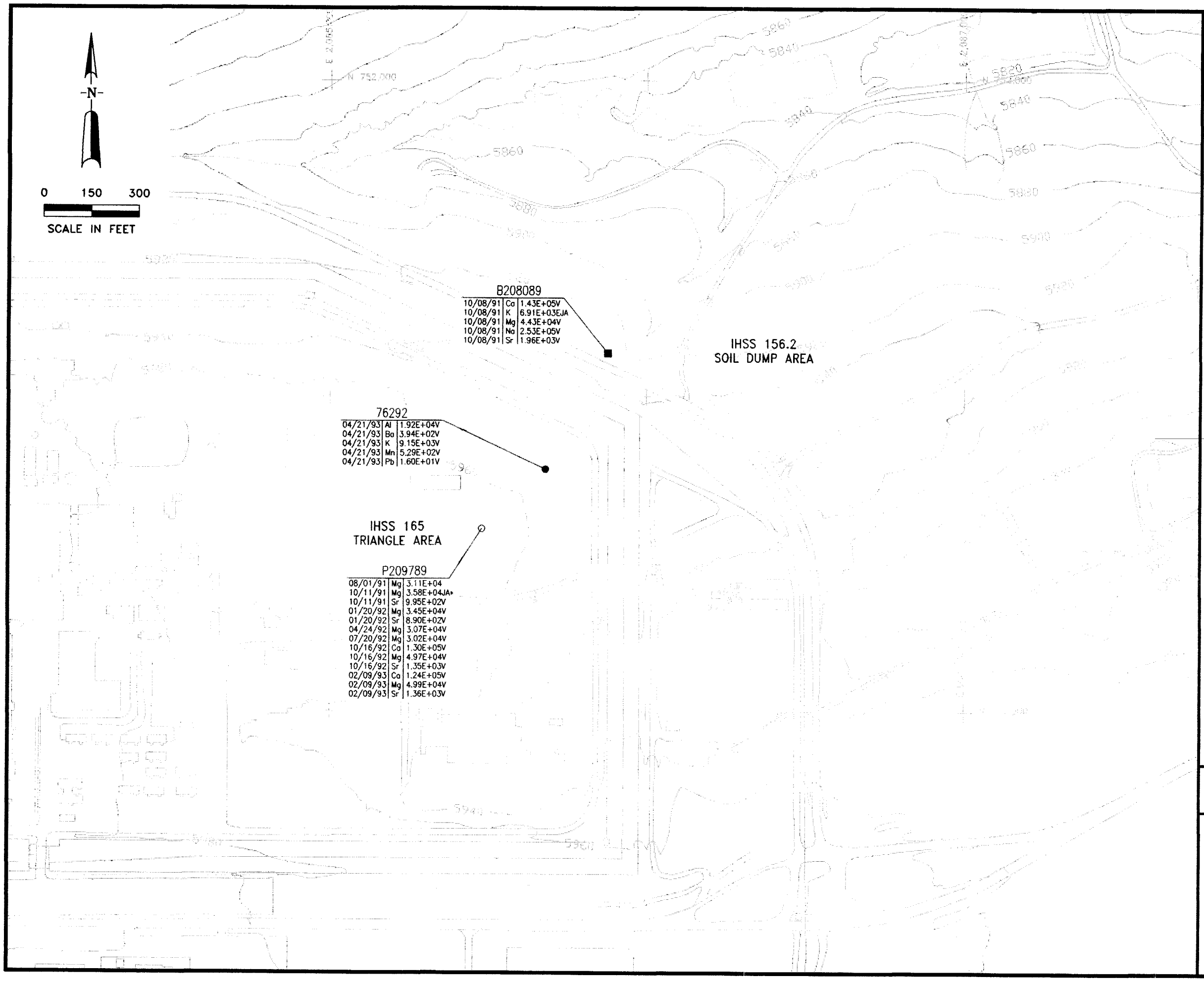
ORGANIC COMPOUNDS
AREA 4 (UPGRADIENT DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-23 JUNE 1995

OU6RI137 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

B208089 ■ UHSU MONITORING WELL (COLLUVIAL)

2986 ○ UHSU MONITORING WELL (ALLUVIAL)

76292 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

76292 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

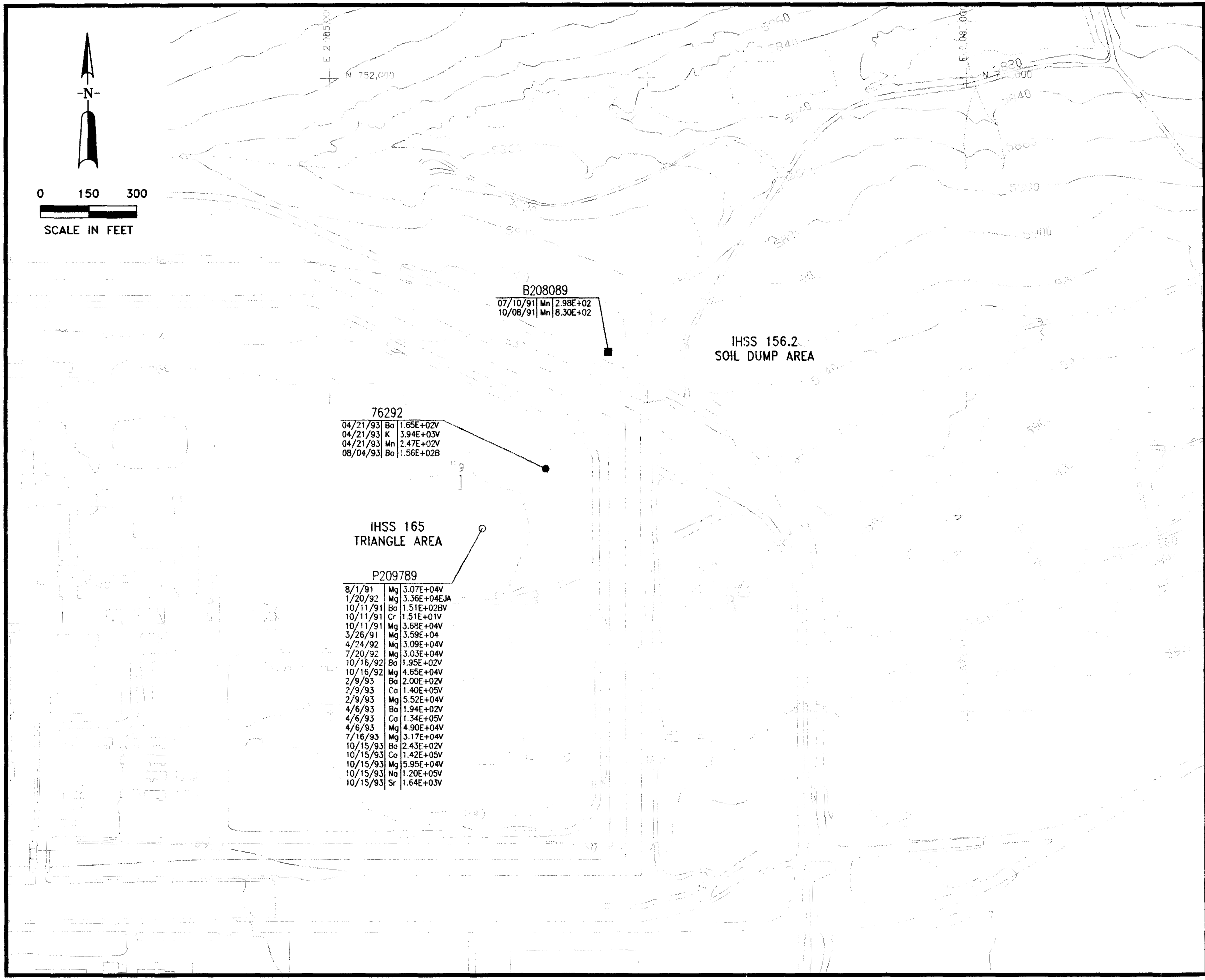
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

TOTAL METALS
AREA 4 (UPGRADIENT DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-24 JUNE 1995

5/1/95 OU6RI208 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

B208089 ■ UHSU MONITORING WELL (COLLUVIAL)

2986 ○ MONITORING WELL (ALLUVIAL)

76292 ● MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

76292 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

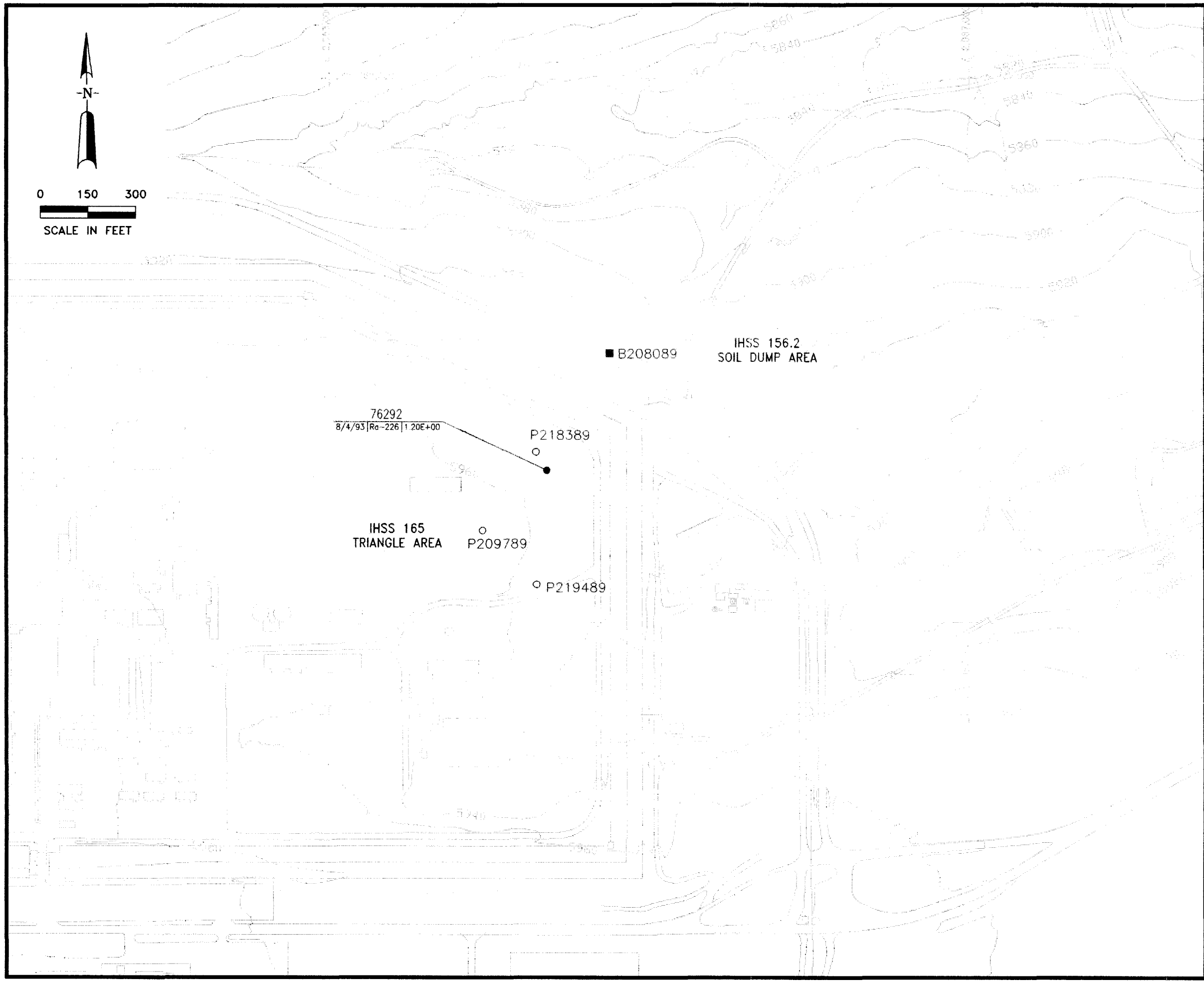
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

DISSOLVED METALS
AREA 4 (UPGRADIENT DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-25 JUNE 1995

5/1/95 OU6RI196 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

B208089 ■ UHSU MONITORING WELL (COLLUVIAL)

2986 ○ UHSU MONITORING WELL (ALLUVIAL)

76292 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

76292 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

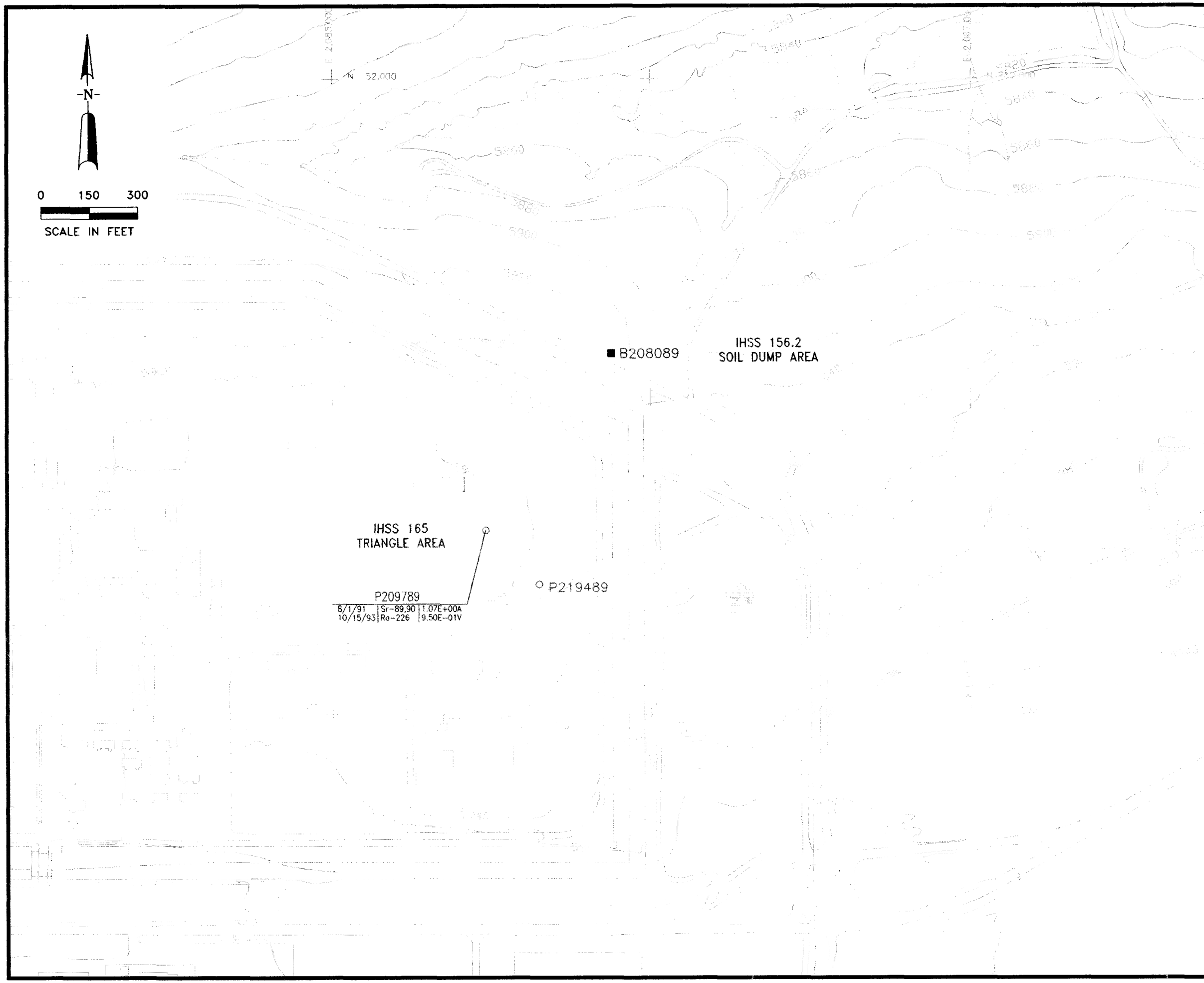
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

TOTAL RADIONUCLIDES
AREA 4 (UPGRADIENT DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-26 JUNE 1995

5/1/95 OU6RI190 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

2986 ○ UHSU MONITORING WELL (ALLUVIAL)

B208089 ■ UHSU MONITORING WELL (COLLUVIAL)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

P209789 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

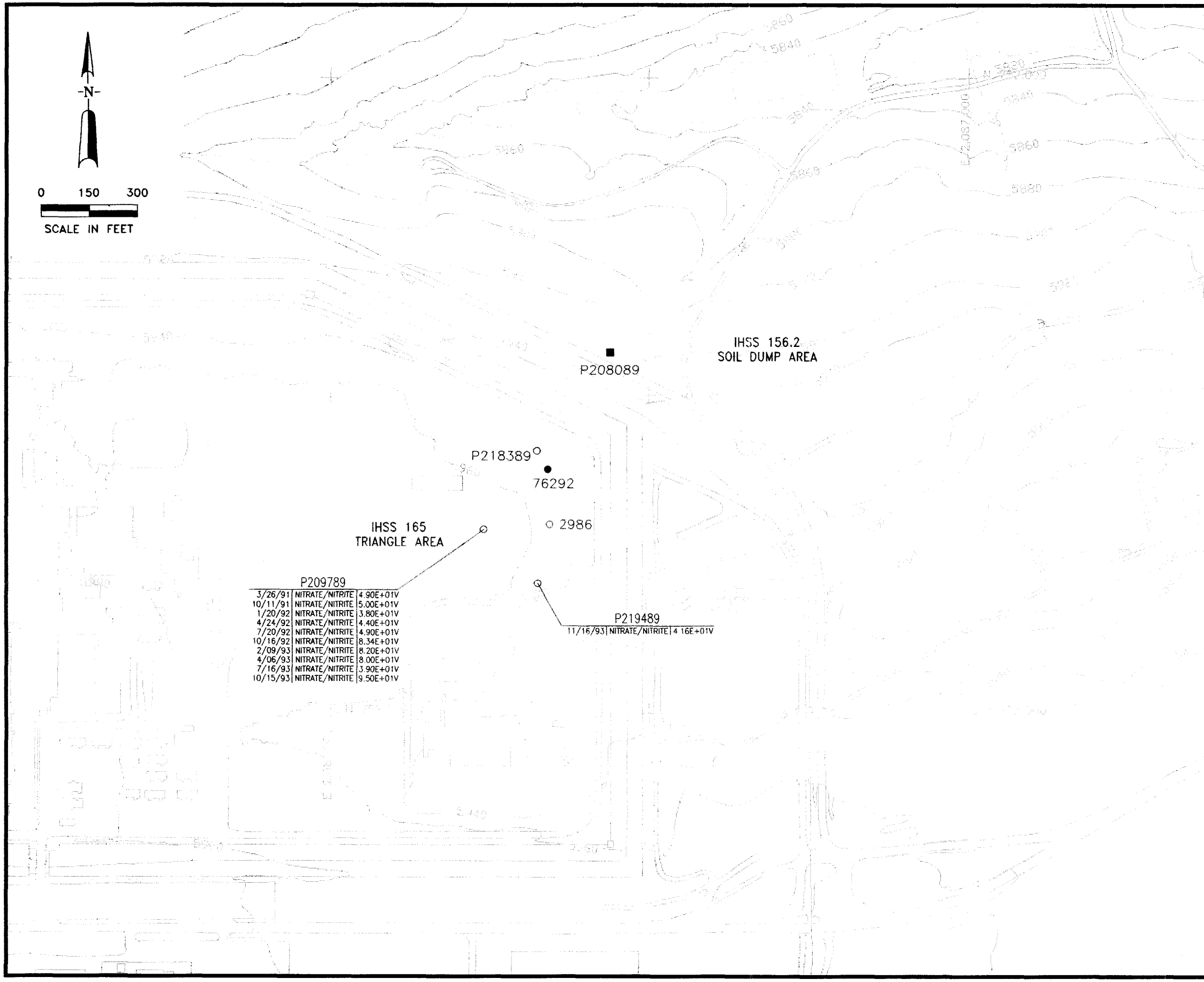
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

DISSOLVED RADIONUCLIDES
AREA 4 (UPGRADIENT DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-27 JUNE 1995

5/1/95 OU6RI203 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

B208089 ■ UHSU MONITORING WELL (COLLUVIAL)

2986 ○ UHSU MONITORING WELL (ALLUVIAL)

76292 ● UHSU MONITORING WELL (BEDROCK)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

B208089 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (mg/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/l (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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OPERABLE UNIT NO. 6
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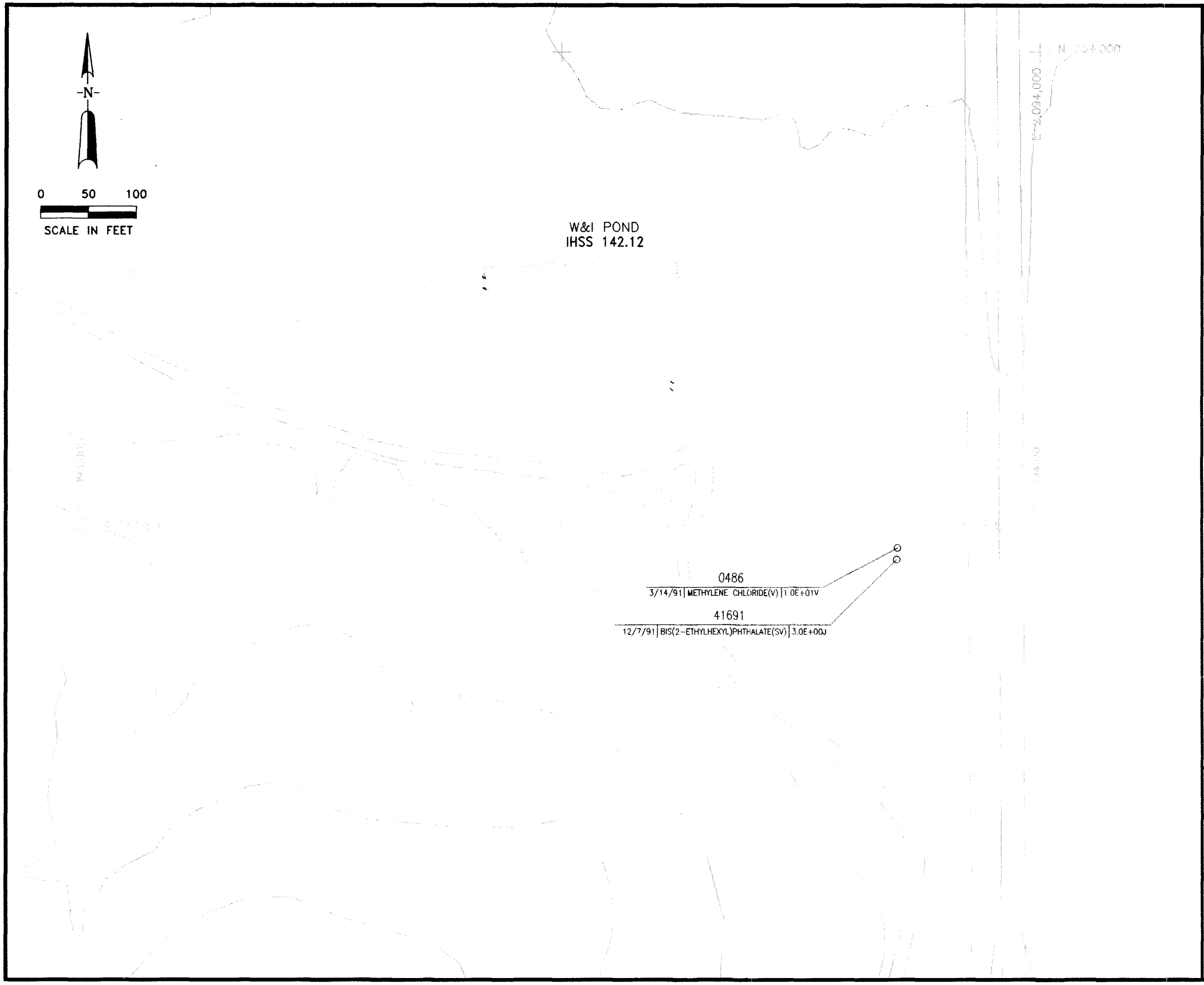
NITRATE/NITRITE
AREA 4 (UPGRADIENT DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-28 JUNE 1995

5/1/95 OU6RI217 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

41691 ○ MONITORING WELL (ALLUVIAL)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

41691 ← LOCATION

2/26/92 | | |

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

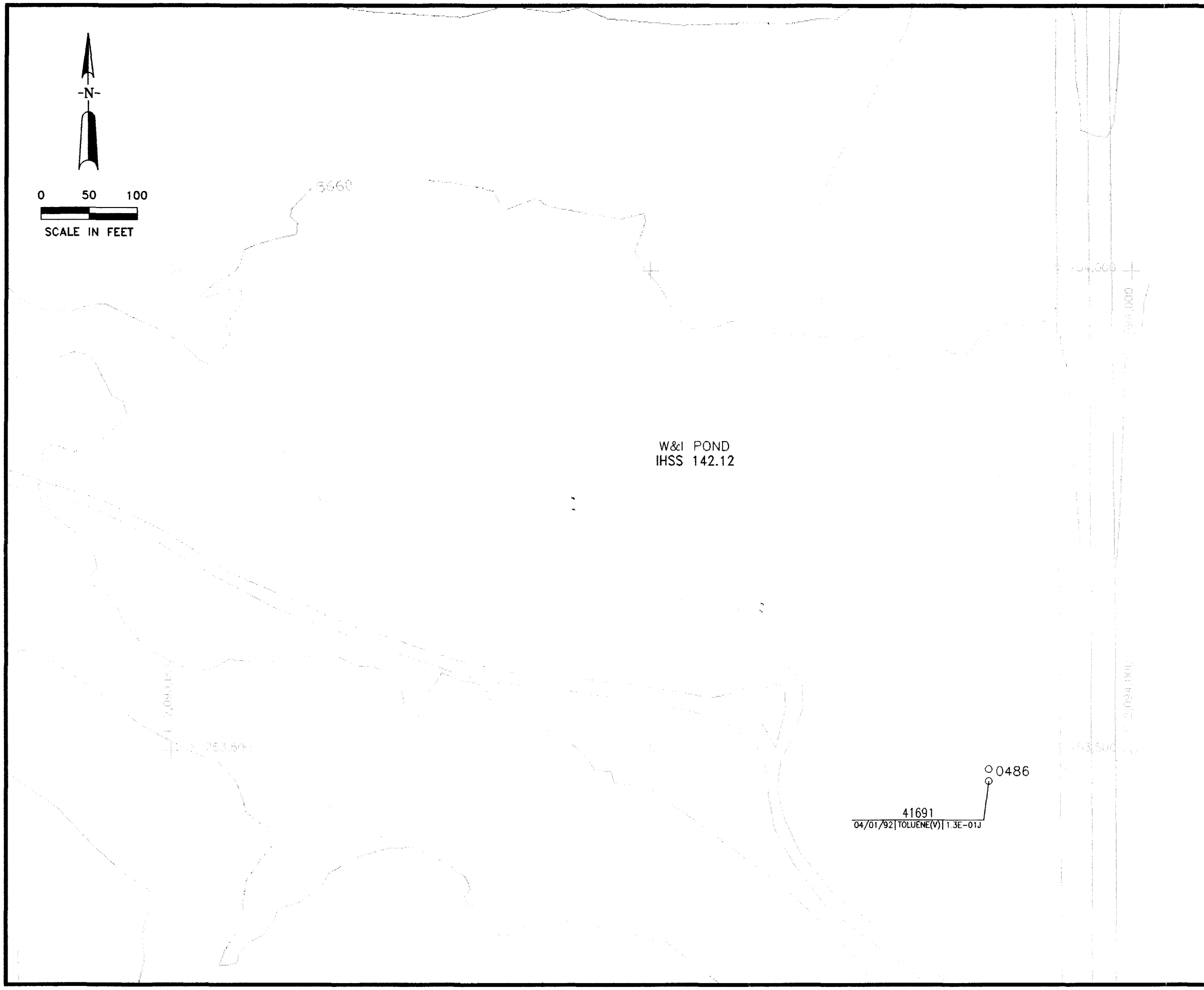
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

SUSPECT ORGANIC COMPOUNDS:
BIS(2-ETHYLHEXYL) PHTHALATE AND METHYLENE CHLORIDE
AREA 5 (W&I DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-29 JUNE 1995

5/1/95 OU6RI146 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

0486 o MONITORING WELL (ALLUVIAL)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

0486 ← LOCATION

2/26/92 | | |

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.
3. PESTICIDE/PCB ANALYSES WERE PERFORMED ONLY AT LOCATION 41691.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

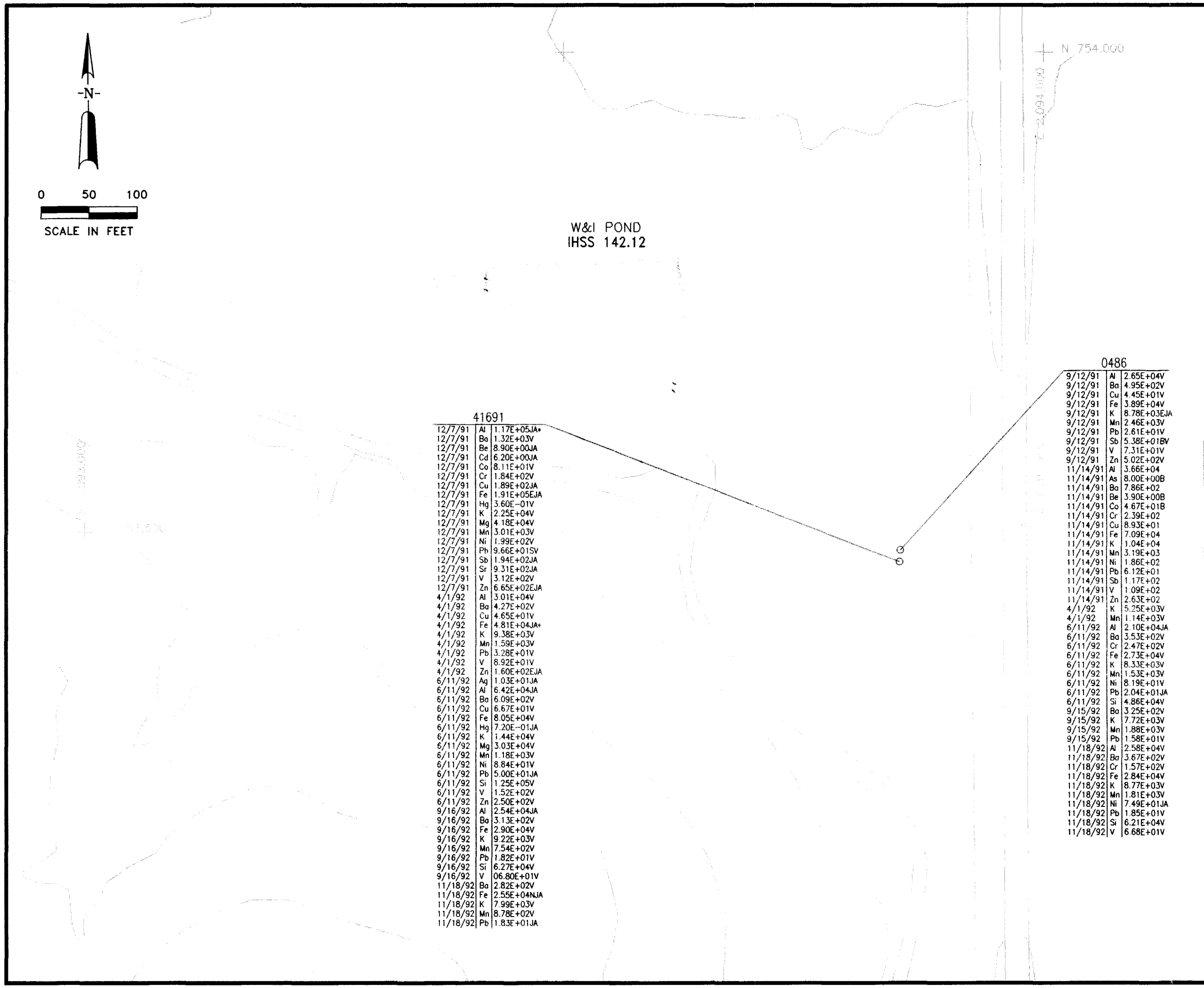
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

ORGANIC COMPOUNDS
AREA 5 (W&I DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-30 JUNE 1995

5/2/95 OU6RI141 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

41691 o MONITORING WELL (ALLUVIAL)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

41691 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

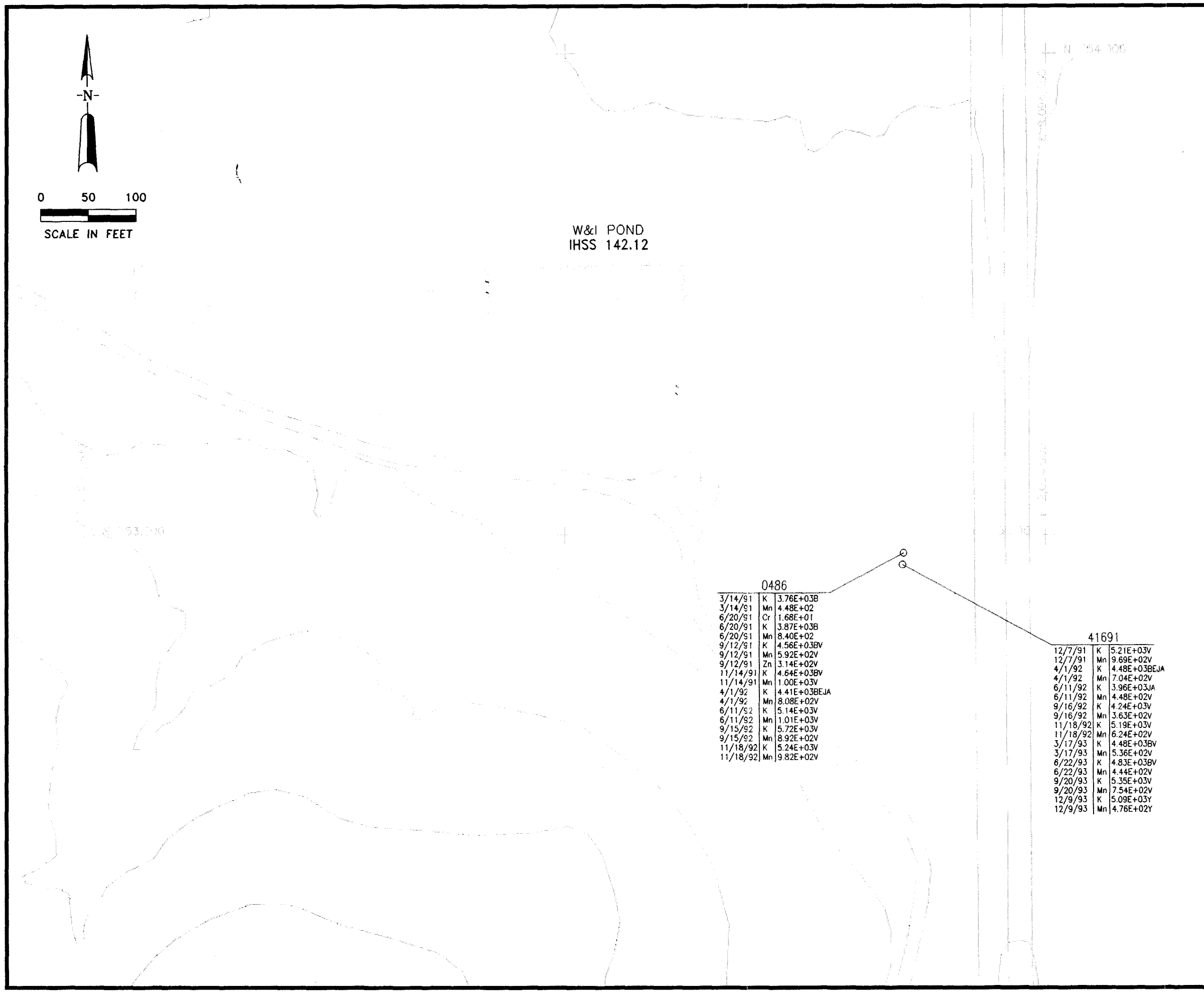
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

TOTAL METALS
AREA 5 (W&I DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-31 JUNE 1995

OU6RI206 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

41691 ○ MONITORING WELL (ALLUVIAL)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

41691 ← LOCATION

2/26/92 | | |

SAMPLE DATE — ANALYTE — ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

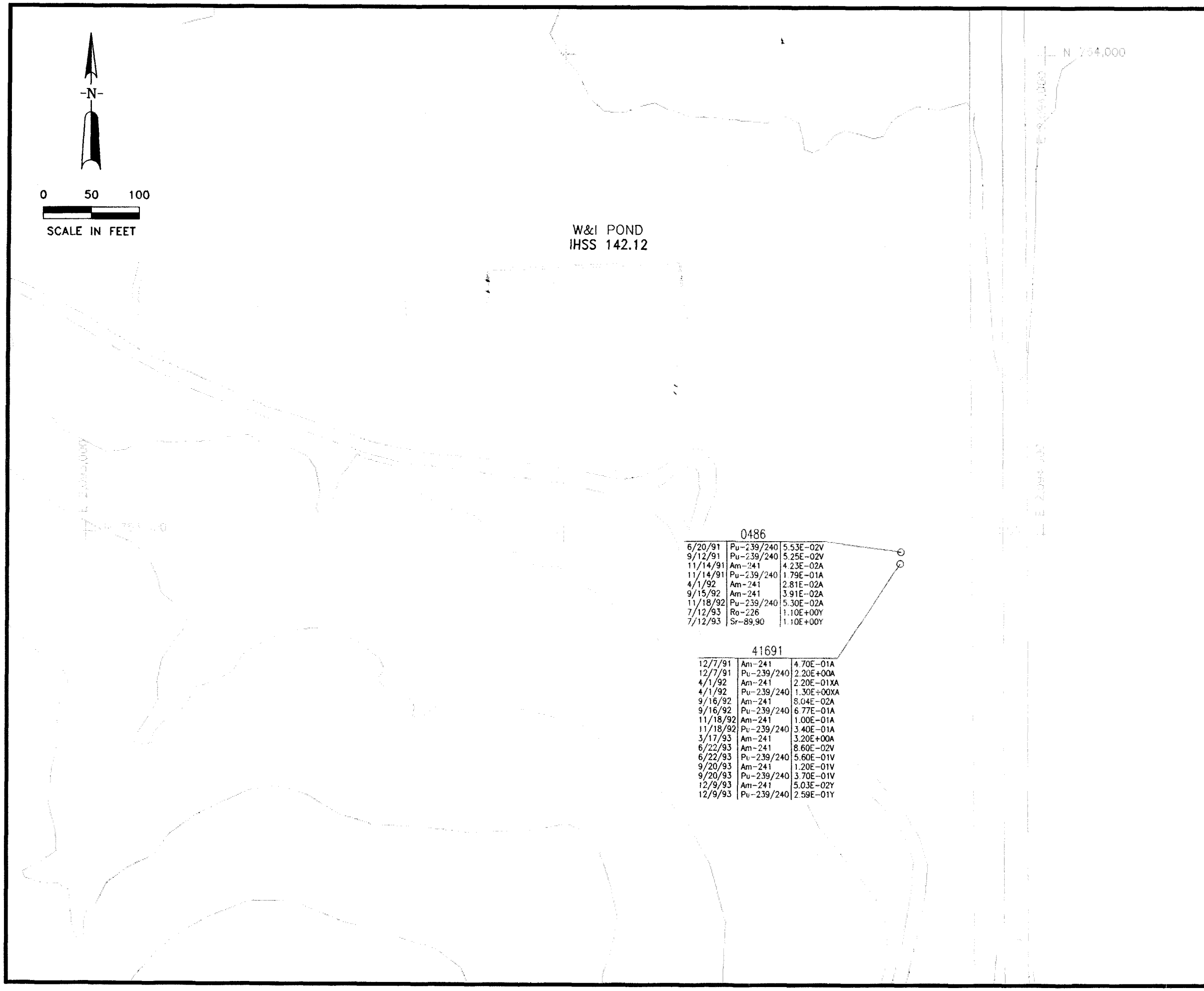
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

DISSOLVED METALS
AREA 5 (W&I DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-32 JUNE 1995

5/2/95 OU6RI194 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

41691 o MONITORING WELL (ALLUVIAL)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

41691 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

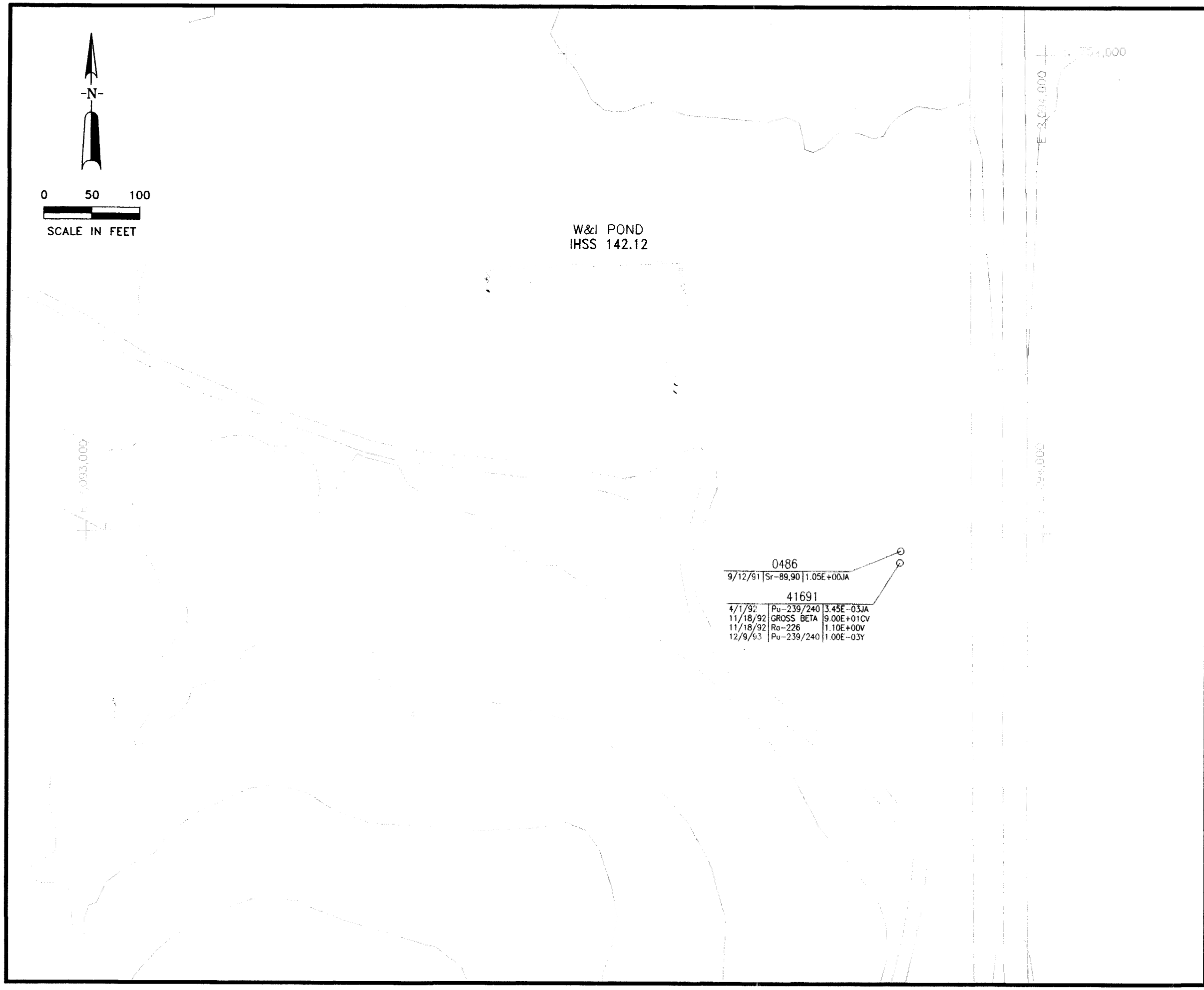
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

TOTAL RADIONUCLIDES
AREA 5 (W&I DRAINAGE)
USHU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-33 JUNE 1995

5/2/95 OU6RI1188 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

41691 ○ MONITORING WELL (ALLUVIAL)

UHSU = UPPER HYDROSTRATIGRAPHIC UNIT

41691 ← LOCATION

2/26/92 | | |

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

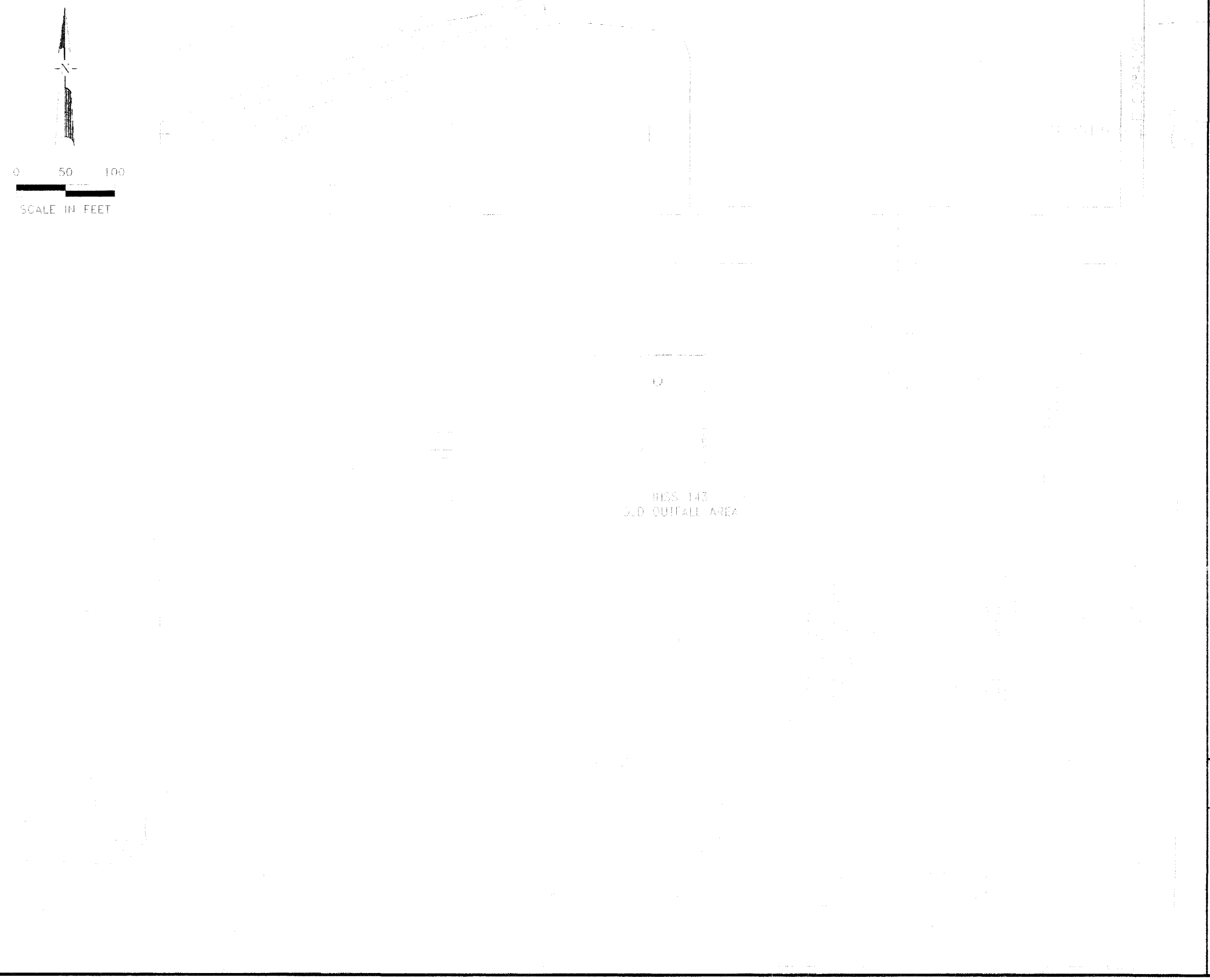
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

DISSOLVED RADIONUCLIDES
AREA 5 (W&I DRAINAGE)
UHSU GROUNDWATER
1st QUARTER 1991 - 4th QUARTER 1993

FIGURE 4.6-34 JUNE 1995

5/2/95 OU6RI200 1=100



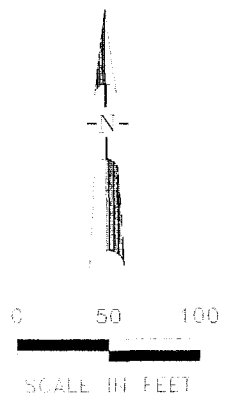
PLANATION

U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

ORGANIC COMPOUNDS
AREA 6 (IHSS 143)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-35



IHSS 146
OLD OUTFALL AREA

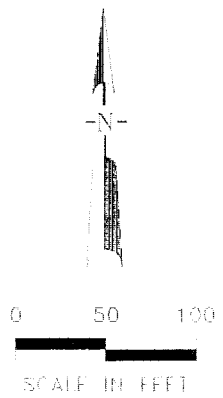
EXPLANATION

U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

TOTAL METALS
AREA 6 (IHSS 146)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-36



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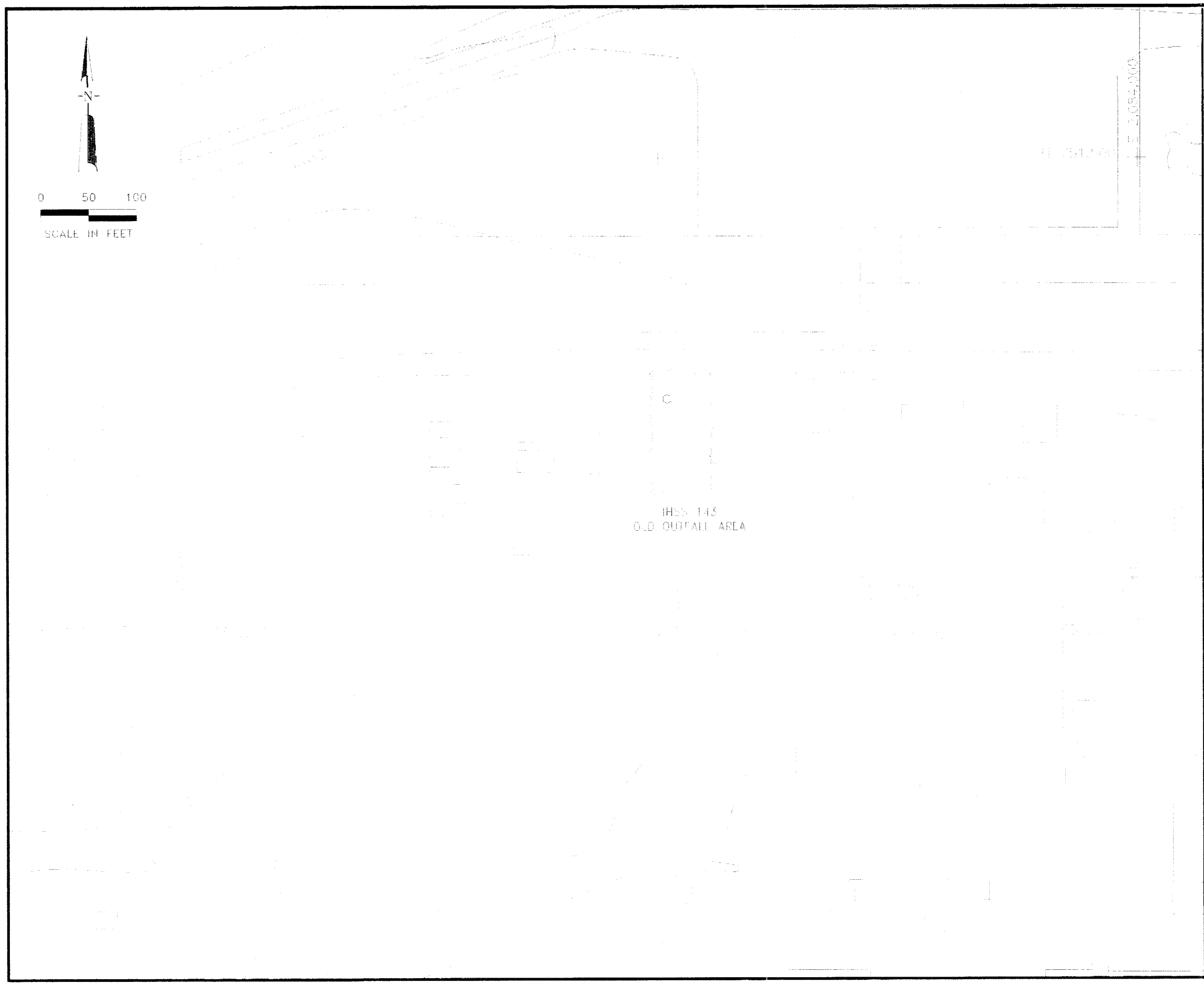
DISSOLVED METALS
AREA 6 (IHSS 143)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-37



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (DOE 1992b)

BOUNDARY OF OLD OUTFALL AREA BASED ON INTERPRETATION OF AERIAL PHOTOGRAPHY (SECTION [illegible])

C [illegible]

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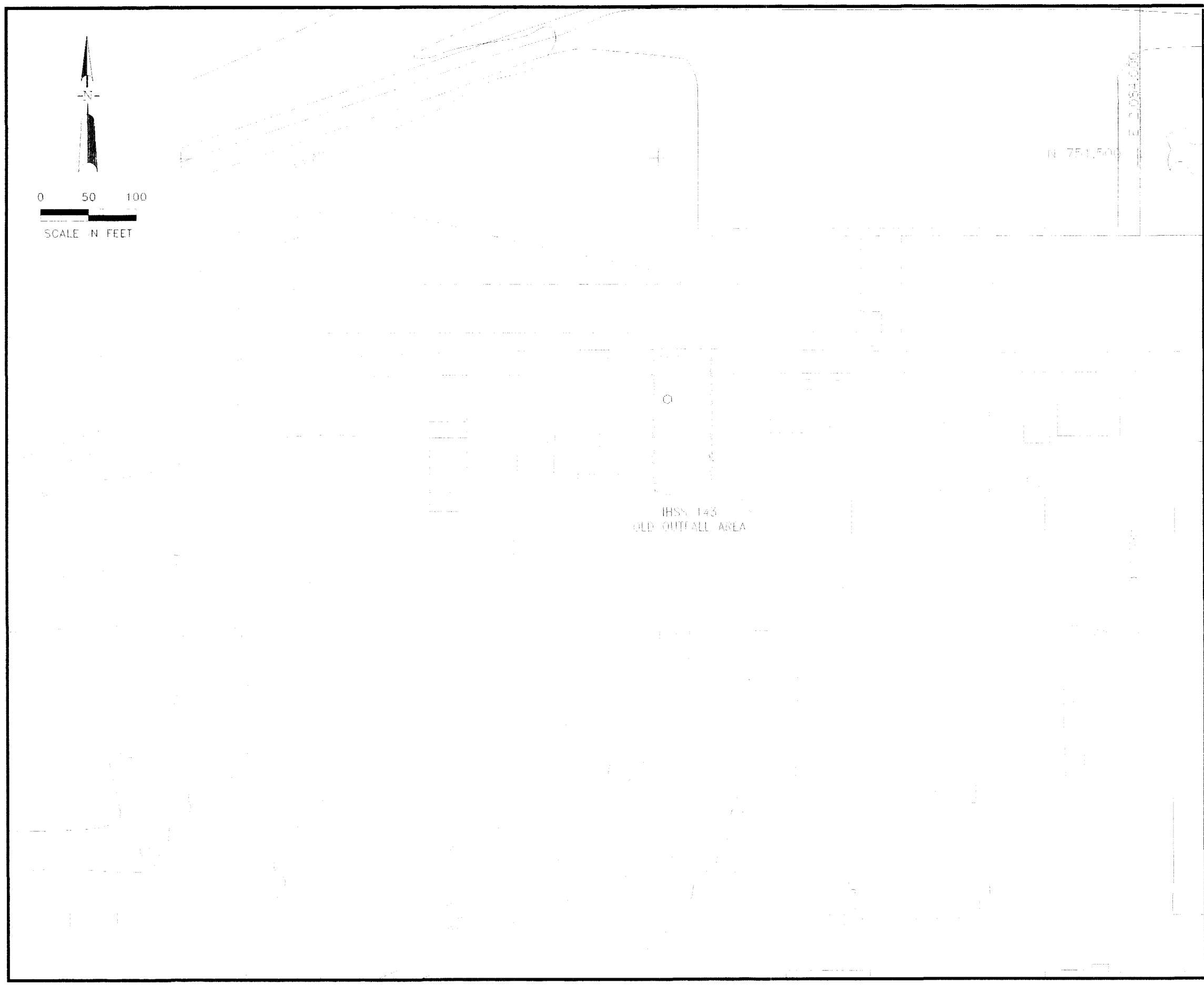
TOTAL RADIONUCLIDES
AREA 6 (IHSS 143)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-38



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (DOE 1992b)

BOUNDARY OF OLD OUTFALL AREA BASED ON INTERPRETATION OF AERIAL PHOTOGRAPHS (SECTION 2.3.3)

MICHEL RIBBS WELL (ALLUVIAL)

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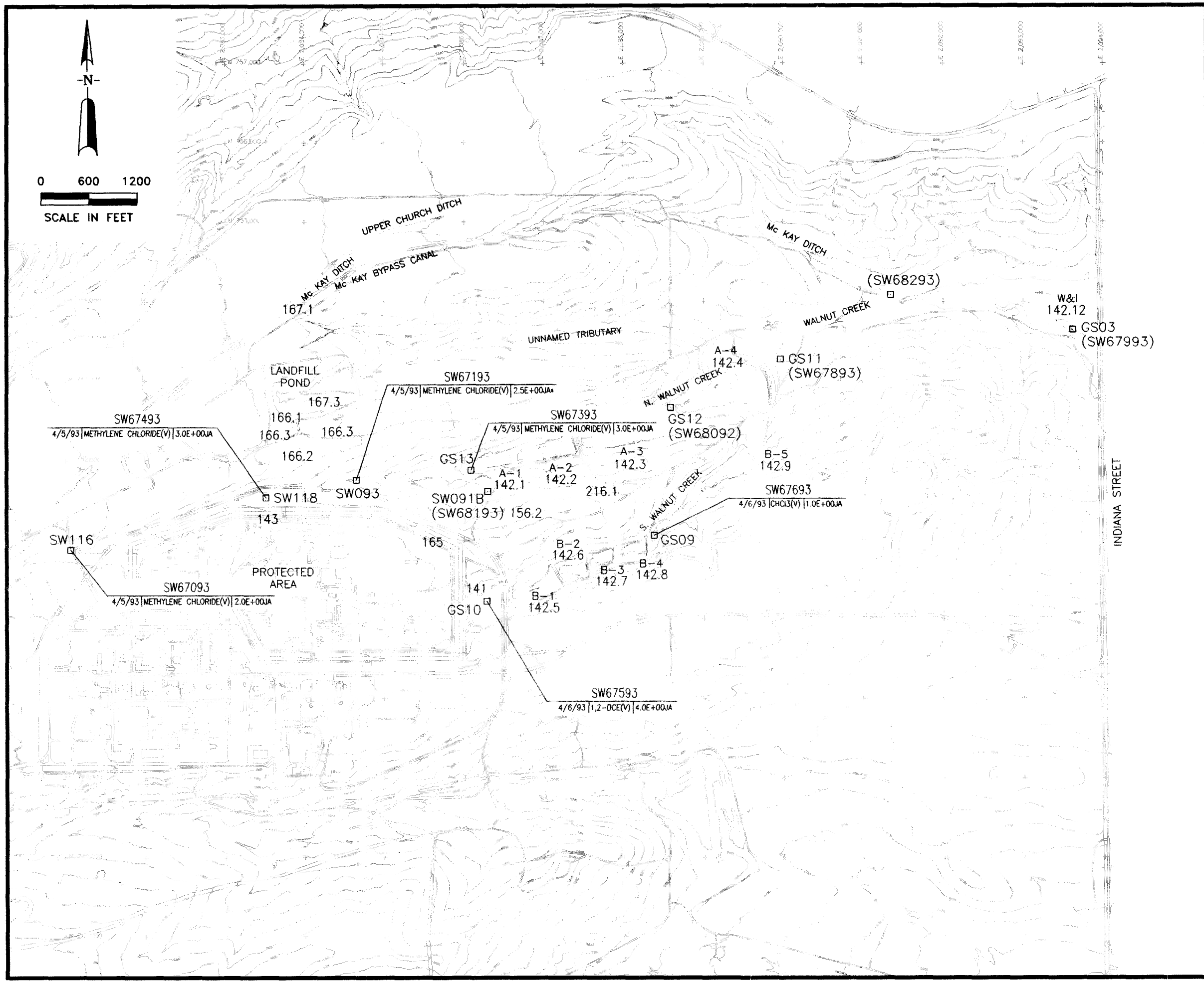
DISSOLVED RADIONUCLIDES
AREA 6 (IHSS 143)
UHSU GROUNDWATER
1st QUARTER 1991 – 4th QUARTER 1993

FIGURE 4.6-39 JUNE 1995



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS10 (SW67593) — SURFACE WATER (BASEFLOW) SAMPLING SITE

GS10 – GAUGING STATION #10

SW118 – SURFACE WATER #118

SW67593 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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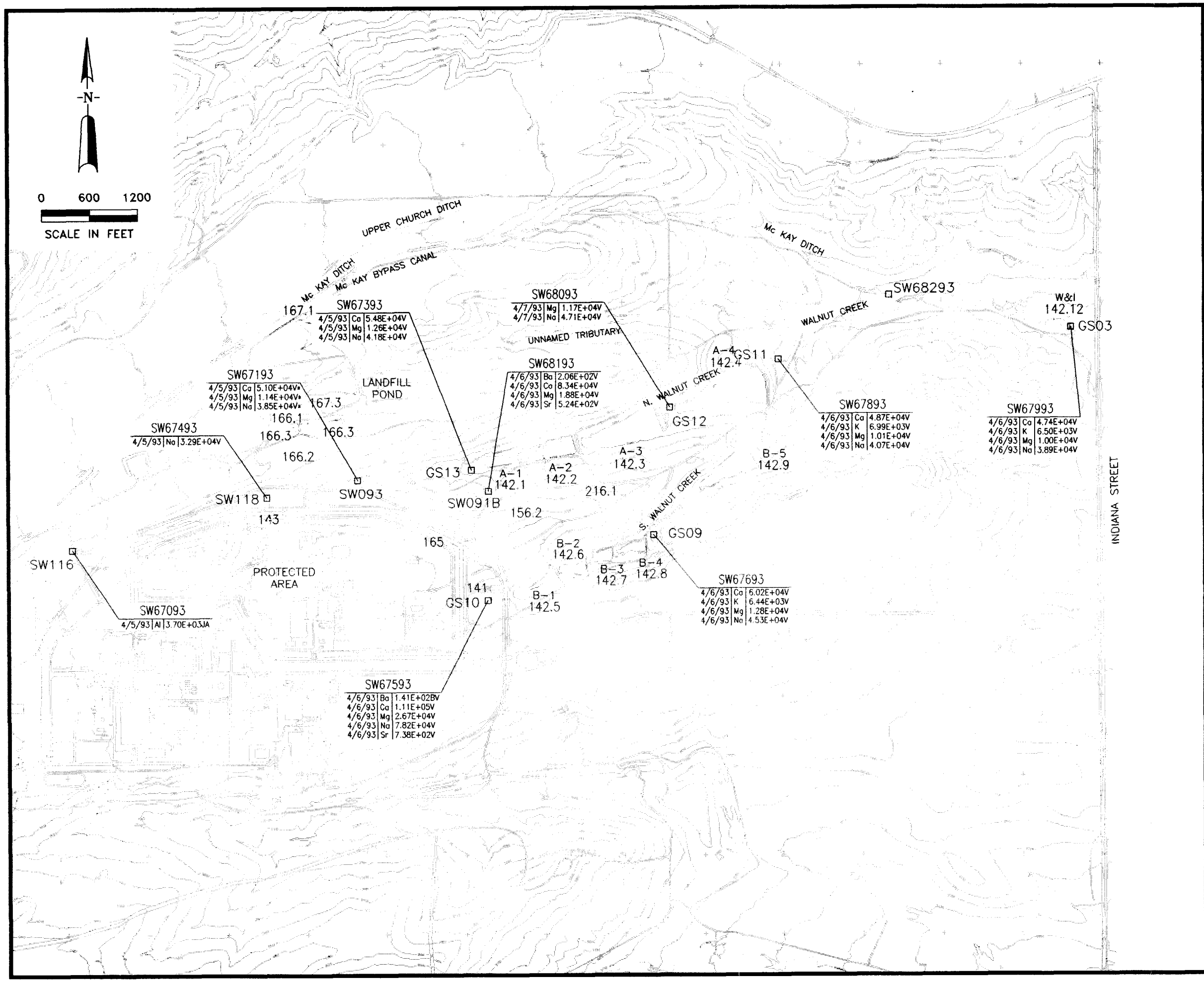
ORGANIC COMPOUNDS
OU6 DRAINAGES
SURFACE WATER
(BASEFLOW)

FIGURE 4.7-1 JUNE 1995

4/26/95 OU6RI133 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS10 (SW67593) — SURFACE WATER (BASEFLOW) SAMPLING SITE

GS10 – GAUGING STATION #10

SW118 – SURFACE WATER #118

SW68893 ← LOCATION

2/26/92		
SAMPLE DATE	ANALYTE	ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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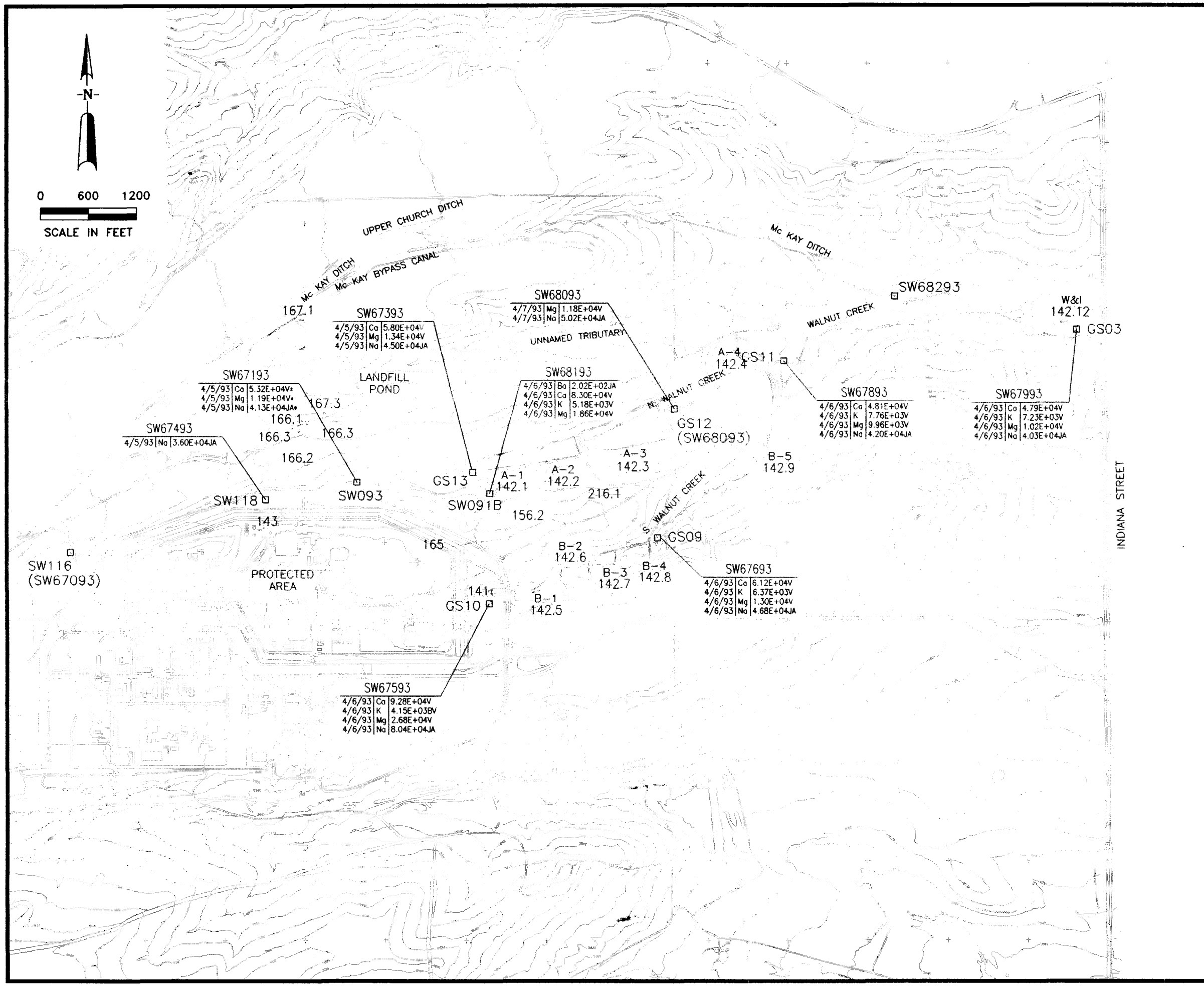
PCOC TOTAL METALS
OU6 DRAINAGES
SURFACE WATER
(BASEFLOW)

FIGURE 4.7-2 JUNE 1995

4/25/95 OU6RI164 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS10 (SW67593) — SURFACE WATER (BASEFLOW) SAMPLING SITE

GS10 – GAUGING STATION #10

SW118 – SURFACE WATER #118

SW68893 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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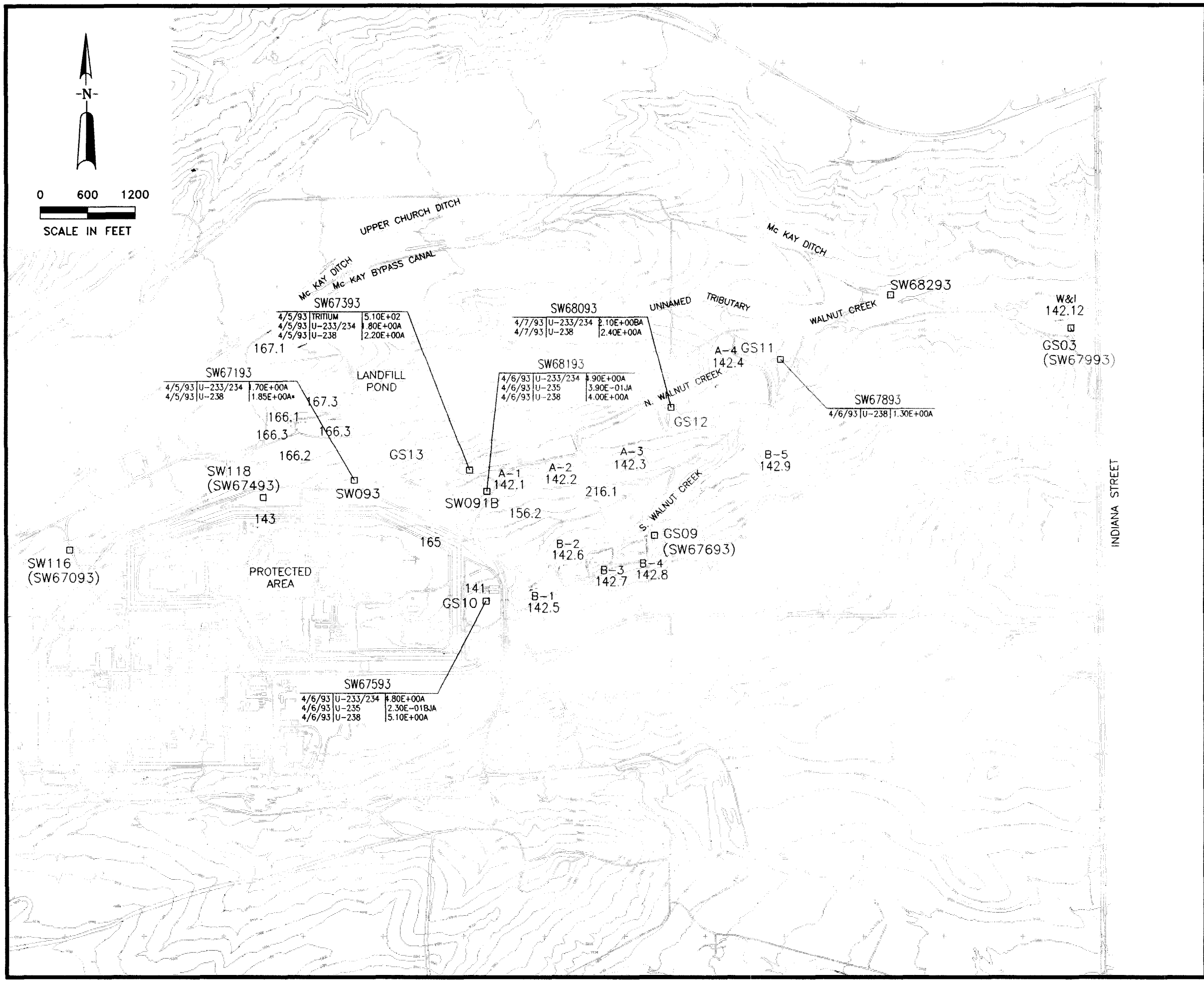
PCOC DISSOLVED METALS
OU6 DRAINAGES
SURFACE WATER
(BASEFLOW)

FIGURE 4.7-3 JUNE 1995

4/26/95 OU6RI165 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS10 (SW67593) — SURFACE WATER (BASEFLOW) SAMPLING SITE

GS10 – GAUGING STATION #10

SW118 – SURFACE WATER #118

SW68893 ← LOCATION

2/26/92		
SAMPLE DATE	ANALYTE	ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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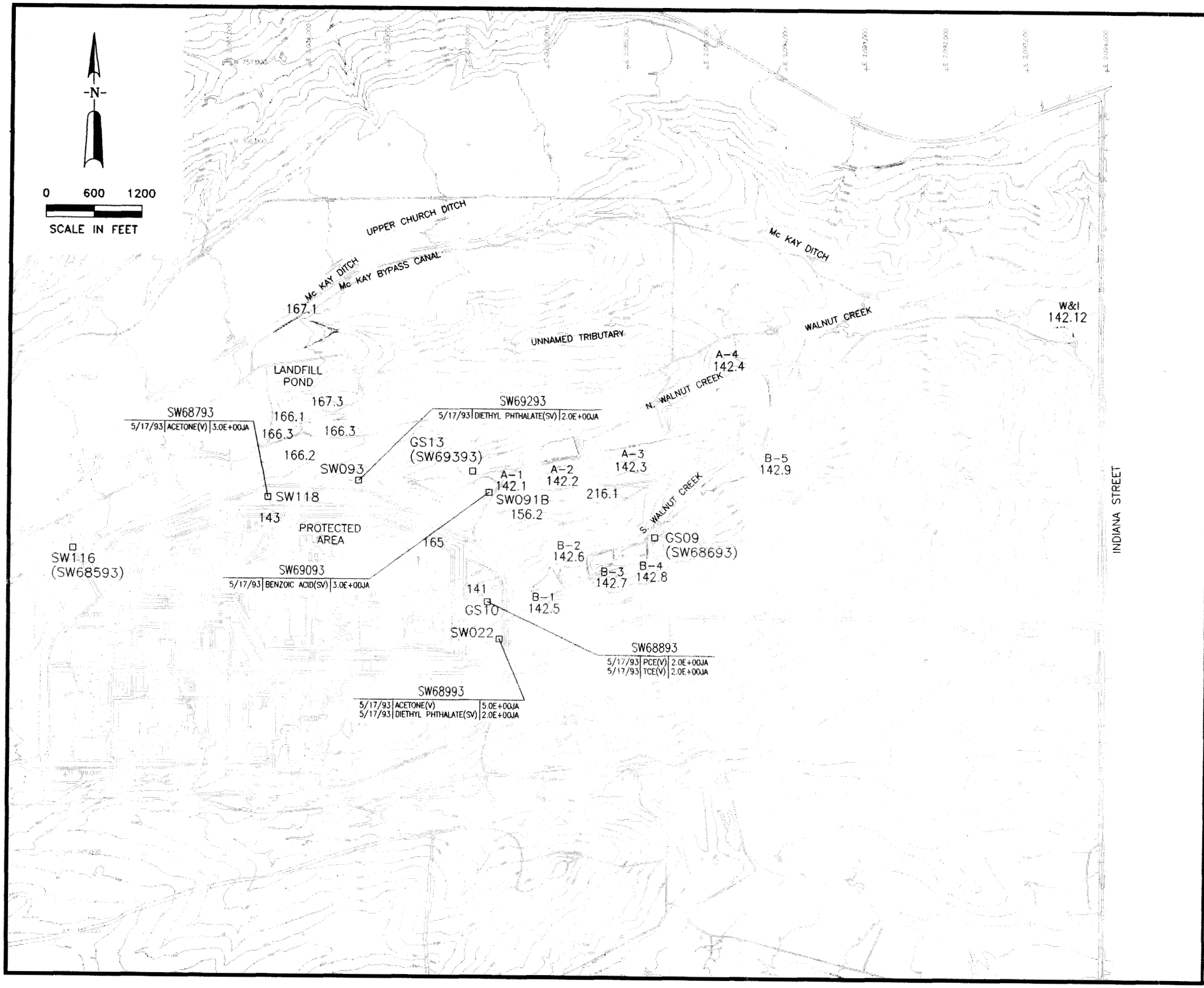
PCOC TOTAL RADIONUCLIDES
OU6 DRAINAGES
SURFACE WATER
(BASEFLOW)

FIGURE 4.7-4 JUNE 1995

6/20/95 OU6RI163 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS10 (SW68893) — SURFACE WATER (STORM EVENT) SAMPLING SITE

GS10 – GAUGING STATION #10

SW118 – SURFACE WATER #118

SW68893 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE
(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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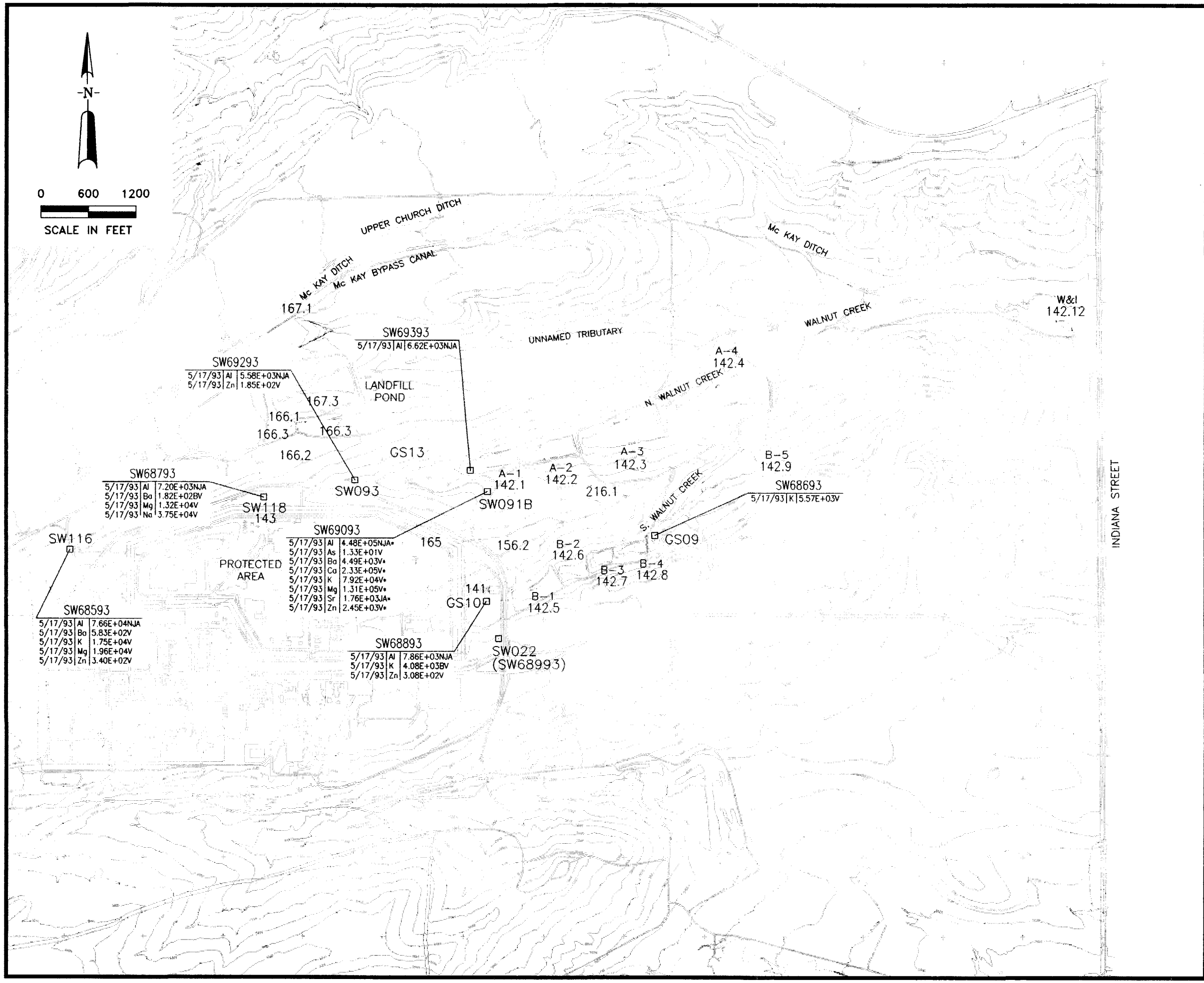
ORGANIC COMPOUNDS
OU6 DRAINAGES
SURFACE WATER
(STORM EVENT)

FIGURE 4.7-5 JUNE 1995

4/25/95 OU6RI134 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS10 (SW68593) — SURFACE WATER (STORM EVENT) SAMPLING SITE

GS10 – GAUGING STATION #10

SW118 – SURFACE WATER #118

SW68793 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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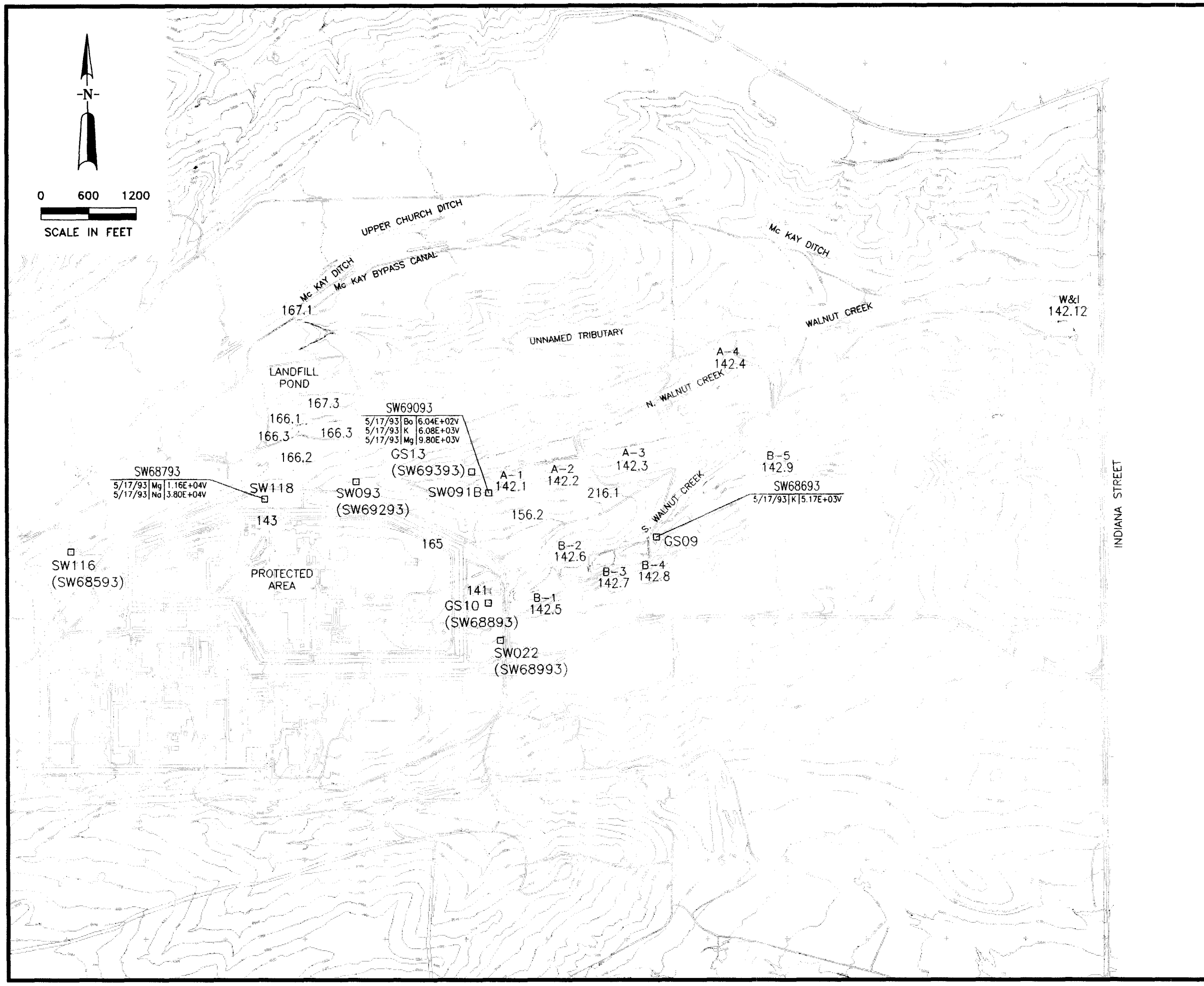
PCOC TOTAL METALS
OU6 DRAINAGES
SURFACE WATER
(STORM EVENT)

FIGURE 4.7-6 JUNE 1995

4/25/95 OU6RI178 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS10 (SW68593) — SURFACE WATER (STORM EVENT) SAMPLING SITE

GS10 – GAUGING STATION #10

SW118 – SURFACE WATER #118

SW68793 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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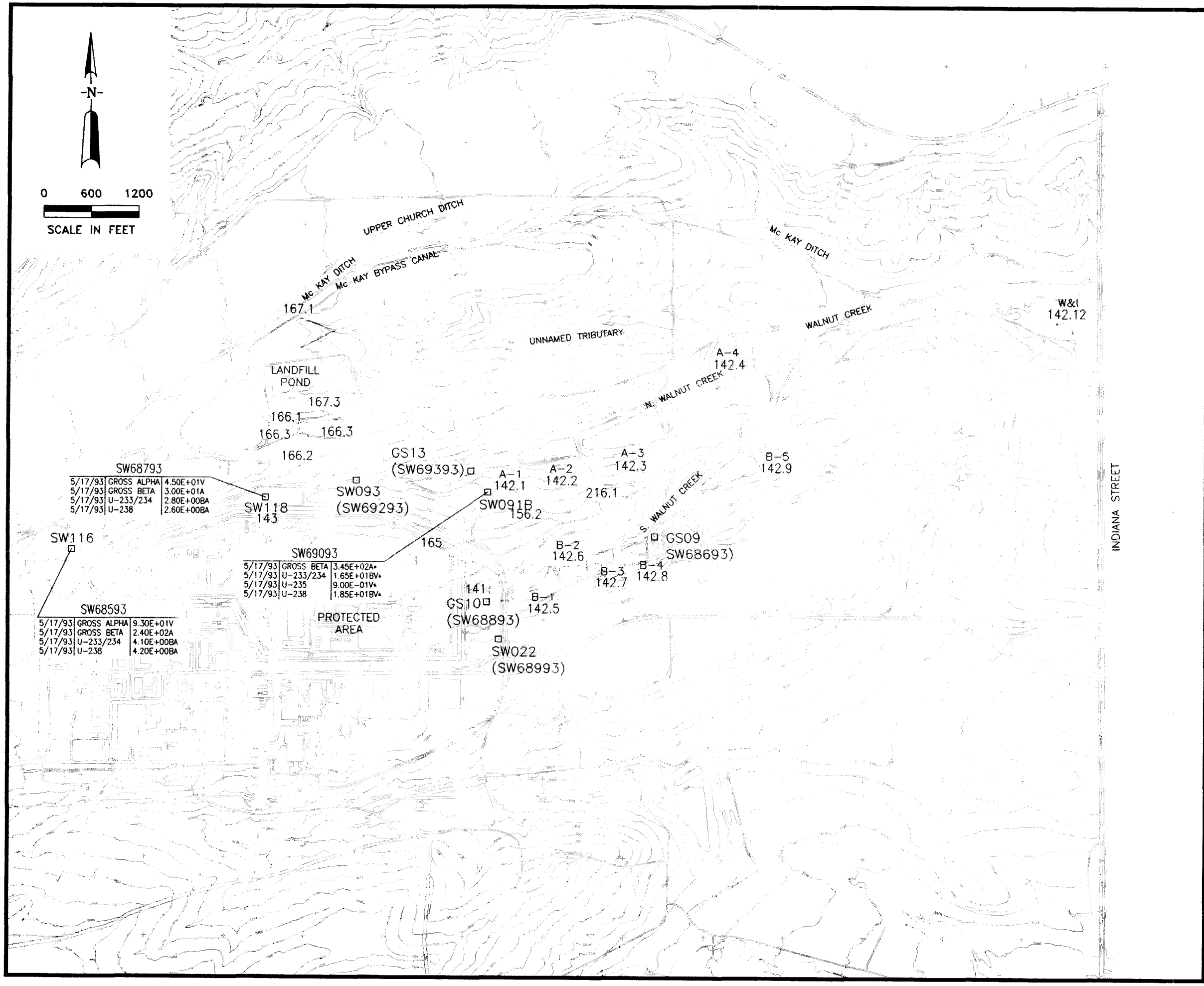
PHASE I RFI/RI REPORT

PCOC DISSOLVED METALS
OU6 DRAINAGES
SURFACE WATER
(STORM EVENT)

FIGURE 4.7-7 JUNE 1995

4/25/95 OU6RI179 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS10 (SW68593) — SURFACE WATER (STORM EVENT) SAMPLING SITE

GS10 – GAUGING STATION #10

SW118 – SURFACE WATER #118

SW68793 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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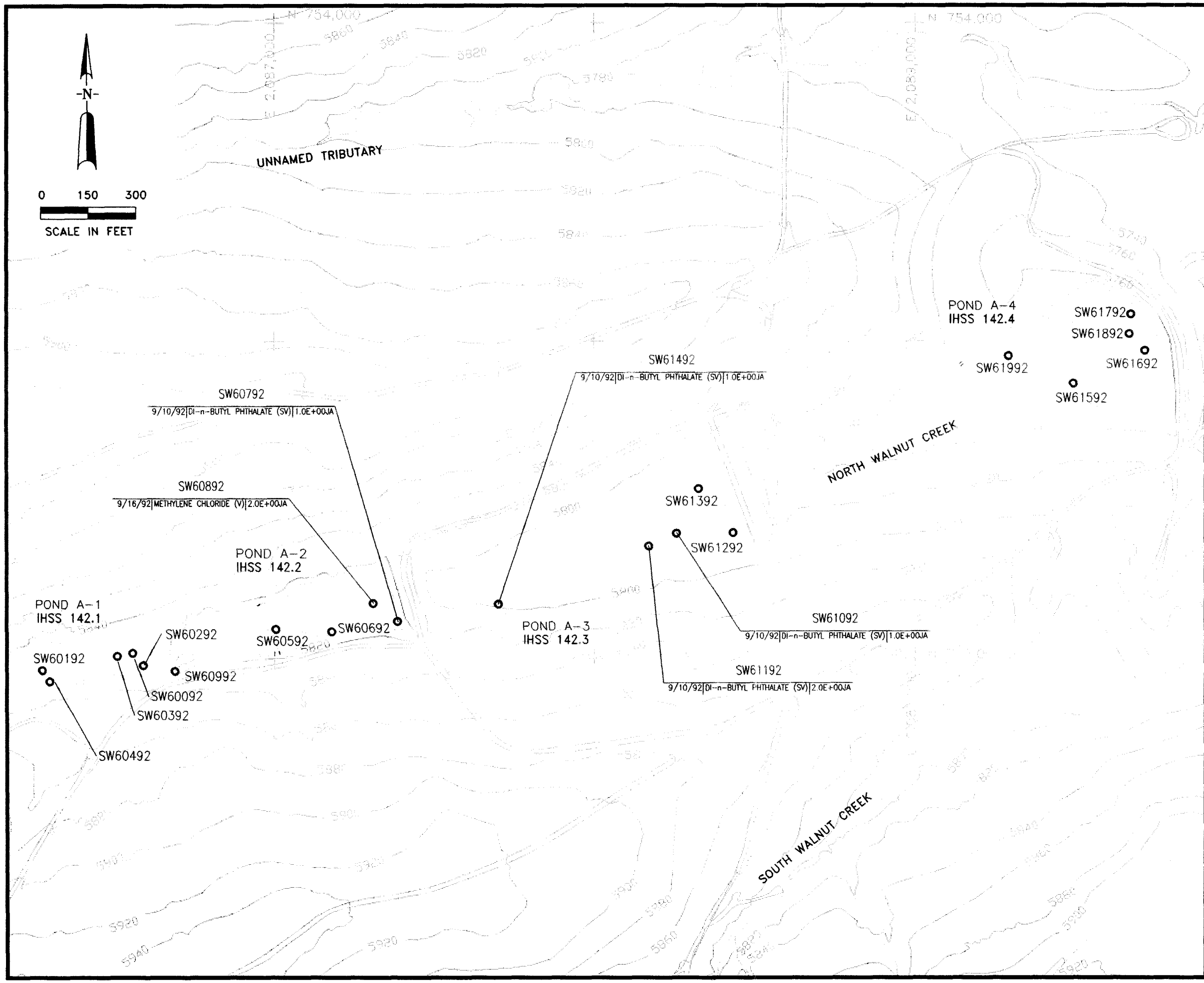
PCOC TOTAL RADIONUCLIDES
OU6 DRAINAGES
SURFACE WATER
(STORM EVENT)

FIGURE 4.7-8 JUNE 1995

1/25/95 OU6RI177 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SW60892 — SURFACE WATER SAMPLE SITE (POND WATER)

SW64892 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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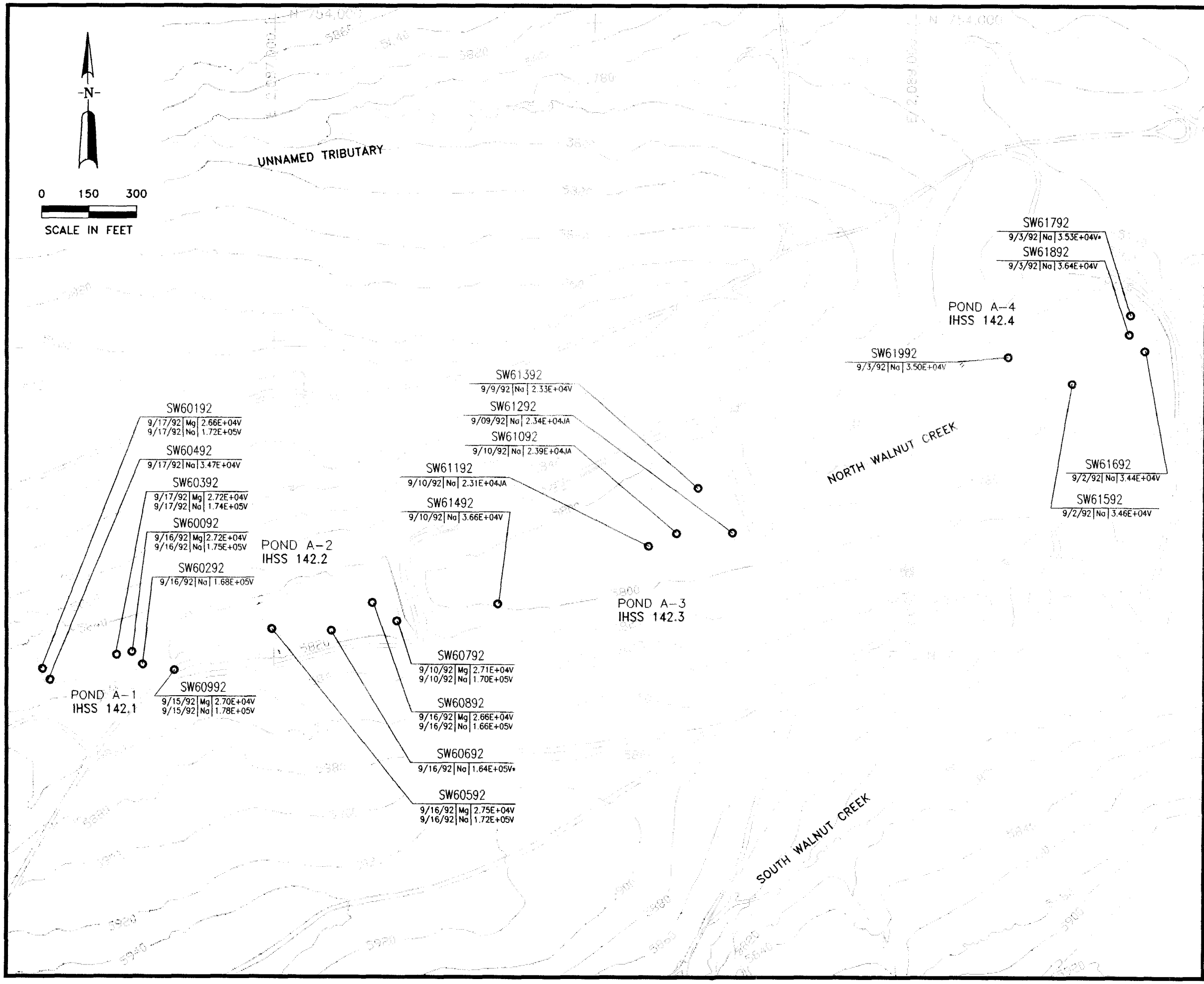
SUSPECT ORGANIC COMPOUNDS:
DI-N-BUTYL PHTHALATE AND METHYLENE CHLORIDE
(IHSSs 142.1 – 142.4)
POND SURFACE WATER

FIGURE 4.7-9 JUNE 1995

4/25/95 OU6RI128 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE

SW61792

SW61792 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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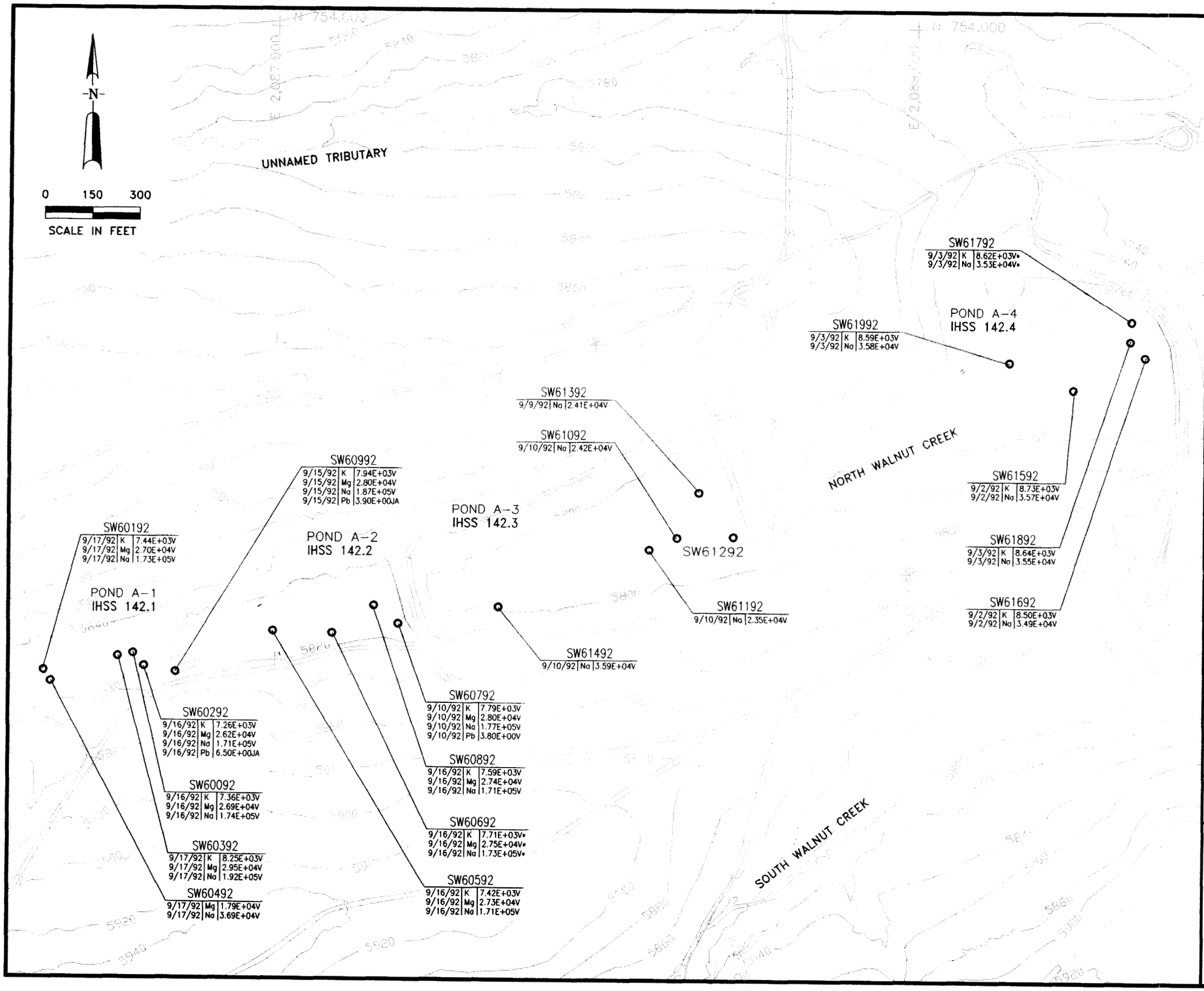
PCOC TOTAL METALS
(IHSSs 142.1 - 142.4)
POND SURFACE WATER

FIGURE 4.7-10 JUNE 1995

4/25/95 OU6RI171 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE
SW61692

SW61692 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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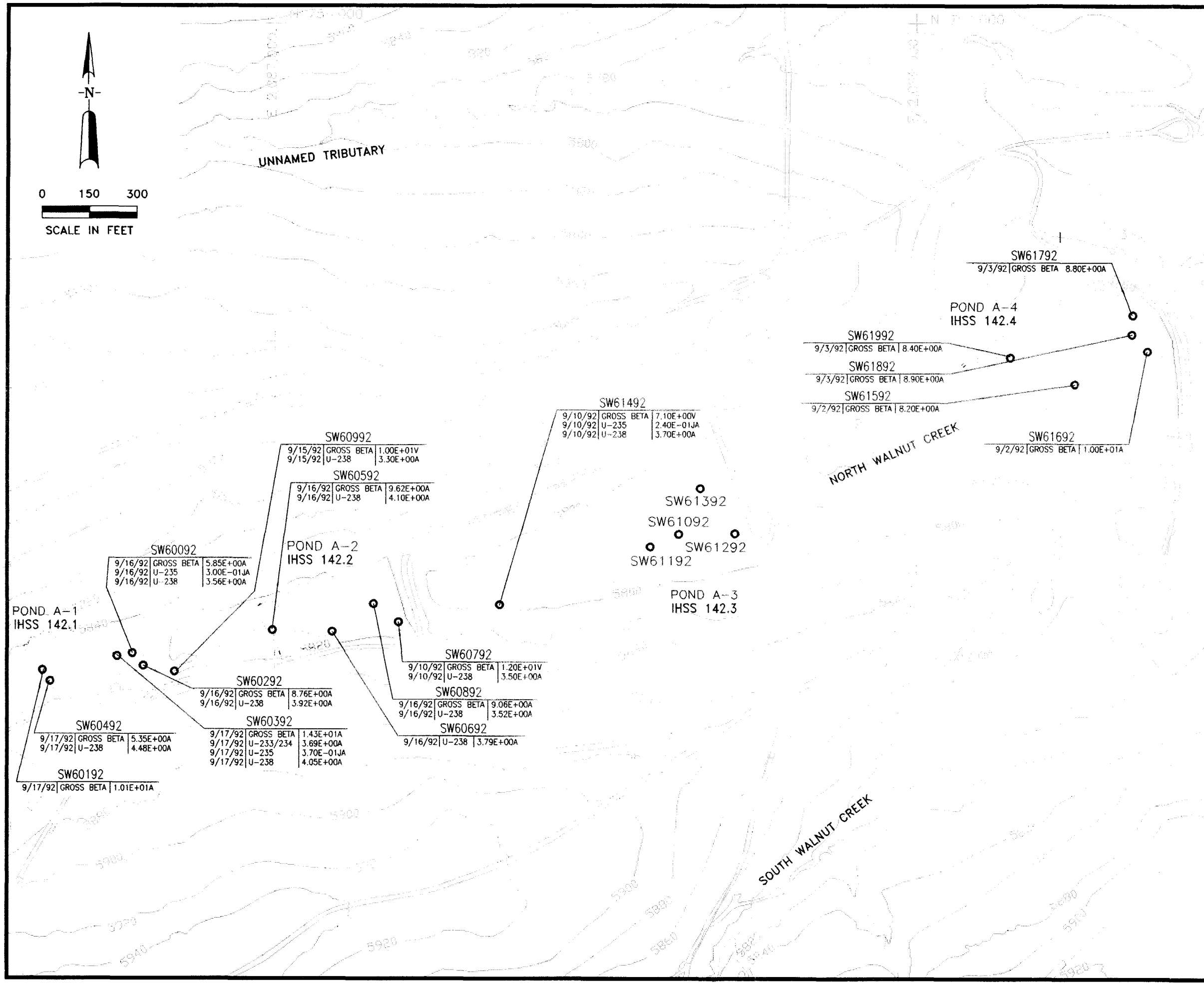
PHASE I RFI/RI REPORT

PCOC DISSOLVED METALS
(IHSSs 142.1 – 142.4)
POND SURFACE WATER

FIGURE 4.7-11 JUNE 1995

4/25/95 OU6RI158 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE

SW61892

SW78392 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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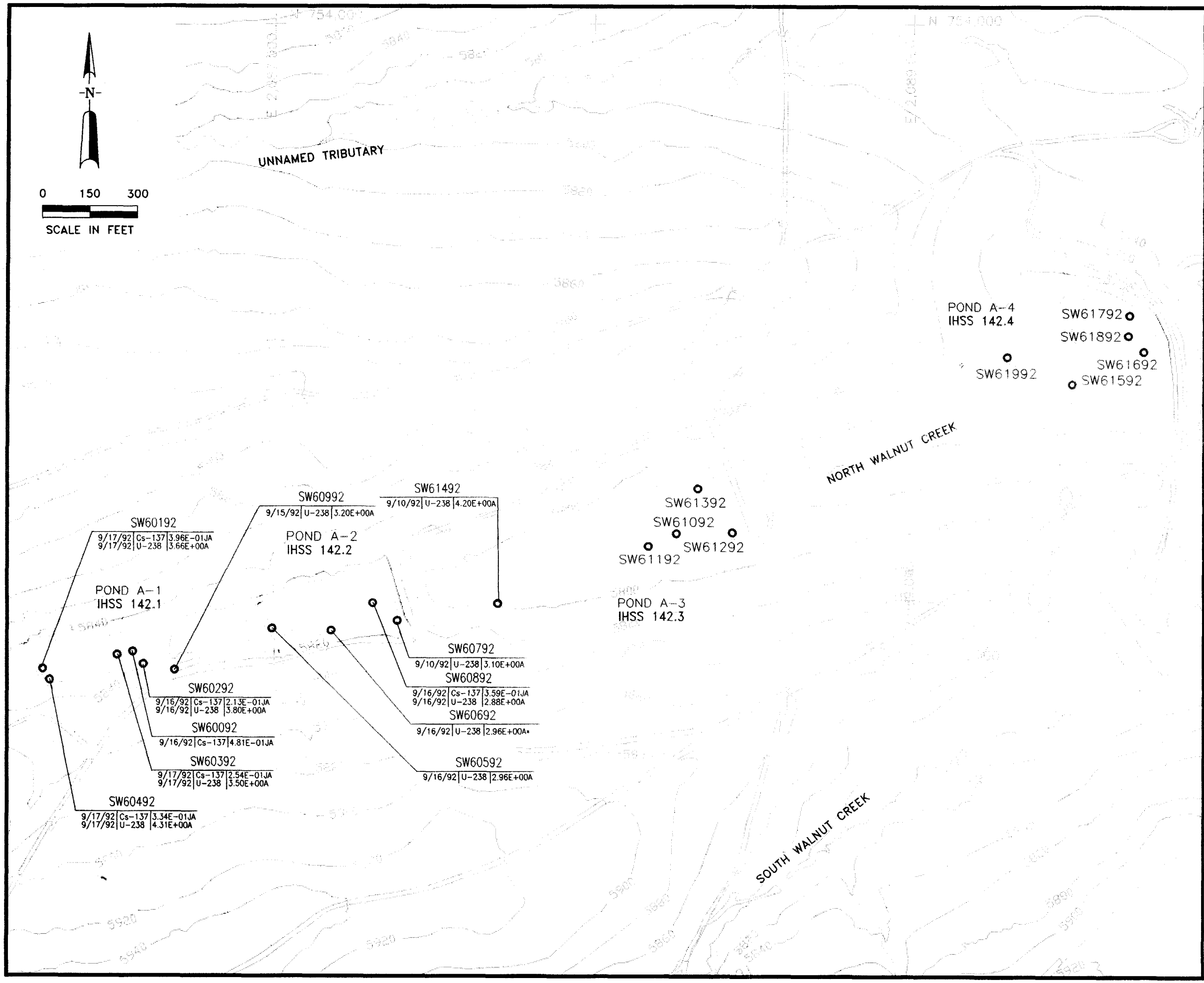
PCOC TOTAL RADIONUCLIDES
(IHSSs 142.1 – 142.4)
POND SURFACE WATER

FIGURE 4.7-12 JUNE 1995

1/25/95 OU6RI174 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE

SW60592

SW60592 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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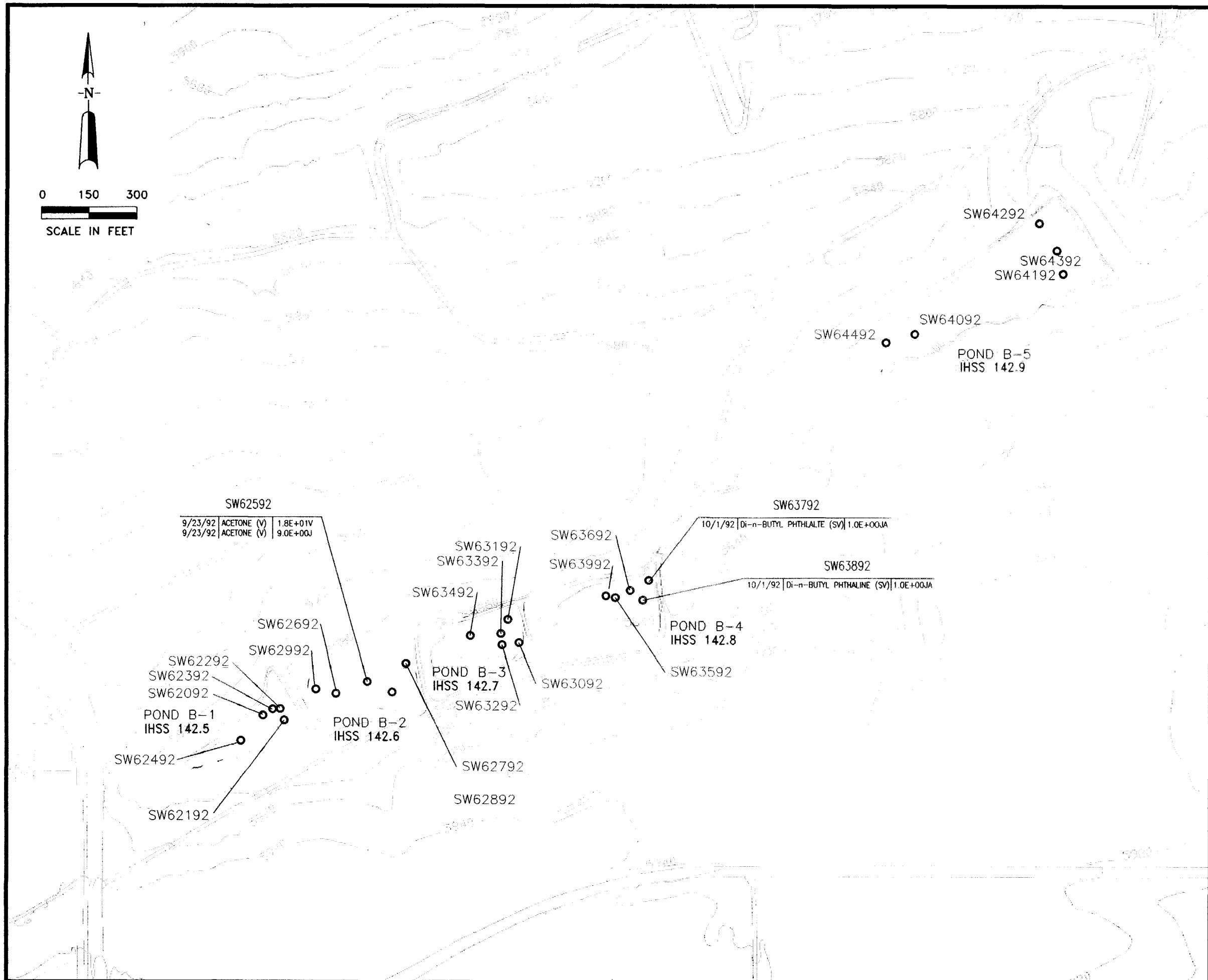
PCOC DISSOLVED RADIONUCLIDES
(IHSSs 142.1 – 142.4)
POND SURFACE WATER

FIGURE 4.7-13 JUNE 1995

0U6RI168 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SW64292 — POND SURFACE WATER SAMPLE SITE

SW64192 ← LOCATION

2/26/92		
SAMPLE DATE	ANALYTE	ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE
(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.2-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

(D) INDICATES THE SAMPLE WAS COLLECTED TO A DEPTH OF 4.5 FEET.

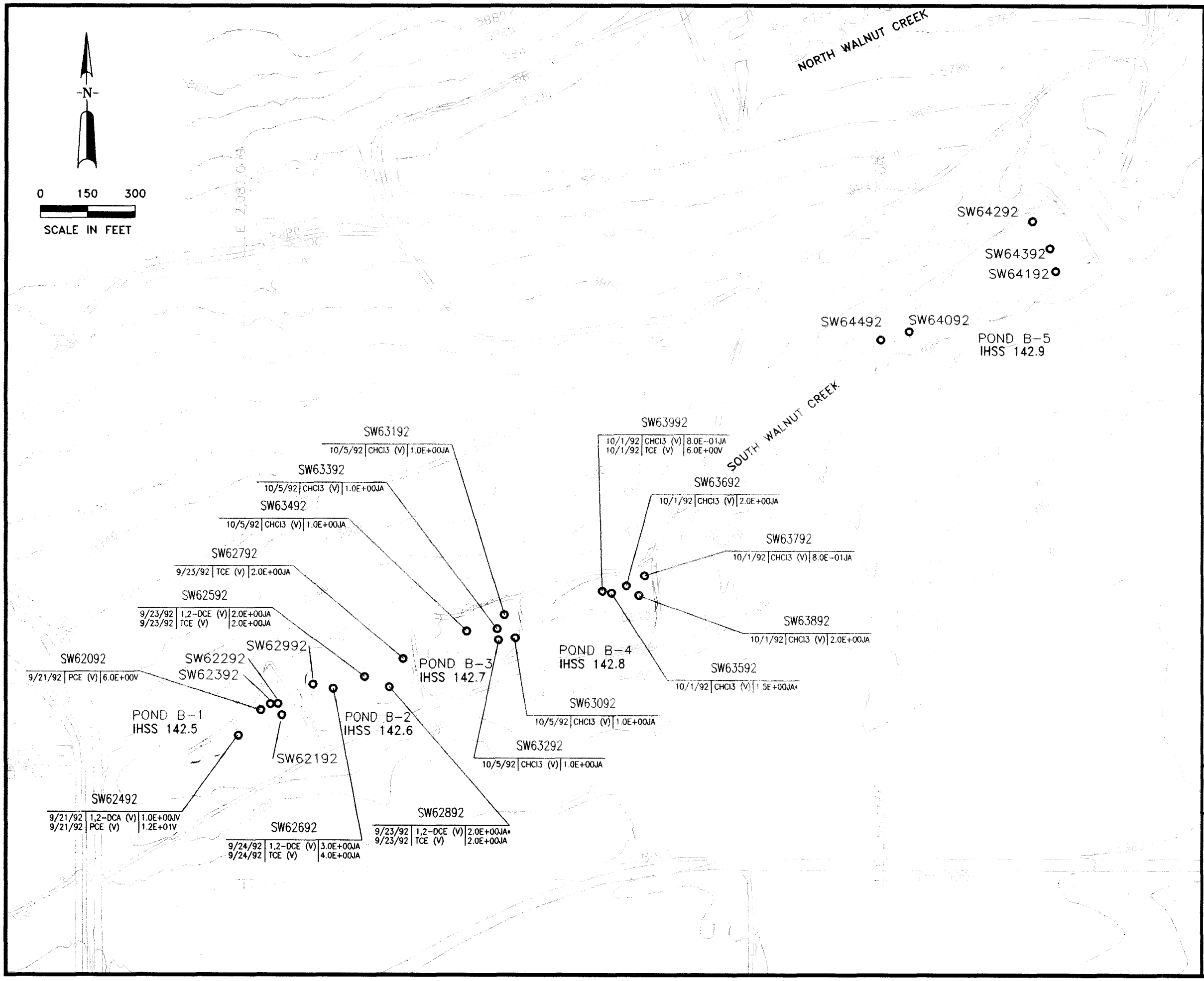
U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

SUSPECT ORGANIC COMPOUNDS:
ACETONE AND DI-N-BUTYL PHTHALATE
(IHSSs 142.5 – 142.9)
POND SURFACE WATER

FIGURE 4.7-14 JUNE 1995

5/21/95 OU6RI131 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SW64192 — POND SURFACE WATER SAMPLE SITE

SW64892 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) - VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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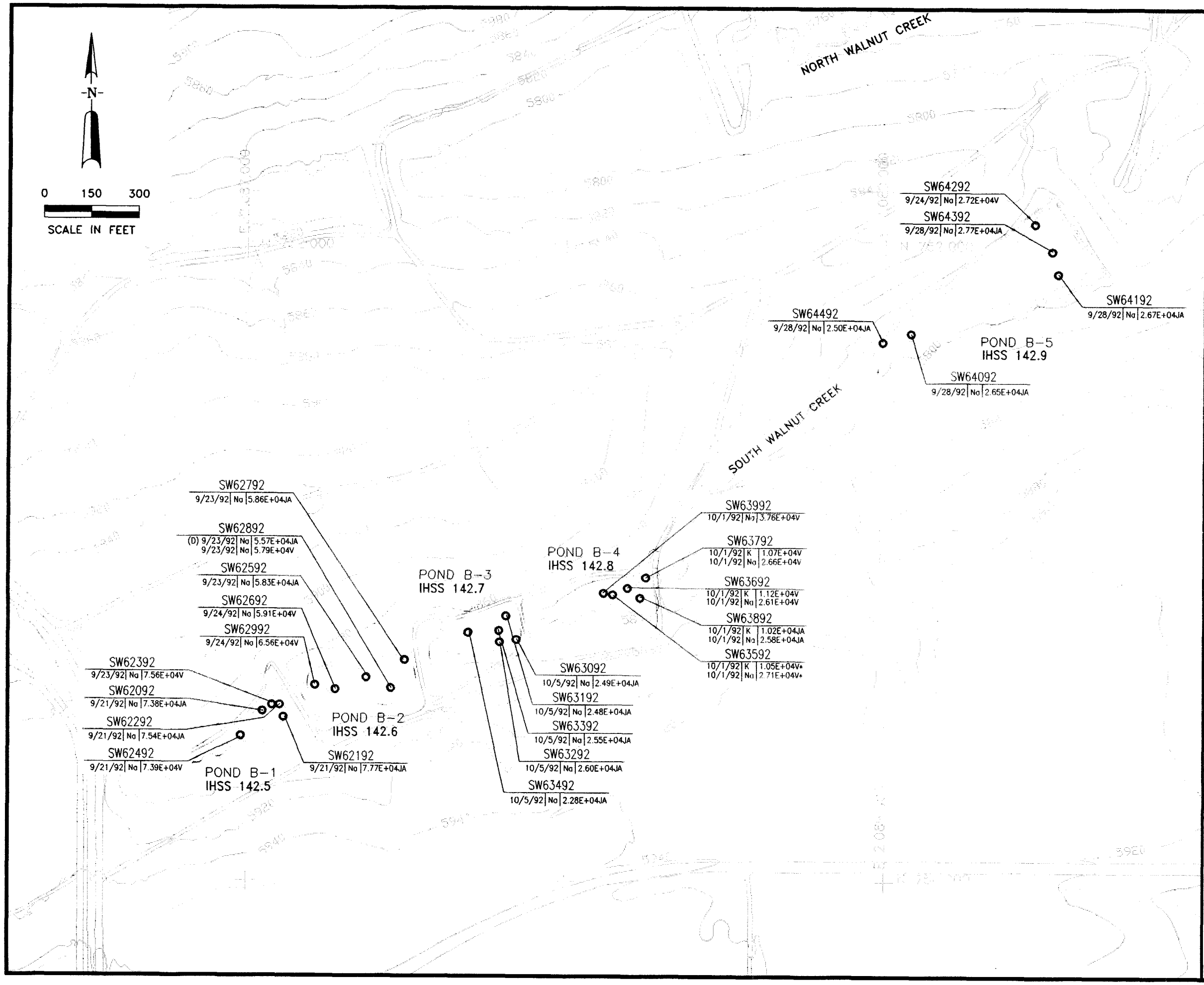
ORGANIC COMPOUNDS
(IHSSs 142.5 - 142.9)
POND SURFACE WATER

FIGURE 4.7-15 JUNE 1995

4/26/95 OU6RI132 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE
SW64392

SW64392 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 CHEMICAL DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

(D) INDICATES THE SAMPLE WAS COLLECTED TO A DEPTH OF 4.5 FEET.

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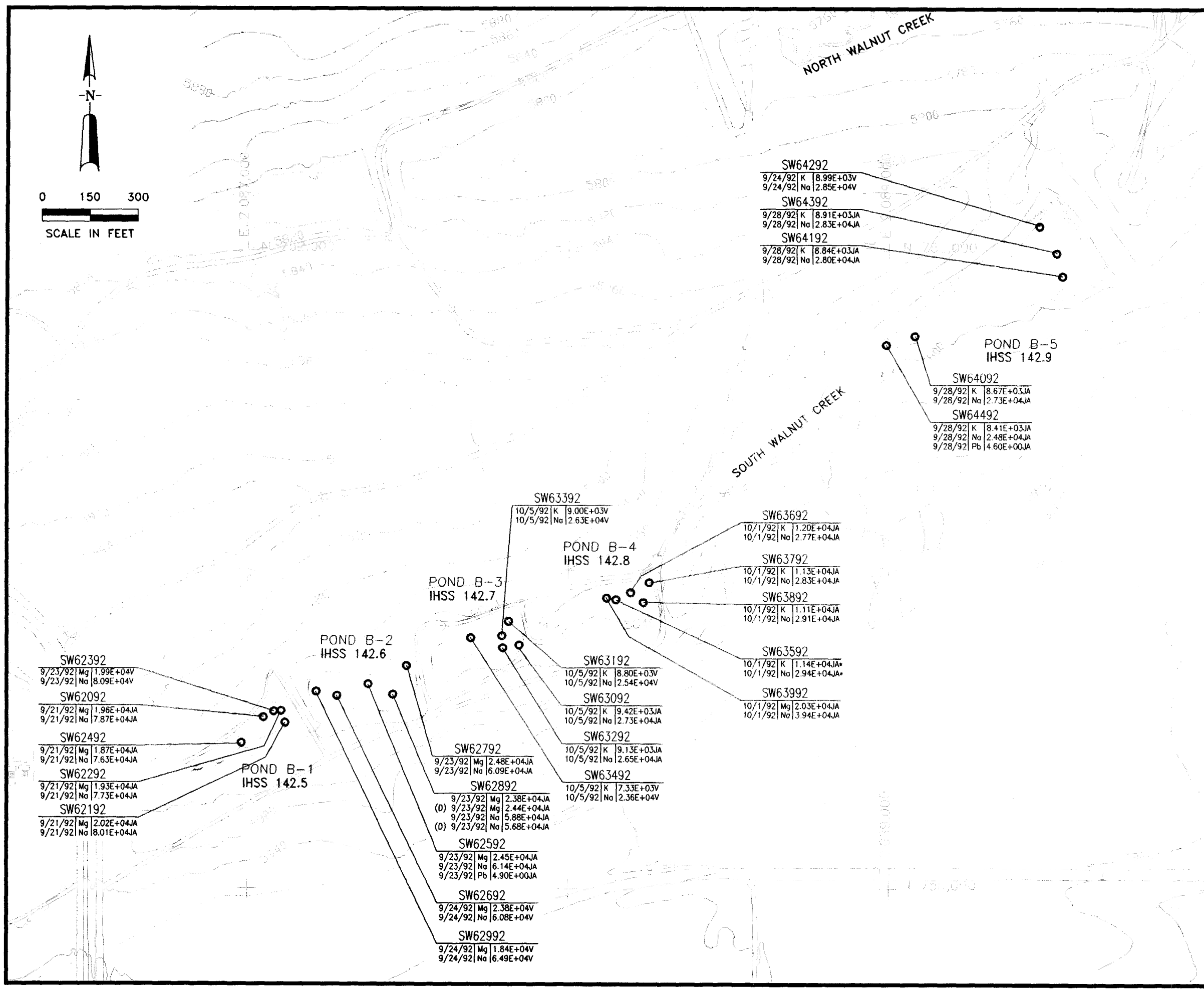
PCOC TOTAL METALS
(IHSSs 142.5 – 142.9)
POND SURFACE WATER

FIGURE 4.7-16 JUNE 1995

0U6RI172 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE

SW64492

SW64492 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

(D) INDICATES THE SAMPLE WAS COLLECTED TO A DEPTH OF 4.5 FEET.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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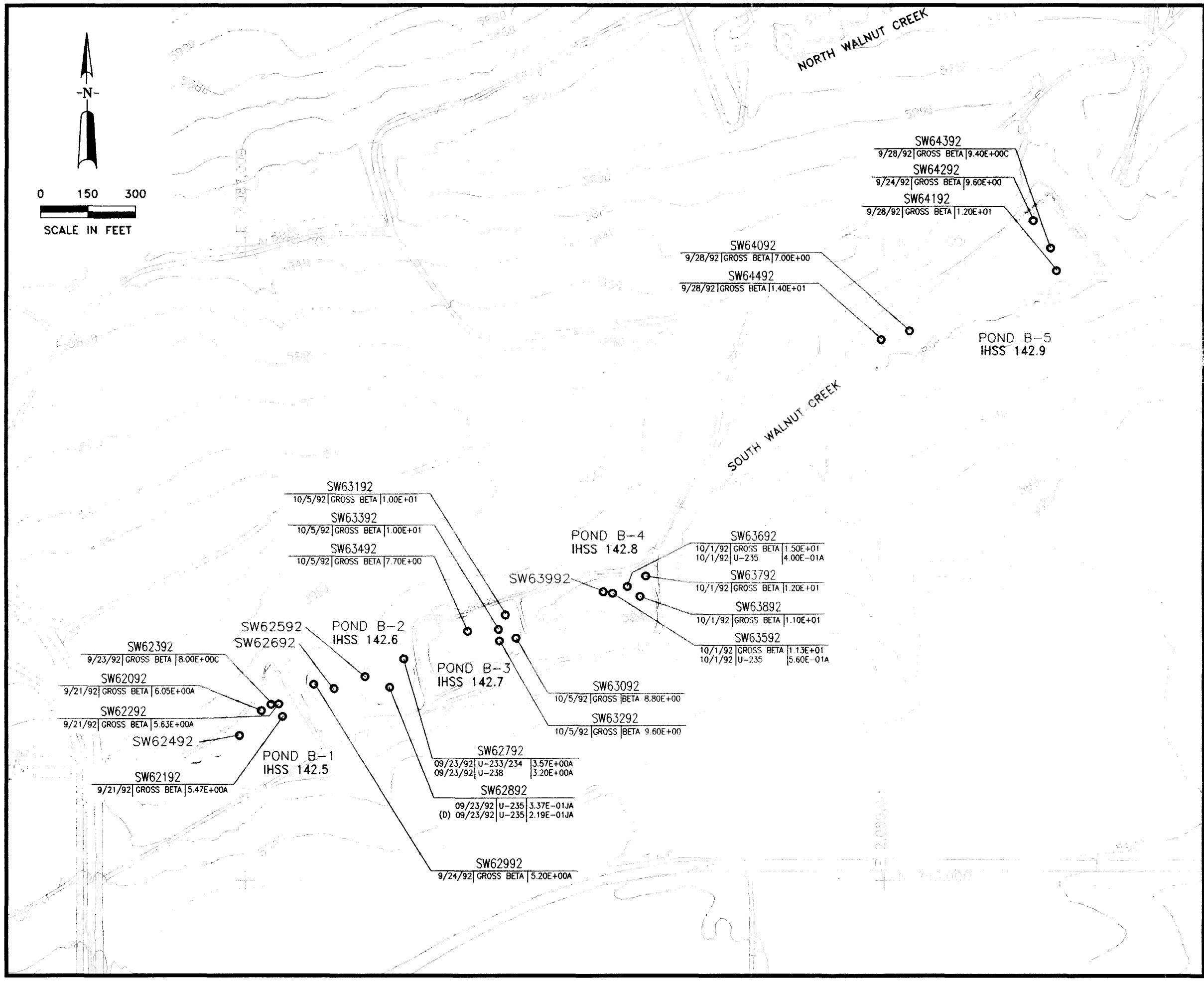
PCOC DISSOLVED METALS
(IHSSs 142.5 – 142.9)
POND SURFACE WATER

FIGURE 4.7-17 JUNE 1995

4/25/95 OU6RI159 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE

SW64392

SW64392 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

(D) INDICATES THE SAMPLE WAS COLLECTED TO A DEPTH OF 4.5 FEET.

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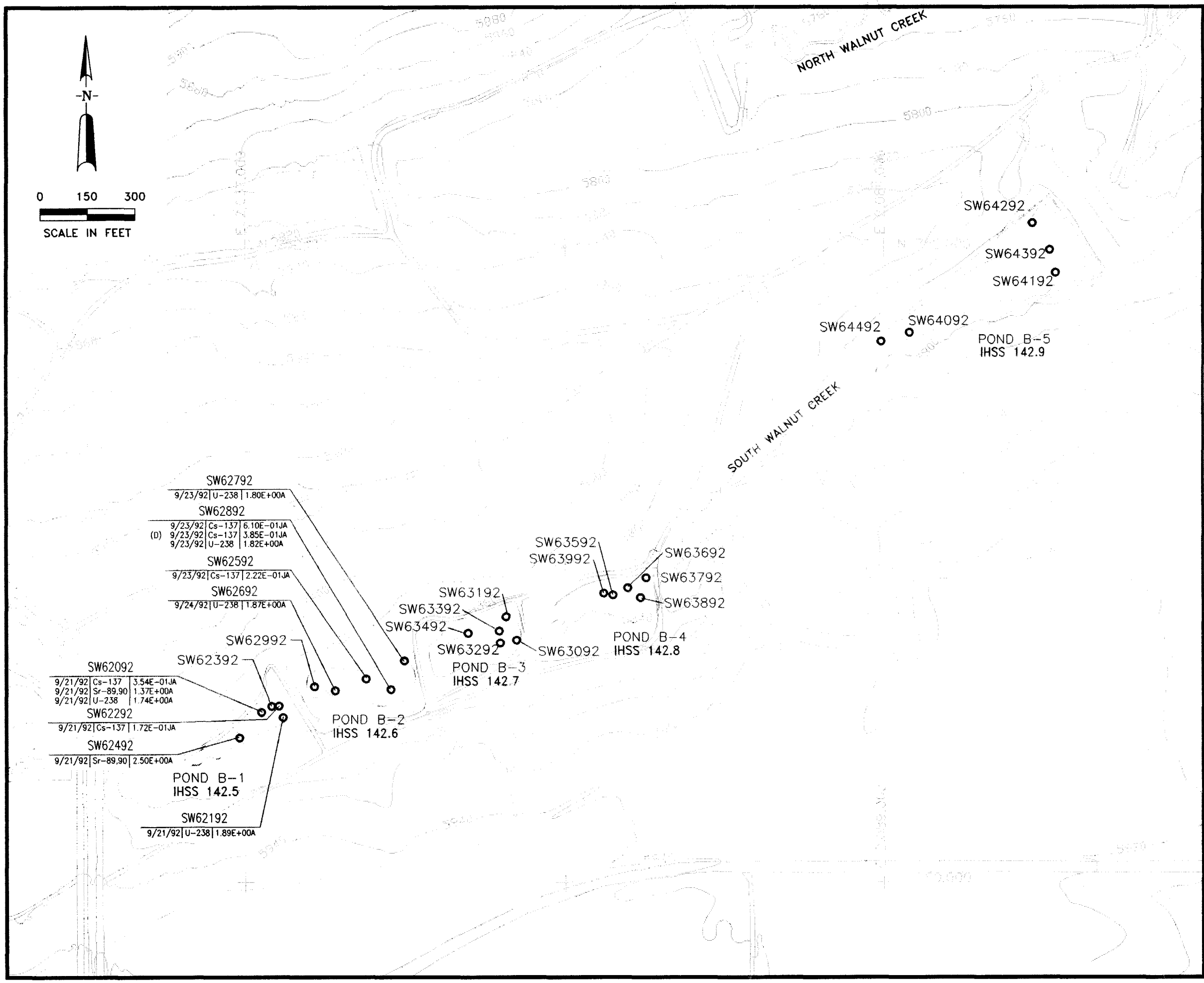
PCOC TOTAL RADIONUCLIDES
(IHSSs 142.5 – 142.9)
POND SURFACE WATER

FIGURE 4.7-18 JUNE 1995

2/26/95 OU6RI175 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE
SW64192

SW64192 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE AVTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

(D) INDICATES THE SAMPLE WAS COLLECTED TO A DEPTH OF 4.5 FEET.

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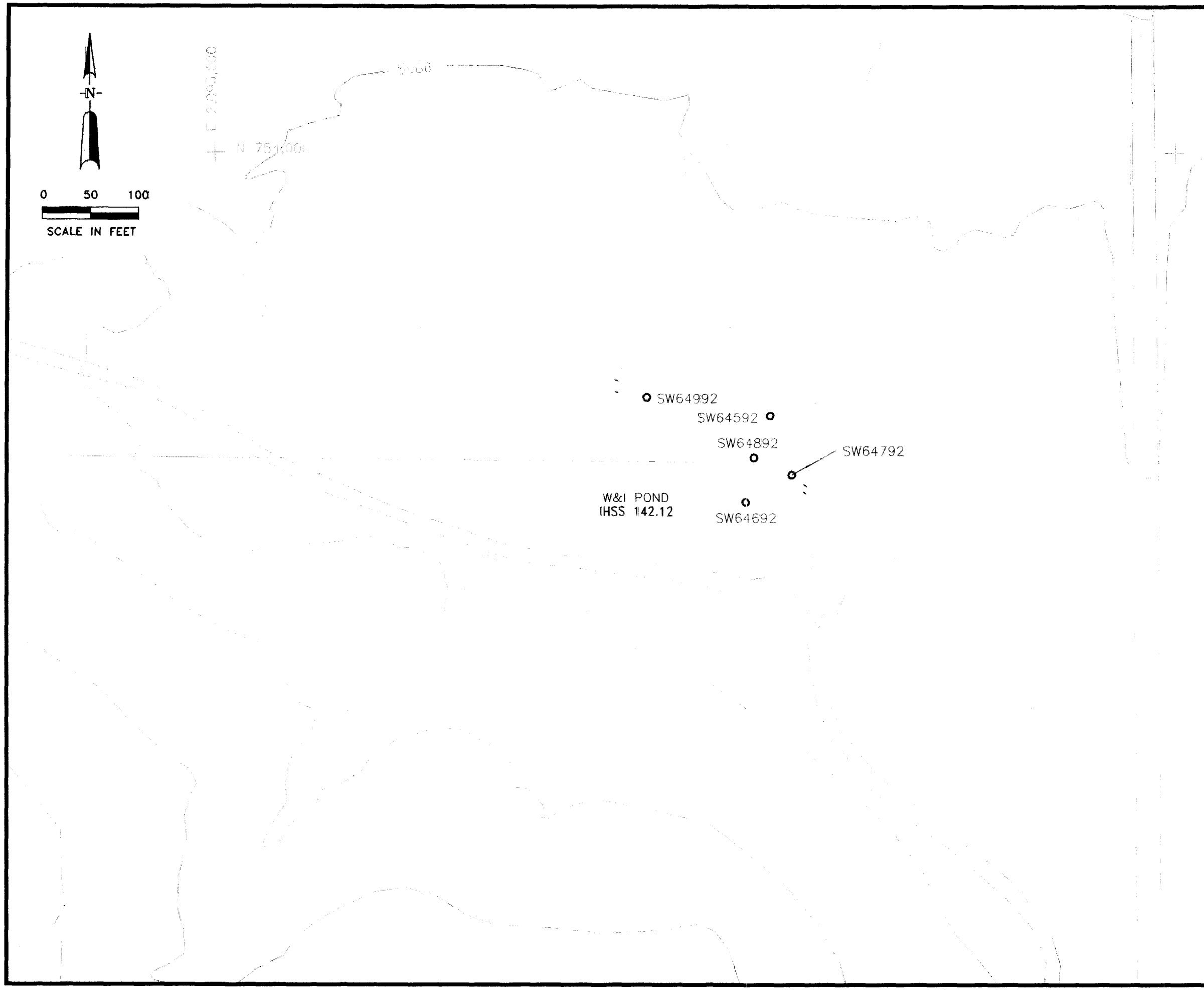
PCOC DISSOLVED RADIONUCLIDES
(IHSSs 142.5 - 142.9)
POND SURFACE WATER

FIGURE 4.7-19 JUNE 1995

5/26/95 OU6RI169 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SW64792 — SURFACE WATER SAMPLE SITE (POND WATER)

SW64792 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

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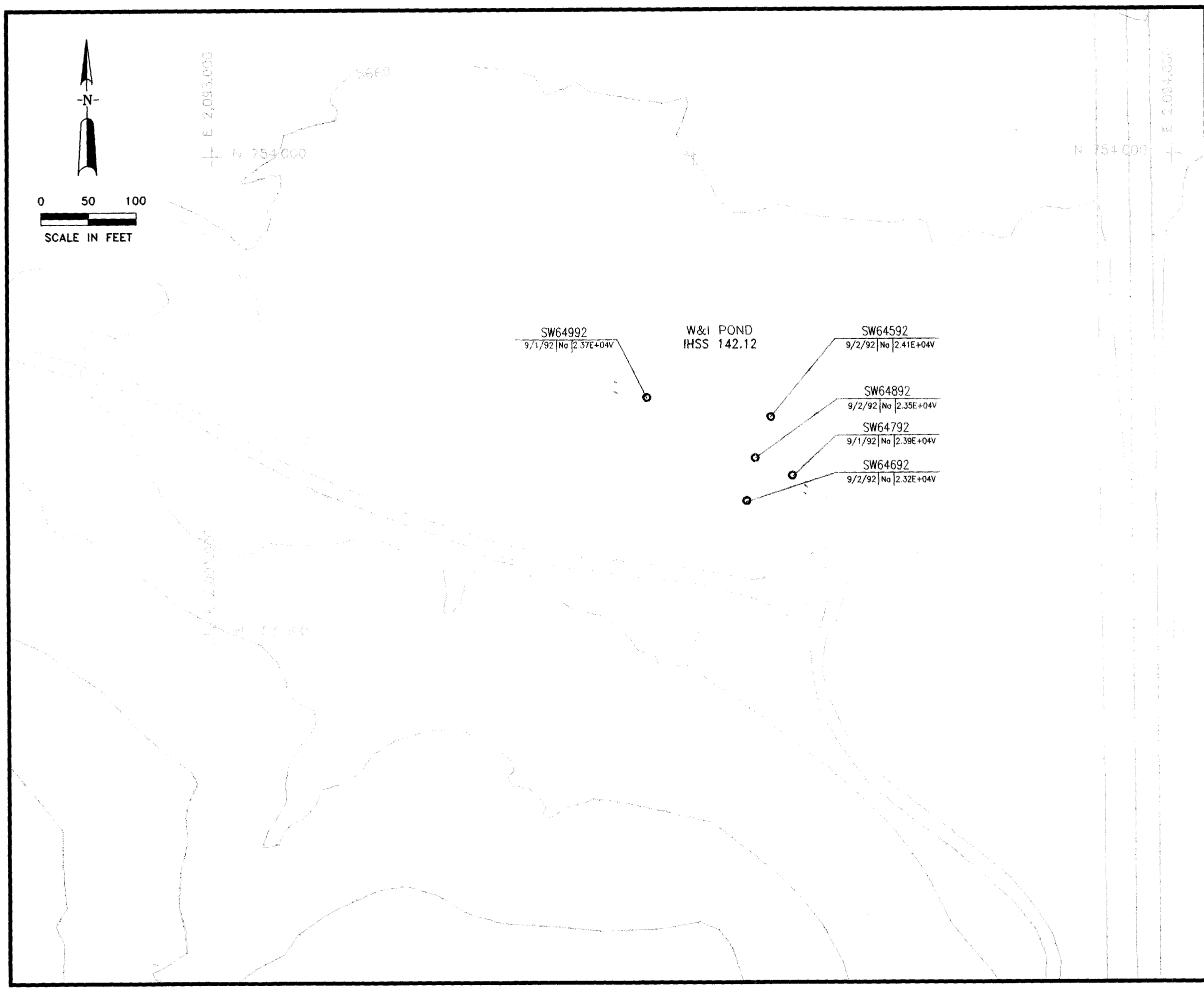
SUSPECT VOLATILE ORGANIC COMPOUND
(IHSS 142.12)
POND WATER

FIGURE 4.7-20 JUNE 1995

OU6RI125 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE

SW64792

SW64792 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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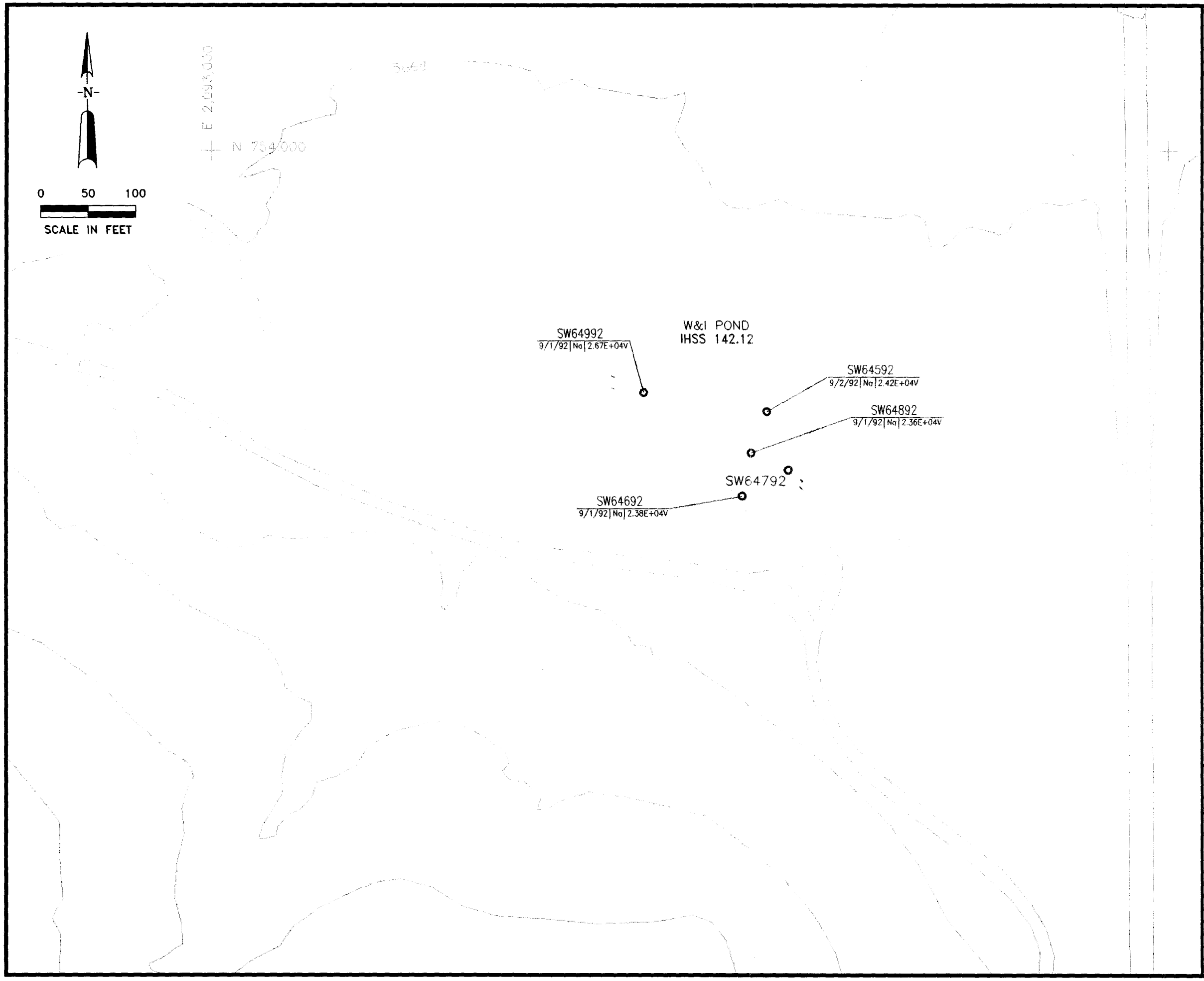
PCOC TOTAL METALS
(IHSS 142.12)
POND SURFACE WATER

FIGURE 4.7-21 JUNE 1995

4/26/95 OU6RI173 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE

SW64792

SW64592 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/l (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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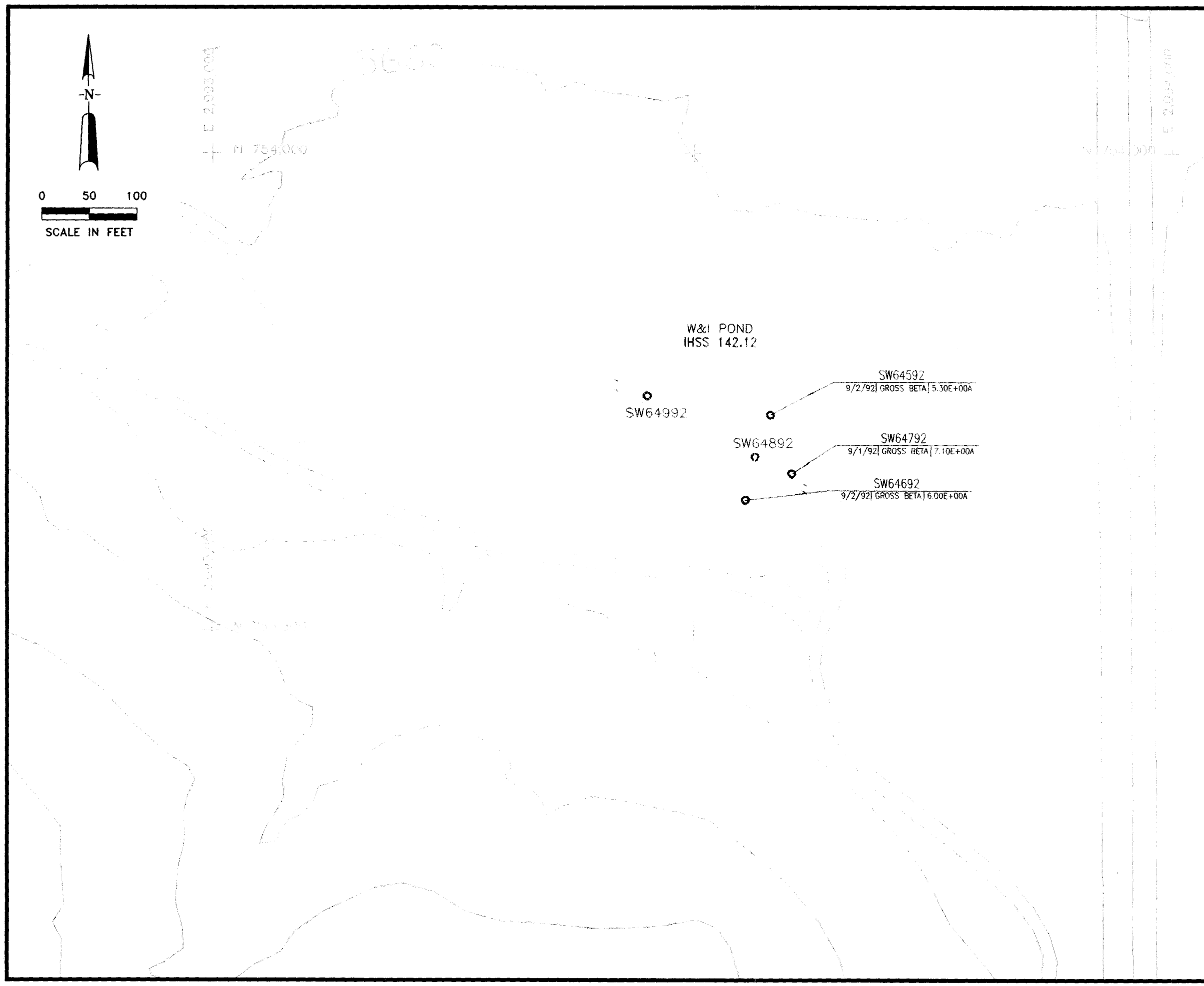
PCOC DISSOLVED METALS
(IHSS 142.12)
POND SURFACE WATER

FIGURE 4.7-22 JUNE 1995

4/26/95 OU6RI160 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

POND SURFACE WATER SAMPLE SITE

SW64792

SW64792 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/l), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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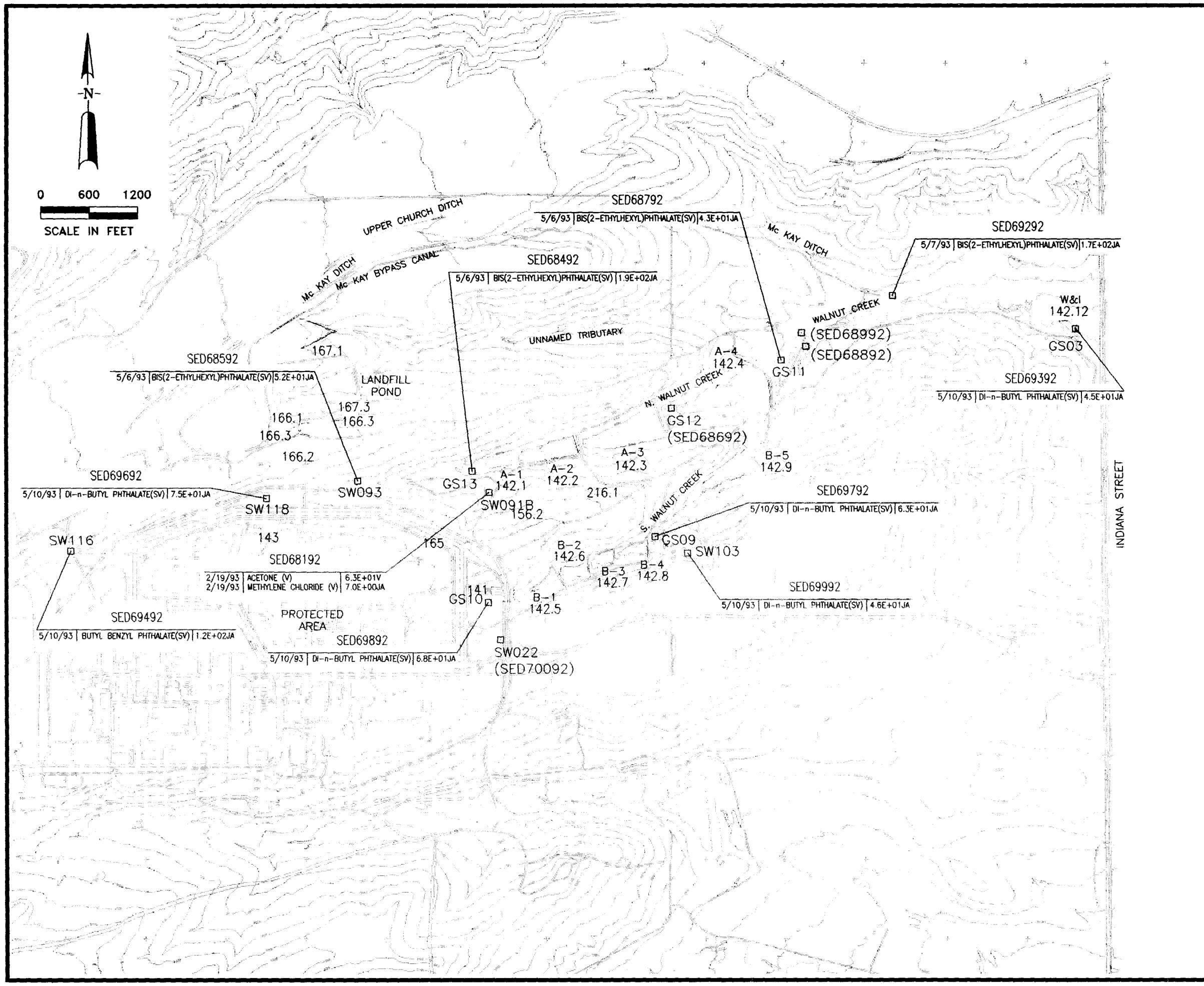
PCOC TOTAL RADIONUCLIDES
(IHSS 142.12)
POND SURFACE WATER

FIGURE 4.7-23 JUNE 1995

4/26/95 OU6RI176 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS03 — STREAM SEDIMENT SAMPLING SITE (SED68492)

GS10 — GS10 – GAUGING STATION #10

SW118 — SURFACE WATER #118

SED69392 ← LOCATION

2/26/92		
SAMPLE DATE	ANALYTE	ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE
(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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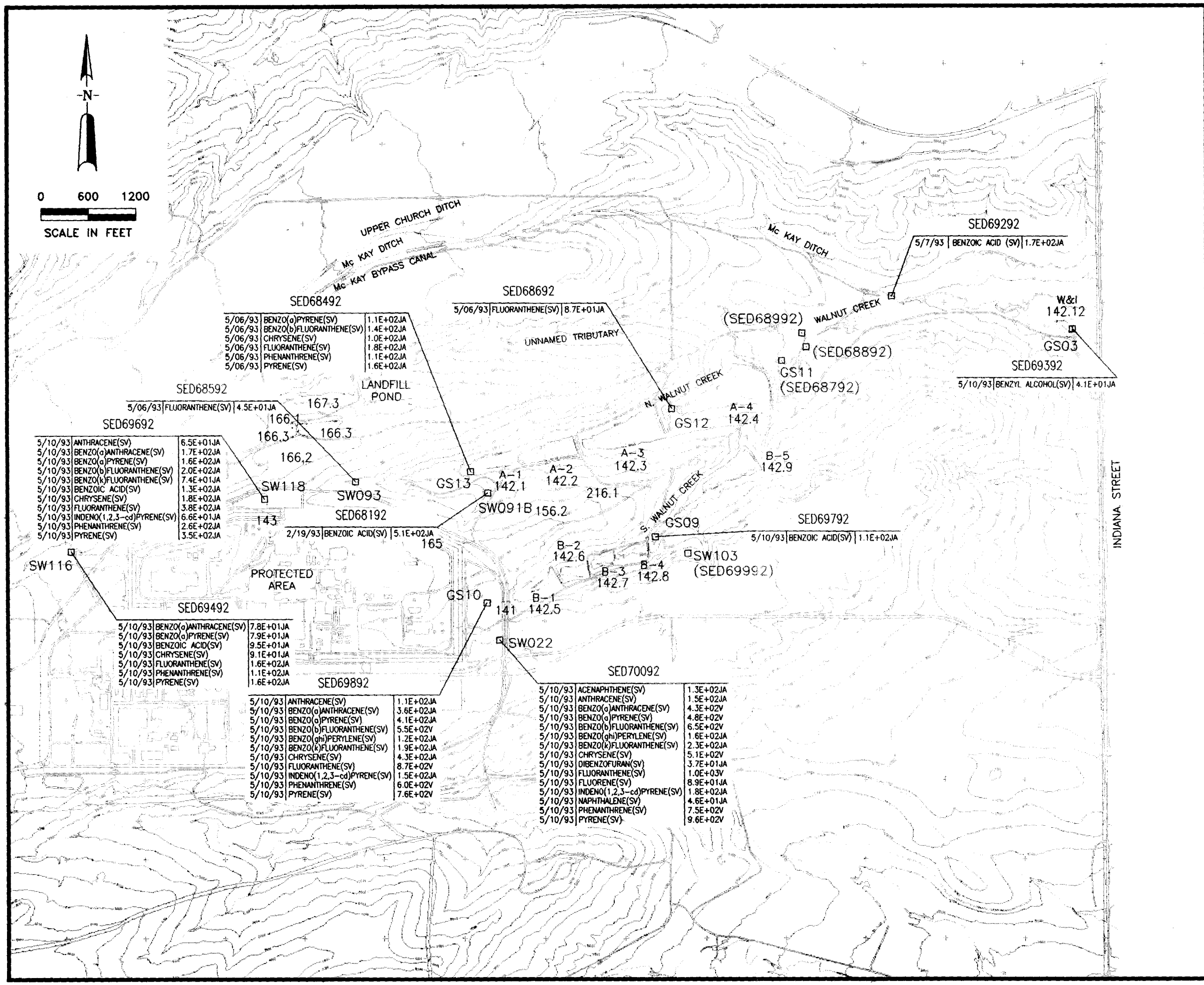
OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

SUSPECT ORGANIC COMPOUNDS:
ACETONE, BIS(2-ETHYLHEXYL)PHTHALATE, BUTYL BENZYL PHTHALATE, DI-N-BUTYL PHTHALATE, AND METHYLENE CHLORIDE
OU6 DRAINAGES
STREAM SEDIMENTS

FIGURE 4.8-1 JUNE 1995

4/18/95 OU6RI121 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS03 — STREAM SEDIMENT SAMPLING SITE (SED68492)

GS10 — GS10 – GAUGING STATION #10

SW118 — SURFACE WATER #118

SED69392 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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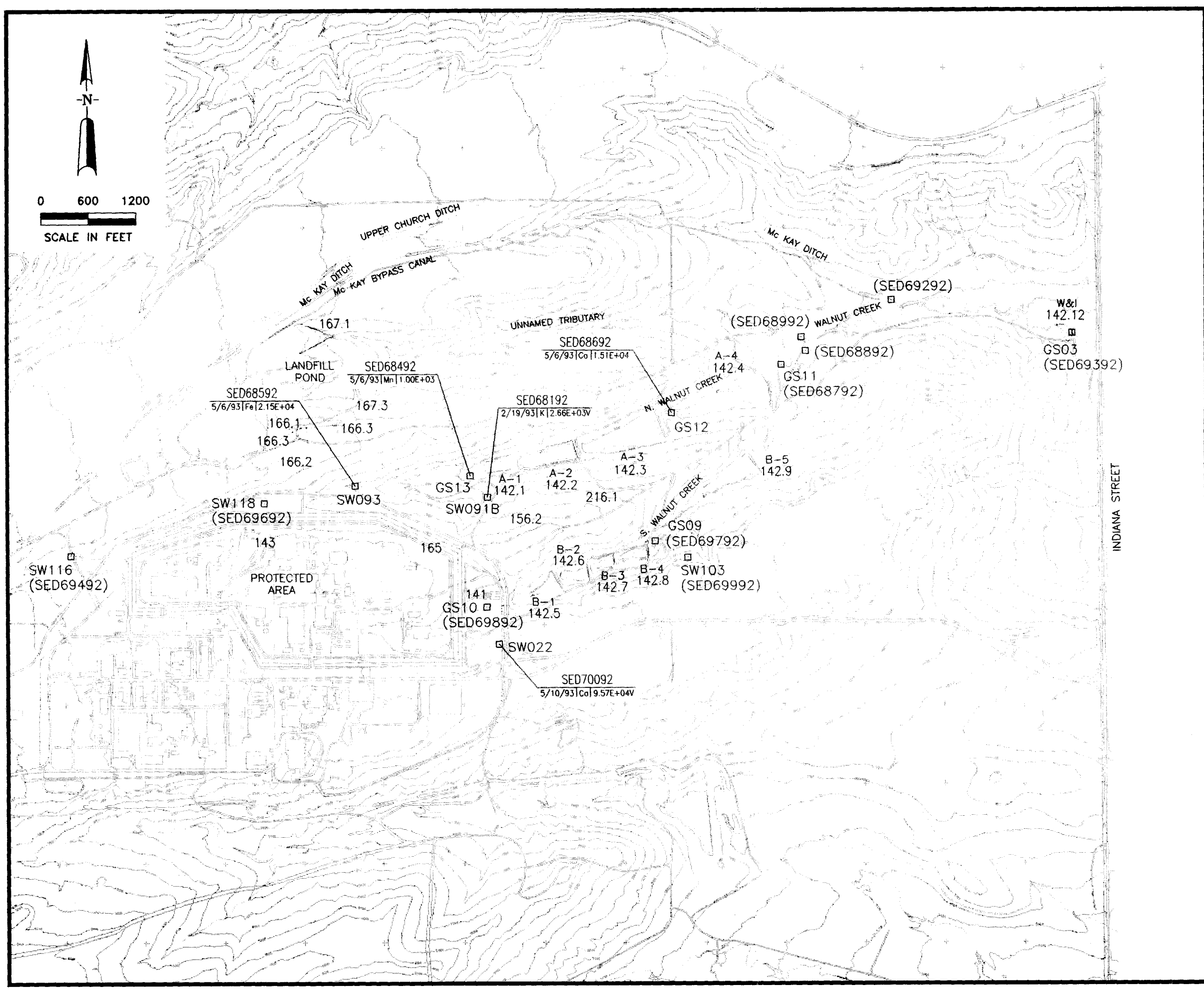
ORGANIC COMPOUNDS
OU6 DRAINAGES
STREAM SEDIMENTS

FIGURE 4.8-2 JUNE 1995

4/18/95 OU6RI122 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS03 — STREAM SEDIMENT SAMPLING SITE (SED68492)

GS10 — GS10 – GAUGING STATION #10

SW118 — SURFACE WATER #118

SED69392 ← LOCATION

2/26/92		
SAMPLE DATE	ANALYTE	ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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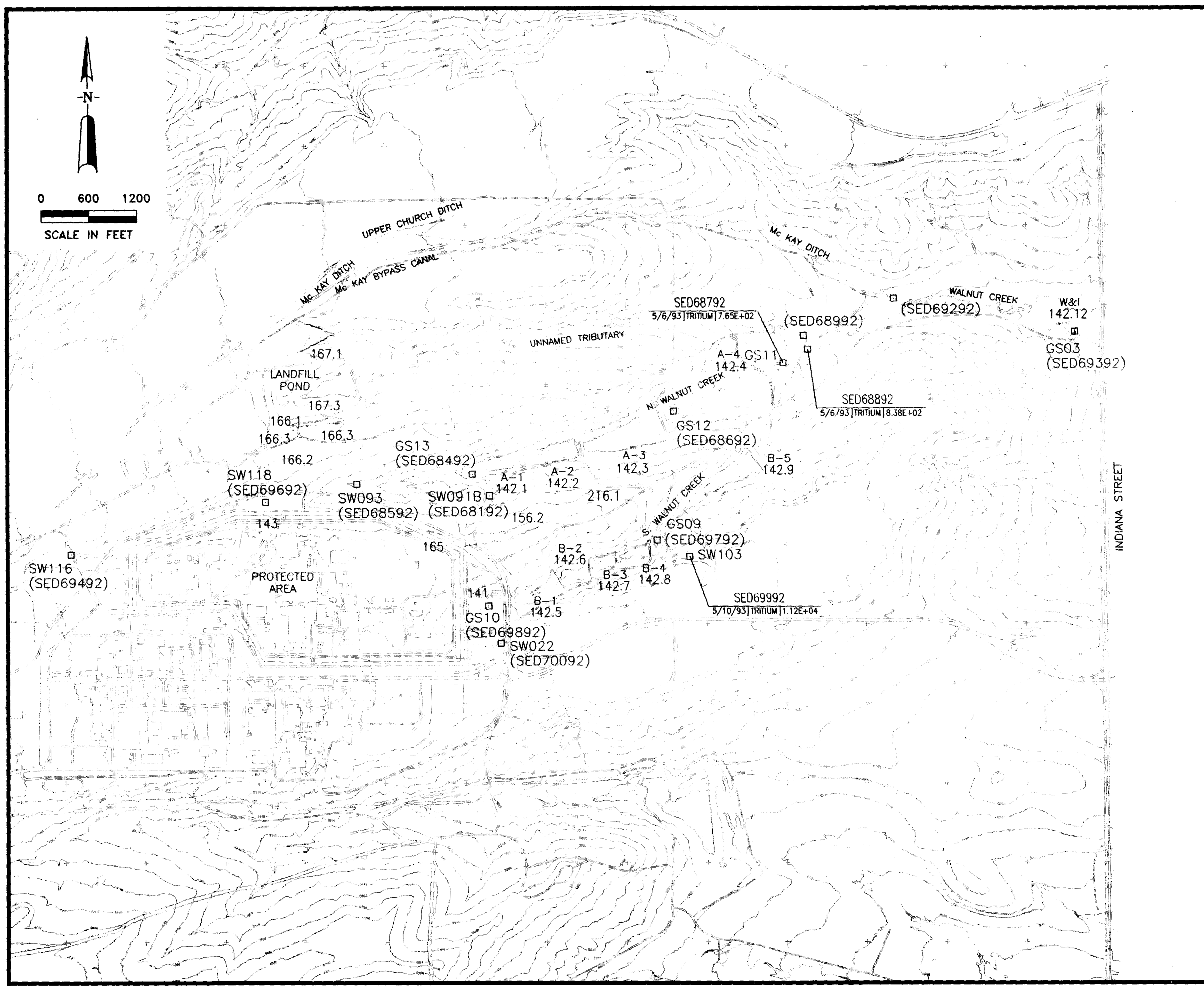
PCOC METALS
OU6 DRAINAGES
STREAM SEDIMENTS

FIGURE 4.8-3 JUNE 1995

4/18/95 OU6RI162 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

GS03 — STREAM SEDIMENT SAMPLING SITE (SED68492)

GS10 — GS10 – GAUGING STATION #10

SW118 — SURFACE WATER #118

SED69992 ← LOCATION

2/26/92		
SAMPLE DATE	ANALYTE	ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. TRITIUM IS REPORTED IN pCi/l. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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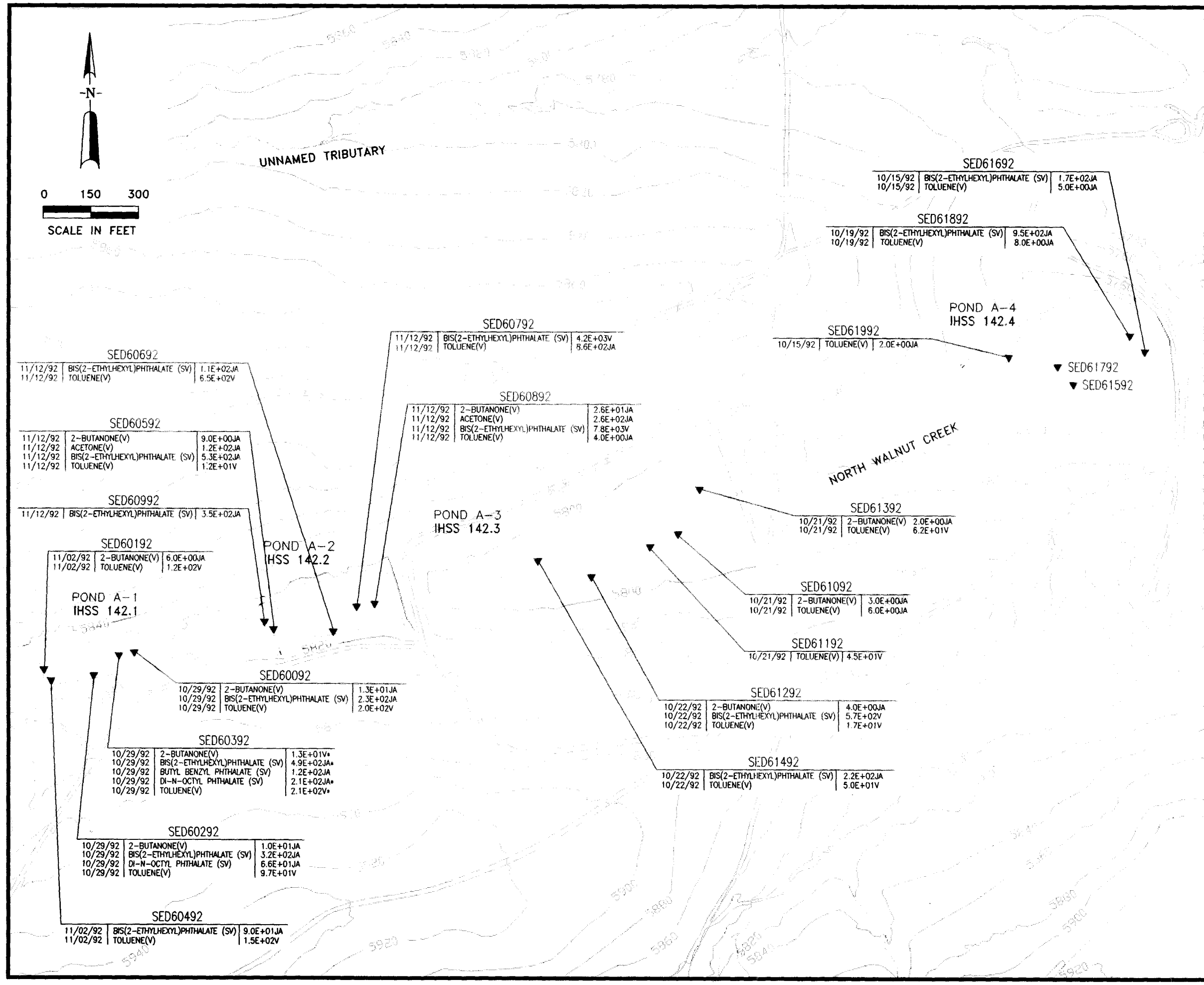
OPERABLE UNIT NO. 6
PHASE I RFI/RI REPORT

PCOC RADIONUCLIDES
OU6 DRAINAGES
STREAM SEDIMENTS

FIGURE 4.8-4 JUNE 1995

4/18/95 OU6RI161 1=1200



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE
SED61592

SED64892 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) - VOLATILE
(SV) - SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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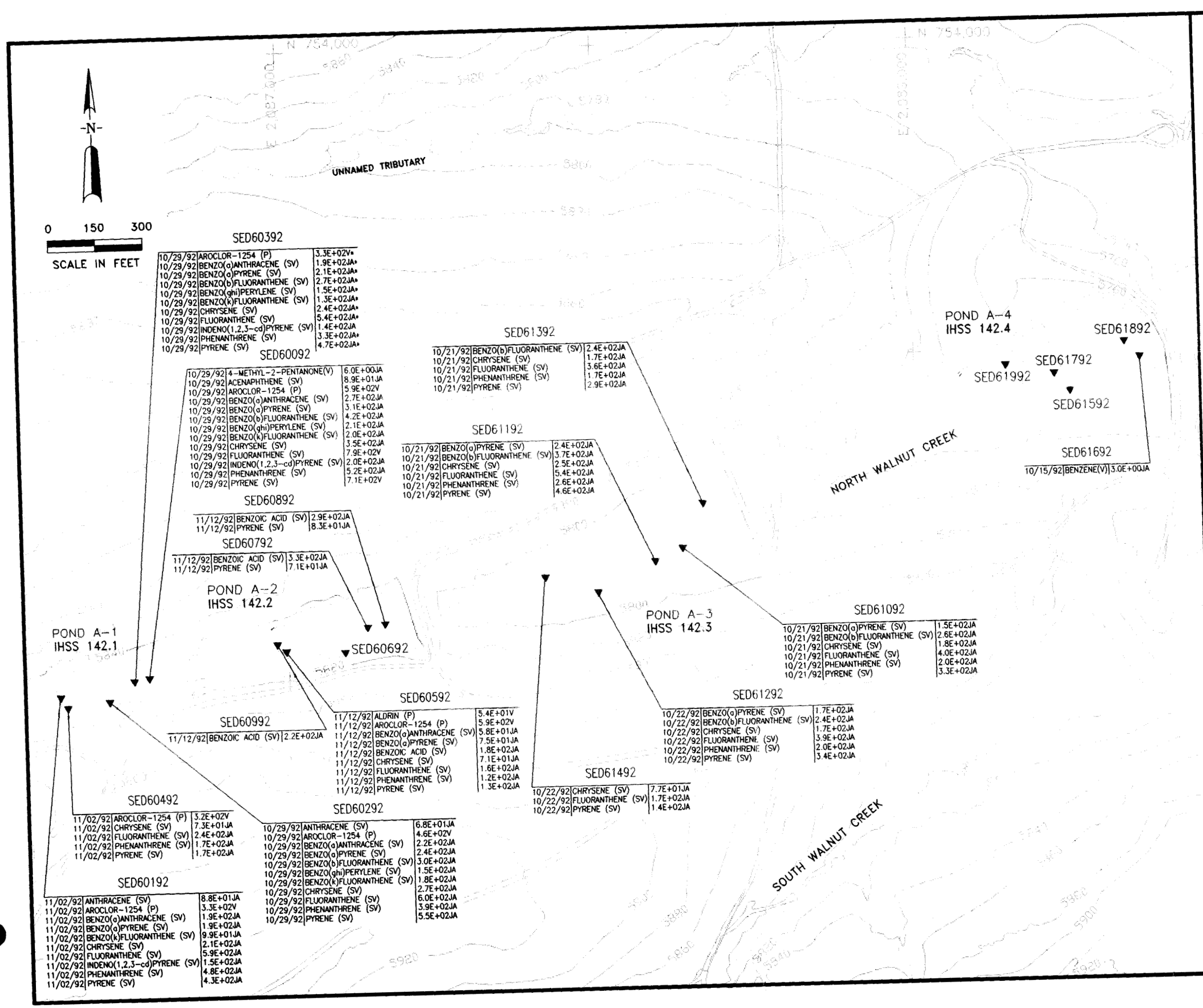
SUSPECT ORGANIC COMPOUNDS:
2-BUTANONE, ACETONE,
BIS(2-ETHYLHEXYL)PHTHALATE,
BUTYL BENZYL PHTHALATE,
DI-N-OCTYL PHTHALATE, AND TOLUENE
(IHSSs 142.1 - 142.4)
POND SEDIMENTS

FIGURE 4.8-5 JUNE 1995

6/13/95 OU6RI127 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED61892 — POND SEDIMENT SAMPLE SITE

SED61692 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE
(SV) – SEMIVOLATILE
(P) – PESTICIDE/PCB

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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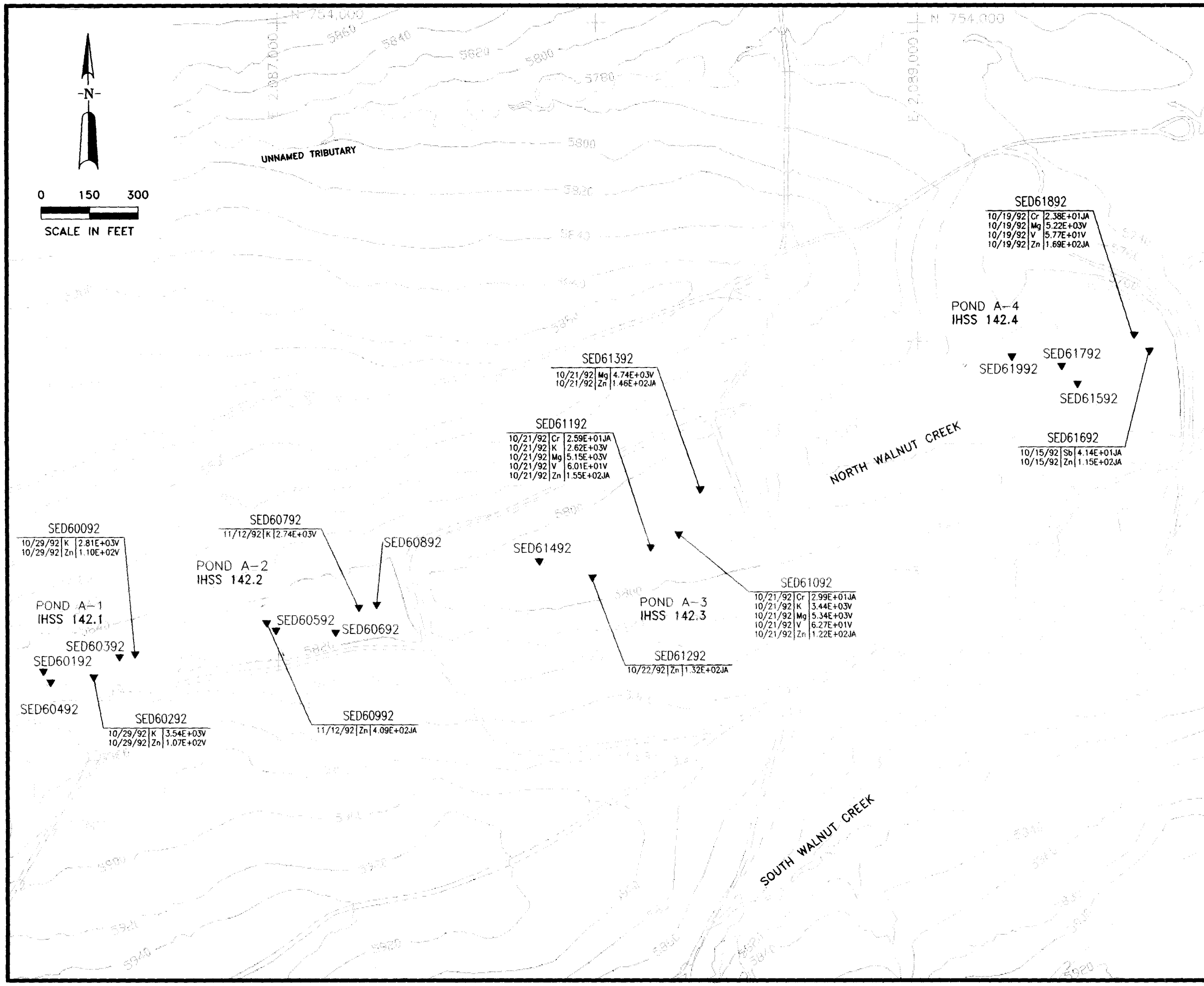
VOLATILE AND SEMIVOLATILE ORGANIC COMPOUNDS AND PESTICIDES/PCBs (IHSSs 142.1 – 142.4) POND SEDIMENTS

FIGURE 4.8-6 JUNE 1995

4/25/95 OU6RI126 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED61792 — POND SEDIMENT SAMPLE SITE

SED61692 ← LOCATION

2/26/92		
SAMPLE DATE	ANALYTE	ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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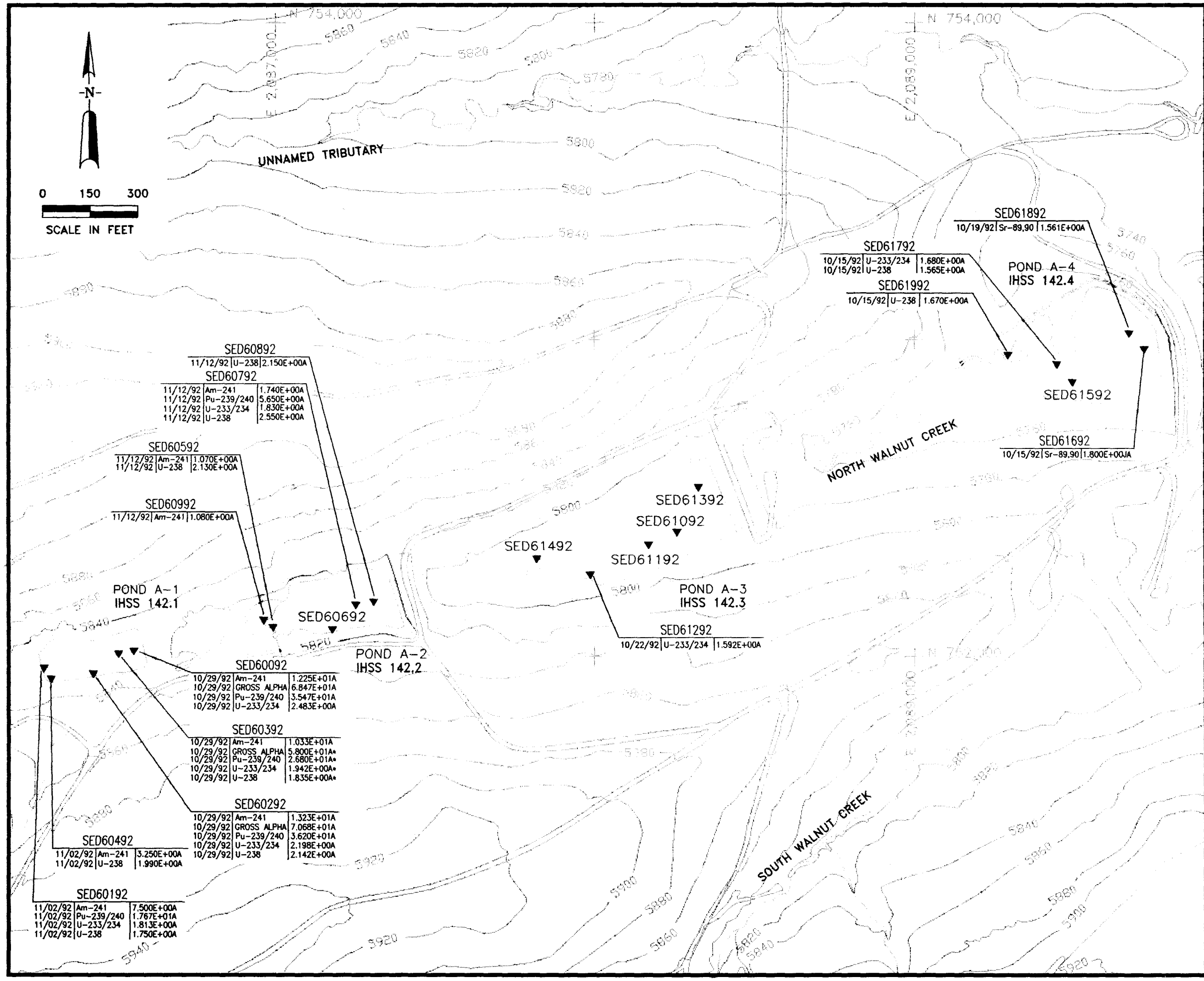
PCOC METALS
(IHSSs 142.1 - 142.4)
POND SEDIMENTS

FIGURE 4.8-7 JUNE 1995

4/25/95 OU6RI210 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE
SED61492

SED61492 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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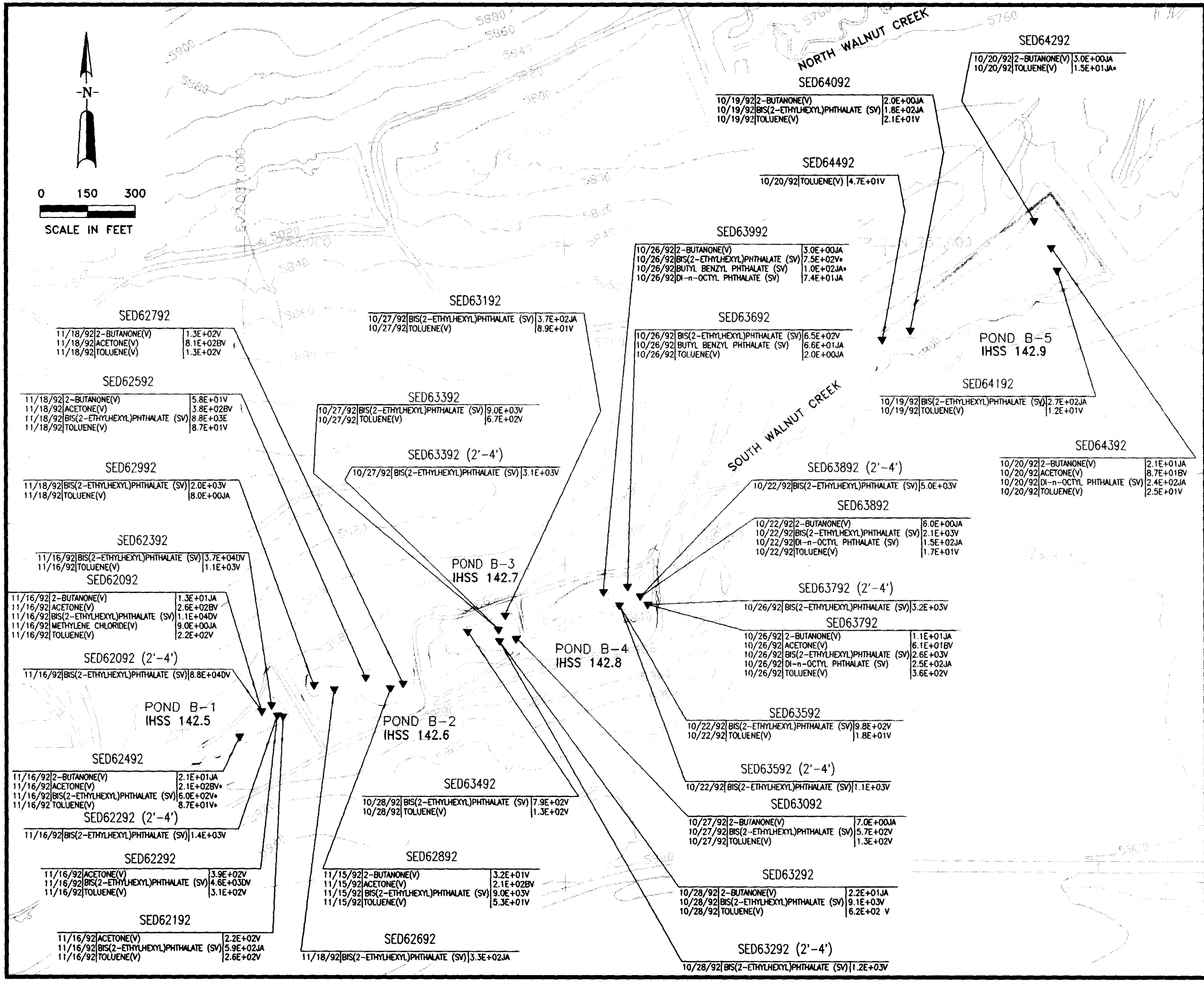
PHASE I RFI/RI REPORT

PCOC RADIONUCLIDES
(IHSSs 142.1 – 142.4)
POND SEDIMENTS

FIGURE 4.8-8 JUNE 1995

4/18/95 OU6RI157 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED63892 — POND SEDIMENT SAMPLE SITE

SED64392 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE
(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.
3. ALL SAMPLES WERE COLLECTED FROM A DEPTH OF 0 TO 2 FEET UNLESS OTHERWISE INDICATED WITH A DEPTH NOTATION BESIDE THE LOCATION CODE.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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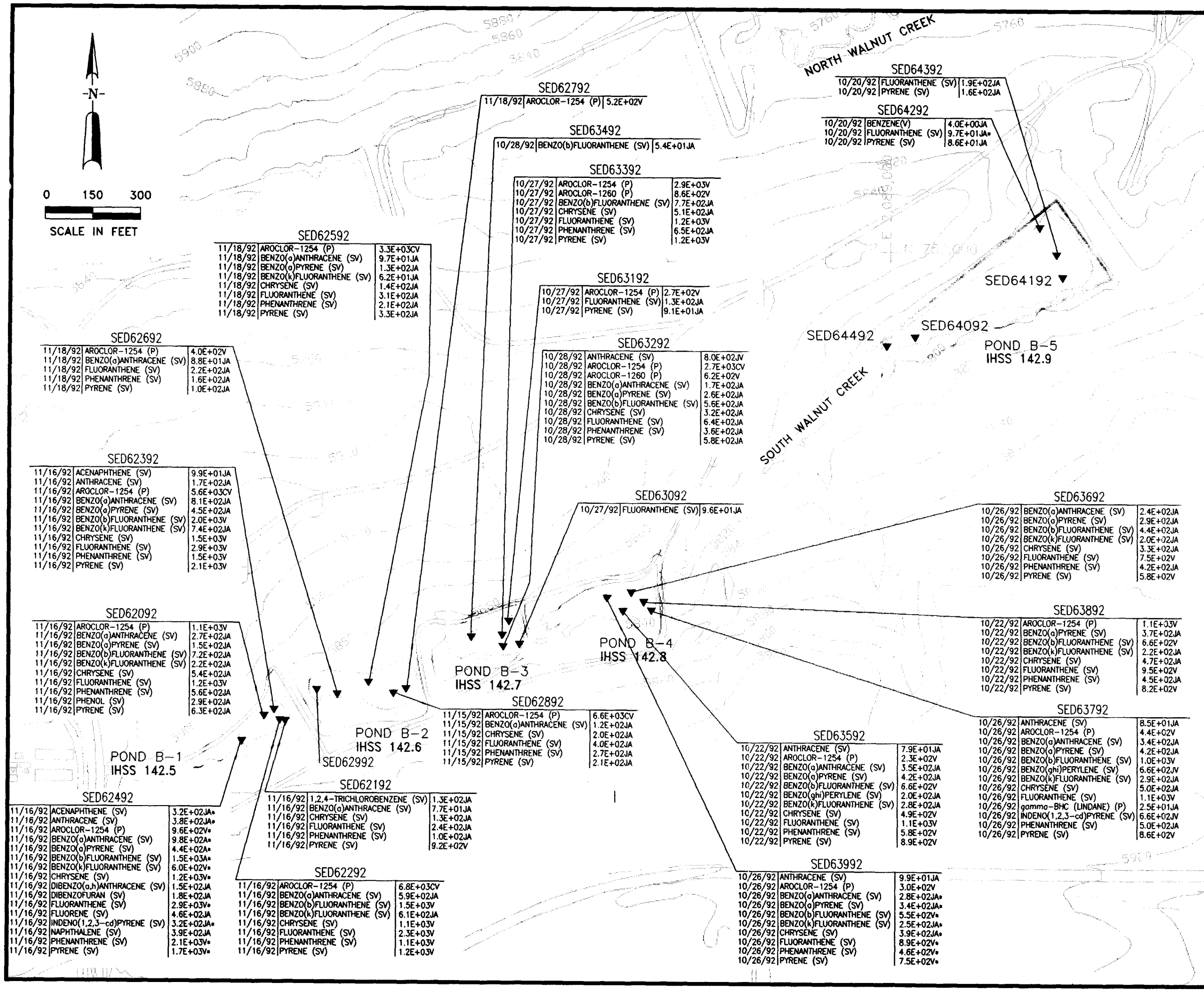
SUSPECT ORGANIC COMPOUNDS:, 2-BUTANONE, ACETONE, BIS(2-ETHYLHEXYL)PHTHALATE, BUTYL BENZYL PHTHALATE, DI-N-OCTYL PHTHALATE, METHYLENE CHLORIDE, TOLUENE (IHSSs 142.5 – 142.9) POND SEDIMENTS

FIGURE 4.8-9 JUNE 1995

6/5/95 OU6RI129 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE

SED63692

SED64392 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(SV) – SEMIVOLATILE

(P) – PESTICIDES/PCBs

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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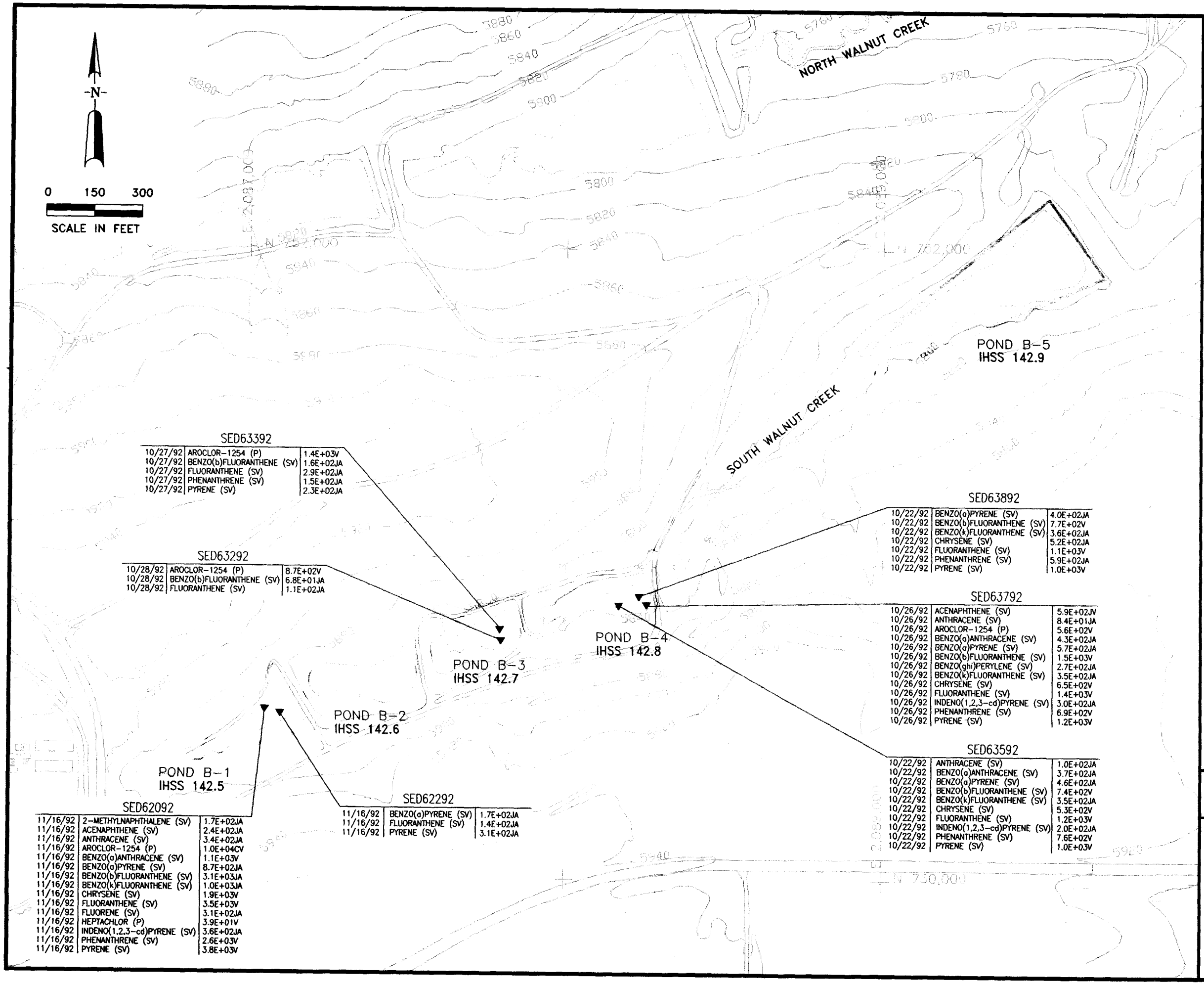
SEMIVOLATILE ORGANIC COMPOUNDS AND PESTICIDES/PCBs
(IHSSs 142.5 – 142.9)
POND SEDIMENTS
0'-2' DEPTH

FIGURE 4.8-10 JUNE 1995

6/5/95 OU6RI130 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE
SED64292

SED64892 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(SV) – SEMIVOLATILE
(P) – PESTICIDES/PCBs

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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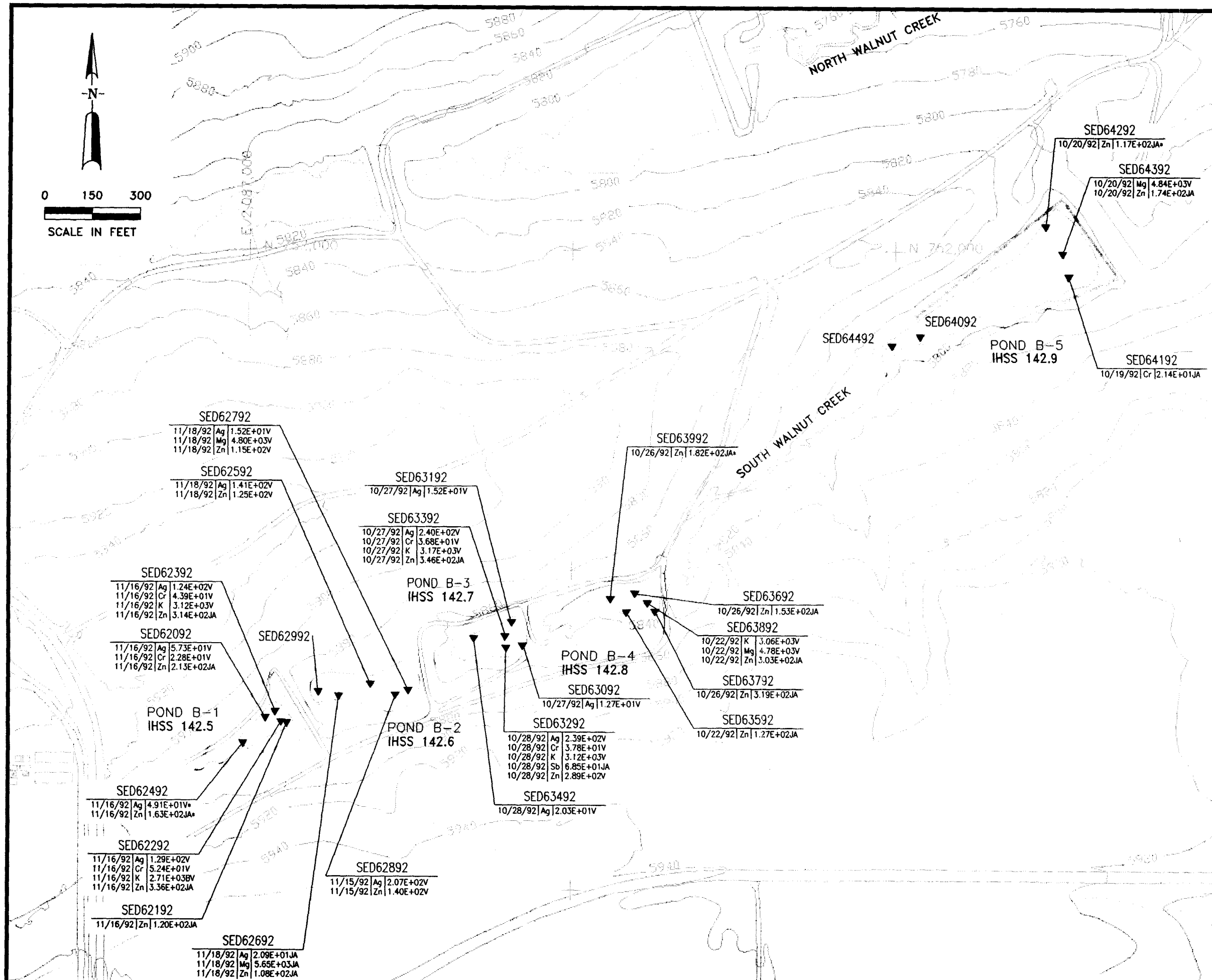
SEMIVOLATILE ORGANIC COMPOUNDS AND PESTICIDES/PCBs
(IHSSs 142.5 – 142.9)
POND SEDIMENTS
2'-4' DEPTH

FIGURE 4.8-11 JUNE 1995

6/6/95 OU6RI135 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED63892 — POND SEDIMENT SAMPLE SITE

SED64392 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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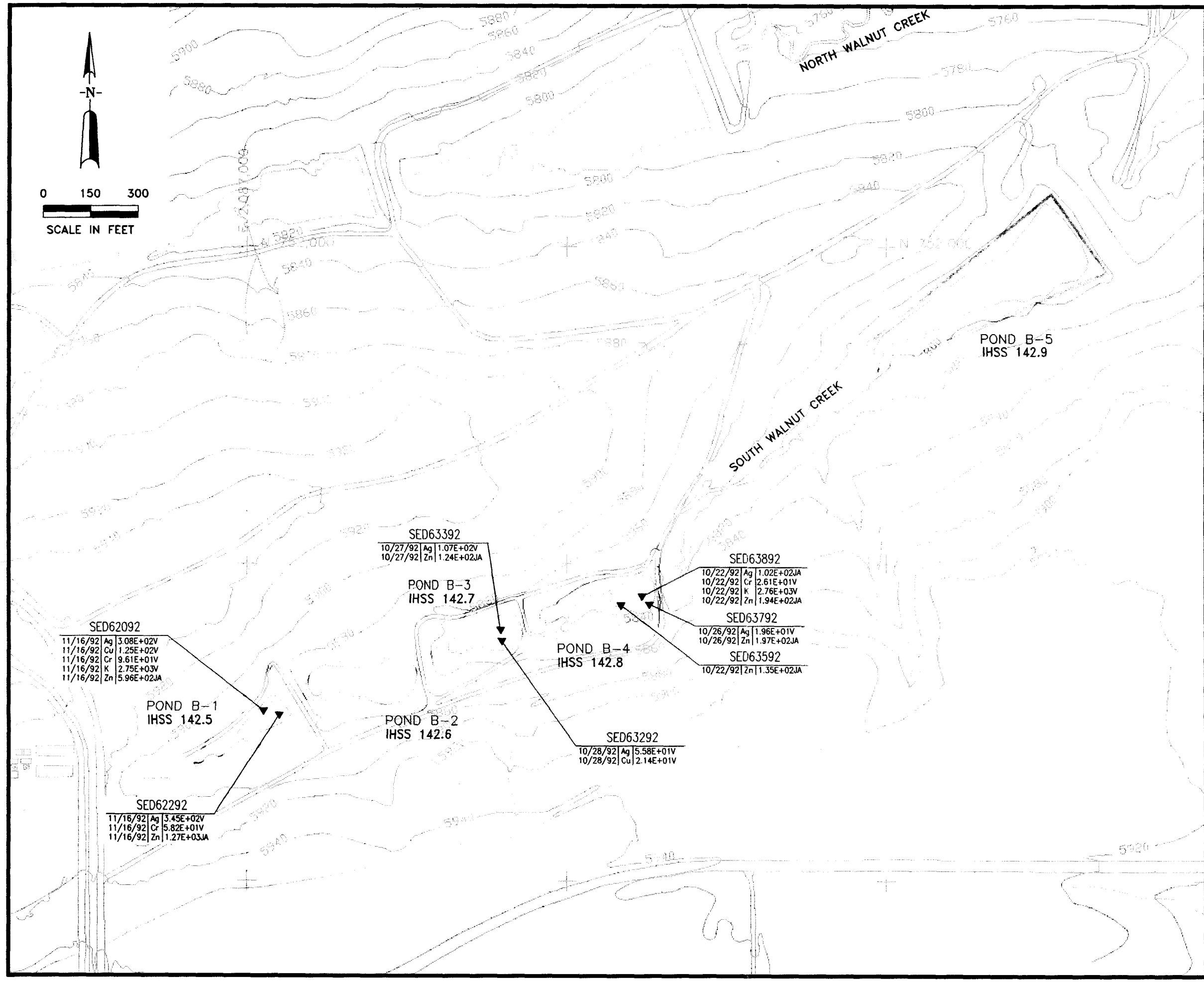
PCOC METALS
(IHSSs 142.5 – 142.9)
POND SEDIMENTS
0'–2' DEPTH

FIGURE 4.8-12 JUNE 1995

4/25/95 OU6RI211 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED63892 — POND SEDIMENT SAMPLE SITE

SED64392 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (mg/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN mg/kg (parts per million). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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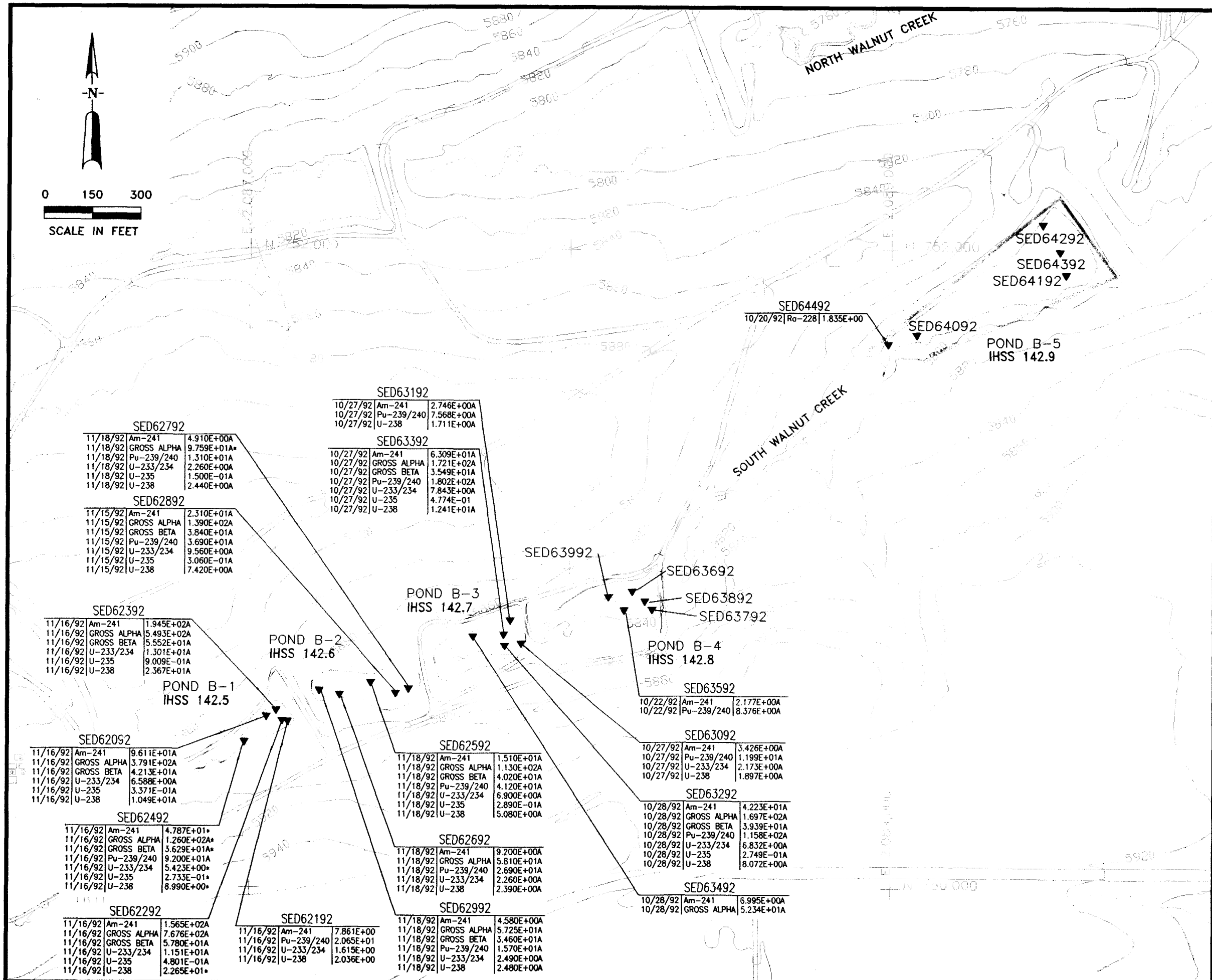
PCOC METALS
(IHSSs 142.5 – 142.9)
POND SEDIMENTS
2'-4' DEPTH

FIGURE 4.8-13 JUNE 1995

8/12/94 OU6RI212 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE
SED63892

SED63892 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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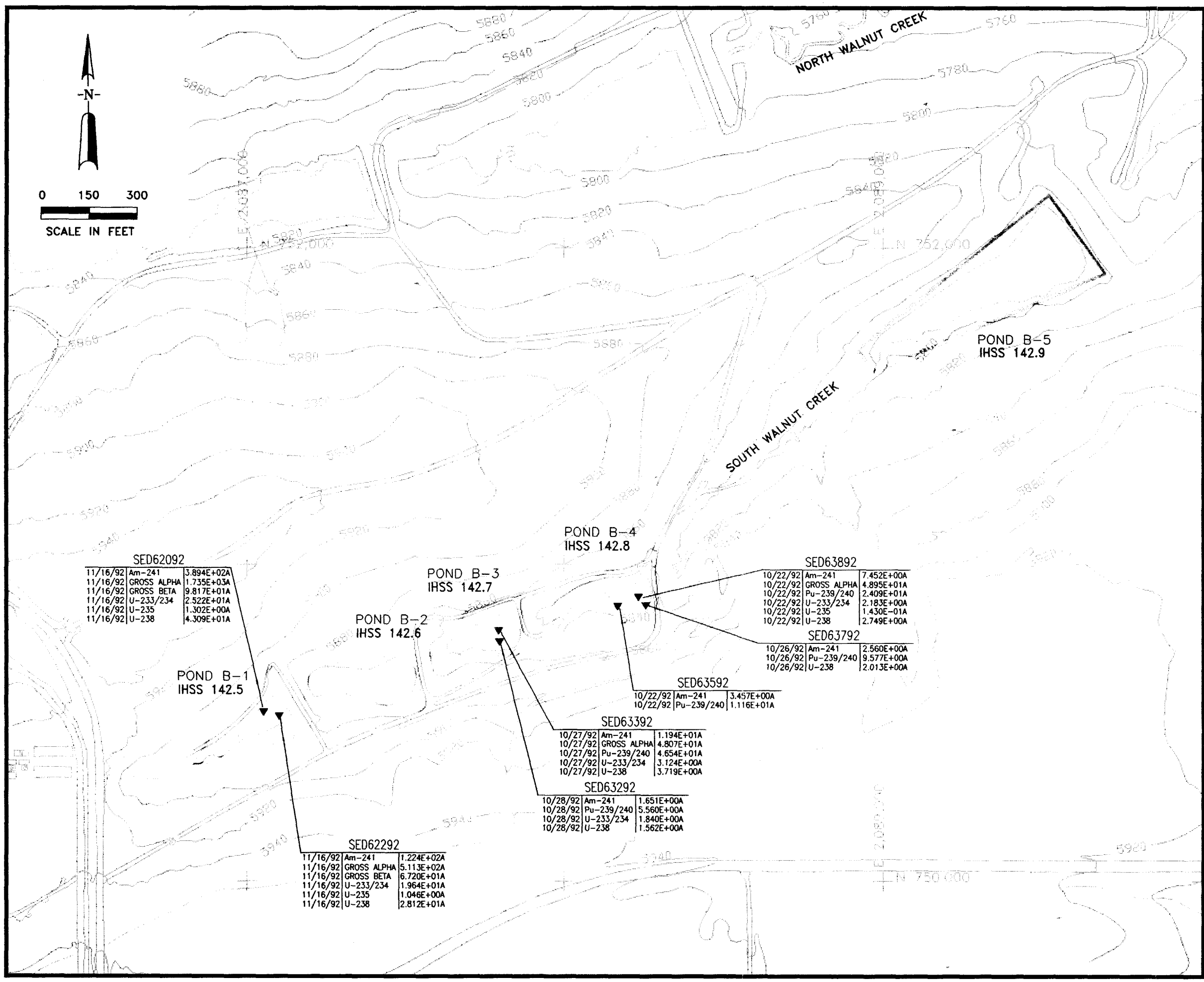
PCOC RADIONUCLIDES
(IHSSs 142.5 – 142.9)
POND SEDIMENTS
0'–2' DEPTH

FIGURE 4.8-14 JUNE 1995

8/12/94 OU6RI152 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE
SED63892

SED63892 ← LOCATION
2/26/92
SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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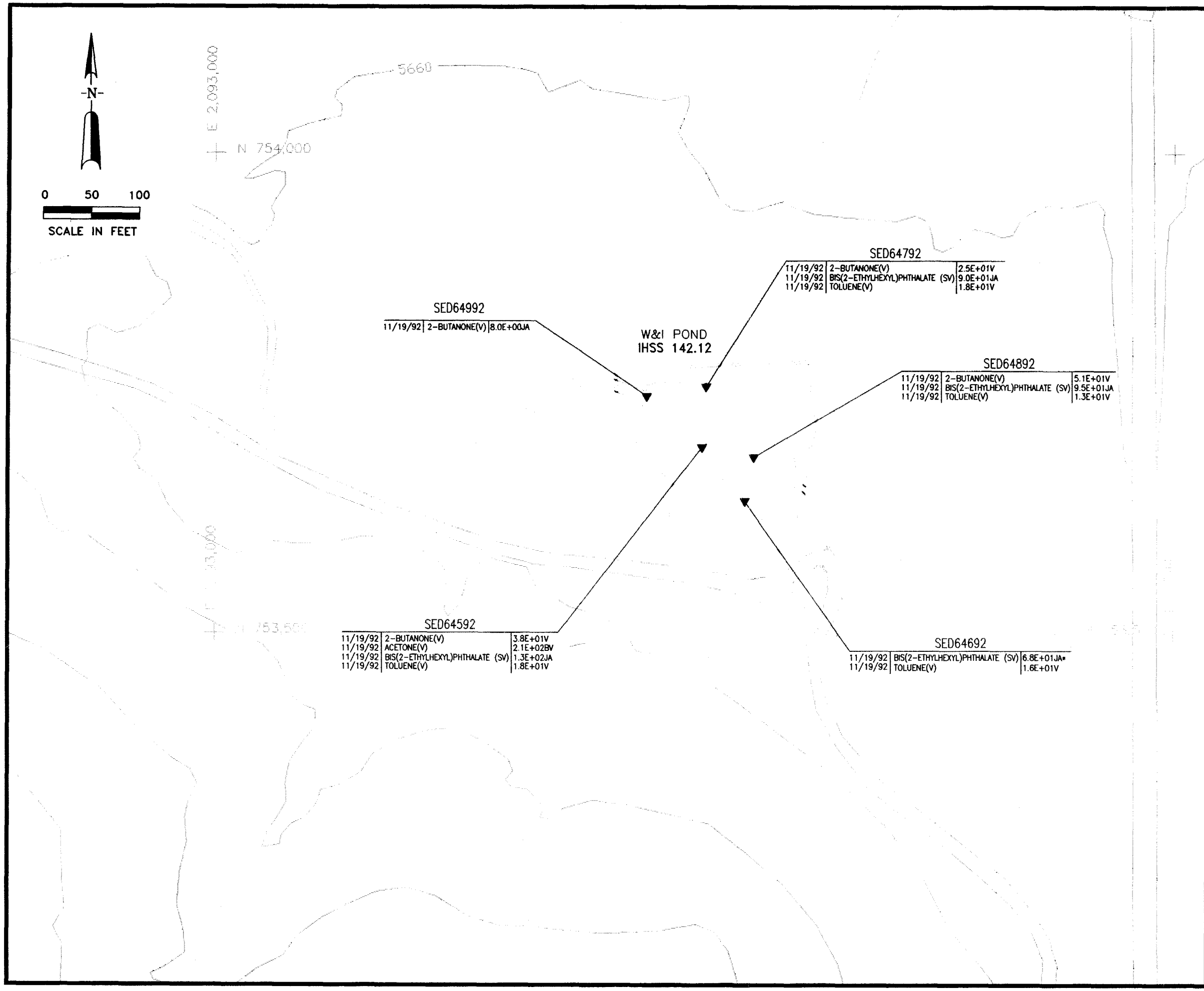
PCOC RADIONUCLIDES
(IHSSs 142.5 – 142.9)
POND SEDIMENTS
2'-4' DEPTH

FIGURE 4.8-15 JUNE 1995

8/12/94 OU6RI166 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ SED64592 — POND SEDIMENT SAMPLE SITE

SED64892 ← LOCATION

2/26/92		
SAMPLE DATE	ANALYTE	ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(V) – VOLATILE
(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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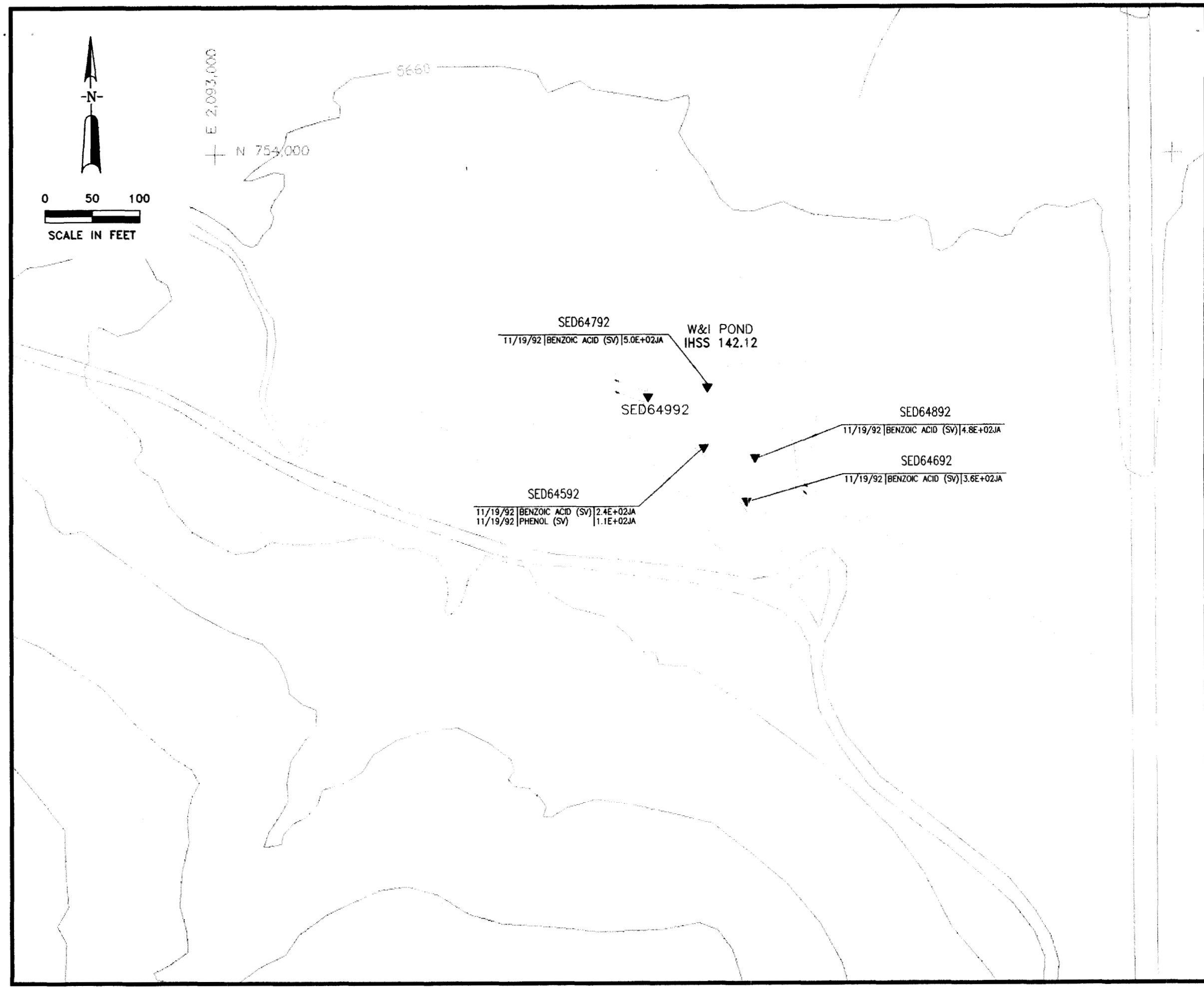
SUSPECT ORGANIC COMPOUNDS:
2-BUTANONE, ACETONE,
BIS(2-ETHYLHEXYL)PHTHALATE, TOLUENE
(IHSS 142.12)
POND SEDIMENTS

FIGURE 4.8-16 JUNE 1995

6/6/95 OU6RI123 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ SED64592 — POND SEDIMENT SAMPLE SITE

SED64592 ← LOCATION

2/26/92 — SAMPLE DATE

ANALYTE

ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

(SV) – SEMIVOLATILE

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4–1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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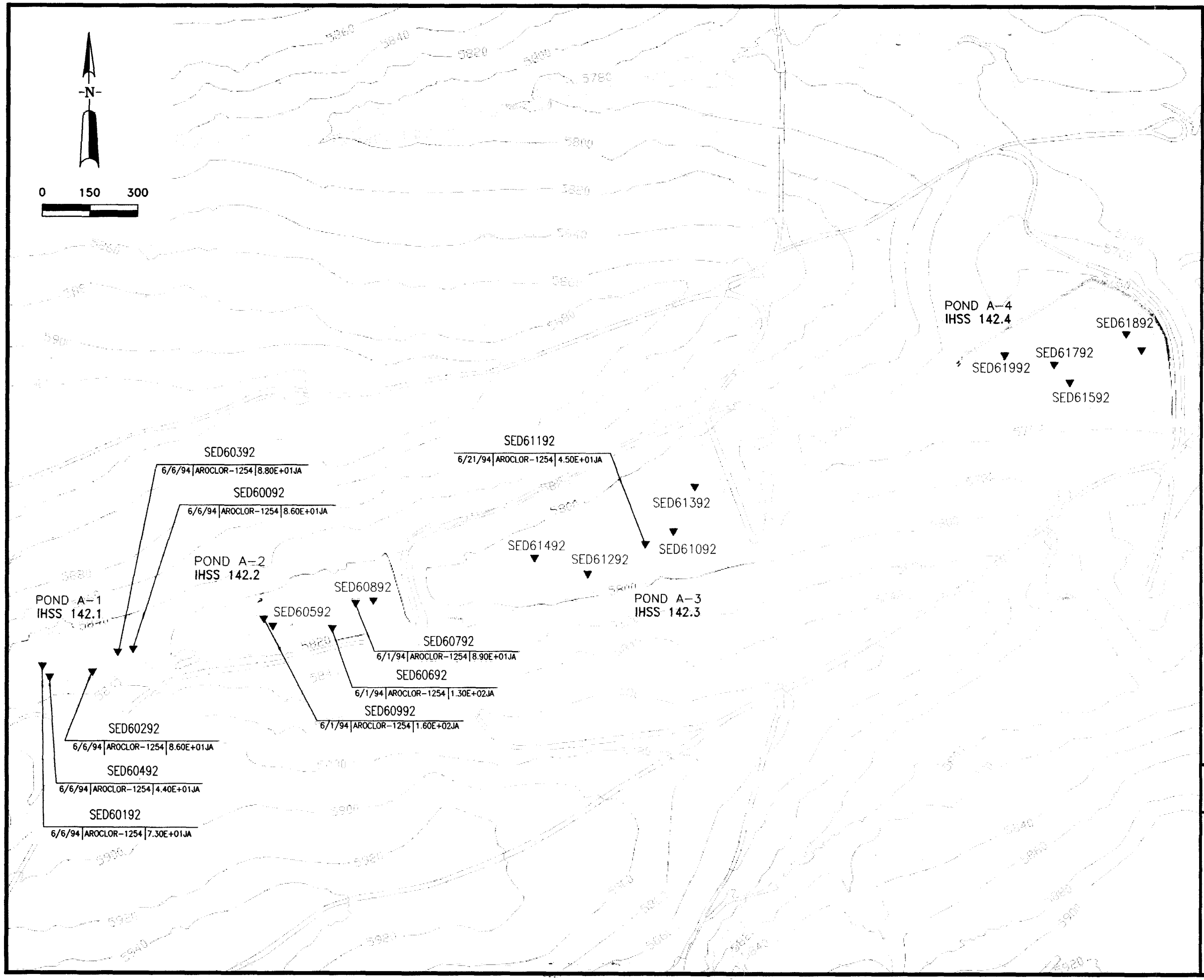
SEMIVOLATILE ORGANIC COMPOUNDS AND PESTICIDES/PCBs (IHSS 142.12) POND SEDIMENTS

FIGURE 4.8–17 JUNE 1995

9/15/94 OU6RI124 1=100



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

SED61892 POND SEDIMENT SAMPLE SITE

SED61692 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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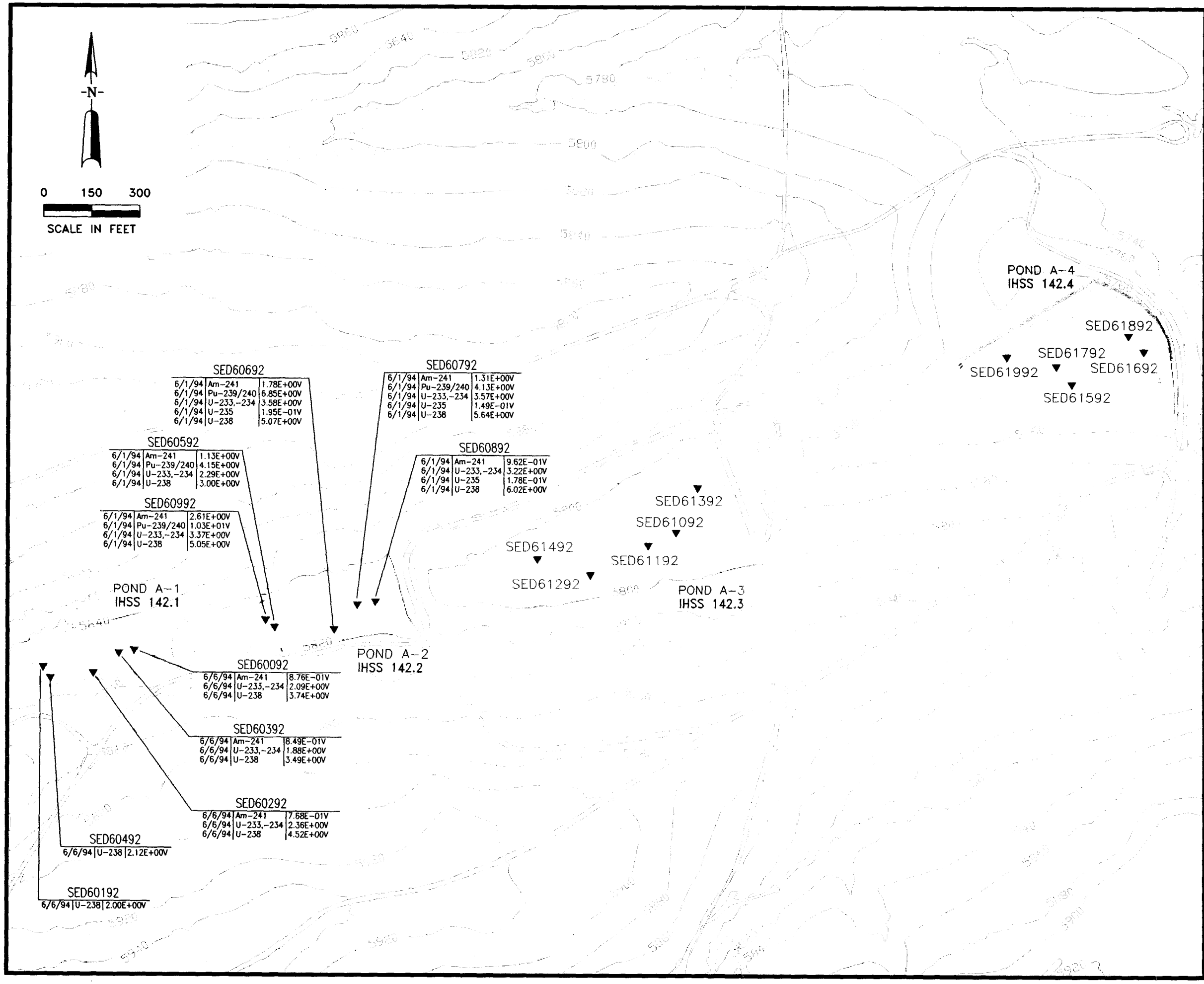
ADDITIONAL PCBs
(IHSSs 142.1 – 142.4)
POND SEDIMENTS

FIGURE 4.8-18 JUNE 1995

OU6RI330 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE
SED61492

SED61492 ← LOCATION
2/26/92
SAMPLE DATE
ANALYTE
ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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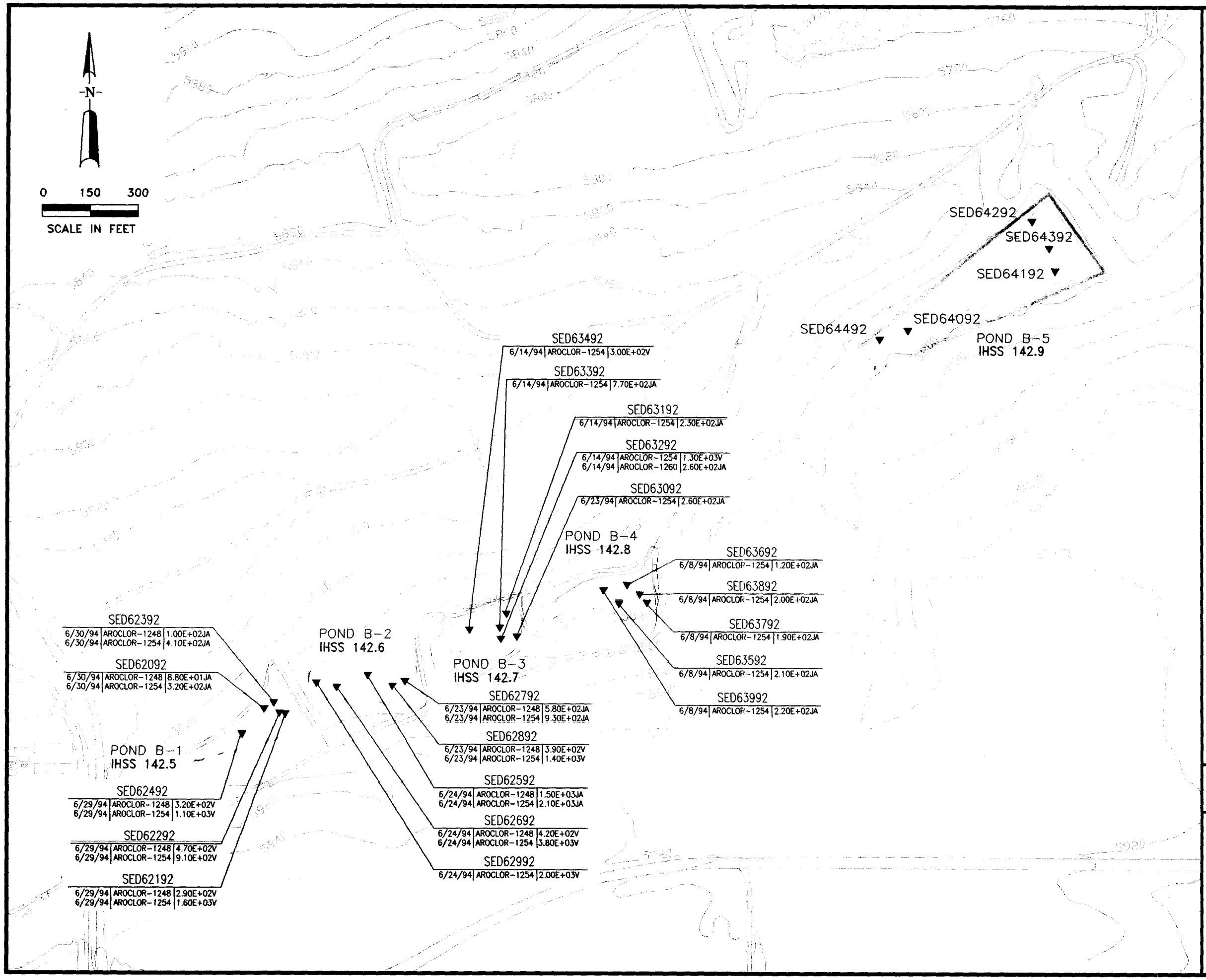
ADDITIONAL RADIONUCLIDES
(IHSSs 142.1 – 142.4)
POND SEDIMENTS

FIGURE 4.8-19 JUNE 1995

9/21/95 OU6RI331 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE

SED63692

SED64392 ← LOCATION

2/26/92

SAMPLE DATE | ANALYTE | ANALYTE CONCENTRATION (ug/kg), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE CONCENTRATIONS ARE REPORTED IN ug/kg (parts per billion). ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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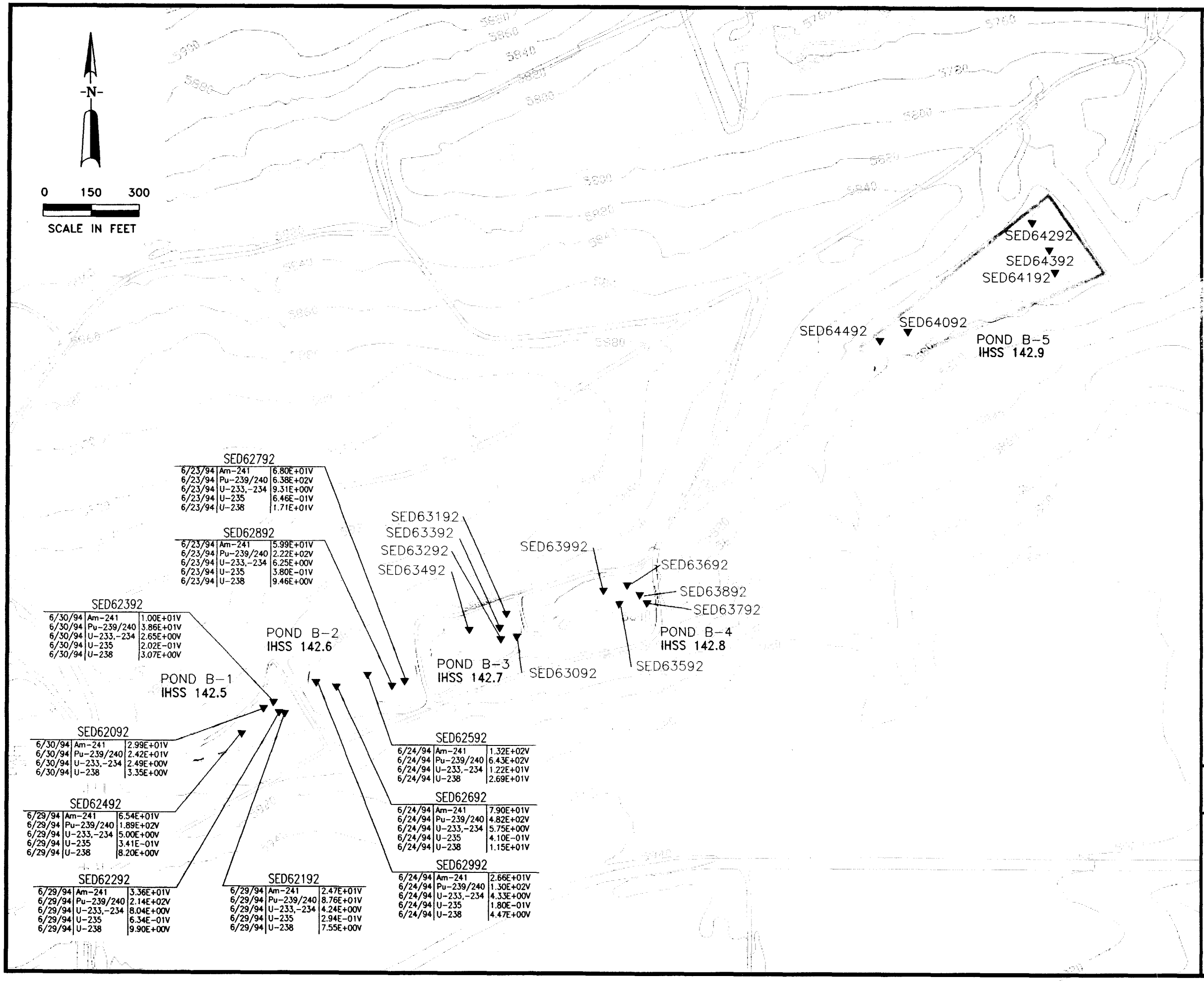
ADDITIONAL PCBs
(IHSSs 142.5 - 142.9)
POND SEDIMENTS

FIGURE 4.8-20 JUNE 1995

9/21/95 OU6RI332 1=300



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

▼ POND SEDIMENT SAMPLE SITE
SED63892

SED63892 ← LOCATION
2/26/92

SAMPLE DATE | ANALYTE | ANALYTE ACTIVITY (pCi/g), LAB QUALIFIERS, AND VALIDATION CODES

NOTES:

1. ALL ANALYTE ACTIVITIES ARE REPORTED IN pCi/g. ANALYTE ABBREVIATIONS, LAB QUALIFIERS, AND VALIDATION CODES ARE PRESENTED ON FIGURE 4.4-1.
2. ALL LOCATIONS SHOWN ON THIS MAP WERE SAMPLED. RESULTS ARE SHOWN ONLY WHERE THE CHEMICALS WERE DETECTED ABOVE BACKGROUND MEAN PLUS 2 STANDARD DEVIATIONS.

* INDICATES THIS RESULT IS AN AVERAGE OF THE REAL AND DUPLICATE SAMPLE RESULTS.

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ADDITIONAL RADIONUCLIDES
(IHSSs 142.5 – 142.9)
POND SEDIMENTS

FIGURE 4.8-21 JUNE 1995

OU6RI333 1=300