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June 13, 1995

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**RECORD COPY**

ATTENTION: Ms. Jeanette Duncan

RE: TRANSMITTAL OF DATA VALIDATION FINAL SUMMARY REPORT  
CONTRACT NO. MSH-SWV-315905

Dear Ms. Duncan:

This letter is to transmit the data validation summary for the following project:

Project Name

100 HR 3 Round 8, Phase I and II Groundwater Sampling Task

Please call if you have any questions.

Sincerely,

GOLDER ASSOCIATES INC.

Sandra Schildt  
Task Manager

Doug Mather  
Project Manager



Enclosures

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**DATA VALIDATION SUMMARY REPORT FOR THE  
100-HR-3 ROUND 8, PHASES I AND II GROUNDWATER SAMPLING TASK**

**Prepared for:**

**Bechtel Hanford, Inc.  
Richland, Washington**

**Prepared by:**

**Golder Associates Inc.  
Redmond, Washington**

June 12, 1995

943-1610.097.400

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## 1.0 INTRODUCTION

This report presents a summary of data validation results on groundwater samples collected for the 100-HR-3 Round 8 Groundwater Sampling task.

The analyses performed for this project consisted of:

- Metals,
- General Chemistry; and
- Radiochemistry

The laboratories conducting the analyses were Quanterra Environmental Services (QES) and Lockheed Analytical Services.

As required by the contract and the WHC statement of work (WHC 1994), data validation was conducted using the Westinghouse data validation procedures for chemical and radiochemical analyses (WHC 1993a and 1993b). Sample results were validated to levels A and D as described in the data validation procedures. At the completion of validation and verification of each data package, a data validation summary was prepared and transmitted with the original documentation to Environmental Restoration Contract (ERC) for inclusion in the project QA record. Table 1-1 provides information concerning the data packages which were validated and verified, and samples recalculated. Tables 1-2 and 1-3 provide a summary and explanation of all qualifiers applied as a result of inorganic and radiochemical validation, respectively.

Five sections, including this introduction, comprise this report. Sections 2.0 through 4.0 provide summaries of the validation by analytical fraction. Section 5.0 provides a list of references used to prepare this report and Appendixes A through F to this report include validated data summary and field QC result tables.

### 1.1 CHEMICAL ANALYSES

Chemical analysis data consisted of:

- A total of 72 water samples analyzed for target analyte list (TAL) metals and cyanide using SW-846 methodology.
- A total of 34 water sample analyzed for general chemistry parameters using EPA methodology.

The chemical data and associated QC has been reviewed and validated to verify that reported sample results are acceptable for decision making purposes.

## **1.2 RADIOCHEMICAL ANALYSES**

The radiochemical data consisted of:

- A total of 38 water samples analyzed for radiochemical parameters using Westinghouse approved radiochemical procedures.

The radiochemical data and associated QC has been reviewed and validated to verify that reported sample results are acceptable for decision making purposes.

## **1.3 WESTINGHOUSE HANFORD GUIDANCE USED**

Data validation was conducted using Westinghouse data validation procedures (WHC 1993a and 1993b).

## **1.4 DEFICIENCIES**

There were major deficiencies identified during the validation of the general chemistry analyses resulting in qualification of sample results as unusable (UR). There were several minor deficiencies identified during validation in which sample results were qualified as estimated (J, BJ, UJ). This report summarizes all the deficiencies identified during validation and the qualification applied.

## **1.5 SAMPLES AND ANALYSES VALIDATED**

Table 1-1 provides a cross-reference list of all samples validated including data package tracking numbers, sample numbers, sample dates, site and sample locations, sample type, and analyses performed.

Table 1-1. 100-HR-3 Round 8 Groundwater, Data Validation.

DATA PACKAGE	SAMPLE ID	SAMPLE DATE	TYPE	LOCATION	SAMPLE TYPE	Met	Chem	Rad
LK31-LAS	B0DHN5	20-Dec-94	WATER	199-H4-47	SPLIT	X*	X*	X*
LK31-LAS	B0DHN6	20-Dec-94	WATER	199-H4-47	SPLIT	X*		
LK3777-LAS	B0DR05	06-Feb-95	WATER	699-96-49	SPLIT	X*	X*	X*
LK3777-LAS	B0DR06	06-Feb-95	WATER	699-96-49	SPLIT	X		
W0348-QES	B0DHM3	20-Dec-94	WATER	199-H4-49		X	X	X
W0348-QES	B0DHM8	21-Dec-94	WATER	199-H6-1		X*		
W0348-QES	B0DHL6	21-Dec-94	WATER	199-H4-45		X		
W0348-QES	B0DHL1	21-Dec-94	WATER	199-H4-13		X	X	X
W0348-QES	B0DHL8	20-Dec-94	WATER	199-H4-46		X		
W0348-QES	B0DHL5	21-Dec-94	WATER	199-H4-45		X	X	X
W0348-QES	B0DHM0	20-Dec-94	WATER	199-H4-47		X		
W0348-QES	B0DHLA	21-Dec-94	WATER	199-H4-15A		X		
W0348-QES	B0DHM2	20-Dec-94	WATER	199-H4-48		X		
W0348-QES	B0DHP0	21-Dec-94	WATER	199-H5-1A	EQUIPMENT BLANK	X		
W0348-QES	B0DHM4	20-Dec-94	WATER	199-H4-49		X		
W0348-QES	B0DHN3	20-Dec-94	WATER	199-H4-47	FIELD DUPLICATE	X	X	X
W0348-QES	B0DHL7	20-Dec-94	WATER	199-H4-46		X	X	X
W0348-QES	B0DHN4	20-Dec-94	WATER	199-H4-47	FIELD DUPLICATE	X		
W0348-QES	B0DHM1	20-Dec-94	WATER	199-H4-48		X*	X*	X*
W0348-QES	B0DHL3	21-Dec-94	WATER	199-H4-15A		X*	X*	X*
W0348-QES	B0DHM7	21-Dec-94	WATER	199-H6-1		X	X	X
W0348-QES	B0DHN9	21-Dec-94	WATER	199-H5-1A	EQUIPMENT BLANK	X	X	X
W0348-QES	B0DHL9	20-Dec-94	WATER	199-H4-47		X*	X*	X*
W0348-QES	B0DHL2	21-Dec-94	WATER	199-H4-13		X		
W0351-QES	B0DHN8	27-Dec-94	WATER	699-97-43	EQUIPMENT BLANK	X		
W0351-QES	B0DHM9	27-Dec-94	WATER	699-96-43		X*	X*	X*
W0351-QES	B0DHN1	27-Dec-94	WATER	699-97-43		X	X	X*
W0351-QES	B0DHN2	27-Dec-94	WATER	699-97-43		X		
W0351-QES	B0DHN7	27-Dec-94	WATER	699-97-43	EQUIPMENT BLANK	X	X	X*
W0351-QES	B0DHN0	27-Dec-94	WATER	699-96-43		X*		
W0408-QES	B0DQZ5	06-Feb-95	WATER	699-96-49		X*	X*	X*
W0408-QES	B0DQY0	07-Feb-95	WATER	199-D5-20		X		
W0408-QES	B0DQZ7	06-Feb-95	WATER	699-97-51A		X	X	X
W0408-QES	B0DQY1	07-Feb-95	WATER	199-D8-3		X	X	X
W0408-QES	B0DQW4	07-Feb-95	WATER	199-D2-6		X		
W0408-QES	B0DQY2	07-Feb-95	WATER	199-D8-3		X		
W0408-QES	B0DR03	06-Feb-95	WATER	699-96-49	FIELD DUPLICATE	X	X	X
W0408-QES	B0DQY3	02-Feb-95	WATER	199-D8-53		X*	X*	X*
W0408-QES	B0DQZ6	06-Feb-95	WATER	699-96-49		X		
W0408-QES	B0DQY4	02-Feb-95	WATER	199-D8-53		X		
W0408-QES	B0DQZ0	02-Feb-95	WATER	199-D8-55		X		

Table 1-1. 100-HR-3 Round 8 Groundwater, Data Validation (Cont.).

DATA PACKAGE	SAMPLE ID	SAMPLE DATE	TYPE	LOCATION	SAMPLE TYPE	Met	Chem	Rad
W0408-QES	B0DQY5	01-Feb-95	WATER	199-D8-54A		X*	X*	X*
W0408-QES	B0DQZ8	06-Feb-95	WATER	699-97-51A		X		
W0408-QES	B0DQY6	01-Feb-95	WATER	199-D8-54A		X		
W0408-QES	B0DQW3	07-Feb-95	WATER	199-D2-6		X	X	X
W0408-QES	B0DQY7	01-Feb-95	WATER	199-D8-54B		X	X	X
W0408-QES	B0DQX9	07-Feb-95	WATER	199-D5-20		X*	X*	X*
W0408-QES	B0DQY9	02-Feb-95	WATER	199-D8-55		X	X	X
W0408-QES	B0DR04	06-Feb-95	WATER	699-96-49	FIELD DUPLICATE	X		
W0408-QES	B0DQY8	01-Feb-95	WATER	199-D8-54B		X		
W0419-QES	B0DQW6	09-Feb-95	WATER	199-D5-12		X		
W0419-QES	B0DR02	15-Feb-95	WATER	EQUIPMENT BLANK	EQUIPMENT BLANK	X		
W0419-QES	B0DQX4	15-Feb-95	WATER	199-D5-17		X		
W0419-QES	B0DR01	15-Feb-95	WATER	EQUIPMENT BLANK	EQUIPMENT BLANK	X*	X*	X*
W0419-QES	B0DQZ2	15-Feb-95	WATER	699-91-46A		X		
W0419-QES	B0DQW5	09-Feb-95	WATER	199-D5-12		X	X	X
W0419-QES	B0DQZ4	09-Feb-95	WATER	699-93-48A		X		
W0419-QES	B0DQZ9	15-Feb-95	WATER	EQUIPMENT BLANK	EQUIPMENT BLANK	X	X	X
W0419-QES	B0DQZ1	15-Feb-95	WATER	699-91-46A		X*	X*	X*
W0419-QES	B0DQX3	15-Feb-95	WATER	199-D5-17		X*	X*	X*
W0419-QES	B0DQZ3	09-Feb-95	WATER	699-93-48A		X*	X*	X*
W0419-QES	B0DR00	15-Feb-95	WATER	EQUIPMENT BLANK	EQUIPMENT BLANK	X		
W0437-QES	B0DQX1	27-Feb-95	WATER	199-D5-16		X	X	X
W0437-QES	B0DQW7	27-Feb-95	WATER	199-D5-14		X	X	X
W0437-QES	B0DQW8	27-Feb-95	WATER	199-D5-14		X		
W0437-QES	B0DQW9	27-Feb-95	WATER	199-D5-15		X	X	X
W0437-QES	B0DQX0	27-Feb-95	WATER	199-D5-15		X		
W0437-QES	B0DQX2	27-Feb-95	WATER	199-D5-16		X		
W0457-QES	B0DR07	14-Mar-95	WATER	199-D5-13		X		X
W0457-QES	B0DR08	14-Mar-95	WATER	199-D8-4		X		X
W0457-QES	B0DR09	14-Mar-95	WATER	199-D8-5		X		X
W0457-QES	B0DR10	14-Mar-95	WATER	199-D8-6		X		X

\* - Indicates samples 100% recalculated.

**Table 1-2. Glossary of Inorganic Data Reporting Qualifiers.**

- B -** Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.
- U -** Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ -** Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- BJ -** Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- J -** Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- UR -** Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.
- R -** Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

**Table 1-3. Glossary of Radiochemistry Data Reporting Qualifiers.**

- U -** Indicates the constituent was analyzed for, but was not detected at a concentration above the minimum detectable activity (MDA). The concentration reported is the sample result corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ -** Indicates the constituent was analyzed for and was not detected at a concentration above the MDA. Due to a quality control deficiency identified during data validation, the result reported may not accurately reflect the sample concentration. The associated data should be considered usable for decision making purposes.
- J -** Indicates the constituent was analyzed for and detected. The concentration reported is qualified as estimated due to a quality control deficiency identified during data validation. The associated data should be considered usable for decision making purposes.
- UR -** Indicates the constituent was analyzed for and not detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.
- R -** Indicates the constituent was analyzed for and detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

## 2.0 METALS DATA VALIDATION SUMMARY

### 2.1 SUMMARY

This section presents a summary of the metals data validation results and review in accordance with the WHC Statement of Work (WHC 1994) and validation procedures (WHC 1993a). Table 1-1 shows the data package identification, sample identification, sample collection date, location, sample type and analysis performed. Appendix A provides a tabular summary of all validated data.

#### 2.1.1 Sample Delivery Groups

Sample results from eight metals data packages are included in this report:

Data Package ID	No. of Samples
W0437-QES	6
W0351-QES	6
LK31-LAS	2
LK3777-LAS	2
W0348-QES	20
W0419-QES	12
W0408-QES	20
W0457-QES	4

#### 2.1.2 Samples Validated

Results for the data packages listed above were validated at the frequency specified in Section 1.0 with data qualifiers assigned as specified in the validation procedures.

#### 2.1.3 Westinghouse Hanford Validation Guidance Used

Data validation was performed in accordance with Data Validation Procedures for Chemical Analyses (WHC 1993a).

#### 2.1.4 Data Quality Objectives

This section provides a summary of the data in terms of defined laboratory performance criteria and project-specific data quality objectives to assure the data is acceptable for use in the 100-HR-3 Round 8 Groundwater Sampling task.

- **Precision.** Laboratory duplicate relative percent difference (RPD) results were acceptable for all data packages, with the exception of iron (see Section 2.5.1).

Serial dilution percent difference (%D) results were acceptable for all data packages.

- **Accuracy.** Laboratory spike recoveries were acceptable for all data packages with the exception of iron (see Section 2.4.1).

Analytical spike recoveries were acceptable for all data packages.

Laboratory control sample recoveries were acceptable for all data packages.

- **Representativeness.** Field duplicate and field split relative percent difference (RPD) values were acceptable for all sample sets collected.
- **Completeness.** Overall, 72 samples were validated for metals with 1304 results reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90 percent.
- **Comparability.** Samples were analyzed by similar methods and all results were reported in common units facilitating comparison of the data.

#### 2.1.5 Deficiencies Noted

There were no major deficiencies identified requiring qualifications of the data as unusable. There were minor deficiencies identified resulting in qualification of the data as estimated.

#### 2.2 ANALYTICAL METHOD

The following paragraphs summarize the method specific QC results for the metals analyses. All samples were analyzed in accordance with SW-846 methodology for selected TAL metals.

### 2.2.1 Initial and Continuing Calibration

Initial and continuing calibration requirements were met for all analyses in all data packages with the exception of the following:

**Data Package LK3777-LAS.** The initial calibration for cadmium was outside the control limits of 90 to 100%.

In accordance with validation procedures, sample results were qualified as estimated (U).

### 2.2.2 Blanks

Laboratory method blanks (initial and continuing calibration and preparation blanks) were analyzed at the proper frequency and results were undetected with the exception of low concentrations of target analytes as summarized in the following sections.

**2.2.2.1 Calibration Blanks.** The following is a summary of the analytes detected in the calibration blanks:

**Data Package LK3777-LAS.** Copper and beryllium were detected in the associated calibration blanks at positive concentrations.

**Data Package W0408-QES.** Beryllium, manganese, and vanadium were detected in associated calibration blanks at positive concentrations.

**Data Package LK31-LAS.** Vanadium, manganese, and zinc were detected in associated calibration blanks at positive concentrations and antimony and copper were detected at negative concentrations.

**Data Package W0348-QES.** Manganese, iron and barium were detected in the associated calibration blanks at positive concentrations and vanadium and cobalt were detected at negative concentrations.

**Data Package W0419-QES.** Barium and beryllium were detected in the associated calibration blanks at positive concentrations and copper and vanadium were detected at negative concentrations.

**Data Package W0351-QES.** Beryllium were detected in the associated calibration blanks at positive concentrations and copper and vanadium were detected at negative concentrations.

In accordance with the validation requirements, sample results associated with the above calibration blanks were qualified as follows:

- undetected (U) for sample results that are less than five times (5X) the highest associated positive blank concentration, and

- estimated (UJ for non-detects, J for sample results within two times (2X) the absolute value of the associated blank) if associated with negative blank results.

**2.2.2.2 Preparation Blanks.** The following is a summary of the analytes detected in the preparation blanks:

**Data Package LK3777-LAS.** Iron and zinc were detected in the preparation blank at positive concentrations.

**Data Package W0408-QES.** Aluminum, copper, and iron were detected in the preparation blank at positive concentrations.

**Data Package LK31-LAS.** Arsenic was detected in the preparation blank at a negative concentration.

**Data Package W0348-QES.** Chromium was detected in the preparation blank at a negative concentration.

**Data Package W0419-QES.** Aluminum, copper, iron, magnesium, manganese, sodium, and vanadium were detected in the preparation blank at positive concentrations.

**Data Package W0351-QES.** Aluminum was detected in the preparation blank at a positive concentration and manganese was detected at a negative concentration.

In accordance with the validation requirements, sample results associated with the preparation blanks were qualified as follows:

- undetected (U) for positive sample results less than 5X the highest blank concentration if associated with a positive blank result >IDL but <CRDL, and
- estimated (J for detects, UJ for non-detects) if associated with a negative blank and within ten times (10X) the absolute value of the negative blank that is greater than (>) the IDL but less than (<) the CRDL.

**2.2.2.3 Field Blanks.** Samples B0DHN9, B0DHP0, B0DQZ9, B0DR00, B0DR01, B0DR02, B0DHN7, and B0DHN8 were identified as equipment blanks with the following analytes and concentrations detected:

- B0DHN9: Calcium (1610 B ug/L), copper (5.2 B ug/L), magnesium (267 B ug/L), sodium (533 B ug/L), and zinc (28.4 ug/L).
- B0DHP0: Barium (26.4 B ug/L), calcium (22900 ug/L), magnesium (5010 ug/L), potassium (963 B ug/L), sodium (2470 ug/L), and zinc (1180 ug/L).
- B0DQZ9: Calcium (1390 B ug/L) and zinc (14 B ug/L).
- B0DR00: Calcium (1480 B ug/L) and zinc (14.1 B ug/L).

- B0DR01: Calcium (1460 B ug/L) and zinc (16.5 B ug/L).
- B0DR02: Calcium (1510 B ug/L) and zinc (14.8 B ug/L).
- B0DHN8: Barium (16.9 B ug/L), calcium ( 16100 ug/L), copper (7 B ug/L), iron (18.2 BJ ug/L), magnesium (3620 B ug/L), sodium (1850 ug/L), and zinc 929 ug/L).
- B0DHN7: Barium (2.8 B ug/L), calcium (1520 ug/L), copper (12.5 B ug/L), iron (19.4 B ug/L), magnesium (288 B ug/L), manganese (.81 BJ ug/L), sodium (533 B ug/L), and zinc (16.7 B ug/L).

## 2.3 HOLDING TIMES

Holding time requirements were acceptable for all samples in all data packages.

## 2.4 ANALYTICAL ACCURACY

### 2.4.1 Spike Samples

Matrix spike percent recoveries (%R) were within the specified control limits of 75% to 125% for all data packages.

### 2.4.2 Laboratory Control Samples

All laboratory control sample percent recoveries were within the specified control limits of 80% and 120% for all data packages.

## 2.5 ANALYTICAL PRECISION

### 2.5.1 Laboratory Duplicates

The laboratory duplicate relative percent differences were within the specified control limits for all data packages with the exception of the following:

**Data Package W0351-QES. Iron.**

### 2.5.2 Serial Dilution

The serial dilution percent difference results were within the specified limit of 10% for sample results greater than 50 times (50X) the instrument detection limit (IDL).

### **2.5.3 Field Duplicates**

A total of four duplicate sample sets were collected and Appendix B presents a summary of the primary and duplicate sample results and the calculated RPD values. All RPD values were acceptable.

### **2.5.4 Field Splits**

A total of four field split sample sets were collected and Appendix B presents a summary of the primary and duplicate sample results and the calculated RPD values. All RPD values were acceptable.

## **2.6 GRAPHITE FURNACE PERFORMANCE**

No graphite furnace analyses were performed.

## **2.7 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS**

Sample detection limits were calculated properly and were consistent with method detection limit requirements. All samples were verified and results for samples indicated with an asterisk (\*) in Table 1-1 were recalculated and compared with the raw data and found to be acceptable.

## **2.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT**

System performance was assessed by a review of the raw data with no indications of poor performance noted.

### 3.0 GENERAL CHEMISTRY ANALYSIS DATA VALIDATION SUMMARY

#### 3.1 SUMMARY

This section presents a summary of the general chemistry data validation results and review against the WHC Statement of Work (WHC 1994). Table 1-1 shows the data package identification, sample identification, sample collection date, location and sample type. Appendix C provides a summary of all validated data results.

##### 3.1.1 Sample Delivery Groups

Sample results from one general chemistry data package are included in this report:

Data Package ID	No. of Samples
W0437-QES	3
W0408-QES	10
W0419-QES	6
W0348-QES	10
LK3777-LAS	1
LK31-LAS	1
WO351-QES	3

##### 3.1.2 Samples Validated

Results for the data package listed above were validated at the frequency specified in Section 1.0 with data qualifiers assigned as specified in the validation procedures.

##### 3.1.3 Westinghouse Hanford Validation Guidance Used

Data validation was performed in accordance with Data Validation Procedures for Chemical Analyses (WHC 1993a).

##### 3.1.4 Data Quality Objectives

This section provides a summary of the data in terms of defined laboratory performance criteria and project-specific data quality objectives to assure the data is acceptable for use in the 100-HR-3 Round 8 Groundwater Sampling Task.

- **Precision.** The laboratory duplicate sample RPD result was acceptable.

The field duplicate sample RPDs were acceptable with exception of nitrate/nitrite and sulfide (see Section 3.5.2).

The field split sample RPDs were acceptable.

- **Accuracy.** The laboratory spike recoveries were acceptable for the data package.

The laboratory control sample results were within limits for the data package.

- **Representativeness.** Field split RPDs were acceptable and field duplicate RPDs were acceptable with the exception of nitrate/nitrite and sulfide.
- **Completeness.** Overall, 34 water samples were validated for general chemistry with 286 results reported, 243 of which were deemed valid. This results in a completeness of 85 percent which does meet normal work plan objectives of 90 percent.
- **Comparability.** Samples were analyzed by similar methods and all results were reported in common units with the exception of ammonia and nitrate/nitrite which were reported in ug/L by QES and mg/L by Lockheed.

### 3.1.5 Deficiencies Noted

There were major and minor deficiencies identified requiring qualification of the data as either unusable or estimated which are explained in greater detail below.

## 3.2 ANALYTICAL METHOD

Performance of specific instrument quality assurance and quality control procedures, including deficiencies noted during the quality assurance review, are discussed below.

### 3.2.1 Initial and Continuing Calibration

Initial and continuing calibration requirements were met for all analyses in all data packages.

### 3.2.2 Blanks

Laboratory method blanks were analyzed at the proper frequency and results were reported and verified as undetected for all general chemistry parameters.

### 3.3 HOLDING TIMES

Holding time requirements were acceptable for all samples in all data packages with the following exceptions:

**Data Package LK31-LAS.** Phosphate for all samples.

**Data Package W0351-QES.** Nitrite, phosphate, nitrate, and turbidity holding times were exceeded by greater than twice the limit for all samples.

**Data Package W0419-QES.** Nitrite, phosphate, and nitrate holding times were exceeded by greater than twice the limit for all samples.

**Data Package LK3777-LAS.** Phosphate, nitrite, and nitrate for all samples.

**Data Package W0348-QES.** Nitrite, phosphate, and nitrate for samples B0DHL7, B0DHL9, B0DHM1, B0DHM3, B0DHN3. Nitrate, nitrite, and phosphate holding times were exceeded by greater than twice the limit for samples B0DHL1, B0DHL3, B0DHM7, B0DHN9, and B0DHL5. The turbidity holding time was exceeded by greater than twice the limit for all samples.

**Data Package W0408-QES.** Nitrite and phosphate holding times were exceeded by greater than twice the limit for all samples. The nitrate holding time was exceeded for all samples.

**Data Package W0437-QES.** Nitrite, nitrate, and phosphate holding times were exceeded by greater than twice the limit for all samples.

In accordance with validation procedures results were qualified as estimated (J, UJ) for holding times exceeded by less than twice the limit. For holding times exceeded by greater than twice the limit, detected results were qualified as estimated (J) and non-detected results were rejected (UR).

### 3.4 ANALYTICAL ACCURACY

#### 3.4.1 Matrix Spike and Matrix Spike Duplicates

The matrix spike percent recoveries were within the specified control limits of 75% and 125% for all data packages.

#### 3.4.2 Laboratory Control Samples

The laboratory control sample percent recoveries were within the specified control limits of 80% to 120% for all data packages.

### **3.5 ANALYTICAL PRECISION**

#### **3.5.1 Laboratory Duplicates**

The laboratory duplicate relative percent difference values were within the specified control limits for all data packages.

#### **3.5.2 Field Duplicates**

A total of two field duplicate sample sets were collected and Appendix D presents a summary of the primary and duplicate sample results and the calculated RPD values. All RPD values were acceptable with the exception of nitrate/nitrite and sulfide in both sample sets.

#### **3.5.3 Field Splits**

A total of two field split sample sets were collected and Appendix D presents a summary of the primary and split sample results and the calculated RPD values. All RPD values were acceptable.

### **3.6 COMPOUND IDENTIFICATION**

The compound identification and confirmation were acceptable for all validated samples.

### **3.7 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS**

All sample results were verified and found to be acceptable. Sample quantitation limits for all samples were calculated correctly and properly reported.

### **3.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT**

Overall assessment of the analytical methods used and sample and QC results were satisfactory.

## 4.0 RADIOCHEMISTRY DATA VALIDATION SUMMARY

### 4.1 SUMMARY

This section presents a summary of the radiochemistry data validation results and review against the WHC Statement of Work (WHC 1994). Table 1-1 shows the data package identification, sample identification, sample collection date, location and sample type. Appendix E provides a summary of all validated data results.

#### 4.1.1 Sample Delivery Groups

Sample results from eight radiochemistry data packages are included in this report:

Data Package ID	No. of Samples
W0348-QES	10
W0351-QES	3
W0408-QES	10
W0419-QES	6
W0437-QES	3
W0457-QES	4
LK31-LAS	1
LK3777-LAS	1

#### 4.1.2 Samples Validated

Results for the data packages listed above were validated at the frequency specified in Section 1.0 with data qualifiers assigned as specified in the validation procedures.

#### 4.1.3 Westinghouse Hanford Validation Guidance Used

Data validation was performed in accordance with Data Validation Procedures for Radiochemical Analyses (WHC 1993b).

#### 4.1.4 Samples Analyzed

This section provides a summary of the data in terms of defined laboratory performance criteria and project-specific data quality objectives to assure the data is acceptable for use in the 100-HR-3 Phases I and II Round 8 Groundwater Sampling Task.

- **Precision.** Laboratory duplicate RPD results were acceptable for all data packages.
- **Accuracy.** Laboratory control sample results were acceptable for all data packages.

Matrix spike results were acceptable for all results, with the exception of tritium (see Section 4.3.2).

Tracer yields were acceptable for all samples analyzed, with the exception of strontium-90 (see Section 4.3.3).

- **Representativeness.** All field duplicate and field split RPD's were within control limits, with the exception of field duplicate RPD values for uranium-234, uranium-238, and tritium (see Section 4.4.2 and Section 4.4.3).
- **Completeness.** A total of thirty-eight samples were validated for radiochemistry parameters with 200 results reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90 percent.
- **Comparability.** Samples were analyzed by similar methods and all results were reported in common units, facilitating comparison of results.

#### 4.1.5 Deficiencies Noted

There were no major deficiencies identified during validation which required qualification of the data as unusable. Minor deficiencies were identified requiring qualification of the data which are explained in greater detail below.

## 4.2 ANALYTICAL METHOD

The following paragraphs summarize the analytical requirements for the radiochemistry analyses.

### 4.2.1 Instrument Calibration

Instrument calibration was performed at the proper frequency.

### 4.2.2 Blanks

**4.2.2.1 Method Blanks.** Laboratory method blanks were analyzed at the proper frequency and results were reported and verified as undetected for all analyses, with the exception of uranium-233/4, -235, -238.

**4.2.2.2 Equipment Blanks.** Samples B0DQZ9, B0DHN9 and B0DR01 were identified as equipment blanks. No analytes were detected in the samples with the exception of gross beta for sample B0DHN9. In accordance with validation procedures, no qualification is required based on field QC.

#### **4.2.3 Holding Times**

Holding time requirements were met for all samples validated.

### **4.3 ANALYTICAL ACCURACY**

#### **4.3.1 Laboratory Control Samples**

Laboratory control (blank spike) samples were analyzed at the required frequency and all results were within control limits.

#### **4.3.2 Matrix Spikes**

Matrix spike samples were analyzed at the required frequency and all results were within control limits, with the exception of tritium.

#### **4.3.3 Chemical Yield**

Chemical yields for carriers and tracers were acceptable for all analyses, with the exception of strontium-90.

### **4.4 ANALYTICAL PRECISION**

#### **4.4.1 Laboratory Duplicates**

Laboratory duplicate relative percent difference (RPD) values were acceptable.

#### **4.4.2 Field Duplicates**

There were two sets of field duplicates identified. Sample B0DHN3 is a field duplicate of B0DHL9. Sample B0DR03 is a field duplicate of B0DQZ5. All RPD's were within control limits, with the exception of uranium-234, uranium-238, and tritium for sample set B0DHN3/B0DHL9. In accordance with validation procedures, no qualification is required based on field QC.

#### 4.4.3 Field Splits

There were two sets of field splits identified. Sample B0DR05 is a field split of B0DQZ5. Sample B0DHN5 is a field split of B0DHL9. All RPD's were within control limits, with the exception of uranium-234 for samples B0DHN5 and B0DHL9. In accordance with validation procedures, no qualification is required based on field QC.

#### 4.5 SAMPLE RESULTS QUANTITATION, VERIFICATION AND REPORTED DETECTION LIMITS

All sample results were verified and found to be correctly reported. Validated results were calculated using the proper detectors, efficiencies and background counts.

Minimum detectable activities (MDAs) met method detection limit requirements, with the exception of gross alpha for sample B0DQW5, strontium-90 for sample B0DQW3, gross beta for samples B0DQW3, B0DQX9, B0DQY1, B0DQY3, B0DQY5, B0DQY7, B0DQY9, B0DQZ5, B0DQZ7 and B0DR03. In accordance with validation procedures, no qualification is required based on detection limits.

#### 4.6 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

System performance was assessed by a review of the raw data and no indications of poor performance were noted.

## 5.0 REFERENCES

WHC 1993a, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Radiochemical Analyses, WHC-SD-EN-SPP-001, Rev. 1, 1993. Westinghouse Hanford Company, Richland, Washington.

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Statement of Work, MSH-SWV-315905, August 10, 1994. Westinghouse Hanford Company, Richland, Washington.

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**APPENDIX A**

**Inorganic Validated Data Summary Tables**

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Parameter	Samp# Date Location Type Comments	BODHL1 12-21-94 199-H4-13 WATER		BODHL2 12-21-94 199-H4-13 WATER		BODHL3 12-21-94 199-H4-15A WATER		BODHL4 12-21-94 199-H4-15A WATER		BODHL5 12-21-94 199-H4-45 WATER		BODHL6 12-21-94 199-H4-45 WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	30.300	U	30.300	U	30.300	U	30.300	U	30.300	U	30.300	U
ANTIMONY	UG/L	27.400	U	27.400	U	27.400	U	27.400	U	27.400	U	27.400	U
BARIUM	UG/L	26.700	B	25.600	B	94.900	B	91.000	B	18.300	B	18.600	B
BERYLLIUM	UG/L	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U
CADMIUM	UG/L	1.800	U	1.800	U	1.800	U	1.800	U	1.800	U	1.800	U
CALCIUM	UG/L	54200.000		51800.000		58300.000		56800.000		43700.000		43900.000	
CHROMIUM	UG/L	39.200		27.700	J	125.000		121.000		6.500	BJ	2.800	UJ
COBALT	UG/L	3.700	UJ	3.700	UJ	3.700	UJ	3.700	UJ	3.700	UJ	3.700	UJ
COPPER	UG/L	5.000	U	6.400	B	5.200	B	5.000	U	7.100	B	5.000	U
IRON	UG/L	155.000		25.700	U	92.900	U	38.800	U	64.500	U	12.000	U
MAGNESIUM	UG/L	8800.000		8350.000		11500.000		11200.000		5270.000		5340.000	
MANGANESE	UG/L	4.900	U	3.000	U	2.800	U	2.900	U	3.300	U	2.200	U
NICKEL	UG/L	6.600	U	6.600	U	10.000	B	7.200	B	6.600	U	6.600	U
POTASSIUM	UG/L	2920.000	B	2520.000	B	6190.000		5860.000		2700.000	B	2780.000	B
SILVER	UG/L	5.300	U	5.300	U	5.300	U	5.300	U	5.300	U	5.300	U
SODIUM	UG/L	7800.000		7090.000		12200.000		11700.000		5010.000		5100.000	
VANADIUM	UG/L	11.300	UJ	11.300	UJ	11.300	UJ	12.800	BJ	11.300	UJ	11.300	UJ
ZINC	UG/L	11.100	B	11.100	U	17.700	B	11.100	U	16.400	B	11.100	U

The decimal places shown do not reflect the precision reported by the laboratory

A-1

Parameter	Samp# Date Location Type Comments	BODHL7 12-20-94 199-H4-46 WATER		BODHL8 12-20-94 199-H4-46 WATER		BODHL9 12-20-94 199-H4-47 WATER		BODHMO 12-20-94 199-H4-47 WATER		BODHM1 12-20-94 199-H4-48 WATER		BODHM2 12-20-94 199-H4-48 WATER	
	Units	Result	Q										
ALUMINUM	UG/L	39.500	B	30.300	U	50.100	B	30.300	U	99.600	B	30.300	U
ANTIMONY	UG/L	27.400	U										
BARIUM	UG/L	31.400	B	29.300	B	16.200	B	15.200	U	18.000	B	16.700	B
BERYLLIUM	UG/L	0.100	U										
CADMIUM	UG/L	1.800	U										
CALCIUM	UG/L	50700.000		49100.000		35600.000		34100.000		32000.000		31400.000	
CHROMIUM	UG/L	28.100	J	20.500	J	3.800	BJ	2.800	UJ	4.900	BJ	4.400	BJ
COBALT	UG/L	3.700	U	3.700	UJ	3.700	U	3.700	U	3.700	U	3.700	U
COPPER	UG/L	6.400	B	8.300	B	7.100	B	5.000	U	7.900	B	15.100	B
IRON	UG/L	132.000		28.100	U	149.000		31.400	U	145.000		43.200	U
MAGNESIUM	UG/L	10600.000		10200.000		5970.000		5620.000		6060.000		5880.000	
MANGANESE	UG/L	3.100	U	2.500	U	4.200	U	2.900	U	4.400	U	2.200	U
NICKEL	UG/L	11.800	B	6.600	U								
POTASSIUM	UG/L	5280.000		5200.000		2850.000	B	2850.000	B	3590.000	B	3430.000	B
SILVER	UG/L	5.300	U										
SODIUM	UG/L	19400.000		18600.000		5920.000		5600.000		5780.000		5560.000	
VANADIUM	UG/L	11.300	UJ										
ZINC	UG/L	56.400		11.100	U	11.100	U	11.100	U	22.600		11.100	U

The decimal places shown do not reflect the precision reported by the laboratory

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Parameter	Samp# Date Location Type Comments	BODHM3 12-20-94 199-H4-49 WATER		BODHM4 12-20-94 199-H4-49 WATER		BODHM7 12-21-94 199-H6-1 WATER		BODHM8 12-21-94 199-H6-1 WATER		BODHM9 12-27-94 699-96-43 WATER		BODHNO 12-27-94 699-96-43 WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	30.300	U	30.300	U	30.300	U	30.300	U	30.300	U	30.300	U
ANTIMONY	UG/L	27.400	U	27.400	U	27.400	U	27.400	U	32.800	U	32.800	U
BARIUM	UG/L	44.400	B	43.100	B	44.200	B	44.200	B	41.800	B	43.300	B
BERYLLIUM	UG/L	0.100	U	0.100	U	0.100	U	0.100	U	0.840	U	0.840	U
CADMIUM	UG/L	1.800	U	1.800	U	1.800	U	1.800	U	3.800	U	3.800	U
CALCIUM	UG/L	55500.000		53600.000		64400.000		63900.000		44600.000		45500.000	
CHROMIUM	UG/L	48.000		43.100		48.700		49.800		160.000		159.000	
COBALT	UG/L	3.700	U	3.700	U	3.700	UJ	3.700	UJ	4.100	U	4.100	U
COPPER	UG/L	5.000	U	7.100	B	6.400	B	6.000	B	5.000	U	5.000	U
IRON	UG/L	56.000	U	43.200	U	52.400	U	38.800	U	15.600	BJ	8.100	U
MAGNESIUM	UG/L	13100.000		12800.000		9810.000		9450.000		12300.000		12500.000	
MANGANESE	UG/L	3.400	U	2.100	U	3.100	U	3.200	U	0.800	UJ	0.800	UJ
NICKEL	UG/L	7.700	B	6.600	U	6.600	U	6.600	U	15.200	U	15.200	U
POTASSIUM	UG/L	5760.000		5750.000		5480.000		5050.000		5100.000		5210.000	
SILVER	UG/L	5.300	U	5.300	U	5.300	U	5.300	U	5.300	U	5.300	U
SODIUM	UG/L	18400.000		18800.000		17000.000		16000.000		20800.000		21200.000	
VANADIUM	UG/L	11.300	UJ	11.300	UJ	11.300	UJ	11.300	UJ	11.300	U	11.300	U
ZINC	UG/L	58.800		19.400	B	11.100	U	11.100	U	11.100	U	18.000	B

The decimal places shown do not reflect the precision reported by the laboratory

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Parameter	Samp# Date Location Type Comments	BODHN1 12-27-94 699-97-43 WATER		BODHN2 12-27-94 699-97-43 WATER		BODHN3 12-20-94 199-H4-47 WATER DUPLICATE		BODHN4 12-20-94 199-H4-47 WATER DUPLICATE		BODHN5 12-20-94 199-H4-47 WATER SPLIT		BODHN6 12-20-94 199-H4-47 WATER SPLIT	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	30.300	U	30.300	U	30.300	U	30.300	U	34.000	B	16.000	U
ANTIMONY	UG/L	32.800	U	32.800	U	27.400	U	27.400	U	50.000	UJ	50.000	UR
BARIUM	UG/L	40.000	B	40.000	B	14.600	U	15.700	B	13.400	B	13.400	B
BERYLLIUM	UG/L	0.850	U	0.850	U	0.100	U	0.100	U	1.000	U	1.000	U
CADMIUM	UG/L	3.800	U	3.800	U	1.800	U	1.800	U	4.000	U	4.000	U
CALCIUM	UG/L	44300.000		44100.000		34300.000		35100.000		29700.000		34300.000	
CHROMIUM	UG/L	178.000		169.000		5.400	BJ	2.800	UJ	3.000	U	3.000	U
COBALT	UG/L	4.100	U	4.100	U	3.700	U	3.700	U	6.000	U	6.000	U
COPPER	UG/L	5.000	U	5.000	U	7.100	B	19.500	B	3.000	U	3.000	UJ
IRON	UG/L	92.300	BJ	9.600	BJ	66.900	U	39.600	U	49.300	B	7.000	U
MAGNESIUM	UG/L	10000.000		9950.000		5710.000		5770.000		5060.000		5620.000	
MANGANESE	UG/L	1.600	BJ	0.800	UJ	2.800	U	2.800	U	1.000	U	1.000	U
NICKEL	UG/L	15.200	U	15.200	U	6.600	U	57.100	U	10.000	U	10.000	U
POTASSIUM	UG/L	4370.000	B	4310.000	B	2760.000	B	2770.000	B	2040.000	B	2170.000	B
SILVER	UG/L	5.300	U	5.300	U	5.300	U	5.300	U	4.000	U	4.000	U
SODIUM	UG/L	22100.000		22100.000		5660.000		5840.000		4870.000	B	5350.000	B
VANADIUM	UG/L	11.300	U	11.300	U	11.300	UJ	11.300	UJ	4.800	B	4.200	U
ZINC	UG/L	11.100	U	11.100	U	17.400	B	14.700	B	6.200	U	2.000	U

The decimal places shown do not reflect the precision reported by the laboratory

A-4

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Parameter	Samp# Date Location Type Comments		BODHN7 12-27-94 699-97-43 WATER EQUIPMENT BLANK	
	Units	Result	Q	
ALUMINUM	UG/L	42.900	U	
ANTIMONY	UG/L	32.800	U	
BARIUM	UG/L	2.800	B	
BERYLLIUM	UG/L	0.850	U	
CADMIUM	UG/L	3.800	U	
CALCIUM	UG/L	1520.000	B	
CHROMIUM	UG/L	2.900	U	
COBALT	UG/L	4.100	U	
COPPER	UG/L	12.500	B	
IRON	UG/L	19.400	BJ	
MAGNESIUM	UG/L	288.000	B	
MANGANESE	UG/L	0.810	BJ	
NICKEL	UG/L	15.200	U	
POTASSIUM	UG/L	2660.000	U	
SILVER	UG/L	5.300	U	
SODIUM	UG/L	553.000	B	
VANADIUM	UG/L	11.300	U	
ZINC	UG/L	16.700	B	

The decimal places shown do not reflect the precision reported by the laboratory

Parameter	Samp# Date Location Type Comments	BODQW6 2-9-95 199-D5-12 WATER		BODQW7 2-27-95 199-D5-14 WATER		BODQW8 2-27-95 199-D5-14 WATER		BODQW9 2-27-95 199-D5-15 WATER		BODQX0 2-27-95 199-D5-15 WATER		BODQX1 2-27-95 199-D5-16 WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	27.700	U	23.500	U	43.200	B	39.200	B	38.400	B	43.900	B
ANTIMONY	UG/L	32.800	U	43.400	B	62.200	B	32.800	U	32.800	U	33.400	B
BARIUM	UG/L	129.000	B	106.000	B	111.000	B	338.000	B	96.800	B	135.000	B
BERYLLIUM	UG/L	0.200	U	0.390	B	0.400	B	0.990	B	0.410	B	0.330	B
CADMIUM	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
CALCIUM	UG/L	116000.000		66100.000		67500.000		65600.000		64200.000		75400.000	
CHROMIUM	UG/L	90.300		1720.000		1760.000		956.000		945.000		841.000	
COBALT	UG/L	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U
COPPER	UG/L	13.200	U	12.300	B	18.000	B	10.300	B	14.500	B	12.400	B
IRON	UG/L	370.000		371.000		2210.000		290.000		1200.000		240.000	
MAGNESIUM	UG/L	25600.000		20500.000		20900.000		18000.000		17700.000		28500.000	
MANGANESE	UG/L	5.500	B	3.700	B	8.500	B	3.300	B	5.700	B	3.600	B
NICKEL	UG/L	15.200	U	15.200	U	15.200	U	15.200	U	15.200	U	15.200	U
POTASSIUM	UG/L	5850.000		6660.000		6550.000		6240.000		5700.000		6660.000	
SILVER	UG/L	3.800	U	4.000	B	4.600	B	3.800	U	3.800	U	3.800	U
SODIUM	UG/L	12900.000		17800.000		18300.000		15600.000		15400.000		15700.000	
VANADIUM	UG/L	15.000	U	30.500	B	31.500	B	18.800	B	19.100	B	18.900	B
ZINC	UG/L	14.800	B	73.100		26.900		121.000		19.300	B	113.000	

The decimal places shown do not reflect the precision reported by the laboratory

9613444.0456

96344-007

BHI-00402  
Rev. 00

Parameter	Sampl# Date Location Type Comments	B0DQX2 2-27-95 199-D5-16 WATER		B0DQX3 2-15-95 199-D5-17 WATER		B0DQX4 2-15-95 199-D5-17 WATER		B0DQX9 2-7-95 199-D5-20 WATER		B0DQY0 2-7-95 199-D5-20 WATER		B0DQY1 2-7-95 199-D8-3 WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	33.400	B	238.000		23.500	U	49.400	U	29.700	U	40.300	U
ANTIMONY	UG/L	32.800	U	32.800	U	32.800	U	32.700	U	32.700	U	32.700	U
BARIUM	UG/L	126.000	B	53.200	B	49.800	B	67.600	B	65.900	B	161.000	B
BERYLLIUM	UG/L	0.200	U	0.300	U	0.200	U	0.690	U	0.510	U	0.770	U
CADMIUM	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
CALCIUM	UG/L	74400.000		45500.000		44600.000		44300.000		41500.000		128000.000	
CHROMIUM	UG/L	831.000		45.000		15.000	B	96.100		72.800		120.000	
COBALT	UG/L	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U
COPPER	UG/L	7.300	B	23.600	U	19.700	U	32.500		11.700	U	19.500	U
IRON	UG/L	1700.000		495.000		33.000	U	148.000	U	20.100	U	81.000	U
MAGNESIUM	UG/L	28200.000		14400.000		14200.000		13900.000		13300.000		12900.000	
MANGANESE	UG/L	6.800	B	12.500	B	7.100	B	9.100	U	3.200	U	7.100	U
NICKEL	UG/L	15.200	U	20.300	B	15.200	U	28.400	B	15.200	U	15.200	U
POTASSIUM	UG/L	5730.000		4800.000	B	4720.000	B	4260.000	B	3670.000	B	8390.000	
SILVER	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
SODIUM	UG/L	15500.000		11900.000		11900.000		12400.000		12000.000		8220.000	
VANADIUM	UG/L	14.600	B	12.700	UJ	8.800	UJ	31.300	B	18.200	U	24.300	B
ZINC	UG/L	28.500		15.400	B	19.700	B	43.500		15.000	B	11.100	B

The decimal places shown do not reflect the precision reported by the laboratory

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Parameter	Samp# Date Location Type Comments	BODQY2 2-7-95 199-D8-3 WATER		BODQY3 2-2-95 199-D8-53 WATER		BODQY4 2-2-95 199-D8-53 WATER		BODQY5 2-1-95 199-D8-54A WATER		BODQY6 2-1-95 199-D8-54A WATER		BODQY7 2-1-95 199-D8-54B WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	23.500	U	34.000	U	23.500	U	46.300	U	23.500	U	33.700	U
ANTIMONY	UG/L	32.700	U	32.700	U	32.700	U	32.700	U	32.700	U	32.700	U
BARIUM	UG/L	158.000	B	88.800	B	82.500	B	83.900	B	77.600	B	99.600	B
BERYLLIUM	UG/L	0.600	U	1.000	U	0.520	U	1.400	U	0.520	U	0.510	U
CADMIUM	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
CALCIUM	UG/L	124000.000		90000.000		90400.000		92300.000		84800.000		41600.000	
CHROMIUM	UG/L	119.000		379.000		359.000		538.000		479.000		37.300	
COBALT	UG/L	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U
COPPER	UG/L	21.800	U	23.500	U	20.700	U	17.100	U	14.000	U	12.800	U
IRON	UG/L	40.300	U	155.000	U	32.000	U	110.000	U	37.100	U	188.000	U
MAGNESIUM	UG/L	13000.000		13200.000		13100.000		17100.000		15900.000		15900.000	
MANGANESE	UG/L	7.200	U	9.400	B	5.400	U	6.900	U	4.200	U	104.000	
NICKEL	UG/L	15.200	U	29.200	B	15.200	U	18.100	B	15.200	U	21.100	B
POTASSIUM	UG/L	8950.000		4050.000	B	4020.000	B	4840.000	B	4250.000	B	9020.000	
SILVER	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
SODIUM	UG/L	7960.000		9380.000		9470.000		14300.000		13300.000		32200.000	
VANADIUM	UG/L	14.400	U	17.800	U	13.800	U	24.300	B	18.400	U	37.700	B
ZINC	UG/L	47.600		26.000		26.700		17.000	B	10.200	B	19.200	B

The decimal places shown do not reflect the precision reported by the laboratory

961344-0159

BHI-00402  
Rev. 00

Parameter	Samp#	B0DQY8		B0DQY9	
	Date	2-1-95		2-2-95	
	Location	199-D8-54B		199-D8-55	
	Type	WATER		WATER	
	Comments				
	Units	Result	Q	Result	Q
ALUMINUM	UG/L	23.500	U	41.100	U
ANTIMONY	UG/L	32.700	U	32.700	U
BARIUM	UG/L	94.200	B	49.700	B
BERYLLIUM	UG/L	0.510	U	0.510	U
CADMIUM	UG/L	3.800	U	3.800	U
CALCIUM	UG/L	40300.000		34300.000	
CHROMIUM	UG/L	5.900	B	69.600	
COBALT	UG/L	4.100	U	4.100	U
COPPER	UG/L	40.500		13.400	U
IRON	UG/L	48.000	U	254.000	U
MAGNESIUM	UG/L	15300.000		5680.000	
MANGANESE	UG/L	94.500		9.600	B
NICKEL	UG/L	70.000		42.600	
POTASSIUM	UG/L	8500.000		2670.000	U
SILVER	UG/L	3.800	U	3.800	U
SODIUM	UG/L	31000.000		5490.000	
VANADIUM	UG/L	38.900	B	10.800	U
ZINC	UG/L	8.500	B	17.300	B

The decimal places shown do not reflect the precision reported by the laboratory

Parameter	Samp# Date Location Type Comments	B0DQZ0 2-2-95 199-D8-55 WATER		B0DQZ1 2-15-95 699-91-46A WATER		B0DQZ2 2-15-95 699-91-46A WATER		B0DQZ3 2-9-95 699-93-48A WATER		B0DQZ4 2-9-95 699-93-48A WATER		B0DQZ5 2-6-95 699-96-49 WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	23.500	U	35.600	U	23.500	U	85.100	U	26.800	U	23.500	U
ANTIMONY	UG/L	32.700	U	32.800	U	32.800	U	32.800	U	32.800	U	32.700	U
BARIUM	UG/L	56.800	B	27.500	B	27.500	B	38.900	B	36.600	B	75.200	B
BERYLLIUM	UG/L	0.510	U	0.290	U	0.200	U	0.290	U	0.200	U	0.510	U
CADMIUM	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
CALCIUM	UG/L	34400.000		30800.000		30900.000		30700.000		29600.000		42800.000	
CHROMIUM	UG/L	15.600	B	13.600	B	10.300	B	26.400		15.200	B	38.700	
COBALT	UG/L	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U
COPPER	UG/L	17.500	U	14.600	U	10.800	U	21.800	U	6.000	UJ	22.500	U
IRON	UG/L	30.500	U	47.100	U	83.200	U	353.000		149.000		243.000	U
MAGNESIUM	UG/L	5670.000		11700.000		11900.000		10200.000		9890.000		9930.000	
MANGANESE	UG/L	5.200	U	2.800	U	2.100	U	7.100	B	2.300	U	7.100	U
NICKEL	UG/L	15.500	B	15.200	U	15.200	U	15.200	U	15.200	U	15.200	U
POTASSIUM	UG/L	2830.000	B	5720.000		5260.000		3800.000	B	4010.000	B	4870.000	B
SILVER	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
SODIUM	UG/L	5490.000		20500.000		21100.000		18000.000		17500.000		11900.000	
VANADIUM	UG/L	16.200	U	27.300	B	23.500	B	15.900	U	12.200	UJ	23.600	B
ZINC	UG/L	28.500		12.500	B	12.400	B	26.200		15.400	B	29.900	

The decimal places shown do not reflect the precision reported by the laboratory

9637410000

Parameter	Samp#	B0DQ26		B0DQ27		B0DQ28		B0DQ29		B0DR00		B0DR01	
	Date	2-6-95		2-6-95		2-6-95		2-15-95		2-15-95		2-15-95	
	Location	699-96-49		699-97-51A		699-97-51A		EQUIP BLANK		EQUIP BLANK		EQUIP BLANK	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments							EQUIP BLANK		EQUIP BLANK		EQUIP BLANK	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	23.600	U	38.700	U	26.300	U	23.500	U	23.500	U	27.700	U
ANTIMONY	UG/L	32.700	U	32.700	U	32.700	U	32.800	U	32.800	U	32.800	U
BARIUM	UG/L	74.300	B	79.800	B	81.300	B	2.800	U	2.100	U	2.500	U
BERYLLIUM	UG/L	0.510	U	0.510	U	0.520	U	0.600	U	0.200	U	0.200	U
CADMIUM	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
CALCIUM	UG/L	44700.000		50300.000		53000.000		1390.000	B	1480.000	B	1460.000	B
CHROMIUM	UG/L	42.500		53.700		50.400		2.900	U	2.900	U	2.900	U
COBALT	UG/L	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U	4.100	U
COPPER	UG/L	13.300	U	23.400	U	18.100	U	10.000	U	6.900	UJ	9.400	U
IRON	UG/L	135.000	U	258.000	U	60.800	U	49.700	U	18.900	U	29.400	U
MAGNESIUM	UG/L	10400.000		11700.000		12200.000		348.000	U	313.000	U	346.000	U
MANGANESE	UG/L	4.400	U	5.000	U	5.700	U	2.100	U	1.100	U	1.300	U
NICKEL	UG/L	15.200	U	23.600	B	15.200	U	15.200	U	15.200	U	15.200	U
POTASSIUM	UG/L	4460.000	B	3200.000	B	3890.000	B	2670.000	U	2670.000	U	2670.000	U
SILVER	UG/L	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U	3.800	U
SODIUM	UG/L	12700.000		11600.000		12100.000		385.000	U	347.000	U	383.000	U
VANADIUM	UG/L	22.300	B	13.300	U	14.500	U	4.000	UJ	2.500	UJ	4.400	UJ
ZINC	UG/L	10.700	B	27.400		14.100	B	14.000	B	14.100	B	16.500	B

The decimal places shown do not reflect the precision reported by the laboratory

9613444-DN62

Parameter	Samp# Date Location Type Comments	BODR02 2-15-95 EQUIP BLANK WATER EQUIP BLANK		BODR03 2-6-95 699-96-49 WATER DUPLICATE		BODR04 2-6-95 699-96-49 WATER DUPLICATE		BODR05 2-6-95 699-96-49 WATER SPLIT		BODR06 2-6-95 699-96-49 WATER SPLIT		BODR07 3-14-95 199-D5-13 WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	34.900	U	23.500	U	29.000	U	26.000	U	26.000	U	40.900	B
ANTIMONY	UG/L	32.800	U	32.700	U	32.700	U	45.000	U	45.000	U	26.300	U
BARIUM	UG/L	2.300	U	73.100	B	75.500	B	77.000	B	72.500	B	113.000	B
BERYLLIUM	UG/L	0.200	U	0.510	U	0.510	U	1.000	U	1.000	U	0.600	U
CADMIUM	UG/L	3.800	U	3.800	U	3.800	U	3.000	UJ	3.000	UJ	2.400	U
CALCIUM	UG/L	1510.000	B	43300.000		45100.000		44200.000		42400.000		64400.000	
CHROMIUM	UG/L	2.900	U	39.900		39.200		43.800		40.100		157.000	
COBALT	UG/L	4.100	U	4.100	U	4.100	U	7.000	U	7.000	U	3.400	U
COPPER	UG/L	15.000	U	12.600	U	16.600	U	3.600	U	3.000	U	25.200	
IRON	UG/L	19.600	U	258.000	U	120.000	U	68.100	U	6.000	U	256.000	
MAGNESIUM	UG/L	355.000	U	10200.000		10500.000		10000.000		9620.000		17700.000	
MANGANESE	UG/L	1.800	U	4.800	U	6.000	U	3.100	U	1.000	U	7.600	B
NICKEL	UG/L	15.200	U	15.200	U	15.200	U	12.000	U	12.000	U	29.000	B
POTASSIUM	UG/L	2670.000	U	4430.000	B	4970.000	B	4760.000	B	4700.000	B	4010.000	B
SILVER	UG/L	3.800	U	3.800	U	3.800	U	4.000	U	4.000	U	4.100	U
SODIUM	UG/L	367.000	U	12400.000		12500.000		13100.000		12300.000		7010.000	
VANADIUM	UG/L	3.600	UJ	18.800	U	24.000	B	13.000	B	10.800	B	9.400	B
ZINC	UG/L	14.800	B	14.600	B	21.400		11.800	U	2.000	U	11.200	B

The decimal places shown do not reflect the precision reported by the laboratory

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Parameter	Samp# Date Location Type Comments	B0DR08 3-14-95 199-D8-4 WATER		B0DR09 3-14-95 199-D8-5 WATER		B0DR10 3-14-95 199-D8-6 WATER	
	Units	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	263.000		126.000	B	70.800	B
ANTIMONY	UG/L	35.800	B	26.300	U	27.300	B
BARIUM	UG/L	24.300	B	41.500	B	14.400	B
BERYLLIUM	UG/L	0.600	U	0.600	U	0.600	U
CADMIUM	UG/L	2.400	U	2.400	U	2.400	U
CALCIUM	UG/L	20800.000		30400.000		20600.000	
CHROMIUM	UG/L	87.200		146.000		128.000	
COBALT	UG/L	3.400	U	3.400	U	3.400	U
COPPER	UG/L	11.100	B	10.700	B	9.900	B
IRON	UG/L	759.000		750.000		587.000	
MAGNESIUM	UG/L	1460.000	B	7760.000		1500.000	B
MANGANESE	UG/L	25.200		16.400		13.500	B
NICKEL	UG/L	37.000	B	60.300		62.000	
POTASSIUM	UG/L	3040.000	B	2820.000	B	2050.000	B
SILVER	UG/L	4.100	U	4.100	U	4.100	U
SODIUM	UG/L	3580.000		5410.000		3790.000	
VANADIUM	UG/L	8.600	U	8.600	U	8.600	U
ZINC	UG/L	35.800		16.900	B	14.600	B

The decimal places shown do not reflect the precision reported by the laboratory

96744003

Parameter	Samp#	BODHN8		BODHN9		BODHPO		BODQW3		BODQW4		BODQW5	
	Date	12-27-94		12-21-94		12-21-94		2-7-95		2-7-95		2-9-95	
	Location	699-97-43		199-H5-1A		199-H5-1A		199-D2-6		199-D2-6		199-D5-12	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments	EQUIP BLANK		EQUIP BLANK		EQUIP BLANK							
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	30.300	U	30.300	U	30.300	U	33.700	U	25.900	U	33.200	U
ANTIMONY	UG/L	32.800	U	27.400	U	27.400	U	32.700	U	32.700	U	32.800	U
BARIUM	UG/L	16.900	B	2.100	U	26.400	B	95.100	B	67.600	B	138.000	B
BERYLLIUM	UG/L	0.200	U	0.100	U	0.100	U	1.500	U	0.510	U	0.450	U
CADMIUM	UG/L	3.800	U	1.800	U	1.800	U	3.800	U	3.800	U	3.800	U
CALCIUM	UG/L	16100.000		1610.000	B	22900.000		81100.000		81000.000		124000.000	
CHROMIUM	UG/L	2.900	U	2.800	UJ	2.800	UJ	164.000		147.000		98.600	
COBALT	UG/L	4.100	U	3.700	UJ	3.700	UJ	4.100	U	4.100	U	4.100	U
COPPER	UG/L	7.000	B	5.200	B	5.000	U	18.400	U	16.700	U	15.900	U
IRON	UG/L	18.200	BJ	64.500	U	27.300	U	115.000	U	33.300	U	336.000	
MAGNESIUM	UG/L	3620.000	B	267.000	B	5010.000		18700.000		18700.000		26900.000	
MANGANESE	UG/L	0.800	UJ	4.200	U	2.400	U	6.900	U	5.100	U	7.900	B
NICKEL	UG/L	15.200	U	6.600	U	6.600	U	35.300	B	34.100	B	15.200	U
POTASSIUM	UG/L	2660.000	U	479.000	U	963.000	B	4170.000	B	4010.000	B	6540.000	
SILVER	UG/L	5.300	U	5.300	U	5.300	U	3.800	U	3.800	U	3.800	U
SODIUM	UG/L	1850.000		533.000	B	2470.000		12700.000		12800.000		13500.000	
VANADIUM	UG/L	11.300	U	11.300	UJ	11.300	UJ	25.500	B	20.000	U	19.500	U
ZINC	UG/L	929.000		28.400		1180.000		23.300		9.500	B	18.600	B

The decimal places shown do not reflect the precision reported by the laboratory

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9613444.0464

BHI-00402  
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Rev. 00

**APPENDIX B**

**Inorganic Field Quality Control Summary Tables**

Field Duplicate Samples, UG/L						
HEIS NO.:		B0DHL9		B0DHN3		
DATE:		12/20/94		12/20/94		
LOCATION:		199-H4-47		199-H4-47		
COMMENTS:				DUPLICATE		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
ALUMINUM	200	50.1	B	30.3	U	200
ANTIMONY	100	27.4	U	27.4	U	NC
BARIUM	200	16.2	B	14.6	U	200
BERYLLIUM	7	0.1	U	0.1	U	NC
CADMIUM	20	1.8	U	1.8	U	NC
CALCIUM	5000	35600		34300		3.7
CHROMIUM	20	3.8	BJ	5.4	BJ	34.8
COBALT	50	3.7	U	3.7	U	NC
COPPER	25	7.1	B	7.1	B	0
IRON	100	149		66.9	U	200
MAGNESIUM	5000	5970		5710		4.5
MANGANESE	15	4.2	U	2.8	U	NC
NICKEL	40	6.6	U	6.6	U	NC
POTASSIUM	5000	2850	B	2760	B	3.2
SILVER	200	5.3	U	5.3	U	NC
SODIUM	1000	5920		5660		4.5
VANADIUM	50	11.3	UJ	11.3	UJ	NC
ZINC	20	11.1	U	17.4	B	200

Field Split Samples, UG/L						
HEIS NO.:		B0DHL9		B0DHN5		
DATE:		12/20/94		12/20/94		
LOCATION:		199-H4-47		199-H4-47		
COMMENTS:				SPLIT		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
ALUMINUM	200	50.1	B	34.0	B	38.3
ANTIMONY	100	27.4	U	50.0	UJ	NC
BARIUM	200	16.2	B	13.4	B	18.9
BERYLLIUM	7	0.1	U	1.0	U	NC
CADMIUM	20	1.8	U	4.0	U	NC
CALCIUM	5000	35600		29700		18
CHROMIUM	20	3.8	BJ	3.0	U	200
COBALT	50	3.7	U	6.0	U	NC
COPPER	25	7.1	B	3.0	U	200
IRON	100	149		49.3	B	100.1
MAGNESIUM	5000	5970		5060		16.5
MANGANESE	15	4.2	U	1.0	U	NC
NICKEL	40	6.6	U	10.0	U	NC
POTASSIUM	5000	2850	B	2040	B	33.1
SILVER	200	5.3	U	4.0	U	NC
SODIUM	1000	5920		4870	B	19.5
VANADIUM	50	11.3	UJ	4.8	B	200
ZINC	20	11.1	U	6.2	U	NC

Field Duplicate Samples, UG/L						
HEIS NO.:		B0DHM0		B0DHN4		
DATE:		12/20/94		12/20/94		
LOCATION:		199-H4-47		199-H4-47		
COMMENTS:				DUPLICATE		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
ALUMINUM	200	30.3	U	30.3	U	NC
ANTIMONY	100	27.4	U	27.4	U	NC
BARIUM	200	15.2	U	15.7	B	3.2
BERYLLIUM	7	0.1	U	0.1	U	NC
CADMIUM	20	1.8	U	1.8	U	NC
CALCIUM	5000	34100		35100		2.9
CHROMIUM	20	2.8	UJ	2.8	UJ	NC
COBALT	50	3.7	U	3.7	U	NC
COPPER	25	5.0	U	19.5	B	200
IRON	100	31.4	U	39.6	U	0.3
MAGNESIUM	5000	5620		5770		2.6
MANGANESE	15	2.9	U	2.8	U	NC
NICKEL	40	6060	U	57.1		200
POTASSIUM	5000	2850	B	2770	B	2.8
SILVER	200	5.3	U	5.3	U	NC
SODIUM	1000	5600		5840		4.2
VANADIUM	50	11.3	UJ	11.3	UJ	NC
ZINC	20	11.1	U	14.7	B	200

Field Split Samples, UG/L						
HEIS NO.:		B0DHM0		B0DHN6		
DATE:		12/20/94		12/20/94		
LOCATION:		199-H4-47		199-H4-47		
COMMENTS:				SPLIT		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
ALUMINUM	200	30.3	U	16.0	U	NC
ANTIMONY	100	27.4	U	50.0	U	NC
BARIIUM	200	15.2	U	13.4	B	200
BERYLLIUM	7	0.1	U	1.0	U	NC
CADMIUM	20	1.8	U	4.0	U	NC
CALCIUM	5000	34100		34300		0.6
CHROMIUM	20	2.8	UJ	3.0	U	NC
COBALT	50	3.7	U	6.0	U	NC
COPPER	25	5.0	U	3.0	UJ	NC
IRON	100	31.4	U	7.0	U	NC
MAGNESIUM	5000	5620		5620		0.0
MANGANESE	15	2.9	U	1.0	U	NC
NICKEL	40	6.6	U	10.0	U	NC
POTASSIUM	5000	2850	B	2170	B	27.1
SILVER	200	5.3	U	4.0	U	NC
SODIUM	1000	5600		5350		4.6
VANADIUM	50	11.3	UJ	4.2	U	NC
ZINC	20	11.1	U	2.0	U	NC

Field Duplicate Samples, UG/L						
HEIS NO.:		B0DQZ5		B0DR03		
DATE:		2/06/95		2/06/95		
LOCATION:		699-96-49		699-96-49		
COMMENTS:				DUPLICATE		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
ALUMINUM	200	23.5	U	23.5	U	NC
ANTIMONY	100	32.7	U	32.7	U	NC
BARIUM	200	75.2	B	73.1	B	2.8
BERYLLIUM	7	0.51	U	0.51	U	NC
CADMIUM	20	3.8	U	3.8	U	NC
CALCIUM	5000	42800		43300		1.2
CHROMIUM	20	38.7		39.9		3.1
COBALT	50	4.1	U	4.1	U	NC
COPPER	25	22.5	U	12.6	U	NC
IRON	100	243	U	258	U	6.0
MAGNESIUM	5000	9930		10200		2.7
MANGANESE	15	7.1	U	4.8	U	NC
NICKEL	40	15.2	U	15.2	U	NC
POTASSIUM	5000	4870	B	4430	B	9.5
SILVER	200	3.8	U	3.8	U	NC
SODIUM	1000	11900		12400		4.1
VANADIUM	50	23.6	B	18.8	U	200
ZINC	20	29.9		14.6	B	68.8

Field Split Samples, UG/L						
HEIS NO.:		B0DQZ5		B0DR05		
DATE:		2/06/95		2/06/95		
LOCATION:		699-96-49		699-96-49		
COMMENTS:				SPLIT		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
ALUMINUM	200	23.5	U	26.0	U	NC
ANTIMONY	100	32.7	U	45.0	U	NC
BARIUM	200	75.2	B	77.0	B	2.4
BERYLLIUM	7	0.51	U	1.0	U	NC
CADMIUM	20	3.8	U	3.0	UJ	3.2
CALCIUM	5000	42800		44200		NC
CHROMIUM	20	38.7		43.8		12.4
COBALT	50	4.1	U	7.0	U	NC
COPPER	25	22.5	U	3.6	U	NC
IRON	100	243	U	68.1	U	NC
MAGNESIUM	5000	9930		10000		0.7
MANGANESE	15	7.1	U	3.1	U	NC
NICKEL	40	15.2	U	12.0	U	NC
POTASSIUM	5000	4870	B	4760	B	2.3
SILVER	200	3.8	U	4.0	U	NC
SODIUM	1000	11900		13100		9.6
VANADIUM	50	23.6	B	13.0	B	57.9
ZINC	20	29.9		11.8	U	200

Field Duplicate Samples, UG/L						
HEIS NO.:		B0DQZ6		B0DR04		
DATE:		2/06/95		2/06/95		
LOCATION:		699-96-49		699-96-49		
COMMENTS:				DUPLICATE		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
ALUMINUM	200	23.6	U	29.0	U	NC
ANTIMONY	100	32.7	U	32.7	U	NC
BARIUM	200	74.3	B	75.5	B	1.6
BERYLLIUM	7	0.51	U	0.51	U	NC
CADMIUM	20	3.8	U	3.8	U	NC
CALCIUM	5000	44700		45100		.9
CHROMIUM	20	42.5		39.2		8.1
COBALT	50	4.1	U	4.1	U	NC
COPPER	25	13.3	U	16.6	U	NC
IRON	100	135	U	120	U	NC
MAGNESIUM	5000	10400		10500		1.0
MANGANESE	15	4.4	U	6.0	U	NC
NICKEL	40	15.2	U	15.2	U	NC
POTASSIUM	5000	4460	B	4970	B	10.8
SILVER	200	3.8	U	3.8	U	NC
SODIUM	1000	12700		12500		1.6
VANADIUM	50	22.3	B	24.0	B	7.3
ZINC	20	10.7	B	21.4		66.7

Field Split Samples, UG/L						
HEIS NO.:		B0DQZ6		B0DR06		
DATE:		2/06/95		2/06/95		
LOCATION:		699-96-49		699-96-49		
COMMENTS:				SPLIT		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
ALUMINUM	200	23.6	U	26.0	U	NC
ANTIMONY	100	32.7	U	45.0	U	NC
BARIUM	200	74.3	B	72.5	B	2.5
BERYLLIUM	7	0.51	U	1.0	U	NC
CADMIUM	20	3.8	U	3.0	UJ	5.3
CALCIUM	5000	44700		42400		NC
CHROMIUM	20	42.5		40.1		5.8
COBALT	50	4.1	U	7.0	U	NC
COPPER	25	13.3	U	3.0	U	NC
IRON	100	135	U	6.0	U	NC
MAGNESIUM	5000	10400		9620		7.8
MANGANESE	15	4.4	U	1.0	U	NC
NICKEL	40	15.2	U	12.0	U	NC
POTASSIUM	5000	4460	B	4700	B	5.2
SILVER	200	3.8	U	4.0	U	NC
SODIUM	1000	12700		12300		3.2
VANADIUM	50	22.3	B	10.8	B	69.5
ZINC	20	10.7	B	2.0	U	200

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## APPENDIX C

General Chemistry Validated Data Summary Tables

Parameter	Samp#	BODQY7	BODQY9	BODQZ1	BODQZ3	BODQZ5	BODQZ7						
	Date	2-1-95	2-2-95	2-15-95	2-9-95	2-6-95	2-6-95						
	Location	199-D8-54B	199-D8-55	699-91-46A	699-93-48A	699-96-49	699-97-51A						
	Depth	---	---	---	---	---	---						
	Type	WATER	WATER	WATER	WATER	WATER	WATER						
	Comments												
	Units	Result	Q	Result	Q	Result	Q	Result	Q				
CHLORIDE	MG/L	4.810		4.650		4.260		5.600		12.500		19.000	
NITRATE	MG/L	0.440	J	1.450	J	2.050	J	1.460	J	2.900	J	4.170	J
NITRITE	MG/L	0.020	UR	0.020	UR	0.020	UR	0.020	UR	0.020	UJ	0.020	UJ
ORTHO-PHOSPHATE	MG/L	1.000	UR	1.000	UR	1.000	UR	1.000	UR	1.000	UJ	1.000	UJ
SULFATE	MG/L	67.400		31.000		30.900		34.000		57.200		73.200	
AMMONIA	UG/L	50.000	U	50.000	U	50.000	U	50.000	U	50.000	U	50.000	U
NITRATE+NITRITE	UG/L	510.000		1730.000		1340.000		1400.000		2650.000		3690.000	
SULFIDE	MG/L	0.400	U	0.400	U	0.230		0.680		0.440	U	0.550	
TURBIDITY		NR		NR		NR		NR		NR		NR	

The decimal places shown do not reflect the precision reported by the laboratory

960711075

Parameter	Samp#	B0DQ29		B0DR01		B0DR03	
	Date	2-15-95		2-15-95		2-6-95	
	Location	EQUIPMENT BLANK		EQUIPMENT BLANK		699-96-49	
	Depth	---		---		---	
	Type	WATER		WATER		WATER	
	Comments	EQUIPMENT BLANK		EQUIPMENT BLANK		FIELD DUPLICATE	
	Units	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/L	0.250	U	0.250	U	12.400	
NITRATE	MG/L	0.020	UR	0.020	UR	2.880	J
NITRITE	MG/L	0.020	UR	0.020	UR	0.020	UJ
ORTHO-PHOSPHATE	MG/L	1.000	UR	1.000	UR	1.000	UJ
SULFATE	MG/L	1.000	U	1.000	U	56.700	
AMMONIA	UG/L	50.000	U	50.000	U	50.000	U
NITRATE+NITRITE	UG/L	50.000	U	50.000	U	4790.000	
SULFIDE	MG/L	0.200		0.350		0.720	
TURBIDITY		NR		NR		NR	

The decimal places shown do not reflect the precision reported by the laboratory

Parameter	Samp#	BODHN7		BODHN9		BODQW3		BODQW5		BODQW7		BODQW9	
	Date	12-27-94		12-21-94		2-7-95		2-9-95		2-27-95		2-27-95	
	Location	699-97-43		199-H5-1A		199-D2-6		199-D5-12		199-D5-14		199-D5-15	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments			EQUIPMENT BLANK									
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/L	0.250	U	0.250	U	22.900		33.000		19.800		14.400	
NITRATE	MG/L	0.020	UR	0.020	UR	15.200	J	21.500	J	12.200	J	11.200	J
NITRITE	MG/L	0.020	UR	0.020	UR	0.020	UJ	0.020	UR	0.020	UR	0.020	UR
ORTHO-PHOSPHATE	MG/L	1.000	UR	1.000	UR	1.000	UJ	1.000	UR	1.000	UR	1.000	UR
SULFATE	MG/L	1.000	U	1.000	U	123.000		196.000		94.200		86.000	
AMMONIA	UG/L	50.000	U	50.000	U	50.000	U	50.000	U	50.000	U	50.000	U
NITRATE+NITRITE	UG/L	50.000	U	50.000	U	14800.000		20400.000		13100.000		10900.000	
SULFIDE	MG/L	0.570		0.480		0.530		0.640		0.200	U	0.400	U
TURBIDITY	NTU	0.020	J	0.010	J	NR		NR		NR		NR	

The decimal places shown do not reflect the precision reported by the laboratory

9613444-0777

Parameter	Samp#	B0DQX1		B0DQX3		B0DQX9		B0DQY1		B0DQY3		B0DQY5	
	Date	2-27-95		2-15-95		2-7-95		2-7-95		2-2-95		2-1-95	
	Location	199-D5-16		199-D5-17		199-D5-20		199-D8-3		199-D8-53		199-D8-54A	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER									
	Comments												
	Units	Result	Q	Result	Q								
CHLORIDE	MG/L	20.200		9.080		10.000		25.800		37.400		35.500	
NITRATE	MG/L	17.300	J	6.670	J	4.430	J	40.900	J	13.500	J	13.500	J
NITRITE	MG/L	0.020	UR	0.020	UR	0.020	UJ	0.200	J	0.020	UR	0.020	UR
ORTHO-PHOSPHATE	MG/L	1.000	UR	1.000	UR	1.000	UJ	1.000	UJ	1.000	UR	1.000	UR
SULFATE	MG/L	132.000		51.500		59.200		136.000		123.000		128.000	
AMMONIA	UG/L	50.000	U	50.000	U	50.000	U	532.000		50.000	U	50.000	U
NITRATE+NITRITE	UG/L	17600.000		9450.000		4120.000		40400.000		14300.000		13600.000	
SULFIDE	MG/L	0.400		0.320		0.400	U	0.410	U	0.400	U	0.400	U
TURBIDITY	NTU	NR		NR									

The decimal places shown do not reflect the precision reported by the laboratory

9613444.0478

Parameter	Samp#	BODHL1		BODHL3		BODHL5		BODHL7		BODHL9		BODHM1	
	Date	12-21-94		12-21-94		12-21-94		12-20-94		12-20-94		12-20-94	
	Location	199-H4-13		199-H4-15A		199-H4-45		199-H4-46		199-H4-47		199-H4-48	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments												
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/L	4.520		5.940		4.680		5.450		3.070		3.420	
NITRATE	MG/L	3.650	J	4.890	J	1.730	J	5.410	J	0.660	J	0.410	J
NITRITE	MG/L	0.020	UR	0.025	J	0.047	J	0.020	UJ	0.020	UJ	0.020	UJ
ORTHO-PHOSPHATE	MG/L	1.000	UR	1.000	UR	1.000	UR	1.000	UJ	1.000	UJ	1.000	UJ
SULFATE	MG/L	30.000		42.900		22.400		31.300		16.400		17.000	
AMMONIA	UG/L	50.000	U	50.000	U	50.000	U	50.000	U	50.000	U	50.000	U
NITRATE+NITRITE	UG/L	3440.000		4370.000		1530.000		4090.000		520.000		361.000	
SULFIDE	MG/L	0.780		0.810		0.410		0.970		0.400	U	0.580	
TURBIDITY	NTU	0.210	J	0.240	J	0.020	J	0.080	J	0.510	J	0.680	J

The decimal places shown do not reflect the precision reported by the laboratory

Parameter	Samp#	BODHM3		BODHM7		BODHM9		BODHN1		BODHN3	
	Date	12-20-94		12-21-94		12-27-94		12-27-94		12-20-94	
	Location	199-H4-49		199-H6-1		699-96-43		699-97-43		199-H4-47	
	Depth	---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER	
	Comments									FIELD DUPLICATE	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/L	6.270		8.060		7.450		7.470		3.200	
NITRATE	MG/L	4.000	J	5.110	J	3.760	J	2.700	J	0.670	J
NITRITE	MG/L	0.020	UJ	0.036	J	0.020	UR	0.020	UR	0.020	UJ
ORTHO-PHOSPHATE	MG/L	1.000	UJ	1.000	UR	1.000	UR	1.000	UR	1.000	UJ
SULFATE	MG/L	39.100		42.600		40.400		46.800		16.500	
AMMONIA	UG/L	50.000	U	50.000	U	50.000	U	50.000	U	50.000	U
NITRATE+NITRITE	UG/L	507.000		4740.000		4580.000		2780.000		197.000	
SULFIDE	MG/L	0.480		0.520		0.550		0.650		0.660	
TURBIDITY	NTU	0.340	J	0.030	J	0.330	J	0.280	J	0.390	J

The decimal places shown do not reflect the precision reported by the laboratory

9612210000

Parameter	Samp#	BODHN5		BODR05	
	Date	12-20-94		2-6-95	
	Location	199-H4-47		699-96-49	
	Depth	---		---	
	Type	WATER		WATER	
	Comments	SPLIT		SPLIT	
	Units	Result	Q	Result	Q
CHLORIDE	MG/L	3.100		12.000	
NITRATE	MG/L	0.640		2.700	
NITRITE	MG/L	0.010	U	0.010	U
ORTHO-PHOSPHATE	MG/L	0.100	UJ	0.100	U
SULFATE	MG/L	15.000		52.000	
AMMONIA	MG/L	0.050	U	0.050	U
NITRATE+NITRITE	MG/L	0.640		2.400	
SULFIDE	MG/L	3.000	U	3.000	U
TURBIDITY	NTU	0.000		NR	

The decimal places shown do not reflect the precision reported by the laboratory

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**APPENDIX D**

**General Chemistry Field Quality Control Summary Tables**

Field Duplicate Samples, MG/L						
HEIS NO.:		B0DQZ5		B0DR03		
DATE:		2/06/95		2/06/95		
LOCATION:		699-96-49		699-96-49		
COMMENTS:				DUPLICATE		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
CHLORIDE	0.5	12.5		12.4		0.8
NITRATE	0.2	2.9	J	2.88	J	0.7
NITRITE	0.02	0.02	UJ	0.02	UJ	NC
PHOSPHATE	1.0	1.0	UJ	1.0	UJ	NC
SULFATE	2.0	57.2		56.7		0.9
AMMONIA	30	50.0 ug/L	U	50.0 ug/L	U	NC
NITRATE/NITRITE	500	2650 ug/L		4790 ug/L		57.5
SULFIDE	0.4	0.44	U	0.72		48.3

Field Split Samples, MG/L						
HEIS NO.:		B0DQZ5		B0DR05		
DATE:		2/06/95		2/06/95		
LOCATION:		699-96-49		699-96-49		
COMMENTS				SPLIT		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
CHLORIDE	0.5	12.5		12.0		4.1
NITRATE	0.2	2.9	J	2.7	J	7.1
NITRITE	0.02	0.02	UJ	0.01	UJ	NC
PHOSPHATE	1.0	1.0	UJ	0.1	UJ	NC
SULFATE	2.0	57.2		52.0		9.5
AMMONIA	30	50.0 ug/L	U	0.05 mg/L	U	NC
NITRATE/NITRITE	500	2650 ug/L		2.4 mg/L		9.9
SULFIDE	0.4	0.44	U	3.0	U	NC

Field Duplicate Samples, MG/L						
HEIS NO.:		B0DHL9		B0DHN3		
DATE:		12/20/94		12/20/94		
LOCATION:		199-H4-47		199-H4-47		
COMMENTS:				DUPLICATE		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
NITRATE/NITRITE	500	520 ug/L		197 ug/L		90
TURBIDITY		0.51	J	0.39	J	26.7
SULFIDE	0.4	0.4	U	0.66		200
AMMONIA	30	50.0 ug/L	U	50.0 ug/L	U	NC
CHLORIDE	0.5	3.07		3.2		4.1
NITRITE	0.02	0.02	UJ	0.02	UJ	NC
NITRATE	0.2	0.66	J	0.67	J	1.5
PHOSPHATE	1.0	1.0	UJ	1.0	UJ	NC
SULFATE	2.0	16.4		16.5		0.6

Field Split Samples, MG/L						
HEIS NO.:		B0DHL9		B0DHN5		
DATE:		12/20/94		12/20/94		
LOCATION:		199-H4-47		199-H4-47		
COMMENTS:				SPLIT		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
NITRATE/NITRITE	500	520 ug/L		0.64		20.7
TURBIDITY		0.51	J	0.0		200
SULFIDE	0.4	0.4	U	3.0	U	NC
AMMONIA	30	50.0 ug/L	U	0.05	U	NC
CHLORIDE	0.5	3.07		3.1		17.6
NITRITE	0.02	0.02	UJ	0.01	U	NC
NITRATE	0.2	0.66	J	0.64		3.1
PHOSPHATE	1.0	1.0	UJ	0.1	UJ	NC
SULFATE	2.0	16.4		15.0		8.9

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**APPENDIX E**

**Radiochemistry Validated Data Summary Tables**

Parameter	Samp#	BODHL1		BODHL3		BODHL5		BODHL7		BODHL9		BODHM1	
	Date	12-21-94		12-21-94		12-21-94		12-20-94		12-20-94		12-20-94	
	Location	199-H4-13		199-H4-15A		199-H4-45		199-H4-46		199-H4-47		199-H4-48	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments												
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
URANIUM-234	pCi/L	1.680		1.410		0.454		1.970		0.265	U	0.329	U
URANIUM-235	pCi/L	-0.022	U	0.109	U	0.041	U	0.109	U	0.018	U	0.048	U
URANIUM-238	pCi/L	1.460		1.060		0.759		2.100		0.239	U	0.229	U
GROSS ALPHA	pCi/L	2.130		-0.133	U	0.594	U	3.010		0.433	U	0.539	U
GROSS BETA	pCi/L	71.800		9.740		24.800		11.900		3.360		7.770	
STRONTIUM	pCi/L	27.800		0.355	U	9.370		2.500		0.605	U	0.049	U
TECHNETIUM-99	pCi/L	-2.360	U	-2.470	U	-1.890	U	-2.100	U	-1.320	U	-0.244	U
TRITIUM	pCi/L	685.000		2170.000		81.500	U	5710.000		84.600	U	178.000	U

The decimal places shown do not reflect the precision reported by the laboratory

963774-0000

Parameter	Samp# Date Location Type Comments	BODHM3 12-20-94 199-H4-49 WATER		BODHM7 12-21-94 199-H6-1 WATER		BODHM9 12-27-94 699-96-43 WATER		BODHN1 12-27-94 699-97-43 WATER		BODHN3 12-20-94 199-H4-47 WATER DUPLICATE		BODHN5 12-20-94 199-H4-47 WATER SPLIT	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
URANIUM-234	pCi/L	0.393		2.100		1.800		1.470		1.990		2.570	
URANIUM-235	pCi/L	0.000	U	-0.018	U	0.104	U	0.213	U	0.084	U	1.010	J
URANIUM-238	pCi/L	0.447		2.020		1.550		1.250		2.070		1.060	J
GROSS ALPHA	pCi/L	0.342	U	2.560		2.230		1.630	U	3.110		0.650	U
GROSS BETA	pCi/L	2.580	U	56.000		5.900		5.250		5.800		4.400	
STRONTIUM	pCi/L	0.560	U	8.110		0.181	U	0.202	U	0.780	U	-0.050	U
TECHNETIUM-99	pCi/L	-1.740	U	-0.604	U	-1.280	U	-1.490	U	-0.140	U	1.800	U
TRITIUM	pCi/L	-42.500	U	6710.000		10700.000	J	9180.000	J	9160.000		120.000	UJ

The decimal places shown do not reflect the precision reported by the laboratory

9615944-0489

Parameter	Samp# Date Location Type Comments	BODHN7 12-27-94 699-97-43 WATER		BODHN9 12-21-94 199-H5-1A WATER EQUIP BLANK		BODQW3 2-7-95 199-D2-6 WATER		BODQW5 2-9-95 199-D5-12 WATER		BODQW7 2-27-95 199-D5-14 WATER		BODQW9 2-27-95 199-D5-15 WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
URANIUM-234	pCi/L	0.197	U	-0.030	U	NR		NR		NR		NR	
URANIUM-235	pCi/L	0.137	U	-0.050	U	NR		NR		NR		NR	
URANIUM-238	pCi/L	0.094	U	-0.052	U	NR		NR		NR		NR	
GROSS ALPHA	pCi/L	0.567	U	0.314	U	4.330		2.160	U	1.340	U	1.820	U
GROSS BETA	pCi/L	1.850	U	3.770	U	5.150		84.200		5.820		10.400	
STRONTIUM	pCi/L	0.103	U	0.166	U	0.481	UJ	30.700		0.104	U	0.677	U
TECHNETIUM-99	pCi/L	-1.680	U	-1.900	U	NR		NR		NR		NR	
TRITIUM	pCi/L	-7.200	UJ	102.000	U	1670.000	J	44000.000	J	1460.000		4740.000	

The decimal places shown do not reflect the precision reported by the laboratory

9613444-0490

Parameter	Samp#	BODQX1	BODQX3	BODQX9	BODQY1	BODQY3	BODQY5
	Date	2-27-95	2-15-95	2-7-95	2-7-95	2-2-95	2-1-95
	Location	199-D5-16	199-D5-17	199-D5-20	199-D8-3	199-D8-53	199-D8-54A
	Type	WATER		WATER		WATER	
	Comments						
	Units	Result	Q	Result	Q	Result	Q
URANIUM-234	pCi/L	NR		NR		NR	NR
URANIUM-235	pCi/L	NR		NR		NR	NR
URANIUM-238	pCi/L	NR		NR		NR	NR
GROSS ALPHA	pCi/L	2.990	U	2.070		1.790	U
GROSS BETA	pCi/L	10.400		5.950		12.900	
STRONTIUM	pCi/L	0.027	U	0.022	U	2.770	
TECHNETIUM-99	pCi/L	NR		NR		NR	
TRITIUM	pCi/L	12100.000		14900.000	J	93.000	UJ
						1860.000	J
						12000.000	J
							16000.000

The decimal places shown do not reflect the precision reported by the laboratory

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Parameter	Samp#	BODQY7	BODQY9	BODQZ1	BODQZ3	BODQZ5	BODQZ7	
	Date	2-1-95	2-2-95	2-15-95	2-9-95	2-6-95	2-6-95	
	Location	199-D8-54B	199-D8-55	699-91-46A	699-93-48A	699-96-49	699-97-51A	
	Type	WATER	WATER	WATER	WATER	WATER	WATER	
	Comments							
Units	Result	Q	Result	Q	Result	Q	Result	Q
URANIUM-234	NR		NR		NR		NR	
URANIUM-235	NR		NR		NR		NR	
URANIUM-238	NR		NR		NR		NR	
GROSS ALPHA	pCi/L	3.660	1.250 U	2.050	1.680	1.070 U	1.990	
GROSS BETA	pCi/L	12.400	4.650	5.230	5.650	4.740	5.150	
STRONTIUM	pCi/L	0.134 U	0.104 U	-0.190 U	0.012 U	0.333 U	0.061 U	
TECHNETIUM-99		NR	NR	NR	NR	NR	NR	
TRITIUM	pCi/L	-112.000 UJ	40.600 UJ	4220.000 J	2460.000 J	6230.000 J	7430.000 J	

The decimal places shown do not reflect the precision reported by the laboratory

9613441.0192

Parameter	Samp#	B0DQ29		B0DR01		B0DR03		B0DR05		B0DR07		B0DR08	
	Date	2-15-95		2-15-95		2-6-95		2-6-95		3-14-95		3-14-95	
Location		EQUIP BLANK		EQUIP BLANK		699-96-49		699-96-49		199-D5-13		199-D8-4	
Type		WATER		WATER		WATER		WATER		WATER		WATER	
Comments		EQUIP BLANK		EQUIP BLANK		DUPLICATE		SPLIT					
Units		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
URANIUM-234		NR		NR		NR		NR		NR		NR	
URANIUM-235		NR		NR		NR		NR		NR		NR	
URANIUM-238		NR		NR		NR		NR		NR		NR	
GROSS ALPHA	pCi/L	0.081	U	0.162	U	1.060	U	2.000	U	NR		NR	
GROSS BETA	pCi/L	1.510	U	0.066	U	6.300		4.900		NR		NR	
STRONTIUM	pCi/L	0.254	U	0.094	U	0.473	U	0.390	U	0.020	U	0.275	U
TECHNETIUM-99		NR		NR		NR		NR		NR		NR	
TRITIUM	pCi/L	112.000	UJ	129.000	UJ	6180.000	J	5650.000		176.000	U	123.000	U

The decimal places shown do not reflect the precision reported by the laboratory

96031410093

Parameter	Samp#	BODR09		BODR10	
	Date	3-14-95		3-14-95	
	Location	199-D8-5		199-D8-6	
	Type	WATER		WATER	
	Comments				
	Units	Result	Q	Result	Q
URANIUM-234		NR		NR	
URANIUM-235		NR		NR	
URANIUM-238		NR		NR	
GROSS ALPHA	pCi/L	NR		NR	
GROSS BETA	pCi/L	NR		NR	
STRONTIUM	pCi/L	-0.173	U	0.178	U
TECHNETIUM-99		NR		NR	
TRITIUM	pCi/L	41.500	U	120.000	U

The decimal places shown do not reflect the precision reported by the laboratory

961344-0094

**APPENDIX F**

**Radiochemistry Field Quality Control Summary Tables**

Field Duplicate Samples, pCi/L						
HEIS NO.:		B0DQZ5		B0DR03		
DATE:		2/06/95		2/06/95		
LOCATION:		699-96-49		699-96-49		
COMMENTS:				DUPLICATE		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
GROSS ALPHA	3.0	1.07	U	1.06	U	NC
GROSS BETA	4.0	4.74		6.3		28.3
STRONTIUM	10	0.333	U	0.473	U	NC
TRITIUM	400	6230	J	6180	J	0.8

Field Split Samples, pCi/L						
HEIS NO.:		B0DQZ5		B0DR05		
DATE:		2/06/95		2/06/95		
LOCATION:		699-96-49		699-96-49		
COMMENTS:				SPLIT		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
GROSS ALPHA	3.0	1.07	U	2	U	NC
GROSS BETA	4.0	4.74		4.9		3.3
STRONTIUM	10	0.333	U	0.39	U	NC
TRITIUM	400	6230	J	5650		9.8

Field Duplicate Samples, pCi/L						
HEIS NO.:		B0DHL9		B0DHN3		
DATE:		12/20/94		12/20/94		
LOCATION:		199-4-47		199-4-47		
COMMENTS:				DUPLICATE		
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
URANIUM-234	1.0	0.265	U	1.99		200
URANIUM-235	1.0	0.018	U	0.084	U	NC
URANIUM-238	1.0	0.239	U	2.07		200
GROSS ALPHA	3.0	0.433	U	3.11		200
GROSS BETA	4.0	3.36		5.8		53.3
STRONTIUM	2.0	0.605	U	0.78	U	NC
TECHNETIUM-99	15.0	-1.32	U	-0.14	U	NC
TRITIUM	400	84.6	U	9160		200

Field Split Samples, pCi/L						
HEIS NO.:	B0DHL9		B0DHN5			
DATE:	12/20/94		12/20/94			
LOCATION:	199-4-47		199-4-47			
COMMENTS:			SPLIT			
PARAMETER	CRDL	RESULT	Q	RESULT	Q	RPD
URANIUM-234	1.0	0.265	U	2.57	J	200
URANIUM-235	1.0	0.018	U	1.01	J	200
URANIUM-238	1.0	0.239	U	1.06	J	200
GROSS ALPHA	3.0	0.433	U	0.65	U	NC
GROSS BETA	4.0	3.36		4.4		26.8
STRONTIUM	2.0	0.605	U	-0.05	UJ	NC
TECHNETIUM-99	15.0	-1.32	U	1.8	U	NC
TRITIUM	400	84.6	U	120	U	NC