INEEL/EXT-2000-00029
Revision 0

Field Sampling Plan for Groundwater Monitoring of Operable Unit 7-13/14

Terri A. Bukowski
Shannon C. Flynn
Hollie K. Gilbert

October 2001

Idaho National Engineering and Environmental Laboratory
Bechtel BWXT Idaho, LLC

INEEL/EXT-2000-00029
Revision 0

Field Sampling Plan for Groundwater Monitoring of Operable Unit 7-13/14

Terri A. Bukowski
Shannon C. Flynn
Hollie K. Gilbert

October 2001

Idaho National Engineering and Environmental Laboratory
Environmental Restoration Program
Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary or Office of Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-99ID13727

Field Sampling Plan for Groundwater Monitoring of Operable Unit 7-13/14

INEEL/EXT-2000-00029
Revision 0

October 2001

Approved by

Thomas M. Stoops, Bechtel BWXT Idaho, LLC
Operable Unit 7-13/14 Project Engineer

10·11·01
Date

Richard Jones for ARB.

Andrew R. Baumer II, Bechtel BWXT Idaho, LLC
Operable Unit 7-13/14 Field Operations Supervisor

10-11-01.
Date

ABSTRACT

As part of the Idaho National Engineering and Environmental Laboratory Environmental Restoration Program's routine monitoring project, groundwater monitoring wells near and inside the Radioactive Waste Management Complex are being sampled on a periodic basis. This field sampling plan governs groundwater sampling that began during the fourth quarter of Fiscal Year 2001. The objective of this investigation is to monitor the groundwater quality and identify any degradation of groundwater quality that may originate at the facility. Data obtained from this effort will be used to support several programs including the Waste Area Group 7 Operable Unit 7-13/14 comprehensive remedial investigation and feasibility study, the active low-level waste disposal operation, the Idaho National Engineering and Environmental Laboratory oversite groups, long-term stewardship, and subsurface sciences at the Radioactive Waste Management Complex.

CONTENTS

ABSTRACT v

ACRONYMS ix

1. INTRODUCTION 1

1.1 Purpose 1

1.2 Scope of Work 1

1.3 Idaho National Engineering and Environmental Laboratory Site Background 1

1.4 Radioactive Waste Management Complex Facility Description 4

1.4.1 Conceptual Site Model 7
1.4.2 Pathways 7
1.4.3 Exposure Routes and Receptors 7

1.5 Existing Data 10

1.5.1 Identification of Data Gaps 10

2. SAMPLING OBJECTIVES 11

3. SAMPLING LOCATION AND FREQUENCY 12

4. SAMPLE DESIGNATION 14

5. SAMPLING EQUIPMENT AND PROCEDURES 15

5.1 Sample Collection 15

5.1.1 Sample Site Preparation 15
5.1.2 Field Measurements 15
5.1.3 Well Purging 16

5.2 Sampling Quality Assurance and Quality Control 18

5.3 Corrective Action 19

6. SAMPLE HANDLING AND ANALYSIS 20

6.1 Field Sample Screening Analysis 20

6.2 Sample Shipping and Laboratory Analysis 20

7. DOCUMENTATION 21

7.1 Field Documentation 21

7.1.1 Sample Labels 21
7.1.2 Chain-of-Custody Records 22
7.1.3 Sample Logbook 22
7.1.4 Field Instrument Calibration and Standardization Logbook 22
7.1.5 Shipping Logbook 22
7.1.6 Field Team Leader Logbook 22

8. HANDLING AND DISPOSITION OF INVESTIGATION-DERIVED WASTE 23

9. REFERENCES 29

Appendix A—Groundwater Monitoring Well Logs

Appendix B—Sampling and Analysis Plan Table

FIGURES

1. Location of the Radioactive Waste Management Complex at the Idaho National Engineering and Environmental Laboratory 2

2. Location of the Idaho National Engineering and Environmental Laboratory in relation to the Idaho Snake River Plain Aquifer 3

3. Subsurface Disposal Area at the Radioactive Waste Management Complex 5

4. Conceptual site model for the Subsurface Disposal Area 8

5. Map of the Idaho National Engineering and Environmental Laboratory showing generalized groundwater flow lines of the Snake River Plain Aquifer 9

6. Location of Radioactive Waste Management Complex groundwater monitoring wells 13

TABLES

1. Specific Radioactive Waste Management Complex well information 17

2. Specific sample requirements from the Quality Assurance Project Plan (DOE-ID 2000) for groundwater samples for Radioactive Waste Management Complex routine monitoring 18

3. Purge water data from quarterly sampling of groundwater monitoring wells 23

ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	chain of custody
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
DQO	data quality objectives
DAR	document action request
EPA	U.S. Environmental Protection Agency
ER	environmental restoration
FFA/CO	federal facility agreement and consent order
FSP	field sampling plan
FTL	field team leader
HASP	health and safety plan
HDPE	high-density polyethylene
ID	identification
INEEL	Idaho National Engineering and Environmental Laboratory
IRA	interim risk assessment
LLW	low-level waste
MCP	management control procedure
OU	operable unit
PLN	plan
PPE	personal protective equipment
QAPjP	quality assurance project plan
QC	quality control
RI/FS	remedial investigation and feasibility study

RWMC	Radioactive Waste Management Complex
SDA	Subsurface Disposal Area
SMO	Sample Management Office
TPR	technical procedure
TRU	transuranic
TSA	Transuranic Storage Area
USGS	U.S. Geological Survey
VOC	volatile organic compound
VVE	vapor vacuum extraction
WAG	waste area group