TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

6.0 ENVIRONMENTAL MEASUREMENTS AND MONITORING PROGRAMS

6.1 RADIOLOGICAL MONITORING

6.1.1 Effluent Monitoring Program

The Nuclear Regulatory Commission (NRC) requires, pursuant to 10 CFR 20 (CFR, 2008x) that licensees conduct surveys necessary to demonstrate compliance with these regulations and to demonstrate that the amount of radioactive material present in effluent from the facility has been kept as low as reasonably achievable (ALARA). In addition, the NRC requires, pursuant to 10 CFR 70 (CFR, 2008b), that licensees submit semiannual reports, specifying the quantities of the principal radionuclides released to unrestricted areas and other information needed to estimate the annual radiation dose to the public from effluent discharges. The NRC has also issued Regulatory Guide 4.15 "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment" (NRC, 1979) and Regulatory Guide 4.16 "Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluent from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants" (NRC, 1985b) that reiterate that concentrations of hazardous materials in effluent must be controlled and that licensees must adhere to the ALARA principal such that there is no undue risk to the public health and safety at or beyond the site boundary.

Refer to Figure 6.1-1, Effluent Release Points and Meteorological Tower, and Figure 6.1-2, Modified Site Features With Proposed Sampling Stations and Monitoring Locations. Effluents are sampled as indicated in Table 6.1-1, Effluent Monitoring Program. For gaseous effluents, liquid condensate samples from the Evaporator exhaust vent and continuous air sampler filters are analyzed for gross alpha and gross beta each week. The filters, or liquid condensate samples, are composited quarterly and an isotopic analysis is performed if a specified gross alpha or gross beta action level is exceeded (as specified in Table 6.1-1).

The guidance in "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Boiling Water Reactors" (NRC, 1991) and Regulatory Guide 4.16, "Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluent from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants" (NRC, 1985b) was followed for determining sample locations, analyses, frequencies, durations, and lower limits of detection for both effluent and environmental samples. Sample sizes are set in accordance with standard commercial laboratory requirements.

Public exposure to radiation from routine operations at the Eagle Rock Enrichment Facility (EREF) may occur as the result of discharge of airborne effluents, including controlled releases from the uranium enrichment process lines during decontamination and maintenance of equipment. In addition, radiation exposure to the public may result from the transportation and storage of uranium hexafluoride (UF_6) feed cylinders, product cylinders, and depleted uranium cylinders. Of these potential pathways, discharge of gaseous effluent has the highest possibility of introducing facility-related uranium into the environment. The plant's procedures and facilities for solid waste handling, storage, and monitoring result in safe storage and timely disposition of the material. ER Section 1.3, Applicable Regulatory Requirements, Permits and Required Consultations, describes all applicable federal and Idaho state standards for discharges, as well as required permits issued by local, Idaho, and Federal governments.

Compliance with 10 CFR 20.1301 (CFR, 2008x) is demonstrated using a calculation of the total effective dose equivalent (TEDE) to the individual who is likely to receive the highest dose in

accordance with 10 CFR 20.1302(b)(1) (CFR, 2008x). The determination of the TEDE by pathway analysis is supported by appropriate models, codes, and assumptions that accurately represent the facility, site, and the surrounding area. The assumptions are reasonably conservative, input data is accurate, and all applicable pathways are considered. ER Section 4.12, Public and Occupational Health Impacts, presents the details of these determinations.

The computer codes used to calculate dose associated with potential gaseous effluent from the plant follow the methodology for pathway modeling described in Regulatory Guide 1.109 (NRC, 1977b), and have undergone validation and verification. The dose conversion factors used are those presented in Federal Guidance Reports Numbers 11 (EPA, 1988) and 12 (EPA, 1993).

Administrative action levels are established for effluent samples and monitoring instrumentation as an additional step in the effluent control process. All action levels are sufficiently low so as to permit implementation of corrective actions before regulatory limits are exceeded. Effluent samples that exceed the action level are cause for an investigation into the source of elevated radioactivity. Radiological analyses will be performed more frequently on ventilation air filters if there is a significant increase in gross radioactivity or when a process change or other circumstances cause significant changes in radioactivity concentrations. Additional corrective actions will be implemented based on the level, automatic shutdown programming, and operating procedures to be developed in the detailed alarm design. Under routine operating conditions, radioactive material in effluents discharged from the facility complies with regulatory release criteria.

Compliance is demonstrated through effluent and environmental sampling data. If an accidental release of uranium should occur, then routine operational effluent data and environmental data will be used to assess the extent of the release. Processes are designed to include, when practical, provision for automatic shutdown in the event action levels are exceeded. Appropriate action levels and actions to be taken are specified for effluent releases. Data analysis methods and criteria used in evaluating and reporting environmental sample results are appropriate and will indicate when an action level is being approached in time to take corrective actions.

Periodic audits of the effluent monitoring program will be conducted by AES. Written procedures will be in place to ensure the collection of representative samples, use of appropriate sampling methods and equipment, proper locations for sampling points, and proper handling, storage, transport, and analyses of effluent samples. In addition, the plant's written procedures also ensure that sampling and measuring equipment, including ancillary equipment such as airflow meters, are properly maintained and calibrated at regular intervals. Moreover, the effluent monitoring program procedures include functional testing and routine checks to demonstrate that monitoring and measuring instruments are in working condition. Employees involved in implementation of this program are trained in the program procedures.

The EREF will ensure, when sampling particulate matter within ducts with moving air streams, that sampling conditions within the sample probe are maintained to simulate as closely as possible the conditions in the duct. This will be accomplished by implementing the following criteria: (1) calibrating air sampling equipment so that the sample is representative of the effluent being sampled in the duct; (2) maintaining the axis of the sampling probe head parallel to the air stream flow lines in the ductwork; (3) sampling (if possible) at least ten duct diameters downstream from a bend or obstruction in the duct; and (4) using shrouded-head air sampling probes when they are available in the size appropriate to the air sampling situation. Particle size distributions will be determined from process knowledge or measured to estimate and compensate for sample line losses and momentary conditions not reflective of airflow conditions in the duct.

The EREF will ensure that sampling equipment (pumps, pressure gages, and air flow calibrators) are calibrated by qualified individuals. All air flow and pressure drop calibration devices (e.g., rotometers) will be calibrated periodically using primary or secondary air flow calibrators (wet test meters, dry gas meters, or displacement bellows). Secondary air flow calibrators will be calibrated annually by the manufacturer(s). Air sampling train flow rates will be verified and/or calibrated each time a filter is replaced or a sampling train component is replaced or modified. Sampling equipment and lines will be inspected for defects, obstructions, and cleanliness. Calibration intervals will be developed based on applicable industry standards.

6.1.1.1 Gaseous Effluent Monitoring

As a matter of compliance with regulatory requirements, all potentially radioactive effluent from the facility is discharged only through monitored pathways. See ER Section 4.12.2.1.1, Routine Gaseous Effluent, for a discussion of pathway assessment. The effluent sampling program for the EREF is designed to determine the quantities and concentrations of radionuclides discharged to the environment. The uranium isotopes ^{238}U, ^{236}U, ^{235}U, and ^{234}U are expected to be the prominent radionuclides in the gaseous effluent. The annual uranium source term for routine gaseous effluent releases from the 6.6 million SWU EREF plant has been conservatively assumed to be 19.5 MBq (528 µCi) per year, which is proportional to the 4.4 MBq (120 µCi) per year source term applied to the 1.5 million SWU plant described in NUREG-1484 (NRC, 1994). This is a very conservative annual release estimate used for bounding analyses. Additional details regarding source term are provided in ER Section 4.12, Public and Occupational Health Impacts. Representative samples are collected from each release point of the facility. Because uranium in gaseous effluent may exist in a variety of compounds (e.g., depleted hexavalent uranium, triuranium octoxide, and uranyl fluoride), effluent data will be maintained, reviewed, and assessed by the facility's Radiation Protection/Chemistry Manager to assure that gaseous effluent discharges comply with regulatory release criteria for uranium. Table 6.1-1, Effluent Monitoring Program, presents an overview of the effluent sampling program.

The gaseous effluent monitoring program for the EREF is designed to determine the quantities and concentrations of gaseous discharges to the environment.

Gaseous effluent from the EREF, which has the potential for airborne radioactivity (albeit in very low concentrations) will be discharged through the four Separations Building Gaseous Effluent Ventilation Systems (GEVS), the Technical Support Building (TSB) GEVS, the Centrifuge Test and Post Mortem Facilities GEVS, the Centrifuge Test and Post Mortem Facilities Exhaust Filtration System, the Ventilated Room Heating, Ventilating, and Air Conditioning (HVAC) System, and the TSB Contaminated Area HVAC System. Monitoring for each of these systems is as follows:

- Separations Building GEVS: The GEVS for each of the four Separations Building Modules (SBMs) discharges to exhaust vents on the SBM roofs. Each Separations Building GEVS provides for continuous monitoring and sampling of the gaseous effluent in the exhaust vents in accordance with the guidance in NRC Regulatory Guide 4.16 (NRC, 1985b). The GEVS exhaust vent sampling systems provide the required samples. The exhaust vents are equipped with monitors for alpha radiation and hydrogen fluoride (HF). The SBM Module 1 GEVS also provides process services for the Blending, Sampling, and Preparation Building (BSPB).
- TSB GEVS: This system discharges to an exhaust vent on the TSB roof. The TSB GEVS provides for continuous monitoring and sampling of the gaseous effluent in the exhaust vent in accordance with the guidance in NRC Regulatory Guide 4.16 (NRC, 1985b). The TSB

GEVS exhaust vent sampling system provides the required samples. The exhaust vent contains monitors for alpha radiation and HF.

- Centrifuge Test and Post Mortem Facilities GEVS: This system discharges through an exhaust vent on the Centrifuge Assembly Building (CAB) roof. The Centrifuge Test and Post Mortem Facilities GEVS exhaust vent sampling system provides for continuous monitoring and sampling of the gaseous effluent in the exhaust vent in accordance with the guidance in NRC Regulatory Guide 4.16 (NRC, 1985b). The exhaust vent is provided with an alpha radiation monitor and an HF monitor.
- Centrifuge Test and Post Mortem Facilities Exhaust Filtration System: This system discharges through an exhaust vent on the CAB roof. When the Centrifuge Test Facility or the Centrifuge Post Mortem Facility is in operation, the Centrifuge Test and Post Mortem Facilities Exhaust Filtration exhaust vent sampling system provides for continuous monitoring and sampling of the gaseous effluent in the exhaust vent in accordance with the guidance in NRC Regulatory Guide 4.16 (NRC, 1985b). The exhaust vent is provided with an alpha radiation monitor and an HF monitor.
- TSB Contaminated Area HVAC System: This system maintains the temperature in various areas in the TSB. For the potentially contaminated areas in the TSB, which include the Chemical Trap Workshop, Mobile Unit Disassembly and Reassembly Workshop, Valve and Pump Dismantling Workshop, Decontamination Workshop, and Maintenance Facility, the TSB Contaminated Area HVAC system maintains a negative pressure in these rooms and discharges the room air to an exhaust vent on the TSB roof. The system provides for continuous alpha and HF monitoring and sampling of the discharged room air from the rooms served by the TSB Contaminated Area HVAC system in accordance with the guidance in NRC Regulatory Guide 4.16 (NRC, 1985b).
- Ventilated Room HVAC System: This system maintains a negative pressure in the Ventilated Room, which is located in the BSPB, and discharges the room air to an exhaust vent on the BSPB roof. The system provides for continuous alpha and HF monitoring and sampling of the discharged room air from the Ventilated Room, in accordance with the guidance in NRC Regulatory Guide 4.16 (NRC, 1985b).

The HVAC systems serving all process areas will have the necessary access to periodically sample exhaust air, in accordance with the guidance in NRC Regulatory Guide 4.16 (NRC, 1985b).

Saturated air from the Evaporator (which is part of the Liquid Effluent Collection and Treatment System) is discharged to the environment through an exhaust vent on the TSB roof. An air sampler in this vent line will sample the discharged air and trap the condensed distillate. The liquid condensate will be periodically sampled and analyzed for isotopic uranium.

The gaseous effluent sampling program supports the determination of quantity and concentration of radionuclides discharged from the facility and supports the collection of other information required in reports to be submitted to the NRC. A minimum detectable concentration (MDC) of at least 1.8×10^{-9} Bq/ml (5.0×10^{-14} µCi/ml) is a program requirement (NRC, 2002a) for all analyses performed on gaseous effluent samples. That MDC value represents 5% of the limit for any applicable uranium isotope (Class W). Liquid condensate samples from the evaporator discharge are analyzed to an MDC equivalent to 5% or less of the appropriate 10 CFR 20 Appendix B, Table 2, Col. 1 (Air) value (CFR, 2008x). Table 6.1-2, Required Lower Limit of Detection for Effluent Sample Analyses, summarizes detection requirements for effluent sample analyses.

6.1.1.2 Stormwater and Sewage Treatment Plant Liquid Effluent Monitoring

General site stormwater runoff is routed to the Site Stormwater Detention Basin. (See sections 3.4 and 4.4 for descriptions of the discharges from this basin.) The two Cylinder Storage Pads Stormwater Retention Basins collect stormwater runoff from the Cylinder Storage Pads (i.e., Full Feed Cylinder Storage Pads, Full Tails Cylinder Storage Pads, Full Product Cylinder Storage Pad, and Empty Cylinder Storage Pads) as well as treated water from the Domestic Sanitary Sewage Treatment Plant. Approximately 18,700 m^3 (4,927,500 gal) of Domestic Sanitary Sewage Treatment Plant effluent are expected to be discharged to the two Retention Basins (combined) each year. Approximately 150,415 m^3 (39.7 million gal) of stormwater are expected to be collected each year (mean annual) by the Detention and Retention basins combined. Both of these basins will be included in the site Radiological Environmental Monitoring Program described below in ER Section 6.1.2.

6.1.2 Radiological Environmental Monitoring Program

The Radiological Environmental Monitoring Program (REMP) at the EREF is a major part of the effluent compliance program. It provides a supplementary check of containment and effluent controls, establishes a process for collecting data for assessing radiological impacts on the environs and estimating the potential impacts on the public, and supports the demonstration of compliance with applicable radiation protection standards and guidelines.

The primary objective of the REMP is to provide verification that the operations at the facility do not result in detrimental radiological impacts on the environment. Through its implementation, the REMP provides data to confirm the effectiveness of effluent controls and the effluent monitoring program. In order to meet program objectives, representative samples from various environmental media are collected and analyzed for the presence of plant-related radioactivity. The types and frequency of sampling and analyses are summarized in Table 6.1-3, Radiological Environmental Monitoring Program. Environmental media identified for sampling consist of ambient air, groundwater, soil/sediment, and vegetation. All environmental samples will be analyzed onsite. However, samples may also be shipped to a qualified independent laboratory for analyses. The MDCs for gross alpha (assumed to be uranium) in various environmental media are shown in Table 6.1-4, Required MDC for Environmental Sample Analysis. Monitoring and sampling activities, laboratory analyses, and reporting of facility-related radioactivity in the environment will be conducted in accordance with industry-accepted and regulatory-approved methodologies.

The Quality Control (QC) procedures used by the laboratories performing the plant's REMP will be adequate to validate the analytical results and will conform with the guidance in Regulatory Guide 4.15 (NRC, 1979). These QC procedures include the use of established standards such as those provided by the National Institute of Standards and Technology (NIST), as well as standard analytical procedures such as those established by the National Environmental Laboratory Accreditation Conference (NELAC).

Monitoring procedures will employ well-known acceptable analytical methods and instrumentation. The instrument maintenance and calibration program will be appropriate to the given instrumentation, in accordance with manufacturers' recommendations.

The EREF will ensure that the onsite laboratory and any contractor laboratory used to analyze EREF samples participates in third-party laboratory intercomparison programs appropriate to the media and analytes being measured. Examples of these third-party programs are: (1) Mixed Analyte Performance Evaluation Program (MAPEP) and the DOE Quality Assurance Program (DOEQAP) that are administered by the Department of Energy; and (2) Analytics, Inc.

Environmental Radiochemistry Cross-Check Program. The EREF will require that all radiological and non-radiological laboratory vendors are certified by the National Environmental Laboratory Accreditation Program (NELAP) or an equivalent state laboratory accreditation agency for the analytes being tested.

Reporting procedures will comply with the requirements of 10 CFR 70.59 (CFR, 2008b) and the guidance specified in Regulatory Guide 4.16 (NRC, 1985b). Reports of the concentrations of principal radionuclides released to unrestricted areas in effluents will be provided and will include the Minimum Detectable Concentration (MDC) for the analysis and the error for each data point.

The REMP includes the collection of data during pre-operational years in order to establish baseline radiological information that will be used in determining and evaluating impacts from operations at the plant on the local environment. The REMP will be initiated at least two years prior to plant operations in order to develop a sufficient database. The early initiation of the REMP provides assurance that a sufficient environmental baseline has been established for the plant before the arrival of the first uranium hexafluoride shipment. Radionuclides in environmental media will be identified using technically appropriate, accurate, and sensitive analytical instruments. Data collected during the operational years will be compared to the baseline generated by the pre-operational data. Such comparisons provide a means of assessing the magnitude of potential radiological impacts on members of the public and in demonstrating compliance with applicable radiation protection standards.

During the course of facility operations, revisions to the REMP may be necessary and appropriate to assure reliable sampling and collection of environmental data. The rationale and actions behind such revisions to the program will be documented and reported to the appropriate regulatory agency, as required. REMP sampling focuses on locations within 4.8 km (3 mi) of the facility, but may also include distant locations as control sites. REMP sampling locations have been determined based on NRC guidance found in the document, "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Boiling Water Reactors" (NRC, 1991), meteorological information, and current land use. The sampling locations may be subject to change as determined from the results of periodic review of land use.

Atmospheric radioactivity monitoring is based on plant design, demographic, geologic, meteorological, and land use data. Because operational releases are anticipated to be very low and subject to rapid dilution via dispersion, distinguishing plant-related uranium from background uranium already present in the site environment is a major challenge of the REMP. The gaseous effluent is released from roof-top discharge points, which will result in ground-level releases. A characteristic of ground-level plumes is that plume concentrations decrease continually as the distance from the release point increases. It logically follows that the impact at locations close to the release point is greater than at more distant locations. The radioactive materials in gaseous effluents from the EREF are expected to be very low concentrations of uranium because of process and effluent controls. Consequently, air samples collected at locations that are close to the plant would provide the best opportunity to detect and identify plant-related radioactivity in the ambient air. Therefore, air-monitoring activities will concentrate on collection of data from locations that are relatively close to the plant, such as the plant perimeter fence or the plant property line. Air monitoring stations will be situated along the three site boundary locations of highest predicted atmospheric deposition. Since there are no communities or residences within 8 km (5 mi) of the facility footprint, an additional air sampler will be located at the site boundary in the same sector as the nearest residence, which is situated in the East sector at approximately 8 km (5 mi) from the facility footprint.

A control sample location will be established beyond 8 km (5 mi) in an upwind sector (the sector with a non-prevalent wind direction) that is not in the vicinity of any other facility with a significant radiological source term. Refer to Sections 3.6, Meteorology, Climatology and Air Quality and 4.6, Air Quality Impacts, for information on meteorology and atmospheric dispersion. All environmental air samplers operate on a continuous basis with sample retrieval for a gross alpha and beta analysis occurring on a biweekly basis (or as required by dust loading).

Vegetation and soil samples from locations near the Owner Controlled Area fence line will be collected on a quarterly basis in each sector during the pre-operational REMP. This is to assure the development of a sound baseline. During the operational years, vegetation, and soil sampling will be performed semiannually in eight sectors, including three with the highest predicted atmospheric deposition. Vegetation samples may include vegetables and grass, depending on availability. Soil samples will be collected in the same vicinity as the vegetation samples. Vegetation and soil samples will also be collected from an off-site control location.

Groundwater samples from onsite monitoring wells will be collected semiannually for radiological analysis. The locations of the groundwater sampling (monitoring) wells are shown on Figure 6.1-2, Modified Site Features with Proposed Sampling Stations and Monitoring Locations. The rationale for the locations is based on the predominant groundwater flow under the EREF site and proximity to key site structures. Nine deep monitoring wells will be located as follows: one down-gradient (i.e., west-southwest) of the plant footprint, three near the down-gradient edge of the plant footprint, three cross-gradient, and two up-gradient of the site to serve as control locations. An additional shallow monitoring well will be located down-gradient of the site. Sediment samples will be collected semiannually from the two Cylinder Storage Pads Stormwater Retention Basins and the Site Stormwater Detention Basin to look for any buildup of uranic material being deposited. The two Cylinder Storage Pads Stormwater Retention Basins will also receive treated domestic sanitary effluent from the Domestic Sanitary Sewage Treatment Plant.

The site Domestic Sanitary Sewage Treatment Plant will receive only treated domestic sanitary wastes. No plant process-related effluents will be introduced. Samples will, however, be collected semiannually from the sanitary sewage treatment system and will be analyzed for isotopic Uranium.

Direct radiation in offsite areas from processes inside the facility building is expected to be minimal because the low-energy radiation associated with the uranium will be shielded by the process piping, equipment, and cylinders to be used at the EREF. However, the uranium cylinders stored on the Cylinder Storage Pads may have an impact in some offsite locations due to direct and scatter (skyshine) radiation. The offsite impact from the storage pads has been evaluated and is discussed in Section 4.12, Public and Occupational Health Impacts.

The conservative evaluation showed that an annual TEDE of < 0.1 mSv ($\leq$10 mrem) is expected at the highest impacted area at the site boundary.

Because the offsite dose equivalent rate from stored uranium cylinders is expected to be very low and difficult to distinguish from the variance in normal background radiation beyond the site boundary, demonstration of compliance will rely on a system that combines direct dose equivalent measurements and computer modeling to extrapolate the measurements. Environmental thermoluminescent dosimeters (TLDs) placed at the Owner Controlled Area fence line or other location(s) close to the stored uranium cylinders, along with a minimum of two off-site TLD control sampling locations to provide information on regional changes in background radiation levels, will provide quarterly direct dose equivalent information. Where TLD results indicate radiation levels at the fence line in excess of background, the direct dose

equivalent at offsite locations will be estimated through extrapolation of the quarterly TLD data using the Monte Carlo N-Particle (MCNP) computer program (ORNL, 2005) or a similar computer program.

Figure 6.1-2, Modified Site Features With Proposed Sampling Stations and Monitoring Locations, indicates the location of REMP sampling locations.

The REMP may be enhanced during the operation of the facility as necessary to maintain the collection and reliability of environmental data based on changes to regulatory requirements or facility operations. The REMP includes administrative action levels (requiring further analysis) and reporting levels for radioactivity in environmental samples.

Written procedures to ensure representative sampling, proper use of appropriate sampling methods and equipment, proper locations for sampling points, and proper handling, storage, transport, and analyses of effluent samples will be a key part of the REMP. In addition, written procedures ensure that sampling and measuring equipment, including ancillary equipment such as airflow meters, are properly maintained and calibrated at regular intervals. Moreover, the REMP implementing procedures will include functional testing and routine checks to demonstrate that monitoring and measuring instruments are in working condition.

Each year, the EREF will submit a summary report of the environmental sampling program to the NRC, including all associated data as required by 10 CFR 70 (CFR, 2008b). The report will include the types, numbers, and frequencies of environmental measurements and the identities and activity concentrations of facility-related radionuclides found in environmental samples, in addition to the MDC for the analyses and the error associated with each data point. Significant positive trends in activities will also be noted in the report, along with any adjustment to the program, unavailable samples, and deviation to the sampling program.

TABLES

Table 6.1-1 Effluent Monitoring Program
(Page 1 of 1)

Sample Location	Sample Type	Analysis / Frequency
Separations Building GEVS exhaust vents TSB GEVS exhaust vent TSB Contaminated Area HVAC System exhaust vent Centrifuge Test and Post Mortem Facilities GEVS exhaust vent[a] Centrifuge Test and Post Mortem Facilities Exhaust Filtration System exhaust vent[a] Ventilated Room HVAC System exhaust vent	Continuous air particulate filter	Gross alpha/beta-Weekly Isotopic analysis[d]-Quarterly composite
Evaporator	Continuous liquid condensate sample from exhaust vent	Gross alpha/beta – Weekly Isotopic analysis[d] – Quarterly composite
Process Areas[b]	Local area continuous air particulate filter[c]	Gross alpha/beta-Weekly Isotopic analysis[d]-Quarterly composite
Non-Process Areas[b]	Local area continuous air particulate filter[c]	Gross alpha/beta-Quarterly composite

Notes:

[a] The continuous sampling system is operated only when the Centrifuge Test Facility or Post Mortem Facility is in operation.

[b] A "Process Area" is any area of the facility where UF_6 process flow between feed, product, or tails cylinders occurs, including areas where cylinders containing UF_6 are opened for testing, inspection, or sampling. A "Non-Process Area" is any other area where uranic material is present in an open form.

[c] These will generally be collected with mobile continuous air monitors, as required to complement the effluent monitoring program.

[d] Isotopic analysis for Uranium if gross alpha and gross beta activities indicate that an individual radionuclide could be present in a concentration greater than 10 percent of the concentrations specified in Table 2 of Appendix B to 10 CFR Part 20 (CFR, 2008x).

Table 6.1-2 Required Lower Limit of Detection for Effluent Sample Analysis
(Page 1 of 1)

Effluent Type	Nuclide	MDC[a] in Bq/ml (µCi/ml)
Gaseous[b]	Isotopic U	1.8×10^{-9} (5.0×10^{-14})
Gaseous[b]	Gross Alpha	1.8×10^{-9} (5.0×10^{-14})

Notes:

[a] These MDCs are 5% of the limits in 10 CFR 20 Appendix B, Table 2 Effluent Concentrations (retention Class W) (CFR, 2008x).

[b] Liquid condensate samples from the Evaporator exhaust vent will be analyzed to an MDC equivalent to 5% or less of the 10 CFR 20 Appendix B, Table 2, Col. 1 (Air) value for retention Class W (CFR, 2008x).

Table 6.1-3 Radiological Environmental Monitoring Program
(Page 1 of 1)

Sample Type/Location	Minimum Number of Sample Locations	Sampling and Collection Frequency	Type of Analysis
Continuous Airborne Particulate	5	Continuous operation of air sampler with sample collection as required by dust loading but at least biweekly. Quarterly composite samples by location.	Gross beta/gross alpha analysis each filter change. Quarterly isotopic analysis on composite sample.
Vegetation	9	1 to 2-kg (2.2 to 4.4-lb) samples collected semiannually	Isotopic analysis [a]
Groundwater	10	4-L (1.06-gal) samples collected semiannually	Isotopic analysis [a]
Basins	1 from each of 3 basins [b]	4-L (1.06-gal) water sample/1 to 2-kg (2.2 to 4.4-lb) sediment sample collected quarterly	Isotopic analysis [a]
Soil	9	1 to 2-kg (2.2 to 4.4-lb) samples collected semiannually	Isotopic analysis [a]
Domestic Sanitary Sewage Treatment Plant	1	4-L (1.06-gal) water fraction/1 to 2-kg (2.2 to 4.4-lb) solid fraction; samples collected semiannually[c]	Isotopic analysis [a]
TLD	18	Quarterly	Gamma and neutron dose equivalent

Notes:

[a] Isotopic analysis for Uranium.

[b] Site Stormwater Detention Basin and Cylinder Storage Pads Stormwater Retention Basins.

[c] Both treated residual solids and clarified liquids are collected from the Domestic Sanitary Sewage Treatment Plant.

Note: Physiochemical monitoring parameters are addressed separately in ER Section 6.2, Physiochemical Monitoring.

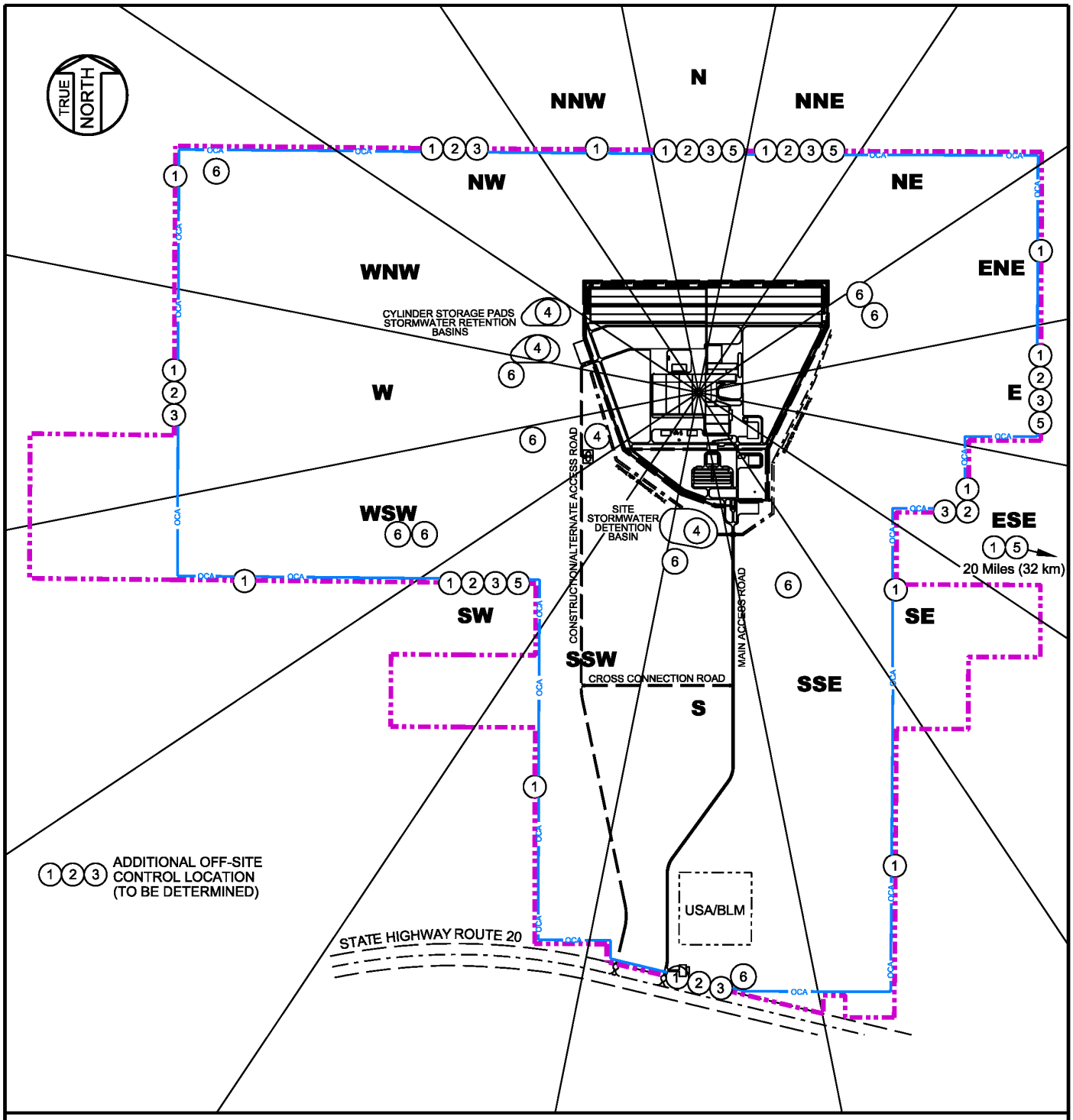
Table 6.1-4 Required MDC for Environmental Sample Analysis
(Page 1 of 1)

Medium	Analysis	MDC Bq/ml or g (µCi/ml or g)
Ambient Air[a]	Gross Alpha	7.4×10^{-10} (2.0×10^{-14})
Vegetation	Isotopic U	1.9×10^{-4} (5.0×10^{-9})
Soil/Sediment	Isotopic U	1.1×10^{-2} (3.0×10^{-7})
Groundwater[a]	Isotopic U	1.1×10^{-4} (3.0×10^{-9})

[a] MDCs are 2% or less of the limits in 10 CFR 20 Appendix B, Table 2 Effluent Concentrations (retention Class W for ambient air) (CFR, 2008x).

FIGURES

Figure 6.1-1, Effluent Release Points and Meteorological Tower, contains Security-Related Information Withheld from Disclosure under 10 CFR 2.390



LEGEND:

- PROPERTY LINE
- OCA — OWNER CONTROLLED AREA FENCE (10 Feet (3 Meters) INSIDE OF PROPERTY LINE)
- (1) THERMOLUMINESCENT DOSIMETER
- (2) SOIL SAMPLE
- (3) VEGETATION SAMPLE
- (4) WATER SAMPLE / SEDIMENT SAMPLE
- (5) CONTINUOUS AIRBORNE PARTICULATE SAMPLE
- (6) GROUNDWATER WELL SAMPLE

0 1500 3000 6000
SCALE: FEET

0 500 1000 2000
SCALE: METERS

FIGURE 6.1-2 **Rev. 2**

Modified Site Features with Proposed Sampling Stations and Monitoring Locations

EAGLE ROCK ENRICHMENT FACILITY ENVIRONMENTAL REPORT

6.2 PHYSIOCHEMICAL MONITORING

6.2.1 Introduction

A physiochemical monitoring program will be implemented at the proposed EREF. The primary objective of physiochemical monitoring is to provide verification that the operations at the EREF do not result in detrimental chemical impacts on the environment. Effluent controls, which are discussed in Sections 3.12, Waste Management, and 4.13, Waste Management Impacts, are in place to ensure that chemical concentrations in gaseous effluents are maintained as low as reasonably achievable (ALARA). In addition, physiochemical monitoring provides data to confirm the effectiveness of effluent controls.

Administrative action levels will be implemented prior to facility operation to ensure that chemical discharges will remain below the limits specified in the facility discharge permits. The limits are specified in any applicable discharge permits administrated by EPA Region 10 and the Idaho State Department of Environmental Quality.

Specific information regarding the source and characteristics of all non-radiological plant effluents and wastes that will be collected and disposed of offsite, or discharged in various effluent streams is provided in Sections 3.12, Waste Management, and 4.13, Waste Management Impacts.

In conducting physiochemical monitoring, sampling protocols and emission/effluent monitoring will be performed for routine operations with provisions for additional evaluation in response to potential accidental release.

The facility will have environmental laboratory areas consisting of various rooms which will be equipped with analytical instruments needed to ensure that the operation of facility activities complies with federal, state and local environmental regulations and requirements. Commercial, offsite laboratories may also be contracted to perform physiochemical analyses of samples.

Compliance will be demonstrated by monitoring and sampling at various facility and process locations, analyzing the samples, comparing results to applicable criteria defined in permits, and reporting the results of these analyses to the appropriate agencies. The sampling/monitoring locations will be selected by the Environmental, Health, Safety, and Licensing (EHS&L) organization staff in accordance with EREF permits and good sampling practices. Parameters to be monitored will be identified in environmental permits obtained for the proposed EREF operations.

Monitoring procedures will employ well-known, acceptable analytical methods and instrumentation. The instrument maintenance and calibration program will comply with manufacturer recommendations. Environmental personnel at the proposed EREF will follow certified sampling and analysis protocols and implement appropriate steps to make sure that the onsite laboratory and any contractor laboratories participate in third-party laboratory inter-comparison programs appropriate to the media and parameters being measured.

The radiological environmental laboratory areas are located in the Technical Support Building (TSB). The non-radiological Environmental Laboratory areas are located in the Operation Support Building (OSB) and are used to perform analyses that include the following:

- Hazardous material presence in waste samples
- pH, oil and other contaminants in liquid waste streams

The environmental laboratory areas will be available to perform analyses on air, water, soil, and flora samples obtained from designated areas around the plant.

In addition to its environmental and radiological capabilities, the capability exists to perform bioassay analyses when necessary. Commercial, offsite laboratories may also be contracted to perform bioassay analyses.

All waste liquids, solids and gases from enrichment-related processes and decontamination operations will be analyzed and/or monitored for chemical and radiological contamination to determine safe disposal methods and/or further treatment requirements. A description of the radiological monitoring program at the EREF is provided in Section 6.1, Radiological Monitoring.

6.2.2 Evaluation and Analysis of Samples

Samples of liquid streams, solids, and gaseous effluents from plant processes will be analyzed in the TSB and OSB environmental laboratory areas. Results of process samples analyses are used to verify that process parameters are operating within expected performance ranges. Results of liquid stream sample analyses will be used to determine if corrective action is required in facility process and/or effluent collection and treatment systems.

6.2.3 Effluent Monitoring

Each year, AES will submit a summary of the environmental sampling program and associated data to the proper regulatory authorities, as required. This summary will include the types, numbers and frequencies of samples collected.

Physiochemical monitoring will be conducted via sampling of stormwater, soil, sediment, surface water (if present in intermittent stream drainage), vegetation, and groundwater as defined in Table 6.2-1, Physiochemical Sampling, to confirm that trace, incidental chemical discharges are below regulatory limits. In the event of any accidental release from the facility, sampling protocols will be initiated immediately and on a continuing basis to document the extent/impact of the release until conditions have been abated and mitigated. Sampling locations are shown in Figure 6.2-1, Physiochemical Monitoring Locations.

Parameters for continuing environmental performance will be developed from the baseline data in the Environmental Report and additional preoperational sampling. Operational monitoring surveys will be conducted using sampling sites and at frequencies established from baseline sampling data and as determined based on permit requirements. The monitoring program will be enhanced as appropriate to maintain the collection and reliability of environmental data. Specific monitoring point locations will be determined during detailed design.

The site packaged Domestic Sanitary Sewage Treatment Plant will receive only typical sanitary wastes. No chemical sampling is planned because no plant process related effluents will be introduced into this system.

6.2.4 Stormwater Monitoring Program

A stormwater monitoring program will be initiated during construction of the facility. Data collected from the program will be used to evaluate the effectiveness of measures taken to prevent the contamination of stormwater and to retain sediments within property boundaries. A temporary detention basin will be used as a sediment control basin during construction as part of the overall sedimentation erosion control plan.

Stormwater monitoring will continue with the same monitoring frequency upon initiation of facility operation. During plant operation, samples will be collected from the two Cylinder Storage Pads Stormwater Retention Basins and the Site Stormwater Detention Basin in order to demonstrate that runoff does not contain any contaminants. A list of parameters to be monitored and monitoring frequencies for stormwater is presented in Table 6.2-2, Stormwater Monitoring Program for Detention and Retention Basins. This monitoring program will be refined to reflect applicable requirements as determined during the National Pollutant Discharge Elimination System (NPDES) process.

6.2.5 Environmental Monitoring

The purpose of this section is to describe the surveillance-monitoring program, which will be implemented to measure non-radiological chemical impacts upon the natural environment.

The ability to detect and contain any potentially adverse chemical releases from the facility to the environment will depend on chemistry data to be collected as part of the effluent and stormwater monitoring programs described in the preceding sections. Data acquisition from these programs encompasses both onsite and offsite sample collection locations and chemical element/compound analyses. Final constituent analysis requirements will be in accordance with permit mandates.

Sampling locations will be determined based on meteorological information and current land use. The sampling locations may be subject to change as determined from the results of any observed changes in land use.

The range of chemical surveillance incorporated into all the planned effluent monitoring programs for the facility are designed to be sufficient to predict any relevant chemical interactions in the environment related to facility operations.

Vegetation and soil sampling will be conducted. Vegetation samples will include grasses, and if available, vegetables. Soil will be collected in the same vicinity as the vegetation samples. The samples will be collected from both on site and off site locations in various sectors. Sectors are chosen based on air modeling. Onsite soil and vegetation sampling will include the outfall at the Site Stormwater Detention Basin. This outfall is further discussed in Section 4.4, Water Resources Impacts. Sediment samples will be collected from discharge points to the different collection basins onsite. Groundwater samples will be collected from a series of wells installed around the facility. The locations of the groundwater sampling (monitoring) wells are shown in Figure 6.2-1, Physiochemical Monitoring Locations.

Stormwater collected in the two Cylinder Storage Pads Stormwater Retention Basins will be sampled to ensure no contaminants are present in the runoff from the cylinder storage pads. If water is present, a surface water sample will be collected from the intermittent stream drainage in the southwest corner of the site.

6.2.6 Meteorological Monitoring

In order to monitor and characterize meteorological phenomena (e.g., wind speed, wind direction, air temperature and humidity) during plant operation as well as consider interaction of meteorology and local terrain, conditions will be monitored with a 40-m (132-ft) instrumented tower located onsite. These data will assist in evaluating the potential locales on and off property that could be influenced by any emissions. The instrumented tower will be located at a site approximately the same elevation as the finished facility grade and in an area where facility structures will have little or no influence on the meteorological measurements. An area

approximately ten times the obstruction height around the tower towards the prevailing wind direction will be maintained in accordance with established standards for meteorological monitoring. This practice will be used to avoid spurious measurements resulting from local building-induced turbulence. The program for instrument maintenance and servicing, combined with redundant data recorders, assures at least 90% data recovery.

The data this equipment provides is recorded in the Control Room and can be used for dispersion calculations. Equipment will also measure temperature and humidity, which will be recorded in the Control Room.

6.2.7 Biota

The monitoring of impacts to biota is detailed in Section 6.3, Ecological Monitoring.

6.2.8 Quality Assurance

The physiochemical monitoring program for EREF will use a set of formalized and controlled procedures for sample collection, laboratory analysis, chain of custody, reporting of results, and corrective actions. Samples sent to laboratories will include blanks and duplicates at specified frequencies to provide data for identifying routine reporting or analytical errors as part of quality assurance checks on the data. Analyses will only be performed at laboratories with appropriate EPA and State of Idaho certifications. The laboratory analyses will be conducted using the best available standard techniques at state or EPA certified laboratories.

Corrective actions will be instituted when an administrative action level is exceeded for any of the measured parameters. Action levels will be divided into three priorities: (1) if the sample parameter is three times the normal background level; (2) if the sample parameter exceeds any existing administrative limits, or; (3) if the sample parameter exceeds any regulatory limit. The third scenario represents the worst case, which will be prepared for but is not expected. Corrective actions will be implemented to ensure that the cause for the action level exceedance can be identified and immediately corrected, applicable regulatory agencies are notified, if required, communications to address lessons learned are dispersed to appropriate personnel, and applicable procedures are revised accordingly if needed. All action plans will be commensurate to the severity of the exceedance.

6.2.9 Lower Limits of Detection

Lower limits of detection (LLD) will be met for sampling parameters listed in Tables 6.2-1, Physiochemical Sampling, and 6.2-2, Stormwater Monitoring Program for Detention and Retention Basins, and will be based on the baseline surveys and the type of matrix (sample type).

TABLES

Table 6.2-1 Physiochemical Sampling
(Page 1 of 1)

Media	Number of Locations	Monitoring Frequency	Sample Type	Analysis[a]
Groundwater	9 deep wells and 1 shallow well used for baseline monitoring.	Semiannually for deep wells; semiannually for shallow wells when water is present	Grab	Metals, organics and pesticides; water level elevations
Soil[b]/sediment	3 minimum soil samples at locations to be determined by environmental staff plus one at the detention basin outfall.	Quarterly, near vegetation sample locations; one sample at each location	Surface grab	Metals, organics, pesticides and fluoride uptake
	Retention and detention basin sediments at discharge points to the basins.	Quarterly for one sample at each location	Surface grab	Metals, organics, pesticides and fluoride uptake
Surface water[b]	Potential location in intermittent stream drainage on southwestern corner of site.	Quarterly if water present	Grab	Metals, organics and pesticides
Stormwater[b]	Retention and detention basins at locations to be determined by environmental staff.	Quarterly if water present	Grab	See Table 6.2-2
Vegetation[b]	4 minimum	Quarterly if present (i.e., during growing seasons); one sample at each location	Surface grab	Fluoride uptake
Meteorology	1 on-site station augmented by records from nearby meteorological stations	Daily	Continuous	Wind direction and wind speed, temperature, and humidity

Notes:

[a] Analyses will meet EPA Lower Limits of Detection (LLD), as applicable, and will be based on the baseline surveys and the type of matrix (sample type).

[b] Location to be established by Environmental, Health, Safety and Licensing (EHS&L) organization staff.

Table 6.2-2 Stormwater Monitoring Program for Detention and Retention Basins (see Figure 4.4-1)[a]

(Page 1 of 1)

Monitored Parameter	Monitoring Frequency	Sample Type	LLD[b] (ppm)
Oil and Grease	Quarterly, if standing water exists	Grab	0.5
Total Suspended Solids	Quarterly, if standing water exists	Grab	0.5
Five-Day Biological Oxygen Demand	Quarterly, if standing water exists	Grab	2
Chemical Oxygen Demand	Quarterly, if standing water exists	Grab	1
Total Phosphorus	Quarterly, if standing water exists	Grab	0.1
Total Kjeldahl Nitrogen	Quarterly, if standing water exists	Grab	0.1
pH	Quarterly, if standing water exists	Grab	0.01 units
Nitrate plus Nitrite Nitrogen	Quarterly, if standing water exists	Grab	0.2
Metals	Quarterly, if standing water exists	Grab	Varies by metal

Notes:

[a] Site Stormwater Detention Basin, Cylinder Storage Pads Stormwater Retention Basins and any temporary basin(s) used during construction.

[b] Lower limit of detection; Analyses will meet EPA LLD, as applicable, and will be based on the baseline surveys and the type of matrix (sample type).

Note: Radiological monitoring parameters are addressed separately in ER Section 6.1, Radiological Monitoring.

FIGURES

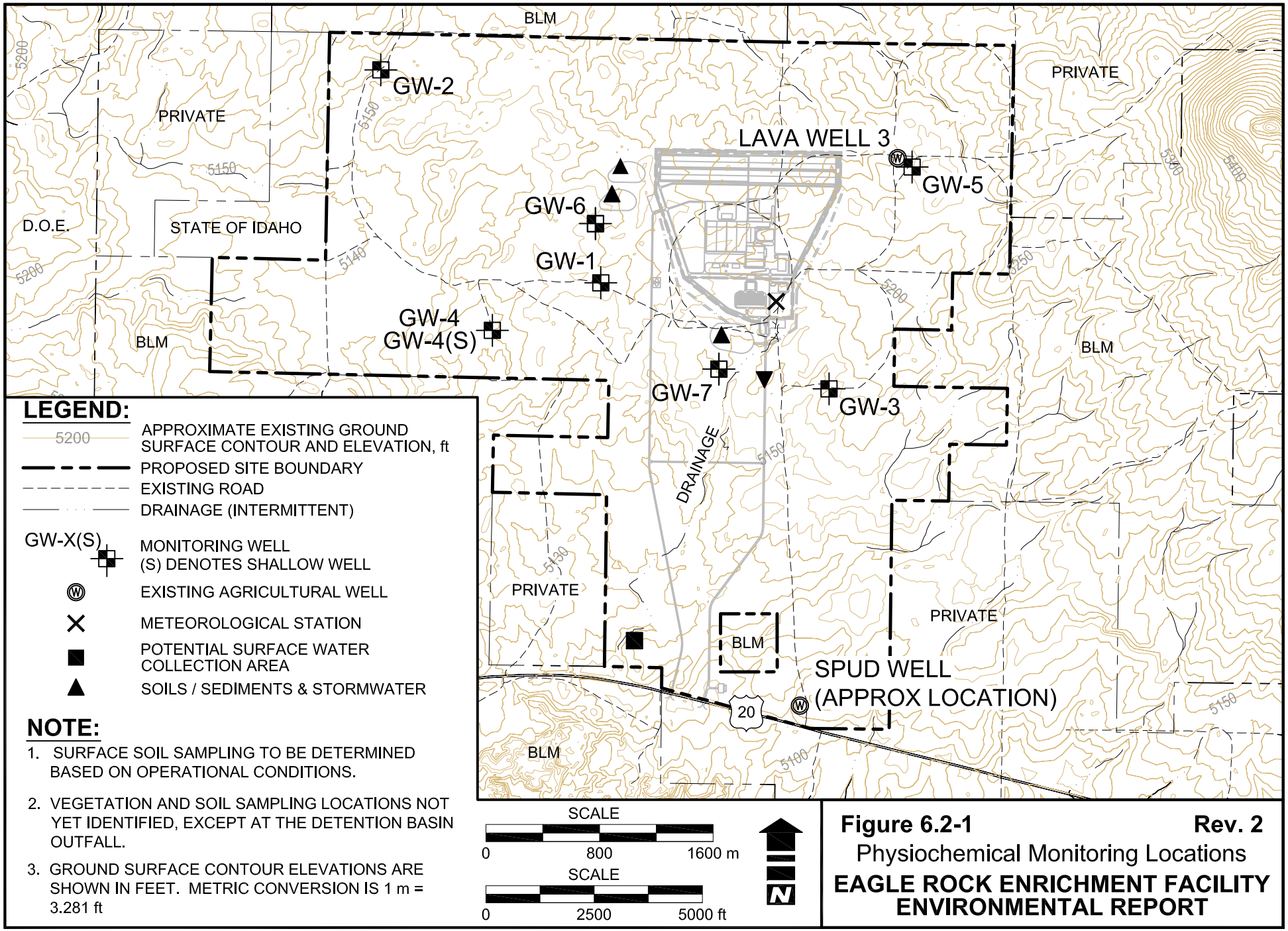


Figure 6.2-1 **Rev. 2**

Physiochemical Monitoring Locations

EAGLE ROCK ENRICHMENT FACILITY
ENVIRONMENTAL REPORT

6.3 ECOLOGICAL MONITORING

6.3.1 Maps

See Figure 6.3-1, Modified Site Features with Proposed Ecological Sampling Locations.

6.3.2 Affected Important Ecological Resources

The existing natural habitats on the proposed Eagle Rock Enrichment Facility (EREF) site and the 8-km (5-mi) area surrounding the site have been impacted by domestic livestock grazing, reseeding, and inter-seeding of habitat, farming, and road development. These current and historic land uses have resulted in reduction of plant and animal community diversity, productivity, and fragmentation of the remaining native sagebrush steppe habitat type.

The sagebrush steppe vegetation community at the proposed EREF site has been influenced by agricultural practices. There is active irrigated farming on about 389 ha (962 ac). In addition, about 880 ha (2,180 ac) has been dryland farmed as recently as four to five years ago. Existing vegetation on these areas is dominated by herbaceous species and limited brush associated with basalt outcrops. The remaining 430 ha (1,060 ac) is sagebrush steppe vegetation dominated by big sagebrush. Seasonal livestock grazing occurs throughout the entire proposed site. Sagebrush steppe is characterized by big sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus nauseosa*), and grass species.

The site provides habitat for greater sage grouse (*Centrocerus* urophasianus) and is potential habitat for the pygmy rabbit (*Brachylagus idahoensis*). The closest breeding ground for greater sage grouse is between 6.4 and 8 km (4 and 5 mi) northwest of the proposed site on Idaho National Laboratory (INL) land. The closest known population of the pygmy rabbit is on the eastern area of the INL about 8.8 km (5.5 mi) west of the proposed site. Both species (i.e., greater sage grouse and pygmy rabbit) have been under review for listing under the Endangered Species Act. At present, listing of the greater sage grouse is warranted, but precluded. Listing of the pygmy rabbit was determined not to be warranted. The area does not provide habitat for species currently protected under the Endangered Species Act.

Based on ecological surveys that have been performed onsite, AES has concluded that the sagebrush steppe habitat is the ecological system on the proposed site that is the most sensitive. This vegetation type is used by big game (pronghorn (*Antilocapra americana*), deer (*Odocoileus hemionus*), and elk (*Cervus elaphus*)) and by greater sage grouse for feeding and likely brood rearing habitat. The proposed site is at the southern end of an area identified by the BLM as crucial winter-spring habitat for pronghorn. However, the area is not considered essential breeding for big game and does not contain breeding grounds for greater sage grouse. The quantity of sagebrush steppe on the proposed site is relatively small, about 430 ha (1,060 ac), and the site is located at the southern edge between contiguous sagebrush habitat to the north and west and farmland and barren lava flows to the south and east. Big game and greater sage grouse are mobile and have individual ranges that are much greater than the habitat on the proposed site. These species do not use the proposed site preferentially and are not found in high concentrations compared to other parts of their range.

6.3.3 Monitoring Program Elements

Several elements have been chosen for the ecological monitoring program. These elements include vegetation, birds, mammals, and reptiles/amphibians. Currently there is no action or reporting level for each specific element. However, additional consultation with all appropriate

agencies (Idaho Department of Fish and Game, U.S. Fish and Wildlife Service, Bureau of Land Management) will continue. Agency recommendations, based on future consultation and monitoring program data, will be considered when developing action and/or reporting levels for each element. In addition, AES will periodically monitor the proposed site (including detention- and retention-basin waters) during construction and plant operations to ensure the risk to birds and wildlife is minimized. If needed, measures will be taken to release entrapped wildlife. The monitoring program will assess the effectiveness of the entry barriers and release features to ensure risk to wildlife is minimized.

6.3.4 Observations and Sampling Design

The EREF site observations will include preconstruction, construction, and operations monitoring programs. The preconstruction monitoring program will establish the site baseline data. The procedures used to characterize the vegetation, bird, mammalian, and reptilian/amphibian communities at the proposed EREF site during pre-construction monitoring will be used for both the construction and operations monitoring programs. Operational monitoring surveys will also be conducted as described below using the same sampling sites established during the preconstruction monitoring program.

These surveys are designed to characterize gross changes in the composition of the vegetation, avian, mammalian, and reptilian/amphibian communities of the site associated with operation of the facility. Interpretation of operational monitoring results, however, must consider those changes that would be expected at the EREF site as a result of natural succession processes. Plant communities at the site will continue to change as the site begins to regenerate and mature. Changes in the bird, small mammal, and reptile/amphibian communities are likely to occur concomitantly in response to the changing habitat.

Vegetation

Ground cover will be estimated from about 20 permanent sampling locations within the proposed EREF site. Sampling will occur annually in June. Annual sampling is scheduled to coincide with the mature flowering stage of the dominant perennial species.

The sampling locations will be selected in areas outside of the proposed footprint of the EREF and will be identified using Global Positioning System coordinates. The expected positions of the sampling locations have been plotted on a site schematic (See Figure 6.3-1, Modified Site Features With Proposed Ecological Sampling Locations). The establishment of permanent sampling locations will facilitate a long-term monitoring system to evaluate vegetation trends and characteristics.

Vegetation characteristics will be quantified using the point-transect method. Points will be located in the field within the sagebrush steppe and disturbed sagebrush steppe vegetation types. Two, 50-m (164-ft) tapes will be extended perpendicular to one another from the random point; one oriented to the south, the other oriented to the east. Ground cover (e.g., bare ground, litter) will be recorded at each point. Overstory species and understory species will also be recorded at points where the point intersects vegetation. This data will be analyzed to determine species composition and to estimate ground cover. The initial monitoring will be conducted through at least the first three years of commercial operation. Following this period, program changes may be initiated based on operational experience.

Wildlife

Wildlife surveys will be conducted during late spring/early summer and late fall/early winter to verify the presence of mammals, birds, and herptiles (reptiles and amphibians) at the proposed EREF site. The spring/summer and fall/winter surveys will be designed to identify species and provide estimates of abundance. Surveys will not be conducted at a time when inclement weather (e.g., high wind, rain, heavy snow) would reduce the likelihood of observing animals because of reduced animal activity or reduced visual conditions. Weather conditions (e.g., temperature, wind speed and direction, humidity, cloud cover) will be recorded during each sampling day. Changes in weather during surveys also will be recorded.

Permanent line transects of about 1.6 km (1 mi) in length will be walked at 30 minutes before sunrise to 1.5 hours after sunrise and 1.5 hours before sunset to 30 minutes after sunset. Transects will be 0.40 to 0.80 km (0.25 to 0.50 mi) apart. Transects will be placed in the sagebrush steppe and in the disturbed sagebrush steppe habitat. Species composition and relative abundance will be determined based on visual observations of animals, sign (e.g., tracks, scat, nests, burrows), and calls. Gender and age (i.e., juvenile and adult) will be noted when possible. Behavior also will be noted (e.g., in flight, male singing and territory establishment, nesting, perching). The initial monitoring will be conducted through at least the first three years of commercial operation. Following this period, program changes may be initiated based on operational experience.

Birds

Bird populations will be sampled twice a year in the late spring during breeding, nesting, and brood rearing season and during the winter. Species and numbers observed will be recorded. In addition, behavior also will be noted (e.g., in flight, male singing and territory establishment, nesting, perching).

The avian communities are described in ER Section 3.5.2, General Ecological Conditions of the Site. All data collected will be recorded and compared to information listed in Table 3.5-2, Birds Potentially Using the Proposed Eagle Rock Enrichment Facility Site. The initial monitoring will be conducted through at least the first three years of commercial operation. Following this period, program changes may be initiated based on operational experience.

Mammals

Mammal populations will be sampled twice a year; in the late spring during breeding and nursing season and during the late fall/winter during migration and shifts to winter range. Species and numbers observed will be recorded. In addition, behavior also will be noted (e.g., fleeing, feeding, resting).

The existing mammalian communities are described in ER Section 3.5.2, General Ecological Conditions of the Site. All data collected will be recorded and compared to the information listed in Table 3.5-1, Mammals Potentially Using the Proposed Eagle Rock Enrichment Facility Site. The initial monitoring will be conducted through at least the first three years of commercial operation. Following this period, program changes may be initiated based on operational experience.

Herptiles (Reptiles and Amphibians)

Herptile populations will be sampled once during the summer, when animals are most active. Species and numbers observed will be recorded. Behavior will also be noted (e.g., breeding display, feeding, resting, thermo-regulating).

The reptile and amphibian communities are described in ER Section 3.5.2, General Ecological Conditions of the Site. The data will be compared to the information listed in Table 3.5-3, Amphibians/Reptiles Potentially Using the Proposed Eagle Rock Enrichment Facility Site. As with the programs for birds and mammals, the initial herptile monitoring program will be conducted through at least the first three years of commercial operation. Following this period, program changes may be initiated based on operational experience.

6.3.5 Statistical Validity of Sampling Program

The proposed sampling program will include descriptive statistics. These descriptive statistics will include the mean, standard deviation, standard error, and confidence interval for the mean. In each case the sampling size will be clearly indicated. The use of these standard descriptive statistics will be used to assess sample variability. A significance level of 5% will be used for the studies, which will result in a 95% confidence level.

6.3.6 Sampling Equipment

Due to the type of ecological monitoring proposed for the EREF site, no specific sampling equipment is necessary.

6.3.7 Method of Chemical Analysis

Due to the type of monitoring proposed for the EREF site, no chemical analysis is proposed for ecological monitoring.

6.3.8 Data Analysis and Reporting Procedures

AES or its contractor will analyze the ecological data collected on the proposed site. The EHS&L Manager or a staff member reporting to the EHS&L Manager will be responsible for the data analysis.

A summary report will be prepared, that will include spatial and temporal information on species composition, distribution, and relative abundance of key species.

6.3.9 Agency Consultation

Consultation was initiated with all appropriate federal and state agencies and affected Native American tribes. Refer to Appendix A, Consultation Documents, for a complete list of consultation documents and comments.

6.3.10 Organizational Unit Responsible for Reviewing the Monitoring Program on an Ongoing Basis

As policy directives are developed, documentation of the environmental monitoring programs will occur. The person or organizational unit responsible for reviewing the program on an ongoing basis will be the EHS&L Manager.

6.3.11 Established Criteria

The ecological monitoring program will be conducted in accordance with generally accepted practices and the requirements of the Idaho Department of Fish and Game and U.S. Fish and Wildlife Service. Procedures will be established as appropriate for data collection storage, analysis, reporting, and corrective actions. Data will be collected, recorded, stored, and analyzed. Actions will be taken as necessary to reconcile anomalous results.

6.3.11.1 Data Recording and Storage

Data relevant to the ecological monitoring program will be recorded in paper and/or electronic forms. These data will be kept on file for the life of the facility.

FIGURES

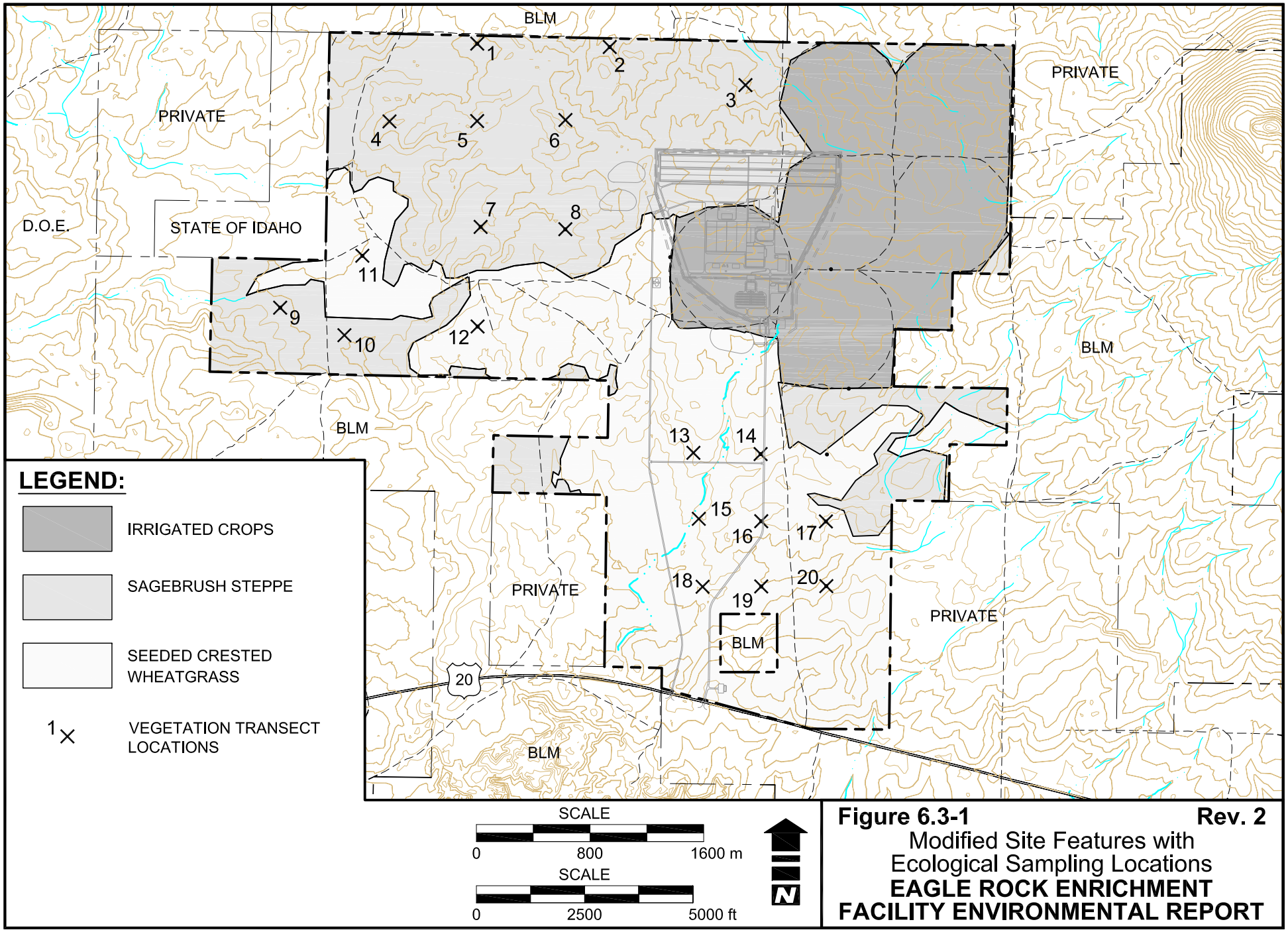


Figure 6.3-1 **Rev. 2**

Modified Site Features with Ecological Sampling Locations

EAGLE ROCK ENRICHMENT FACILITY ENVIRONMENTAL REPORT