40-8948

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

July 7, 1995

Mr. Robert Nelson
U.S. Nuclear Regulatory Commission
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Submission of the Draft Annotated Outline for the Environmental Impact Statement Assessing the Decommissioning of Shieldalloy Metallurgical Corporation's Cambridge, Ohio Facility

Dear Bob:

Enclosed is a copy of the draft annotated outline for your use. This document is the first deliverable under Subtask B3 for the Cambridge EIS.

This document should be read with the revised draft description of the proposed action and alternatives (DOPAA) for the Shieldalloy Metallurgical Corporation Facility at Cambridge, Ohio sent to you June 10, 1995. The draft annotated outline is based upon the revised draft DOPAA and the information available to us. As stated in the cover letter for the revised draft DOPAA, the onsite dilution processing and disposal and onsite segregation processing with offsite disposal alternatives have been assumed to be technically infeasible and are not included in the draft annotated outline.

Unresolved concerns arose during preparation of the draft annotated outline. These concerns include: (1) Who is to prepare Section 5.3, Staff Assessment? (2) What is to be ORNL's role in the consultation process with the State Historic Preservation Office and the Fish and Wildlife Service? (3) Where is the offsite slag located and how much material is there? (4) Where will capping materials be obtained? and (5) To what extent are the potential impacts along the transportation corridor from the Shieldalloy site at Cambridge, Ohio to the Envirocare site at Clive, Utah to be analyzed?

If you have any questions, please call Murray Wade at (615) 574-8632 or Lance McCold at (615) 574-5216.

Sincerely,

James W. Terry

Enclosure

c: D. DeMarco (NRC)
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PDR; per C. Polland

~~CF per R. Nelson~~

Draft
Annotated Outline for the Environmental Impact Statement Assessing the Decommissioning of the Shieldalloy Metallurgical Corporation's Cambridge, Ohio Facility

July 7, 1995

Note: Read this draft annotated outline in conjunction with the revised draft *Description of the Proposed Action and Alternatives* delivered to the NRC Monday, June 12, 1995.

3. AFFECTED ENVIRONMENT

3.1 THE CAMBRIDGE SITE

3.1.1 Background

A brief history of the development and licensed processing of radioactive materials at this site will be described; the series of owner-operators and their periods of possession will be presented.

3.1.2 Operations and Layout

The buildings and other facilities (e.g., waste areas) will be described. Those buildings and sites used for storing and processing the radioactively contaminated materials (both source and waste) will be described in detail.

3.2 LAND USE

Land use will be addressed from social, economic, and ecological perspectives. Uses of existing agricultural, urban, and industrial lands as well as recreational use of open marsh and forest land near Shieldalloy's facility will be identified. Reasonably foreseeable future land uses, information about which is available through land use planning documents and zoning ordinances will be described. Ownership patterns of land (particularly undeveloped, agricultural, and residential parcels) near the Shieldalloy facility will be identified.

3.3 COMMUNITY RESOURCES

3.3.1 Socioeconomic Characteristics

The socioeconomic characteristics of the nearby communities of Cambridge and Byesville (located in Jackson and Cambridge Townships, respectively), where 60% of Shieldalloy's workforce resides will be described. Guernsey County will be profiled generally. The level of detail provided will be commensurate with the potential for an impact on any given socioeconomic resource. Features to be characterized include the size and composition of the local populations, (workers; general public; and low-income, minority, and sensitive populations). Local housing, public services and infrastructure, and economic resources also will be described in commensurate detail. Public services and infrastructure include schools, medical facilities, public

safety services and facilities, utilities, and waste management. The capacity and conditions of the local transportation network, particularly state and county roads and railroads, will be examined. Economic resources consider both economic development planning and employment in the major communities identified above and in the county as a whole.

3.3.2 Cultural Resources

This section will identify and describe any archaeological or other historic sites located on the approximately 23 ha (58 acres) that may be affected by the stabilizing and capping of the west and east slag piles and the offsite slag. The stabilization of only onsite material and the offsite disposal alternatives will affect smaller areas in the same location. The section will also include a more generic description of the surrounding cultural landscape (i.e., the National Road historic transportation corridor in the vicinity of Cambridge). As directed by Section 106 of the National Historic Preservation Act, attention will be focused on prehistoric and historic archaeological sites, historic sites and structures, traditional cultural properties, and districts or landscapes listed in or eligible for the *National Register of Historic Places*.

3.3.3 Environmental Justice

As directed by Executive Order 12898 and NMSS Policy and Procedures Letter 1-50, Rev.1, Environmental Justice in NEPA Documents, relevant demographic characteristics of the population, i.e., race, ethnicity, and income, will be determined. If a pattern of naturally-occurring resource consumption (well-water and food sources) particularly among low-income and minority populations is found, this section will identify areas where these resources are obtained.

3.4 HUMAN HEALTH

The presence of populations (both normal and sensitive) that may be adversely affected by elevated levels of radioactive species in ingested drinking water and foods and respired air will be determined and documented. Any extant environmental factors that may increase the sensitivity of individuals to low levels of radioactive materials will be documented.

3.5 GEOLOGY AND HYDROLOGY

3.5.1 Groundwater

The presence of potential potable water aquifers on and near the site, groundwater use, the degree of hydraulic connection between shallow and bedrock aquifers, aquifer characteristics (e.g., hydraulic conductivities, hydraulic gradients, soil-water distribution coefficients), groundwater quality, recharge and discharge relationships, flow directions, contaminant migration pathways, and interactions between groundwater and surface water will be discussed.

3.5.2 Surface Water

Onsite and offsite natural and engineered surface drainages will be discussed. Characteristics to be described include ranges of flow rates, water quality, watershed drainage areas, and recharge/discharge relationships with groundwater. The 100-year floodplain also will be identified.

3.5.3 Soils

Soil types and characteristics that are relevant to movement of the radioactive species of concern (principally uranium, thorium, and their daughters) will be presented.

3.6 METEOROLOGY, AIR QUALITY, AND NOISE

Meteorological and air-quality data found in state and local summaries available from the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Environmental Protection Agency (EPA) will be summarized in this section. Because air quality is not expected to be a major issue, this section is expected to be brief. Air-quality standards from the *Code of Federal Regulations* (40 CFR 50) will also be summarized. Regulated pollutants include: sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter less than 10 micrometers in aerodynamic diameter. Typical units for measuring air quality and for expressing air-quality standards are in terms of mass of contaminant per unit volume (e.g., micrograms per cubic meter).

3.6.1 Meteorology

Precipitation extremes will be emphasized because of the potential for contamination of surface and groundwater systems. Temperature, winds, and extreme weather other than floods will be discussed only briefly.

3.6.2 Air Quality and Noise

Background concentrations of pollutants regulated by the National Ambient Air Quality Standards (NAAQS) and the extent to which local air quality is in attainment of these standards will be summarized. Regulations concerning the prevention of significant deterioration (PSD) of air quality (40 CFR 51) will also be discussed briefly. However, because construction will be temporary and the proposed action is expected to reduce the release of contaminants to the atmosphere, PSD is not expected to be an issue. Available data on existing visibility (usually measured in kilometers [miles]) and noise conditions (typically measured in decibels) in the area will also be summarized in this section.

3.7 ECOLOGICAL RESOURCES

The site and regional biotic environment will be characterized briefly. Biological resources both onsite and offsite in areas that are known to be or could be potentially affected by the proposed action or alternatives will be described as necessary. With the exception of the built-up industrial facilities area, this site is essentially a wetland with a few open water channels and industrial ponds. The following topical areas will be covered.

3.7.1 Wetlands

This section will describe wetlands on the 130-acre site within the valley of Wills Creek and wetlands immediately adjacent to the reach of Chapman Run lying to the west of the Shieldalloy Metallurgical Corporation (SMC) boundary. The wetland characterization will address areal delineation, structure, and function, including descriptions of plant and animal communities, soils, and hydrology.

3.7.2 Aquatic communities

This section will describe the surface water, water quality, and aquatic biota on the 130-acre site, including unnamed perennial and intermittent open channels draining into the primary receiving stream, Chapman Run. Emphasis will be placed on aquatic communities that are downstream from the existing slag piles.

3.7.3 Species of Special Concern

This section will identify any federally or state-listed species that could be affected by the proposed action or alternatives and will summarize their biology to the extent needed to assess impacts. Potential residents or visitors listed as threatened or endangered by either the U.S. Fish and Wildlife Service or the State of Ohio include the bald eagle (federally listed), barn owl (state-listed), bobcat (state-listed), Indiana bat (federally listed), northern harrier (state-listed), northern madtom (state-listed fish), regal fritillary butterfly (state-listed), river otter (state-listed), and *Sparthiphaga inops* (state-listed moth).

3.8 REFERENCES

References will be included to document statements made in Sect. 3.

4. ENVIRONMENTAL CONSEQUENCES AND RECOMMENDED MONITORING AND MITIGATION

The following sections will describe the environmental consequences of the four alternatives: (1) onsite stabilization and disposal, (2) onsite stabilization and disposal of onsite and offsite slag, (3) offsite disposal of radiological and hazardous waste, and (4) no action. These consequences will reflect consideration of direct, indirect, and cumulative impacts. Environmental consequences will be segregated into remediation impacts and postremediation impacts. Postremediation impacts will be divided into short-term (up to 30 years) and long-term (up to 1000 years or longer).

4.1 LAND USE

4.1.1 Onsite Stabilization And Disposal Alternative of Onsite Slag Alternative

4.1.1.1 Remediation

During remediation activities land use will continue with its present restrictions. The impacts of these restrictions for a period of six to seven months during the stabilization and capping activities will be the same as the currently occurring impacts.

4.1.1.2 Postremediation

Near Term

This alternative would result in indefinitely restricted land use. The social and economic impacts of the restricted land use will be assessed by comparing the social and economic costs and benefits that could result from using the land to those resulting from restrictions against its use. Costs and benefits are determined by assessing the potential productive capacity or the land and local/regional needs for using the land productively as opposed to the green space it would become under this alternative. Existing and reasonably foreseeable land uses in the area of the Shieldalloy site would be compared to the land use restrictions that would result from the onsite disposal of onsite slag to qualitatively determine the compatibility of these land uses. Local zoning, planning documents, and existing land use and community development patterns will be used to project future land uses.

Long Term

The long term impacts are highly uncertain and will be presented in that context. There is no model to quantify the impacts,

4.1.2 Onsite Stabilization and Disposal of Onsite and Offsite Slag Alternative

4.1.2.1 Remediation

The impacts would be similar to those discussed in Sect. 4.1.1.1 with the exception of small areas that may be disturbed where slag has been deposited offsite. Removing these materials may temporarily disturb existing land use in areas where the offsite slag is deposited and in the immediate proximity of the deposits where large equipment may disturb the land. The existing land uses in these areas will be determined and the socioeconomic costs of the disturbance of these lands will be assessed. In the absence of specific information about the location of the offsite slag, analyses will be performed on the basis of a worst case scenario. Such a scenario would assume that the fill has been deposited at numerous sites resulting in many hectares (acres) of land disturbance during remediation. In this case impacts would be temporary but large.

4.1.2.2 Postremediation

Near Term

The land use impacts arising from the land use restriction imposed under the onsite stabilization and disposal of onsite and offsite slag alternative are expected to be similar to those from the onsite stabilization and disposal of onsite slag alternative. The analyses will be conducted similarly. The potential for change in land use where the offsite slag is currently located will be briefly assessed. Impacts at these offsite areas, if any, are expected to be positive because the encumbrance would cease.

Long Term

As noted in Sect. 4.1.1.2, the long term impacts are very uncertain, and will be presented in that context.

4.1.3 Offsite Disposal Of Radiological And Hazardous Waste Alternative

4.1.3.1 Remediation

The land use impacts of the offsite disposal of radiological and hazardous waste alternative would be similar to those examined in Sect. 4.1.1.1.

4.1.3.2 Postremediation

There would be no postremediation land use restrictions at the Cambridge site resulting from the offsite disposal alternative and, therefore, no land use impacts (short-term or long-term) are anticipated for this alternative.

4.1.4 No Action Alternative

The land use impacts from the no action alternative are expected to be similar to the postremediation impacts presented in Sect. 4.1.1.2.

4.1.5 Cumulative Impacts

The compatibility of onsite and offsite land uses under each alternative will be assessed in Sects. 4.1.1 to 4.1.4. This section will consider cumulative impacts of land being removed from productive use.

4.2 COMMUNITY RESOURCES

4.2.1 Socioeconomic Resources

Potential impacts to populations and socioeconomic resources identified in Sect. 3 are analyzed for the preferred action and all alternative actions including the no action alternative. Discussion of impacts ranges from detailed to general, depending on the level of treatment warranted by the nature of the action.

4.2.1.1 Onsite stabilization and disposal of onsite slag alternative

Remediation

Possible changes in the economic structure of the affected municipalities will be determined by comparing potential economic benefits (e.g., additional jobs, local expenditures, and taxes) to the potential for financial burdens (e.g., need for additional services and reduced tax benefits).

Socioeconomic impacts resulting from the workforce requirements associated with this alternative will be assessed generally, as the required workforce for this alternative is 12-25 persons. Because the workforce is extremely small in nominal terms and relative to the local population and workforce, no population related impacts to housing, education, utilities, transportation, and social services are anticipated.

This proposed action does not introduce changes that are expected to alter housing values. The analysis of potential transportation impacts will compare average and estimated peak trips (by trucks bring capping materials to the site) per day to the capacity and levels of service occurring on roads to be used or likely to be used to deliver capping materials to the site. Identification of the location of capping materials would aid this analysis. Without such information, likely roadway use will be estimated and information about the capacity and condition of local roads in general will be used for this analysis.

Postremediation

Near term

It is reasonable to assume that social, political, and economic conditions will not be drastically altered during the near term. Assuming this is the case and that institutional controls remain in place, it is expected that the postremediation socioeconomic impacts would be small and beneficial.

Long term

The highly uncertain nature of long term impacts will be discussed.

4.2.1.2 Onsite stabilization and disposal of onsite and offsite slag alternative

Remediation

The impacts to socioeconomic resources during remediation from the onsite stabilization and disposal of onsite and offsite slag alternative would be similar to those presented in Sect. 4.2.1.1 for the onsite stabilization and disposal of onsite slag alternative.

Postremediation

It is expected that the postremediation impacts of onsite stabilization and disposal of onsite and offsite slag alternative would be similar to those presented in Sect. 4.2.1.1 (both near-term and long-term).

4.2.1.3 Offsite disposal of radiological and hazardous waste alternative

Remediation

Impacts to local socioeconomic resources from the remediation portion of the offsite disposal of radiological and hazardous waste alternative would be similar to those presented in Sect 4.2.1.1 for the onsite stabilization and disposal of onsite slag.

Postremediation

Near term

Postremediation impacts in the Byesville/Guernsey County area from the offsite disposal of radiological and hazardous waste alternative would be beneficial. Potential socioeconomic impacts at the disposal site have been addressed in the Envirocare EIS. Transportation (i.e., rail system) impacts for the offsite disposal alternative are expected to

be small, except in the unlikely occurrence of an accident which could induce large, but temporary, impacts to transportation.

Long term

Long term impacts are highly uncertain and will be discussed in that context.

4.2.1.4 No action alternative

It is expected that the impacts to socioeconomic resources from the no action alternative would be similar to those described in Sect. 4.2.1.1.

4.2.1.5 Cumulative Impacts

The cumulative impacts to socioeconomic resources resulting from the alternatives and any past, present, and reasonably foreseeable future action, whether government or private, will be assessed.

4.2.2 Cultural Resources

4.2.2.1 Onsite stabilization and disposal of onsite slag alternative

Remediation

The potential for disturbance of archaeological sites and degradation or disruption of historic sites and cultural resources during remediation activities will be assessed through consultation with the State Historic Preservation Office. Impacts will be determined according to whether resources are present and according to the extent the activities associated with each alternative will disrupt resources or interfere with the public's ability to appreciate the resources.

Historic resources located along the roads and highways used to transport materials (e.g., dirt, topsoil, clay) to the site may be affected by these transportation activities. Historic and archaeological resources located at the site from which the cover material is excavated may also be affected by this activity. If information about the source of cover material and the transportation routes used to deliver cover material to the site becomes available, this EIS will include a record of consultation with the SHPO regarding these matters and will document whether impacts are expected. In the absence of information about the location and transportation routes of cover material, this EIS will note that consultation with the SHPO is incomplete and must be completed when such information becomes available.

Postremediation

It is expected that there would be no postremediation impacts (near-term or long-term) on cultural resources under the onsite stabilization and disposal of onsite slag alternative.

4.2.2.2 Onsite stabilization and disposal of onsite and offsite slag alternative

Remediation

The analysis of impacts will be conducted as presented in Sect. 4.2.2.1. The impacts are expected to be similar to those discussed in Sect. 4.2.2.1.

Postremediation

The postremediation impacts from the onsite stabilization and disposal of onsite slag alternative would be expected to be similar to the impacts presented in Sect. 4.2.2.1.

4.2.2.3 Offsite disposal of radiological and hazardous waste alternative

Remediation

It is expected that the potential for disturbance of archaeological sites and degradation or disruption of historic sites and cultural resources is similar to that for the onsite stabilization and disposal of onsite slag alternative. Disturbance of archaeological sites and degradation or disruption of historic sites and cultural resources at the Envirocare site has been evaluated in an EIS for that site. There is potential for cultural resources located along the transportation corridor between the Shieldalloy site and the Envirocare site to be substantially affected in the unlikely event of a serious train accident that could affect the cultural resource or the public's opportunity to appreciate the resource. The EIS will note this potential but will not conduct a detailed analysis (e.g., it will not identify all cultural resources along the transportation corridor).

Postremediation

The postremediation impacts from the offsite disposal of radiological and hazardous waste alternative would be expected to be similar to the impacts presented in Sect. 4.2.2.1.

4.2.2.4 No Action Alternative

Remediation

There are no land disturbing or transportation activities associated with this alternative. Analysis for other elements of cultural resources would be similar to those presented above.

Postremediation

Since there was no remediation, there would be no postremediation impacts to cultural resources.

4.2.2.5 Cumulative Impacts to Cultural Resources

The cumulative impacts to community resources resulting from the alternatives and any past, present, and reasonably foreseeable future action whether government or private will be assessed.

4.2.3 Environmental Justice

4.2.3.1 Onsite stabilization and disposal alternative

A screening approach, consistent with the directive included in NMSS Policy and Procedures Letter 1-50, Rev. 1, Environmental Justice in NEPA Documents, will be used to determine the potential for environmental justice effects. The potential for disproportionate health, social, and economic impacts to minority and low-income population will be assessed. An assessment of demographic information, the potential for natural resource contamination, and the potential for human health impacts associated with this alternative will determine the extent of the analysis necessary. The analysis will merge census data (presence of low-income and minority populations) with supporting information (e.g., resource use, land ownership) as necessary to determine whether and under what conditions the identified populations may be susceptible to potential impacts of the proposed and alternative actions.

4.2.3.2 Onsite stabilization and disposal of onsite and offsite slag alternative

The onsite stabilization and disposal of onsite and offsite slag alternative may result in environmental justice effects similar to those caused by the alternative discussed above and may introduce additional issues relevant to the location of the offsite slag. The issue considered, as noted in Sect. 4.2.3.1, is whether certain segments of the population would incur disproportionate adverse affects (health, social, and economic) because of the activity. The amount of detail for this alternative will be determined through consultation with NRC.

4.2.3.3 Offsite disposal of radiological and hazardous waste alternative

The offsite disposal of radiological and hazardous waste would affect the same populations as onsite stabilization and disposal of onsite slag and the analysis of environmental justice will be conducted as described in Sect. 4.2.3.1. In addition, it would affect the population en route to and near the Utah site. Hence, the environmental justice concerns are expected to be different from those determined above. The EIS for the Envirocare facility does not address environmental justice. The amount of detail in this analysis will be determined through consultation with NRC.

4.2.3.4 No action alternative

The no action alternative would affect the same population as the onsite stabilization and disposal of onsite slag alternative, although impacts may differ based on potentially larger human health impacts.

4.2.3.5 Cumulative Environmental Justice Impacts

other environmental health hazards being experienced by populations in the area will be generally identified. This analysis will draw material from the human health and socioeconomic cumulative impacts analyses.

4.3 HUMAN HEALTH

4.3.1 Onsite Stabilization and Disposal of Onsite Slag Alternative

Characterization of the likely human health impacts to members of the public and to workers resulting from implementation of onsite stabilization either with or without offsite slag will be done similarly.

4.3.1.1 Remediation

For cleanup and disposal operations, the spatial focus will be on individuals in the immediate vicinity of the action. At the environmental levels anticipated, the materials of primary concern are the natural decay chains of uranium and thorium, which accompanied the ore. For the radionuclides, the human health endpoint for calculations is cancer risk.

Impacts to the onsite workers can also result from construction accidents. Implementation of aggressive worker safety programs would reduce the probability of such accidents. For construction accidents, the human health endpoint for calculations is occupational accident risk.

4.3.1.2 Postremediation

Near term

For near-term hazards, the spatial focus will be on offsite impacts. Based on site characteristics, environmental sampling and analyses, the primary pathway of concern for offsite hazards is through the drinking water pathway. Some smaller concern may be present for radon releases (but this is more for long-term [i.e. PAWG] discussion).

Long term

The long-term analyses of hazards resulting from people utilizing the actual disposal site as well as long-term offsite impacts are to be provided by the PAWG.

4.3.2 Onsite Stabilization and Disposal of Onsite and Offsite Slag Alternative

4.3.2.1 Remediation

Human health impacts from this alternative during remediation would be similar to those presented in Sect. 4.3.1. Individuals residing near the locations of the offsite slag would have the potential for increased health impacts during excavation and transportation of the slag to the site.

4.3.2.2 Postremediation

Near term

Following removal of the offsite slag, the potential impact to these individuals would be substantially reduced.

Long term

The long term impacts are to be developed by the PAWG as noted in Sect. 4.3.1.2.

4.3.3 Offsite Disposal of Radiological and Hazardous Waste Alternative

4.3.3.1 Remediation

Human health impacts from this alternative would be examined as discussed in Sect. 4.3.1.1.

4.3.3.2 Postremediation

The human health impacts from stored radionuclides at the site (both short and long-term) would no longer be a concern. The human health impacts at the disposal site in Utah have been considered in the Envirocare EIS. The human health impacts along the transportation corridor must be considered.

4.3.4 No Action Alternative

Under the no action alternative, human health impacts can result from the leaching of radionuclides and other hazardous materials from the disposal sites. In a lesser way, some materials might be transported via resuspension. In the longer-term [a PAWG issue], radon will be released at levels beyond those natural for the geographic region. Because both the no action and the preferred action leave the disposal sites in place, the major differences between the health hazards from no action and the preferred action result from the differences in the rates of migration of the hazardous constituents. Under the no action alternative change will occur more

rapidly because there will be no engineered barriers to reduce the rate of environmental breakdown by the action of weather, plants, and microbes.

4.3.5 Cumulative Impacts to Human Health

The cumulative impacts to human health resulting from the suite of alternatives and any past, present, and reasonably foreseeable future action whether government or private will be assessed.

4.4 GROUNDWATER AND SURFACE WATER

4.4.1 Onsite Stabilization and Disposal of Onsite Slag Alternative

4.4.1.1 Remediation

Increased concentrations of radioactive materials may occur in groundwater and surface water during remediation activities. The impacts of this remediation would be minimized by implementation of the erosion and sedimentation plan. Impacts from accidental spills would be minimized by implementation of the spill prevention plan. The EIS will focus on impact minimization by control of runoff, seepage, sedimentation, and water consumption.

4.4.1.2 Postremediation

Near term

The presence of properly functioning caps for the slag piles should keep the concentration of leached radionuclides from the piles at background levels. Radionuclide concentrations will be determined from measurement of samples taken from selected surface water sites and wells. It is expected that the radionuclide concentrations in the waters affected by the piles will decline over a yet-to-be-determined period.

Long term

We expect that the PAWG will conduct the hydrological impacts analyses for the period between 30 and 1000 years and provide appropriate text for inclusion in the EIS.

4.4.2 Onsite Stabilization and Disposal of Onsite and Offsite Slag Alternative

4.4.2.1 Remediation

As with the onsite stabilization and disposal of onsite slag alternative, it is expected that remediation activities may raise the already elevated above background concentrations of radionuclides in groundwater and surface water. Impacts would be minimized as outlined in Sect.

4.4.1.1. Transportation of the offsite slag to the site would be done in compliance with all applicable Department of Transportation regulations.

4.4.2.2 Postremediation

Near term

It is anticipated that the groundwater and surface water impacts of the onsite stabilization and disposal of onsite and offsite slag alternative would be similar to but larger than those arising from the onsite stabilization and disposal of onsite slag alternative.

Long term

As noted above, we expect that the PAWG will conduct the long term hydrological impacts analyses and provide appropriate text for inclusion in the EIS.

4.4.3 Offsite Disposal Of Radiological And Hazardous Waste Alternative

4.4.3.1 Remediation

Impacts to groundwater and surface water resulting from offsite disposal would occur primarily during excavation and transport of the waste slag. Impact minimization would be accomplished as outlined in Sect. 4.4.1.1.

4.4.3.2 Postremediation

Near term

There may be a yet-to-be-determined period of time before the existing radiological contamination of the groundwater and surface water would decrease to the background level.

Long term

It is expected that there would be no long term impacts at the Shieldalloy site. Long term impacts would occur at the Envirocare site and have been evaluated in the EIS for that site.

4.4.4 No Action Alternative

4.4.4.1 Near Term

The near term impacts from the no action alternative are expected to be similar to but larger than those resulting from the onsite stabilization and disposal of onsite slag alternative. More

radionuclides would escape from the piles into the environment. The concentrations determined during recent investigations would be representative of the expected quantities.

4.4.4.2 Long Term

As noted above, we expect that the PAWG will conduct the long term hydrological impacts analyses and provide appropriate text for inclusion in the EIS.

4.4.5 Cumulative Hydrological Impacts

The cumulative impacts to human health resulting from the four alternatives and any past, present, and reasonably foreseeable future action, whether government or private, will be assessed.

4.5 AIR QUALITY AND NOISE

4.5.1 Onsite Stabilization and Disposal Alternative

4.5.1.1 Remediation

Fugitive dust and vehicle exhaust associated with site preparation and construction for onsite disposal of onsite slag would have temporary impacts on air quality, possibly leading to exceedances of the National Ambient Air Quality Standards (NAAQS) (40 CFR 50). Existing literature provides estimates of contaminant emissions, in terms of mass of substance per unit area per unit time, associated with construction activities. Where such parameters are missing, conservative (upper bound) estimates can be formulated. The regulated pollutant of most concern is particulate matter that may be inhaled; oxides of nitrogen (ozone precursors) and possibly sulfur dioxide, if enough diesel-powered construction vehicles are used. Lead and carbon monoxide are not expected to be of particular concern for this project. Any radionuclides mixed with the cover material would also be evaluated. Emissions parameters for pollutants of concern can be input to standard dispersion models that provide estimates of increases in atmospheric concentrations (mass per unit volume) of contaminants at various distances from the site. The simplified but conservative screening model SCREEN2 (EPA, 1992) will be used. Modeled increases in contaminant concentrations are added to background (recently measured) concentrations in the region (available from EPA), and the sums are compared to NAAQS (40 CFR 50) to check for potential exceedances of the standards that could result from the proposed construction.

Fugitive dust and other contaminants from construction could temporarily reduce typical visual ranges (which are usually expressed in kilometers, or miles). Screening calculations (e.g., EPA, 1988) can indicate whether estimated increases in contaminant concentrations might result in noticeable decreases in visibility. As noted in the preceding paragraph, small particulate matter is of most concern. It is the small particles (less than about 2.5 micrometers in diameter) that most affect visibility. Nitrogen dioxide can cause a reddish-brown haze, and sulfur dioxide can oxidize

to form sulfate particles that can reduce visibility, but it is expected that these pollutants will not cause major problems.

Construction noise might be audible above background {typically 50-60 decibels [dB(A)] during the day}, and possibly annoying to anyone living within about 250 m (0.1 to 0.2 mi) of the site. Noise from construction may reach 90 dB(A) at 16 meters from the source, and diminishes by about 6 dB(A) for each doubling of distance from the source (Golden et al., 1979).

Consequences of the above-listed alternatives related to air quality are expected to be minor and/or beneficial. Where necessary and practical, changes in contaminant concentrations in the atmosphere can be estimated (using source terms and dispersion models as discussed above for construction), although this is not likely to be necessary because air concentrations of regulated contaminants (including radionuclides) are not likely to increase as a result of the proposed action. Maximum allowable concentrations (mass/volume) of regulated contaminants are given in 40 CFR 50 (NAAQS). Standards for radionuclides are given in 40 CFR 61 (Appendix E) in terms of radioactivity per unit volume of air.

4.5.1.2 Postremediation

Near term

In the near term, stabilization and capping of the onsite slag will improve air quality. There will be fewer fugitive dust emissions. The vegetation on the cap will substantially reduce the potential for escaping dusts.

Long term

ORNL assumes that the long-term (1000-year) impacts to air quality would be beneficial, barring a peculiar major catastrophe that would be impossible to predict.

4.5.2 Onsite Stabilization and Disposal of Onsite and Offsite Slag Alternative

4.5.2.1 Remediation

The impacts and analyses are expected to be similar to those presented in Sect. 4.5.1.1.

4.5.2.2 Postremediation

Near Term

The impacts and analyses are expected to be similar to those presented in Sect. 4.5.1.2.

Long Term

Long term impacts are highly uncertain and will be discussed in that context.

4.5.3 Offsite Disposal of Radiological and Hazardous Waste Alternative

4.5.3.1 Remediation

The impacts and analyses are expected to be similar to those presented in Sect. 4.5.1.2.

4.5.3.2 Postremediation

Near term

Potential consequences of disposal offsite are of some concern with respect to air quality and noise because exhumation and transportation of waste material could lead to appreciable emissions of radionuclides to the atmosphere as well as noise. Potential effects of fugitive dust from exhumation and transportation would be identified. Transportation, especially long-haul transportation to Utah, would also introduce the possibility of low-risk, high impact events such as transportation accidents that might release appreciable amounts of radionuclides to the atmosphere. Air emissions at the Utah site are covered in the site-specific EIS.

Long term

Long term impacts are highly uncertain and will be discussed in that context.

4.5.4 No Action Alternative

Air emissions from the slag piles would be expected to increase gradually with time as the pile materials weather. During the near-term it is unlikely that there would be a substantial increase in air emissions from the slag piles.

4.5.5 Cumulative Air Quality and Noise Impacts

The cumulative impacts to air quality and arising from noise resulting from the alternatives and any past, present, and reasonably foreseeable future action whether government or private will be assessed.

4.6 IMPACTS TO ECOLOGICAL RESOURCES

The impacts of the proposed action and alternatives on wetland and aquatic ecological resources will be evaluated. Areas of potential concern include, but may not be limited to, construction activities that may disturb wetland and stream sediment, vegetation, and animals; impacts of spilling, leaching, or eroding of radioactive substances from the slag piles into sediment or water; and groundwater transport of leached materials to surface waters. Concentration of radioisotopes of uranium, thorium, radium, and polonium within the environment will be used with published information on bioavailability and food chain transfer to assess the impact of these radionuclides on biota. Based on the impact evaluation, mitigation measures will be recommended in Sect. 4.8.

4.6.1 Wetland and Aquatic Ecological Resources

4.6.1.1 Onsite stabilization and disposal alternative

Remediation

Potential concerns include effects of construction activities including slag, rip rap, and soil moving operations on wetlands and stream biota. Construction will induce temporary erosion and transport of suspended solids into onsite wetlands and streams, thereby subjecting resident biota to adverse effects such as reduced visibility, smothering of eggs and sessile organisms, gill abrasion, and reduced predation efficiency. Encroachment of new construction into wetlands and streams will result in direct physical losses of these resources and their dependent biota (Such encroachment will require a permit from the Army Corps of Engineers). Direct losses will be quantified on an areal basis; indirect losses from altered hydrology will be qualitatively described. Some radionuclides attached to suspended solids generated during construction may also be introduced into the wetlands and streams. Existing concentration data and predicted concentrations for radionuclides in wetlands and streams will be used with published information on bioavailability, food chain transfer, and toxicity to evaluate effects on wetland and aquatic organisms under the no action alternative. We are assuming that the approximately 26,000 m^3 of capping materials for the east and west slag piles are procured from a commercial source with no adverse environmental impacts.

Postremediation

Near term

The effects of onsite stabilization and disposal of the onsite slag piles on structure and function of the surrounding wetlands and receiving streams, including effects on the biota within these habitats will be evaluated.

Long term

No mechanisms for long-term impacts substantially different from near-term effects have been identified. We will conduct a bounding analysis using either the source term developed by the PAWG or another conservative estimate of radionuclide concentrations in the surrounding wetlands and receiving streams.

4.6.1.2 Onsite stabilization and disposal of onsite and offsite slag alternative

Remediation

In addition to the effects evaluated in Sect. 4.6.1.1, similar, but additional effects from further loss of wetland area, altered hydrology, erosion and sedimentation are anticipated. We will address these effects qualitatively. It is assumed that the approximately 26,000 m^3 of capping materials for the offsite slag pile would be procured from a commercial source with no adverse environmental impacts. Further encroachment into wetland habitat for the offsite slag pile would require additional permits from the Army Corps of Engineers.

Postremediation

Near term

It is anticipated that the impacts from the onsite stabilization and disposal of onsite and offsite slag would be similar to those presented in Sect. 4.6.1.1.

Long term

It is expected that there will be no quantifiable long term impacts.

4.6.1.3 Offsite disposal of radiological and hazardous waste alternative

Remediation

The remediation impacts from implementation of the offsite disposal of radiological and hazardous waste alternative are expected to be similar to those presented in Sect. 4.6.1.1.

Postremediation

Near term

It is anticipated that the near term postremediation impacts from the offsite disposal of radiological and hazardous waste would be less than those presented in Sect. 4.6.1.1.

Long term

It is expected that there would be no quantifiable long term impacts.

4.6.1.4 No Action Alternative

Existing concentration data and predicted concentrations for radionuclides in wetlands and streams will be used with published information on bioavailability, food chain transfer, and toxicity to evaluate effects on wetland and aquatic organisms under the no action alternative.

The impacts on nearby wetland and aquatic ecosystem structure and function from leaving the slag piles in their existing condition will be assessed. Erosion of the existing cap into the wetlands and stream systems is one potential impact. It is expected that these impacts would be smaller than those arising from onsite disposal because direct physical damage to the wetlands would not occur.

4.6.1.5 Cumulative Impacts

The cumulative impacts to wetlands and aquatic ecological resources resulting from the four alternatives and any past, present, and reasonably foreseeable future action whether government or private will be assessed.

4.6.2 Species of Special Concern

Species of special concern are not anticipated to reside on or otherwise use the site. Therefore, no impacts on these species from any of the alternatives are expected.

4.7 MONITORING PROGRAMS

Suggestions for erosion and sedimentation measurement programs will made as needed based upon the results of impact analyses. Suggestions for groundwater and surface water monitoring programs will made as needed based upon the results of impact analyses.

4.8 UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

There are potentially unavoidable adverse impacts to wetland and stream structure resulting from both onsite and offsite disposal. Fugitive dust would be a temporary adverse impact associated with any of the remediation alternatives.

4.9 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

The trade-off between short-term use of the environment and long-term productivity will be evaluated for each of the alternatives.

4.10 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The land upon which the slag will stay (whether at the Shieldalloy or Envirocare site) will be lost to other uses. After it has been disposed of, the slag will not be available for steel conditioning or alternative uses. If irreparably damaged and not replaced, the wetlands will be lost as habitat.

4.11 REFERENCES

References will be included to document statements made in the Sect. 4.

5. COSTS AND BENEFITS ASSOCIATED WITH DECOMMISSIONING ALTERNATIVES

This section will present the costs and benefits associated with each of the four alternatives. The costs presented by Shieldalloy will be verified to the extent possible, as well as evaluated for completeness. The costs will be compared with the benefits of each alternative resulting from the environmental consequences on the affected municipalities.

Economic costs and benefits will be characterized by present value. The present value will be estimated for Shieldalloy and for the State of Ohio (based on the assumption that responsibility for maintenance of the site reverts to the State of Ohio after the initial 30 years). The present value of the costs and the benefits will be evaluated under two scenarios: (1) using Office of Management and Budget's recommended discount rate and (2) using a zero discount rate, because a non-zero discount rate is not appropriate for long-term analyses.

5.1 ECONOMIC COSTS

The types of costs associated with each of the decommissioning alternatives will be presented.

5.1.1 Onsite Stabilization and Disposal of Onsite Slag Alternative

The capital costs, as well as operation and maintenance costs will be delineated. These costs include the materials and labor costs of site preparation and maintenance for onsite stabilization and disposal with or without offsite slag. The site preparation includes stabilizing, capping and grading the slag piles. There are maintenance activities that would continue indefinitely **[NRC: Is indefinitely the correct period?]**. Potential financial burdens to the community (need for additionai services , reduced tax benefits, and loss of productive land use) will also be included.

5.1.2 Onsite Stabilization and Disposal of Onsite and Offsite Slag Alternative

It is anticipated that the costs for this alternative will be handled analogously with those for the onsite stabilization and disposal of onsite slag alternative.

5.1.3 Offsite Disposal of Radiological and Hazardous Waste Alternative

The offsite disposal of radiological and hazardous waste alternative does not entail any operations and maintenance costs. The capital costs for this alternative include costs of site preparation and costs associated with transportation and disposal of the waste. The waste is assumed to be transported by rail for disposal at Envirocare's Utah facility. The transportation costs will be analyzed. In addition, Envirocare's tipping fees will be verified.

5.1.4 No Action Alternative

It is assumed that maintenance costs are the same as for the onsite disposal of onsite slag alternative.

5.2 ECONOMIC BENEFITS

5.2.1 Onsite Stabilization and Disposal of Onsite Slag Alternative

Potential economic benefits to the community (e.g., additional jobs, more taxes) will be estimated under the same discount rate scenarios as the costs. It is assumed there are no economic benefits for Shieldalloy.

5.2.2 Onsite Stabilization and Disposal of Onsite and Offsite Slag Alternative

The onsite stabilization and disposal of onsite and offsite slag alternative is to be assessed analogously with Sect. 5.2.1.

5.2.3 Offsite Disposal of Radiological and Hazardous Waste Alternative

The offsite disposal of radiological and hazardous waste alternative is to be assessed analogously with Sect. 5.2.1.

5.2.4 No Action Alternative

The no action alternative is to be assessed analogously with Sect. 5.2.1.

5.3 STAFF ASSESSMENT

Note: ORNL is uncertain about what should be the contents of this section. We need direction from NRC if we are to write this section.

5.4 REFERENCES

References will be included to document statements made in the Sect. 5.

6. LIST OF PREPARERS

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7. LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS RECEIVING COPIES OF THE DRAFT EIS

Note: ORNL needs NRC to provide this list.

APPENDIX A
COMMENTS ON THE DRAFT EIS

Reserved for public and agency comments on the draft EIS.

APPENDIX B
CONSULTATIONS

NATIONAL HISTORIC PRESERVATION ACT OF 1966

ENDANGERED SPECIES ACT

We need direction from NRC regarding our role in the consultation process. As we understand the process, there are three options: (1) ORNL could prepare and submit the consultation requests to the SHPO and FWS; (2) ORNL could prepare draft consultation requests for NRC to send to the agencies; and (3) NRC could send consultation letters to the agencies without input from ORNL. How should we proceed?