UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 5, 2015

Carolyn C. Haass
Vice President
Northwest Medical Isotopes, LLC
8815 Northwest 9th Street, Suite 256
Corvallis, OR 97330

SUBJECT: ENVIRONMENTAL SITE AUDIT REGARDING NORTHWEST MEDICAL ISOTOPES, LLC PROPOSED RADIOISOTOPE PRODUCTION FACILITY

Dear Ms. Haass:

The U.S. Nuclear Regulatory Commission (NRC) is reviewing Northwest Medical Isotopes, LLC's construction permit application for its proposed radioisotope production facility. The environmental site audit will be conducted at and near the proposed site September 16-17, 2015, by NRC staff. The environmental audit activities will be conducted in accordance with the environmental audit plan (Enclosure 1).

The NRC staff requests the information described in the environmental audit needs list (Enclosure 2) be made available, to the extent possible, during the environmental site audit. A draft schedule of tours and meetings for the audit is also provided (Enclosure 3). The NRC staff informally transmitted this information to you by e-mail on July 20, 2015.

If you have any questions, please contact me by telephone at 301-415-2715 or by e-mail at Nancy.Martinez@nrc.gov.

Sincerely,

/RA/

Nancy Martinez, Environmental Project Manager
Environmental Review and Guidance Branch
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-609

Enclosures:
As stated

cc: Listserv

August 5, 2015

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Vice President
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Distribution: See next Page
ADAMS Accession No: ML15202A643 concurred via email

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DATE	7/30/15	8/5/15	8/5/15

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Letter to C. Haass from N. Martinez dated August 5, 2015

SUBJECT: ENVIRONMENTAL SITE AUDIT REGARDING NORTHWEST MEDICAL ISOTOPES, LLC PROPOSED RADIOISOTOPE PRODUCTION FACILITY

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NORTHWEST MEDICAL ISOTOPES, LLC
ENVIRONMENTAL AUDIT PLAN

I. Background

On November 7, 2015, Northwest Medical Isotopes, LLC (NWMI) filed with the Nuclear Regulatory Commission (NRC) pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, and Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR), a portion of an application for a construction permit application for a medical radioisotope production facility in Columbia, Missouri. By letter dated February 5, 2015, NWMI withdrew and resubmitted this portion of their construction permit application to include a discussion of connected actions in their environmental report (ER) in response to a letter from the NRC (ADAMS Accession No. ML14349A501). The NRC staff is reviewing the information contained in Chapter 19, the environmental report (ER), of the construction permit application.

During the NRC staff's review, an environmental audit is conducted at the proposed site. This audit is conducted with the intent to gain understanding, to verify information, and to identify information that will require docketing to support the basis of the licensing or regulatory decision. Specifically, the NRC staff will identify pertinent environmental data, review the proposed and alternative sites and vicinity, and obtain clarifications regarding information provided in the ER.

The NRC staff has prepared a regulatory audit plan that provides a clear overview of audit activities and scope, team assignments, and schedule.

II. Environmental Audit Bases

Environmental review requirements are specified in 10 CFR Part 51, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions.” Review guidance for the staff is provided in Interim Staff Guidance (ISG) augmenting NUREG-1537, “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Format and Content, Part 1, Chapter 19, Environmental Data Needs” and in “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Standard Review Plan, Part 2, Chapter 19. Environmental Review.”

As discussed in ISG augmenting NUREG-1537, Part 2, an environmental site visit provides the reviewer with firsthand knowledge of the site and the location and position of facilities. It also allows the reviewer an opportunity to study the environment around the site.

III. Environmental Audit Scope

The scope of this environmental audit for the NWMI environmental review is to identify those issues which are significant, to identify those issues which can be eliminated from further study, and to identify the environmental resources that must be adequately described and

evaluated in the environmental impact document. Audit team members will focus on reviewing the documents and requested information listed in the NWMI Environmental Site Audit Needs List (Enclosure 2) and discussing the information with the applicant's subject matter experts.

IV. Information and Other Material Necessary for the Environmental Audit

As described in the Environmental Site Audit Needs List (Enclosure 2).

V. Tentative Team Assignment Area of Review Assigned Auditor

The environmental audit team members and their specific discipline assignments are shown in Table 1.

Table 1. Environmental Site Audit Team Members and Resource Assignments

Discipline	**Team Member**
Environmental Project Manager	Nancy Martinez, NRC
Safety Project Manager	Michael Balazik, NRC
Air Quality	Nancy Martinez, NRC
Alternatives	Russell Chazell, NRC
Cultural Resources	Robert Hoffman, NRC
Cumulative Impacts	Robert Hoffman, NRC
Ecology	Michelle Moser, NRC
Geology	Kevin Folk, NRC
Human Health, Waste Management	Russell Chazell, NRC William Rautzen, NRC
Land Use	Michelle Moser, NRC
Noise	Nancy Martinez, NRC
Socioeconomics	Jeffrey Rikhoff, NRC*
Transportation	Russell Chazell, NRC William Rautzen, NRC Jeffrey Rikhoff, NRC*
Water Resources	Kevin Folk, NRC

*Will not attend environmental site audit but will participate via conference call.

VI. Logistics

An entrance meeting will be held with NWMI staff at the beginning of the audit on September 16, 2015. An exit meeting will be held towards the end of this audit on September 17, 2015.

VII. Special Requests

The NRC staff requests the applicant make available the information identified on the Environmental Site Audit Needs List (Enclosure 2). NWMI staff or contractors who are subject matter experts in the disciplines listed on the Environmental Site Audit Needs List should be available for interviews and to provide tours which have been identified on the Environmental Site Audit Schedule (Enclosure 3).

VIII. Deliverables

An audit summary report is scheduled to be issued by NRC staff within 90 days from the end of the environmental audit.

NORTHWEST MEDICAL ISOTOPES, LLC
ENVIRONMENTAL SITE AUDIT NEEDS LIST

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed Chapter 19, the environmental report (ER), of the Northwest Medical Isotopes, LLC construction permit application.

Please be prepared to discuss the following issues and make the following available during the environmental site audit.

Presentations requested during the environmental audit

Provide an overview presentation of the radioisotope production process.

Provide a presentation that describes the modifications that would occur at each of the three reactors.

Provide a presentation to describe the scoring and alternative site selection process.

Air Quality

AIR-1 Clarify if Table 19-58 of the Environmental Report presents emission factors or emissions for Off-Road Construction Equipment. If Table 19-58 does present emissions for Off-Road Construction Equipment, verify the emissions presented for particulate matter less than 2.5 microns.

AIR-2 Section 19.2.3.1.2 of the ER states: "The off gas containing the fission product gases goes through a series of cleanup columns. The nitrogen oxides (NO_x) is removed by a reflux condenser and several NO_x absorbers, the fission product gases (noble and iodine) are captured on absorbers, and the remaining gas is filtered and discharged into the process ventilation header." Table 19-86 of the ER states "The RPF would emit minor emissions of NOx and CO_2 along with levels of radionuclides below 10 CFR 20 levels." Furthermore, section 19.4.2.1.2.3 of the ER, states: "Gaseous effluents resulting from the production process are based on a 50-week/year operating schedule. There are no emissions of CO, Pb, O_3, or particulate matter from the process exhaust system." However, section 19.4.2.1.2.3 does not discuss NO_x, SO_2, or CO_2 emissions or quantify the amount of NO_x, SO_2, or CO_2 emitted resulting from the RPF production process. Clarify if NO_x, SO_2, or CO_2 would be emitted during the production process. If so, provide NO_x, SO_2, and CO_2 emissions resulting from the production process.

ENCLOSURE 2

AIR-3 Section 19.4.2.1.2.5 of the ER states: “Emissions data shown in Table 19-63 provide an estimate of vehicle emissions. Calculations used to obtain the estimates are based on an average workforce of 25-50 vehicles/day using a specific vehicle ratio (60 percent light-duty autos, 30 percent light-duty gas trucks, and 10 percent light-duty diesel trucks) and a round trip of 40 mi/day…” However, Table 19-6 lists that during operation the average workforce and peak workforce will be 98. Explain why 25-50 vehicles/day were assumed during the operation phase to estimate workforce vehicle emissions.

AIR-4 Section 19.4.2.1.2.5 of the ER states “During the operations phase, vehicular air emissions would result from the commuting workforce and from routine deliveries to and from the proposed RPF.” Table 19-63 of the ER provides an estimate of vehicle emissions during operations. Clarify if Table 19-63 emissions account for both commuting workforce and from routine deliveries to/from the RPF.

AIR-5 Identify the construction phase duration assumed in calculating carbon dioxide emissions presented in Table 19-64.

AIR-6 Table 19-56 of the ER identifies 100 for workforce travel during the construction phase. However, Table 19-6 identifies a peak workforce of 82 during construction. Clarify why 100 workforce travel was used in Table 19-56.

AIR-7 Section 19.4.2.2.4 of the ER states that emission-specific strategies would be developed and implemented to ensure compliance with NAAQS and NESHAP standards. However, the ER does not quantify the hazardous air pollutants emitted resulting from operations. Identify sources of hazardous air pollutants (HAPs) and quantify HAP emissions from these sources.

AIR-8 Section 19.4.13 of the ER identifies facility modifications at the two identified reactors needed to support the handling and irradiation of targets. In support of analyzing the site-specific air quality impacts associated with the connected actions, identify if necessary facility modifications and handling and irradiation of targets could result in an increase in workforce, exhaust emissions from any construction equipment, and/or fugitive dust emissions from facility modifications.

AIR-9 Table 19-59 of the ER considered fugitive dust, windblown dust, and emissions from off-road construction equipment from construction presented in Tables 19-55 and 19-58. However, the total amount presented in Table 19-59 do not equate to the sum from Tables 19-55 and 19-58. Clarify the differences in these values.

AIR-10 Table 19-61 and Table 19-62 of the ER present total annual and hourly emissions from the four natural gas boilers. Hourly and annual emissions, however, from these two tables do not match. Clarify and provide the correct annual and hourly total emissions from the gas-fired boilers.

AIR-11 Section 19.4.2.1.1 of the ER identifies batch plant operations as a source of fugitive dust. Clarify if a batch plant will be onsite and if emissions from batch plant operations are accounted for in Section 19.4.2.1.1 of the ER.

AIR-12 Provide the following ER references for review:

1. EDF-3124-0011, 2014, *Greenhouse Gas Emissions*, Rev. 0, Portage, Inc., Idaho Falls, Idaho, June 26, 2014.
2. EDF-3124-0008, 2014, *Emissions from Natural Gas Boiler Operation*, Rev. 0, Portage, Inc., Idaho Falls, Idaho, June 26, 2014.
3. EDF-3124-0012, 2015, *Emission Modeling for Process and HVAC Boilers Using AERSCREEN*, Rev. 1, Portage, Inc., Idaho Falls, Idaho, February 4, 2015.
4. EDF-3124-0013, 2014, *On-Road Emissions for Vehicles During Operation*, Rev. 0, Portage, Inc., Idaho Falls, Idaho, June 26, 2014.

Alternatives

ALT-1 Section 19.5.1 of the ER states that "[t]he current demand for ^{99m}Tc in the U.S. requires a weekly supply of approximately 6,000 six-day Ci of ^{99}Mo, approximately 50 percent of the annual U.S. demand." This seems contradictory. Is 6,000 six-day Ci of ^{99}Mo the current demand or 50% of the demand?

ALT-2 Clarify how the weighted percentage for each alternative location was arrived at on Table 19-88. For example, explain the determination of the value for "score" versus the value for "weighted score."

ALT-3 Make available any site selection studies or summaries prepared to support the site evaluation and selection process.

ALT-4 The "available space" site criterion mentions "boutique isotopes." Clarify what is meant by this term and what plans exists to generate such isotopes.

ALT-5 The production of commercial products could have a socioeconomic impact to local communities at the proposed Discovery Ridge Research Park site and at each of the alternative sites. Provide an estimated gross annual revenue for the proposed commercial products (Mo-99, I-131, and Xe-133) based on the current annual average price per dose of each product. Provide a publically available reference to support the estimated price per dose.

ALT-6 Provide copies of the following ER references for the NRC staff review:

1. NWMI-2013-002, *Site Selection: Radioisotope Production Facility*

Conclusions

CON-1 Section 19.6.1 states that "[i]f the site is returned to its current state, there would be no unavoidable adverse environmental impacts associated with the proposed action." Yet, Sections 19.6.1.1 and 19.6.1.2 determines SMALL unavoidable impacts to construction and operation. Unavoidable impacts are, by definition, not avoided simply through decommissioning. Unavoidable adverse impacts are predicted adverse environmental impacts that cannot be avoided and that have no practical means of further mitigation. Clarify how there can be "no unavoidable adverse environmental impacts" as stated in the header Section 19.6.1 of the ER and yet there are such impacts, albeit small ones, as discussed in Subsections 19.6.1.1 and 19.6.1.2 of the ER. Further, reconcile the statement in Section 19.6.1 with the statements in Section 19.6.2.1 and 19.6.2.2 that "[s]ome small adverse environmental impacts could remain after all practical measures to avoid or mitigate them are taken."

Connected Actions

CONA-1 Section 19.3.9.3 of the ER states that the third reactor will be similar to the Oregon State University TRIGA Reactor (OSTR). Section 19.4.13.1.3 of the ER states that the impacts associated with irradiating LEU targets at the third reactor would be similar to those at both University of Missouri Research Reactor (MURR) and OSTR. Section 19.2.1 of the ER identifies a university reactor used to bound the decision for the third reactor. Identify which of the test reactors identified would the third reactor be the most similar to and explain why the impacts would be bounding.

CONA-2 Clarify whether any facility modifications associated with the connected actions discussed in Section 19.4.13 would be external to the existing structures, and whether there would be associated ground-disturbing activities.

Cumulative Impacts

CI-1: Identify any additional state, county, and regional documents that were reviewed (other than the cited *City of Columbia FY2013 CIP Planning Document*) to develop Table 19-86. Provide this reference information and specifically identify for which of the listed projects each source provides supporting information.

CI-2 Provide the name, description, location, and status of any additional past, present or reasonably-foreseeable projects or actions at or in the vicinity of the proposed RPF that have been identified since the applicant's ER was prepared.

Ecology

ECO-1 Describe any site investigations that examined vegetation (grasses, shrubs, and trees) and wildlife (mammals, reptiles and amphibians, and birds) on or near the site, including transient wildlife that may only use the site as a temporary resting or foraging ground, or wildlife that only uses the site seasonally. In addition, describe any site investigations that focused on invasive species.

ECO-2 Section 19.3.5.7.1 of the ER states that "representative plant species include little bluestem (*Schizachyrium scoparium*), sideoats grama (*Bouteloua curtipendula*), winter bentgrass (*Agrostis hyemalis*), and Atlantic camas (*Camassia scilloides*) (Nigh and Schroeder, 2002; Faber-Lagendoen, 2001)." Provide the technical basis for why NWMI assumes these plants occur onsite. Describe the percent cover of the most common vegetative species on site.

ECO-3 Section 19.3.5.7.1 of the ER states that "potential native plant species that may occur within the proposed site include those associated with tall grass hardpan prairie (Nigh and Schroeder, 2002)." Nigh and Schroeder (2002) describe numerous native species. Describe which native species occur on site.

ECO-4 Figure 19-39 of the ER shows the locations for wetlands near the proposed RPF site. The large size of the symbol for the proposed RFP makes it difficult to confirm the location of any wetland onsite or near the site. Confirm whether any wetlands are located on the proposed site and describe the distance from the proposed site to the nearest wetland. Describe wetland and wildlife species that are likely to occur in nearby wetlands.

ECO-5 Section 19.3.5.6 of the ER states that in "stream monitoring surveys, 18 to 27 invertebrate species are estimated to inhabit streams within the Bonne Femme Watershed. The estimated number of fish species within the Bonne Femme Watershed ranges from 11 to 17 species of shiners, suckers, redhorse, sunfish, bass, darters, and stonerollers." Describe what survey NWMI is referring to.

ECO-6 Describe the aquatic species, such as fish and invertebrates that are likely to occur within the stormwater management ponds, Gans Creek, and nearby streams.

ECO-7 Describe the most common vegetative species (grasses, shrubs, and trees), wildlife species (mammals, reptiles and amphibians, and birds), and aquatic species (fish and macroinvertebrates) at each alternative site.

Geologic Environment

GEO-1 As a follow-up to the information presented in Sections 19.3.3.8.1, 19.3.4.3.2, and 19.4 of the ER, provide a description of the scope and timing of any site-specific geotechnical and hydrological studies to be performed for the Discovery Ridge Site. Include studies such as proposed baseline preoperational groundwater and surface water quality monitoring as well as studies to address such potential issues as soils with high-shrink swell potential, karst features, and confirmation of the depth to perched groundwater or water-table conditions.

GEO-2 Make available the following documents and references:

1. Terracon, 2011a, Phase I Environmental Site Assessment Discovery Ridge Lots 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18, Terracon Consultants, Inc., prepared for University of Missouri and Trabue, Hansen & Hinshaw, Inc., Terracon Project No. 09117701, March 23, 2011 (Section 19.3.4.3.1).
2. Terracon, 2011b, Preliminary Geotechnical Engineering Report Discovery Ridge–Certified Site Program Lots 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18, Terracon Consultants, Inc., prepared for University of Missouri and Trabue, Hansen & Hinshaw, Inc., Terracon Project No. 09105094.1, February 11, 2011 (Section 19.3.3.8.1).

Historic and Cultural Resources

HC-1 Identify whether the applicant has prepared a Cultural Resource Management Plan, and/or any procedures that would be followed in the event that human remains or other items of historic or cultural value are inadvertently discovered during construction, operation, and decommissioning of the facility.

HC-2 Provide U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle maps at 1:24,000 scale that show the boundaries of the NWMI RPF property and plant site. Note that NRC staff will need to take the hard copy map(s) for the file search at the Missouri State Historic Preservation Office (SHPO). Therefore, NRC staff needs the actual USGS-named quad sheets at 1:24,000 scale – not GIS maps with underlying topographic data.

HC-3 Provide copies of the following documents and reports cited in the ER:

1. Chapman, C. H., 1975, The Archaeology of Missouri I, University of Missouri Press, Columbia, Missouri, 1975. (applicable excerpts)
2. Chapman, C. H., 1980, The Archaeology of Missouri II, University of Missouri Press, Columbia, Missouri, 1980. (applicable excerpts)
3. Terracon, 2011a, Phase I Environmental Site Assessment Discovery Ridge Lots 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18, Terracon Consultants, Inc., prepared for University of Missouri and Trabue, Hansen & Hinshaw, Inc., Terracon Project No. 09117701, March 23, 2011.

HC-4 Provide information on whether the proposed RPF would be visible from any surrounding National Register of Historic Places (NHRP)-listed or –eligible historic properties.

HC-5 Provide copies of any letters or communications, to and from 1) the Missouri SHPO, 2) Federally-recognized Indian tribes that may have ancestral or historical ties to the project area, or 3) local historical societies that have occurred subsequent to those discussed in the ER.

Human Health

Non-radiological

HH-NR-1 Provide a list of reporting requirements for non-radioactive waste streams to EPA and MDNR as discussed in Section 19.3.8.3 of the ER.

HH-NR-2 Provide a copy of the plant procedure that workers would use for identifying industrial hazards prior to performance of jobs.

HH-NR-3 Provide a copy of the emergency response plan discussed in Section 19.4.8.1.1 of the ER.

HH-NR-4 Provide a copy of the recycling and reuse plan discussed in Section 19.4.8.1.2.4 of the ER.

HH-NR-5 Discuss human health impacts due to the connected actions of target handling and irradiation at the two identified reactors and the third reactor. Specifically, for each reactor, address the following:

1. Provide a list of reporting requirements for non-radioactive waste streams to EPA applicable state agencies.
2. Provide a copy of or discuss the procedure that workers would use for identifying industrial hazards prior to performance of jobs.
3. Provide a copy of or discuss the emergency response plan for each reactor.
4. Provide a copy of or discuss the recycling and reuse plan for each reactor.

Radiological

HH-R-1 Baseline radiation levels for the general area are discussed in 19.3.8 of the ER, and consist of reports from reactors like MURR and Callaway. Since it is stated in 19.4.8.2 of the ER that there is possibility that the RPF will release gaseous and liquid radionuclides into the environment, current radiation levels are important to quantify. Clarify if any baseline monitoring will be performed at the

RPF, and how effluent releases will be monitored/mitigated during construction, operations, and decommissioning.

HH-R-2 Provide the program(s) for radiological worker protection and monitoring necessary to comply with 10 CFR Part 20.

Land-Use

LAN-1 Table 19-15 of the ER describes USGS land use categories for the 8 km (5-mi) region of influence surrounding the proposed RPF. Describe the current land uses on site as defined by USGS.

LAN-2 Section 19.3.1.2.3 of the ER states that the site has an L sensitivity rating, as an area with low scenic values resulting from a low sensitivity to changes in visual quality by the type of users in the area, a low amount of use by viewers, low public interest in changes to the visual quality of the site, and a lack of special natural and wilderness areas. Provide the technical justification for this rating.

LAN-3 Section 19.4.1.1.1 of the ER states that "construction staging activities could also occur along Discovery Drive bordering the lot and the adjacent Discovery Ridge Lot 14. Staging activities would be temporary and would cease after construction of the facility." Describe the exact locations and approximate acreage of any offsite stages areas that would be used during construction.

LAN-4 Section 19.4.1.1.1 of the ER states that "after the facility is built, landscaping would mitigate disturbances caused during construction on the lot, both exterior of the perimeter fence and from the perimeter fence to the perimeter of the building." Provide a description of landscaping activities NWMI intends to complete. For example, would open areas be covered in grasses, shrubs, or ornamental flowers. Would any native species be used for landscaping? If known, provide the approximate percentage of space that would be landscaped vs. developed.

LAN-5 Describe the current zoning at each alternative site.

LAN-6 In support of analyzing the site-specific environmental impacts associated with the connected actions, describe the current land use at the third reactor and the two identified reactors and whether any change to the land uses would be required.

LAN-7 In support of analyzing the site-specific environmental impacts associated with the connected actions, describe whether there would be an increases in noise or traffic in the areas surrounding the two identified reactors and the third reactor.

LAN-8 In support of analyzing the site-specific environmental impacts associated with the connected actions, describe whether any ground disturbing activities would occur during modifications to the two identified reactors and the third reactor.

Noise

NOI-1 Section 19.4.2.3.1 of the ER states that the impacts impact of noise from construction are SMALL. However Table 19-90 of the ER state that the noise impacts from construction at the Discovery ridge site would be MODERATE. Clarify the noise construction impact level and reconcile the differences concluded regarding the impact level.

Proposed Action

PA-1 Section 19.2.1 of the ER states the nominal operational processing capacity of the RPF would be one batch per week (up to 12 targets per batch) for up to 52 weeks, and approximately 30 targets from the OSTR or a third university reactor for eight weeks per year per reactor. The discussion further states that the assumed bounding scenario would be a total of 68 batches of irradiated LEU targets processed at the RPF annually.

For the bounding scenario, clarify:

1. The estimated number of targets per batch, batches per week, and batches per year that would be separately processed from the OSTR and the third reactor, respectively.

2. The estimated annual number of targets to be fabricated, irradiated, and processed at the RPF.

PA-2 Section 19.2.1.1 of the ER states that the start date of site preparation/construction would be the first quarter of 2016 and an end date of construction of first quarter 2017, which would result in a maximum construction phase of 15 months. However, Section 19.4.2.1.1.4. of the ER references an estimated construction period spanning 17 months. Clarify the construction duration phase and/or the difference in construction duration presented in Section 19.2.1.1 and Section 19.4.2.1.1.4 of the ER.

PA-3 Section 19.2.1.2 of the ER states that 100% of the 3.0 hectare (7.4 acre) site would be permanently affected. Differentiate between the total estimated amount of land that would be temporarily affected by construction activities (e.g., land clearing, material and equipment lay-down areas) versus the amount that would be permanently affected by operational activities (e.g., building and support facility footprints, paved vehicle access and parking areas).

PA-4: Section 19.2 of the ER discusses the activities and schedule of the pre-operations phase. Clarify if the impacts of the pre-operations phase were considered within the construction phase or the operations phase impacts described in Section 19.4 of the ER.

PA-5 Clarify the relationship of the values presented in Tables 19-6 and 19-14, specifically:

1. Whether the estimated delivery trucks listed in Table 19-6 during operation account for fresh LEU and irradiated target shipments identified in Table 19-14 of the ER, and

2. Whether the estimated offsite shipments identified in Table 19-6 during operation account for the unirradiated targets, ^{99}Mo product, spent LEU, and radioactive waste shipments during operation identified in Table 19-14 of the ER.

PA-6 Section 19.2.2.3 indicates that the proposed RPF site would be connected to local power, sewer, and water infrastructure. Provide estimated annual sanitary sewer, electrical power, municipal water, and natural gas requirements required to support each phase of the project.

PA-7 Section 19.2.5.2 indicates that the RPF would use three electric boilers. How do these boilers relate to the four natural gas boilers discussed in Section 19.4.2.1.2.4?

Purpose and Need

PN-1 Section 19.1.1 of the ER states that Northwest Medical Isotopes, Inc. (NWMI) intends to provide approximately 50 percent of the molybdenum-99 demand in North America. Describe what NWMI assumes is the total the molybdenum-99 demand in North America.

PN-2 Table 19-4. Regulatory Compliance Status of the ER describes the general status of required permits and approvals. Provide an updated status of the permits and approvals, including approximate dates when NWMI would submit applications to the various agencies.

PN-3 Clarify is if the NWMI facility will produce molybdenum (Mo-99), iodine-131 (I-131) and xenon-133 (Xe-133).

Socioeconomics

SOC-1 Section 19.4.7.1.2 of the ER indicates “89 (non-management) permanent operations workers needed are available in the ROI.” The next sentence states, “About 40 percent (36) of the operations workers and their families are assumed to relocate to reside in the ROI.” These statements appear to be in conflict. There is also no discussion about the number of permanent management operations workers. In addition, Table 19-6 of the ER lists an average and peak operation workforce of 98. Clarify these statements and reconcile the differences

in workforce numbers discussed in Section 19.4.7.1.2 and Table 19-6 during operations.

SOC-2 Section 19.4.7.1.3 of the ER states that during peak construction, an estimated 81 workers would be required for decommissioning. However, Table 19-6 of the ER lists a peak workforce of 28. Reconcile the differences in workforce numbers discussed in Section 19.4.7.1.3 and Table 19-6 during decommissioning.

SOC-3 Section 19.4.7.6.1 of the ER states that during peak construction, traffic volume is estimated to be 30 heavy vehicles (dump truck and deliveries) and 82 vehicles (pickup trucks and cars) daily. However, Table 19-6 of the ER lists 20 delivery trucks (per week) and 1 offsite material waste and shipment per week. Reconcile the differences in traffic volume discussed in Section 19.4.7.6.1 and shipments identified in Table 19-6 during construction.

SOC-4 Section 19.4.7.6.3 of the ER states that there are an estimated 30 heavy vehicles (waste trucks) and 81 vehicles (pickup and cars) traveling to and from the site daily during the decommissioning phase. However, Table 19-6 of the ER lists 20 waste shipments per week and a peak workforce of 15. Reconcile the differences in traffic volume discussed in Section 19.4.7.6.3 and shipments and workforce identified in Table 19-6 during decommissioning.

Storage, Treatment, and Transportation of Materials

Nonradioactive Materials

STT-NR-1 Provide copies of the chemical management plan and product handling plan discussed in Section 19.2.8.1.1 of the ER.

STT-NR-2 Clarify whether Section 19.2.8.1.2 applies to the treatment and temporary storage of non-radioactive wastes. The preamble sentence of the section refers only to radioactive and mixed wastes.

STT-NR-3 Discuss the processes intended to manage transportation of non-radioactive materials and wastes.

STT-NR-4 Section 19.4.10.1.6 of the ER states that a non-radioactive waste recycling drop-off point is located approximately 4 miles from the RFP. Please clarify that statement. Will NWMI be transporting non-radioactive recyclables to that drop off point or will the waste broker pick up the recyclables at the RFP?

STT-NR-5 In support of analyzing the site-specific environmental impacts associated with the connected action of irradiation services, discuss the storage and treatment of non-radioactive material from target handling and irradiation at the two identified reactors and the third reactor and impacts.

Waste Management

Non-radiological

WM-NR-1 Provide the chemical composition of the waste streams listed in Tables 19-12 and 19-13 of the environmental report (ER).

WM-NR-2 Provide the anticipated mass (in a unit applicable to solid material) of the waste streams listed in Table 19-13 of the ER.

WM-NR-3 Provide a list of anticipated waste disposal companies and disposal sites for the waste streams, including construction wastes, listed in Section 19.2.7 of the ER.

WM-NR-4 Provide a list of non-radioactive waste streams, their chemical composition, and their amount.

WM-NR-5 Clarify whether the radioisotope production facility will be a large or small quantity hazardous waste generator under the Resource Conservation and Recovery Act (RCRA).

WM-NR-6 Provide a list, to include location within the facility, of any anticipated 90-day RCRA collection points.

WM-NR-7 In support of analyzing the site-specific environmental impacts associated with the connected actions, identify if target handling and irradiation will result in changes in the types or increases in the non-radiological effluent releases and waste streams at the two identified reactors and the third reactor. Provide sources, types, and approximate quantities of non-radiological effluents or waste and discuss non-radiological waste management impacts of target handling and irradiation at the two identified reactors and the third reactor.

Radiological

WM-R-1 Table 19-14 of the ER lists the types of radioactive materials and wastes generated by or required for use at the RPF. For the radioactive wastes generated and shipped to Waste Control Specialist (WCS), clarify what those wastes are and what class of radioactive waste (i.e. Class A, Class B, Class C, Greater Than Class C (GTCC)) that will be produced, treated, stored, and shipped.

WM-R-2 Clarify how long radioactive waste must be stored on site for decay before shipping, and if sufficient storage space is available for all anticipated radioactive wastes and radioactive materials necessary for operation.

WM-R-3 In support of analyzing of the environmental impacts associated with the connected actions, identify if target handling and irradiation will result in changes in the types or increases in the radiological effluent releases and waste streams at the two identified reactors and the third reactor. Provide sources, types, and

approximate quantities of radiological effluents or waste and discuss radiological waste management impacts of target handling and irradiation at the two identified reactors and the third reactor. Discuss any expected radiological impacts to the workers at those facilities due to those expected changes. Discuss any expected radiological impacts from transportation due to the shipment to and from the two identified reactors and the third reactor.

Water Resources

WAT-1 Section 19.2.4.1 of the ER provides a narrative description and tabular summary of the projected water demands and Section 19.2.7.1 summarizes liquid waste streams associated with operation of the proposed RPF. Provide a supporting process water balance (water use diagram) for the facility showing flow rates to and from the various water systems, water system interconnections and interdependence, points of consumption, and source and discharge locations. Specifically identify RPF process, cooling, steam production, fire protection, sanitary, floor and equipment washdown, or other specific water uses.

NORTHWEST MEDICAL ISOTOPES, LLC
ENVIRONMENTAL AUDIT SCHEDULE

Tuesday, Sept. 15

- Travel to Columbia, MO

Wednesday, Sept 16

- Entrance Meeting (introductions, etc.)
- NWMI Presentation(s)
    - Overview of production process
    - Overview of modifications that would occur at each of the three reactors
    - Overview of the scoring and alternative site selection process
- Site Visit
    - Walk down of the Discovery Ridge proposed site
    - University of Missouri Research Reactor (MURR) tour
    - Walk down of the MURR alternative site

Thursday, Sept 17

- Resource-specific meetings/breakout sessions on information needs
- Exit Meeting

Friday, Sept 18

- Travel to Washington, DC

ENCLOSURE 3