U.S. Department of Energy
200 Grand Avenue
Grand Junction, CO 81501

July 31, 2017 MOAB-00066-17

Mr. Chris Grossman
U.S. Nuclear Regulatory Commission
Division of Decommissioning, Uranium Recovery, and Waste Programs
Office of Nuclear Material Safety and Safeguards
11545 Rockville Pike
Mail Stop T-8F05
Rockville, MD 20852-2738

SUBJECT: APPLICATION OF SUPPLEMENTAL STANDARDS FOR U.S. HIGHWAY 191 RIGHTS-OF-WAY ON MOAB, UTAH, MOAB URANIUM MILL TAILINGS REMEDIAL ACTION (UMTRA) PROJECT

Dear Mr. Grossman:

Enclosed for your review and concurrence is the Application of Supplemental Standards for U.S. Highway 191 Rights-of-Way. This supplemental standards area lies within the Utah Department of Transportation (UDOT) rights-of-way on the U.S. Department of Energy (DOE) UMTRA Project site in Moab, Utah.

DOE is proposing no remediation for this area, and application of supplemental standards using 40 CFR 192.21 criterion (c), excessive cost relative to long-term benefits, as the justification.

As a reminder, a supplemental standards application for a different area was submitted to your office in November 2016 titled Historical Highway Right-of-Way and is pending U.S. Nuclear Regulatory Commission (NRC) concurrence.

Please respond to this letter indicating NRC's concurrence of the supplemental standards application. Should you have any questions, feel free to call me at (970) 257-2115.

Sincerely,

Ellen M. Mattlin
Acting Moab Federal Project Director
Moab UMTRA Project

cc w/enclosure:
John Sattler, EMCCBC
Rick Torgerson, UDOT
Wendee Ryan, TAC
Project File MOA 2.12 (C. Smith)

L:\condor_doe\MOAB\NRC\TrransmittApplicationSuppStdsHwy191ROW.docx

DOE-EM/GJ2235

Office of Environmental Management – Grand Junction

UMTRA Project

Moab UMTRA Project
U.S. Highway 191 Historical Highway Rights-of-Way Supplemental Standards Application

July 2017

U.S. Department of Energy

Office of Environmental Management

Prepared by the Technical Assistance Contractor under contract number DE-EM0002067 for the U.S. Department of Energy Office of Environmental Management, Grand Junction, Colorado.

DOE-EM/GJ2235

Moab UMTRA Project
U.S. Highway 191 Rights-of-Way Supplemental Standards Application

July 2017

Prepared by the Technical Assistance Contractor under contract number DE-EM0002067
for the U.S. Department of Energy Office of Environmental Management, Grand Junction, Colorado.

Contents

Figure

Appendix

Attachment

Plate

Acronyms and Abbreviations

CFR	Code of Federal Regulation
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ft^2	square feet
g	gram
h	hour or hours
in.	inch or inches
μR	microroentgens
mrem	millirems
NaI	sodium iodide
OCS	Opposed Crystal System
pCi	picocuries
Ra-226	radium-226
Rn-222	radon-222
ROW	right-of-way
RRM	residual radioactive material
TC	total count
U-238	uranium-238
UMTRA	Uranium Mill Tailings Remedial Action
yr	year

1.0 Introduction

The Moab Uranium Mill Tailings Remedial Action (UMTRA) Project site in Utah is being cleaned up to U.S. Environmental Protection Agency (EPA) standards in 40 Code of Federal Regulations Part 192 (40 CFR 192), "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings." These standards allow the application of supplemental standards if one or more criteria in 40 CFR 192.21, "Criteria for applying supplemental standards," are met. The purpose of this document is to propose application of supplemental standards for portions of the U.S. Highway 191 rights-of-way (ROWs), including a culvert, that lie within the Moab site property boundary.

1.1 Location

Figure 1 shows the location of the proposed supplemental standards area, which lies in Section 27, T25S, R21E, in Grand County, Utah. The area addressed in this Application is approximately 62,900 square feet (ft^2).

1.2 Major Physical Features

The proposed supplemental standards area consists of soils along the northern and southern edges of U.S. Highway 191 where a 1:1 slope was left in place to ensure the stability and safety of the highway. In addition, contaminated material was left around a drainage culvert that crosses underneath the highway.

Residual radioactive material (RRM) in this area is likely windblown tailings from the former millsite or pieces of ore lost during truck transport on the highway to the nearby ore-buying station or to the mill when it was in operation. Contaminated soils outside the proposed supplemental standards area but still within the highway ROWs were remediated in two phases: Phase 1 was performed between March and April 2003, and Phase 2 was performed between July and November 2006. These remedial actions were addressed in the *Moab Site Project Completion Report Appendix Package Highway 191 Phase 1* (DOE-EM/GJ1474-2007) and *Moab Site Project Completion Report Appendix Package Highway 191 Phase 2* (DOE-EM/GJ1471-2007), respectively.

1.3 Land Use

Because the proposed supplemental standards area is within the highway ROWs, the U.S. Department of Energy (DOE) assumes future use of this area will remain a transportation corridor. Based on the current and assumed future land use, the most reasonable scenarios for exposure to a member of the public due to RRM in this supplemental standards area is a highway worker or a semi-truck driver parked along the ROW for an extended period.

2.0 Applicable EPA Criterion

Supplemental standards are being proposed for the above-described area based on the following criterion in 40 CFR 192.21(c): The estimated cost of remedial action to satisfy 40 CFR 192.12(a), "Standards," at a "vicinity" site is unreasonably high relative to the long-term benefits, and the RRM does not pose a clear present or future hazard.

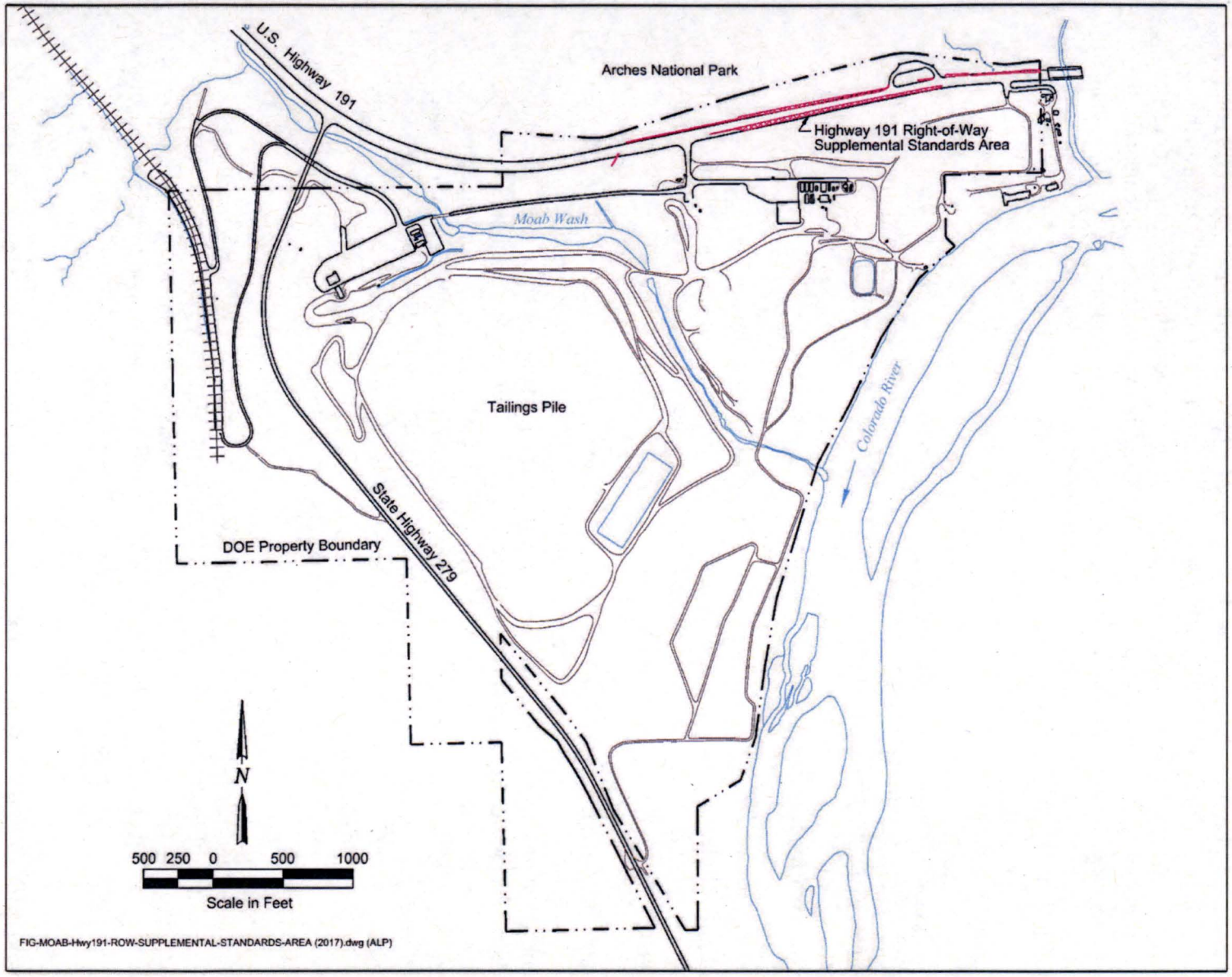

Figure 1. Proposed Supplemental Standards Area Location Map

3.0 Summary of Public Dose Assessment

Appendix A details the assessment of potential public dose to the RRM in the proposed supplemental standards area based on exposures to a highway worker doing short-term (40 hours [h]) maintenance or working on a longer-term (320 h) project and for a truck driver who is parked at a roadside pullout for 8 h once a week.

Radiological data used in the assessment are based on total count (TC) or on-site laboratory analysis of soils collected during the site characterization conducted from November 2001 through February 2005 and documented in the *Radiological Assessment for Non-Pile Areas of the Moab Project Site* (DOE-EM/GJ901-2005) or from samples collected during the remediation of adjacent areas. Plate 1 shows the soil sample locations from the radiological assessment that fall within the proposed supplemental standards area.

The total dose for the short-term worker, longer-term worker, and truck driver under the conservative assumptions made are 3 millirems per year (mrem/yr), almost 12 mrem/yr, and 19.5 mrem/yr, respectively, including background. These are far below the 100 mrem/yr above background limit DOE established as acceptable dose to the public in DOE Order 458.1 Admin Chg 3, "Radiation Protection of the Public and the Environment."

4.0 Remediation Alternatives

Two alternatives were considered to address the remaining RRM.

4.1 Alternative 1 – No Remediation (Supplemental Standards)

No additional work is required under this alternative. The public dose associated with this alternative is summarized in Section 3.0. This alternative would minimize disturbance of the highway ROWs and culvert. No additional costs would be incurred if this alternative is chosen.

4.2 Alternative 2 – Full Remediation

Implementing this alternative would require removal of all contaminated soils in excess of the EPA standards for radium-226 (Ra-226) (5 picocuries per gram [pCi/g] above background in surface soils and 15 pCi/g above background in subsurface soils). The area is about 62,900 ft^2 (1.45 acres), and the estimated volume of material to be removed based on the assessed contamination depths would be about 2,065 cubic yards. Under this alternative, the already low exposure to the public due to the RRM would be further reduced.

5.0 Recommendation

The contaminated soils remaining in the ROWs and culvert within the proposed supplemental standards area would not pose a significant present or future health risk to the public due to the very low exposure levels and limited exposure times. Remediation of this area would be costly compared to the health and environmental benefits.

Based on the assessment of public dose presented in this document, DOE recommends Alternative 1 – No Remediation be approved for the proposed supplemental standards area. Attachment 1 consists of a letter signed by the Utah Department of Transportation indicating its concurrence with this Supplemental Standards Application.

6.0 References

40 CFR 192 (Code of Federal Regulations), "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings."

DOE (U.S. Department of Energy), *Moab Site Project Completion Report Appendix Package Highway 191 Phase 1,* DOE-EM/GJ1474-2007.

DOE (U.S. Department of Energy), *Moab Site Project Completion Report Appendix Package Highway 191 Phase 2,* DOE-EM/GJ1471-2007.

DOE (U.S. Department of Energy) Order 458.1 Admin Chg 3, "Radiation Protection of the Public and the Environment."

DOE (U.S. Department of Energy), *Radiological Assessment for Non-Pile Areas of the Moab Project Site,* DOE-EM/GJ901-2005.

Appendix A.
Assessment of Potential Public Dose from RRM

Appendix A. Assessment of Potential Public Dose from RRM

1.0 Introduction

Supplemental standards are sought for the portion of the DOE Moab site property that lies within U.S. Highway 191 ROWs and a culvert in the highway ROW. This dose assessment was performed using the RESRAD Dose Assessment Code (Version 7.2) to support the no action alternative described in the Supplemental Standards Application. The RESRAD Code is a generally accepted method of estimating potential doses from residual radioactivity in soil. RESRAD can be used to calculate the total dose to a member of the public due to a mixture of radionuclides in soil.

The calculations in this assessment were performed to demonstrate compliance with DOE Order 458.1, which states DOE activities will be conducted in a manner such that the public dose limit of 100 mrem/yr above background will not be exceeded. All doses calculated in this assessment are effective doses, which include the doses from radiation sources internal and/or external to the body.

2.0 Exposure Scenarios

Because the supplemental standards area is within public highway ROWs, the most reasonable scenario for exposure to a member of the public is highway maintenance. The dose assessment considered a worker repairing the highway at the point of highest surface soil Ra-226 activity concentration and a worker performing general maintenance on the entire road as it traverses the supplemental standards areas. Any material excavated during highway maintenance is assumed to be placed back into the excavation. In addition, tractor-trailers have been observed parked in pull-off areas adjacent to the highway for extended periods, presumably so the driver can nap in the tractor sleeper. Pathways judged to be incomplete from source to receptor as described below were not included in the analysis as shown in Table A-1.

2.1 Exposure Pathways

The exposure pathways considered reasonable for all of the following exposure scenarios.

- Direct gamma radiation
- Inhalation of airborne radioparticulates
- Inhalation of radon and its decay products

In addition, for the highway worker scenarios, incidental ingestion of radionuclides in soil is considered a reasonable exposure scenario.

Water dependent pathways and food ingestion pathways were not included in the analysis since no ground water wells would be established in the supplemental standards area, and no food would be raised in the area. The exposure was assumed outdoors with no indoor exposure time because no structures would be built on it.

3.0 Dose Calculation

Table A-1 shows the value of each parameter used for the highway worker and truck driver scenarios in the RESRAD analysis.

Table A-1. Value of Parameters Used in RESRAD Analysis

Parameter	Highway Worker	Truck Driver
Occupancy time Outdoor exposure fraction = hours of exposure/total hours per year	One workweek (40 h) = 40/8,760 = 0.0046 8 workweeks (320 h) = 320/8,760 = 0.0365	8 h per day, 1 day per week, 50 weeks per yr for a total of 400 h/yr Outdoor exposure fraction = 400/8760 = 0.046
Mass loading for particulate inhalation	1.0 mg/m^3	0.1 mg/m^3
Breathing rate[1]	14,700 m^3/yr (1.68 m^3/h)	3,740 m^3/yr (0.43 m^3/h)
Soil ingestion rate	0.1 g/day	Not applicable
All other parameters	RESRAD default value	RESRAD default value

m^3 = cubic meters; mg= milligrams

[1]The mean breathing rate for moderate intensity work for a person age 41-50 is 2.8E-2 m^3/minute; for sleep or nap, 7.1E-3 m^3/minute (EPA "Exposure Factors Handbook 2011"). RESRAD requires the breathing rate to be expressed in cubic meters per year. The breathing rate in cubic meters per minute was multiplied by 5.26 E5 minutes/yr to obtain an equivalent annual breathing rate for input into the RESRAD code.

3.1 Direct Gamma Radiation

Ra-226 results in soil measured in the highway ROWs during the assessment of the Moab site as reported in the *Radiological Assessment for Non-Pile Areas of the Moab Project Site* are shown in Table A-2. Sample locations are shown on Plate 1. With three exceptions (R0443, R0498, and R0579), the Ra-226 concentrations were calculated based on measurements taken in boreholes using either an Eberline E-600 scaler equipped with SPA-3 sodium iodide (NaI) gamma detectors or a Geoprobe equipped with Bicron or Alpha-Spectra NaI "pipe monitor" gamma detector. A predetermined conversion factor was applied to the TC for a 30- or 60-second count time, depending on the instrument used. Soil samples representing the surface 6-inch (in.) depth were collected at R0443, R0498 (culvert), and R0579 and analyzed using the Opposed Crystal System (OCS).

There is no correlation between the TC measurements and soil samples. The surface TC measurement was higher at eight of the 13 locations assessed using TCs. The OCS result was greater than the TC measurement in the two instances when both methods were used. The average of the highest Ra-226 concentration at each location was 24.40 pCi/g. The highest concentration at each location was used to calculate an average Ra-226 concentration as a conservative measure to account for the uncertainties in the estimated concentrations.

Table A-2. Ra-226 Concentrations in Assessment Measurements

Location ID	Ra-226 Concentration (pCi/g)			
	Surface Measurement (TC)	0-6 in. Surface OCS Sample	6 in. Subsurface Measurement (TC)	Maximum Value
R0371	27.42		10.23	27.42
R0412	11.69		17.31	17.31
R0420	6.18		8.92	8.92
R0421	12.10		14.99	14.99
R0432	15.77		15.00	15.77
R0443[1]	10.59	49.53	5.77	49.53
R0498[2]	3.50	22.29	1.94	22.29
R0528	20.60		39.45	39.45
R0579[3]		21.46		21.46
R0587	41.10		15.14	41.10
R0588	33.57		22.02	33.57
R0589	16.33		12.75	16.33
R0590	14.55		8.75	14.55
R0591	18.67		18.84	18.84
Average				**24.40**

[1]0- and 6-in. TC measurements in addition to 0-6-in. composite soil sample analyzed by OCS.
[2]Culvert at western end of the supplemental standards area.
[3]0-6-in. composite soil sample analyzed by OCS. No reported TC measurement.

Results of 15 excavation control samples collected in the ROWs during remediation of adjacent areas are shown in Table A-3. The excavation control samples were collected in the general area of the supplemental standards area. The average of the three excavation control surface samples is 43.7 pCi/g, and the average of the subsurface samples is 30.8 pCi/g.

Table A-3. Ra-226 Concentrations in Excavation Control Samples

Sample Location Number	Sample Depth (in.)	Ra-226 Concentration (pCi/g)
21	0-6	28.2
22	0-6	46.6
23	0-6	56.3
Surface Average		**43.7**
24	>6	11.2
25	>6	18.6
26	6-12	18.5
27	>6	10.6
27A	>6	18.5
28	>6	42.8
29	>6	15.4
30	>6	36.7
31	>6	37.5
32	>6	16.5
33	>6	35.9
34	>6	107.6
Subsurface Average		**30.8**

μR/h = microroentgens per hour

An overall average Ra-226 concentration was calculated using the maximum value for the assessment locations and the three surface excavation control samples shown in Tables A-2 and A-3. The overall average, 27.80 pCi/g, was used in the RESRAD analysis for the highway worker performing general maintenance in the supplemental standards area. The maximum surface concentration, 56.3 pCi/g, was used for the highway worker repairing a small section of the supplemental standards area at the point of highest Ra-226 concentration and the resting truck driver. The dose to the highway worker or resting truck driver is almost entirely due to the direct gamma radiation; therefore, the Ra-226 concentration in surface soils is the most important parameter. Gamma radiation from subsurface soils would be shielded by overlying soils.

3.2 Inhalation of Airborne Radioparticulates

The radionuclide concentrations used in the analysis are listed in Table A-4. The maximum measured surface radionuclide concentration for either the assessment measurement (Table A-2) or the excavation control surface samples (Table A-3) was used in the analysis for the highway worker maintaining a small section of the highway for 40 h and the resting truck driver. The average Ra-226 concentration calculated as described in Section 3.1 was used for the highway worker spending 8 weeks (320 h) in the supplemental standards area. The default RESRAD value was used in the analysis for the truck driver; the concentration for highway workers is a factor of 10 times the default RESRAD value to take into account that soil may be excavated and become airborne during highway maintenance. Using the default value for the truck driver is acceptable because the dust concentration would likely not be elevated during periods when a truck driver would be resting.

Table A-4. Radionuclide Concentrations Used in RESRAD Analysis

Radionuclide	Assumed Concentration (pCi/g)		
	40-h Highway Worker (maximum concentration)	320-h Highway Worker (average concentration)	Truck Driver (maximum concentration)
U-238	56.3	27.8	56.3
U-234	56.3	27.8	56.3
Th-230	56.3	27.8	56.3
Ra-226[1]	56.3	27.8	56.3
Pb-210	56.3	27.8	56.3

Pb = lead; Th = thorium; U = uranium

[1]Includes radon-222 and its short-lived decay products.

For the purpose of this analysis, all uranium-238 (U-238) decay series radionuclides were assumed to be in equilibrium; that is, present at the same activity concentration as Ra-226. This is a reasonable assumption if the contamination is entirely due to ore. Because the contamination also includes uranium mill tailings, which are depleted in uranium isotopes, the equilibrium assumption based on the Ra-226 concentration is somewhat conservative.

4.0 Results

The results of the RESRAD analysis for each exposure scenario are shown in Table A-5.

Table A-5. Estimated Annual Dose

Exposure Pathway	40-h Worker (mrem/yr)	320-h Worker (mrem/yr)	Truck Driver (mrem/yr)
Direct gamma radiation	2.6	10.1	19.4[1]
Inhalation of airborne radioparticulates	0.33	1.3	0.1
Inhalation of radon and its decay products	<0.1	<0.1	<0.1
Incidental ingestion of radionuclides in soil	0.08	0.3	Not applicable
Total annual estimated dose	3.0	11.8	19.5

[1]RESRAD-calculated direct dose was multiplied by a factor of 0.75 to account for shielding by the truck body (based on "Systematic Radiological Assessment of Exemptions for source and Byproduct Materials").

The exposure pathways assumed for this analysis are reasonable based on the location and potential future use of the area. Nearly all of the radiation dose would be due to direct gamma radiation from the short-lived radon-222 (Rn-222) decay products lead-214 and bismuth-214 in the surface soil.

Inhalation of airborne particulates and ingestion of soils (for highway workers) contribute a very small portion of the dose. The RESRAD-calculated potential annual radiation doses to the maximally exposed individuals are significantly less than the annual dose limit of 100 mrem/yr in DOE Order 458.1.

Because the exposure for all scenarios is outdoors, inhalation of radon decay products does not contribute significantly to the dose. In contrast to indoor exposures, outdoor short-lived decay products would be dispersed before they could build up. The dose from Rn-222 and its short-lived decay products is included in the RESRAD-calculated dose from Ra-226.

5.0 Comparison of RESRAD Direct Gamma to EPA Dose Coefficients

To validate the RESRAD analysis, the direct gamma radiation dose was compared to the dose calculated based on the dose coefficients in EPA Federal Guidance Report No. 12. The nominal dose rate per picocurie per gram U-238 in equilibrium with its decay products, based on the published dose coefficients, is 0.0013 mrem/h.

The estimated doses were calculated as follows.

- 40-h highway maintenance worker at maximum soil concentration of 56.3 pCi/g:
  Dose = (0.0013 mrem-g/h-pCi)(56.3 pCi/g)(40 h/yr) = 2.9 mrem/yr
  This result compares favorably to the RESRAD-estimated dose of 2.6 mrem/yr.

- 320-h highway worker at average Ra-226 concentration (27.8 pCi/g):
  Dose = (0.0013 mrem-g/h-pCi)(27.8 pCi/g)(320 h/yr) = 11.6 mrem/yr
  This compares favorably to the RESRAD estimate of 10.3 mrem/yr.

- Truck driver at maximum Ra-226 concentration:
  Dose = (0.0013 mrem-g/h-pCi)(56.3 pCi/g)(400 h/yr) = 29.3 mrem/yr, which is less than 4 mrem different than the RESRAD-estimated direct radiation dose of 25.8 mrem/yr.

Therefore, for the three scenarios considered in this analysis, the direct radiation doses calculated based on the EPA dose coefficients are consistent with the doses calculated in RESRAD.

6.0 Conclusion

The most probable future use of the highway ROWs is a transportation corridor. This assessment demonstrates that members of the public who work on the highway or park along the roadside would receive a fraction of the 100 mrem/yr public dose limit not including background even when conservative assumptions are used; therefore, DOE recommends concurrence with this Supplemental Standards Application.

7.0 References

EPA (U.S. Environmental Protection Agency), "External Exposure to Radionuclide in Air, Water, and Soil." Federal Guidance Report No. 12. EPA 402-R-93-081.

EPA (U.S. Environmental Protection Agency), "Exposure Factors Handbook 2011 (Final)." EPA/600/R-09/052F.

Schneider, S., D. Kocher, G. Kerr, P. Scofield, F. O'Donnell, C. Mattsen, S. Cotter, J. Bogard, J. Bland, and C. Wiblin, "Systematic Radiological Assessment of Exemptions for source and Byproduct Materials." NUREG-1717.

Yu, C., A. Zielen, J. Cheng, D. LePoire, E. Gnanapragasam, S. Kamboj, J. Amish, A. Wallo, III, W. Williams, and H. Peterson, "User's Manual for RESRAD Version 6." ANL/EAD-4.

Attachment 1.
Letter from Utah Department of Transportation

Attachment 1. Letter from Utah Department of Transportation

U.S. Department of Energy
200 Grand Avenue
Grand Junction, CO 81501

July 10, 2017

Mr. Rick Torgerson
Region Four Director
Utah Department of Transportation
210 West 800 South
Richfield, UT 84701

MOAB-00061-17

Subject: Concurrence with Application of Supplemental Standards for U.S. Highway 191 Rights-of-Way and Culvert in Moab, Utah

Dear Mr. Torgerson:

This letter is to request your concurrence on an Application of Supplemental Standards for U.S. Highway 191 Utah Department of Transportation (UDOT) rights-of-way, including a culvert that lies within the U.S. Department of Energy (DOE) Uranium Mill Tailings Remedial Action (UMTRA) Project site in Moab, Utah.

Residual radioactive materials, consisting of decomposed uranium ore and/or windblown mill tailings, exist in a portion of the right-of-way on either side of U.S. Highway 191 and in a culvert that runs underneath the highway as shown in Figure 1 of Attachment 1. The soil contamination area involving the UDOT rights-of-way and culvert is approximately 62,900 square feet, with a total estimated volume of 2,066 cubic yards that would require removal if supplemental standards were not applied.

Remediation of the soil contamination area would require disturbing the highway to remove the residual radioactive materials. The U.S. Environmental Protection Agency cleanup standards for radium-226 in soil, codified in 40 Code of Federal Regulations Part 192.21 (40 CFR 192.21), allow residual radioactive materials to remain in place when one or more criteria are met. DOE is submitting an Application for Supplemental Standards to the U.S. Nuclear Regulatory Commission (NRC) using 40 CFR 192.21 criterion (c) excessive costs relative to long-term benefits as the justification.

In applying supplemental standards, the residual radioactive materials that would remain in place would not pose a significant present or future health or environmental risk. Based on the analytical results for radium-226 of samples collected in the highway rights-of-way and around the culvert, soils encountered during repair of the highway or culvert may be put back as fill at the discretion of UDOT without any special containment measures beyond normal dust control and watering to mitigate dust.

Attachment 1. Letter from Utah Department of Transportation (*continued*)

DOE would like to obtain your concurrence on the Application of Supplemental Standards for U.S. Highway 191 in the UDOT rights-of-way, including a culvert, indicated in Attachment 1 by signing where indicated below. Please return a signed copy of this letter to me at the address above, preferably no later than August 10, 2017. If you have any questions, feel free to call me at (970) 257-2115.

Sincerely,

Ellen Mattlin
Moab Federal Project Director (Acting)

I concur with the Application of Supplemental Standards for U.S. Highway 191 in the UDOT rights-of-way, including a culvert, on the DOE Moab UMTRA Project site:

Rick Torgerson
UDOT

7/19/17
Date

cc w/enclosure:
Robert Dowell, UDOT
Matt Reardon, CBC
John Sattler, MOAB
Joe Ritchey, TAC
Wendee Ryan, TAC
Project File MOA 2.12 (C. Smith)

L:\condor_doe\MOAB\UDOT\2ndReqstUDOTConcurrenceHwy191ROWsSStds.docx

Plate 1.
Sample Locations within U.S. Highway 191 Rights-of-Way
Supplemental Standards Area

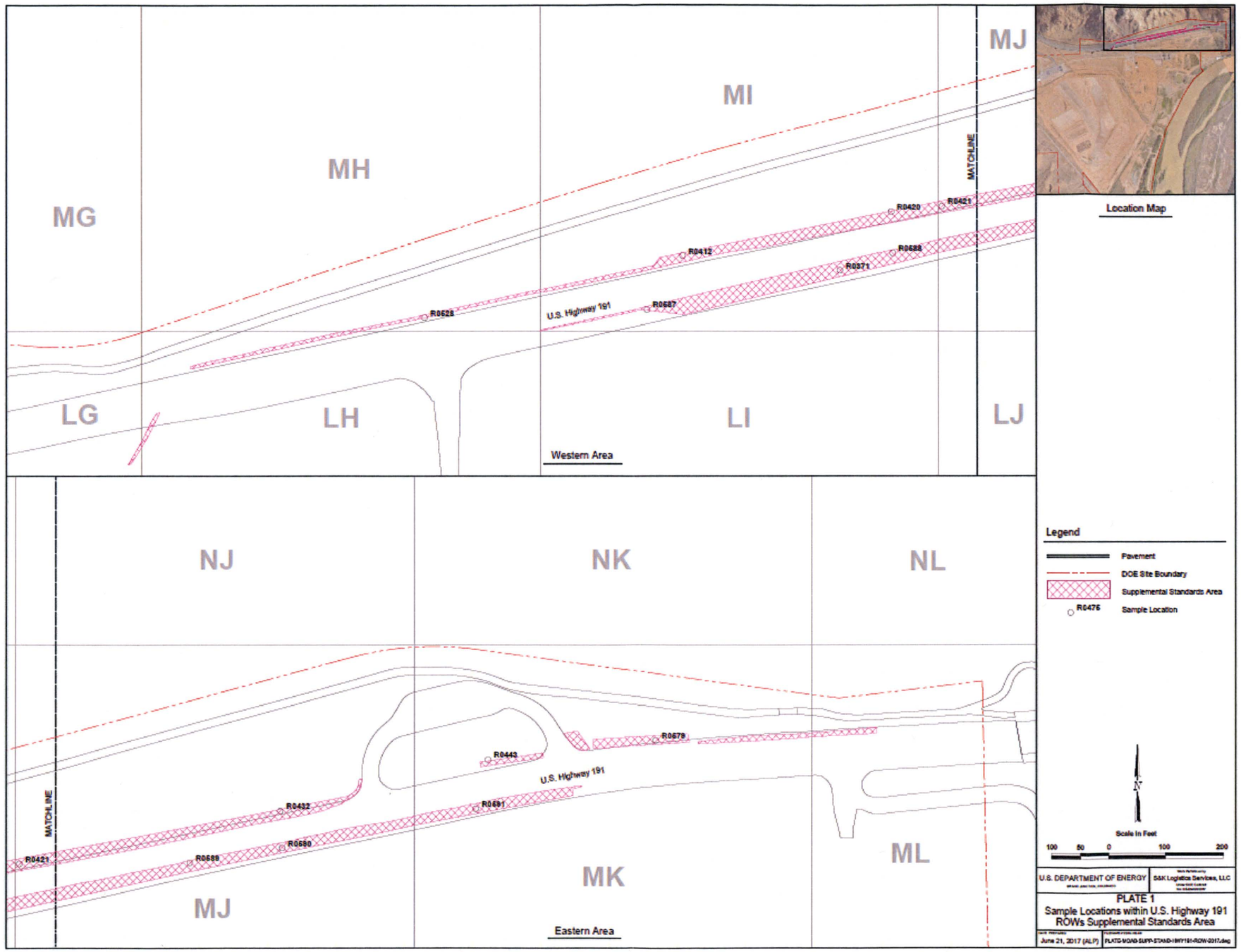

Plate 1. Sample Locations within U.S. Highway 191 Rights-of-Way Supplemental Standards Area