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

April 2, 2010

Mr. Richard Chang, Engineer/Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Review of Supplemental Standards Application for Moab Gas Line and Vicinity Property 018 (Docket No. WM-110)

Dear Mr. Chang,

The Department of Energy Moab UMTRA Project submits four copies each of the enclosed reports in response to the Nuclear Regulatory Commission's (NRC's) letter of February 4, 2009. These reports are titled *Completion Report and Supplemental Standard Application for Moab Vicinity Property VP018* and the *Supplemental Standards Application for the Gas Line Adjacent to the Off-Pile Remediation of the Moab Mill Site*.

Thank you for bringing the delinquency of our response to our attention. If you have any questions or require additional information, please contact me at (970) 257-2115.

Sincerely,

Donald R. Metzler
Moab Federal Project Director

cc w/o enclosure:
K. Conway, NRC (e)
J. Berwick, DOE (e)
K. Wethington, DOE (e)
R. Hopping, TAC (e)
J. Ritchey, TAC (e)
Project File MOA75.18 (C. Smith)

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SM-4224-091148

Supplemental Standards Application for the Gas Line Adjacent to the Off-Pile Remediation of the Moab Mill Site

August 2009

Stoller

Work Performed by S.M. Stoller Corporation Under Purchase Order No.4064 for Energy*Solutions*, Moab, Utah. Energy*Solutions* Performs Work for the U.S. Department of Energy Under Task Order No. DE-AT30-07CC00014

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1.0 Introduction

The Moab Uranium Mill Tailings Remedial Action (UMTRA) Project Site (Moab mill site) is a former uranium-ore processing facility located about 3 miles northwest of the city of Moab in Grand County, Utah. It is located on the west bank of the Colorado River at the confluence with Moab Wash. It encompasses approximately 400 acres, of which approximately 130 acres are covered by a uranium mill tailings pile. The Moab mill site is managed by the U.S. Department of Energy (DOE) Office of Environmental Management.

Between November of 2007 and March of 2008, an area of the Moab mill site referred to as the Off-Pile Remediation (OPR) was remediated. During the remediation, data was collected to support a supplemental standards application for a high pressure gas line which borders the northern edge of the remediated area (Figure 1). Supplemental standards applications for other sections of this gas line will be submitted at a later date. Remediation of this area would require that the line be shut down for an extended period. Because of the economic impact of shutting down the line, the owner will not allow remediation of the area.

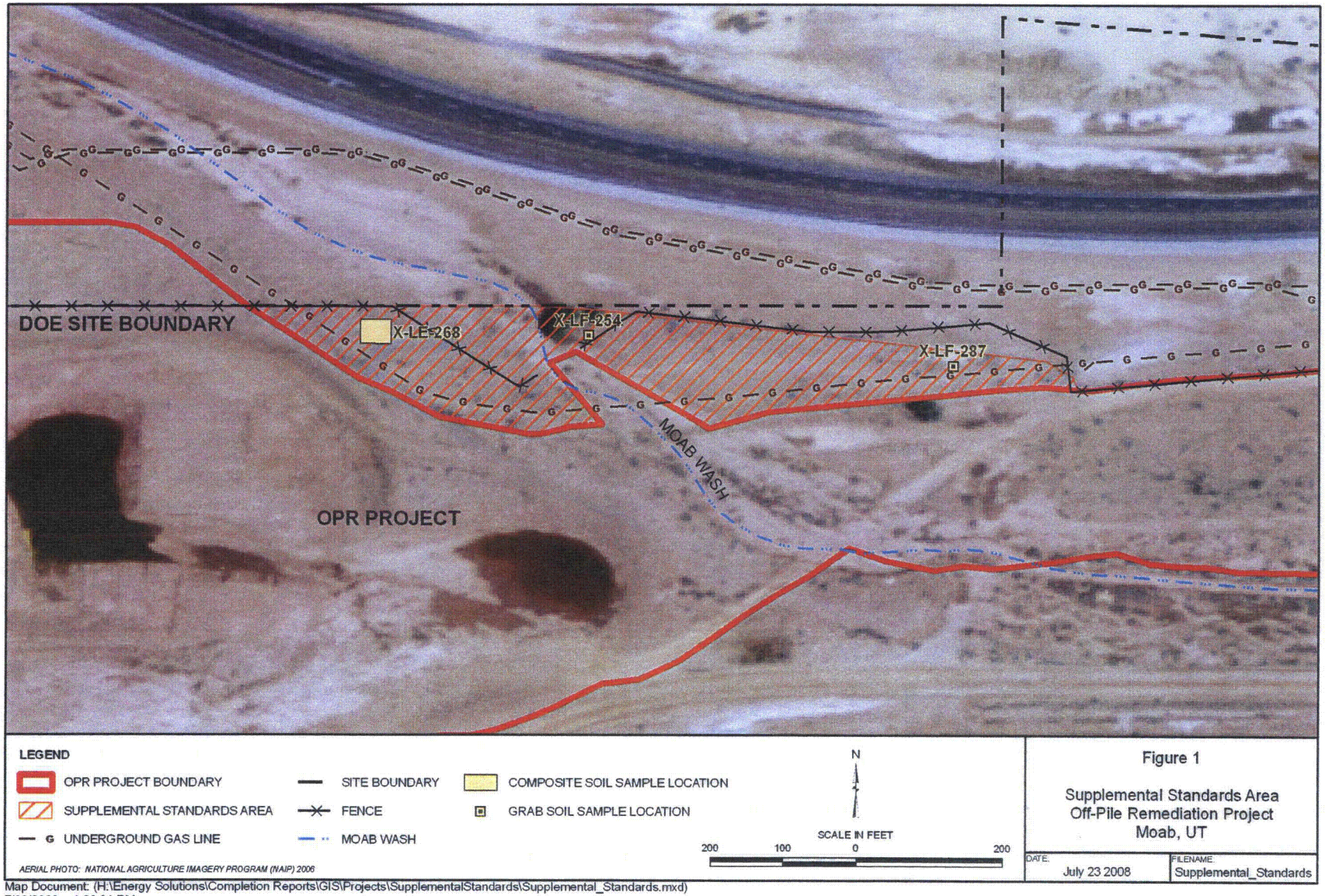

Figure 1. Site Location Map Showing the Supplemental Standards Area for the Off-Pile Remediation

2.0 Applicable EPA Criteria

This Supplemental Standards Application is in accordance with the regulations set by Environmental Protection Agency (EPA) in 40 CFR 192. The potential and applicable criteria as stated in CFR 192.21 are as follows:

_____ (a) Remedial actions required to satisfy subpart A or B would pose a clear and present risk of injury to workers or to members of the public, notwithstanding reasonable measures to avoid or reduce risk.

_____ (b) Remedial actions to satisfy the cleanup standards for land, §192.12(a), and groundwater, §192.12(c), or the acquisition of minimum materials required for control to satisfy §§192.02(b) and (c), would, notwithstanding reasonable measures to limit damage, directly produce health and environmental harm that is clearly excessive compared to the health and environmental benefits, now or in the future. A clear excess of health and environmental harm is harm that is long-term, manifest, and grossly disproportionate to health and environmental benefits that may reasonably be anticipated.

____X_____ (c) The estimated cost of remedial action to satisfy §192.12(a) at a "vicinity" site (described under section 101(6)(B) of the Act) is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not pose a clear present or future hazard. The likelihood that buildings will be erected or that people will spend long periods of time at such a vicinity site should be considered in evaluating this hazard. Remedial action will generally not be necessary where residual radioactive materials have been placed semi-permanently in a location where site-specific factors limit their hazard and from which they are costly or difficult to remove, or where only minor quantities of residual radioactive materials are involved. Examples are residual radioactive materials under hard surface public roads and sidewalks, around public sewer lines, or in fence post foundations. Supplemental standards should not be applied at such sites, however, if individuals are likely to be exposed for long periods of time to radiation from such materials at levels above those that would prevail under §192.12(a).

_____ (d) The cost of a remedial action for cleanup of a building under §192.12(b) is clearly unreasonably high relative to the benefits. Factors that should be included in this judgment are the anticipated period of occupancy, the incremental radiation level that would be affected by the remedial action, the residual useful lifetime of the building, the potential for future construction at the site, and the applicability of less costly remedial methods than removal of residual radioactive materials.

_____ (e) There is no known remedial action.

_____ (f) The restoration of groundwater quality at any designated processing site under §192.12(c) is technically impracticable from an engineering perspective.

_____ (g) The groundwater meets the criteria of §192.11(e).

_____ (h) Radionuclides other than radium-226 and its decay products are present in sufficient quantity and concentration to constitute a significant radiation hazard from residual radioactive materials.

2.1 Location

This application is for residual radioactive material at a portion of the Moab mill site adjacent to the OPR. The address of the Moab mill site is 2021 North Highway 191. The area where supplemental standards will be applied is shown on Figure 1. The area is associated with the trench for a buried high-pressure gas line. It is bounded on the north by the DOE site property boundary; on the south it abuts the OPR. The area of application is approximately 8,112 square meters (m^2) [87,320 square feet (ft^2)].

2.2 Major Physical Features

This area consists of vacant land dissected approximately through the middle by Moab Wash, an intermittent stream with a relief of several feet in this section. The areas outside of the wash are flat, sandy, and sparsely vegetated. A wire fence runs along the north boundary, but turns south to intersect a more favorable crossing point on Moab Wash. This leaves a small portion of the supplemental standards area outside the fence.

2.3 Land Use

The property is currently vacant land, and no land use change is anticipated that would disturb or affect the supplemental standards area. It lies within the boundary of the Moab mill site and all but a small section is fenced. The small section lies within Moab Wash and because of summer storms and flash floods, cannot be fenced. Surface soils have been remediated to the south of the supplemental standards area. The only public access to the small section is from the highway right-of-way. The site has no particular attraction for an intruder. Therefore, the most likely exposure pathway would be to a worker engaged in repair of the gas line.

2.4 Owner and Local Agency Input

The property owner is the DOE, they concur with the application of supplemental standards and are presenting this application. The owner of the high pressure gas line is Williams Energy Company. They have concurred with the application of supplemental standards.

2.5 Radiological Data

Remaining residual radioactive material is probably windblown mill tailings from the former Atlas mill and decomposed uranium ore. Ra-226 concentrations in the top 15 centimeters (cm) of soil range from 83.4 to 979.5 picocuries per gram (pCi/g). Soil sample locations are shown in Figure 1. Soil samples were analyzed on-site using the Opposed Crystal System (OCS).

Ambient gamma radiation in this area ranges from 28 to 754 microroentgen/hour (μR/h) at ground level and from 25 to 36 μR/h at 1 meter (m) above ground level (waist level). Radiological data is based on direct gamma exposure rate measurements. The data is summarized in Table 1.

Table 1. Radiological Data

Location	Parameter	Value	Type of Sample
X-LF-287	Ra-226	979.5 pCi/g	Grab 0 to 15 cm
X-LF-254	Ra-226	494.4 pCi/g	Grab 0 to 15 cm
X-LE-268	Ra-226	83.4 pCi/g	Composite from 10 by 10 m block, 0 to 15 cm
Supplemental standards area	Gamma	28 to 754 μR/h (average 36 μR/h)	Ground level
Supplemental standards area	Gamma	25 to 36 μR/h (average 30 μR/h)	Waist level (1 m above ground level)

3.0 Health Risk Analysis

Radiation doses to members of the public from residual radioactive materials were calculated using the parameters shown in Table 2. The radium concentrations and average exposure rate data were generated during the remediation of the OPR. Appendix One details the equations and calculations.

Table 2. Parameter Values Used in the Estimate of Dose

Parameter	Assumed or Measured Value
Exposure time per event	40 h (5 days)
Soil ingestion	0.1 g per day
Airborne dust concentration	0.15 mg/m^3
Ra-226 concentration	83 to 980 pCi/g
Average gamma exposure rate	30-150 μR/h

There is no access to the site by the public for most of the supplemental standards area and the site has no particular attraction to an intruder. Therefore, the most likely exposure pathway would be to a worker engaged in repair of the gas line or some inadvertent intruder to the site. The gas company evaluates the integrity of the line using an internal probe sent through the pipe from a remote location so no site access is required. Therefore, no exposure is assumed for routine maintenance. The gas line company probed the line in 2007 and no problems with the line were identified that required any repairs. Gas line repair at an adjacent property (VP018) required 5 days of work. An estimate of 10 years was used for the frequency of gas-line repairs. However, based on the recent probe by the gas line company, repairs may be less frequent.

3.1 Potential Exposure Pathways

The potential exposure pathways for gas line workers on the site are as follows:

- Direct gamma exposure.
- Inhalation of dust from radionuclides while traversing or passing by the site.
- Ingestion of windblown radionuclides in soil while traversing and passing by the site.

Exposure pathways explicitly not considered in the analysis include inhalation of radon decay products, consumption of vegetation grown on the site, and ingestion of water from sources on the site. Radon gas from the site would diffuse off-site before a significant concentration of radon decay products could build up. There is no edible vegetation in the area and it is highly unlikely that the area would be used to grow edible plants. Moab Wash flows intermittently and is not used for drinking water.

For the purpose of calculating the direct gamma radiation dose it was assumed that an adult gas line worker might spend a maximum of 40 hours in a given year involved in repair of the line. Given the reliability of such facilities, this is likely an overly conservative assumption. The dose was calculated for a one-time, 40-hour event.

3.2 Results

The dose was calculated using the assumptions for the parameters listed in Table 2. The minimum dose (Ra-226 equals 83 pCi/g) would be 1.68 millirem (mrem) as shown in Table 3. The maximum dose (Ra-226 equals 980 pCi/g) and higher gamma exposure rate results in 14.1 mrem. For the situation with the minimum Ra-226 concentration, the major single component to dose is external exposure. However, for the maximum concentrations of Ra-226 in soil, the calculated dose is roughly split between the three exposure pathways.

Table 3. Summary of Exposures to a Gas Line Repair Worker for a Single Event

Pathway	mrem	
	Minimum Ra-226 in Soil = 83 pCi/g	**Maximum Ra-226 in Soil = 980 pCi/g**
Direct exposure	0.84	4.2
Dust inhalation	0.44	5.2
Soil ingestion	0.40	4.7
Total	1.68	14.1

4.0 Remediation Alternatives

4.1 Alternative 1 – No Remediation (Supplemental Standards)

No additional work is required under this alternative. The health risks associated with this alternative is approximately 14.1 mrem per event to gas line repair workers. The event is assumed to occur every 10 years. No additional costs would be incurred if this alternative is chosen. Because the gas line right-of-way is part of the Moab mill site and is actively managed, the land use will not change in the foreseeable future. Areas outside the gas line right-of-way will be remediated as part of the cleanup of the Moab mill site.

4.2 Alternative 2 – Full Remediation

Remediation of this area would require permission and extensive support from the gas line owner. The gas line service would be interrupted, which will be costly to the gas line owner. Implementing this alternative would require removal of all soil contaminated in excess of the EPA standards. The area is 8,112 m^2 and estimated at 15 cm deep based on remediation of the adjacent OPR. The estimated volume of material to be removed would be 1,217 cubic meters (m^3) [1,592 cubic yards (yd^3)] of material. The gas company has not allowed DOE access to work within the gas line corridor.

If access was allowed, the cost to remediate was estimated by Williams Energy Company to be approximately $1,219,700. This does not include the loss of business if Williams has to lower the pressure in the line to allow the work to occur. DOE safety policies do not allow workers close to live lines, even if the pressure was lowered. We do not believe that the gas company would deenergize the line except for emergencies or replacement.

5.0 Summary and Recommendations

The adjacent areas of the Moab mill site have been remediated to EPA standards contained in 40 CFR 192. An area totaling approximately 8,112 m^2 (87,320 ft^2) and a volume of 1,217 m^3 (1,592 yd^3) has not been remediated as it is associated with a high-pressure gas line. This area is vacant land and will remain vacant land with controlled access. The contamination remaining on the site would not pose a significant present or future health risk due to the low levels of radioactivity and limited use by members of the public. Near term removal of the residual radioactive material would be unduly costly with very little health benefit.

Energy*Solutions* recommends that Alternative 1 – No Remediation be approved. The estimated gamma exposure rate for a member of the public (gas line worker) under this alternative is approximately 14.1 mrem per event. This exposure is slightly more than half of the Nuclear Regulatory Commission (NRC) 25 mrem per year decommissioning standard even when very conservative assumptions are used. This minor exposure is estimated to occur once every 10 years.

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Appendix One

Assessment of Potential Public Dose from Residual Radioactive Materials Adjacent to the Off-Pile Remediation of the Moab Mill Site (2021 North Highway 191)

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Introduction

Radiation doses to members of the public from residual radioactive materials adjacent to the OPR of the Moab mill site (2021 North Highway 191) were calculated using data generated during the remedial action site surveys. These surveys included direct gamma exposure rate measurements and on-site spectral gamma analysis of soils collected from the property.

Current and future land use of the region under consideration includes a buried high pressure gas line, currently enclosed in a fenced area. Contamination on the property likely consists of windblown materials from the adjacent mill tailings pile, although there is some evidence that decomposed ore is also present on the property. Ra-226 concentrations on the surface are probably due to windblown material from the adjacent mill site. Any ore present on the site is likely from historic hauling of ore. Because of the high-pressure gas line, surface soils have not been remediated. Ambient gamma exposure at the site averages 36 μR/h at ground level. At 1 m above ground level the gamma exposure averages 30 μR/h. There are no measurements of radionuclide concentrations in the bottom of the trench.

There is no access to the majority of the site for the public and the site has no particular attraction to an intruder. Therefore, the most likely exposure pathway would be to a worker engaged in repair of the gas line or some inadvertent intruder to the site. The gas line will likely require repair only every 10 to 20 years. The gas company evaluates the integrity of the line using an internal probe sent through the pipe from an off-site location, so no exposure is assumed for routine maintenance. The gas line company probed the line in 2007 and no problems with the line were identified that required any repairs. Gas line repair at an adjacent property required 5 days of work. Based on the recent probe by the gas line company, repairs may be less frequent than every 10 years.

Potential exposure pathways

The potential exposure pathways for a gas line worker on the site are as follows:

- Direct gamma exposure.
- Inhalation of radionuclides contained in dust while the gas line is being repaired.
- Ingestion of radionuclides in soil while repairing the line.

Exposure pathways explicitly not considered in the analysis include inhalation of radon decay products, consumption of vegetation grown on the site, and ingestion of water from sources on the site. Radon gas from the site would diffuse off-site before a significant concentration of radon decay products could build up. There is no edible vegetation in the area and it is highly unlikely that the area could be used to grow edible plants. The only water source on the site, Moab Wash, flows intermittently and is not suitable for drinking.

Dose Equations

The total dose to a worker is described by:

$DT = DG + DD + DS$

Where :

DT = total dose
DG = dose from direct radiation exposure
DD = dose from inhalation of radionuclides in airborne dust
DS = dose from soil ingestion.

The basic equations for calculating the dose by each exposure pathway are as follows:

Direct radiation exposure:

$DG = [X]\ [0.7\ mrem/mR]\ [t]\ [1.0E\text{-}3\ mR/\mu R]$

Where:

X = measured exposure rate (μR/h)
t = time of exposure (h)

The conversion factor for exposure (mR) to dose (mrem) of 0.7 for an adult to account for self-shielding of critical organs by the body is taken from values summarized in UNSCEAR (2000).

For the purpose of calculating the direct gamma radiation dose it was assumed that an adult gas line worker might spend a maximum of 40 hours in a given year involved in repair of the line. Given the reliability of such facilities, this is likely an overly conservative assumption. The dose was calculated for a one-time, 40-hour event.

Inhalation of dust:

$DD = [t]\ [I_{inh}]\ [C_d]\ [\Sigma\ (C_{si})\ (DC(_{inh})_i)]\ [2.5]\ [3.7E\text{-}2\ Bq/pCi]\ [1E{+}5\ mrem/Sv]$

Where:

t = time of exposure (h)
I_{inh} = inhalation rate = 1.7 cubic meters/hour (m^3/h)
C_d = total dust concentration in air (grams/m^3)
C_{si} = concentration of radionuclide i in soil (pCi/g)
$DC(inh)_i$ = ICRP-72 inhalation dose coefficient for radionuclide i for an adult [seivert/becquerel (Sv/Bq)]

An enhancement factor of 2.5 was used in the analysis to account for the fact that the radionuclide concentrations in airborne dust may be greater than the concentrations in soil. This

factor is generally accepted and is used in the dose analyses performed by the MILDOS code (ANL 1998).

The ICRP-72 dose coefficients for an adult (ICRP 1996) were used for inhalation and ingestion dose calculations. The coefficients are given below. The coefficients for Ra-226 and its decay products, Po-210 and Pb-210, were summed and applied to the Ra-226 intake.

ICRP 72 Dose Coefficients for Uranium and its Decay Products

Nuclide	Inhalation (Sv/Bq)[a]	Ingestion (Sv/Bq)
U-238	8.0E-6	4.5E-8
Th-234	7.7E-9	3.4E-9
U-234	9.4E-6	4.9E-8
Adjusted Sum U-235+D[b]	5.6E-6	8.4E-8
Sum U-238+D and U-235+D	2.3E-5	1.8E-7
U-235	8.5E-6	4.7E-8
Pa-231	3.4E-5	7.1E-7
Ac-227	7.2E-5	1.1E-6
Th-227	1.0E-5	8.8E-9
Sum U-235+D	1.3E-4	1.9E-6
Adjusted Sum U-235+D = Sum U235+D x 0.045	5.6E-6	8.4E-8
Th-230	1.4E-5	2.1E-7
Ra-226	9.5E-6	2.8E-7
Pb-210	5.6E-6	6.9E-7
Po-210	4.3E-6	1.2E-6
Sum Ra-226+D	1.9E-5	2.2E-6

[a] Assumes least soluble class and 1 micrometer (μm) AMAD (activity median aerodynamic diameter)
[b] D = decay products

The mass concentration of airborne dust was assumed to be a 0.15 milligram/m^3(mg/m^3), which is the value used by the RESRAD dose calculation code (Yu et al. 2001).

The concentrations of Ra-226 in soil were measured. Concentrations of other radionuclides were assumed to be equal to the Ra-226 concentration. The dose coefficients were summed and applied to the Ra-226 intake as shown in the table above.

Ingestion of soil:

The gas line worker was assumed to ingest a small amount of soil during his/her time in the gas line trench. The dose due to soil ingestion was calculated as follows:

$D_S = [t]\ [I_{ing}]\ [\Sigma\ (C_{si})(DC(ing)_i)]\ [3.7E\text{-}2\ Bq/pCi]\ [1E+5\ mrem/Sv]$

Where:

t = length of event (days)
I_{ing} = soil ingestion rate (grams per day)
C_{si} = concentration of radionuclide i in soil (pCi/g)
$DC(ing)_i$ = ICRP 72 ingestion dose coefficient for radionuclide i for an adult (Sv/Bq)

ICRP-72 ingestion dose coefficients were used in the calculation (ICRP 1996). The amount of soil ingested while in the gas line trench was assumed to be 0.1 gram per day, the daily soil ingestion rate generally assumed for adults.

Inputs to Dose Calculation

Estimates for dose to a gas line worker from direct gamma radiation, inhalation of airborne radionuclides in dust, and ingestion of soil were calculated using the equations above. As mentioned previously, material in the trench below grade is unknown, so it is assumed to be decomposed ore in equilibrium at the measured concentrations of Ra-226. Concentration values shown below are assumed to be the average concentration inside a trench that would be excavated to access the pipeline for repair purposes. Measurements of gamma exposure in an open trench are not available, so the exposure rate was assumed to vary between 30 and 150 µR/h, roughly 2 to 10 times background.

Parameter Values Used in the Estimate of Dose

Parameter	Assumed Value
Exposure time period	40 h (5 days)
Soil ingestion	0.1 grams per day
Airborne dust concentration	0.15 milligram/m^3
Ra-226 concentration	83 to 980 pCi/g
.0Net gamma exposure rate	30 µR/h

Results

Using the assumptions listed above, the calculated doses are as shown below.

Type	mrem	
	Minimum	Maximum
External	0.84	0.84
Ingested	0.40	4.70
Inhaled	0.44	5.18
Total	1.68	10.7

For the situation in which the minimum Ra-226 concentration equals 83 pCi/g, the major single component to dose is external exposure. However, for the maximum concentrations of Ra-226 (980 pCi/g) in soil, the calculated dose is dominated by inhalation of suspended dust and ingestion of soil. The maximum calculated dose is approximately 11 mrem for a repair event.

Conclusions

The most probable future use of the property in question is as vacant land housing a buried gas line. Using conservative assumptions and with no credit for protective devices or practices, the above calculations demonstrate that the projected dose to a worker involved in repair of the gas line would range from about 7 percent to as much as 56 percent of the 25 mrem per year decommissioning standard. However, these calculations assumed a one-time event and it is unlikely that exposures to gas line workers would occur more frequently than every 10 years or so.

There is no current evidence that radiation doses below 10 rem increase the risk of cancer to humans. However, the Interagency Steering Committee on Radiation Standards (ISCORS 2002) published guidance for estimating risk from effective dose equivalent. The ISCORS guidance recommends use of a conversion factor of 6×10^{-4} fatal cancers per TEDE (total effective dose equivalent) rem (6×10^{-7} fatal cancers per mrem). Applying that conversion to the dose from a single event calculated above would lead to a fatal cancer risk to the gas line worker of 8.5×10^{-6}, or approximately 9 chances in a million.

References

Argonne National Laboratory (ANL), 1998. MILDOS-AREA User's Guide (Draft). Environmental Assessment Division, September.

International Commission on Radiological Protection (ICRP), 1996. Age-dependent Doses to Members of the Public from Intake of Radionuclides: Part 5, compilation of Ingestion and Inhalation dose Coefficients. ICRP Publication 72. Pergamon/Elsevier Sciences. Tarrytown, NY.

Interagency Steering Committee on Radiation Standards (ISCORS), 2002. A Method for Estimating Radiation Risk from TEDE. ISCORS Technical Report No. 1. July, 2002.

United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), 2000. Sources and Effects of Ionizing Radiation. Volume I. United Nations, New York.

Yu, C., A.J. Zielen, J.-J. Cheng, D.J. LePoire, E. Gnanapragasam, S. Kampoj, J. Arnish, A. Wallo III, W.A. Williams, and H. Peterson, 2001. User's Manual for RESRAD Version 6. ANL/EAD-4. Environmental Assessment Division, Argonne National Laboratory, Argonne, Illinois. July.

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Appendix Two

Owner and Local Agency Input

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

April 22, 2009

JUN 2 9

Mrs. Millie McClatchy
1901 North Highway 191
Moab, UT 84532

Subject: Supplemental Standards on Moab Vicinity Property VP018,
Tax ID No: 03-027-0015 Section 27, TS 25 S, R 21 E

Dear Mrs. McClatchy:

This letter is to request your concurrence for the Application of Supplemental Standards for the high-pressure gas line right-of way on the property identified as Tax ID No: 03-027-0015, Section 27, TS 25 S, R 21 E, Moab, Utah.

The Environmental Protection Agency (EPA) standard, 40 Code of Federal Regulations (CFR), Part 192, allows residual radioactive material to remain in place when one or more of the following situations exist:

a) clear and present risk to workers and/or the general public,
b) excessive environmental harm,
c) excessive cost of land cleanup relative to long term benefits,
d) there is no known remedial action, or
e) radionuclides other than radium-226 exist.

Item "c" of the aforementioned list is the U.S. Department of Energy's (DOE) justification for the Application of Supplemental Standards for the high-pressure gas line right-of-way.

Information regarding the depths, concentrations of radium-226 in the soil, and area where DOE has applied to the Nuclear Regulatory Commission (NRC) for Supplemental Standards is shown in Attachment 1.

In applying for Supplemental Standards for the area of your property indicated in Attachment 1 (high-pressure gas line right-of-way), DOE has determined that for the current land use, the residual radioactive material that would remain in place will not pose a significant present of future health risk. As you are aware, NRC is currently reviewing DOE's application for Supplemental Standards as well as remediation verification data for the non-Supplemental Standards portions of your property. The non-Supplemental Standards portions of your property have been remediated to EPA's 40 CFR 192 standard, and once approved by NRC, will have been determined to be safe for unrestricted use.

DOE would like to obtain your concurrence on the Application of Supplemental Standards for the area of your property indicated in Attachment 1. If you are in agreement with the Application of Supplemental Standards for your property identified as VP018, please sign where indicated below and return a signed copy of this letter to me at the address above.

If you have any questions feel free to call me at (970) 257 2115 or Ken Wethington of my staff at (435) 719 2890.

Sincerely,

Donald R. Metzler
Moab Federal Project Director

CONCURRENCE with Supplemental Standards of Tax ID No: 03-027-0015 Section27, T25S, R21E, Moab, Utah:

Millie L. McClatchy

Millie McClatchy Date 6-24-09

cc w/enclosure:
B. Sokolovich, CBC
K. Wethington, EM-3.3
Project File MOA 75.18 (C. Smith)

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U.S. Department of Energy
200 Grand Avenue
Grand Junction, CO 81501
April 22, 2009

Greg Tibbetts and Todd Stubbs
Williams Northwest Pipeline
P.O. Box 337
La Sal, UT 84530

Subject: Supplemental Standards on Moab Vicinity Property VP018,
Tax ID No: 03-027-0015 Section 27, TS 25 S, R 21 E

Dear Mr. Tibbetts and Mr. Stubbs:

This letter is to request your concurrence for the Application of Supplemental Standards for the high-pressure gas line right-of way on the property identified as Tax ID No: 03-027-0015, Section 27, TS 25 S, R 21 E, Moab, Utah.

The Environmental Protection Agency (EPA) standard, 40 Code of Federal Regulations (CFR), Part 192, allows residual radioactive material to remain in place when one or more of the following situations exist:

a) clear and present risk to workers and/ or the general public,
b) excessive environmental harm,
c) excessive cost of land cleanup relative to long term benefits,
d) there is no known remedial action, or
e) radionuclides other than radium-226 exist.

Item "c" of the aforementioned list is the U.S. Department of Energy's (DOE) justification for the Application of Supplemental Standards for the high-pressure gas line right-of-way.

Information regarding the depths, concentrations of radium-226 in the soil, and area where DOE has applied to the Nuclear Regulatory Commission (NRC) for Supplemental standards is shown in Attachment 1.

In applying for Supplemental Standards for the area of the McClatchy property (VP018) indicated in Attachment 1 (high-pressure gas line right-of-way), DOE has determined that for the current land use, the residual radioactive material that would remain in place will not pose a significant present of future health risk. As you may be aware, NRC is currently reviewing DOE's Application for Supplemental Standards for the Williams Northwest Pipeline high-pressure right-of-way through the McClatchy property. The area being considered for supplemental standards is located along the west edge of the McClatchy property inside a fenced utility corridor. The soil contamination area, which consists of soil containing decomposed uranium ore and/or windblown tailings, is approximately 6,675 square feet in size, with a total estimated volume of 124 cubic yards that would require removal. In order to remediate the described soil contamination area,

the gas line service would require either interruption in service or lowering of the pressure of the line, for the duration of the cleanup. This aspect of performing full remedial action activities in addition to access issues with Williams Northwest Pipeline in the described area has prompted the Application for Supplemental Standards for the area by the DOE. Estimated costs for the interruption in service of the Williams Northwest Pipeline high-pressure gas line in the described right-of -way, relative to the full remedial action alternative, is also being requested by the NRC for their review and consideration of the supplemental standards application. DOE would like to request that Williams Northwest Pipeline prepare an estimate of the associated costs and include the estimate in your response to this letter.

DOE would like to obtain your concurrence on the Application of Supplemental Standards for the area of your right-of-way indicated in Attachment 1. If you are in agreement with the Application of Supplemental Standards for your right-of-way identified on VP018, please sign where indicated below and return a signed copy of this letter to me at the address above.

If you have any questions feel free to call me at (970) 257 2115 or Ken Wethington of my staff at (435) 719 2890.

Sincerely,

Donald R. Metzler
Moab Federal Project Director

CONCURRENCE with Supplemental Standards of Tax ID No: 03-027-0015 Section27, T25S, R21E, Moab, Utah:

N/A

Greg Tibbetts
Williams Northwest Pipeline Date

B. Todd Stubbs 13 JUNE 2009

Todd Stubbs
Williams Northwest Pipeline Date
MOAB DISTRICT MANAGER

SEE ATTACHED ESTIMATE -

cc w/enclosure:
B. Sokolovich, CBC
K. Wethington, EM-3.3
Project File MOA 75.18 (C. Smith)

T:\condor_doe\VicinityProps\VP018\Williams Northwest Pipeline SStds letter (3).doc

La Sal Route
La Sal, Utah 84532

Donald R. Metzler
US Department of Energy
200 Grand Avenue
Grand Junction, CO 81501

Subject: Supplemental Standards Concurrence Williams Northwest Pipeline Right of Way Moab, Utah, Section 27, TS 25 S, R 21 E, Grand County.

Dear Mr. Metzler:

Attached is the signed concurrence for the Application of Supplemental Standards relating to the Williams Northwest Pipeline right of way in the Moab, Utah area concerning the DOE cleanup site Tax ID No: 03—27-0015, Section 27, TS 25 S, R 21 E, Grand County, Utah.

In addition it was requested that an estimate be given as to mitigation to removal of the soil around the pipeline if determined to be contaminated. The cost to completely mitigate all of the soil in relation to the pipeline through the length of the property would be $ 1, 219,750.00. This would include: the soil being removed, the location of disposal would be determined by the Department of Energy, clean soil being replaced and the right of way being returned to a suitable contour with a minimum of five feet of cover.

Metzler US DOE

As you are aware of, it is required that as work (excavation, traversing, etc.) is performed on the designated right of way corridor through the above mentioned property, it is your responsibility to receive prior approval from Williams Northwest Pipeline and notify the Utah State One Call System (Blue Stakes of Utah).

If you have any questions please call me at 435-259-7422.

Sincerely,

B. Todd Stubbs
Moab District Manager
WILLIAMS COMPANIES, INC. NORTHWEST PIPELINE

SM-442-091147

Completion Report and Supplemental Standard Application For Moab Vicinity Property VP018

August 2009

Stoller

Work Performed by S.M. Stoller Corporation for Energy*Solutions,* Moab, Utah.
Energy*Solutions* Performs Work for the U.S. Department of Energy Office of Environmental Management, Grand Junction, Colorado Under Contract No. DE-AT30-07CC00014

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1.0 Introduction and Property Description

This completion report is for the clean up of residual radioactive material (RRM) at Moab Vicinity Property VP018 which includes all of the accessible land located within the boundaries of Utah tax identification numbers 03-027-0011, 03-027-0015 and 03-027-0016, Moab. The property address is 1901 North Highway 191, Moab, Utah, 84532. The property is owned by Millie McClatchy. The property is bounded on the west by the Moab millsite, on the south by the Colorado River, on the north by Utah Highway 191, and on the east by privately owned property. A map showing the location of the property is shown in Figure 1.

The property includes a utility corridor that was not remediated. An application for supplemental standards for an area of RRM within this corridor is included as Appendix A of this report.

This completion report summarizes the results of the remediation and the radiological survey data for VP018.

2.0 Basis for Remedial Action

Radiological contamination on VP018 originated from the Moab Uranium Mill Tailings Remedial Action (UMTRA) Project Site. This is a former uranium ore processing facility located about 3 miles northwest of the city of Moab. In 2001 the Floyd D. Spence National Defense Authorization Act (Act) was passed which required that the millsite property title and the responsibility for cleanup be transferred from the Moab Mill Reclamation Trust to the U.S. Department of Energy (DOE). The Act mandated remediation of the site in accordance with Title I of the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978. In conjunction with the millsite cleanup, RRM on the adjacent properties is also being remediated. Remediation is managed by the DOE Office of Environmental Management.

Remedial action for the site has been conducted in accordance with UMTRCA; applicable provisions of the *Code of Federal Regulations* (40 CFR Part 192.12, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings; and 40 CFR 192.22, Supplemental Standards); *Radiation Protection of the Public and the Environment* (DOE Order 5400.5); *Environment, Safety, and Health Program for Department of Energy Operations* (DOE Order 5480.1B); the National Environmental Policy Act (42 *United States Code* 4321), the *Vicinity Properties Management and Implementation Manual* (DOE 1988); and all other applicable environmental regulations with an emphasis on maintaining all health and safety risks as low as reasonably achievable.

3.0 Cleanup Standards

3.1 Regulatory Standards

The cleanup standards, based on compliance with 40 CFR 192.12, are summarized in Table 1. This standard requires that the concentration of radium-226 (Ra-226) for the 0- to 15-centimeter (cm) soil layer must be 5 picocuries per gram (pCi/g) above background or less. Since the Ra-226 background for the site is 0.8 pCi/g (see Section 3.2), the cleanup standard is 5.8 pCi/g for surface soil. For soil layers deeper than 15 cm the requirement is that Ra-226 must be 15 pCi/g above background or less. Therefore, the cleanup standard is 15.8 pCi/g for subsurface soil layers.

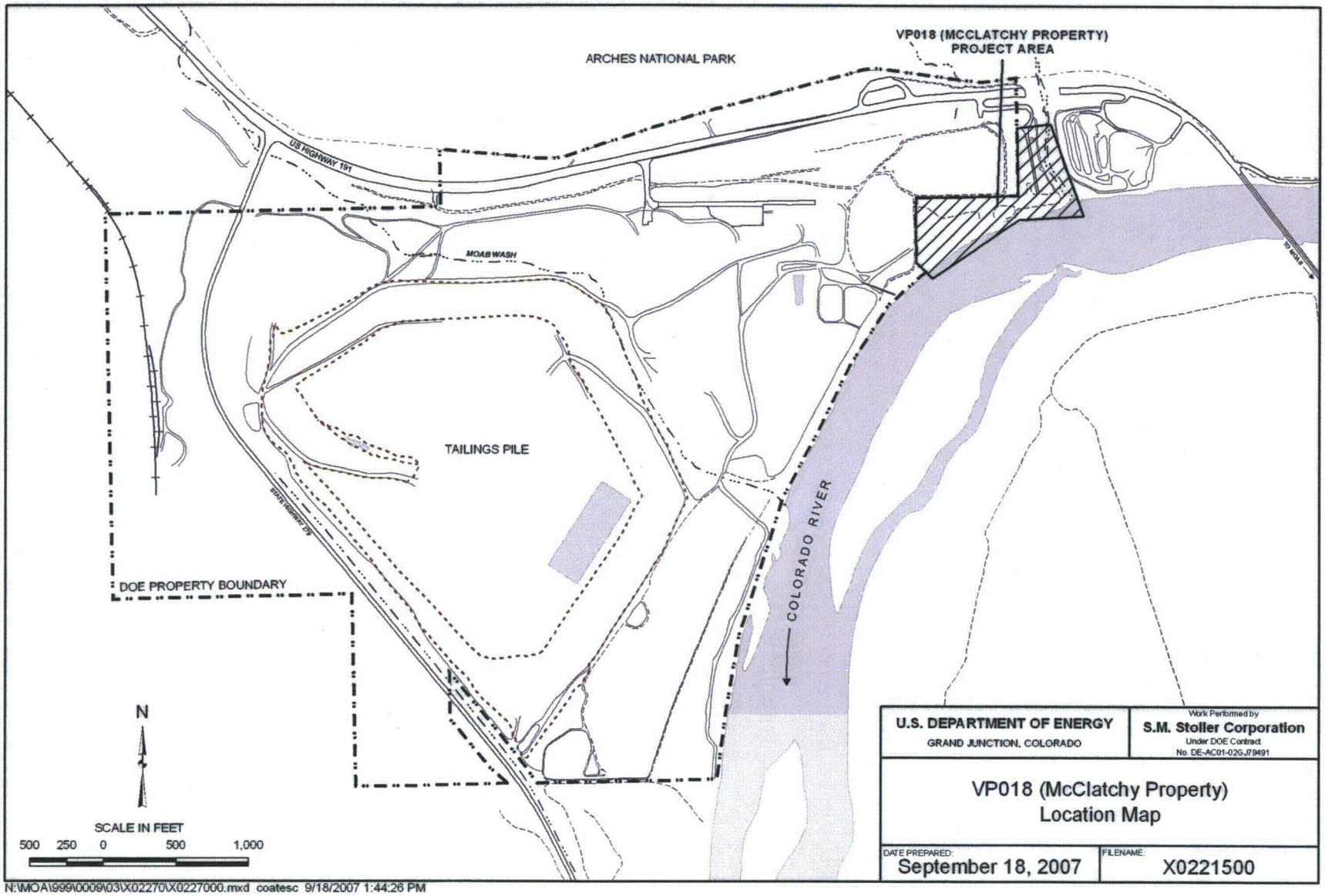

Figure 1. Site Location Map Showing Moab Vicinity Property VP018

Because thorium-230 (Th-230) decays to Ra-226, the Th-230 goals are based on a level of Th-230 that will ensure the site meets the Ra-226 standard over a 1,000-year performance period. The amount of Th-230 that can be left in place is dependent upon the amount of Ra-226 that is also left, as shown in Table 1.

Table 1. Cleanup Standards

Remediation Goals				
Ra-226	Surface (including background)		Subsurface (including background)	
	5.8 pCi/g		15.8 pCi/g	
Th-230	Ra-226 (pCi/g)	Th-230 (pCi/g)	Ra-226 (pCi/g)	Th-230 (pCi/g)
	1.0	14.6	1.0	43.2
	2.0	12.7	2.0	41.2
	3.0	10.9	3.0	39.5
	4.0	9.0	4.0	37.6
	5.0	7.2	5.0	35.7
	5.8	5.8	6.0	33.9
			7.0	32.0
			8.0	30.2
			9.0	28.3
			10.0	26.5
			11.0	24.6
			12.0	22.8
			13.0	20.9
			14.0	19.1
			15.0	17.2
			15.8	15.8
Total Uranium (pCi/g)	Not applicable in this remediation area		Not applicable in this remediation area	

3.2 Background Soil Radionuclide Concentrations

Soil radionuclide-concentration background values are summarized in Table 2. Background soil values for the site were determined from laboratory analysis of eight samples collected from four offsite background locations in November 2001.

Table 2. Background Soil Radionuclide Concentrations

Criterion	Background Value
Radium-226 Concentration in Soil	0.8 pCi/g
Thorium-230 Concentration in Soil	0.5 pCi/g
Total Uranium Concentration in Soil	1.2 pCi/g

4.0 Work Performed

4.1 Instrumentation

Gamma scintillometers were used to identify areas where elevated gamma levels indicate possible Ra-226 contamination. The types of scintillometers used included handheld Mount Sopris SC-132s, and Ludlum 44-10 sodium-iodide detectors mounted on an All-Terrain Vehicle (ATV) or in a backpack unit. Both types of scintillometers can be shielded (collimated) with lead around the sides of the detector. Collimated instruments were used to minimize elevated gamma (shine) caused by adjacent areas that were not yet remediated. Uncollimated instruments were used to maximize sensitivity for locating gamma anomalies. The ATV and backpack scintillometers were linked with a global positioning system (GPS) for mapping the location of the gamma measurements. These systems are referred to as gamma-scanning (GS) GPS. The accuracy of the GPS for the ATV-mounted units is approximately plus or minus 4.6 m (15 ft.). The accuracy of the backpack-mounted units is approximately plus or minus 1 m (3 ft.)

Soil samples were analyzed on-site using a sodium-iodide-based Opposed Crystal System (OCS) for Ra-226. Verification to the 40 CFR 192 soil standards was based upon the OCS data. In accordance with quality control procedures, a minimum of 5 percent of the OCS verification samples were submitted to an independent analytical laboratory.

Soil samples were also analyzed on-site for uranium using an Ortec Gamma Gauge© high-purity germanium (HPGe) detector. The HPGe is used for screening and is considered a semi-quantitative method.

Instrument procedures are included in *Field Services Procedures Manual (STO 203)*. All instruments had daily operation checks performed in accordance with the *Field Services Procedures Manual*.

4.2 Characterization Survey Prior to Remediation

In order to determine which areas of the property required remediation to meet the cleanup standards, the main property was assessed by S. M. Stoller in December, 2005 through February, 2006. The property was assessed using procedures contained in the *Field Services Procedures Manual*. The assessment is contained in Stoller document X01588, *Radiological Assessment for VP018 North Highway 191 Moab, Utah.* Plate 1 shows the areas assessed as requiring remediation. The assessment report was approved by the DOE. The interior of the structures were scanned. All gamma readings were within the range of background.

4.3 Remediation

Remediation began in September 2006 and was completed in November 2006. Surveys of the remediated areas were performed in accordance with the *Field Services Procedure Manual*. After excavation to the assessed depth of contamination, the excavations were 100 percent gamma scanned with handheld gamma scintillometers to locate any areas above the background gamma range that required further removal. Where required, excavation control soil samples were collected to further delineate areas for removal.

RRM that were removed from VP018 consisted of uranium mill tailings and uranium ore contaminated soils. Depths of removal were greater than 15 cm (6 inches). The contaminated material was stockpiled at the Moab Millsite. After excavation of the DOE disposal cell at Crescent Junction, Utah, the material will be transported there for final disposal.

4.4 Verification

Verification was based on meeting the 40 CFR 192 standards for Ra-226 concentrations in soil. Gamma scanning and soil sampling were used to verify that the cleanup standards were achieved. All areas were backfilled and were verified to the subsurface radium-in-soil standard of 15.8 pCi/g.

Verification grid blocks V-ML-117 and V-ML-194 are in the right-of-way for Highway 191 but are considered as part of this property. These blocks were remediated in conjunction with Highway 191 phase 2.

4.4.1 Reference Grids

After excavation was complete, a predetermined grid measuring 210 m × 180 m was overlain on the verification area. The verification grid areas are identified by a "V" for verification plus two letters (e.g., grid V-ML). Each grid area was subdivided into 378 smaller verification blocks measuring 10 m × 10 m (100 m^2). Blocks are uniquely identified by the alphabetic identifier and location number within the larger grid (e.g., V-ML-370). Composite verification soil samples were collected from the verification blocks shown in Plate 1.

4.4.2 Gamma Scan Measurements

The accessible excavated surface was 100 percent scanned for gamma using the handheld scintillometers. Areas with elevated gamma levels were investigated further to ensure all contamination above the subsurface standard was removed.

4.4.3 Soil Measurements

After remediation, the level of Ra-226 in soil was verified by collecting composite soil samples from selected 100-m^2 verification blocks. Composite samples were taken by dividing a block into approximately nine equal sub-blocks and then collecting an aliquot at the center of each sub-block. Soil samples were analyzed for Ra-226 using the OCS method. For this property the blocks covered 100 percent of the remediated area.

The results of the OCS analyses for Ra-226 are provided in Table 3. There were three OCS soil samples collected. Because of the limited number of verification samples, none were submitted to an independent laboratory for confirmatory analysis. This does not meet the quality control guidance in the *Field Services Procedures Manual* that requires 5 percent of the samples be submitted to an outside laboratory. However, one of the assessment samples from this property was submitted for independent analysis and that, in conjunction with confirmatory samples from remediation work on Highway 191 phase 2 which occurred at the same time, provides adequate assurance that the OCS results are acceptable. The Ra-226 results for Highway 191 phase 2 are contained in Stoller document X0212000 and showed an average Ra-226 value of 2.8 pCi/g by

the OCS method and 3.14 pCi/g by the laboratory. For the assessment sample the OCS value was 2.6 pCi/g and the laboratory value was 1.26 pCi/g.

The independent laboratories that performed the quality control analyses were Severn Trent Laboratories St. Louis (STL) and Paragon Analytics Laboratories. STL analyzed Ra-226 by method EML GA-01-R MOD, Th-230 by method EML A-01-R MOD, and uranium by method EPA 6020. Paragon analyzed Ra-226 by method SOP713R8. All methods are approved by DOE.

Table 3 shows the OCS Ra-226 results.

Table 3. Summary of Soil Data and Gamma Data After Remedial Excavation

Verification Block ID	Sample Ticket No.	Sample Date	Sample Depth (cm)	OCS Ra-226 (pCi/g)	Average Uncollimated Gamma (μR/hr)
V-KK-073	PAA 049	11/8/06	>15	2.11	13.5
V-ML-117	NEN 480	9/18/06	>15	3.41	12.8
V-ML-194	NEN 481	9/26/06	>15	1.50	15.8

*Average gamma is based on handheld scintillometers readings for the verification block.

4.4.4 Radon Decay-Product Concentration (RDC) /Gamma Measurements

There are two habitable structures on the property. The annual average Working Level (WL) for the caretaker's residence was 0.009 WL and for the main residence was 0.011 WL. This is below the EPA standard of 0.020 WL. As stated, all gamma measurements taken before remediation on the interior of the buildings were within background.

5.0 Final Condition

A summary of radiological results after remediation is provided in Table 4. Because of the limitations of current technology and procedures for identifying and remediating RRM, unknown deposits of contamination may exist below the levels excavated during this remediation. After remediation the area was contoured and planted with native vegetation.

5.1 Areas Verified to the Subsurface Standard (>15 cm)

The 40 CFR 192 standard for subsurface areas is 15.8 pCi/g Ra-226. For subsurface areas the maximum concentration was 3.41 pCi/g, which is below the cleanup standard (Table 4). The mean Ra-226 concentration was 2.34 pCi/g. The projected upper limit of the mean concentration, calculated at the 95 percent confidence level, was 3.21 pCi/g.

These results indicate that the radionuclide concentrations do not exceed the cleanup standards; therefore, all cleanup criteria have been met for the areas verified to the subsurface standard.

All areas verified to the subsurface standard were backfilled with a minimum of 15 cm (6 inches) of material with an average Ra-226 concentration of 0.6 pCi/g. Backfill soil sample results are shown in Table 5.

Table 4. Summary of Radiological Release Survey Results

Certification Criteria	Number of Observations	Cleanup Standard	Cleanup Standard Including Background	Results
Ra-226 (pCi/g) Surface	0	Shall not exceed 5 pCi/g above background in the surface to 15-cm layer, averaged over 100 m^2	5.8	NA
Th-230 (pCi/g) Surface	0	Shall not exceed 5 pCi/g above background in the surface to 15-cm layer based averaged over 100 m^2	5.8	NA
Ra-226 (pCi/g) Subsurface	3	Shall not exceed 15 pCi/g above background in any 15-cm-thick soil layer more than 15 cm below the surface, averaged over 100 m^2	15.8	OCS Analysis Sample mean = 2.34 Maximum = 3.41 Std. dev = 0.80 $z_{95\%}$ = 1.65 $\mu_{95\%}$ = 3.21
Th-230 (pCi/g) Subsurface	0	Shall not exceed 43.2* Ci/g above background in any 15-cm-thick soil layer more than 15 cm below the surface, averaged over 100 m^2 over 1,000 year performance period*	43.2*	NA
Uranium Surface	0	Not determined	Not determined	NA
Uranium Subsurface	0	Not determined	Not determined	NA
Interior RDC	0	<0.02 WL	<0.02 wl	0.009 WL (Caretaker) 0.011 WL (Main)
Gamma	Numerous	Shall not exceed 20 μR/hr above background	31-34	11-14

*See Table 1

NA = not applicable

n = number of measurements

$z_{95\%}$ = z distribution statistic at 95% confidence (n=3 for > 15 cm)

$\bar{x}$ = sample mean

S = Std. dev., the sample standard deviation

$\mu_{95\%}$ = upper limit of the true population mean at the 95 percent confidence level, using the following equation:

$$\mu_{95\%} = \bar{x} + z_{95\%} \frac{s}{\sqrt{n}}$$

Table 5. Backfill Data

Sample Identification	OCS Ra-226 (pCi/g)
LeGrande Pit # 1	0.3
LeGrande Pit # 2	0.4
LeGrande Pit # 3	1.2

5.2 Areas Verified to the Surface Standard

No areas were verified to the surface standard.

5.3 Areas That Did Not Require Remediation

The millsite characterization (Section 4.2) demonstrated that some areas of VP018 were below the 40 CFR 192 cleanup standards and therefore did not require remediation. The data from these areas is shown in Table 6 and the locations are shown on Plate 1.

Table 6. Radium-226, Thorium-230 and Uranium Data in Areas that Were Not Remediated

Loc.	Sample Ticket	Date	Sample Depth (cm)	OCS Ra-226 (pCi/g)	HPGe Uranium (pCi/g)	Borehole Ra-226 (pCi/g)	Lab Ra-226 (pCi/g)	Lab Th-230 (pCi/g)	Lab Uranium (pCi/g)
R0001	NEM 776	1/9/06	0-15	3.70	17.6				
R0002	NEM 777	1/9/06	0-15	2.60	10.3		1.26	2.43	9.65
R0003	NEM 778	1/9/06	0-15	3.71	13.1				
R0004	NEM 787	1/9/06	0-15	2.97	11.4				
R0005	NEM 788	1/30/06	0-15	5.20	13.1				
R0006	NEM 789	1/30/06	0-15	1.30					
R0007	NEM 790	1/30/06	0-15	0.70					
R0008	NEM 791	1/30/06	0-15	1.90					
R0009	NEM 871	2/13/06	0-15	1.90					
R0010	NEM 792	1/30/06	0-15	3.85					
R0011	NEM 793	1/30/06	0-15	3.01					
R0012	NEM 794	1/30/06	0-15	2.92					
R0013	NEM 859	1/30/06	0-15	2.40					
R0014	NEM 860	1/30/06	0-15	3.50					
R0015	NEM 861	1/30/06	0-15	1.60					
R0016	NEM 862	1/30/06	0-15	1.73	5.4				
R0017	NEM 863	1/30/06	0-15	2.56					
R0018	NEM 864	1/30/06	0-15	1.60					
R0019	NEM 865	1/30/06	0-15	1.00	5.6				
R0020	NEM 866	1/30/06	0-15	1.70					
R0025		2/27/06	0-15			1.78			
			15-30			2.41			
			30-45			2.9			
			44-61			3.26			
			61-76			3.46			
			76-91			4.33			
			91-106			6.14			
			106-122			8.11			
			122-137			8.71			
			137-152			9.14			
			152-167			9.08			
			167-183			8.98			
			183-198			9.24			

Table 6 (continued). Radium-226, Thorium-230 and Uranium Data in Areas that Were Not Remediated

Loc.	Sample Ticket	Date	Sample Depth (cm)	OCS Ra-226 (pCi/g)	HPGe Uranium (pCi/g)	Borehole Ra-226 (pCi/g)	Lab Ra-226 (pCi/g)	Lab Th-230 (pCi/g)	Lab Uranium (pCi/g)
			198-213			7.35			
			213-228			4.25			
			228-244			3.94			
R0026		2/27/06	0-15			2.26			
			15-30			3.01			
			30-45			3.62			
			46-61			4.2			
			61-76			4.98			
			76-91			7.32			
			91-106			8.7			
			106-122			8.78			
			122-137			8.65			
			137-152			8.93			
			152-167			8.63			
			167-183			6.19			
			183-198			4.36			
			198-213			5.02			
			213-228			4.44			
			228-244			3.73			
R0027		2/27/06	0-15			2.11			
			15-30			2.67			
			30-45			3.1			
			45-61			3.38			
			61-76			3.6			
			76-91			3.9			
			91-106			4.22			
			106-122			5.39			
			122-137			7.18			
			137-152			8.62			
			152-167			8.84			
			168-183			9.02			
			183-198			6.28			
			198-213			3.89			
			213-228			3.64			

Note: Blank cells indicate no measurement for that analyte or by that method were taken.

6.0 References

40 CFR 192.12. EPA (Environmental Protection Agency), Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, *Code of Federal Regulations,* March 2007.

40 CFR 192.22, EPA (Environmental Protection Agency), Supplemental Standards, *Code of Federal Regulations,* March 2007.

42 U.S.C. 4321. EPA (Environmental Protection Agency), National Environmental Policy Act, *United States Code*, January 2007.

DOE (U.S. Department of Energy), 1988. *Vicinity Properties Management and Implementation Manual*, UMTRA DOE/AL-050601, U.S. Department of Energy, Grand Junction, Colorado, March.

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

DOE (U.S. Department of Energy), 2005b. *Moab Project Health and Safety Plan* (DOE-EM/GJ1038-2005), November.

DOE (U.S. Department of Energy) 2006. *Moab UMTRA Project Emergency Response Plan*, (DOE-EM/GJ1085-2006), October.

DOE (U.S. Department of Energy) Orders:

Order 5400.5 *Radiation Protection of the Public and the Environment*, February 1990.

Order 5480.1B *Environment, Safety, and Health Program for Department of Energy Operations*, September 1986.

STO 1. *Quality Assurance Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 2. *Health and Safety Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 3. *Site Radiological Control Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 4. *Training Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 5. *Construction Procedures Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 6. *Environmental Procedures Catalog*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 15. *Property Management Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 17. *Information Technology Policy and Procedures Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 18. *Procurement Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 100. *General Administrative Procedures Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 201. *Health and Safety Procedures Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 202. *Environmental Services Desk Instructions*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 203. *Field Services Procedures Manual*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 204. *Engineering Procedures and Guidelines*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 206. *Quality Assurance Desk Instructions*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

STO 207. *Finance and Accounting Procedures*, continuously updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy, Grand Junction, Colorado.

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Appendix A

Supplemental Standard Application for

Moab Vicinity Property

VP018

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1.0 Applicable EPA Criteria

This Supplemental Standards Application is in accordance with the regulations set by Environmental Protection Agency (EPA) in 40 CFR 192. The potential and applicable criteria as stated in CFR 192.21 are as follows:

_____ (a) Remedial actions required to satisfy subpart A or B would pose a clear and present risk of injury to workers or to members of the public, notwithstanding reasonable measures to avoid or reduce risk.

_____ (b) Remedial actions to satisfy the cleanup standards for land, §192.12(a), and groundwater, §192.12(c), or the acquisition of minimum materials required for control to satisfy §§192.02(b) and (c), would, notwithstanding reasonable measures to limit damage, directly produce health and environmental harm that is clearly excessive compared to the health and environmental benefits, now or in the future. A clear excess of health and environmental harm is harm that is long-term, manifest, and grossly disproportionate to health and environmental benefits that may reasonably be anticipated.

__X__ (c) The estimated cost of remedial action to satisfy §192.12(a) at a "vicinity" site (described under section 101(6)(B) of the Act) is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not pose a clear present or future hazard. The likelihood that buildings will be erected or that people will spend long periods of time at such a vicinity site should be considered in evaluating this hazard. Remedial action will generally not be necessary where residual radioactive materials have been placed semi-permanently in a location where site-specific factors limit their hazard and from which they are costly or difficult to remove, or where only minor quantities of residual radioactive materials are involved. Examples are residual radioactive materials under hard surface public roads and sidewalks, around public sewer lines, or in fence post foundations. Supplemental standards should not be applied at such sites, however, if individuals are likely to be exposed for long periods of time to radiation from such materials at levels above those that would prevail under §192.12(a).

_____ (d) The cost of a remedial action for cleanup of a building under §192.12(b) is clearly unreasonably high relative to the benefits. Factors that should be included in this judgment are the anticipated period of occupancy, the incremental radiation level that would be affected by the remedial action, the residual useful lifetime of the building, the potential for future construction at the site, and the applicability of less costly remedial methods than removal of residual radioactive materials.

_____ (e) There is no known remedial action.

_____ (f) The restoration of groundwater quality at any designated processing site under §192.12(c) is technically impracticable from an engineering perspective.

_____ (g) The groundwater meets the criteria of §192.11(e).

_____ (h) Radionuclides other than radium-226 and its decay products are present in sufficient quantity and concentration to constitute a significant radiation hazard from residual radioactive materials.

2.0 Introduction

This Supplemental Standards Application is for Moab Vicinity Property VP018. Figure A–1 shows the location of the property and Plate 1 shows the area for which supplemental standards are proposed.

2.1 Location and Legal Description

This application is for Moab Vicinity Property VP018 which includes all of the accessible land located within the boundaries of Utah tax identification numbers 03-027-0011, 03-027-0015 and 03-027-0016, Moab. The property address is 1901 North Highway 191, Moab, Utah, 84532. The property is owned by Millie McClatchy. The property is bounded on the west by the Moab millsite, on the south by the Colorado River, on the north by Utah Highway 191, and on the east by Courthouse Wash and privately owned property. A map showing the location of the property is shown in Figure A–1.

2.2 Major Physical Features

VP018 consists of flat land that is adjacent to the Colorado River. The property has a caretaker's residence, a main residence, and several other buildings. There is a small dirt airstrip on the property and several service roads. Courthouse Wash, an intermittent stream, crosses the eastern edge of the property. The southwest corner of the property is crossed by a utility corridor which contains buried high pressure gas lines. The area surrounding the utility corridor is fenced. The location of the proposed supplemental standards area is shown in Plate 1.

The area being considered for supplemental standards is located along the west edge of the property inside a fenced utility corridor. It is approximately 620 m^2 (6,675 square feet); a photograph of the area is shown in Figure A–2. The contamination appears to consist of weathered uranium ore or windblown uranium tailings mixed with soil. The depth of contaminated material is estimated at 15 cm (6 inches) based on sampling of the area. The total volume estimated to remain is 94 cubic meters (124 cubic yards).

2.3 Land Use

VP018 is developed residential land. However, the supplemental standards area is associated with the trench for a buried high-pressure gas line enclosed in a fenced area. Surface soils have been cleaned up adjacent to the corridor. Ambient gamma radiation at the site is in the range of background (15–25 μR/hr) at waist level. There is no access to the site for the public and the site has no particular attraction to an intruder. Therefore, the most likely exposure pathway would be to a worker engaged in repair of the gas line.

2.4 Owner and Local Agency Input

Attachment 2 contains the response from the owners who concurred on the application of supplemental standards.

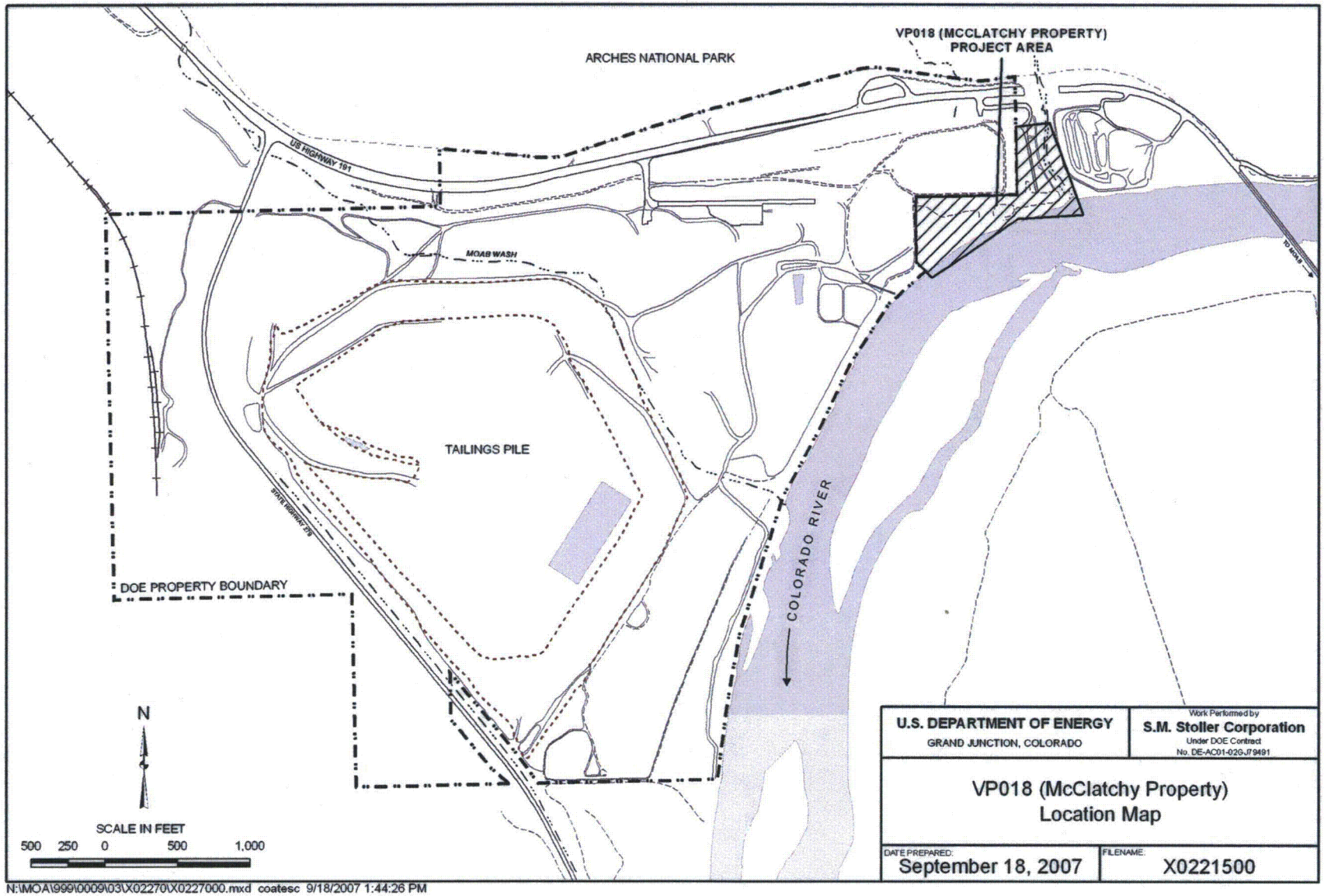

Figure A−1. Site Location Map Showing Moab Vicinity Property VP018

Figure A-2. Photograph of Supplemental Standards Area

2.5 General Assumptions and Parameters

The parameters of the supplemental standards areas are shown on Plate 1. Remaining RRM is likely soil containing decomposed uranium ore or windblown uranium tailings from the former Moab Millsite. Radiological data is based on direct gamma exposure rate measurements; radionuclide concentrations are based on laboratory analysis of similar materials from the adjacent Moab Atlas mill. Recent gas line repair required 5 days of work, which was used as the basis of the risk assessment.

2.6 Health Risk Analysis

Radiation doses to members of the public from residual radioactive materials were calculated using data generated during the remedial action site surveys. Attachment 1 details the equations and calculations.

2.6.1 Potential Exposure Pathways

The potential exposure pathways for a gas line worker on the site are as follows:

- Direct gamma exposure
- Inhalation of dust from radionuclides while the gas line is uncovered and
- Ingestion of radionuclides in soil from the open trench.

Exposure pathways explicitly not considered in the analysis include inhalation of radon decay products, consumption of vegetation grown on the site, and ingestion of water from sources on the site. Radon gas from the site would diffuse off-site before a significant concentration of radon decay products could build in. There is no edible vegetation in the area and it is highly unlikely that the area could be used to grow edible plants. There are no water sources within the fenced utility corridor.

For the purpose of calculating the direct gamma radiation dose it was assumed that an adult gas line worker might spend a maximum of 40 hours in a given year involved in repair of the line. Given the reliability of such facilities, this is likely an overly conservative assumption as repairs are expected to occur only every 5-6 years. The dose was calculated for a one-time, 40 hour event.

Table A-1. Parameter Values Used in the Estimate of Dose

Parameter	Arithmetic mean
Time of Exposure	40 hr
Soil Ingestion	0.15 g/day
Airborne Dust Concentration	1.5E-4 g/m^3
U-238 Concentration	200 pCi/g
Th-230 Concentration	200 pCi/g
Ra-226 Concentration	200 pCi/g
Net Gamma Exposure Rate	100 uR/hr

2.6.2 Results

Using the parameters shown above, the estimated dose is approximately 4.8 mrem. This is well below both the 100 mrem/yr standard used by the NRC for acceptable doses to the public, and the 25 mrem/yr standard used by the NRC for decommissioning.

3.0 Remediation Alternatives

3.1 Alternative 1 – No Remediation (Supplemental Standards)

No additional work is required under this alternative. The health risks associated with this alternative is 4.8 mrem/yr to gas line repair workers. No additional costs would be incurred if this alternative is chosen. Because the utility right-of-way is actively managed by the utility

owner, the land use will not change in the foreseeable future. Areas outside of the utility right-of-way were remediated.

3.2 Alternative 2 – Full Remediation

Remediation of this area would require permission and extensive support from the utility owner. The gas line service would be interrupted, which will be costly to the utility owner. Implementing this alternative would require removal of all soil contaminated in excess of the EPA standard. The area is 620 m^2 and estimated at 15 cm deep based on sampling of the area. The estimated volume of material to be removed would be 94 m^3 cubic meters of material. The gas company has not allowed DOE access to work within the utility corridor.

If access was allowed, Williams estimated the total cost to replace the line across VP018 and the Moab Millsite is $1,219,750. Williams has stated it would not replace a small piece of the line. This does not include the loss of business if Williams has to lower the pressure in the line to allow the work to occur.

4.0 Summary and Recommendations

The accessible portions of the site have been remediated to EPA standards contained in 40 CFR 192. An area totaling approximately 620 m^2 (6,676 ft^2) and a volume of 94 cubic meters (124 cubic yards) has not been remediated as it is associated with a high- pressure gas line inside a fenced enclosure. This area is vacant land and will remain vacant land with controlled access. The contamination remaining on the site would not pose a significant present or future health risk due to the low levels of radioactivity and limited use by members of the public. Near term removal of the RRM would be unduly costly with very little health benefit.

Based on this S. M. Stoller recommends that *Alternative 1 – No Remediation* be approved. The estimated gamma exposure rate for a member of the public (utility worker) under this alternative is approximately 4.8 mrem/yr. This exposure is less than 20% of the NRC 25 mrem per year decommissioning standard even when very conservative assumptions are used.

Attachment 1

Assessment of Potential Public Dose from Residual Radioactive Materials

McClatchy Property (VP018)

Assessment of Potential Public Dose from Residual Radioactive Materials on the McClatchy Property (VP018)

Radiation doses to members of the public from residual radioactive materials on the McClatchy property (1901 North Highway 191) were calculated using data generated during the remedial action site surveys. These surveys included direct gamma exposure rate measurements and laboratory analysis of soils collected from the property.

Current and future land use of the region under consideration includes a buried gas line enclosed in a fenced area. Ambient gamma radiation at the site is in the range of background (15–25 μR/hr). Materials with elevated radionuclide concentrations were left on the surface and below grade in the proximity of a high-pressure gas line. The residual materials appear to be decomposed ore rather than tailings material. There is no access to the site for the public and the site has no particular attraction to an intruder. Therefore, the most likely exposure pathway would be to a worker engaged in repair of the gas line.

Recent gas line repair required 5 days of work, which is anticipated to occur every 6 years or so. In the most recent instance, the workers were trained as radiation workers. In the future, the gas line owner is planning to bypass that segment of the line by installing a new bypass line outside of the area being considered for supplemental standards and connecting the bypass at two points inside the SS area.

Under certain assumptions, potential doses to gas line workers were calculated. All doses calculated in this assessment are effective doses.

Potential exposure pathways

The potential exposure pathways for a gas line worker on the site are as follows:

- Direct gamma exposure
- Inhalation of dust from radionuclides while the gas line is uncovered and
- Ingestion of radionuclides in soil from the open trench.

Exposure pathways explicitly not considered in the analysis include inhalation of radon decay products, consumption of vegetation grown on the site, and ingestion of water from sources on the site. Radon gas from the site would diffuse off-site before a significant concentration of radon decay products could build in. There is no edible vegetation in the area and it is highly unlikely that the area could be used to grow edible plants. There are no water sources on the site.

Dose Equations

The total dose to a worker is described by:

$D_T = D_G + D_D + D_S$,

Where:

D_T = total dose
D_G = dose from direct radiation exposure
D_D = dose from inhalation of radionuclides in airborne dust
D_S = dose from soil ingestion.

The basic equations for calculating the dose by each exposure pathway are as follows:

Direct radiation exposure:

$D_G = [X][0.7\ \text{mrem/mR}][t][1.0\text{E-}3\ \text{mR/}\mu\text{R}]$

Where:

X = measured exposure rate (μR/hr)
t = time of exposure (hr)

The conversion factor for exposure (mR) to dose (mrem) was derived from the values given by UNSCEAR (2000). The factor of 0.7 for an adult takes into account self-shielding of critical organs by the body.

For the purpose of calculating the direct gamma radiation dose it was assumed that an adult gas line workers might spend a maximum of 40 hours in a given year involved in repair of the line. Given the reliability of such facilities, this is likely an overly conservative assumption. The dose was calculated for a one-time, 40-hour event.

Inhalation of dust:

$D_D = [t][I_{inh}][C_d][\Sigma\ (C_{si})(DC(inh)_i)][2.5][3.7\text{E-}2\ \text{Bq/pCi}][1\text{E+}5\ \text{mrem/Sv}]$

Where:

t = time of exposure (hr)
I_{inh} = inhalation rate = 1.7 m3/hr
C_d = total dust concentration in air (g/m3)
C_{si} = concentration of radionuclide i in soil (pCi/g)
$DC(inh)_i$ = ICRP72 inhalation dose coefficient for radionuclide i for an adult (Sv/Bq)

An enhancement factor of 2.5 was used in the analysis to account for the fact that the radionuclide concentrations in airborne dust may be greater than the concentrations in soil. This factor is generally accepted and is used in the dose analyses performed by the MILDOS code (ANL 1998).

The ICRP 72 dose coefficients (ICRP 1996) were used for inhalation and ingestion dose calculations. The coefficients are given below. The coefficients for Ra-226 and its decay products, Po-210 and Pb-210, were summed and applied to the Ra-226 intake.

ICRP 72 Dose Coefficients for Uranium and its Decay Products

Nuclide	Inhalation (Sv/Bq)*	Ingestion (Sv/Bq)
U-238	8.0E-6	4.5E-8
Th-234	7.7E-9	3.4E-9
U-234	9.4E-6	4.9E-8
Adjusted Sum U-235+D (see below)	5.6E-6	8.4E-8
Sum U-238+D and U-235+D	2.3E-5	1.8E-7
U-235	8.5E-6	4.7E-8
Pa-231	3.4E-5	7.1E-7
Ac-227	7.2E-5	1.1E-6
Th-227	1.0E-5	8.8E-9
Sum U-235+D	1.3E-4	1.9E-6
Adjusted Sum U-235+D = Sum U235+D x 0.045	5.6E-6	8.4E-8
Th-230	1.4E-5	2.1E-7
Ra-226	9.5E-6	2.8E-7
Pb-210	5.6E-6	6.9E-7
Po-210	4.3E-6	1.2E-6
Sum Ra-226+D	1.9E-5	2.2E-6

* Assumes least soluble class and 1 µm AMAD (activity median aerodynamic diameter)

The mass concentration of airborne dust was assumed to be a 0.1 mg/m^3, which is the value used by the RESRAD dose calculation code (Yu et al. 2001).

The concentrations Ra-226 in soil were measured. Concentrations of Po-210 and Pb-210 were assumed to be equal to the Ra-226 concentration. The dose coefficients were summed and applied to the Ra-226 intake as shown in the table above.

Ingestion of soil:

The gas line worker was assumed to ingest a small amount of soil during his/her time in the gas line trench. The dose due to soil ingestion was calculated as follows:

$$D_S = [I_{ing}][\Sigma\,(C_{si})(DC(ing)_i)][3.7E\text{-}2\ Bq/pCi][1E+5\ mrem/Sv]$$

Where:

I_{ing} = soil ingestion rate (g/day)
C_{si} = concentration of radionuclide i in soil (pCi/g)
$DC(ing)_i$ = ICRP 72 ingestion dose coefficient for radionuclide i for an adult (Sv/Bq)

ICRP 72 ingestion dose coefficients were used in the calculation (ICRP 1996). The amount of soil ingested while in the gas line trench was assumed to be 0.1 g/day, the daily soil ingestion rate generally assumed for adults.

Inputs to Dose Calculation

Estimates for dose to a gas line worker from direct gamma radiation, inhalation of airborne radionuclides in dust, and ingestion of soil were calculated using the equations above. As mentioned previously, material in the trench below grade appears to be decomposed ore. Concentration values shown below are assumed to be the average concentration inside a trench that would be excavated to access the pipeline for repair purposes. The values are assumed, but are based on sampling from the Atlas mill site and have been skewed to relatively high values to provide conservatism.

Parameter values used in the estimate of dose

Parameter	Arithmetic Mean
Time of Exposure	40 hr
Soil Ingestion	0.15 g/day
Airborne Dust Concentration	1.5E-4 g/m3
U-238 Concentration	200 pCi/g
Th-230 Concentration	200 pCi/g
Ra-226 Concentration	200 pCi/g
Net Gamma Exposure Rate	100 uR/hr

Results

Direct radiation exposure:

$D_G = [X][0.7\ \text{mrem/mR}][t][1.0\text{E-}3\ \text{mR}/\mu\text{R}] = 2.80$ mrem.

Where:

X= 100 uR/hr
t = 40 hr

Inhalation of dust:

$D_D = [t][I_{inh}][C_d][\Sigma\ (C_{si})(DC(inh)_i)][2.5][3.7\text{E-}2\ \text{Bq/pCi}][1\text{E+}5\ \text{mrem/Sv}] = 1.06\text{E+}0$ mrem,

where:

t = 40 hr
I_{inh} = inhalation rate = 1.7 m^3/hr
C_d = total dust concentration in air = 1.5 E-4 g/m^3
C_{si} = assumed concentration of radionuclide i in soil (pCi/g)
C(U-238) = 200 pCi/g,
C(Ra-226) = 200 pCi/g
C(Th-230) = 200 pCi/g

$DC(inh)_i$ = ICRP 72 inhalation dose coefficient for radionuclide i for an adult (Sv/Bq)

U-238 + D: 2.3E-5 Sv/Bq
Th-230 : 1.4E-5 Sv/Bq
Ra-226 + D: 1.9E-5 Sv/Bq.

Ingestion of soil:

$D_S = [I_{ing}][\Sigma (C_{si})(DC(ing)_i)][3.7E\text{-}2 \text{ Bq/pCi}][1E+5 \text{ mrem/Sv}] = 9.6E\text{-}1 \text{ mrem}$

Where:

I_{ing} = soil ingestion rate = 0.10 g/d
C_{si} = arithmetic average of radionuclide i in soil (pCi/g)
C(U-238) = 200 pCi/g
C(Th-230) = 200 pCi/g
C(Ra-226) = 200 pCi/g
$DC(ing)_i$ = ICRP 72 ingestion dose coefficient for radionuclide i for an adult (Sv/Bq)
U-238: 1.8E-7 Sv/Bq
Th-230: 2.1E-7 Sv/Bq
Ra-226: 2.2E-6 Sv/Bq

Total Dose to Gas Line Worker

$D_T = D_G + D_D + D_S = 4.8$ mrem

Where $D_G = 2.8$ mrem, $D_D = 1.06$ mrem and $D_S = 0.96$ mrem.

Conclusion

The most probable future use of the property in question is as vacant land housing a buried gas line for approximately the next six years. The above calculations demonstrate that the projected dose to a worker involved in repair of the gas line would be less than 20% of the 25 mrem per year decommissioning standard even when very conservative assumptions are used. The dose calculation was based on a one-time event and it is unlikely that exposures to gas line workers would occur more frequently than every 5-6 years.

There is no current evidence that radiation doses below 10 rem increase the risk of cancer to humans. However, the Interagency Steering Committee on Radiation Standards (ISCORS 2002) published guidance for estimating risk from effective dose equivalent. The ISCORS guidance recommends use of a conversion factor of 6×10^{-4} fatal cancers per TEDE (total effective dose equivalent) rem (6×10^{-7} fatal cancers per mrem). Applying that conversion to the dose from a single event calculated above would lead to a fatal cancer risk to the gas line worker of 2.9×10^{-6}, or approximately 3 chances in a million.

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U.S. Department of Energy
200 Grand Avenue
Grand Junction, CO 81501
April 22, 2009

Greg Tibbetts and Todd Stubbs
Williams Northwest Pipeline
P.O. Box 337
La Sal, UT 84530

Subject: Supplemental Standards on Moab Vicinity Property VP018,
Tax ID No: 03-027-0015 Section 27, TS 25 S, R 21 E

Dear Mr. Tibbetts and Mr. Stubbs:

This letter is to request your concurrence for the Application of Supplemental Standards for the high-pressure gas line right-of way on the property identified as Tax ID No: 03-027-0015, Section 27, TS 25 S, R 21 E, Moab, Utah.

The Environmental Protection Agency (EPA) standard, 40 Code of Federal Regulations (CFR), Part 192, allows residual radioactive material to remain in place when one or more of the following situations exist:

a) clear and present risk to workers and/ or the general public,
b) excessive environmental harm,
c) excessive cost of land cleanup relative to long term benefits,
d) there is no known remedial action, or
e) radionuclides other than radium-226 exist.

Item "c" of the aforementioned list is the U.S. Department of Energy's (DOE) justification for the Application of Supplemental Standards for the high-pressure gas line right-of-way.

Information regarding the depths, concentrations of radium-226 in the soil, and area where DOE has applied to the Nuclear Regulatory Commission (NRC) for Supplemental standards is shown in Attachment 1.

In applying for Supplemental Standards for the area of the McClatchy property (VP018) indicated in Attachment 1 (high-pressure gas line right-of-way), DOE has determined that for the current land use, the residual radioactive material that would remain in place will not pose a significant present of future health risk. As you may be aware, NRC is currently reviewing DOE's Application for Supplemental Standards for the Williams Northwest Pipeline high-pressure right-of-way through the McClatchy property. The area being considered for supplemental standards is located along the west edge of the McClatchy property inside a fenced utility corridor. The soil contamination area, which consists of soil containing decomposed uranium ore and/or windblown tailings, is approximately 6,675 square feet in size, with a total estimated volume of 124 cubic yards that would require removal. In order to remediate the described soil contamination area,

the gas line service would require either interruption in service or lowering of the pressure of the line, for the duration of the cleanup. This aspect of performing full remedial action activities in addition to access issues with Williams Northwest Pipeline in the described area has prompted the Application for Supplemental Standards for the area by the DOE. Estimated costs for the interruption in service of the Williams Northwest Pipeline high-pressure gas line in the described right-of-way, relative to the full remedial action alternative, is also being requested by the NRC for their review and consideration of the supplemental standards application. DOE would like to request that Williams Northwest Pipeline prepare an estimate of the associated costs and include the estimate in your response to this letter.

DOE would like to obtain your concurrence on the Application of Supplemental Standards for the area of your right-of-way indicated in Attachment 1. If you are in agreement with the Application of Supplemental Standards for your right-of-way identified on VP018, please sign where indicated below and return a signed copy of this letter to me at the address above.

If you have any questions feel free to call me at (970) 257 2115 or Ken Wethington of my staff at (435) 719 2890.

Sincerely,

Donald R. Metzler
Moab Federal Project Director

CONCURRENCE with Supplemental Standards of Tax ID No: 03-027-0015 Section27, T25S, R21E, Moab, Utah:

N/A

Greg Tibbetts
Williams Northwest Pipeline Date

B. Todd Stubbs 13 JUNE 2009

Todd Stubbs
Williams Northwest Pipeline Date
MOAB DISTRICT MANAGER

SEE ATTACHED ESTIMATE -

cc w/enclosure:
B. Sokolovich, CBC
K. Wethington, EM-3.3
Project File MOA 75.18 (C. Smith)

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La Sal Route
La Sal, Utah 84532

Donald R. Metzler
US Department of Energy
200 Grand Avenue
Grand Junction, CO 81501

Subject: Supplemental Standards Concurrence Williams Northwest Pipeline Right of Way Moab, Utah, Section 27, TS 25 S, R 21 E, Grand County.

Dear Mr. Metzler:

Attached is the signed concurrence for the Application of Supplemental Standards relating to the Williams Northwest Pipeline right of way in the Moab, Utah area concerning the DOE cleanup site Tax ID No: 03—27-0015, Section 27, TS 25 S, R 21 E, Grand County, Utah.

In addition it was requested that an estimate be given as to mitigation to removal of the soil around the pipeline if determined to be contaminated. The cost to completely mitigate all of the soil in relation to the pipeline through the length of the property would be $ 1, 219,750.00. This would include: the soil being removed, the location of disposal would be determined by the Department of Energy, clean soil being replaced and the right of way being returned to a suitable contour with a minimum of five feet of cover.

Metzler US DOE

As you are aware of, it is required that as work (excavation, traversing, etc.) is performed on the designated right of way corridor through the above mentioned property, it is your responsibility to receive prior approval from Williams Northwest Pipeline and notify the Utah State One Call System (Blue Stakes of Utah).

If you have any questions please call me at 435-259-7422.

Sincerely,

B. Todd Stubbs
Moab District Manager
WILLIAMS COMPANIES, INC. NORTHWEST PIPELINE

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

THAT CAN BE VIEWED AT THE RECORD TITLED:

"Plate 1
Verification Grid for VP018 (McClatchy Property)
Showing Depth of Assessed Cantamination"

WITHIN THIS PACKAGE...OR BY SEARCHING USING THE

D-01X