SUBJECT: NORTHEAST CHURCH ROCK – POST EE/CA ANALYSIS OF ALTERNATIVES
ALTERNATIVE OFF-SITE DISPOSAL LOCATIONS

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The purpose of this memorandum is to discuss the legal and practical considerations for off-site disposal of waste from the Northeast Church Rock ("NECR") Mine Site. The Environmental Protection Agency, Region 9 ("U.S. EPA")[1] preferred alternative in the Engineering Evaluation/Cost Analysis (EE/CA), Alternative 5A, provides that the waste will be disposed at a nearby site, and specifically evaluates the United Nuclear Corporation ("UNC") Mill Site ("Mill Site"). Many comments on the EE/CA, from the community, Navajo EPA and other stakeholders, asserted that mine waste from the NECR Mine Site should be removed farther from the residential community than the proposed location at the Mill Site. In response to such comments, U.S. EPA has evaluated fourteen disposal sites, including several suggested by the commenters. This memorandum discusses the merits of those potential locations. This discussion will cover (1) the legal and regulatory standards that impact whether disposal can occur at a given site; and (2) an individual analysis of each of the fourteen sites that Region 9 studied.

I. Legal Standards

Several legal standards affect whether mine waste can be disposed at a particular site, including federal statutes, regulations and guidance.

A. Federal Statutes

1. Atomic Energy Act

The Atomic Energy Act ("AEA"), as revised in 1978 and in 2005 by the Energy Policy Act (EPAct), defines three types of nuclear waste:

- Source material (uranium and thorium);
- Special nuclear material (enriched uranium and plutonium); and
- Byproduct material (material that is made radioactive in a reactor, and residue from the milling of uranium and thorium).

[1] The United States Environmental Protection Agency is referred to herein as "EPA." EPA Region 9 is referred to as "U.S. EPA." EPA Region 6 and Navajo EPA are individually referenced.

Under Section 11.e(2) of the AEA, byproduct material is defined to include "the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." Wastes from the decommissioning of buildings and equipment, whose primary function was to conduct the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, are considered to be byproduct material. These byproduct material wastes are not subject to EPA regulation under the Resource, Conservation and Recovery Act ("RCRA").[2] The Nuclear Regulatory Commission ("NRC") is the federal regulatory agency responsible for licensing and regulating civilian use of source, special nuclear and by-product material. The NRC has jurisdiction over the licensing of both low-level and high-level radioactive waste disposal facilities.[3]

The Mine Site wastes are non-11.e(2) wastes because they are not mill tailings. However, many of the sites considered for disposal of the Mine Site wastes are former or current mill tailings sites.

2. Uranium Mine Tailings Radiation Control Act (UMTRCA)

To provide for the disposal, long-term stabilization, and control of 11.e(2) mill tailings, Congress enacted the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). This Act established two programs: The UMTRCA Title I program established a joint Federal/State-funded program for remedial action at mill tailings sites where tailings resulted largely from production of uranium for the weapons program. Under Title I, the Department of Energy ("DOE") is responsible for cleanup and remediation of these sites. The NRC is required to evaluate DOE's design and implementation and, after remediation, concur that the sites meet standards set by the EPA. The UMTRCA Title II program is directed toward uranium mill sites licensed by the NRC or Agreement States in or after 1978. Title II of the Act provides NRC with the authority to control radiological and non-radiological hazards, EPA with the authority to set generally applicable standards for both radiological and non-radiological hazards, and for the eventual state[4] or federal ownership of the disposal sites, under general license from NRC.

UMTRCA, Title I, Section 104(f)(2), and Title II, Section 202(b)(5) provide that DOE is "authorized to carry out maintenance, monitoring and emergency measures under this subsection, but shall take no other action pursuant to such license, rule or order with respect to such property and minerals unless expressly authorized by Congress . . . ." 42 U.S.C. §§ 7912(f)(2), 2092(b)(5).

[2] See 42 U.S.C. § 6903(27).

[3] Disposal of high level radioactive waste is the responsibility of the Department of Energy. The licensing of high level waste disposal facilities is the responsibility of the NRC, as specified in 10 CFR Part 60, "*Disposal of High-Level Radioactive Waste in Geologic Repositories*." The regulations for these disposal facilities are in 10 CFR Part 61, "*Licensing Requirements for Land Disposal of Radioactive Waste*." Certain low-level radioactive wastes may be disposed at RCRA-permitted disposal sites.

[4] New Mexico is an Agreement State.

3. Resource, Conservation & Recovery Act

Under the Resource, Conservation & Recovery Act, 42 U.S.C. § 6928 *et seq.*, EPA regulates the disposal of solid and hazardous waste, which are defined to exclude the above-described source, special nuclear or byproduct material as defined by the AEA. 42 U.S.C. § 6903(27). Under its regulations, however, NRC may authorize the disposal of certain low-activity radioactive wastes in properly licensed RCRA facilities.[5] The term "low-activity waste" (LAW) does not have a statutory or regulatory definition, but generally means wastes that contain some residual radioactivity, including naturally occurring radionuclides, which can be safely disposed of in hazardous or municipal solid waste landfills. Such waste possesses a small fraction of the hazard of waste at the Class A limits in 10 CFR Part 61.

4. Comprehensive Environmental Response, Compensation and Liability Act

a. Off-Site Rule and CERCLA Section 104(d)(4)

The Comprehensive Environmental Responsibility and Compensation Act ("CERCLA"), 42 U.S.C. §§ 9601 *et seq.*, provides that in any removal or remedial action involving the transfer of any hazardous substance or pollutant or contaminant off-site, such materials may only be transported to a facility that is operating in compliance with federal and state requirements. 42 U.S.C. § 9621(d)(3). The unit to which the material is transferred may not be releasing any hazardous waste into the groundwater or surface water or soil, and any releases from other units at the facility must be under a corrective action program under Subtitle C of RCRA. 42 U.S.C. § 9621(d)(3)(A)-(B).

Based on this statutory provision, EPA has adopted the Off-Site Rule ("Procedures for planning and implementing off-site response actions"). 40 CFR § 300.440. The Off-Site Rule lays out procedures and requirements for any CERCLA response action involving the off-site transfer of any hazardous substance, pollutant or contaminant for disposal. The Off-Site Rule requires that such wastes transferred off-site from a CERCLA response site may only be placed in a facility at which there are no relevant violations of environmental laws.

The term "off-site" is not defined in CERCLA or the National Contingency Plan ("NCP"), but the terms "on-site" and "site" are defined. "On-site" means the "areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action." 40 CFR § 300.5.

For the purposes of the response action selected in the Action Memorandum, U.S. EPA believes that the UNC Mill Site and the NECR Mine Site may be treated as one facility under CERCLA Section 104(d)(4), 42 U.S.C. § 9604(d)(4),[6] or that the proposed response action is an on-site action under Section 300.5 of the NCP, 40 CFR § 300.5. However, the final determination under CERCLA Section 104(d)(4), 42 U.S.C. § 9604(d)(4) shall be made as part of the issuance of an

[5] 10 CFR § 20.2002.

[6] 42 USC § 9604(d)(4): "Where two or more non-contiguous facilities are reasonably related on the basis of geography, or on the basis of the threat, or potential threat to public health or welfare or the environment, [EPA] may . . . treat these related facilities as one for purposes of this section."

appropriate decision document by U.S. EPA Region 6 consistent with the NCP, 40 CFR Part 300.

However, the Off-Site Rule will apply to any disposal location that is not considered on-site. The process to determine whether a disposal facility is able to take CERCLA waste under the Off-Site Rule is referred to as an acceptability determination. EPA bases each acceptability determination on the facility's compliance with both state and federal laws, and on control of hazardous substance releases at the facility. The criteria for the acceptability determination are specified in 40 CFR § 300.440(b).[7]

b. Permits

CERCLA also provides that no federal, state or local permits will be required for the portion of a removal or remedial action conducted entirely on-site, provided the action meets certain other CERCLA requirements. 42 U.S.C. § 9621(e)(1). The action nevertheless must comply with the substantive requirements of any applicable or relevant and appropriate state and federal standards ("ARARs") for a response action. 42 U.S.C. § 9621(d)(1)-(2)(A)(i)-(ii).

c. National Contingency Plan

The National Contingency Plan ("NCP") is EPA's implementing regulations for CERCLA. The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable.[8] In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. At the NECR Site, all wastes containing either 200 pCi/g or more of Ra-226 and/or 500 mg/kg or more of total uranium (0.05% uranium) present a significant risk to human health; therefore, this contaminated material is considered principal threat waste. EPA considers it preferable to re-process principal threat waste to reclaim metals and radionuclides if possible, or in the alternative, to dispose of such materials at a licensed disposal facility, rather than include these materials with disposal of the lower-level wastes.

B. Federal Regulations Relating to Uranium Mills and Disposition of Wastes at Uranium Mills

The regulations at 10 CFR Part 40, Appendix A, set forth Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material From Ores Processed Primarily for their Source Material Content. In particular, the criteria in Appendix A cover the siting and design of tailings impoundments, disposal of tailings or wastes, decommissioning of land and structures, groundwater protection standards, testing of the radon emission rate from the impoundment cover, monitoring programs, airborne effluent and offsite exposure limits, inspection of retention

[7] Each EPA Region is required to coordinate its acceptability determinations with its RCRA Off-Site Rule coordinator. For additional information about the Off-Site Rule, EPA Region IX's coordinator, Kandice Bellamy, can be reached at (415) 972-3304.

[8] 40 CFR § 300.430(a)(l)(iii)(A).

systems, financial surety requirements for decommissioning and long-term surveillance and control of the tailings impoundment, and eventual government ownership of the tailings site under an NRC general license.

Other regulations regulate the closure of mill sites. For Title I UMTRCA sites, 10 CFR § 40.27 governs the circumstances where the facility has been de-commissioned, the NRC license has been terminated, and long-term stewardship has been transferred to DOE.[9] For Title II UMTRCA sites, 10 CFR § 40.28 governs such circumstances.[10] When such facilities have been transferred to DOE, DOE is effectively the licensee for the facility under a general license with the NRC. The general license conferred under §§ 40.27 and 40.28 permits the licensee to monitor, maintain and perform emergency measures necessary to protect the public health and safety and to comply with the requirements of the AEA.

UMTRCA and its implementing regulations at 40 CFR Part 192, Subparts A-E, also regulate the closure of specific mill sites selected for the Title I or Title II UMTRCA program. Some requirements (e.g., 40 CFR §§ 192.02, 192.12, 192.32) may apply to specific sites under consideration for disposal of wastes from the NECR Mine Site.[11]

C. Nuclear Regulatory Commission Guidance

The NRC has published guidance concerning the regulation of the uranium recovery industry. See *Regulatory Issue Summary 2000-23 Recent Changes to Uranium Recovery Policy*, November 30, 2000 ("Summary"). The Summary includes the NRC's response to a 1999 Commission Paper prepared by NRC staff, titled "Use of Uranium Mill Tailings Impoundments for the Disposal of Other than 11.e(2) Byproduct Materials and Reviews of Applications to Process Material Other than Natural Ore" (SECY-99-012). The 1999 Commission Paper discusses the disposal of radioactive waste in mill tailings impoundments other than byproduct material defined in Section 11.e(2) of the AEA. The NRC summarized its response to the Commission Paper on the disposal of non-11.e(2) waste in Attachment 1 to the Summary, "Interim Guidance on Disposal of Non-Atomic Energy Act of 1954, Section 11e.(2) Byproduct Material in Tailings Impoundments" ("Interim Guidance"). The Interim Guidance states:

The mechanism to authorize the disposal of non-11e.(2) byproduct material in a tailings impoundment is an amendment to the mill license under 10 CFR Part 40, authorizing the receipt of the material and its disposal. Additionally, an exemption to the requirements of 10 CFR

[9] See 40 CFR § 40.27 (General license for custody and long-term care of residual radioactive material disposal sites).

[10] See 40 CFR § 40.28 (General license for custody and long-term care of uranium or thorium byproduct materials disposal sites).

[11] For example, the regulations at 40 C.F.R. § 192.32 provide that the NRC or an "Agreement State" may, in response to a request from a licensee of a site licensed to manage uranium by-products, authorize a portion of the site to remain accessible during the closure process to accept materials similar to the physical, chemical and radiological characteristics of the in situ uranium mill tailings and associated wastes, from other sources. 40 CFR § 192.32(a)(iv). Such a requirement might apply at a facility where it was proposed to dispose of non-11.e(2) wastes. The NRC's regulations at 10 CFR Part 40, Appendix A, were adopted from EPA's regulations at 40 CFR Part 192 and are substantially similar.

Part 61, under the authority of 10 CFR 61.6, must be granted, if the material would otherwise be regulated under Part 61.[12]

The Guidance sets forth eight criteria for considering such applications, the above-referenced criterion requiring a license amendment, and seven additional criteria, which are summarized below:

1. Since mill tailings impoundments are already regulated under 10 CFR Part 40, licensing of the receipt and disposal of non-11e.(2) byproduct material should also be done under 10 CFR Part 40.

2. Special nuclear material and Section 11e.(1) byproduct material waste should not be considered as candidates for disposal in a tailings impoundment, without compelling reasons to the contrary.

3. The 11e.(2) licensee must provide documentation showing necessary approvals of other affected regulators (e.g., the U.S. Environmental Protection Agency or State) for material containing listed hazardous wastes or any other material regulated by another Federal agency or State because of environmental or safety considerations.

4. The 11e.(2) licensee must demonstrate that there will be no significant environmental impact from disposal of this material.

5. The 11e.(2) licensee must demonstrate that the proposed disposal will not compromise the reclamation of the tailings impoundment by demonstrating compliance with the reclamation and closure criteria of Appendix A of 10 CFR Part 40.

6. The 11e.(2) licensee must provide documentation showing approval by the Regional Low-Level Waste Compact in whose jurisdiction the waste originates as well as approval by the Compact in whose jurisdiction the disposal site is located, for material which otherwise would fall under Compact jurisdiction.

7. DOE and the State in which the tailings impoundment is located should be informed of the NRC findings and proposed action, with a request to concur within 120 days. A concurrence and commitment from either DOE or the State to take title to the tailings impoundment after closure must be received before granting the license amendment to the 11e.(2) licensee.

As noted above, the Mine Site wastes are "non-11.e(2)" byproduct material. Thus, an amendment to the mill license would be required to dispose of such wastes at any mill site. With respect to a closed mill site where DOE is the licensee, presuming DOE could acquire the necessary authority to reopen a closed site or to transfer the site to a third party, the third party would then need to acquire a license from NRC to accept non-11.e(2) by-product material.

[12] As noted at footnote 1, the regulations for disposal facilities for high level radioactive waste are found in 10 CFR Part 61, "*Licensing Requirements for Land Disposal of Radioactive Waste.*"

Similarly, at any active mill site, the current licensee could apply to the NRC to amend its license to accept non-11.e(2) waste. In either case, the licensee would have to be willing to do so and may want to be compensated.

In considering whether to issue or amend a mill license, the NRC also must determine whether the action will have a significant adverse impact on the environment, and if so, prepare an Environmental Impact Statement for public comment pursuant to the National Environmental Policy Act ("NEPA").[13] This can be a lengthy process due to the critical nature of the issues and the requirements for public involvement.

II. Disposal Locations

The potential disposal locations evaluated by U.S. EPA fall into four categories:

1) an on-site facility exempted from the off-site rule.
2) a licensed facility able to accept low-level waste,
3) a current UMTRCA site with similar waste to that being disposed, and
4) an off-site location where a licensed facility could be built.

As discussed below, the first category, on-site facilities, are exempt from the Off-Site Rule. The second and third categories, existing off-site facilities, would require an acceptability determination made under the Off-Site Rule. Approval from the NRC in the form of a license amendment or a new license would be needed to bring waste to an UMTRCA site that has not yet been returned to DOE for long-term stewardship.

For facilities that have been returned to DOE for long-term stewardship, presuming DOE could be authorized to reopen a closed site, or to enter into an agreement for the site to be reopened by a party willing to lease or purchase the site from DOE, the operator would have to apply for a license from the NRC to accept non-11.e(2) waste. NRC likely would expect DOE to indicate that it had no objection upon closure of the site to accept long-term monitoring and maintenance of the disposed materials, and DOE would expect a demonstration that the monitoring and maintenance of the materials would not add to DOE's overall costs of legacy management at the site.

Alternatively, constructing a new facility (Category 4) might require either a new NRC license or RCRA permit (for low-level radioactive wastes), either of which is an exceptionally lengthy process. Once a location was identified, it could take years for the license to be issued and a facility constructed before it was ready to accept NECR waste.

Category 1: Exempt on-site facility

1. NECR Mine Site

In a removal action at a mine site, one option is to cap the waste in place on the mine site. The Mine Site is "on-site" and therefore exempt from the Off-Site Rule. There are no statutory or

[13] 42 U.S.C. § 4321 *et seq.*

regulatory barriers to locating a disposal facility at this location, provided the location complies with ARARs. A more detailed analysis of this alternative is included in the EE/CA.[14]

Summary: There are no Off-Site Rule or other apparent statutory or regulatory barriers to disposal at the Mine Site.

2. Mill Site – Proposed EE/CA Alternative

This site is an UMTRCA Title II site that has a license from the NRC held by UNC. The Mill Site is listed on the National Priorities List ("NPL") and EPA, Region 6, oversees cleanup of the groundwater contamination that resulted from the historic activities at the Mill Site. The facility has not been closed due to the on-going groundwater remediation.

As noted above, for the purposes of the response action selected in the Action Memorandum, U.S. EPA believes that the UNC Mill Site and the NECR Mine Site may be treated as one facility under CERCLA Section 104(d)(4), 42 U.S.C. § 9604(d)(4), or that the proposed response action is an on-site action under Section 300.5 of the NCP, 40 CFR § 300.5. However, the final determination under CERCLA Section 104(d)(4), 42 U.S.C. § 9604(d)(4), shall be made as part of the issuance of an appropriate decision document by U.S. EPA Region 6 consistent with the NCP, 40 CFR Part 300. Based on these determinations, for the purposes of the selected response action, the off-site rule (40 CFR §300.440) would not apply, and the permit exemption set forth in CERCLA Section 121(e)(1) would apply.

Summary: There are no Off-Site Rule or other apparent legal or regulatory barriers to disposal at this location. Additionally, the NRC has commented that it believes that the disposal of the Mine Wastes at this site is a viable alternative.[15]

Category 2: Currently Licensed Facilities

Two licensed facilities, US Ecology and Waste Control Specialists (WCS), meet the criteria for the Off-Site Rule as they are in compliance with environmental laws and currently have the necessary licenses and permits to accept the NECR waste. These facilities are not governed by UMTRCA regulations because they are not mill tailings sites. These two facilities would be able to accept all waste from the Mine Site. More detailed analysis of off-site disposal in a currently licensed facility is included in the EE/CA.

3. US Ecology, Grand View Idaho

US Ecology operates a RCRA-permitted disposal facility authorized to accept naturally occurring and other non-NRC regulated radioactive material near Grand View Idaho, approximately 650 miles from the NECR Mine Site.

[14] See (http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/f453d4346e384945882575cf007fd4bf!OpenDocument)

[15] U.S. Nuclear Regulatory Commission Interagency Comments on the EE/CA for the Northeast Church Rock Site, Gallup, New Mexico, February 23, 2009, p. 1.

4. Waste Control Specialists (WCS), Andrews, Texas

The WCS facility received its license to accept low-level radioactive waste in 2010. The facility has two disposal cells; one cell accepts waste from commercial sources, and the other accepts other low-level radioactive waste from federal projects and is overseen by DOE. The WCS site is located approximately 31 miles west of the city of Andrews, Texas, and about 500 miles from the NECR Mine Site.

Summary: There are no UMTRCA or Off-Site legal barriers to disposal at these licensed facilities. As discussed in the EE/CA, CERCLA factors of implementability, cost-effectiveness and protectiveness affect whether this option would be selected.

5. White Mesa Mill, Blanding UT

The White Mesa Uranium Mill was built in 1979 to process uranium ore and is licensed to process uranium ore. In 1987, the facility began receiving "alternate feed material" (uranium-bearing radioactive waste) for processing. Since 1999, the mill has relied solely on alternate feed material. The facility currently accepts for re-processsing waste with 0.10% uranium grade. This facility may be willing to accept the principal threat waste from the NECR Mine Site (waste greater than 0.05% uranium) for re-processing. To accept non-11.e(2) waste for disposal as opposed to re-processing, this facility would be required to apply to the NRC for a license amendment.

Summary: This facility may be able to accept principal threat waste for re-processing, but currently is not licensed to accept other waste from the Mine Site.

Category 3: UMTRCA Sites

6. Energy Solutions, Moab/Crescent Junction, Utah

Approximately 250 miles north of the NECR Mine Site, DOE is constructing a tailings disposal repository near Crescent Junction, Utah, to receive 12 million cubic yards of uranium mill tailings from the Atlas Mill Tailings pile at the Moab UMTRCA site. Approximately 3 million cubic yards of waste have been moved to the facility to date.

U.S. EPA inquired of DOE by e-mail on January 31, 2011, as to whether the Crescent Junction facility could accept wastes from the NECR Mine Site. In a letter dated February 17, 2011, DOE responded that the land is "reserved . . . for use by the DOE 'to protect the Moab Mill Site Remediation Project.' Public Land Order 7697, Transfer of Public Land for the Crescent Junction Uranium Mill Tailings Repository; Utah. . . . Therefore the land is not authorized for other uses such as disposal of NECR wastes." Letter, Donald R. Metzler, MOAB UMTRCA Project Director, to Cynthia Wetmore, U.S. EPA, February 17, 2011.[16]

[16] In addition, the Crescent Junction facility would only be able to accept the Principal Threat Waste (> 200 piC/g Radium-226) from the NECR site if it could be separated from other lower level waste.

Summary: The Crescent Junction facility is not available to accept NECR wastes because DOE is not authorized to accept waste from locations other than from the Atlas Mill Tailings pile at this site.

7. Ambrosia Lake (Philips Mill)

This is a Title I UMTRCA site in the Ambrosia Lake district of New Mexico, approximately 80 miles from the NECR Mine Site. The site covers approximately 196 acres. The disposal cell was closed in July 1995 under the oversight of the NRC. The facility's license was terminated and the facility was placed in long-term care of DOE in 1998 under a general license.

No groundwater remediation was performed, and none is planned. Groundwater monitoring is not required according to DOE. The uppermost aquifer at the site is considered a "limited use" aquifer and is not suitable for drinking water or irrigation water because of low yield.

Summary: This site is not a viable disposal option for NECR waste. Presuming DOE could be authorized to reopen the site, or to enter into an agreement for the site to be reopened by a party willing to lease or purchase the site from DOE, the operator would have to apply for a license from the NRC to accept non-11.e(2) waste. NRC likely would expect DOE to indicate that it had no objection upon closure of the site to accept long-term monitoring and maintenance of the disposed materials, and DOE would expect a demonstration that the monitoring and maintenance of the materials would not add to DOE's overall costs of legacy management at the site. This is not considered implementable with the necessary degree of certainty and in a reasonable time frame. It also is unclear whether there may be groundwater problems at the site that would preclude an acceptability determination under the Off-Site Rule.

8. Ambrosia Lake (Rio Algom)

This is a Title II UMTRCA site, also located in the Ambrosia Lake district of New Mexico. The tailings impoundment contains 33 million tons of uranium ore and covers an area of approximately 370 acres.

Closure is currently being overseen by the NRC. All groundwater corrective actions have been discontinued. The major disposal cell has been closed and a major diversion berm surrounding the cell has been constructed. A smaller area, approximately 2 acres, is not closed yet, and will receive some low-level debris from the facility this year. Other than the 2-acre disposal area, the rest of the facility is closed. The 2-acre facility and therefore, the complete facility are anticipated to be closed and turned over to DOE for long-term management in 2013.

Summary: This site is not a viable disposal option for NECR waste since it does not currently have capacity for the NECR waste in the remaining cell. Presuming DOE could be authorized to reopen the site or enter into an agreement with a third party willing to lease or purchase the site, the operator would have to build additional capacity, and would be required to obtain a license from the NRC to accept non-11.e(2) waste. NRC likely would expect DOE to indicate that it had no objection upon closure of the site to accept long-term monitoring and maintenance of the disposed materials, and DOE would expect a demonstration that the monitoring and maintenance

of the materials would not add to DOE's overall costs of legacy management at the site. This is not considered implementable with the necessary degree of certainty and in a reasonable time frame.

9. Homestake

The Homestake Superfund Site is about 50 miles from the NECR Mine Site and is a former mill site. The large tailings impoundment covers an area of about 170 acres and is approximately 85 - 100 feet high. The small tailings impoundment covers an area of about 40 acres and is 20 - 25 feet high. Closure of the tailing piles is being overseen by the NRC. The final closure activities (installation of a 14 foot cap) are scheduled for 2013 and 2017 after the tailings are dewatered.

Seepage from the two tailings impoundments has resulted in the contamination of the underlying groundwater aquifers with radiological and non-radiological contaminants. The groundwater restoration program includes a groundwater collection/injection system, tailings collection wells within the tailings impoundment, a tailings impoundment toe drain, a reverse osmosis treatment plant, and two evaporation ponds.

Summary: Due to ongoing groundwater releases, this site is not an available disposal option under the Off-Site Rule.

10. Shiprock

This is a Title I UMTRCA site within the Navajo Nation in the northwest corner of New Mexico near the town of Shiprock, approximately 28 miles west of Farmington. The facility has been closed and was turned over to DOE for long-term management under a general license in 2003.

Summary: This site was closed in 2003. Presuming DOE could be authorized to reopen the site or enter into an agreement with a third party willing to lease or purchase the site, the operator would be required to obtain a license from the NRC to accept non-11.e(2) waste. NRC likely would expect DOE to indicate that it had no objection upon closure of the site to accept long-term monitoring and maintenance of the disposed materials, and DOE would expect a demonstration that the monitoring and maintenance of the materials would not add to DOE's overall costs of legacy management at the site. This is not considered implementable with the necessary degree of certainty and in a reasonable time frame.

11 and 12. Bluewater and L-Bar

These two Title II UMTRCA sites are both located in New Mexico, are closed and have been returned to DOE for long-term stewardship. The ARCO Bluewater site was closed in 1997 and placed under the stewardship of DOE under a general license. The L-Bar Disposal site was closed and placed under the stewardship of DOE in 2003 under a general license.

Summary: Presuming DOE could be authorized to reopen the site or enter into an agreement with a third party willing to lease or purchase the site, the operator would be required to obtain a license from the NRC to accept non-11.e(2) waste. NRC likely would expect DOE to indicate that it had no objection upon closure of the site to accept long-term monitoring and maintenance

of the disposed materials, and DOE would expect a demonstration that the monitoring and maintenance of the materials would not add to DOE's overall costs of legacy management at the site. This is not considered implementable with the necessary degree of certainty and in a reasonable time frame.

Category 4: Unlicensed potential locations for a new facility.

Siting and licensing a new disposal facility is a long and complicated process including environmental review, public comment and likely legal challenges. These facilities are difficult to permit and can take decades from the initial scoping to the opening of a facility. Some facilities never make it through the process after years of effort. U.S. EPA examined several options for unlicensed potential locations for a new facility that theoretically could be licensed in the future to accept waste from the NECR Mine, and found none to be feasible options for the NECR Mine Site waste.

13. Abandoned Coal Mines near Grant

In the public comment period of the NECR EE/CA, a commenter suggested building a facility at one of the nearby abandoned coal mines near Grant, NM.

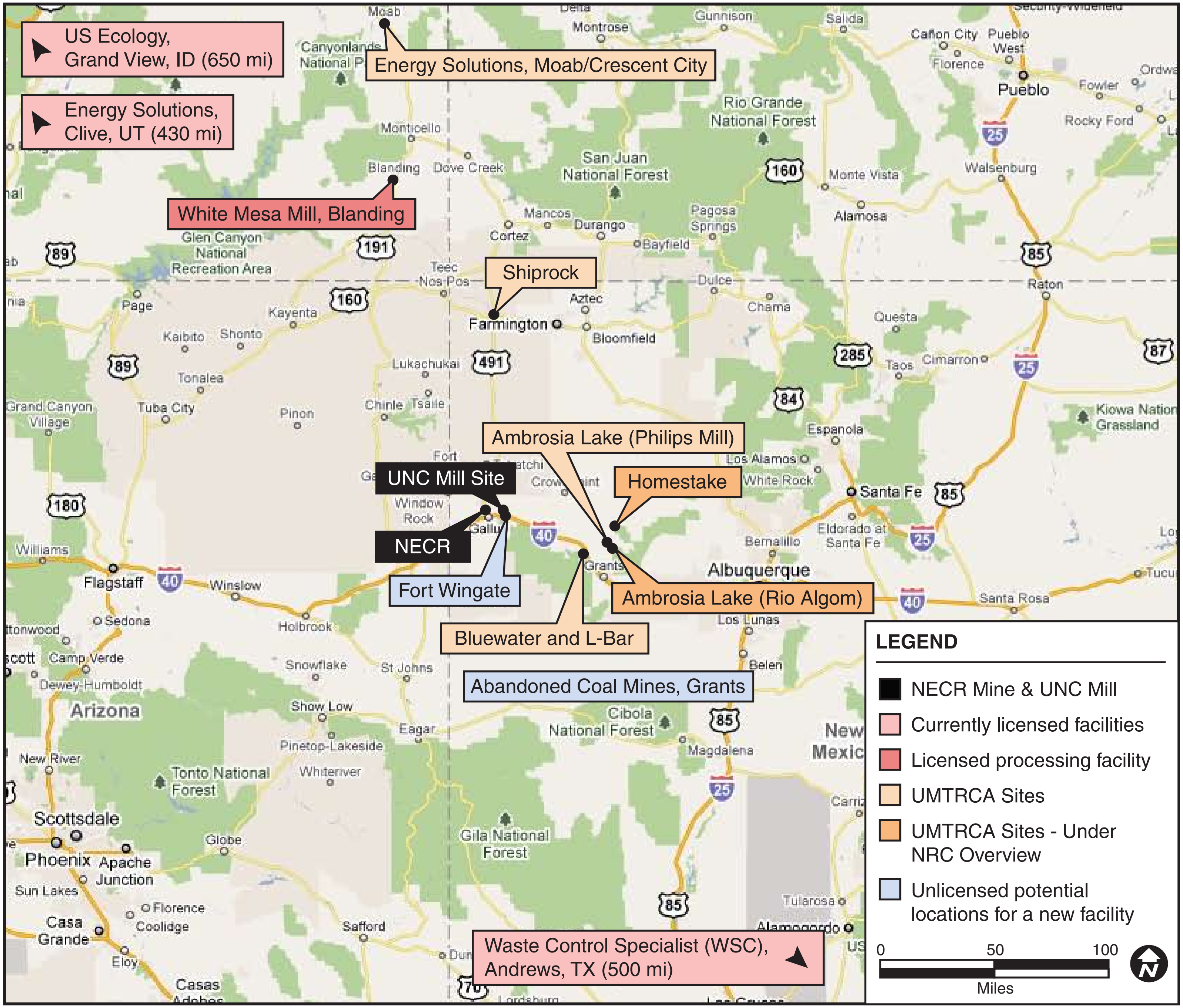
Summary: Due to the time constraints associated with the siting and permitting of a new disposal facility, this option is not currently available for disposal of NECR Mine waste or in the near term. This site also may not comply with the Off-Site Rule because of contamination associated with historic mining activities.

14. Fort Wingate

Fort Wingate is a former Army depot located about 10 miles from NECR at the intersection of Route 566 and Hwy 40. The 22,000-acre installation stored and demolished ammunition. The Department of the Army initiated closure under the BRAC I Department of Defense Program in 2003. After closure activities are completed, most of the property will be turned over to the Bureau of Indian Affairs ("BIA"). The lands will be held in trust by the BIA for the benefit of the Navajo Nation and Pueblo of Zuni indefinitely. Efforts to clean up the property have focused on the removal of exploded and unexploded ordnance.

Summary: Due to the time constraints associated with the siting and permitting of a new disposal facility, this option is not available for disposal of NECR waste currently or in the near term. In addition to the usual time constraints, an agreement with the Department of Defense likely would be necessary to effectuate siting a disposal facility at this location. This site also may not comply with the Off-Site Rule because of contamination associated with existing exploded and unexploded ordnance, and for similar reasons, may face licensing challenges with the NRC.

Furthermore, siting the facility at Fort Wingate potentially would remove the land from beneficial use for the Navajo Nation and Pueblo of Zuni.


US Ecology, Grand View, ID (650 mi)
Energy Solutions, Clive, UT (430 mi)
Energy Solutions, Moab/Crescent City
White Mesa Mill, Blanding
Shiprock
Ambrosia Lake (Philips Mill)
UNC Mill Site
Homestake
NECR
Fort Wingate
Ambrosia Lake (Rio Algom)
Bluewater and L-Bar
Abandoned Coal Mines, Grants
Waste Control Specialist (WSC), Andrews, TX (500 mi)
LEGEND
NECR Mine & UNC Mill
Currently licensed facilities
Licensed processing facility
UMTRCA Sites
UMTRCA Sites - Under NRC Overview
Unlicensed potential locations for a new facility
0
50
100
Miles
N