

Appendix A

Applicable, Relevant, and Appropriate Requirements

**APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS
(ARARs)**

**Engineering Evaluation/Cost Analysis
North East Church Rock Mine Site
Gallup, New Mexico
May, 2009**

Acronyms

| | |
|---------|---|
| BMP | Best Management Practice |
| CAA | Clean Air Act |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| ESA | Endangered Species Act |
| Mrem/yr | Milli-Roentgen-Equivalent-Man/Year |
| NESHAP | National Emissions Standards for Hazardous Air Pollutants |
| NMAC | New Mexico Administrative Code |
| NMSA | New Mexico Statutes Annotated |
| NN | Navajo Nation |
| NPDES | National Pollutant Discharge Elimination System |
| NRC | Nuclear Regulatory Commission |
| RCRA | Resource Conservation and Recovery Act |
| SMCRA | Surface Mining Control and Reclamation Act |
| TBC | To Be Considered |
| UMTRCA | Uranium Mill Tailings Radiation Control Act |
| USC | United States Code |

**Table A-1
Chemical-Specific ARARs and TBC Information**

| Media | Requirement | Requirement Synopsis | Status and Rationale |
|---------------------|--|--|--|
| Solid Wastes | FEDERAL Resource Conservation and Recovery Act (RCRA) of 1976, as amended – Subtitle C, 42 USC 6901 et seq. | Regulates disposal of solid waste. Per 42 USC 6903(27), RCRA does not regulate “source, special nuclear, or byproduct material” as defined in the Atomic Energy Act, but may apply to other wastes, including ores containing uranium in concentrations less than 500 ppm. | Substantive requirements may be applicable to wastes that are subject to the Act |
| Hazardous Wastes | FEDERAL Resource Conservation and Recovery Act (RCRA) of 1976, as amended – Subtitle D, 42 USC 6901 et seq. | Provides for “cradle-to-grave” regulation of hazardous wastes. Per 42 USC 6903(27), RCRA does not regulate “source, special nuclear, or byproduct material” as defined in the Atomic Energy Act. Per 40 CFR 261.4(b)(7), wastes derived from the extraction, beneficiation and processing of ores are not hazardous wastes. EPA does not anticipate encountering RCRA hazardous wastes during this removal action. However, if hazardous wastes (e.g., buried drums containing solvents) are discovered, RCRA hazardous waste requirements would be ARARs. | Substantive requirements may be applicable if wastes that are subject to the Act are encountered |
| Soils | FEDERAL Surface Mining Control and Reclamation Act of 1977 (SMCRA), as amended -- And regulations at 30 CFR Parts 816 and 817 | Establishes a program for regulating surface coal mining and reclamation (mandatory uniform standards). Includes minimization of impacts on fish, wildlife, and related environmental values. Revegetation requirements (e.g., 30 CFR 816.111) may be relevant & appropriate to protect against erosion. | Substantive requirements may be relevant and appropriate |
| Hazardous Materials | FEDERAL Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), as amended – And regulations at 40 CFR Part 192, Subparts A-E | Protect the public and the environment from uranium mill tailings. Some requirements (e.g., 40 CFR 192.02, 192.12, 192.32) may be ARARs. | Substantive requirements may be applicable to activities involving uranium mill tailings, and/or activities on UNC NPL site, if any; may be relevant and appropriate to other activities |

**Table A-1
Chemical-Specific ARARs and TBC Information**

| Media | Requirement | Requirement Synopsis | Status and Rationale |
|--------------|--|--|--|
| Other | FEDERAL Code of Federal Regulations (CFR), Title 10, Part 20 NRC Regulations – Standards for Protection Against Radiation; Subpart D – Radiation Dose Limits | Establishes standards for protection against ionizing radiation resulting from activities conducted under licenses issued by the NRC | Substantive requirements may be applicable or relevant and appropriate if source, byproduct or special nuclear material is encountered |
| Air | FEDERAL Clean Air Act (CAA) – National Emission Standards for Hazardous Air Pollutants (NESHAPs) that apply to radionuclides, Title 40 CFR Part 61, Subpart H. | Regulates airborne emissions of radionuclides to nearest off site receptor during cleanup of Federal facilities and licensed U.S. NRC facilities. Emissions of radionuclides cannot exceed 10 milli-Roentgen-Equivalent-Man per year (mrem/yr) | Substantive requirements may be applicable to activities on UNC NPL site, if any; may be relevant and appropriate to activities in other areas |
| Other | FEDERAL EPA Directive on Protective Cleanup Levels for Radioactive Contamination at CERCLA sites. OSWER Directive 9200.4-18 | Provides guidance for cleanup levels for CERCLA sites with radioactive contamination. Cleanup of radionuclides are governed by risk established in the NCP when ARARS are not available or sufficiently protective. | TBC |
| Water | NAVAJO NATION Navajo Nation Pollutant Discharge Elimination System Program – applicable regulations | Protection of NN watershed from discharges of pollutants from any point source | Substantive requirements may be applicable to activities on reservation and tribal trust land |
| Solid Wastes | NAVAJO NATION Navajo Nation Solid Waste Act – Subchapter 2 – Prohibited Act Subchapter 5 – Enforcement | Protect the health, safety, and preserve the resources of the NN. Regulates solid waste but exempts mine tailings and waste rock. Some requirements are applicable to salts. | Substantive requirements may be relevant and appropriate if regulated salts are encountered during removal action |
| Air | NAVAJO NATION Navajo Nation Air Pollution Prevention and Prevention Act – Air Quality Control Programs – Permits, 2004; Code of Regulations for air emissions, Rules and Regulations. | Outlines Best Management Practices (BMPs) to control dust that would be generated during earth moving activities. Details the BMPs to control excessive amounts of particulates. | Substantive requirements may be applicable to activities on reservation and tribal trust land |

**Table A-1
Chemical-Specific ARARs and TBC Information**

| Media | Requirement | Requirement Synopsis | Status and Rationale |
|-----------------|--|---|---|
| Water | NAVAJO NATION Navajo Nation Clean Water Act – Title 4 Navajo Nation Code. | Establishes water quality standards; prevention of pollutant discharges. Standards protect fish, wildlife, and domestic, cultural, agricultural, and recreational uses of water. | Substantive requirements may be applicable to activities on reservation and tribal trust land |
| Hazardous Waste | STATE 20.4 NMAC – Hazardous Waste Management | Establishes criteria for the classification of hazardous waste and for the treatment, storage, and disposal of hazardous waste. The state Act incorporates most Federal RCRA regulations, including the definition of solid waste, which excludes “source, byproduct or special nuclear material.” New Mexico’s definition of hazardous waste also excludes wastes from the extraction, beneficiation, and processing of ores and minerals. | Substantive requirements may be applicable or relevant and appropriate if wastes that are subject to the Act are encountered |
| Water | STATE 20.6.2 NMAC – New Mexico Water Quality Ground and Surface Water Protections | Establishes water quality standards and regulations to prevent or abate water pollution from discharges. | Substantive requirements may be relevant and appropriate to surface runoff on reservation or tribal trust land, and may be applicable to surface runoff on non-tribal lands |
| Water | STATE 20.6.4 NMAC – New Mexico Standards for Interstate and Intrastate Surface Waters | Establishes water quality standards that consist of the designated use or uses of surface waters, water quality criteria necessary to protect the use or uses, and an anti-degradation policy. | Substantive requirements may be relevant and appropriate to surface runoff on reservation or tribal trust land, and may be applicable to surface runoff on non-tribal lands |
| Other | STATE 20.3.14 NMAC – New Mexico Standards for Protection Against Radiation | Establishes standards for protection against radiation resulting from extraction, transport, transfer and storage of naturally occurring radioactive materials in the oil and gas industry. | Substantive requirements may be relevant and appropriate |
| Other | STATE 20.3.4 NMAC – Standards for Protection Against Radiation | Establishes standards for protection against ionizing radiation resulting from activities conducted pursuant to licenses or registrations issued by the Department | Substantive requirements may be relevant and appropriate |

Table A-2
Location-Specific ARARs and TBC Information

| Media | Requirement | Requirement Synopsis | Status and Rationale |
|--------------------|--|--|---|
| Cultural Resources | FEDERAL The Native American Graves Protection And Repatriation Act – 25 United States Code (USC) Section 3001 <i>et seq</i> and its regulations Title 43 CFR Part 10. | Protects Native American graves from desecration through the removal and trafficking of human remains and cultural items including funerary and sacred objects | Substantive requirements applicable if Native American burials or cultural items are identified within area to be disturbed |
| Cultural Resources | FEDERAL National Historic Preservation Act – 16 USC 470 <i>et seq</i> ; 36 CFR Part 800 | Provides for the protection of sites with historic places and structures | Substantive requirements applicable if eligible resources identified within area to be disturbed |
| Cultural Resources | FEDERAL Archeological Resources Protection Act of 1979 – 16 USC Sections 47000-47011; 43 CFR Part 7 | Prohibits removal of or damage to archaeological resources unless by permit or exception | Substantive requirements applicable if eligible resources are identified within area to be disturbed |
| Cultural Resources | FEDERAL American Indian Religious Freedom Act – 42 USC Section 1996 <i>et seq</i> . | Protects religious, ceremonial, and burial sites, and the free practice of religions by Native American groups | Substantive requirements applicable if Native American sacred sites are identified within area to be disturbed |
| Wildlife | FEDERAL ESA – 7 USC Section 136; 16 USC Sections 15331-1548, Title 50 CFR Parts 17 and 402 | Regulates the protection of threatened and endangered species or critical habitat of such species | Substantive requirements applicable if protected species are identified within area to be disturbed |

Table A-2
Location-Specific ARARs and TBC Information

| Media | Requirement | Requirement Synopsis | Status and Rationale |
|--------------------|---|---|---|
| Wildlife | NAVAJO NATION Navajo Nation Endangered Species List – Resource Committee Resolution RCAU-103-05 | Regulates the protection of Navajo Nation threatened and endangered species or critical habitat of such species | Substantive requirements applicable if protected species are identified within area to be disturbed on reservation or tribal trust land |
| Cultural Resources | STATE NMSA 1978 – New Mexico Cultural Properties Act | Requires the identification of cultural resources, assessment of impact on those resources that may be caused by the proposed remedy, and consultation with the State Historic Preservation Officer | Substantive requirements applicable to response actions on non-tribal lands in New Mexico |

**Table A-3
Action-Specific ARARs and TBC Information**

| Media/ Activity | Requirement | Requirement Synopsis | Status and Rationale |
|----------------------------|--|--|---|
| Hazardous Materials | FEDERAL Federal Hazardous Materials Transportation Law (formerly Hazardous Materials Transportation Act) – 49 CFR Parts 171, 172, 173 | Provides protection against the risks to life, property, and the environment that are inherent in transportation of hazardous materials in commerce | Substantive requirements applicable to transportation of materials subject to the Act, including radionuclides |
| Water | FEDERAL EPA Guidance for Developing Best Management Practices for Storm Water – Publication EPA/832/R-92006 | Guidance for developing stormwater BMPs for industrial facilities | TBC |
| Water | FEDERAL CWA – Section 402, National Pollutant Discharge Elimination System (NPDES) Stormwater discharges (40 CFR parts 122, 125). | On-site and off-site discharges from site are required to meet the substantive CWA requirements, including discharge limitations, monitoring and best management practices | Substantive requirements may be applicable |
| Water | FEDERAL CWA – Section 404, dredged or fill material, 33 CFR parts 320-330, 40 CFR 230. | Regulates discharge of dredge or fill material into waters of the U.S. | Substantive requirements may be applicable to activities impacting waters of the U.S. |
| Air | STATE 20.2 NMAC – Air Quality | Establishes ambient air quality standards, performance standards for specific sources of air pollutants, and specifies monitoring methods | Substantive requirements may be relevant and appropriate to sources on reservation or tribal trust land; may be applicable to sources on non-tribal lands in New Mexico |
| Mining | STATE 19.10 NMAC – Regulation of Non-Coal Mining | Establishes requirements for mine reclamation and close-out plans | Substantive requirements may be relevant and appropriate |

Table A-3
Action-Specific ARARs and TBC Information

| Media/ Activity | Requirement | Requirement Synopsis | Status and Rationale |
|----------------------------|--|--|--|
| Wildlife | STATE 19.21.2 NMAC – New Mexico Wildlife Conservation Act NMSA 178 Sections 17-2-37 thru 17-2- 46 | Regulates taking of endangered plant species | Substantive requirements may be applicable if protected species are identified within area to be disturbed on non-tribal lands; may be relevant and appropriate on reservation or tribal trust land |

Appendix B

Removal Action Cost Analysis Sheets

Summary of All Costs

| | Alternative 2 | Alternative 3 | Alternative 4 | Alternative 5 |
|--------------------------------------|----------------------|---------------------|---------------------|---------------------|
| Total Labor Cost: | \$8,161,740 | \$2,765,300 | \$3,702,000 | \$3,702,000 |
| Total Material Cost: | \$324,349 | \$113,800 | \$173,732 | \$173,732 |
| Total Construction Cost | \$12,230,552 | \$15,415,697 | \$19,347,013 | \$20,969,444 |
| Total Disposal Cost: | \$66,021,260 | \$694,953 | \$694,953 | \$626,049 |
| Total Transportation Cost: | \$172,215,862 | \$0 | \$0 | \$6,314,750 |
| Total ODC: | \$6,540,357 | \$1,391,168 | \$1,704,532 | \$1,834,178 |
| CONSTRUCTION COST | \$265,494,120 | \$20,380,918 | \$25,622,230 | \$33,620,154 |
| Design, Plans | \$1,223,055 | \$1,541,570 | \$1,934,701 | \$3,355,111 |
| O&M (Present Worth) | \$368,330 | \$1,841,651 | \$1,841,651 | \$1,227,767 |
| TOTAL CONTINGENCY COST | \$26,549,412 | \$2,038,092 | \$2,562,223 | \$3,362,015 |
| TOTAL COST (With Contingency) | \$293,634,917 | \$25,802,231 | \$31,960,805 | \$41,565,048 |
| Total Cost with Option A | | \$28,529,451 | \$34,688,025 | \$44,292,268 |
| Total Cost with Option B | | \$26,651,206 | \$32,809,780 | |

Option A: Removal of Hot Spot to off-site Class I HazWaste Facility (tons)

Option B: Removal of Hot Spot material to UNC NPL Site

ALTERNATIVE 2 - BASIS OF ESTIMATE SHEETS

Statement of Work

Scope Description:

Alternative 2.

The scope covered by this BOE contains only those elements directly associated with the offsite disposal of contaminated waste at the NECR site. Assumptions are explained in a separate document and are generally explained in the column to the far right of each row. Elements including design, plan development, and O&M are covered by this BOE but as a separate and distinct line item.

Judgemental Factors Applied In Projecting From Known Source Data to the Estimate:

- 1) Cost developed for this BOE were based RSE Means, RACER, Quotes and Company Experience
- 2) RS Means Heavy Construction Cost Data 21st annual Edition.
- 3) Disposal Facilities - US Ecology - Grandview Id. Transportation - MPE Inc.

Key Assumptions (not in conflict with the WBS):

- 1) All material will be excavated and disposed off site at an approved facility.
- 2) Based on volume estimates, it is estimated that the project will take 9 years.
- 3) Soil conversion factor 1.45 (cy to ton).
- 4) 100,000cy backfill will be used from an on-site source
- 5) 100% of excavated waste will be LLRW and hauled to a Class A disposal facility
- 6) Based on area and volume data, 151 acres will be disturbed and will require hydroseeding.
- 8) A 10% contingency is added for unknowns

Cost Elements

Labor:

| Labor Category | Labor Hours | Labor Rate | TOTAL COST |
|-------------------------|-------------|------------|--------------------|
| Office Labor | | | |
| Program | 10800 | \$133.00 | \$1,436,400 |
| Project Manager | 18000 | \$45.00 | \$810,000 |
| Engineer-Sr. | 10800 | \$41.00 | \$442,800 |
| Health & Safety | 17280 | \$44.00 | \$760,320 |
| Geologist/Hydrog | 12240 | \$38.00 | \$465,120 |
| Env. Scientist-Sr. | 11520 | \$42.00 | \$483,840 |
| Chemist-Sr. | 14400 | \$40.00 | \$576,000 |
| GIS-CADD-Sr. | 7200 | \$27.00 | \$194,400 |
| Admin Support | 7200 | \$22.00 | \$158,400 |
| Office Labor Total | | | \$5,327,280 |
| Field Labor | | | |
| Field | 17280 | \$44.00 | \$760,320 |
| Field Inspector | 17280 | \$27.00 | \$466,560 |
| SSHO/QC | 17280 | \$36.00 | \$622,080 |
| Surveyor | 8640 | \$25.00 | \$216,000 |
| Security | 19440 | \$20.00 | \$388,800 |
| Laborer | 19440 | \$19.58 | \$380,700 |
| Field Labor Total | | | \$2,834,460 |
| Total Labor Cost | | | \$8,161,740 |

ALTERNATIVE 2 - BASIS OF ESTIMATE SHEETS

| Item Description | Number of Units | Number of | Unit Price | TOTAL COST |
|--|-----------------|-----------|------------|-------------------------|
| PPE, Level D (day) | 1,575 | 20 | 10.00 | \$315,000 |
| Misc disposable field equipment (lump) | 7 | 1 | 1000.00 | \$7,000 |
| Drums (each) | 15 | 1 | 60.00 | \$900 |
| Scaffolding | 483 | 3 | 34.50 | \$1,449 1 54 23.70 4370 |
| Total Material Cost | | | | \$324,349 |

Construction Costs:

| Construction Description | Number of Units | Total Hours | SubCont Rate | TOTAL COST |
|---|-----------------|-------------|--------------|--|
| Util. clearance - air vac. extract. (HR) | 15 | 4 | 210.00 | \$12,600 |
| Provide/place 6" Class II base (SY) | 15 | 11,100 | 7.06 | \$1,175,490 321123.230100 |
| Asphalt pavement (SF) | 60,000 | 1 | 2.12 | \$127,200 32 12 16.140020 |
| Liner - HDPE/LLDPE (sqft) | 20,000 | 15 | 1.17 | \$386,100 334713.5312 |
| Geocomposite (SY) | 2,220 | 15 | 2.25 | \$82,418 31 32 19.161500 |
| Geotextile Fabric (SY) | 2,220 | 15 | 2.25 | \$82,418 31 32 19.161500 |
| Development of local borrow source | 35,000 | 1 | 1.00 | \$35,000 engineering estimate |
| Rip Rap load, haul on-site source (CY) | 2,220 | 1 | 25.37 | \$56,321 312323.15.6020+312323.18.2150 |
| subtotal | | | | \$1,957,546 |
| Data validation (each) | 4,100 | 1 | 10.00 | \$41,000 |
| Lab - CAM 17 Metals - solid (each) | 4,100 | 1 | 95.00 | \$389,500 Est. based on prior experience at Site |
| Lab - Radionuclides - solid (each) | 4,100 | 1 | 100.00 | \$410,000 |
| Air Monitoring (cost/year) | 9 | 1 | 75000.00 | \$675,000 Racer |
| subtotal | | | | \$1,515,500 |
| Land surveying, Mob/Demob (Lump) | 15 | 1 | 1000.00 | \$15,000 |
| Land surveying, field (hr) | 15 | 16 | 200.00 | \$48,000 |
| Land surveying report (lump) | 15 | 1 | 4500.00 | \$67,500 |
| Construction BMPs (lump) | 15 | 1 | 10000.00 | \$150,000 |
| Security fencing (LF) | 1,000 | 1 | 17.04 | \$17,040 323113.401300 |
| Temporary fencing (LF) | 15 | 5,000 | 4.18 | \$940,500 01 56 26.500250 |
| 150HP equipment-Mob/Demob | 16 | 20 | 271.00 | \$86,720 15436.500100 |
| FOGM - Equip refuel (Day) | 90 | 3 | 4000.00 | \$1,080,000 |
| Pavement removal (SY) | 1,110 | 1 | 5.25 | \$5,828 02 41 13.175050 |
| Concrete demolition (CY) | 370 | 1 | 92.00 | \$34,074 02 41 13.175500 |
| Clearing and Grubbing (AC) | 151 | 1 | 2550.00 | \$385,050 31 11 10.10 0020 |
| Excavate, place in stockpile (no util's.) | 261,300 | 1 | 2.12 | \$553,956 31 23 16.42 0300 |
| Excavate, direct load to trucks (no | 609,700 | 1 | 2.44 | \$1,486,449 31 23 16.42 0300+15% |
| Load stockpiles to trucks (CY) | 261,300 | 1 | 0.80 | \$209,040 31 23 16.42 1650 |
| Excavation factor for utilities (CY) | 8,710 | 1 | 3.55 | \$30,921 3123 16.13 0110 |
| Backfill soil, local source (CY) | 200,000 | 1 | 8.88 | \$1,776,000 31 23 23.18 1255 |
| Place/compact backfill (CY) | 200,000 | 1 | 1.99 | \$398,000 31 23 23.17 0020+312323.23 5600 |
| Soil amendments (topsoil) (SF) | 20,000 | 1 | 1.15 | \$23,000 32 91 13.23 3600 |
| topsoil placement and grading (SY) | 20,000 | 1 | 4.18 | \$83,600 32 91 19.13 0800 |
| subtotal | | | | \$7,390,677 |
| Geotechnical survey field | 15 | 1 | 200.00 | \$3,000 |
| Geotechnical testing - field obs./tests | 155 | 8 | 200.00 | \$248,000 |
| Geotech. anal. D1557 moist./density | 15 | 2 | 140.00 | \$4,200 |
| Geotech. report (lump) | 15 | 1 | 1000.00 | \$15,000 |
| subtotal | | | | \$270,200 |
| Hydroseeding (MSF) | 6,578 | 1 | 60.30 | \$396,628 329219.145400 |
| Site Winterization | 1 | 7 | 100000.00 | \$700,000 |
| Total Construction Costs | | | | \$12,230,552 |

ALTERNATIVE 2 - BASIS OF ESTIMATE SHEETS

Disposal Costs:

| Waste Disposal Description | Total Volume | Total units | Disposal Rate | TOTAL COST |
|-------------------------------------|--------------|-------------|---------------|--------------------------------------|
| soil, RCRA haz. Class I T&D (CY) - | 871,000 | 1 | 75.00 | \$65,325,000 US Ecology verbal quote |
| IDW soil T&D (drum) | 10 | 1 | 217.80 | \$2,178 02 81 20.101100 |
| IDW water T&D (drum) | 10 | 1 | 217.80 | \$2,178 |
| waste T&D demurrage (HR) | 580 | 1 | 118.80 | \$68,904 02 81 20.103110 |
| Concrete, non-haz. Class II SW, T&D | 5,000 | 7,600 | 7.60 | \$38,000 02 41 19.18 0400 |
| Asphalt, non-haz. Class II SW, T&D | 5,000 | 6,500 | 90.00 | \$585,000 02 41 19.19 0100 |
| Misc. Disposal Costs | | | | \$696,260 |
| Total Disposal Costs | | | | \$66,021,260 |

Transportation Costs:

| Waste Transportation Description | Unit Measure | Total units | Transp Rate | TOTAL COST |
|---|--------------|-------------|-------------|---------------------------------------|
| Rad waste soil, RCRA haz. Class I T&D (ton) | 1,262,950 | 1 | 136.36 | \$172,215,862 US Ecology verbal quote |
| Total Transportation Cost | | | | \$172,215,862 |

Other Direct Costs:

| Item Description | units/yr | yr | Unit Price | TOTAL COST |
|----------------------------------|----------|----|------------|--|
| Lodging for residents | 200 | 2 | 109.00 | \$43,600 per email 9/17/07 from Bill Schaal |
| Trailer/office space (Month) | 36 | 9 | 282.00 | \$91,368 01 52 13.20 0350+01 52 13.20 0700 |
| Trailer/Conex (Month) | 36 | 9 | 76.00 | \$24,624 01 52 13.20 1250 |
| Portable sanitary station (week) | 160 | 9 | 165.00 | \$237,600 01 54 33.40 6410 |
| Trash (Month) | 18 | 9 | 435.00 | \$70,470 |
| Utilities hook-up fees (lump) | 2 | 1 | 1000.00 | \$2,000 |
| Electric power PG&E (month) | 36 | 9 | 110.00 | \$35,640 01 52 13.40 0160 |
| Land phone/fax (month) | 36 | 9 | 210.00 | \$68,040 01 52 13.400140 |
| Office Equipment (month) | 36 | 9 | 150.00 | \$48,600 01 52 13.40 0100 |
| Office Supplies (month) | 36 | 9 | 95.00 | \$30,780 01 52 13.40 0120 |
| Water | 36 | 9 | 62.00 | \$20,088 01 51 13.800700 |
| Per diem, (day) | 900 | 9 | 109.00 | \$882,900 per email 9/17/07 from Bill Schaal |
| Travel, air fare (year) | 104 | 9 | 1000.00 | \$936,000 |
| Mobile phone (month) | 36 | 9 | 50.00 | \$16,200 |
| Radios (month) | 90 | 9 | 25.00 | \$20,250 |
| Rental truck 4WD (month) | 36 | 9 | 585.00 | \$189,540 01 54 33.40 7200 |
| 4WD truck fuel (week) | 160 | 9 | 24.00 | \$34,560 |
| Rental car (day) | 48 | 9 | 40.00 | \$17,280 |
| Generator (Month) | 9 | 9 | 780.00 | \$63,180 01 54 33.40 2600 |
| Generator fuel (Week) | 40 | 9 | 3.00 | \$1,080 |
| Submersible Pump (Month) | 18 | 9 | 198.00 | \$32,076 01 54 33.40 4700 |
| Truck Scales (Month) | 18 | 7 | 200.00 | \$25,200 |
| ODC's - Site Support | | | | \$2,891,076 |
| Labor | 332,088 | 9 | 0.58 | \$1,733,499 |
| Equipment | 90,650 | 9 | 0.58 | \$473,193 |
| Material: | 25,270 | 9 | 0.58 | \$131,909 |
| ODC's | 247,638 | 9 | 0.58 | \$1,292,670 |
| Subcontractors | 3,450 | 9 | 0.58 | \$18,009 |
| ODC's - Rad H&S | | | | \$3,649,281 |
| Total ODC Costs | | | | \$6,540,357 |

ALTERNATIVE 2 - BASIS OF ESTIMATE SHEETS

Other Direct Costs: O&M, Design, Plans

| | | | | | |
|--|--------|----|----------------------|----------------------|--------------------|
| Develop Design | 1 | | 6% construction cost | | \$733,833 |
| Develop Plans | 1 | 1 | 4% construction cost | | \$489,222 |
| O&M Costs | 30,000 | 30 | 1.00 | Net present Worth 7% | \$368,330 |
| Total Excluded ODC's - O&M, Design, Plans | | | | | \$1,591,385 |

Contingency:

Basis of Contingency:
10% general contingency applied in accordance with DOE G 430.1-1, Table 11-3 as the Sanitary Waste location/excavation is well known and documented.

Percent Contingency: 10.0%

Total WBS Cost:

| | |
|--|----------------------|
| Total Labor Cost: | \$8,161,740 |
| Total Material Cost: | \$324,349 |
| Total Construction Cost | \$12,230,552 |
| Total Disposal Cost: | \$66,021,260 |
| Total Transportation Cost: | \$172,215,862 |
| Total ODC: | \$6,540,357 |
| TOTAL COST (Less Contingency): | \$265,494,120 |
| TOTAL CONTINGENCY COST: | \$26,549,412 |
| TOTAL COST (With Contingency): | \$292,043,532 |
| Total Excluded ODC Costs - O&M, Design, Plans | \$1,591,385 |

Approvals:

| | | | |
|--------------|------------------------------------|-------|------------------------------------|
| Prepared By: | Eric Rixen (revised by Nova Clite) | Date: | 10/31/2007 (rev February 14, 2008) |
| Revised By: | Cynthia Wetmore | Date: | 10/15/2008 (rev 05/22/2009) |
| Approved By: | | Date: | |

ALTERNATIVE 3 - BASIS OF ESTIMATE SHEETS

Statement of Work

Scope Description:

Alternative 3.

The scope covered by this BOE contains only those elements directly associated with the excavation and consolidation of waste material into an onsite covered disposal cell at the NECR site. Assumptions are explained in a separate document and are generally explained in the column to the far right of each row. Elements including design, plan development, and O&M are covered by this BOE but as a separate and distinct line item.

Judgemental Factors Applied In Projecting From Known Source Data to the Estimate:

- 1) Cost developed for this BOE were based RSE Means, RACER, Quotes and Company Experience
- 2) RS Means Heavy Construction Cost Data 21st annual Edition.
- 3) Disposal Facilities - US Ecology - Grandview Id. Transportation - MPE Inc.

Key Assumptions (not in conflict with the WBS):

1) 21% of all waste material will be covered in-situ in Ponds 1 & 2 2) 74% of all waste material excavated and consolidated into an onsite area to be covered. 3) Assume the project will take 3 years. 4) Soil conversion factor 1.45 (cy to ton). 5) 200,000cy Backfill will be used from on-site borrow source; rip rap also from on-site quarry 6) Based on area and volume data, 151 acres will be disturbed and will require hydroseeding. 7) A 10% contingency is added for unknowns.

Cost Elements

Labor:

| Labor Category | Labor Hours | Labor Rate | TOTAL COST | References |
|-------------------------|-------------|------------|--------------------|------------|
| Office Labor | | | | |
| Program Manager | 3600 | \$133.00 | \$478,800 | |
| Project Manager | 6000 | \$45.00 | \$270,000 | |
| Engineer-Sr. | 3600 | \$41.00 | \$147,600 | |
| Health & Safety | 5760 | \$44.00 | \$253,440 | |
| Geologist/Hydroge | 2880 | \$38.00 | \$109,440 | |
| Env. Scientist-Sr. | 5280 | \$42.00 | \$221,760 | |
| Chemist-Sr. | 3200 | \$40.00 | \$128,000 | |
| GIS-CADD-Sr. | 2400 | \$27.00 | \$64,800 | |
| Admin Support | 4800 | \$22.00 | \$105,600 | |
| Office Labor Total | | | \$1,779,440 | |
| Field Labor | | | | |
| Field | 6480 | \$44.00 | \$285,120 | |
| Field Inspector | 6480 | \$27.00 | \$174,960 | |
| SSHO/QC | 6480 | \$36.00 | \$233,280 | |
| Surveyor | 1440 | \$25.00 | \$36,000 | |
| Security | 6480 | \$20.00 | \$129,600 | |
| Laborer | 6480 | \$19.58 | \$126,900 | |
| Field Labor Total | | | \$985,860 | |
| Total Labor Cost | | | \$2,765,300 | |

ALTERNATIVE 3 - BASIS OF ESTIMATE SHEETS

| Material: | | | | | |
|--|-----------------|-------------|--------------|---------------------|--|
| Item Description | Number of Units | Number of | Unit Price | TOTAL COST | |
| PPE, Level D (day) | 525 | 20 | 10.00 | \$105,000 | |
| Misc disposable field equipment (lump) | 7 | 1 | 1000.00 | \$7,000 | |
| Drums (each) | 15 | 2 | 60.00 | \$1,800 | |
| Scaffolding | 483 | 3 | 34.50 | \$1,449 | 1 54 23.70 4370 |
| Total Material Cost | | | | \$113,800 | |
| Construction Costs: | | | | | |
| Construction Description: | Number of Units | Total Hours | SubCont Rate | TOTAL COST | |
| Util. clearance - air vac. extract. (HR) | 15 | 4 | 210.00 | \$12,600 | |
| Provide/place 6" Class II base (SY) | 15 | 11,100 | 7.06 | \$1,175,490 | 321123.230100 |
| Asphalt pavement (SF) | 60,000 | 1 | 2.12 | \$127,200 | 32 12 16.140020 |
| Liner - HDPE/LLDPE (sqft) | 720,583 | 1 | 1.17 | \$843,082 | 334713.5312 |
| Geotextile Filter Fabric (SY) | 80,065 | 1 | 2.25 | \$180,146 | 31 32 19.161500 |
| Geonet Fabric (SY) | 80,065 | 1 | 2.25 | \$180,146 | 31 32 19.161500 |
| Development of local borrow source | 539,789 | 1 | 1.00 | \$539,789 | RMeans estimate |
| Rip Rap load, haul on-site source (CY) | 40,032 | 1 | 25.37 | \$1,015,622 | 312323.15.6020+312323.18.2150 |
| subtotal | | | | \$4,074,075 | |
| Data validation (each) | 4,000 | 1 | 10.00 | \$40,000 | |
| Lab - CAM 17 Metals - solid (each) | 4,000 | 1 | 95.00 | \$380,000 | Est. based on prior experience at Site |
| Lab - Radionuclides - solid (each) | 4,000 | 1 | 100.00 | \$400,000 | |
| Air Monitoring (cost/year) | 3 | 1 | 75000.00 | \$225,000 | Racer |
| subtotal | | | | \$1,045,000 | |
| Land surveying, Mob/Demob (Lump) | 13 | 1 | 1000.00 | \$13,000 | |
| Land surveying, field (hr) | 13 | 8 | 200.00 | \$20,800 | |
| Land surveying report (lump) | 13 | 1 | 4500.00 | \$58,500 | |
| Construction BMPs (lump) | 13 | 1 | 10000.00 | \$130,000 | |
| Security fencing (LF) | 1,000 | 1 | 17.04 | \$17,040 | 323113.401300 |
| Temporary fencing (LF) | 15 | 5,000 | 4.18 | \$313,500 | 01 56 26.500250 |
| Hydro-Geological survey report (lump) | 1 | 1 | 100000.00 | \$100,000 | |
| 150HP equipment | 15 | 20 | 271.00 | \$81,300 | 15436.500100 |
| FOGM - Equip refuel (Day) | 155 | 3 | 4000.00 | \$1,860,000 | |
| Pavement removal (SY) | 1,110 | 1 | 5.25 | \$5,828 | 02 41 13.175050 |
| Concrete demolition (CY) | 370 | 1 | 92.00 | \$34,074 | 02 41 13.175500 |
| Clearing and Grubbing (AC) | 151 | 1 | 2550.00 | \$385,050 | 31 11 10.10 0020 |
| Excavate, direct load to trucks (no | 776,000 | 1 | 2.44 | \$1,891,888 | 31 23 16.42 0300+15% |
| Excavation factor for utilities (CY) | 7,760 | 1 | 3.55 | \$27,548 | 3123 16.13 0110 |
| Local borrow soil, backfill delivered | 175,000 | 1 | 8.88 | \$1,554,000 | 31 23 23.18 1255 |
| Place/compact backfill (CY) | 175,000 | 1 | 1.99 | \$348,250 | 31 23 23.17 0020+312323.23 5600 |
| Soil amendmets (topsoil) (SF) | 17,500 | 1 | 1.15 | \$20,125 | 32 91 13.23 3600 |
| topsoil placement and grading (SY) | 17,500 | 1 | 4.18 | \$73,150 | 32 91 19.13 0800 |
| Place/compact Waste material (CY) | 737,200 | 1 | 2.47 | \$1,820,884 | 31 23 23.17 0020+312323.23 5640 |
| Local borrow soil, cover material | 53,376 | 1 | 8.88 | \$473,979 | 31 23 23.18 1255 |
| Place/compact cover material (CY) | 53,376 | 1 | 2.47 | \$131,839 | 31 23 23.17 0020+312323.23 5640 |
| subtotal | | | | \$9,360,754 | |
| Geotechnical survey field | 13 | 1 | 200.00 | \$2,600 | |
| Geotechnical testing - field obs./tests | 200 | 8 | 200.00 | \$320,000 | |
| Geotech. anal. D1557 moist./density | 13 | 2 | 140.00 | \$3,640 | |
| Geotech. report (lump) | 13 | 1 | 1000.00 | \$13,000 | |
| subtotal | | | | \$339,240 | |
| Hydroseeding (MSF) | 6,578 | 1 | 60.30 | \$396,628 | 329219.145400 |
| Site Winterization | 2 | 1 | 100000.00 | \$200,000 | |
| Construction Costs: | | | | \$15,415,697 | |

ALTERNATIVE 3 - BASIS OF ESTIMATE SHEETS

| Disposal Costs: | | | | |
|---|---------------------|--------------------|----------------------|--|
| Waste Disposal Description | Total Volume | Total units | Disposal Rate | TOTAL COST |
| IDW soil T&D (drum) | 7 | 1 | 217.80 | \$1,525 02 81 20.101100 |
| IDW water T&D (drum) | 7 | 1 | 217.80 | \$1,525 |
| waste T&D demurrage (HR) | 580 | 1 | 118.80 | \$68,904 02 81 20.103110 |
| Concrete, non-haz. Class II SW, T&D | 5,000 | 7,600 | 7.60 | \$38,000 02 41 19.18 0400 |
| Asphalt, non-haz. Class II SW, T&D | 5,000 | 6,500 | 90.00 | \$585,000 02 41 19.19 0100 |
| Misc. Disposal Costs | | | | \$694,953 |
| Total Disposal Costs | | | | \$694,953 |
| Transportation Costs for optional handling of "Principal Threat" Material: | | | | |
| Option | Unit Measure | | Transp Rate | TOTAL COST |
| Option A: To off-site Class I Hazardous Waste Disposal Facility (tons) | | | | |
| Transportation Costs (tons) | 14,500 | 1 | 136.36 | \$1,977,220 MPE Verbal Quote |
| Disposal fee - (CY) | 10,000 | 1 | 75.00 | \$750,000 US Ecology verbal quote |
| Subtotal Option A | | | | \$2,727,220 |
| Option B: To UNC NPL Site | | | | |
| Transport to UNC Mill Site | 14,500 | 1 | 5.00 | \$72,500 engineering estimate |
| Construction of Hot Spot Cell at NPL site | | | | \$776,475 5% of construction costs for Alt 3 |
| Subtotal Option B | | | | \$848,975 |
| Other Direct Costs: | | | | |
| Item Description | units/yr | yr | Unit Price | TOTAL COST |
| Lodging for residents | 200 | 2 | 109.00 | \$43,600 per email 9/17/07 from Bill Schaal |
| Trailer/office space (Month) | 36 | 3 | 282.00 | \$30,456 01 52 13.20 0350+01 52 13.20 0700 |
| Trailer/Conex (Month) | 36 | 3 | 76.00 | \$8,208 01 52 13.20 1250 |
| Portable sanitary station (week) | 160 | 3 | 165.00 | \$79,200 01 54 33.40 6410 |
| Trash (Month) | 18 | 3 | 435.00 | \$23,490 |
| Utilities hook-up fees (lump) | 2 | 1 | 1000.00 | \$2,000 |
| Electric power PG&E (month) | 36 | 3 | 110.00 | \$11,880 01 52 13.40 0160 |
| Land phone/fax (month) | 36 | 3 | 210.00 | \$22,680 01 52 13.400140 |
| Office Equipment (month) | 36 | 3 | 150.00 | \$16,200 01 52 13.40 0100 |
| Office Supplies (month) | 36 | 3 | 95.00 | \$10,260 01 52 13.40 0120 |
| Water | 36 | 3 | 62.00 | \$6,696 01 51 13.800700 |
| Per diem, (day) | 900 | 3 | 109.00 | \$294,300 per email 9/17/07 from Bill Schaal |
| Travel, air fare (each) | 104 | 3 | 1000.00 | \$312,000 |
| Mobile phone (month) | 36 | 3 | 50.00 | \$5,400 |
| Radios (month) | 90 | 3 | 25.00 | \$6,750 |
| Rental truck 4WD (month) | 36 | 3 | 585.00 | \$63,180 01 54 33.40 7200 |
| 4WD truck fuel (week) | 160 | 3 | 24.00 | \$11,520 |
| Rental car (day) | 48 | 3 | 40.00 | \$5,760 |
| Generator (Month) | 9 | 3 | 780.00 | \$21,060 01 54 33.40 2600 |
| Generator fuel (Week) | 40 | 3 | 3.00 | \$360 |
| Submersible Pump (Month) | 18 | 3 | 198.00 | \$10,692 01 54 33.40 4700 |
| Truck Scales (Month) | 18 | 0 | 200.00 | \$0 |
| ODC's - Site Support | | | | \$985,692 |
| Labor | 332,088 | 1 | 0.58 | \$192,611 |
| Equipment | 90,650 | 1 | 0.58 | \$52,577 |
| Material: | 25,270 | 1 | 0.58 | \$14,657 |
| ODC's | 247,638 | 1 | 0.58 | \$143,630 |
| Subcontractors | 3,450 | 1 | 0.58 | \$2,001 |
| ODC's - Rad H&S | | | | \$405,476 |
| Total ODC Costs | | | | \$1,391,168 |

ALTERNATIVE 3 - BASIS OF ESTIMATE SHEETS

| | | | | | |
|--|---------|----|----------------------|-------------------------|--------------------|
| Develop Design | 1 | 1 | 6% construction cost | | \$924,942 |
| Develop Plans | 1 | 1 | 4% construction cost | | \$616,628 |
| O&M Costs | 150,000 | 30 | | 1.00 | \$1,841,651 |
| | | | | Net present Worth 7% | |
| Total Excluded ODC's - O&M, Design, Plans | | | | | \$3,383,221 |

Contingency:

Basis of Contingency:

10% general contingency applied in accordance with DOE G 430.1-1, Table 11-3 as the Sanitary Waste location/excavation is well known and documented.

Percent Contingency: 10.0%

Total WBS Cost:

| | | |
|--|---------------------|--------------|
| Total Labor Cost: | \$2,765,300 | |
| Total Material Cost: | \$113,800 | |
| Total Construction Cost | \$15,415,697 | |
| Total Disposal Cost: | \$694,953 | |
| Total Transportation Cost: | | |
| Total ODC: | \$1,391,168 | |
| <hr/> | | |
| TOTAL COST (Less Contingency): | \$20,380,918 | |
| TOTAL CONTINGENCY COST: | \$2,038,092 | |
| TOTAL COST (With Contingency): | \$22,419,010 | |
| Additional Cost with Option A TSD Disposal | \$2,727,220 | \$25,146,230 |
| Additional Cost with Option B UNC NPL Disposal | \$848,975 | \$23,267,985 |
| <hr/> | | |
| Total Excluded ODC Costs - O&M, Design, Plans | \$3,383,221 | |

Approvals:

| | | | |
|--------------|------------------------------------|-------|------------------------------------|
| Prepared By: | Eric Rixen (revised by Nova Clite) | Date: | 10/31/2007 (rev February 13, 2008) |
| Revised By: | Cynthia Wetmore | Date: | 10/15/2008 (rev 05/22/2009) |
| Approved By: | | Date: | |

ALTERNATIVE 4 - BASIS OF ESTIMATE SHEETS

Statement of Work

Scope Description:

Alternative 4.

The scope covered by this BOE contains only those elements directly associated with the excavation and consolidation of waste material into an onsite fully encapsulated disposal cell at the NECR site. Assumptions are explained in a separate document and are generally explained in the column to the far right of each row. Elements including design, plan development, and O&M are covered by this BOE but as a separate and distinct line item.

Judgemental Factors Applied In Projecting From Known Source Data to the Estimate:

- 1) Cost developed for this BOE were based RSE Means, RACER, Quotes and Company Experience
- 2) RS Means Heavy Construction Cost Data 21st annual Edition.
- 3) Disposal Facilities - US Ecology - Grandview Id. Transportation - MPE Inc.

Key Assumptions (not in conflict with the WBS):

- 1) All material will be excavated and consolidated into an onsite repository.
- 2) Based on volume estimates, it is estimated that the project will take 4 years.
- 3) Soil conversion factor 1.45 (cy to ton).
- 4) 200,000cy Backfill will be obtained from an on-site borrow source, rip-rap also assumed from on-site quarry.
- 5) Based on area and volume data, 151 acres will be disturbed and will require hydroseeding.
- 7) A 10% contingency is added for unknowns.
- 8) Repository will be located over Sandfill 2, NECR-2, and Sandfill 3 areas.

Cost Elements

Labor:

| Labor Category | Labor Hours | Labor Rate | | TOTAL COST | Reference |
|-------------------------|-------------|------------|--|--------------------|-----------|
| Office Labor | | | | | |
| Program | 4800 | \$133.00 | | \$638,400 | |
| Project Manager | 8000 | \$45.00 | | \$360,000 | |
| Engineer-Sr. | 4800 | \$41.00 | | \$196,800 | |
| Health & Safety | 7680 | \$44.00 | | \$337,920 | |
| Geologist/Hydrog | 3840 | \$38.00 | | \$145,920 | |
| Env. Scientist-Sr. | 7040 | \$42.00 | | \$295,680 | |
| Chemist-Sr. | 6400 | \$40.00 | | \$256,000 | |
| GIS-CADD-Sr. | 3200 | \$27.00 | | \$86,400 | |
| Admin Support | 3200 | \$22.00 | | \$70,400 | |
| Office Labor Total | | | | \$2,387,520 | |
| Field Labor | | | | | |
| Field | 8640 | \$44.00 | | \$380,160 | |
| Field Inspector | 8640 | \$27.00 | | \$233,280 | |
| SSHO/QC | 8640 | \$36.00 | | \$311,040 | |
| Surveyor | 1920 | \$25.00 | | \$48,000 | |
| Security | 8640 | \$20.00 | | \$172,800 | |
| Laborer | 8640 | \$19.58 | | \$169,200 | |
| Field Labor Total | | | | \$1,314,480 | |
| Total Labor Cost | | | | \$3,702,000 | |

Material:

| Item Description | Number of Units | Number of | Unit Price | TOTAL COST |
|--|-----------------|-----------|------------|------------------|
| PPE, Level D (day) | 700 | 20 | \$10.0 | \$140,000 |
| Misc disposable field equipment (lump) | 15 | 2 | \$1,000.0 | \$30,000 |
| Drums (each) | 15 | 2 | \$60.0 | \$1,800 |
| Scaffolding | 483 | 4 | 34.50 | \$1,932 |
| Total Material Cost | | | | \$173,732 |

ALTERNATIVE 4 - BASIS OF ESTIMATE SHEETS

Construction Costs:

| Construction Description | Number of Units | Total Hours | SubCont Rate | TOTAL COST |
|---|-----------------|-------------|--------------|--|
| Util. clearance - air vac. extract. (HR) | 15 | 4 | \$210.0 | \$12,600 |
| Provide/place 6" Class II base (SY) | 15 | 11,100 | 7.06 | \$1,175,490 321123.230100 |
| Asphalt pavement (SF) | 60,000 | 1 | 2.12 | \$127,200 32 12 16.140020 |
| Liner - HDPE/LLDPE (sqft) | 1,526,533 | 1 | 1.17 | \$1,786,044 334713.5312 |
| Geotextile Filter Fabric (SY) | 169,615 | 1 | 2.25 | \$381,633 31 32 19.161500 |
| Geonet Fabric (SY) | 169,615 | 1 | 2.25 | \$381,633 31 32 19.161500 |
| Development of local borrow source | 539,789 | 1 | 1.00 | \$539,789 RSM estimate |
| Rip Rap load, haul on-site source (CY) | 49,889 | 1 | 25.37 | \$1,265,681 312323.15.6020+312323.18.2150 |
| subtotal | | | | \$5,670,071 |
| Data validation (each) | 4,100 | 1 | 10.00 | \$41,000 |
| Lab - CAM 17 Metals - solid (each) | 4,100 | 1 | 95.00 | \$389,500 Est. based on prior experience at Site |
| Lab - Radionuclides - solid (each) | 4,100 | 1 | 100.00 | \$410,000 |
| Air Monitoring (cost/year) | 4 | 1 | 75000.00 | \$300,000 Racer |
| subtotal | | | | \$1,140,500 |
| Land surveying, Mob/Demob (Lump) | 16 | 1 | \$1,000.0 | \$16,000 |
| Land surveying, field (hr) | 15 | 8 | \$200.0 | \$24,000 |
| Land surveying report (lump) | 16 | 1 | \$4,500.0 | \$72,000 |
| Security fencing (LF) | 1,000 | 1 | 17.04 | \$17,040 323113.401300 |
| Temporary fencing (LF) | 15 | 5,000 | 4.18 | \$313,500 01 56 26.500250 |
| Hydro-Geological survey report (lump) | 1 | 1 | 100000.00 | \$100,000 |
| Construction BMPs (lump) | 20 | 1 | 10000.00 | \$200,000 |
| 150HP equipment | 15 | 20 | 271.00 | \$81,300 15436.500100 |
| FOGM - Equip refuel (Day) | 155 | 3 | 4000.00 | \$1,860,000 |
| Pavement removal (SY) | 1,110 | 1 | 5.25 | \$5,828 02 41 13.175050 |
| Concrete demolition (CY) | 370 | 1 | 92.00 | \$34,074 02 41 13.175500 |
| Clearing and Grubbing (AC) | 151 | 1 | 2550.00 | \$385,050 31 11 10.10 0020 |
| Excavate, place in stockpile (no util's.) (CY) | 130,650 | 1 | \$7.6 | \$998,166 31 23 16.463320 |
| Excavate, direct load to trucks (no util's.) (CY) | 740,350 | 1 | 2.44 | \$1,804,973 31 23 16.42 0300+15% |
| Load stockpiles to trucks (CY) | 130,650 | 1 | \$0.3 | \$37,889 31 23 16.420020 |
| Excavation factor for utilities (CY) | 8,710 | 1 | 3.55 | \$30,921 3123 16.13 0110 |
| Local borrow soil, backfill delivered (CY) | 200,000 | 1 | 8.88 | \$1,776,000 31 23 23.18 1255 |
| Place/compact backfill (CY) | 200,000 | 1 | 1.99 | \$398,000 31 23 23.17 0020+312323.23 5600 |
| Soil amendments (topsoil) (SF) | 20,000 | 1 | 1.15 | \$23,000 32 91 13.23 3600 |
| topsoil placement and grading (SY) | 20,000 | 1 | 4.18 | \$83,600 32 91 19.13 0800 |
| Place/compact Waste material (CY) | 871,000 | 1 | 2.47 | \$2,151,370 31 23 23.17 0020+312323.23 5640 |
| Import soil, Repository material delivered (CY) | 113,077 | 1 | 8.88 | \$1,004,124 31 23 23.18 1255 |
| Place/compact imported repository material (CY) | 113,077 | 1 | 2.47 | \$279,300 31 23 23.17 0020+312323.23 5640 |
| subtotal | | | | \$11,696,134 |
| Geotechnical survey field (mob/demob) | 16 | 1 | \$200.0 | \$3,200 |
| Geotechnical testing - field obs./tests (Hr) | 200 | 8 | \$200.0 | \$320,000 |
| Geotech. anal. D1557 moist./density relation | 16 | 2 | \$140.0 | \$4,480 |
| Geotech. report (lump) | 16 | 1 | \$1,000.0 | \$16,000 |
| subtotal | | | | \$343,680 |
| Hydroseeding (MSF) | 6,578 | 1 | 60.30 | \$396,628 329219.145400 |
| Site Winterization | 1 | 1 | 100000.00 | \$100,000 |
| Construction Costs: | | | | \$19,347,013 |

ALTERNATIVE 4 - BASIS OF ESTIMATE SHEETS

Disposal Costs:

| Waste Disposal Description | Total Volume | Total units | Disposal Rate | TOTAL COST |
|--|--------------|-------------|---------------|----------------------------|
| IDW soil T&D (drum) | 7 | 1 | 217.80 | \$1,525 02 81 20.101100 |
| IDW water T&D (drum) | 7 | 1 | 217.80 | \$1,525 |
| waste T&D demurrage (HR) | 580 | 1 | 118.80 | \$68,904 02 81 20.103110 |
| Concrete, non-haz. Class II SW, T&D (CY) | 5,000 | 7,600 | 7.60 | \$38,000 02 41 19.18 0400 |
| Asphalt, non-haz. Class II SW, T&D (ton) | 5,000 | 6,500 | 90.00 | \$585,000 02 41 19.19 0100 |
| Misc. Disposal Costs | | | | \$694,953 |
| Total Disposal Costs | | | | \$694,953 |

Transportation Costs for optional handling of "Principal Threat" Material:

| Options | Unit Measure | Total units | Transp Rate | TOTAL COST |
|---|--------------|-------------|-------------|--|
| Option A: To off-site Class I Hazardous Waste Disposal Facility (tons) | | | | |
| Transportation Costs (tons) | 14,500 | 1 | 136.36 | \$1,977,220 MPe Verbal Quote |
| Disposal fee - (CY) | 10,000 | 1 | 75.00 | \$750,000 US Ecology verbal quote |
| Subtotal Option A | | | | \$2,727,220 |
| Option B: To UNC NPL Site | | | | |
| Transport to UNC Mill Site | 14,500 | 1 | 5.00 | \$72,500 engineering estimate |
| Construction of Hot Spot Cell at NPL site | | | | \$976,037 5% of construction costs for Alt 4 |
| Subtotal Option B | | | | \$1,048,537 |

Other Direct Costs:

| Item Description | units/yr | yr | Unit Price | TOTAL COST |
|----------------------------------|----------|----|------------|--|
| Lodging for residents | 200 | 2 | 109.00 | \$43,600 per email 9/17/07 from Bill Schaal |
| Trailer/office space (Month) | 36 | 4 | 282.00 | \$40,608 01 52 13.20 0350+01 52 13.20 0700 |
| Trailer/Conex (Month) | 36 | 4 | 76.00 | \$10,944 01 52 13.20 1250 |
| Portable sanitary station (week) | 160 | 4 | 165.00 | \$105,600 01 54 33.40 6410 |
| Trash (Month) | 18 | 4 | 435.00 | \$31,320 |
| Utilities hook-up fees (lump) | 2 | 1 | 1000.00 | \$2,000 |
| Electric power PG&E (month) | 36 | 4 | 110.00 | \$15,840 01 52 13.40 0160 |
| Land phone/fax (month) | 36 | 4 | 210.00 | \$30,240 01 52 13.400140 |
| Office Equipment (month) | 36 | 4 | 150.00 | \$21,600 01 52 13.40 0100 |
| Office Supplies (month) | 36 | 4 | 95.00 | \$13,680 01 52 13.40 0120 |
| Water | 36 | 4 | 62.00 | \$8,928 01 51 13.800700 |
| Per diem, (day) | 900 | 4 | 109.00 | \$392,400 per email 9/17/07 from Bill Schaal |
| Travel, air fare (each) | 104 | 4 | 1000.00 | \$416,000 |
| Mobile phone (month) | 36 | 4 | 50.00 | \$7,200 |
| Radios (month) | 90 | 4 | 25.00 | \$9,000 |
| Rental truck 4WD (month) | 36 | 4 | 585.00 | \$84,240 01 54 33.40 7200 |
| 4WD truck fuel (week) | 160 | 4 | 24.00 | \$15,360 |
| Rental car (day) | 48 | 4 | 40.00 | \$7,680 |
| Generator (Month) | 9 | 4 | 780.00 | \$28,080 01 54 33.40 2600 |
| Generator fuel (Week) | 40 | 4 | 3.00 | \$480 |
| Submersible Pump (Month) | 18 | 4 | 198.00 | \$14,256 01 54 33.40 4700 |
| Truck Scales (Month) | 18 | 0 | 200.00 | \$0 |
| ODC's - Site Support | | | | \$1,299,056 |
| Labor | 332,088 | 1 | 0.58 | \$192,611 |
| Equipment | 90,650 | 1 | 0.58 | \$52,577 |
| Material: | 25,270 | 1 | 0.58 | \$14,657 |
| ODC's | 247,638 | 1 | 0.58 | \$143,630 |
| Subcontractors | 3,450 | 1 | 0.58 | \$2,001 |
| ODC's - Rad H&S | | | | \$405,476 |
| Total ODC Costs | | | | \$1,704,532 |

ALTERNATIVE 4 - BASIS OF ESTIMATE SHEETS

| | | | | | |
|--|---------|----|----------------------|----------------------------|--------------------|
| Develop Design | 1 | 1 | 6% construction cost | | \$1,160,821 |
| Develop Plans | 1 | 1 | 4% construction cost | | \$773,881 |
| O&M Costs | 150,000 | 30 | \$1.0 | Net present Worth 7% | \$1,841,651 |
| Total Excluded ODC's - O&M, Design, Plans | | | | | \$3,776,352 |

Contingency:

Basis of Contingency:
10% general contingency applied in accordance with DOE G 430.1-1, Table 11-3 as the Sanitary Waste location/excavation is well known and documented.

Percent Contingency: 10.0%

Total WBS Cost:

| | | |
|--|---------------------|--------------|
| Total Labor Cost: | \$3,702,000 | |
| Total Material Cost: | \$173,732 | |
| Total Construction Cost | \$19,347,013 | |
| Total Disposal Cost: | \$694,953 | |
| Total Transportation Cost: | | |
| Total ODC: | \$1,704,532 | |
| <hr/> | | |
| TOTAL COST (Less Contingency): | \$25,622,230 | |
| TOTAL CONTINGENCY COST: | \$2,562,223 | |
| TOTAL COST (With Contingency): | <u>\$28,184,453</u> | |
| Additional Cost with Option A TSD Disposal | \$2,727,220 | \$30,911,673 |
| Additional Cost with Option B UNC NPL Disposal | \$1,048,537 | \$29,232,990 |
| <hr/> | | |
| Total Excluded ODC Costs - O&M, Design, Plans | \$3,776,352 | |

Approvals:

| | | | |
|--------------|------------------------------------|-------|------------------------------------|
| Prepared By: | Eric Rixen (revised by Nova Clite) | Date: | 10/31/2007 (rev February 13, 2008) |
| Revised By: | Cynthia Wetmore | Date: | 10/15/2008 (rev 05/22/2009) |
| Approved By: | | Date: | |

ALTERNATIVE 5 - BASIS OF ESTIMATE SHEETS

Statement of Work

Scope Description:

Alternative 5.

The scope covered by this BOE contains only those elements directly associated with the excavation and consolidation of waste material into a fully encapsulated disposal cell at the NECR UNC site. Assumptions are explained in a separate document and are generally explained in the column to the far right of each row. Elements including design, plan development, and O&M are covered by this BOE but as a separate and distinct line item.

Judgemental Factors Applied In Projecting From Known Source Data to the Estimate:

- 1) Cost developed for this BOE were based RSE Means, RACER, Quotes and Company Experience
- 2) RS Means Heavy Construction Cost Data 21st annual Edition.
- 3) Disposal Facilities - US Ecology - Grandview Id. Transportation - MPE Inc.

Key Assumptions (not in conflict with the WBS):

- 1) 100% of excavated waste material will be excavated and consolidated into a repository constructed at the UNC-NPL site. 2) Project will take 4 years. 3) Soil conversion factor 1.45 (cy to ton). 4) 200,000cy Backfill will be used from an on-site borrow source; rip-rap also from developed on-site quarry. 5) 151 acres will be disturbed and will require hydroseeding. 6) A 10% contingency is added for unknowns.

Cost Elements

Labor:

| Labor Category | Labor Hours | Labor Rate | | TOTAL COST | Reference |
|-------------------------|-------------|------------|--|--------------------|-----------|
| Office Labor | | | | | |
| Program Manager | 4800 | \$133.00 | | \$638,400 | |
| Project Manager | 8000 | \$45.00 | | \$360,000 | |
| Engineer-Sr. | 4800 | \$41.00 | | \$196,800 | |
| Health & Safety | 7680 | \$44.00 | | \$337,920 | |
| Geologist/Hydrogeo-Sr. | 3840 | \$38.00 | | \$145,920 | |
| Env. Scientist-Sr. | 7040 | \$42.00 | | \$295,680 | |
| Chemist-Sr. | 6400 | \$40.00 | | \$256,000 | |
| GIS-CADD-Sr. | 3200 | \$27.00 | | \$86,400 | |
| Admin Support | 3200 | \$22.00 | | \$70,400 | |
| Office Labor Total | | | | \$2,387,520 | |
| Field Labor | | | | | |
| Field Superintendent | 8640 | \$44.00 | | \$380,160 | |
| Field Inspector | 8640 | \$27.00 | | \$233,280 | |
| SSHO/QC | 8640 | \$36.00 | | \$311,040 | |
| Surveyor | 1920 | \$25.00 | | \$48,000 | |
| Security | 8640 | \$20.00 | | \$172,800 | |
| Laborer | 8640 | \$19.58 | | \$169,200 | |
| Field Labor Total | | | | \$1,314,480 | |
| Total Labor Cost | | | | \$3,702,000 | |

Material:

| Item Description | Number of Units | Number of Units | Unit Price | TOTAL COST |
|--|-----------------|-----------------|------------|------------------------|
| PPE, Level D (day) | 700 | 20 | \$10.0 | \$140,000 |
| Misc disposable field equipment (lump) | 15 | 2 | \$1,000.0 | \$30,000 |
| Drums (each) | 15 | 2 | \$60.0 | \$1,800 |
| Scaffolding | 483 | 4 | 34.50 | \$1,932.154 23.70 4370 |
| Total Material Cost | | | | \$173,732 |

ALTERNATIVE 5 - BASIS OF ESTIMATE SHEETS

Construction Costs:

| Construction Description | Number of Units | Total units | SubCont Rate | TOTAL COST |
|---|-----------------|-------------|--------------|--|
| Util. clearance - air vac. extract. (HR) | 15 | 8 | \$210.0 | \$25,200 |
| Provide/place 6" Class II base (SY) | 15 | 16,380 | 7.06 | \$1,734,642 321123.230100 |
| Asphalt pavement (SF) | 81,760 | 1 | 2.12 | \$173,331 32 12 16.140020 |
| Liner - HDPE/LLDPE (sqft) | 1,526,533 | 1 | 1.17 | \$1,786,044 334713.5312 |
| Geotextile Filter Fabric (SY) | 169,445 | 1 | 2.25 | \$381,252 31 32 19.161500 |
| Geonet Fabric (SY) | 169,445 | 1 | 2.25 | \$381,252 31 32 19.161500 |
| Development of local borrow source | 539,789 | 1 | 1.00 | \$539,789 RSM estimate |
| Rip Rap load, haul on-site source (CY) | 49,889 | 1 | 25.37 | \$1,265,684 312323.15.6020+312323.18.2150 |
| subtotal | | | | \$6,287,193 |
| Data validation (each) | 4,100 | 1 | 10.00 | \$41,000 |
| Lab - CAM 17 Metals - solid (each) | 4,100 | 1 | 95.00 | \$389,500 Est. based on prior experience at Site |
| Lab - Radionuclides - solid (each) | 4,100 | 1 | 100.00 | \$410,000 |
| Air Monitoring (cost/year) | 4 | 1 | 75000.00 | \$300,000 Racer |
| subtotal | | | | \$1,140,500 |
| Land surveying, Mob/Demob (Lump) | 16 | 2 | \$1,000.0 | \$32,000 |
| Land surveying, field (hr) | 18 | 24 | \$200.0 | \$86,400 |
| Land surveying report (lump) | 16 | 2 | \$4,500.0 | \$144,000 |
| Surveying Costs | | | | \$262,400 |
| Security fencing (LF) | 1,000 | 2 | 17.04 | \$34,080 323113.401300 |
| Temporary fencing (LF) | 15 | 5,000 | 4.18 | \$313,500 01 56 26.500250 |
| Hydro-Geological survey report (lump) | 1 | 1 | 100000.00 | \$100,000 |
| Construction BMPs (lump) | 15 | 2 | 10000.00 | \$300,000 |
| 150HP equipment | 16 | 20 | 271.00 | \$86,720 15436.500100 |
| FOGM - Equip refuel (Day) | 155 | 3 | 4000.00 | \$1,860,000 |
| Pavement removal (SY) | 1,110 | 1 | 5.25 | \$5,828 02 41 13.175050 |
| Concrete demolition (CY) | 370 | 1 | 92.00 | \$34,074 02 41 13.175500 |
| Clearing and Grubbing (AC) | 192 | 2 | 2550.00 | \$979,200 31 11 10.10 0020 |
| Excavate, direct load to trucks (no util's.) (CY) | 871,000 | 1 | 2.44 | \$2,123,498 31 23 16.42 0300+31 23 16.42 0020 |
| Excavation factor for utilities (CY) | 8,710 | 1 | 3.55 | \$30,921 3123 16.13 0110 |
| Local soil source, backfill delivered (CY) | 200,000 | 1 | 8.88 | \$1,776,000 31 23 23.18 1255 |
| Place/compact backfill (CY) | 200,000 | 1 | 1.99 | \$398,000 31 23 23.17 0020+312323.23 5600 |
| Soil amendments (topsoil) (SF) | 20,000 | 1 | 1.15 | \$23,000 32 91 13.23 3600 |
| topsoil placement and grading (SY) | 20,000 | 1 | 4.18 | \$83,600 32 91 19.13 0800 |
| Place/compact Waste material (CY) | 871,000 | 1 | 2.47 | \$2,151,370 31 23 23.17 0020+312323.23 5640 |
| Import soil, Repository material delivered (CY) | 113,077 | 1 | 8.88 | \$1,004,124 31 23 23.18 1255 |
| Place/compact imported repository material (CY) | 113,077 | 1 | 2.47 | \$279,300 31 23 23.17 0020+312323.23 5640 |
| subtotal | | | | \$11,583,214 |
| Geotechnical survey field (mob/demob) | 16 | 2 | \$200.0 | \$6,400 |
| Geotechnical testing - field obs./tests (Hr) | 200 | 16 | \$200.0 | \$640,000 |
| Geotech. anal. D1557 moist./density relation | 16 | 4 | \$140.0 | \$8,960 |
| Geotech. report (lump) | 16 | 1 | \$1,000.0 | \$16,000 |
| subtotal | | | | \$671,360 |
| Hydroseeding (MSF) | 6,839 | 2 | 60.30 | \$824,777 329219.145400 |
| Site Winterization | 1 | 2 | 100000.00 | \$200,000 |
| Construction Costs: | | | | \$20,969,444 |

ALTERNATIVE 5 - BASIS OF ESTIMATE SHEETS

Disposal Costs:

| Waste Disposal Description | Total Volume | Total units | Disposal Rate | TOTAL COST |
|--|--------------|-------------|---------------|----------------------------|
| IDW soil T&D (drum) | 7 | 1 | 217.80 | \$1,525 02 81 20.101100 |
| IDW water T&D (drum) | 7 | 1 | 217.80 | \$1,525 |
| Concrete, non-haz. Class II SW, T&D (CY) | 5,000 | 7,600 | 7.60 | \$38,000 02 41 19.18 0400 |
| Asphalt, non-haz. Class II SW, T&D (ton) | 5,000 | 6,500 | 90.00 | \$585,000 02 41 19.19 0100 |
| Misc.Disposal Costs | | | | \$626,049 |
| Total Disposal Costs | | | | \$626,049 |

Transportation Costs for optional handling of "Principal Threat" Material:

| Options | Unit Measure | Total units | Transp Rate | TOTAL COST |
|--|--------------|-------------|-------------|-----------------------------------|
| Option A: To off-site Class I Hazardous Waste | | | | |
| Disposal Facility (tons) | | | | |
| Transportation Costs (tons) | 14,500 | 1 | 136.36 | \$1,977,220 MPe Verbal Quote |
| Disposal fee - (CY) | 10,000 | 1 | 75.00 | \$750,000 US Ecology verbal quote |
| Subtotal Option A | | | | \$2,727,220 |

Transportation Costs:

| Waste Transportation Description | Unit Measure | Total units | Transp Rate | TOTAL COST |
|----------------------------------|--------------|-------------|-------------|--------------------|
| Transport to UNC Mill Site | 1,262,950 | 1 | 5.00 | \$6,314,750 |
| Total Transportation Cost | | | | \$6,314,750 |

Other Direct Costs:

| Item Description | units/yr | yr | Unit Price | TOTAL COST |
|----------------------------------|----------|----|------------|--|
| Lodging for residents | 200 | 2 | 109.00 | \$43,600 per email 9/17/07 from Bill Schaal |
| Trailer/office space (Month) | 36 | 4 | 282.00 | \$40,608 01 52 13.20 0350+01 52 13.20 0700 |
| Trailer/Conex (Month) | 36 | 4 | 76.00 | \$10,944 01 52 13.20 1250 |
| Portable sanitary station (week) | 160 | 4 | 165.00 | \$105,600 01 54 33.40 6410 |
| Trash (Month) | 18 | 4 | 435.00 | \$31,320 |
| Utilities hook-up fees (lump) | 2 | 1 | 1000.00 | \$2,000 |
| Electric power PG&E (month) | 36 | 4 | 110.00 | \$15,840 01 52 13.40 0160 |
| Land phone/fax (month) | 36 | 4 | 210.00 | \$30,240 01 52 13.400140 |
| Office Equipment (month) | 36 | 4 | 150.00 | \$21,600 01 52 13.40 0100 |
| Office Supplies (month) | 36 | 4 | 95.00 | \$13,680 01 52 13.40 0120 |
| Water | 36 | 4 | 62.00 | \$8,928 01 51 13.800700 |
| Per diem, (day) | 900 | 4 | 109.00 | \$392,400 per email 9/17/07 from Bill Schaal |
| Travel, air fare (each) | 104 | 4 | 1000.00 | \$416,000 |
| Mobile phone (month) | 36 | 4 | 50.00 | \$7,200 |
| Radios (month) | 90 | 4 | 25.00 | \$9,000 |
| Rental truck 4WD (month) | 36 | 4 | 585.00 | \$84,240 01 54 33.40 7200 |
| 4WD truck fuel (week) | 160 | 4 | 24.00 | \$15,360 |
| Rental car (day) | 48 | 4 | 40.00 | \$7,680 |
| Generator (Month) | 9 | 4 | 780.00 | \$28,080 01 54 33.40 2600 |
| Generator fuel (Week) | 40 | 4 | 3.00 | \$480 |
| Submersible Pump (Month) | 18 | 4 | 198.00 | \$14,256 01 54 33.40 4700 |
| Truck Scales (Month) | 18 | 3 | 200.00 | \$10,800 |
| ODC's - Site Support | | | | \$1,309,856 |
| Labor | 332,088 | 1 | 0.75 | \$249,066 |
| Equipment | 90,650 | 1 | 0.75 | \$67,988 |
| Material: | 25,270 | 1 | 0.75 | \$18,953 |
| ODC's | 247,638 | 1 | 0.75 | \$185,729 |
| Subcontractors | 3,450 | 1 | 0.75 | \$2,588 |
| ODC's - Rad H&S | | | | \$524,322 |
| Total ODC Costs | | | | \$1,834,178 |

ALTERNATIVE 5 - BASIS OF ESTIMATE SHEETS

| | | | | | |
|----------------|---------|----|-----------------------|-------------------------|-------------|
| Develop Design | | 1 | 12% construction cost | | \$2,516,333 |
| Develop Plans | | 1 | 4% construction cost | | \$838,778 |
| O&M Costs | 100,000 | 30 | \$1.0 | Net present Worth 7% | \$1,227,767 |

Total Excluded ODC's - O&M, Design, Plans **\$4,582,879**

Contingency:

Basis of Contingency:

10% general contingency applied in accordance with DOE G 430.1-1, Table 11-3 as the Sanitary Waste location/excavation is well known and documented.

Percent Contingency: 10.0%

Total WBS Cost:

| | | |
|--|---------------------|---------------------|
| Total Labor Cost: | \$3,702,000 | |
| Total Material Cost: | \$173,732 | |
| Total Construction Cost | \$20,969,444 | |
| Total Disposal Cost: | \$626,049 | |
| Total Transportation Cost: | \$6,314,750 | |
| Total ODC: | \$1,834,178 | |
| <hr/> | | |
| TOTAL COST (Less Contingency): | \$33,620,154 | |
| TOTAL CONTINGENCY COST: | \$3,362,015 | |
| TOTAL COST (With Contingency): | \$36,982,169 | |
| Total Excluded ODC Costs - O&M, Design, Plans | \$4,582,879 | |
| Additional Cost with Option A TSD Disposal | \$2,727,220 | \$39,709,389 |

Approvals:

| | | | |
|--------------|------------------------------------|------|------------------------------------|
| Prepared By: | Eric Rixen (revised by Nova Clite) | Date | 10/31/2007 (rev February 14, 2008) |
| Revision By: | cynthia wetmore | Date | 10/15/2008 (rev 05/22/2009) |
| Approved By: | | Date | |

Appendix C

**Navajo Department of Justice letter to EPA discussing
Trust Responsibility.**

September 2, 2008



NAVAJO NATION DEPARTMENT OF JUSTICE
OFFICE OF THE ATTORNEY GENERAL

LOUIS DENETSOSIE
ATTORNEY GENERAL

HARRISON TSOSIE
DEPUTY ATTORNEY GENERAL

September 2, 2008

Mr. Dustin Minor
Office of Regional Counsel
United States Environmental Protection Agency Region IX
75 Hawthorne St.
San Francisco, CA 94105

Re: Draft Engineering Evaluation/Cost Analysis for the Northeast Church Rock site

Dear Mr. Minor:

The Navajo Nation writes regarding the Engineering Evaluation/Cost Analysis ("EE/CA") currently being assembled for the Northeast Church Rock mine site near Gallup, New Mexico ("NECR"). As previously expressed to the Agency, the Navajo Nation opposes disposal of radioactive waste on Navajo tribal land as being inconsistent with both federal law and the Agency's federal trust responsibility. Unique historical, cultural, and religious realities of Navajo life, as well as the Agency's own guidelines for completing the EE/CA, militate against the selection of such an alternative. Accordingly, the Navajo Nation urges the Agency to consider and apply these and the other factors discussed below as it identifies and recommends cleanup alternatives in the EE/CA.

1. The Agency's Indian Policy Should Guide the Agency's Decisions Regarding the NECR Mine Site

The federal government bears a unique trust responsibility to Indian Tribes, including the Navajo Nation. In a 2001 Supreme Court decision involving the Klamath Tribe's water rights, the Court described the trust doctrine as "one of the primary cornerstones of Indian law," ... with the United States as trustee, the Indian tribes ... as beneficiaries, and the property and natural resources managed by the United States as the trust corpus." *Dep't of Interior v. Klamath Water Users Protective Ass'n*, 532 U.S. 1, 11 (2001) (quoting Felix S. Cohen's Handbook of Federal Indian Law 221 (Rennard Strickland et al. eds., 1982) (1942)).

This trust obligation applies to every arm of the federal government, including the Agency. Courts have not only acknowledged the Agency's trust duties to the Navajo Nation, they have also upheld EPA positions regarding tribal lands based on its trust duties. *See, e.g., HRI, Inc. v. EPA*, 198 F.3d 1224, 1246 (10th Cir. 2000) ("Congress's intent to protect tribal lands and governance extends no less to EPA than to other departments of the federal government.").

The EPA acknowledged this unique trust relationship in its Policy for the Administration of Environmental Programs on Indian Reservations.¹ The Policy recognizes the Agency's duty to protect the lands and jurisdiction of the Indian tribes: "In keeping with that trust responsibility, the Agency will endeavor to protect the environmental interests of Indian Tribes when carrying out its responsibilities that may affect the reservations." Significantly, the Policy commands the Agency to "ensure the close involvement of Tribal Governments in making decisions and managing environmental programs affecting reservation lands," and to "give special consideration to Tribal interests in making Agency policy."

2. Several Factors Militate Against Retaining Radioactive Waste on Navajo Land

The Navajo Nation believes that the unique cultural, religious, and historical context surrounding the NECR mine render inappropriate any remedial measure that results in mine waste remaining on Navajo land. Furthermore, under the Agency's Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA (Aug. 1993) ("Guidance"), the NECR EE/CA must consider several criteria when analyzing cleanup alternatives. Among these criteria are effectiveness, implementability, and community acceptance, which also weigh heavily in favor of an off-site solution. (Guidance at 20, 43.)

As explained below, each of these considerations is relevant to the NECR EE/CA. The EE/CA must contain a comparative analysis of the cleanup alternatives in order to "evaluate the relative performance of each alternative in relation to each of the criteria. The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another so that the key tradeoffs that would affect the remedy selection can be identified." (Guidance at 45.) Accordingly, the Navajo Nation urges the Agency to discuss these considerations in its analysis of alternatives in the EE/CA and to apply them should a preferred alternative for the NECR site be selected.

a. Historical and Cultural Considerations

No analysis of the NECR mine site or any other mine in Navajo Indian Country is complete without recognition of the long and devastating history of uranium mining in that area. Over fifty years ago, the Navajo Nation opened its lands and provided the services of its people in assisting with the development of the United States' nuclear capacity. Various groups mined millions of tons of uranium ore from Navajo lands, providing uranium for the Manhattan Project and for the United States' weapons stockpile. As a result, the United States was able to prevail in the Cold War, but not without great cost.

A grossly disproportionate share of that cost has been borne by the Navajo Nation and the Navajo people. The decades of uranium mining have left the Navajo a blighted homeland with over 500 abandoned mines, four inactive milling sites, a former dump site, contaminated groundwater, structures that may contain elevated levels of radiation, and other environmental and public health concerns. As a result of the radioactive waste still permeating their land, the Navajo people suffer any number of maladies. The livestock on which many Navajo depend for their livelihood are often born deformed or diseased. Water and soil pollution are common. During hearings on Capitol Hill last October, Members of both political parties in the United States Congress rightly termed the Navajo's plight a "modern American tragedy."

In addition to the historical significance any clean-up at NECR has to the Navajo people, the Agency must also consider the cultural significance of the Navajo lifestyle. Navajo is an agrarian society: its people eat what they raise on the land. Yet, the radioactive waste still permeating their land has made this a dangerous practice. There is cultural and spiritual value to the Navajo in living off of land that is free from

¹ Available at <http://www.epa.gov/superfund/tools/topics/relocation/policy.htm>.

harmful levels of radioactive contaminants. When considered in light of the Agency's legal and trust responsibility to the Navajo people, this cultural spiritual value necessitates more than merely cleaning up property to an arbitrary agricultural standard.

b. Application to EE/CA analysis through Guidelines and recommendations

The Agency's own Guidelines require special consideration in the EE/CA to the unique concerns of the Navajo Nation. Among the most important of these guidelines are the effectiveness, implementability, and community acceptance criteria.

i. Effectiveness

As concerns effectiveness, extensive experience of the Navajo Nation, including in this very area of Navajo Indian country, has demonstrated that consolidating and capping is a temporary and ineffective remedy, notwithstanding good faith expectations to the contrary. The weather characteristics, intensive land use, and special demographic, cultural and economic factors make Navajo Indian country unique in this respect.

ii. Feasibility

The EE/CA's alternatives must be administratively and legally feasible. To be feasible in these respects, any alternative that implicates on-site disposal on Navajo trust land must be carefully and explicitly qualified in the EE/CA because, under applicable federal law, such a remedy requires the consent of the Navajo Nation. Neither outside governments nor private parties can take tribal trust lands, either directly or by unauthorized occupation, for use as a dump without tribal consent. *See United States v. Pend Oreilles Pub. Util. Dist.*, 28 F.3d 1544, 1548 (9th Cir. 1994) (“The Utility may not condemn tribal lands embraced in a reservation under the [Federal] Power Act or any other federal statute) (emphasis added), *cert. denied*, 514 U.S. 1015 (1995); *United States v. 2,005.32 Acres of Land*, 160 F.Supp. 193 (D.S.D.) (Army could not condemn tribal lands), *vacated as moot*, 259 F.2d 271 (8th Cir. 1958).²

iii. Community Acceptance

² Importantly, the only lawful uses of lands owned by the United States and held in trust for Indian nations are those undertaken in conformity with federal law, and this has been true since the first Congress of the United States. *See* 25 U.S.C. § 177 (Indian Trade and Intercourse Act, first enacted in 1793;. *See, e.g., Golden Hill Paugusett Tribe v. Weicker*, 39 F.3d 51, (2d Cir. 1994) (purpose of § 177 is to prevent encroachment by white settlers on Indian lands); *Bear v. United States*, 611 F.Supp. 589 (D. Neb. 1985) (under § 177, congressional approval was required to condemn Winnebago trust land along Missouri River), *aff'd*, 810 F.2d 153 (8th Cir. 1987); *Schaghticoke Tribe v. Kent School Corp.*, 423 F.Supp. 780 (D. Conn. 1976) (Tribal trust land is an instrumentality of the federal government and may not be taken from the Indians by contract, adverse possession, or otherwise, without the consent of the government); *7,405.3 Acres, supra* (same). Congress has buttressed this federal protection through other laws, also. *See Imperial Granite Co. v. Pala Band of Mission Indians*, 940 F.2d 1269, 1272 n.4 (9th Cir. 1991) (federal Quiet Title Act poses an “insuperable burden” to a suit to establish right to use Indian land).

The Agency must consider community acceptance in fashioning and selecting alternatives. This factor should be given added weight in this instance because the Agency and the Department of the Interior have determined that NEC residents comprise a "dependent Indian community," a distinct community of Indians dependent primarily on federal and tribal services.³

The Church Rock Chapter desires the off-site removal of all contaminated materials. This position is not an arbitrary one, but stems from cultural attributes of the Navajo people that have been expressed to the Agency both in this letter and on several prior occasions. Navajo tribe members share unique and profound ties to the land that justify their strong preference for total removal of contaminated materials from Navajo trust land. The unique attachment of the Navajo to their land has been judicially acknowledged. For example, in *United States v. Tsosie*, the court was asked to evict a Navajo woman from land where she had lived most of her life and where her umbilical cord was buried in accordance with Navajo tradition. The court explained:

[M]any of the cultural traditions and values [of Navajo society] are strong enough and important enough to the preservation of a balanced and harmonious society to have the force of law, equivalent to a statute or even a constitutional provision in United States laws. There tradition, values and related rights and obligations are viewed by the Navajo people as sacred because they are rooted in religious songs, prayers and chants. . . . Relocating traditional Navajos from the land where their umbilical cords are buried and where they have always lived is uprooting them from their religion, and from a central part of their own identities. There are no precise analogies in the non-Navajo society of which I am aware to describe the harm that such relocation causes. It would be like yanking an infant away from its mother when the infant is still screaming and the mother is reaching for it, and the mother is killed from loneliness and the child is killed for lack of tenderness and sustenance. It is tantamount to separating the Navajo from her spirit.

849 F.Supp. 758, 774-75 (D.N.M. 1994), *aff'd*, 92 F.3d 1037 (10th Cir. 1999).

Because of the Navajo's unique connection with the land, a remedial alternative that simply retains radioactive material on Navajo land will not only be ineffective and difficult to implement (and impossible to implement without Navajo Nation consent) it will be rejected by the community it is supposed to serve. To ignore the Church Rock community's complete opposition to a solution other than complete off-site removal would be a violation of the EPA's trust responsibilities to the Navajo people. *See, e.g., HRI, Inc. v. EPA*, 198 F.3d 1224, 1247 (10th Cir. 2000) ("The fact that EPA is not specifically charged with administration of Indian lands or funds does not render unreasonable its solicitude for core Indian interests.")

3. Conclusion

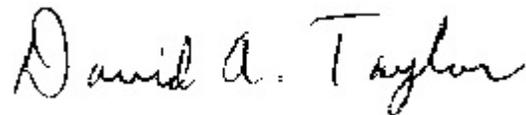
The Navajo continue to pay much more than their fair share for the United States' successes in the Cold War. As the Agency recognizes, the uranium contamination at NECR poses a grave risk to human health and the environment. Any action that retains radioactive material on Navajo land will only prolong rather than remedy the disharmony between the Navajo and their land. To the Navajo people, for whom the land is "a central part of their identities," this disharmony is as palpable as the more outwardly visible manifestations of NECR's uranium contamination such as livestock deformities or human illnesses.

Ultimately, the Navajo Nation recognizes that, in drafting the EE/CA, the Agency must balance the conflicting interests of many important constituencies. We appreciate the difficulty inherent in this task, and

³ 18 U.S.C. § 1151(b). *See* 72 Fed. Reg. 8380 (Feb. 26, 2007)

remain thankful for the thoughtful attention that the Agency has paid and will continue to pay to the Navajo Nation's unique situation as it completes work on the NECR EE/CA. We emphasize that any alternative that requires use or occupancy of Navajo lands must be explicitly conditioned on Navajo Nation consent, which the Navajo Nation may withhold in its sole discretion. By analyzing the unique context of the Navajo people and the NECR mine as required by the Agency's Indian Policy, trust responsibility, and established factors for EE/CA analyses, we believe the Agency will reach a fair and just resolution to this continuing problem.

Very truly yours,
NAVAJO NATION DEPARTMENT OF JUSTICE
LOUIS DENETSOSIE ATTORNEY GENERAL

A handwritten signature in cursive script that reads "David A. Taylor". The signature is written in black ink and is positioned below the typed name and title.

David A. Taylor, Senior Attorney
NATURAL RESOURCES UNIT

Appendix D

Supporting Data and Analysis

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | |
|--------|--------|
| ANAGRP | METALS |
| ZONE | (All) |
| UNITS | (All) |

| Max of RESULT2 | | | CHEM_CODE | | | | | | |
|----------------|---------------|---------------|-----------|----|--------|------|------|------|--|
| AREA | LOC_ID2 | LABSAMPID2 | AS | MO | RA-226 | SE | U | V | |
| Arroyo | Arroyo-SB-001 | C06120235-072 | 2.6 | 0 | 14.9 | 4.4 | 29 | 27.1 | |
| | | C06120235-073 | 5.4 | 0 | 17.3 | 3.7 | 27.3 | 29.6 | |
| | | C06120235-074 | 7.8 | 0 | 8.4 | 2.1 | 14.3 | 32.6 | |
| | Arroyo-SB-002 | C06120336-001 | 2.2 | 0 | 12.7 | 5.9 | 15.6 | 24 | |
| | | C06120336-002 | 2.8 | 0 | 21.1 | 8 | 21.7 | 28.1 | |
| | | C06120336-003 | 6.1 | 0 | 21 | 11.1 | 108 | 34.2 | |
| | Arroyo-SB-003 | C06120336-004 | 1.4 | 0 | 12.9 | 0 | 14.2 | 20 | |
| | | C06120336-005 | 3.6 | 0 | 13.3 | 1.9 | 18.6 | 23.3 | |
| | | C06120336-006 | 4.7 | 0 | 12.4 | 3 | 16.4 | 29.6 | |
| | Arroyo-SB-004 | C06120336-007 | 1.2 | 0 | 12.5 | 1.1 | 14.6 | 19.8 | |
| | | C06120336-008 | 2.9 | 0 | 14.9 | 5.3 | 16.6 | 23.8 | |
| | | C06120336-009 | 6.3 | 0 | 18.5 | 2.8 | 23.7 | 34.9 | |
| | Arroyo-SB-005 | C06120336-010 | 2.2 | 0 | 18.1 | 12.7 | 25.7 | 30.4 | |
| | | C06120336-011 | 4.7 | 0 | 30.2 | 14.4 | 79.2 | 37.9 | |
| | | C06120336-012 | 7.3 | 0 | 10.3 | 4.9 | 27 | 36.6 | |
| | Arroyo-SB-006 | C06120336-013 | 1.7 | 0 | 11.2 | 2.9 | 18.7 | 20.7 | |
| | | C06120336-014 | 3.3 | 0 | 11.8 | 3 | 23.7 | 24 | |
| | | C06120336-015 | 8.2 | 0 | 11.1 | 2.1 | 19.4 | 36.1 | |
| | Arroyo-SB-007 | C06120336-016 | 1.8 | 0 | 14.8 | 3.5 | 21.7 | 34.7 | |
| | | C06120336-017 | 2.6 | 0 | 11.1 | 2.9 | 17.1 | 25.5 | |
| | | C06120336-018 | 4.3 | 0 | 35.7 | 4.3 | 45.4 | 37.3 | |
| | Arroyo-SB-008 | C06120336-019 | 1.9 | 0 | 17.6 | 4.6 | 17.4 | 27.9 | |
| | | C06120336-020 | 2.1 | 0 | 21.5 | 6.3 | 17.1 | 28 | |
| | | C06120336-021 | 2.1 | 0 | 24.5 | 7.4 | 21.3 | 30.9 | |
| | Arroyo-SB-009 | C06120336-024 | 2.2 | 0 | 11.7 | 5.6 | 22.6 | 22.7 | |
| | | C06120336-025 | 1.3 | 0 | 15.5 | 2.3 | 23.7 | 23.5 | |
| | | C06120336-026 | 3.5 | 0 | 15.5 | 11.3 | 31.7 | 32.5 | |
| | Arroyo-SB-010 | C06120336-027 | 2.6 | 0 | 18.5 | 12.4 | 35.1 | 34.1 | |
| | | C06120336-028 | 1.9 | 0 | 18.6 | 5.5 | 26.6 | 25.1 | |
| | | C06120336-029 | 1.5 | 0 | 12.9 | 6 | 21.9 | 23.1 | |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|------------|---------------|---------------|-----|-----|------|-----|------|------|
| Arroyo | Arroyo-SB-208 | C06120336-022 | 2.2 | 0 | 20.2 | 4.5 | 19.2 | 29.1 |
| | | C06120336-023 | 2.2 | 0 | 23 | 8.1 | 22.3 | 32.4 |
| Backgrd | NECRBKG-01 | C06081541-001 | 4.4 | 0 | 0.8 | 0.2 | 0.8 | 24.7 |
| | NECRBKG-02 | C06081541-002 | 9.2 | 0 | 1.3 | 0.7 | 1.4 | 29.8 |
| | NECRBKG-03 | C06081541-003 | 10 | 0 | 1.1 | 0.7 | 1.8 | 32.3 |
| | NECRBKG-04 | C06081541-004 | 5.1 | 0 | 1.3 | 0.7 | 1.3 | 40.7 |
| | NECRBKG-05 | C06081541-005 | 4.5 | 0 | 1.1 | 0.5 | 1 | 30.7 |
| | NECRBKG-06 | C06081541-006 | 6.1 | 0 | 1 | 0.6 | 1.1 | 31.9 |
| | NECRBKG-07 | C06081541-007 | 4.2 | 0 | 1.1 | 0.5 | 1.3 | 33.5 |
| | NECRBKG-08 | C06081541-008 | 3.1 | 0 | 1.2 | 0.4 | 1.4 | 32.5 |
| | NECRBKG-09 | C06081541-009 | 2.8 | 0 | 1.2 | 0.5 | 1.4 | 31.6 |
| | NECRBKG-10 | C06081541-010 | 2.5 | 0 | 0.9 | 0.5 | 1.1 | 27.3 |
| | NECRBKG-11 | C06081541-011 | 2.9 | 0 | 1 | 0.4 | 0.9 | 30.6 |
| | NECRBKG-12 | C06081541-012 | 3.1 | 0 | 1.2 | 0.3 | 1 | 23.7 |
| | NECRBKG-13 | C06081541-013 | 2.8 | 0 | 1 | 0.4 | 1.1 | 31.2 |
| | NECRBKG-14 | C06081541-014 | 2.4 | 0 | 1 | 0.2 | 1.1 | 20.1 |
| | NECRBKG-15 | C06081541-015 | 2.7 | 0 | 1.2 | 0.5 | 1.2 | 28.7 |
| | NECRBKG-16 | C06081541-016 | 2.7 | 0 | 0.7 | 0.4 | 1.2 | 23 |
| | NECRBKG-17 | C06081541-017 | 3 | 0 | 1.1 | 0 | 1.2 | 29 |
| | NECRBKG-18 | C06081541-018 | 2.4 | 0 | 0.6 | 0 | 1.1 | 21.2 |
| | NECRBKG-19 | C06081541-019 | 2.7 | 0 | 1.1 | 0.2 | 0.9 | 18.4 |
| | NECRBKG-20 | C06081541-020 | 2.7 | 0 | 1 | 0 | 0.9 | 20 |
| | NECRBKG-21 | C06081541-021 | 2.9 | 0 | 1 | 0.3 | 1 | 22.5 |
| | NECRBKG-22 | C06081541-022 | 3.4 | 0 | 0.8 | 0.2 | 0.9 | 18 |
| | NECRBKG-23 | C06081541-023 | 2.9 | 0 | 0.9 | 0 | 0.9 | 22.6 |
| | NECRBKG-24 | C06081541-024 | 2 | 0 | 1 | 0 | 0.9 | 18.8 |
| | NECRBKG-25 | C06081541-025 | 2.5 | 0 | 1.3 | 0 | 1.2 | 24.9 |
| NECRBKG-42 | C06081541-026 | 3.3 | 0 | 1 | 0 | 0.9 | 17.5 | |
| NECRBKG-45 | C06081541-027 | 2.7 | 0 | 1.3 | 0.3 | 1 | 26.8 | |
| CORR | NECR-COR-A-01 | C06081547-001 | | | 1.9 | | | |
| | NECR-COR-A-02 | C06081547-002 | | | 5.4 | | | |
| | NECR-COR-A-03 | C06081547-003 | | | 4.5 | | | |
| | NECR-COR-A-04 | C06081547-004 | | | 1.8 | | | |
| | NECR-COR-A-05 | C06081547-005 | | | 3.7 | | | |
| | NECR-COR-A-06 | C06081547-006 | | | 1.1 | | | |
| | NECR-COR-A-07 | C06081547-007 | | | 1.5 | | | |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|--------------|---------------|---------------|---------------|-----|-----|-----|-----|------|
| CORR | NECR-COR-A-08 | C06081547-008 | | | | | | 3.5 |
| | NECR-COR-A-09 | C06081547-009 | | | | | | 6.6 |
| | NECR-COR-A-10 | C06081547-010 | | | | | | 31.6 |
| | NECR-COR-A-11 | C06081547-012 | | | | | | 1.9 |
| | NECR-COR-A-12 | C06081547-013 | | | | | | 6.8 |
| | NECR-COR-A-13 | C06081547-014 | | | | | | 8.9 |
| | NECR-COR-A-14 | C06081547-015 | | | | | | 10.3 |
| | NECR-COR-A-15 | C06081547-016 | | | | | | 9.2 |
| | NECR-COR-A-16 | C06081547-018 | | | | | | 6.2 |
| | NECR-COR-A-17 | C06081547-019 | | | | | | 185 |
| | NECR-COR-A-18 | C06081547-020 | | | | | | 40.4 |
| | NECRCOR-A-19 | C06081541-028 | | | | | | 1 |
| | NECR-COR-A-50 | C06081547-011 | | | | | | 32.3 |
| | NECR-COR-A-55 | C06081547-017 | | | | | | 8.8 |
| | NECR-COR-B-01 | C06081542-001 | | | | | | 11.9 |
| | NECR-COR-B-02 | C06081542-002 | | | | | | 10.6 |
| | NECR-COR-B-03 | C06081542-003 | | | | | | 9.7 |
| | NECR-COR-B-04 | C06081542-004 | | | | | | 11.4 |
| | NECR-COR-B-05 | C06081542-005 | | | | | | 15.8 |
| | NECR-COR-B-06 | C06081542-006 | | | | | | 15.7 |
| | NECR-COR-B-07 | C06081542-007 | | | | | | 14.9 |
| | NECR-COR-B-08 | C06081542-008 | | | | | | 14.4 |
| | NECR-COR-B-09 | C06081542-009 | | | | | | 18.9 |
| | NECR-COR-B-10 | C06081542-010 | | | | | | 21.2 |
| | NECR-COR-B-11 | C06081542-012 | | | | | | 19.6 |
| | NECR-COR-B-12 | C06081542-013 | | | | | | 21.4 |
| | NECR-COR-B-13 | C06081542-014 | | | | | | 19.2 |
| | NECR-COR-B-14 | C06081542-015 | | | | | | 21 |
| | NECR-COR-B-15 | C06081542-016 | | | | | | 26.4 |
| | NECR-COR-B-40 | C06081542-011 | | | | | | 22.1 |
| | NECR-COR-B-45 | C06081542-017 | | | | | | 27.6 |
| | Homes | Home1-SS-001 | C06110906-048 | 2.9 | 0 | 1.2 | 0 | 0.8 |
| Home1-SS-002 | | C06110906-049 | 2.7 | 0 | 0.9 | 0.3 | 1 | 28.9 |
| Home1-SS-003 | | C06110906-050 | 3.2 | 0 | 1 | 0.2 | 1 | 27.8 |
| Home1-SS-004 | | C06110906-051 | 2.3 | 0 | 1.3 | 0 | 1 | 31.2 |
| Home1-SS-005 | | C06110906-052 | 5.7 | 0 | 1.5 | 0 | 1.4 | 32.3 |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|--------------|---------------|---------------|-----|-----|------|-----|------|------|
| Homes | Home2-SS-001 | C06110906-053 | 5.9 | 0 | 0.9 | 0.7 | 1 | 35.9 |
| | Home2-SS-002 | C06110906-054 | 5.1 | 0 | 0.9 | 0.3 | 0.7 | 37.5 |
| | Home2-SS-003 | C06110906-055 | 4.1 | 0 | 0.9 | 0.6 | 1 | 36.1 |
| | Home2-SS-004 | C06110906-056 | 3.6 | 0 | 0.9 | 1.2 | 0.8 | 33.4 |
| | Home2-SS-005 | C06110906-058 | 4.5 | 0 | 0.9 | 0.3 | 1 | 35.5 |
| | Home2-SS-204 | C06110906-057 | 4.7 | 0 | 1 | 0.7 | 1 | 36.5 |
| | Home3-SS-001 | C06110906-059 | 3.3 | 0 | 0.9 | 0 | 1.4 | 32.8 |
| | Home3-SS-002 | C06110906-060 | 3.3 | 0 | 1.1 | 0 | 0.9 | 31.2 |
| | Home3-SS-003 | C06110906-061 | 3.7 | 0 | 1.1 | 0.6 | 0.7 | 28.5 |
| | Home3-SS-004 | C06110906-062 | 4.5 | 0 | 1.2 | 0.7 | 1 | 37.4 |
| | Home3-SS-005 | C06110906-063 | 6.4 | 0 | 1.1 | 0 | 1.1 | 42.6 |
| | Home4-SS-001 | C06110906-064 | 3.9 | 0 | 1.3 | 0 | 1.1 | 33.5 |
| | Home4-SS-002 | C06110906-065 | 3 | 0 | 2.1 | 0.8 | 1.5 | 26.6 |
| | Home4-SS-003 | C06110906-067 | 3.2 | 0 | 1.6 | 0.7 | 1.5 | 25.8 |
| | Home4-SS-004 | C06110906-068 | 6 | 0 | 3.6 | 1.6 | 3.5 | 28.8 |
| | Home4-SS-005 | C06110906-069 | 4.3 | 0 | 3 | 1.1 | 2.7 | 28.2 |
| | Home4-SS-202 | C06110906-066 | 3.1 | 0 | 2.1 | 0.4 | 1.4 | 26.5 |
| | Home5-SS-001 | C06110906-070 | 3 | 0 | 1 | 0.9 | 0.8 | 30.1 |
| | Home5-SS-002 | C06110906-071 | 5.2 | 0 | 1.4 | 1.2 | 1.1 | 31.9 |
| | Home5-SS-003 | C06110906-072 | 4.4 | 0 | 0.9 | 1 | 0.9 | 30 |
| | Home5-SS-004 | C06110906-073 | 7.2 | 0 | 1.3 | 0.8 | 1.4 | 31.2 |
| | Home5-SS-005 | C06110906-074 | 3.3 | 0 | 2.1 | 0.7 | 2.4 | 23.8 |
| | Home6-SS-001 | C06110906-075 | 4.2 | 0 | 6.1 | 1.5 | 9.3 | 33.9 |
| | Home6-SS-002 | C06110906-076 | 4.4 | 0 | 11.4 | 2 | 11.1 | 38.4 |
| | Home6-SS-003 | C06110906-077 | 4.5 | 0 | 5.6 | 2 | 5.7 | 34.8 |
| | Home6-SS-004 | C06110906-078 | 4.5 | 0 | 8.9 | 1.7 | 10.2 | 36.8 |
| | Home6-SS-005 | C06110906-079 | 4.2 | 0 | 14.9 | 2.7 | 12.7 | 37.3 |
| | Home7-SS-001 | C06110906-080 | 4.9 | 0 | 3.4 | 1.2 | 2.3 | 31 |
| | Home7-SS-002 | C06110906-081 | 4.4 | 0 | 5.5 | 1.5 | 6.3 | 34.1 |
| | Home7-SS-003 | C06110906-082 | 5.2 | 0 | 29.6 | 6.3 | 20.5 | 49.7 |
| | Home7-SS-004 | C06110906-083 | 5.5 | 0 | 9.4 | 2 | 11.8 | 43.3 |
| | Home7-SS-005 | C06110906-084 | 3.4 | 0 | 7.4 | 1.3 | 9.2 | 28.4 |
| | Home8-SS-001 | C06110906-085 | 3.5 | 0 | 2.3 | 0.2 | 2.1 | 30.9 |
| | Home8-SS-002 | C06110906-086 | 3 | 0 | 2.5 | 0.5 | 2.7 | 33.2 |
| Home8-SS-003 | C06110906-087 | 2.7 | 0 | 3.2 | 0.5 | 5.3 | 34 | |
| Home8-SS-004 | C06110906-088 | 4.1 | 0 | 5.6 | 1.2 | 6.4 | 34 | |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|--------|--------------|---------------|-----|---|------|------|------|------|
| Homes | Home8-SS-005 | C06110906-089 | 5.3 | 0 | 3.3 | 0 | 4.9 | 38.8 |
| | Home9-SS-001 | C06110906-090 | 5 | 0 | 3.4 | 1 | 7.9 | 29.8 |
| | Home9-SS-002 | C06110906-091 | 3.6 | 0 | 3.3 | 0.7 | 8.1 | 27.8 |
| | Home9-SS-003 | C06110906-092 | 4.1 | 0 | 6.7 | 1.8 | 19.1 | 33.1 |
| | Home9-SS-004 | C06110906-093 | 2.8 | 0 | 5.4 | 1.2 | 12.4 | 26.1 |
| | Home9-SS-005 | C06110906-094 | 4.5 | 0 | 2.6 | 0.4 | 3.3 | 29.4 |
| NECR-1 | NECR1-SB-016 | C06111057-012 | 0 | 0 | 80.8 | 59.5 | 758 | 62.4 |
| | | C06111057-014 | 3.8 | 0 | 21.1 | 9.5 | 99.5 | 34.2 |
| | | C06111057-015 | 0 | 0 | 64.6 | 29.6 | 141 | 54.4 |
| | | C06111057-016 | 0 | 0 | 63.1 | 32.8 | 144 | 35 |
| | | C06111057-017 | 5.1 | 0 | 1.4 | 0.6 | 21.4 | 38.7 |
| | NECR1-SB-046 | C06111057-003 | 0 | 0 | 58.8 | 54.2 | 176 | 52.5 |
| | | C06111057-044 | 0 | 0 | 31.9 | 24.6 | 71.1 | 41.7 |
| | | C06111057-045 | 0 | 0 | 19.3 | 5.4 | 72.7 | 31 |
| | | C06111057-046 | 6.9 | 0 | 1.3 | 1.4 | 337 | 41.5 |
| | | C06111057-047 | 5.2 | 0 | 1 | 0 | 3.4 | 34.4 |
| | | C06111057-048 | 5.5 | 0 | 1.1 | 0.5 | 0.8 | 39.2 |
| | | C06111057-049 | 6.2 | 0 | 1.1 | 0 | 1.1 | 37.9 |
| | NECR1-SB-095 | C06111057-018 | 3.8 | 0 | 27.7 | 6.7 | 90.4 | 41.9 |
| | | C06111057-019 | 7.9 | 0 | 7.9 | 1.1 | 11.4 | 48.4 |
| | | C06111057-020 | 5.2 | 0 | 1.8 | 0.9 | 2.4 | 39.7 |
| | | C06111057-078 | 3 | 0 | 75.7 | 30.6 | 209 | 45.1 |
| | NECR1-SB-131 | C06111057-084 | 1.6 | 0 | 41.5 | 14.7 | 58.7 | 34.3 |
| | | C06111057-117 | 2.8 | 0 | 67.4 | 15.4 | 58.6 | 47.8 |
| | | C06111057-118 | 7.3 | 0 | 1.9 | 0 | 59.4 | 40.7 |
| | | C06111057-119 | 5.1 | 0 | 1.8 | 0 | 19.2 | 31.5 |
| | | C06111057-120 | 7.9 | 0 | 1.2 | 0 | 1.6 | 39.8 |
| | | C06111057-121 | 5.2 | 0 | 1.3 | 0 | 1.5 | 37.3 |
| | NECR1-SB-90 | C06111057-021 | 4.4 | 0 | 6.9 | 1.9 | 8.5 | 41.2 |
| | | C06111057-022 | 3.1 | 0 | 4.2 | 0.8 | 43.2 | 44.5 |
| | | C06111057-023 | 0.8 | 0 | 103 | 20.6 | 125 | 89.5 |
| | | C06111057-024 | 0.9 | 0 | 90 | 45.4 | 144 | 63.7 |
| | | C06111057-025 | 0.6 | 0 | 48.9 | 47 | 218 | 83.3 |
| | | C06111057-026 | 6.4 | 0 | 1.7 | 0.2 | 313 | 31.7 |
| | | C06111057-027 | 4.9 | 0 | 1.3 | 0.4 | 331 | 34.5 |
| | | C06111057-028 | 4.3 | 0 | 1.2 | 1 | 240 | 35.1 |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|--------------|---------------|---------------|-----|------|------|------|------|------|
| NECR-1 | NECR1-SB-90 | C06111057-029 | 5.3 | 0 | 1.3 | 0.8 | 165 | 42 |
| | | C06111057-093 | 2.3 | 0 | 84.8 | 29 | 122 | 47.1 |
| | NECR1-SS-005 | C06111057-013 | 3.7 | 0 | 8.9 | 2.6 | 5.1 | 28.6 |
| | NECR1-SS-018 | C06111057-011 | 2.1 | 0 | 21.7 | 5.4 | 17 | 27.1 |
| | NECR1-SS-020 | C06111057-010 | 1.9 | 0 | 46.2 | 54.1 | 52 | 38.3 |
| | NECR1-SS-023 | C06111057-009 | 4.5 | 0 | 18.3 | 11.2 | 71.2 | 42.8 |
| | NECR1-SS-026 | C06111057-008 | 0 | 0 | 68.4 | 69.4 | 199 | 42.5 |
| | NECR1-SS-028 | C06111057-007 | 7.4 | 63.8 | 26.3 | 6.6 | 79.9 | 35.4 |
| | | C06120336-054 | 5.7 | 55.5 | 18.5 | 5.5 | 42.4 | 21.4 |
| | NECR1-SS-030 | C06111057-006 | 5.3 | 0 | 6.5 | 2.1 | 8.5 | 32.5 |
| | NECR1-SS-044 | C06111057-004 | 1.3 | 0 | 47.9 | 27.3 | 57.7 | 48.4 |
| | NECR1-SS-047 | C06111057-002 | 2.3 | 0 | 31.3 | 19.2 | 27.7 | 33.8 |
| | NECR1-SS-049 | C06111057-001 | 8.3 | 214 | 29.3 | 5.1 | 664 | 22.9 |
| | NECR1-SS-065 | C06111057-097 | 5.7 | 0 | 28.4 | 16 | 59.1 | 56.9 |
| | NECR1-SS-067 | C06111057-096 | 2.9 | 0 | 38.3 | 21.2 | 55.1 | 39.1 |
| | NECR1-SS-068 | C06111057-095 | 1.9 | 0 | 12.8 | 5.7 | 256 | 21.6 |
| | NECR1-SS-070 | C06111057-094 | 2.5 | 0 | 26.1 | 9.4 | 49.6 | 32.8 |
| | NECR1-SS-101 | C06111057-090 | 4.4 | 0 | 12.7 | 4.1 | 27.2 | 30.2 |
| | NECR1-SS-103 | C06111057-089 | 5.6 | 0 | 17.7 | 7.9 | 17.7 | 41.6 |
| | NECR1-SS-126 | C06111057-087 | 5.9 | 10.8 | 50.9 | 14.1 | 99.3 | 48.6 |
| | NECR1-SS-127 | C06111057-086 | 6.9 | 15.2 | 93.3 | 21.6 | 177 | 75.9 |
| | NECR1-SS-129 | C06111057-085 | 4.4 | 0 | 7 | 2.4 | 7.7 | 31.9 |
| | NECR1-SS-133 | C06111057-083 | 2.1 | 0 | 54.7 | 12.6 | 52.6 | 35.8 |
| | NECR1-SS-135 | C06111057-082 | 4.6 | 0 | 63.2 | 16.5 | 81 | 61.3 |
| | NECR1-SS-137 | C06111057-081 | 5.4 | 0 | 52.6 | 17.6 | 98.5 | 64.2 |
| | NECR1-SS-138 | C06111057-080 | 2.2 | 0 | 48.6 | 13.5 | 19.9 | 26.8 |
| | NECR1-SS-140 | C06111057-079 | 4.8 | 0 | 15.8 | 4.2 | 21.2 | 34.7 |
| | NECR1-SS-164 | C06120235-037 | 4.3 | 0 | 35.7 | 11.4 | 22 | 43.2 |
| | NECR1-SS-173 | C06120235-038 | 4.5 | 0 | 4.6 | 1.4 | 5.6 | 32.3 |
| | NECR1-SS-184 | C06120235-039 | 2.7 | 0 | 1.2 | 1 | 2.9 | 35.9 |
| | NECR1-SS-281 | C06120235-047 | 4 | 0 | 80.5 | 53.1 | 83.4 | 69.7 |
| | NECR1-SS-289 | C06120235-048 | 5.7 | 0 | 1.8 | 1 | 3.1 | 30.6 |
| | NECR1-SS-293 | C06120235-049 | 9 | 0 | 7 | 3.2 | 21.4 | 32.9 |
| NECR1-SS-307 | C06120235-050 | 13.3 | 0 | 3.8 | 1.1 | 6.8 | 41 | |
| NECR1-SS-316 | C06120235-009 | 2.7 | 0 | 1.3 | 0 | 1.2 | 19.3 | |
| NECR1-SS-323 | C06120235-007 | 3.7 | 0 | 2.6 | 0.9 | 2.2 | 32.3 | |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|--------|-----------------|---------------|------|---|------|------|------|------|
| NECR-1 | NECR1-SS-326 | C06120235-008 | 2.8 | 0 | 5.2 | 1.6 | 4.3 | 28.5 |
| | NECR1-SS-92 | C06111057-092 | 3.1 | 0 | 13.2 | 8.2 | 18.1 | 28.3 |
| | NECR1-SS-93 | C06111057-091 | 2 | 0 | 35.7 | 12.8 | 56.9 | 29.6 |
| | NECR1-TP-138 | C06120405-010 | 6.9 | 0 | 24.2 | 13.2 | 73.6 | 42.3 |
| | NECR-SS-207 | C06120235-040 | 4.9 | 0 | 3.1 | 1.4 | 7.6 | 30.5 |
| | NECR-SS-238 | C06120235-041 | 7.9 | 0 | 1.6 | 1.4 | 3.4 | 42.9 |
| | NECR-SS-240 | C06120235-042 | 14.9 | 0 | 1.5 | 0.5 | 3.6 | 50.2 |
| | NECR-SS-240 DUP | C06120235-043 | 13.9 | 0 | 1.2 | 1.1 | 3.8 | 48.7 |
| | NECR-SS-262 | C06120235-044 | 5.2 | 0 | 1.4 | 1.1 | 2.2 | 30.4 |
| | NECR-SS-265 | C06120235-045 | 4.9 | 0 | 1.6 | 0.4 | 2.4 | 30.6 |
| | NECR-SS-266 | C06120235-046 | 5.1 | 0 | 1.7 | 0.6 | 57.7 | 34.6 |
| NECR-2 | NECR2-SS-004 | C06110906-046 | 4 | 0 | 1.2 | 0 | 1.5 | 28.9 |
| | NECR2-SS-015 | C06110906-032 | 3.5 | 0 | 97.2 | 11.9 | 107 | 46.7 |
| | NECR2-SS-017 | C06110906-033 | 2.8 | 0 | 55.3 | 13.3 | 48.9 | 39.9 |
| | NECR2-SS-018 | C06110906-034 | 3.4 | 0 | 3.6 | 1.2 | 2.2 | 29.4 |
| | NECR2-SS-020 | C06110906-042 | 1.3 | 0 | 38.1 | 15.7 | 66.2 | 26.8 |
| | NECR2-SS-027 | C06110906-047 | 3.4 | 0 | 35.3 | 6.6 | 12.3 | 34.9 |
| | NECR2-SS-033 | C06110906-035 | 3.3 | 0 | 2 | 1.2 | 5.2 | 16 |
| | NECR2-SS-035 | C06110906-037 | 1.9 | 0 | 160 | 26.7 | 370 | 67.3 |
| | NECR2-SS-037 | C06110906-036 | 4.8 | 0 | 4.6 | 1.2 | 7.1 | 33 |
| | NECR2-SS-039 | C06110906-038 | 2.3 | 0 | 35.4 | 6.5 | 29.5 | 26.7 |
| | NECR2-SS-050 | C06110906-040 | 6.4 | 0 | 1.2 | 0 | 2 | 24.7 |
| | NECR2-SS-052 | C06110906-045 | 2.5 | 0 | 23 | 5.6 | 43.5 | 31 |
| | NECR2-SS-056 | C06110906-041 | 3.4 | 0 | 11.9 | 2.6 | 3.9 | 33 |
| | NECR2-SS-069 | C06110906-043 | 4.7 | 0 | 8.9 | 2.6 | 9.6 | 34.2 |
| | NECR2-SS-071 | C06110906-044 | 5 | 0 | 40 | 14.5 | 45.7 | 58.9 |
| | NECR2-SS-083 | C06120235-017 | 3.3 | 0 | 3.1 | 0.4 | 3.2 | 26.5 |
| | NECR2-SS-096 | C06120235-018 | 8.1 | 0 | 1.4 | 0.4 | 3.7 | 39 |
| | NECR2-SS-103 | C06120235-019 | 4.9 | 0 | 1.5 | 0.6 | 2.1 | 35.6 |
| | NECR2-SS-109 | C06120235-020 | 6.4 | 0 | 1.6 | 0.9 | 1.7 | 37.2 |
| | NECR2-TP-015 | C06110906-021 | 3.6 | 0 | 2.5 | 1 | 17 | 35.4 |
| | NECR2-TP-020 | C06110906-018 | 3.2 | 0 | 1.2 | 0.9 | 9.7 | 25 |
| | NECR2-TP-035 | C06110906-015 | 2.9 | 0 | 10.4 | 1.4 | 35.5 | 18.8 |
| | NECR2-TP-039 | C06110906-019 | 3.6 | 0 | 5.5 | 2.1 | 32.2 | 33.7 |
| | NECR2-TP-052 | C06110906-016 | 3.4 | 0 | 12.6 | 4 | 70.6 | 32.5 |
| | | C06110906-017 | 3.2 | 0 | 2.9 | 0.8 | 32.7 | 25.9 |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | | |
|---------------|--------------|---------------|---------------|-----|------|------|------|------|------|
| NECR-2 | NECR2-TP-239 | C06110906-020 | 3.3 | 0 | 5.2 | 1.4 | 15.8 | 34.1 | |
| NEMSA | NEMSA-TP-001 | C06110906-027 | 3.6 | 0 | 1.2 | 0.6 | 1 | 28.6 | |
| | | C06110906-028 | 0.8 | 0 | 45.8 | 17.5 | 71 | 32.5 | |
| | | C06110906-029 | 1.5 | 0 | 57.3 | 15.6 | 67 | 35.1 | |
| | | C06110906-030 | 4.9 | 0 | 1.3 | 0.4 | 311 | 28.5 | |
| | NEMSA-TP-002 | C06120336-030 | 4.2 | 0 | 1.7 | 1 | 4.8 | 32.4 | |
| | | C06120336-031 | 0.7 | 0 | 46.6 | 19 | 79.5 | 41.7 | |
| | | C06120336-032 | 0 | 0 | 68.8 | 38.9 | 125 | 47.3 | |
| | | C06120336-033 | 3.7 | 0 | 1.1 | 0 | 227 | 25.6 | |
| | NEMSA-TP-003 | C06120336-034 | 3.2 | 0 | 0.9 | 1.7 | 0.9 | 18 | |
| | | C06120336-035 | 0.6 | 0 | 38.2 | 24.2 | 17.6 | 36.4 | |
| | | C06120336-036 | 4 | 0 | 0.8 | 0 | 49.3 | 24.9 | |
| | NEMSA-TP-004 | C06120336-037 | 4.3 | 0 | 1.3 | 1.2 | 4.8 | 29.2 | |
| | | C06120336-038 | 1.3 | 0 | 68.8 | 112 | 136 | 44 | |
| | | C06120336-052 | 0.8 | 0 | 140 | 40.1 | 390 | 43.2 | |
| | | C06120336-053 | 0 | 0 | 112 | 132 | 75.8 | 38.5 | |
| | NEMSA-TP-005 | C06120336-039 | 4.3 | 0 | 2.6 | 0 | 2.2 | 28.9 | |
| | | C06120336-040 | 4.5 | 0 | 8.4 | 0.5 | 27.3 | 32.8 | |
| | | C06120336-041 | 3.4 | 0 | 0.8 | 0 | 1.4 | 26.5 | |
| | Pond 1/2 | Pond1/2-SB-71 | C06111057-071 | 5.5 | 0 | 0.7 | 0 | 2.1 | 37.6 |
| | | | C06111057-072 | 6.7 | 0 | 1 | 1 | 3.3 | 43.2 |
| Pond1/2-SB-82 | | C06111057-073 | 2.7 | 0 | 177 | 56.3 | 339 | 75.6 | |
| | | C06111057-074 | 4.6 | 0 | 14.4 | 3.7 | 22.7 | 36.2 | |
| | | C06111057-075 | 5 | 0 | 12.2 | 3.4 | 18.1 | 38 | |
| | | C06111057-076 | 6.8 | 0 | 1.1 | 0 | 5 | 42.6 | |
| | | C06111057-077 | 5.1 | 0 | 1.5 | 0 | 1.7 | 37.9 | |
| Pond12-SB-071 | | C06111057-069 | 3.1 | 0 | 49.9 | 11.3 | 73.9 | 34.9 | |
| Pond12-SB-71 | | C06111057-070 | 4.7 | 0 | 0.9 | 0 | 1.3 | 30.2 | |
| Pond12-SS-009 | | C06120235-010 | 2.2 | 0 | 1.7 | 1.2 | 1.6 | 24.6 | |
| Pond12-SS-011 | | C06111057-050 | 5 | 0 | 1.1 | 0 | 1 | 35.3 | |
| Pond12-SS-012 | | C06120235-011 | 4.5 | 0 | 1.5 | 0.8 | 1.7 | 35.2 | |
| Pond12-SS-014 | | C06111057-051 | 3.2 | 0 | 96.9 | 36.3 | 47.5 | 56.2 | |
| Pond12-SS-019 | | C06111057-052 | 4.9 | 0 | 4.7 | 0.9 | 7.8 | 34.9 | |
| Pond12-SS-020 | | C06111057-054 | 5 | 0 | 2.2 | 0.5 | 2 | 35.6 | |
| Pond12-SS-023 | | C06111057-055 | 2.5 | 0 | 62.4 | 22.8 | 28.6 | 38.5 | |
| Pond12-SS-024 | | C06111057-056 | 2.5 | 0 | 26.9 | 7.1 | 16.2 | 28.7 | |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | | |
|-----------|----------------|---------------|---------------|-----|------|------|------|------|------|
| Pond 1/2 | Pond12-SS-032 | C06120235-012 | 4.4 | 0 | 1.6 | 0.8 | 2 | 33.5 | |
| | Pond12-SS-035 | C06111057-057 | 8.8 | 0 | 78.5 | 30.6 | 85.5 | 83.7 | |
| | Pond12-SS-041 | C06111057-059 | 4.2 | 0 | 3 | 1.5 | 4.1 | 26.8 | |
| | Pond12-SS-042 | C06111057-060 | 5.6 | 0 | 1 | 0 | 1.5 | 35.5 | |
| | Pond12-SS-047 | C06111057-061 | 3.7 | 0 | 73.1 | 24.3 | 37.7 | 49.6 | |
| | Pond12-SS-050 | C06111057-062 | 5.3 | 0 | 13.7 | 5.3 | 11.9 | 35.8 | |
| | Pond12-SS-056 | C06111057-063 | 5.3 | 0 | 11.2 | 3.2 | 10.1 | 35.9 | |
| | Pond12-SS-058 | C06111057-064 | 5.5 | 0 | 655 | 159 | 1080 | 198 | |
| | Pond12-SS-061 | C06111057-065 | 4.4 | 0 | 26.5 | 5.2 | 36.6 | 35.8 | |
| | Pond12-SS-063 | C06120235-013 | 3 | 0 | 1.2 | 0.6 | 1.3 | 40.1 | |
| | Pond12-SS-069 | C06111057-066 | 3.8 | 0 | 161 | 33 | 166 | 79.6 | |
| | Pond12-SS-076 | C06111057-067 | 5.2 | 0 | 2.2 | 0.2 | 8 | 40.8 | |
| | Pond12-SS-077 | C06111057-068 | 5.1 | 0 | 487 | 83.7 | 423 | 123 | |
| | Pond12-TP-030 | C06120235-057 | C06120235-057 | 5.5 | 0 | 41.3 | 13.2 | 149 | 45.2 |
| | | | C06120235-058 | 6.4 | 0 | 6.2 | 1.6 | 80.3 | 30.7 |
| | Pond12-TP-035 | C06120235-060 | C06120235-060 | 1.4 | 0 | 41.5 | 11.2 | 38.9 | 31.6 |
| | | | C06120235-061 | 4.4 | 0 | 19.6 | 15.5 | 206 | 35.3 |
| | Pond12-TP-035) | C06120235-059 | 3.2 | 0 | 417 | 159 | 286 | 158 | |
| | Pond12-TP-058 | C06120235-062 | C06120235-062 | 4.3 | 0 | 438 | 227 | 760 | 173 |
| | | | C06120235-063 | 5.6 | 0 | 1.3 | 2.6 | 59.4 | 31.9 |
| Pond 3/3a | Pond3/3a-SB-61 | C06111057-111 | 3.7 | 0 | 17.3 | 6.8 | 28.4 | 30.3 | |
| | | C06111057-112 | 4.8 | 0 | 0.9 | 0 | 1.3 | 29.6 | |
| | | C06111057-113 | 4.8 | 0 | 1.1 | 0 | 1 | 27.9 | |
| | | C06111057-114 | 4.1 | 0 | 1.5 | 0 | 1 | 29.7 | |
| | | C06111057-115 | 4.5 | 0 | 1 | 0 | 1.1 | 34.5 | |
| | | C06111057-116 | 4.9 | 0 | 1.3 | 0 | 1 | 35 | |
| | Pond3-SS-001 | C06111057-110 | 6.1 | 0 | 18.1 | 5.2 | 42 | 50.4 | |
| | Pond3-SS-007 | C06111057-109 | 5.5 | 0 | 259 | 22.3 | 1020 | 64.1 | |
| | Pond3-SS-014 | C06111057-122 | 5.7 | 6.6 | 875 | 71.9 | 3970 | 118 | |
| | Pond3-SS-015 | C06111057-108 | 3.9 | 0 | 18.8 | 8.6 | 11.1 | 32.4 | |
| | Pond3-SS-027 | C06111057-107 | 4 | 0 | 4.7 | 0.9 | 19.1 | 26.9 | |
| | Pond3-SS-038 | C06111057-105 | 6.1 | 0 | 20.9 | 4.2 | 34.9 | 34.1 | |
| | Pond3-SS-042 | C06111057-103 | 5.1 | 0 | 1.4 | 0.7 | 1.9 | 28.8 | |
| | Pond3-SS-046 | C06111057-099 | 6.7 | 0 | 19.5 | 3.3 | 34.3 | 42.5 | |
| | Pond3-SS-057 | C06111057-098 | 8.1 | 0 | 2.8 | 0.7 | 4.5 | 39.9 | |
| | Pond3-SS-059 | C06111057-100 | 5.5 | 0 | 26.9 | 5.2 | 62.9 | 39.5 | |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|-----------|--------------|---------------|------|---|------|------|------|------|
| Pond 3/3a | Pond3-SS-063 | C06111057-102 | 6.4 | 0 | 3.8 | 2.9 | 8.8 | 38.9 |
| | Pond3-SS-065 | C06111057-101 | 5.7 | 0 | 39.6 | 5.2 | 68.4 | 46.8 |
| | Pond3-SS-29 | C06111057-106 | 5 | 0 | 312 | 24.5 | 1240 | 79.3 |
| | Pond3-TP-007 | C06120336-042 | 4.9 | 0 | 4.5 | 3.1 | 24.4 | 35.8 |
| | | C06120336-043 | 2.9 | 0 | 0.7 | 0 | 0.7 | 22.6 |
| | Pond3-TP-014 | C06120336-044 | 3.3 | 0 | 0.8 | 0 | 1.5 | 25.6 |
| | | C06120336-045 | 3.2 | 0 | 0.8 | 0 | 1.4 | 22.1 |
| | Pond3-TP-029 | C06120336-046 | 6.2 | 0 | 14.3 | 0.8 | 102 | 28.5 |
| | | C06120336-047 | 6.7 | 0 | 15.7 | 2.9 | 116 | 31.1 |
| | | C06120336-048 | 4.5 | 0 | 2.1 | 0 | 30.8 | 33.7 |
| | Pond3-TP-037 | C06120336-049 | 2.7 | 0 | 7.7 | 1 | 9.8 | 19.2 |
| | | C06120336-050 | 6.6 | 0 | 2.2 | 1 | 16.3 | 45.7 |
| | | C06120336-051 | 4.9 | 0 | 0.7 | 0 | 23.5 | 31.4 |
| Sand 1 | Sand1-SS-009 | C06110737-028 | 5.1 | 0 | 1.8 | 0.3 | 1.9 | 20.2 |
| | Sand1-SS-011 | C06110737-024 | 3.2 | 0 | 5.8 | 0.9 | 2.5 | 22.8 |
| | Sand1-SS-017 | C06110737-022 | 2 | 0 | 2.1 | 0.3 | 2.8 | 11.8 |
| | Sand1-SS-021 | C06110737-026 | 2.6 | 0 | 2.3 | 0.7 | 12.6 | 13.4 |
| | Sand1-SS-027 | C06110737-027 | 2.8 | 0 | 4.4 | 0.6 | 1 | 14.1 |
| | Sand1-SS-028 | C06110737-029 | 3 | 0 | 0.8 | 0.2 | 0.7 | 15.6 |
| | Sand1-SS-030 | C06110737-023 | 4.1 | 0 | 14.3 | 2.5 | 10.6 | 33.9 |
| | Sand1-SS-032 | C06120235-014 | 4.6 | 0 | 3.8 | 1.3 | 2.5 | 34.4 |
| | Sand1-SS-041 | C06110737-025 | 5.6 | 0 | 1.3 | 0.4 | 2.1 | 23.2 |
| | Sand1-SS-043 | C06110737-030 | 3.4 | 0 | 6.7 | 1.7 | 1.8 | 18.8 |
| | Sand1-SS-044 | C06110737-015 | 6.7 | 0 | 11 | 1.6 | 1.7 | 31.9 |
| | Sand1-SS-049 | C06110737-016 | 4.9 | 0 | 16.8 | 3 | 41 | 81.3 |
| | Sand1-SS-050 | C06110737-018 | 5 | 0 | 15.7 | 8.1 | 4.5 | 26.1 |
| | Sand1-SS-051 | C06110737-019 | 4.6 | 0 | 1.9 | 0.5 | 1 | 32.6 |
| | Sand1-SS-053 | C06120235-015 | 7 | 0 | 5.4 | 1.4 | 2.5 | 32 |
| | Sand1-SS-063 | C06110737-020 | 3.3 | 0 | 20.8 | 3.5 | 6.9 | 28.5 |
| | Sand1-SS-065 | C06120235-016 | 4.6 | 0 | 4.3 | 1 | 3 | 30.1 |
| | Sand1-SS-068 | C06110737-021 | 2.3 | 0 | 47.3 | 19.2 | 41.3 | 42.1 |
| | Sand1-SS-249 | C06110737-017 | 5.1 | 0 | 19.1 | 3.7 | 44.8 | 82.5 |
| | Sand1-TP-030 | C06120405-011 | 2.9 | 0 | 113 | 15.8 | 31.7 | 45.7 |
| | | C06120405-020 | 13.9 | 0 | 4.8 | 1.4 | 5.2 | 44.8 |
| | Sand1-TP-043 | C06120405-012 | 3.4 | 0 | 0.6 | 0.4 | 0.8 | 17.4 |
| | Sand1-TP-049 | C06120405-013 | 3.4 | 0 | 75.8 | 17.3 | 32.3 | 40.6 |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|--------------|---------------|---------------|---------------|-----|------|------|------|------|
| Sand 1 | Sand1-TP-049 | C06120405-014 | 4.4 | 0 | 6.4 | 2.4 | 3 | 23.9 |
| | Sand1-TP-063 | C06120405-016 | 1.1 | 0 | 80.6 | 21.7 | 89.8 | 48.5 |
| | | C06120405-017 | 9.2 | 0 | 8.8 | 4.6 | 60.5 | 28.3 |
| | Sand1-TP-068 | C06120405-018 | 2.5 | 0 | 57.4 | 34.3 | 91.6 | 45.3 |
| | | C06120405-019 | 6.5 | 0 | 7.1 | 0.6 | 27 | 10.4 |
| Sand1-TP-249 | C06120405-015 | 4.2 | 0 | 9 | 3.3 | 3.6 | 21.7 | |
| Sand 2 | Sand2-SS-003 | C06110737-001 | 8 | 0 | 3.3 | 0.9 | 4.2 | 22.6 |
| | Sand2-SS-004 | C06110737-002 | 7.3 | 0 | 2 | 0.8 | 2.2 | 29.1 |
| | Sand2-SS-006 | C06110737-003 | 7.8 | 0 | 1.2 | 0.2 | 1 | 30.9 |
| | Sand2-SS-007 | C06110737-004 | 4 | 0 | 16.1 | 2.8 | 7 | 37.6 |
| | Sand2-SS-010 | C06110737-005 | 9 | 0 | 1.2 | 0.3 | 1.2 | 42.6 |
| | Sand2-SS-011 | C06110737-006 | 4.7 | 0 | 6.2 | 1 | 5.4 | 29.6 |
| | Sand2-SS-012 | C06110737-008 | 3.3 | 0 | 6.2 | 0.9 | 26.3 | 54.2 |
| | Sand2-SS-014 | C06110737-009 | 3.5 | 0 | 0.8 | 0 | 0.7 | 12.4 |
| | Sand2-SS-015 | C06110737-010 | 5.5 | 0 | 4.4 | 0.8 | 2.7 | 38.1 |
| | Sand2-SS-016 | C06110737-011 | 4.5 | 0 | 6.1 | 1.3 | 2.5 | 34.3 |
| | Sand2-SS-017 | C06110737-012 | 3.2 | 0 | 36 | 6.3 | 9 | 41.5 |
| | Sand2-SS-019 | C06110737-013 | 3.3 | 0 | 21.6 | 3.6 | 27.5 | 49.7 |
| | Sand2-SS-020 | C06110737-014 | 4.1 | 0 | 27.7 | 5 | 41.4 | 49 |
| | Sand2-TP-008 | C06110906-026 | 3.6 | 0 | 2.4 | 0.4 | 15.3 | 45 |
| | Sand2-TP-011 | C06110906-022 | 5.3 | 0 | 1.1 | 0.5 | 2.5 | 41.7 |
| | Sand2-TP-012 | C06110906-023 | 3.1 | 0 | 3.8 | 0 | 26.5 | 50.9 |
| | Sand2-TP-017 | C06110906-024 | 3.8 | 0 | 1.9 | 0.7 | 2.8 | 29.9 |
| | Sand2-TP-019 | C06110906-025 | 3.6 | 0 | 1.8 | 0 | 3.2 | 35.2 |
| | Sand 3 | Sand3-SS-002 | C06110906-013 | 3.4 | 0 | 15.3 | 4.2 | 42.6 |
| Sand3-SS-004 | | C06120235-064 | 2.1 | 0 | 1.4 | 1 | 3.5 | 34.9 |
| Sand3-SS-006 | | C06110906-012 | 4.7 | 0 | 17.4 | 3.5 | 119 | 39.6 |
| Sand3-SS-008 | | C06110906-014 | 3.7 | 0 | 1.4 | 0.5 | 2.9 | 34.1 |
| Sand3-SS-010 | | C06110906-010 | 3.8 | 0 | 33.4 | 7.2 | 136 | 45 |
| Sand3-SS-012 | | C06120235-065 | 4.3 | 0 | 1.4 | 0 | 2.3 | 38.8 |
| Sand3-SS-014 | | C06110906-005 | 1.7 | 0 | 123 | 33.5 | 396 | 51.5 |
| Sand3-SS-017 | | C06110906-011 | 5.3 | 0 | 1 | 0.7 | 1.4 | 26 |
| Sand3-SS-022 | | C06110906-004 | 2.9 | 0 | 1.2 | 0 | 0.9 | 22.7 |
| Sand3-SS-024 | | C06110906-003 | 4.3 | 0 | 27.4 | 5.8 | 7.4 | 33.2 |
| Sand3-SS-025 | | C06110906-002 | 2.7 | 0 | 26.9 | 5.5 | 10.9 | 28.6 |
| Sand3-SS-026 | | C06110906-001 | 2.5 | 0 | 19.6 | 5.3 | 7.3 | 20.6 |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|--------------|----------------|---------------|------|------|------|------|------|------|
| Sand 3 | Sand3-SS-027 | C06110906-007 | 4.7 | 0 | 4.5 | 1.4 | 3.2 | 28.7 |
| | Sand3-SS-05 | C06110906-009 | 1.5 | 0 | 66.9 | 32.2 | 86.4 | 54.5 |
| | Sand3-SS-09 | C06110906-008 | 3.7 | 0 | 31.9 | 14 | 41.4 | 41 |
| | Sand3-SS-214 | C06110906-006 | 1.7 | 0 | 123 | 47.6 | 516 | 63.5 |
| | Sand3-TP-005 | C06120235-066 | 0.8 | 0 | 40.8 | 39.2 | 131 | 63.3 |
| | | C06120235-067 | 4.3 | 0 | 28.1 | 3.6 | 78.8 | 33.9 |
| | Sand3-TP-006 | C06120235-068 | 5 | 0 | 8.4 | 0.8 | 102 | 35 |
| | Sand3-TP-009 | C06120235-069 | 6.9 | 0 | 5.1 | 1.7 | 90.6 | 38 |
| | Sand3-TP-014 | C06120235-070 | 4.2 | 0 | 1.2 | 1.3 | 227 | 29.4 |
| | | C06120235-075 | 1.5 | 0 | 84.1 | 29 | 488 | 52.2 |
| Sand3-TP-025 | C06120235-071 | 4.6 | 0 | 27.2 | 8.9 | 21.1 | 41.3 | |
| Sed Pad | SEDPAD-SS-005 | C06111057-030 | 3.1 | 0 | 17.7 | 3.7 | 14.1 | 25.5 |
| | SEDPAD-SS-006 | C06111057-031 | 3 | 0 | 38.8 | 14.2 | 21.7 | 39.5 |
| | SEDPAD-SS-011 | C06111057-033 | 11.6 | 0 | 3.8 | 2.7 | 27.3 | 502 |
| | SEDPAD-SS-014 | C06111057-036 | 2.7 | 0 | 236 | 78.8 | 366 | 106 |
| | SEDPAD-SS-015 | C06111057-037 | 1.5 | 0 | 33.4 | 12.9 | 34.7 | 31.5 |
| | SEDPAD-SS-018 | C06111057-038 | 7.1 | 0 | 1.5 | 1.3 | 1.9 | 46.8 |
| | SEDPAD-SS-020 | C06111057-039 | 6 | 0 | 12.8 | 3.8 | 17.7 | 22.2 |
| | SEDPAD-SS-021 | C06111057-040 | 1.3 | 0 | 85.6 | 45.4 | 1640 | 59.1 |
| | SEDPAD-SS-022 | C06111057-041 | 1.3 | 0 | 104 | 44.5 | 85.9 | 60.7 |
| | SEDPAD-SS-025 | C06111057-042 | 1.5 | 0 | 36.7 | 7.5 | 21.9 | 29.9 |
| | SEDPAD-SS-026 | C06111057-043 | 3 | 0 | 27.1 | 9 | 33.1 | 32.1 |
| | SEDPAD-SS-07 | C06111057-032 | 1.1 | 0 | 106 | 45.5 | 92.4 | 63.4 |
| | SEDPAD-SS-08 | C06111057-034 | 3 | 0 | 25.8 | 7.9 | 19.8 | 35.5 |
| | SEDPAD-SS-12 | C06111057-035 | 0.9 | 0 | 118 | 37.8 | 363 | 52.9 |
| | SEDPAD-TP-006 | C06120405-001 | 0.6 | 0 | 92.9 | 161 | 68.6 | 74.7 |
| | | C06120405-002 | 4.2 | 0 | 2.8 | 2.4 | 88.7 | 29 |
| | SEDPAD-TP-012 | C06120405-003 | 0.8 | 0 | 84 | 83.5 | 147 | 48.4 |
| | | C06120405-004 | 4.3 | 0 | 2.9 | 2.7 | 158 | 30.7 |
| | SEDPAD-TP-014 | C06120405-005 | 2.7 | 0 | 165 | 61.4 | 252 | 75 |
| | | C06120405-006 | 3.8 | 0 | 9.8 | 3.4 | 18.9 | 31.5 |
| | SEDPAD-TP-021 | C06120405-007 | 1.9 | 0 | 99.7 | 63.9 | 357 | 60.3 |
| | | C06120405-008 | 0 | 0 | 86.3 | 74.1 | 270 | 63.9 |
| | SEDPAD-TP-026 | C06120405-009 | 5.5 | 0 | 86.6 | 40.9 | 89 | 65.4 |
| Trailer | Trailer-SS-001 | C06120235-051 | 3.7 | 0 | 12.5 | 6.6 | 12.7 | 43.7 |
| | Trailer-SS-009 | C06120235-053 | 6.1 | 0 | 102 | 39.8 | 139 | 61.3 |

Appendix D

Supporting Data and Analysis

Removal Site Evaluation Data

| | | | | | | | | |
|-----------------|------------------|---------------|-----|----|------|------|------|------|
| Trailer | Trailer-SS-013 | C06120235-052 | 0 | 0 | 33.2 | 101 | 44 | 78.4 |
| | Trailer-SS-024 | C06120235-054 | 5.4 | 0 | 2.1 | 1.7 | 16.7 | 32.8 |
| | Trailer-SS-027 | C06120235-056 | 5.3 | 0 | 2.1 | 0.8 | 1.7 | 31.7 |
| | Trailer-SS-224 | C06120235-055 | 5.5 | 0 | 1.8 | 1.1 | 16.5 | 33.1 |
| Vent 3/8 | Vent3-SS-034 | C06120235-005 | 2.3 | 0 | 1.4 | 0.2 | 1.1 | 9 |
| | Vent8-SS-002 | C06120235-001 | 5.1 | 0 | 3.6 | 2.9 | 5.2 | 35.3 |
| | Vent8-SS-006 | C06120235-003 | 3.3 | 0 | 13.2 | 5 | 19.4 | 30.3 |
| | Vent8-SS-019 | C06120235-006 | 3.3 | 0 | 137 | 27.4 | 358 | 55.4 |
| | Vent8-SS-031 | C06120235-004 | 2.6 | 0 | 2.2 | 0.9 | 2.1 | 21.6 |
| | Vent8-SS-202 | C06120235-002 | 4.6 | 0 | 3.9 | 1.4 | 4.6 | 32.8 |
| Boneyard | Boneyard-TP-001 | C06110906-031 | 1.3 | 0 | 45.9 | 16.7 | 17.4 | 41.3 |
| | | C06120235-021 | 5.2 | 0 | 1.3 | 0.2 | 0.8 | 29.9 |
| | | C06120235-022 | 3.7 | 0 | 1.6 | 0.4 | 0.8 | 29 |
| | Boneyard-TP-002 | C06120235-023 | 5.5 | 0 | 2.2 | 0.6 | 2.1 | 32 |
| | | C06120235-024 | 5.2 | 0 | 1.1 | 0 | 1.5 | 31.1 |
| | | C06120235-025 | 4 | 0 | 1.1 | 0 | 0.9 | 27.8 |
| | Boneyard-TP-003 | C06120235-026 | 5.1 | 0 | 1.1 | 0.8 | 1.5 | 31.6 |
| | | C06120235-027 | 5.1 | 0 | 1.2 | 0 | 1 | 37.8 |
| | Boneyard-TP-004 | C06120235-029 | 1.9 | 0 | 50.7 | 33.4 | 228 | 33.9 |
| | | C06120235-030 | 3.3 | 0 | 10.1 | 3.1 | 240 | 22.2 |
| | | C06120235-031 | 3.5 | 0 | 1.9 | 0.8 | 5.5 | 24.7 |
| | Boneyard-TP-004) | C06120235-028 | 0.8 | 0 | 48.4 | 24.3 | 12.5 | 36.9 |
| | Boneyard-TP-005 | C06120235-033 | 4 | 0 | 1.2 | 0 | 1 | 26 |
| | | C06120235-034 | 4 | 0 | 1.4 | 1.2 | 5.6 | 25.2 |
| | | C06120235-035 | 4 | 0 | 1.7 | 0.3 | 4.3 | 24.7 |
| | | C06120235-036 | 4.9 | 0 | 1.9 | 0.5 | 8.4 | 25.6 |
| Boneyard-TP-204 | C06120235-032 | 4.2 | 0 | 13 | 4.6 | 475 | 24.5 | |

| Subsurface Soil Analytical Results Supplemental Removal Site Evaluation Sampling, April 2008 Northeast Church Rock Mine Site | | | | | |
|--|-------------------|-------------------|--------------------|----------------|-------------------|
| Location ID | Depth (ft bgs) | Ra-226 (pCi/g) | Uranium (mg/kg) | Gamma (cpm) | Comments |
| Unnamed Arroyo | | | | | |
| A-420 | 2 | n/a | | 51,997 | |
| | 5 | 6.7 | 22.9 | 48,306 | |
| | 10 | 1.1 | 10.1 | 45,876 | |
| | 15 | n/a | | 45,491 | |
| | 20 | n/a | | 42,922 | Possible bedrock |
| | 25 | n/a | | 45,957 | Weathered bedrock |
| A-421 | 2 | n/a | | 40,592 | |
| | 5 | 7.0 | 42.9 | 40,813 | |
| | 10 | 1.4 | 11.3 | 37,414 | |
| A-422 | 2 | n/a | | 63,052 | |
| | 5 | n/a | | 63,185 | |
| | 10 | 6.6 | 14.6 | 58,560 | |
| | 15 | 1.6 | 7.69 | 56,082 | |
| | 20 | 1.3 | 7.11 | 53,924 | |
| A-423 | 2 | n/a | | 80,863 | |
| | 5 | n/a | | 79,971 | |
| | 10 | 1.2 | 24.6 | 72,861 | |
| | 15 | 2.9 | 14.9 | 72,028 | |
| | 20 | n/a | | 73,970 | |
| | 25 | n/a | | 73,680 | |
| | 30 | n/a | | 72,234 | |
| | 35 | n/a | | 73,808 | |
| | 40 | n/a | | 72,458 | |
| | 45 | n/a | | n/a | Bedrock |
| Boneyard | | | | | |
| BY-415 | 5 | 1.8 | 48.2 | 18,852 | |
| | 10 | 0.7 | 34.6 | 17,938 | |
| | 15 | n/a | | 17,863 | Possible bedrock |
| NECR-1 | | | | | |
| N1-419 | 2 | n/a | | 84,000 | |
| | 5 | 19 | 13.9 | 75,326 | |
| | 10 | 2.4 | 55.2 | 72,758 | |
| | 15 | n/a | | n/a | |
| NEMSA | | | | | |
| NA-416 | 5 | n/a | | 50,573 | |
| | 10 | n/a | | 37,417 | |
| | 15 | 17.5 | 117.0 | 44,685 | |
| | 20 | 1.9 | 17.6 | 31,452 | |
| NA-417 | 2 | 3.1 | 21.6 | 23,570 | |
| | 5 | 2.5 | 11.1 | 23,531 | |

| Subsurface Soil Analytical Results Supplemental Removal Site Evaluation Sampling, April 2008 Northeast Church Rock Mine Site | | | | | |
|--|-------------------|-------------------|--------------------|----------------|-------------------|
| Location ID | Depth (ft bgs) | Ra-226 (pCi/g) | Uranium (mg/kg) | Gamma (cpm) | Comments |
| Pond 1 | | | | | |
| P1-418 | 2 | n/a | | 226,493 | |
| | 5 | n/a | | 226,202 | |
| | 10 | 15.6 | 74.6 | 229,405 | |
| | 15.5 | n/a | | n/a | Bedrock |
| Pond 3 | | | | | |
| P3-414 | 2 | n/a | | 74,081 | |
| | 5 | n/a | | 73,993 | |
| | 10 | 2.4 | 26.5 | 66,348 | |
| | 15 | 1.8 | 21.9 | 65,897 | |
| | 20 | n/a | | n/a | Weathered bedrock |
| Notes: n/a = not applicable | | | | | |