Photocopy

Department of Energy
Albuquerque Operations Office
P.O. Box 5400
Albuquerque, New Mexico 87115

JUL - 6 1988

Dear Friend:

Enclosed is the Department of Energy's Environmental Assessment on the proposed Remedial Action at the Green River Uranium Mill Tailings Site, Green River, Utah (DOE/EA-0343).

In November 1978, Congress enacted Public Law 95-604, the Uranium Mill Tailings Radiation Control Act of 1978. The Act authorizes the Department of Energy to enter into cooperative agreements with the affected states and Indian tribes in order to establish assessment and remedial action programs at inactive uranium mill tailings sites, including the Green River site. The Act stipulates that the department will meet the applicable cleanup and disposal standards promulgated by the Environmental Protection Agency. It further states that the Nuclear Regulatory Commission is to concur in all major decisions, and to license the maintenance and monitoring of the final disposal site.

The Environmental Assessment was prepared in compliance with the National Environmental Policy Act to assess the environmental impacts of the Department's proposal to perform remedial action at the Green River site and its related vicinity properties. The Department's proposed action, as identified in the Environmental Assessment, is to stabilize the residual radioactive material at a new disposal site several hundred feet south of the existing Green River tailings pile.

Also enclosed is a Finding of No Significant Impact, in which the Department has determined, based on the analyses in the Environmental Assessment, that remedial action at the Green River site is not a major Federal action significantly affecting the quality of the human environment. Therefore, preparation of an Environmental Impact Statement is not required.

Sincerely,

W. John Arthur, III
Project Manager
Uranium Mill Tailings Project Office

Enclosures (2)

WM-68
NLDH 11/1

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U.S. Department of Energy

Finding of No Significant Impact and Floodplain Statement of Findings for the Remedial Action at the Green River Uranium Mill Tailings Site, Green River, Utah

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact (FONSI) and Floodplain Statement of Findings.

SUMMARY: The U.S. Department of Energy (DOE) has prepared an environmental assessment (EA) (DOE/EA-0343) on the proposed remedial action at the inactive uranium mill tailings site near Green River, Utah. Based on the analyses in the EA, which is available upon request, the DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.). Therefore, the preparation of an environmental impact statement (EIS) is not required. The DOE has also prepared a Floodplain Assessment as part of the EA. This assessment is prepared pursuant to Executive

Orders 11988 and 11990, and 10 CFR Part 1022, Compliance with Floodplain/Wetlands Environmental Review Requirements.

Under authority granted by the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978 (Public Law 95-604 dated November 8, 1978), the U.S. Department of Energy (DOE) proposes to clean up the residual radioactive wastes and other contaminated materials at the inactive uranium mill tailings site located at Green River, Utah. The proposed action will move and stabilize the radioactive wastes according to a plan to be concurred in by the U.S. Nuclear Regulatory Commission (NRC) and the State of Utah.

BACKGROUND: On November 8, 1978, the Uranium Mill Tailings Radiation Control Act (UMTRCA), Public Law 95-604 (PL95-604), was enacted in order to address a Congressional finding that uranium mill tailings located at inactive processing sites may pose a potential and significant radiation health hazard to the public. Title I of the UMTRCA authorized the DOE to enter into cooperative agreements with affected states or Indian tribes to clean up those inactive sites contaminated with uranium mill tailings and required the Secretary of the DOE to designate sites to be cleaned up. On November 8, 1979, DOE designated 24 inactive processing sites for remedial action under Title I of the UMTRCA including the inactive uranium mill tailings site near Green River, Utah (44 FR 74892).

The UMTRCA also required the U.S. Environmental Protection Agency (EPA) to promulgate standards for remedial action at all inactive mill

sites. The purpose of these standards is to protect the public health and safety and the environment from radiological and nonradiological hazards associated with residual radioactive materials at the sites. The final standards (40 CFR Part 192) were published on January 5, 1983, and became effective on March 7, 1983. However, on September 3, 1985, the U.S. 10th Circuit Court of Appeals remanded groundwater standards 40 CFR 192.2(a)(2)-(3). Proposed standards were issued by EPA on September 23, 1987. Under UMTRCA, the DOE must comply with the proposed standards until standards are promulgated in final form. As a result, remedial action taken with regard to the Green River site would not preclude subsequent design enhancements if needed to achieve compliance and would not limit the selection of reasonable groundwater restoration methods that may be necessary when final standards are promulgated. When the final EPA standards are promulgated, the DOE will evaluate the groundwater protection requirements and undertake such action as is necessary to ensure that the final standards are met. The need for and extent of aquifer restoration will be evaluated in a separate NEPA process.

Under the UMTRCA, all remedial actions must be selected and performed with the concurrence of the NRC. The NRC has not and does not intend to issue regulations applicable to the Title I remedial actions at the inactive uranium mill tailings sites but will issue a license applicable to the 24 inactive sites for long-term surveillance and maintenance after the remedial actions are complete. On May 15, 1980, the DOE and the State of Utah entered into a cooperative agreement under Title I of the UMTRCA. The cooperative agreement set forth the terms and conditions for the DOE and Utah cooperative remedial action

efforts including the DOE's development of a remedial action plan (concurred in by the State of Utah), the DOE's preparation of an appropriate environmental document, real estate responsibilities, and other concerns. The DOE and the State of Utah will provide 90 and 10 percent, respectively, of the engineering and construction costs.

PROJECT DESCRIPTION: The Green River uranium mill tailings site covers 48 acres in Grand County, Utah, 0.5 mile southeast of the town of Green River. The mill was built in 1957 by Union Carbide Corporation and operated from 1958 through 1961, as an upgrader for ores from the Temple Mountain uranium mines approximately 40 miles to the southwest. When the Green River mill was shut down in 1961, the plant equipment was dismantled but the buildings were left intact. Union Carbide (now UMETCO) still owns the site and buildings, which are currently vacant but leased for use to the city of Green River.

The 48-acre designated site consists of the tailings pile (eight acres), the mill yard and ore storage area (21 acres), four main buildings, a water tower, and several small buildings. The total volume of contaminated materials, including the tailings and underlying soils, is estimated to be 185,000 cubic yards (cy). The buildings are structurally sound and are marginally contaminated. Access to the mill yard is restricted by a six-foot-high security fence with locked gates. The tailings pile is also fenced to restrict vehicle and livestock access; pedestrian traffic is not restricted. The remainder of the designated site is not fenced and access is not

restricted. Radiation warning signs are posted on the fences at the site. Dispersion of the tailings by wind and water erosion has contaminated approximately 64 acres of which 40 (including the area of the former ore storage and mill yard) and 24 acres are within and outside of the designated site, respectively.

The principal feature of the proposed action is the relocation of the tailings and other contaminated materials to a disposal area 600 feet south of the existing tailings pile. The tailings and other contaminated materials would be consolidated in a below-grade area; the resulting disposal cell would be contoured to have 10 percent (10 horizontal to one vertical) sideslopes and a gently sloping top of five percent. To ensure compliance with the EPA standards, the tailings and contaminated materials would be covered with 1.0 foot of compacted earth (radon/infiltration barrier) to inhibit the emanation of radon and the infiltration of water. The topslope and sideslopes of the disposal cell would be covered with a five-foot-thick layer of sand, gravel, and select fill to protect the radon/infiltration barrier from frost action, and small rock for erosion protection. This layer would also protect against penetration by animals and prevent human intrusion. Various other erosion control measures would be taken to assure the long-term stability of the stabilized disposal cell.

The stabilized disposal cell would cover approximately eight acres, and would be approximately 600 feet along each side. After remedial action the area of the existing tailings pile would be backfilled, graded to promote surface drainage, and revegetated. All other areas disturbed at the site by remedial action would be backfilled and

graded to promote surface drainage. All on-site buildings would be decontaminated and left intact for unrestricted use after the remedial action. Forty-five acres of the 48-acre designated tailings site would be released for any use consistent with existing land use controls following completion of remedial action. A fence would be constructed around the disposal site. The final restricted area would cover nine acres; this would require six acres of land outside the designated site boundary. The conceptual design is subject to change during the final design process.

The DOE examined three alternatives for the remedial action in its Environmental Assessment of Remedial Action at the Green River Uranium Mill Tailings Site, Green River, Utah. The DOE's proposed action is to decontaminate the buildings at the mill site and to relocate the radioactive wastes from the existing tailings pile and other contaminated material to an area 600 feet south of the existing tailings pile for permanent stabilization on site. The other alternatives analyzed in the EA included taking no action and stabilizing the wastes on site at the existing tailings site location. Each of the remedial action alternatives involves activity in a floodplain.

FINDING: The DOE has considered the concerns that have been expressed during public meetings and government agency reviews about the environmental and health impacts from the proposed remedial action. In general, these concerns relate to the impacts from radiation

released during remedial action, air quality impacts, impacts on the surface water, and impacts from the contaminated groundwater.

The EA discusses the environmental impacts resulting from the proposed remedial action and identifies mitigation measures that would be implemented to assure that the effects are not significant. The FONSI for stabilization on site at the Green River tailings site is based on the following findings which are supported by the information and analyses in the EA.

- Radiation release - The increased radiation exposure above background levels to the general population at and in the vicinity of the Green River site during the remedial action would be extremely low. The total estimated excess health effects for the general population and remedial action workers were projected to be 0.0006 additional cancer deaths due to radiation from the tailings during the remedial action period. The total estimated excess health effects for remedial action workers were projected to be 0.0005 additional cancer deaths due to radiation from the tailings during the remedial action period.

  The no action alternative would result in 0.0001 total estimated excess health effects per year. This number is not directly comparable to the total estimated excess health effects mentioned above for the general population because the excess health effects estimated for the proposed action are for the duration of tailings disturbance and account for increased radon levels due to tailings disturbance. In addition, the total estimated excess health effects for the no action alternative do not consider factors such

as dispersion or unauthorized removal and use of the tailings which could lead to greater excess health effects than those calculated.

The DOE would closely monitor the release of radon and airborne radioactive particulates during the remedial action. The release of radon and airborne radioactive particulates would be reduced by dampening contaminated material with water or chemical dust suppressants, by limiting the handling of contaminated material during adverse weather conditions, and by using trucks with tight-fitting tailgates and covers when the materials are to be moved. Drainage controls and waste-water retention ponds would be constructed to prevent contaminated water from leaving the site.

Human exposure to residual radioactive material would be reduced further by restricting access, by providing worker training programs, and by the use of necessary monitoring and protective equipment by the remedial action workers.

The total excess health effects at and in the vicinity of the Green River tailings site after 10 and 1000 years of no action are estimated to be 0.001 and 0.1, respectively. The calculations for the no action alternative do not consider the dispersal of the tailings by natural erosion or by man; thus, the total excess health effects may be greater.

Based on the above, it was determined that the radiation impacts from the proposed action would not be significant.

- Air quality - An inventory of emissions due to remedial action indicated that fugitive dust emissions would be much higher than combustion emissions. Both combustion and fugitive dust emissions would be temporary and endure only for the 14-month period of remedial action. Appropriate air quality permits will be obtained from the State of Utah. No Federal permits will be required.

  The fugitive dust emissions were used in a computer simulation model to determine the total suspended particulates (TSP) concentrations downwind from the various work sites. Results of the modeling indicate that the TSP concentrations at the Green River mill tailings site and the two borrow sites would exceed the Federal secondary and the State of Utah 24-hour TSP standards. However, this impact would be temporary and short-term, lasting only for the length of the remedial action process. The maximum exceedance of the 24-hour TSP standards would occur over a four-month period (months six through nine) during peak remedial action activity. Dust suppression measures, such as water sprays or chemical dust suppressors, will be implemented at the construction site to minimize fugitive particulate emissions.

  For these reasons, it was determined that the air-quality impacts of the proposed action would be temporary and would not be significant.

- Surface-water quality - Surface-water runoff as a result of the cleanup and consolidation of the tailings and contaminated material would be minimal because the remedial action design includes the construction of drainage and erosion controls. This

includes waste-water retention ponds constructed during site preparation to prevent the discharge of contaminated water from the site. The contaminated water would be retained for evaporation or use in the compaction of the tailings and contaminated materials, and any sediments from the ponds would be consolidated with the tailings during the final reshaping of the disposal cell.

Surface-water runoff created by excessive precipitation would not cause erosion of the stabilized disposal cell and carry contaminants into local surface waters because erosion control features such as sideslope design and rock barriers were incorporated into the remedial action design.

On this basis, it was determined that the impacts on surface-water resources would not be significant.

- Groundwater quality - Major groundwater aquifers at the Green River site are referred to in the EA as the top, upper-middle, lower-middle, and bottom hydrostratigraphic units. Percolation of tailings seepage into the groundwater system beneath the tailings pile has adversely impacted the water quality in both the top and upper-middle hydrostratigraphic units. Gross alpha activity, molybdenum, nitrate, selenium, and uranium concentrations in the top and upper-middle hydrostratigraphic units exceed background levels, the proposed EPA maximum concentration limits, and state of Utah groundwater standards beneath and downgradient of the existing tailings pile. The vertical extent of contamination is

confined to these two shallow units by strong, vertically upward hydraulic gradients between the upper-middle unit and the underlying units. The maximum depth of contamination beneath the surface of the present tailings pile is about 65 feet.

The disposal cell design incorporates many natural, durable components that would minimize infiltration and leachate generation. Compliance with the proposed standards would be aided by the following:

- Below-grade disposal of the tailings that will lessen percolation of precipitation through the tailings by limiting the exposed area of the stabilized pile.

- Emplacement of a cover system consisting of filter layers, erosion protection, and a layer to protect the radon/infiltration barrier from frost action to reduce infiltration and promote surface runoff and evaporation.

- Minimization of tailings seepage by the use of a low hydraulic conductivity radon/infiltration barrier to reduce infiltration.

- Consistent, uniform, vertical fracturing of the foundation bedrock that will prevent ponding ("bathtubbing") in the tailings and promote drainage of runoff water from the toe of the cell.

- Natural geochemical attenuation of contaminants in the tailings seepage by adsorption and precipitation reactions within the Cedar Mountain Formation fractured bedrock beneath and downgradient of the disposal cell.

- Strong, upward, vertical hydraulic gradients in the saturated bedrock downgradient of the disposal site that will inhibit downward migration of contamination.

- Natural dilution (mixing) of the tailings seepage by groundwater underflow in the Cedar Mountain Formation.

- Limitation of the lateral extent of any future contamination from tailings seepage from the disposal cell due to the prevailing flow of the shallow groundwater toward the existing contaminant plume of the mill site.

Groundwater protection at the Green River site would be consistent with the proposed EPA standards for inactive sites (40 CFR Part 192) and would be accomplished in accordance with the remedial action plan prepared by the DOE and approved by the NRC. The generic impacts of the EPA standards were addressed in an EIS published by the EPA (EPA 521/1-83-008-1 and 2).

Based on the above, it was determined that the impacts on groundwater resources would not be significant.

- There are no endangered or threatened species or archaeological resources in the area that would be affected by the remedial action.

o No wetlands would be affected by the remedial action of the Green River tailings site.

In summary, based on the analyses in the EA, the DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969 (423 U.S.C. 4321 et seq.). Therefore, the preparation of an EIS is not required.

FLOODPLAIN STATEMENT OF FINDINGS: This is a Statement of Findings prepared pursuant to Executive Orders 11988 and 11990, and 10 CFR Part 1022, Compliance with Floodplain/Wetlands Environmental Review Requirements. Under authority granted by the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, the DOE proposes to clean up the residual radioactive wastes and other contaminated materials at the inactive uranium mill tailings site in Green River, Utah, and relocate these materials to an area 600 feet south of the existing tailings pile where they would be permanently stabilized. Radioactively contaminated materials are located within the 100-year floodplain of Brown's Wash. On the basis of the floodplain assessment in the Environmental Assessment (EA), Appendix F, the DOE has determined that there is no practicable alternative to the proposed activities and that the proposed action has been designed to minimize potential harm to or within the floodplain of Brown's Wash.

The proposed remedial action for the Green River tailings is stabilization on site. All of the tailings and other contaminated materials would be

consolidated in a below-grade area 600 feet south of the existing pile. The tailings pile would be contoured to have 10 percent sideslopes and a gently sloping top. The pile would be covered with 1.0 foot of compacted earth to inhibit radon emanation and water infiltration and to assure compliance with the EPA standards. The top and sides of the pile would be covered with a five foot-thick layer of sand, gravel, select fill and rock for erosion and frost protection. This layer would also protect against penetration by animals and inadvertent human intrusion. A below-grade rock apron would be constructed around the pile to protect the pile against gully intrusion. The top of the stabilized pile would have an average height of 14 feet with a maximum height of 33 feet. The area of the existing tailings pile would be backfilled, graded to promote surface drainage, and revegetated. All other areas at the site disturbed by remedial action would be backfilled and graded to promote surface drainage. All on-site buildings would be decontaminated and left intact. A fence would be constructed around the stabilized tailings pile. A map showing the location of the affected floodplain can be found in the EA, Figure F.2.1.

Specific construction activities related to the floodplain area include (1) the disturbance of approximately 12.5 acres of tailings and other contaminated materials within the 100-year floodplain of Brown's Wash; (2) grading and revegetating the floodplain where excavated, including adding any necessary soil conditioners, and (3) use of water bars, mulch, riprap, or other soil erosion controls, if necessary, to minimize erosion.

The DOE examined three alternatives for the remedial actions in the EA. The DOE's proposed action is to decontaminate the Green River uranium mill tailings site and to relocate the wastes 600 feet south of the existing tailings pile for permanent stabilization on site. The other alternatives analyzed in the EA included taking no action and stabilizing the wastes in-place at the Green River uranium mill tailings site.

During the action alternatives (stabilization on site or stabilization in place) at the Green River tailings site, 12.5 acres within the Brown's Wash 100-year floodplain would be disturbed by removing 20,500 cy of tailings and other contaminated materials. The majority of the disturbance would occur outside the tailings pile boundary, downstream of the tailings pile, and along both banks of the wash. These areas constitute 12 acres of the total disturbed area and contain 16,500 cy of tailings and other contaminated materials. The depths of excavation required in these areas would be one foot or less. Excavation ranging from six to nine feet would be required in an 0.5-acre area of the tailings pile within the 100-year floodplain in order to remove 4,000 cy of contaminated materials.

The no action alternative, which entails leaving the site in its present condition, would not be consistent with the intent of Congress in Public Law 95-604 and would not result in compliance with the EPA standards.

Potential impacts during remedial action would be mitigated by use of the following measures:

- Contaminated materials in the floodplain would be excavated during the period that the wash is dry.

- Berms, riprap or other erosion control measures would be used to minimize erosion along the banks of the wash.

- Riparian vegetation adjacent to areas subject to excavation would be left undisturbed as much as possible to reduce river velocities and associated erosion during flood events.

- Revegetation would begin as soon as practical after removal of contaminated materials.

The remedial action has been designed to conform to applicable Federal and state regulations. Before construction begins, all applicable permits and approvals, such as those required under Section 404 of the Clean Water Act, would be obtained from the U.S. Army Corps of Engineers, Utah state agencies, and other agencies having jurisdiction. Initial consultation with the agencies has taken place.

SINGLE COPIES OF THE EA ARE AVAILABLE FROM: W. John Arthur, III, UMTRA Project Manager, U.S. Department of Energy, UMTRA Project Office, 5301 Central Avenue, N.E., Suite 1720, Albuquerque, New Mexico 87108, (505) 844-3941.

FOR FURTHER INFORMATION, CONTACT: Carol Borgstrom, Acting Director, Office of NEPA Project Assistance, Office of the Assistant Secretary for Environment, Safety, and Health, Room 3E-080, Forrestal Building, Washington, D.C. 20585, (202) 586-4600.

Issued at Washington, D.C. May 26, 1988.

Ernest C. Baynard, III
Assistant Secretary
Environment, Safety, and Health