

Appendix B
Risk Assessment Information

Summary of Post-Remediation Risk Status at the Weldon Spring Site

Baseline risk assessments addressing both human health and ecological risks were performed as part of the remedial investigation phase of the remedial investigation/feasibility study processes conducted. A limited assessment was performed for the Quarry Bulk Waste Operable Unit (OU) consistent with the focused scope of the remedial investigation/feasibility study conducted.

These risk assessments are documented in the baseline risk assessment reports that have been prepared for the four operable units of the Weldon Spring Site (DOE 1990, 1992, 1997, 1998). The assessments provided information regarding actual and potential risks to human health and the environment posed by the site areas addressed in each of the operable units. The information was then used to determine whether a current or potential threat to human health or the environment exists that warranted consideration of a remedial action.

The risk assessment performed to support the removal action conducted at the Southeast Drainage is presented in the Engineering Evaluation/Cost Analysis report prepared for the drainage (DOE 1996). An assessment was also prepared for the contaminated culverts under County Highway D (Frog Pond culverts) (ANL 2000).

After remediation of the former Chemical Plant and vicinity properties, a post-cleanup risk assessment (DOE 2002) was performed to determine residual risk levels for the various soil areas remediated. A similar assessment was also performed after the removal action was completed for the Southeast Drainage (ANL 1999). Information from the post-remediation reports and from the baseline risk assessment reports (for areas that did not undergo remediation) was used to determine the need for and the nature of institutional controls to protect human health and the environment.

B1.0 Risk Assessment Methodology

B1.1 Human Health

Potential risks posed by exposure to site-related radiation and chemicals were assessed using methods developed by EPA and other agencies (EPA 1989b). Although exposure to ionizing radiation can result in cancer, serious genetic effects, and other detrimental health effects, the predominant health concern associated with radioactive contaminants at the Weldon Spring Site (which are primarily alpha-emitting radionuclides) is the induction of cancer. The radiological health risks evaluated were limited to this concern. This approach is consistent with EPA guidance, which notes that, in general, the risk of cancer is limiting and may be used as the sole basis for assessing the radiation-related human health risks for a site contaminated with radionuclides (EPA 1989b). For exposure to site chemicals, cancer and noncancer endpoints were evaluated consistently with EPA guidance (EPA 1989b).

Potential human health risks were estimated with reference to current and likely foreseeable future land use. Risk assessments conducted for the Weldon Spring Site have been performed by DOE in consultation with EPA and the state of Missouri and conform to procedures recommended by both agencies.

The EPA risk assessment process as implemented at the Weldon Spring Site consists of four primary steps. Recognition and careful consideration of the uncertainties associated with each of the four steps presented below is an important component of the risk assessment process.

Data Collection and Hazard Assessment—Site-related hazards or contaminants of concern are identified.

Exposure Assessment—An estimate is made as to the nature and magnitude of potential exposures associated with the site. Exposure scenarios, exposure pathways, potential receptors, exposure concentrations, and intakes are postulated or estimated. An exposure pathway is considered complete only if all the following elements are present: presence of a contaminated medium (e.g., drinking water, soil), presence of a person or ecological receptor at the location where the contaminated medium exists, and opportunity for the person or ecological receptor to come in contact with the contaminated medium.

Toxicity Assessment—Toxicity of the contaminants of concern are evaluated, and appropriate toxicity values for quantifying the potential health effects of the contaminants of concern are identified; these values have been developed by EPA for conducting risk assessments at CERCLA sites.

Risk Characterization—Potential cancer and noncancer risks are quantified. For cancer risks, EPA has established an acceptable risk range of 1 in 1 million to 1 in 10,000 (EPA 1990). This means that contaminant concentrations at a site that could result in increasing a person's chances of developing cancer by 1 chance in 1 million to 1 chance in 10,000 (in addition to this person's chances of developing cancer from other causes) would be considered acceptable. The quantitative measure of noncarcinogenic health effects is the hazard index. EPA has defined a hazard index greater than 1 as indicating possible adverse noncarcinogenic health effects.

Table B-1 presents a summary of the exposure scenarios, scenario assumptions, and intake parameters used in the various risk assessments performed for the site.

B1.2 Ecological Risk Assessment

The ecological assessments conducted for the Weldon Spring Site addressed both aquatic biota and terrestrial wildlife, as appropriate for the four operable units (EPA 1989a and 1989c). For aquatic biota, the risk assessment included consideration of both exposure and effects. Biotic surveys of fish and invertebrate communities were performed. This method provided direct information on the status of the aquatic community inhabiting a spring (e.g., Burgermeister Spring) or a site surface water area (e.g., Femme Osage Slough) and the habitat quality of these spring water or surface water areas. Acute and chronic toxicity tests were also performed. The risk assessment for terrestrial wildlife modeled uptake of contaminants through a drinking water pathway.

B2.0 Baseline Risk Assessment Results

B2.1 Human Health

The baseline risk assessment performed for the former Chemical Plant soils, structures, surface water, and sludges at the raffinate pits indicates that elevated concentrations of site-related contaminants (both radioactive and chemical) could pose an unacceptable risk and a hazard index greater than 1 for the future recreational visitor scenario evaluated (DOE 1992).

Risk estimates for contaminated groundwater in the shallow aquifer beneath the Chemical Plant area indicate that some contaminants could pose an unacceptable risk if ingested at frequencies and amounts similar to those of residential use (DOE 1997).

Risk estimates for springs (including Burgermeister Spring) at the Chemical Plant indicate that site-related contaminant levels are within the acceptable risk range and below a hazard index of 1 for the current and future recreational visitor accessing the spring water (DOE 1997).

For the Southeast Drainage, risk estimates for a recreational visitor and hypothetical child resident scenario indicated that contaminant levels in spring water are within the acceptable risk range and below a hazard index of 1. However, radioactive contaminant levels in sediment at several locations posed a risk slightly greater than the acceptable range when evaluated using the hypothetical child resident scenario (DOE 1996). The hypothetical child resident was evaluated as the reasonably maximally exposed individual at the drainage. DOE consulted with EPA, the Missouri Department of Natural Resources, and the Missouri Department of Health in developing this scenario and its exposure assumptions for evaluating potential exposure to the contaminants in the drainage.

For the Quarry, residual soils at the Quarry proper, including those in the fractures, indicated that contaminant levels are within the acceptable risk range and below a hazard index of 1 for the recreational visitor scenario. Surface water, sediment, and fish samples from Femme Osage Slough also indicate that contaminant levels are within the acceptable risk range and below a hazard index of 1 for the recreational visitor scenario (DOE 1998).

Uranium in groundwater north of Femme Osage Slough poses a risk greater than the acceptable risk range for a hypothetical resident scenario. Site-related contaminants have not been detected at monitor wells south of Femme Osage Slough (including those at the St. Charles County well field) (DOE 1998).

B2.2 Ecological Risk

At the former Chemical Plant, the area of most ecological concern was the four raffinate pits, largely due to chemicals (generally metals) in the ponded water and raffinate pit sludges. Although the industrial portion of the former Chemical Plant did not present good habitat for wildlife, the undeveloped areas supported fauna similar to that in the surrounding wildlife areas. Tissue concentrations in fish collected in Lakes 34, 35, and 36 in the Busch Wildlife Area indicated uranium concentrations at levels for which no adverse effects have been observed. Overall, there were no obvious adverse ecological impacts to area biota, with the possible

exception of the biota at the raffinate pits. Remedial action at the former Chemical Plant and raffinate pits has significantly reduced ecological risks in the area (DOE 1992).

Results of the biotic surveys, media toxicity testing, and contaminant uptake modeling for terrestrial wildlife indicate that current contaminant levels in surface water and sediment at Burgermeister Spring pose little or no risk to the aquatic and terrestrial biota of the area (DOE 1997).

The Quarry proper provides minimal suitable habitat for vegetation and wildlife and was not addressed in the ecological risk assessment. The media and areas of interest in terms of ecological risk are surface water and sediment in Femme Osage Slough and Little Femme Osage Creek. Results of the ecological risk assessment indicated that there are no risks to terrestrial wildlife receptors foraging in Femme Osage Slough or ingesting water from Little Femme Osage Creek. Biotic surveys indicated that the aquatic and terrestrial communities are typical of those expected to be in the area. Tissue analyses of small mammals and fish indicated uranium concentrations within the range for which no adverse effects have been observed. The levels of site-related contaminants in surface water and sediment in Femme Osage Slough and Little Femme Osage Creek present no risk to biota in the area (DOE 1998).

At the Southeast Drainage, surface water in the drainage does not pose risk to terrestrial biota drinking the water at the drainage. Surface water and sediment in the drainage pose minor risks to aquatic biota, and adverse effects would more likely result from the intermittent flow of surface water than from contamination in the drainage. Any ecological impacts would be localized within the drainage and would not have demonstrable effect on the ecological resources in the area. Removal of contaminated sediments has further reduced the low ecological risks that existed previously (DOE 1996).

B3.0 Residual Risk Summary

Table B-2 presents a summary of the human health risk status based on current conditions at the areas that constitute the Weldon Spring Site. The table is a compilation of risk results presented in post-remediation reports for remediated areas (e.g., the post-remediation risk assessment prepared for the former Chemical Plant soils, structures, and raffinate pits [DOE 2002]) and those presented in the baseline risk assessment reports for areas that did not undergo remediation, such as Femme Osage Slough, Burgermeister Spring, and Quarry groundwater. For the areas that were not remediated, DOE reviewed more recent data to determine whether risk results presented in the baseline risk assessments still reflect current conditions, and risk estimates were updated as needed.

The post-cleanup risk assessment performed for the Chemical Plant and vicinity properties (DOE 2002) incorporated all the soil data collected during the confirmation process. These data represent the levels of soil contaminants of concern that remain. The risk assessment considered each confirmation unit as separate one-half acre exposure units. The 95 percent upper confidence limit of the arithmetic mean of all samples collected for each confirmation unit was used as the exposure point concentration for calculating potential risk based on a hypothetical resident scenario. The ingestion, inhalation (including radon), and external gamma pathways were evaluated.

For the Southeast Drainage, confirmation data that were collected for the locations remediated were also evaluated to determine the residual risk and the risk reduction that was achieved. The removal action performed has resulted in reducing potential risk posed by the drainage (ANL 1999).

Finally, data evaluated in the baseline risk assessment (DOE 1998) for Femme Osage Slough and Little Femme Osage Creek were re-evaluated to estimate potential risk using a hypothetical resident scenario. The evaluation in the baseline risk assessment was based on a recreational visitor scenario and was consistent with current and reasonable future land use. Results indicate that contaminant levels in the sediment and surface water are also within the acceptable risk range for the hypothetical resident scenario (ANL 2003).

Table B-1. Exposure Scenarios and Scenario Assumptions Presented in Risk Assessments for the Weldon Spring, Missouri, Site

Occurrence	Exposure Scenario	Scenario Assumptions and Intake Parameters	Comment/Reference
Chemical Plant soil	Site worker at former Chemical Plant ^a	Assumed 10 years of exposure for 200 days/year at 8 hours per day. Evaluated the ingestion, inhalation, and external gamma pathways.	Baseline Assessment Report (DOE 1992).
	Site trespasser at former Chemical Plant ^a	Assumed 10 years of exposure for 5 times a year for 1 hour each time. Evaluated the ingestion, inhalation, and external gamma pathways.	(same as above)
	Current/future recreational visitor ^a	Assumed 30 years of exposure for 20 times or days per year for 4 hours each time. Evaluated the ingestion, inhalation, and external gamma pathways.	(same as above)
	Hypothetical resident ^b	Assumed 30 years of exposure for 350 days per year. Evaluated the ingestion, inhalation (including radon) and external gamma pathway.	Post-Remediation Risk Assessment Report (DOE 2002)
Chemical Plant groundwater and springs (including Burgermeister Spring)	Current/future recreational visitor (assumed ingestion of spring water only) ^a	Assumed ingestion for 30 years at 20 visits per year consuming a cupful (200 mL) each time.	Baseline Risk Assessment Report (DOE 1997).
	Hypothetical resident (assumed ingestion of groundwater) ^a	Assumed ingestion for 30 years, 350 days/year at 2 L per day.	
Quarry Bulk Waste	Hypothetical passerby ^a	Evaluated the inhalation to radon pathway for an adult passing by 500 to 700 times per year for 5 to 10 years.	These scenarios were postulated to assess potential exposure to the bulk waste present at the time when the Quarry was fenced and closed to the public. Assessment presented in the Baseline Risk Evaluation Report (DOE 1990).
	Hypothetical trespasser ^a	Assumed to be 11 to 18 years old; trespassed 12 to 50 times a year for 2 to 4 hours each time for 5 to 10 years.	

Table B-1 (continued). Exposure Scenarios and Scenario Assumptions Presented in Risk Assessments for the Weldon Spring, Missouri, Site

Occurrence	Exposure Scenario	Scenario Assumptions and Intake Parameters	Comment/Reference
Residual Soil at Quarry Proper (soil that remained after bulk waste removal)	Recreational visitor ^a	Assumed ingestion, inhalation, external gamma pathways; 30 years of exposure, 20 visits per year.	Baseline Risk Assessment Report (DOE 1998).
Quarry Area soil	Recreational visitor ^a	Assumed ingestion, inhalation, external gamma pathways; 30 years of exposure, 20 visits per year.	(same as above)
Femme Osage Slough and Little Femme Osage Creek	Current/future recreational visitor ^a	Assumed ingestion of sediment, surface water, and fish.	(same as above)
	Hypothetical resident ^c	Assumed exposure to sediment and surface water via the ingestion and external gamma pathway.	Letter transmittal to DOE (ANL 2003).
Quarry groundwater	Hypothetical resident (assumed ingestion of groundwater) ^a	Assumed ingestion of groundwater for 30 years, 350 days/year at 2 L per day.	Baseline Risk Assessment Report (DOE 1998).
Southeast Drainage	Current/future recreational visitor/hunter ^a	Assumed 20 visits/year for 30 years; evaluated external gamma and ingestion pathways ^d .	Southeast Drainage Engineering Evaluation/Cost Analysis (DOE 1996).
	Hypothetical child resident ^a	Assumed 90 days/year visits for 10 years; evaluated for external gamma and ingestion pathways ^d .	
Frog Pond culverts	Utility construction worker ^a	Assumed exposure for 5 working days, 8 hours per day; evaluated external gamma, inhalation, and ingestion pathways.	Letter transmittal to DOE (ANL 2000).
	Recreational visitor ^a	Assumed exposure for 10 years, 10 days per year for 1 hour per day. Same pathways as that for construction worker.	

^a Exposure scenario evaluated for the baseline risk assessment.

^b Exposure scenario evaluated for the post-remediation risk assessment.

^c Data from baseline risk assessment (DOE 1998) reevaluated for hypothetical resident scenario.

^d For calculating the external gamma doses, it was assumed that only 25 percent of the exposure time was spent in areas with elevated radionuclide concentrations because a receptor would be likely to move around the drainage.

Key: mL = milliliter, L = liter

Table B-2. Summary of Residual Risk Status at the Weldon Spring, Missouri, Site

Site Area	Risk Status	Reference
Chemical Plant soil	Similar to background. ^a	DOE 2002
Vicinity property soil	Similar to background. ^a	DOE 2002
Chemical Plant groundwater	Greater than acceptable risk range and hazard index of 1 for a hypothetical resident scenario. ^b	DOE 1997
Burgermeister Spring	Within acceptable risk range for recreational visitor. ^b	DOE 1997
Quarry proper	Within acceptable risk range for recreational visitor. ^b	DOE 1998
Quarry area groundwater north of slough	Greater than acceptable risk range and hazard index of 1 due to uranium concentrations remaining. ^b	DOE 1998
Quarry area groundwater south of slough	Within acceptable risk range for resident scenario. ^b	DOE 1998
Femme Osage Slough and Little Femme Osage Creek	Within acceptable risk range for the recreational visitor ^b scenario. Within acceptable risk range for a hypothetical ^c resident scenario.	DOE 1998 ANL 2003
Southeast Drainage	Within acceptable risk range for recreational visitor and hypothetical child resident. ^b	DOE 1996
Frog Pond outlet/culverts	Within acceptable risk range for a utility construction worker and recreational visitor scenario. ^b	ANL 2000

^aRisk status after remediation.

^bRisk status at baseline risk assessment phase and still representative of current conditions.

^cData from baseline risk assessment (DOE 1998) reevaluated for hypothetical resident scenario.

B4.0 References

Argonne National Laboratory (ANL), 1999. Transmittal letter from M. Picel to T. Pauling, U.S. Department of Energy, Weldon Spring Site Remedial Action Project, St. Charles, Missouri, September 14.

———, 2000. Transmittal letter from M. Picel to T. Pauling, U.S. Department of Energy, Weldon Spring Site Remedial Action Project, St. Charles, Missouri, March 9.

———, 2003. Transmittal letter from M. Picel to T. Pauling U.S. Department of Energy, Weldon Spring Site Remedial Action Project, St. Charles, Missouri, April.

U.S. Department of Energy (DOE), 1990. *Baseline Risk Evaluation for Exposure to Bulk Wastes at the Weldon Spring Quarry, Weldon Spring, Missouri*, DOE/OR/21548-065, U.S. Department of Energy Oak Ridge Operations Office, Weldon Spring Site Remedial Action Project, Weldon Spring, Missouri, January.

———, 1992. *Baseline Assessment for the Chemical Plant Area of the Weldon Spring Site*, DOE/OR/21548-091, U.S. Department of Energy Oak Ridge Operations Office, Weldon Spring Site Remedial Action Project, Weldon Spring, Missouri, November.

———, 1996. *Engineering Evaluation/Cost Analysis for the Proposed Removal at the Southeast Drainage near the Weldon Spring Site, Weldon Spring, Missouri*, DOE/OR/21548-584, U.S. Department of Energy Oak Ridge Operations Office, Weldon Spring Site Remedial Action Project, Weldon Spring, Missouri, August.

———, 1997. *Baseline Risk Assessment for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri*, DOE/OR/21548-568, U.S. Department of Energy Oak Ridge Operations Office, Weldon Spring Site Remedial Action Project, Weldon Spring, Missouri, July.

———, 1998. *Baseline Risk Assessment for the Quarry Residuals Operable Unit of the Weldon Spring Site, Weldon Spring, Missouri*, DOE/OR/21548-594, U.S. Department of Energy Oak Ridge Operations Office, Weldon Spring Site Remedial Action Project, Weldon Spring, Missouri, February.

———, 2002. *Post-Remediation Risk Assessment for the Chemical Plant Operable Unit, Weldon Spring Site, St. Charles, Missouri*, Rev. 1, DOE/OR/21548-910, U.S. Department of Energy Oak Ridge Operations Office, Weldon Spring Site Remedial Action Project, Weldon Spring, Missouri, March.

U.S. Environmental Protection Agency (EPA), 1989a. *Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish*, EPA/444/4-89-001, Assessment and Watershed Protection Division, Office of Water, Washington, D.C., May.

U.S. Environmental Protection Agency (EPA), 1989b. *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, (Part A)*, EPA/540/1-89/002, Interim Final, Office of Emergency and Remedial Response, Washington, D.C., December.

———, 1989c. *Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual*, Interim Final, EPA/540/1-89/001, Office of Emergency and Remedial Response, Washington, D.C., March.

———, 1990. “National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule (40 CFR Part 300),” *Federal Register* 55(46):8666–8865, March 8.

Appendix C
Disposal Cell Contents

Table C-1. Contents of the Weldon Spring, Missouri, Disposal Cell

Work Zone Per WP437 and Material Description	Cell Placement Considerations	Occupied Cell Volume (cy)
Raffinate Pits Work Zone		
CSS Grout	Produced in CSS Plant and pumped to cell. Volume as determined at the plant.	188,443.00
Raffinate Pit 4 residual sludge	Stabilized in situ with grout then mixed with TSA aggregates. Conversion calculated assuming aggregates alone would not shrink and the mix ratio was 2.5 to 1.	2,530.00
Raffinate Pit 3 residual sludges	Mixed with > or = 3 parts contaminated soil. Conversion factor calculated assuming that soil alone will shrink with 0.965.	10,277.00
Raffinate Pit 3 soils	Conversion factor bank/fill for soils is 0.965.	52,365.73
Raffinate Pit 4 soils	Conversion for soils is 0.965.	65,649.92
Raffinate Pits 1 and 2 soils (some residual sludge mixed with the soils)	Conversion factor is 0.950.	58,197.95
Raffinate Pits metal debris	Mixed with soil in the cell. Conversion loose/fill for metal is 10 to 1.	21.00
Raffinate Pit 1 interceptor trench	North and east of Raffinate Pit 1. Estimated at 481 + 489 + 1894 = 3274 cy. Use 0.90 for conversion.	2,946.60
Trench for the 2 inch PVC line	Estimated at 133 cy. Use 0.900.	119.70
Entrance ramp in Raffinate Pits 1 and 2	Aggregate surface estimated at 100 cy. Use conversion of 1 to 1.	100.00
Raffinate Pit 3 overflow line and manhole	Estimated at 726 cy of soil. Use 0.900 conversion.	653.40
Intermediate dike in Raffinate Pit 4	Estimated at 8366 cy. Conversion is 0.965 to 1.	8,073.19
Interceptor trench east of Raffinate Pit 3	Estimated at 2198 cy. Conversion is 0.900 to 1.	1,978.20
Aggregate on SW corner of Raffinate Pit 4 dike	Estimated at 370 cy. Conversion is 0.900.	333.00
TSA Work Zone		
Soil stockpiles from Quarry cleanup	Used alone or in various mixes. Conversion factor for soils is 0.965.	99,332.28
Nitro soil pile, Quarry origin	Previously treated with cement/fly ash. Conversion factor for this mix is 1.00.	25,100.00
Soil pile NW of TSA	Created during excavations for SWTP basins and TSA construction (1992). Conversion factor is 0.965.	19,029.80
Rubble pile from Quarry cleanup	Conversion factor loose/fill is 0.900.	16,290.00
Metal stockpiles	Resulted from site demolitions. Conversion for metals is 10 to 1.	220.00
HEPA filters	From site demolitions. Entombed in concrete and soil under the CSS monolith. Volume includes concrete and soil.	452.00
B-25 boxes	Unreleasable content. Grouted with clean grout on a grout pad and under the CSS monolith. 36 boxes @ 5 cy each.	180.00
Containers, 20-cy each	Boxes with process pipe from site demolitions. Grouted with clean grout on a clean grout base, then entombed under the CSS monolith. 117 containers @ (20cy + 5cy base) = 2925 cy.	2,925.00
Filter cake from SWTP in 4-cy boxes	Total volume is 800 cy.	800.00
TSA facility (construction gravel and sand, liners)	Mostly mixed with Raffinate Pit 4 stabilized soil. Conversion factor assuming aggregates were placed alone is 1.0.	37,700.00
TSA in situ soil excavations	Conversion factor for these soils is 0.965.	26,540.40
TSA concrete transfer station	Estimated at 162 cy. Use 1.67 for bulking at placement.	270.54
TSA transfer station metal debris	Estimated at 30 cy. Use 10 to 1 conversion.	3.00
TSA aggregates under transfer station	Estimated at 797 cy. Use 1 to 1 conversion.	797.00

Table C-1 (continued). Contents of the Weldon Spring, Missouri, Disposal Cell

Work Zone Per WP437 and Material Description	Cell Placement Considerations	Occupied Cell Volume (cy)
TSA transfer station underlying soils	Estimated at 142 cy. Use 0.965 conversion.	137.03
TSA decontamination station concrete	Estimated at 125 cy. Use 1.67 for bulking in cell.	208.75
TSA various liners (basin, decontamination station, etc)	All liners (HDPE, geotextile) generated from the TSA were shredded and entombed in soil. Total occupied volume is below 50 cy. Use 50 cy.	50.00
Brine tanks from SWTP	Mixed with soil. Est. conversion factor is 0.430.	25.80
Contaminated Jersey barriers	27 each at 0.5 cy.	13.50
TSA equalization basin sediment	estimated at 1800 cy mixed with soil in the cell. Conversion factor is 0.43.	774.00
PCB contaminated concrete	200 cy. Conversion is .900 to 1.	180.00
PCB contaminated aggregates	Estimated at 108 cy. Conversion 1 to 1.	108.00
TSA scrap metal, wood and debris	Estimated at 430 cy. Conversion is 1 to 10.	43.00
20-cy rolloffs	Emptied in cell then crushed. Misc. materials estimated to 180 cy. Conversion is 1 to 5.	36.00
PMC stored equipment	Estimated at 50 cy. Entombed in CSS or soil. Conversion is .66 to 1.	33.00
Ash Pond Work Zone		
Soil stockpiled from cell foundation, including Ash Pond capping	From WP420 excavations. Factor bank to fill is 0.965.	437,310.98
Soil stockpiled from Raffinate Pit 4 excavations	Conversion factor is 0.965.	47,478.00
Soil stockpiled from VP-9 cleanup	Conversion factor is 0.80 due to presence of vegetation and roots.	2,680.00
Wood piles from site	Mixed with 3 parts of soil. Volumetric conversion factor is 0.50.	910.00
Rubble	from site foundations removal. Conversion factor is 0.900.	65,419.20
In-situ soils	Conversion factor is 0.965.	108,461.18
Buried rubble	Conversion 0.9.	292.50
Sediments in sedimentation basins	Mixed with several soil parts for drying. Conversion factor is 0.2.	785.00
Soil under DHO equipment parking area	Conversion is 0.965.	11,469.03
Nitro-contaminated soils	Estimated at 370 cy. Conversion is 1 to 1.	370.00
Root balls from VP-9	Estimated at 300 cy. Conversion is 1 to 0.5 because were mostly placed in CSS grout.	150.00
Various debris (concrete, bricks, rocks, gravel)	Estimated at 8185 cy. Conversion is 0.8 to 1.	6,548.00
Contaminated soil under cell footprint	Estimated at 8000 cy. Conversion is 0.965.	7,720.00
MSA Work Zone		
Structural metal piles	Entombment in soil. Conversion is 5 to 1 between loose and fill cy.	3,260.00
Shreddable metal piles	Same as above.	6,860.00
Aluminum piles	Same as above.	336.00
Copper piles	Entombed in CSS grout. Conversion assumes 30% of voids filled, thus a factor of 0.7 applies.	634.90
Window frames	Entombed in soil. Conversion is 5 to 1.	55.00
ACM siding bundles	Placed directly in cell.	650.00
Intact metal objects	Big pieces placed in CSS. Some void filling and crushing is assumed. Conversion loose to fill is 0.5.	1,660.00
Drums	Placed intact and crushed. Assume 0.5 of volume is reduced.	351.50
Sling bags with cemented filter cake and brine from SWTP	Placed to block CSS flow. Bulking of 10% assumed due to uneven voids when placed.	715.00

Table C-1 (continued). Contents of the Weldon Spring, Missouri, Disposal Cell

Work Zone Per WP437 and Material Description	Cell Placement Considerations	Occupied Cell Volume (cy)
13 cy roll-off containers	Content emptied in the cell and grouted or covered with soil. Assume 50% voids filled with soil.	338.00
4-cy roll-off containers	Entombed in CSS grout. Add 1 cy per box for the clean grout base. 36 boxes @ 5cy = 180 cy.	180.00
20-cy roll-off containers	Contents placed in the cell. Assume 50% voids filled with soil or compacted.	1,670.00
PCB contaminated concrete	Placed near or within CSS monolith. Assume voids remain as in the stockpile.	500.00
MSA trash and rubble	Estimated at 700 cy. Conversion is 1 to 5.	140.00
Transite pipe	Crushed and entombed in soil. Assume reduction of 5 to 1.	166.00
MSA pad and facility	Assumed factor of 1.0 in-situ to placed in the cell.	14,800.00
MSA in situ soils	Conversion factor in-situ to placed in the cell is 0.965.	4,855.88
Frog Pond Work Zone		
Frog Pond in situ soils	Conversion is 0.965.	15,721.78
Sediments	Conversion after mixing with soil is 1 to 0.43.	2,290.61
Soil under the sediments	Conversion is 0.965.	2,068.00
Frog Pond outlet	Estimated at 473 cy. Conversion is 1 to 1.	473.00
SWTP and 434 Work Zones		
Soil excavated in this work zone	Conversion is 0.965.	7,047.40
Sediments	Conversion is 1 to 0.43.	206.40
Boxes	Content mixed with soil. Conversion is 1 to 0.43.	87.72
SWTP foundations	Estimated at 582 cy. Bulking factor of 1.67.	971.94
SWTP debris	Estimated at 220 cy. Use 0.2 conversion factor.	44.00
SWTP liners	Total of 175,000 sq.ft HDPE, 43,000 sq.ft geonet and 43,000 GCL. Shredded and entombed in soil. Estimated total volume is approximately 500 cy.	500.00
Building 434 foundations	Estimated at 635 cy concrete. Conversion factor for bulking is 1.67.	1,060.45
CSS Plant Work Zone		
CSS pilot plant concrete debris	Estimated at 222 cy Conversion is 1 to 1.	222.00
CSS pilot plant metal debris	Estimated at 100 loose cy. Conversion is 10:1.	10.00
Road at the CSS Pilot plant	Estimated at 500 cy aggregates. Conversion is 1 to 1.	500.00
CSS Plant metal debris	Estimated at 3700 cy. Due to size and volume, placement requirements are as for the MSA metal. Conversion loose to fill is 5 to 1.	740.00
CSS Plant concrete debris	Estimated at 676 cy. Conversion is 1 to 1.	676.00
Contaminated aggregate under the CSS Plant	Per estimates. Conversion is 1 to 1.	1,686.00
in situ contaminated soils in this area	Conversion is 0.965.	3,638.05
Administration Area Work Zone		
Concrete foundations (decontamination pad and others)	Estimated at 100 cy. Conversion 1.67 to 1.	167.00
Storm sewer removal, metal, concrete and soil	Estimated at approximately 200 cy. Factor of conversion 1 to 1.	200.00

Table C-1 (continued). Contents of the Weldon Spring, Missouri, Disposal Cell

Work Zone Per WP437 and Material Description	Cell Placement Considerations	Occupied Cell Volume (cy)
ASA Work Zone		
In situ soils	Conversion is 0.965.	2,080.54
Aggregate pad	Estimated at 3009 cy.	3,009.00
Sea-Land containers	Emptied, covered with soil and demolished. Conversion is 1 to 1.	3,987.00
Misc. Contaminated Items		
Access road aggregate from DHO equipment staging area to north decontamination pad	Estimated at 300 cy. Conversion is 1 to 1.	300.00
Aggregate surface at north decontamination pad and DHO shop	Estimated at 1,700 cy. Conversion factor is 1 to 1.	1,700.00
Sediments in the DHO recirculation pond (north decontamination pad)	Estimated at 350 cy. Conversion factor is 1 to 2.27.	150.50
Liners, pipelines, soil around pipes at north DHO decontamination pad	Estimated at 150 cy. Conversion 1 to 0.8.	3,320.00
Concrete foundations at DHO north decontamination pad and shop	Estimated at 294 cy. Bulking factor is 1.67.	490.98
Debris at north DHO decontamination pad	Estimated at 150 cy. Conversion factor is 1 to 5.	30.00
Contaminated soils around north DHO decontamination pad	Estimated at 150 cy. conversion is 0.965.	144.75
Resurfacing of contaminated haul roads	Estimated at 4,489 cy. Conversion is 1 to 1.	4,489.00
DHO equipment staging area	Estimated at 2,900 cy aggregates. Conversion is 1 to 1.	2,900.00
SWTP filter cake boxes directly to cell	129 4-cy boxes = 496 cy. Conversion is 1 to 0.43.	213.28
Sling bags	48 bags.	48.00
SWTP brine as grout pumped placed in the cell	3,697.5 cy. Conversion is 1 to 1.	3,698.00
General hot spots on Chemical Plant site	1,2098 cy. Conversion is 0.965.	11,674.57
Sediments from CMSA basin	4,617 cy. Conversion factor is 0.43.	1,985.31
Clean Items Used In Cell Waste Containment Area		
6-inch soil cushion on the upper 3:1 slope	Per design, 4,600 cy.	4,600.00
Rock on the CSS haul routes inside the cell	As built, 4,950 cy.	4,950.00
Pads for pumps between Phase 1 and 2	As built, 60 cy.	60.00
Erosion berms on the LCRS sand	As built, 30 cy.	30.00
Separation berm Phase 1 from Phase 2	As built, 3,160 cy.	3,160.00
North low-permeability berm	As built, 140 cy.	140.00
East rebuilt Penetration	As built, 50 cy.	50.00
Gravel on west entrance berm	As built, 1,200 cy.	1,200.00
Overbuilt within tolerances on the LCRS sand layer	As built, 2,600 cy.	2,600.00
Select soil waste built of clean common fill	1,020 cy. Used in covering the cell dimple = 1,150 cy.	2,270.00
Peat used for the geochemical barrier	Per purchase and 1/4 mix ratio with soil.	9,295.00
Army Waste		
Waste from army property	As received, 26,220 cy. Conversion is 0.9.	23,598.00
Wastes in the Cell Dimple		
Quarry geonet	Entombed in clean grout.	175.00
Quarry Water Treatment Plant tanks and metal debris	Entombed in clean grout.	570.00
Quarry HDPE liners	Entombed in clean grout.	30.00
Quarry soils, sediments, filter and media	Placed and compacted in the cell dimple.	1,875.00

Table C-1 (continued). Contents of the Weldon Spring, Missouri, Disposal Cell

Work Zone Per WP437 and Material Description	Cell Placement Considerations	Occupied Cell Volume (cy)
Quarry concrete debris	Placed and compacted in the cell dimple.	304.00
Quarry wood and railroad ties	Placed and compacted in the cell dimple.	20.00
Admin. Area asphalt and metal debris	Placed and compacted in the cell dimple.	310.00
Various trash generated on site	Placed and compacted in the cell dimple.	70.00
Admin. Area concrete debris	Placed and compacted in the cell dimple.	77.00
Waste from army property	Placed and compacted in the cell dimple.	50.00

Key:

- ACM = asbestos containing material
- ASA = asbestos storage area
- CMSA = construction material staging area
- CSS = chemical stabilization/solidification
- cy = cubic yard(s)
- DHO = direct hire organization
- GCL = geosynthetic clay liner
- HEPA = high-efficiency particulate air
- LCRS = leachate collection and removal system
- PCB = polychlorinated biphenyls
- MSA = material staging area
- PMC = Project Management Contractor
- SWTP = site water treatment plant
- TSA = temporary storage area
- WP = work package
- VP = vicinity property

Table C-2. Weldon Spring Site Disposal Cell Total Activity Final Estimate

Waste Stream ^a	Volume (cy)	Mass (g) ^c	Radiological Profile ^d	Nuclide Activity (Ci) ^e										Total Activity (Ci)	% of Total (if > 1%)
				U-238	U-234	U-235	Th-228	Th-230	Th-232	Ra-226	Ra-228	Rn-222 ^f			
Raffinate Pits Work Zone															
Raffinate processed through CSS Plant ^b	159990	1.49E+11	Raffinate	6.12E+01	6.12E+01	2.84E+00	8.95E+00	4.03E+03	4.78E+01	1.25E+02	9.10E+00	1.47E+02	4.49E+03	68.44%	
Pit 4 residual sludge	2530	2.36E+09	Raffinate	9.68E-01	9.68E-01	4.48E-02	1.42E-01	6.37E+01	7.55E-01	1.98E+00	1.44E-01	2.33E+00	7.11E+01	1.08%	
Pit 3 residual sludge	10277	9.59E+09	Raffinate	3.93E+00	3.93E+00	1.82E-01	5.75E-01	2.59E+02	3.07E+00	8.05E+00	5.85E-01	9.47E+00	2.89E+02	4.40%	
Pit 3 soil	52366	6.74E+10	Raffinate pit soils	2.76E+00	2.76E+00	1.35E-01	4.04E-01	1.82E+02	2.16E+00	5.66E+00	4.11E-01	6.66E+00	2.03E+02	3.09%	
Pit 4 soil	65650	8.45E+10	Raffinate pit soils	3.46E+00	3.46E+00	1.69E-01	5.07E-01	2.28E+02	2.70E+00	7.10E+00	5.15E-01	8.35E+00	2.54E+02	3.88%	
Pits 1 & 2 soil	58198	7.49E+10	Raffinate pit soils	3.07E+00	3.07E+00	1.50E-01	4.49E-01	2.02E+02	2.40E+00	6.29E+00	4.57E-01	7.40E+00	2.26E+02	3.44%	
Pit 1 Interceptor Trench	2947	3.79E+09	Site soils	3.94E-01	3.89E-01	2.20E-02	1.67E-02	4.13E-02	4.25E-02	1.86E-02	1.52E-02	1.86E-02	9.58E-01		
Pit 3 Overflow & Manhole	653	8.40E+08	Site soils	8.72E-02	8.62E-02	4.87E-03	3.70E-03	9.16E-03	9.41E-03	4.12E-03	3.36E-03	4.12E-03	2.12E-01		
Pit 4 Intermediate Dike	8073	1.04E+10	Site soils	1.08E+00	1.07E+00	6.03E-02	4.57E-02	1.13E-01	1.16E-01	5.09E-02	4.16E-02	5.09E-02	2.62E+00		
Interceptor Trench east of Pit 3	1978	2.55E+09	Site soils	2.64E-01	2.61E-01	1.48E-02	1.12E-02	2.77E-02	2.85E-02	1.25E-02	1.02E-02	1.25E-02	6.43E-01		
TSA Work Zone															
Quarry soils stockpiles	99332	1.28E+11	TSA bulk waste	2.53E+01	2.53E+01	1.16E+00	1.23E+01	4.19E+01	3.29E+00	1.39E+01	1.23E+01	1.39E+01	1.50E+02	2.28%	
Nitro soils pile	25100	3.23E+10	TSA bulk waste	6.40E+00	6.40E+00	2.94E-01	3.11E+00	1.06E+01	8.30E-01	3.52E+00	3.11E+00	3.52E+00	3.78E+01		
B-25 boxes	180	2.32E+08	TSA non-filter cake	7.41E-01	7.41E-01	3.48E-02	2.23E-02	5.33E+00	1.99E+01	2.50E-02	2.23E-02	2.50E-02	2.69E+01		
20 cy rolloffs	2925	3.76E+09	TSA non-filter cake	1.20E+01	1.20E+01	5.65E-01	3.63E-01	8.66E+01	3.24E+02	4.07E-01	3.63E-01	4.07E-01	4.37E+02	6.65%	
SWTP filter cake	800	7.65E+08	TSA filter cake	1.19E+00	1.19E+00	5.58E-02	6.12E-04	4.48E-02	8.72E-03	4.82E-03	4.05E-03	4.82E-12	2.50E+00		
TSA in-situ soil	26540	3.42E+10	Site soils	3.55E+00	3.50E+00	1.98E-01	1.50E-01	3.72E-01	3.83E-01	1.67E-01	1.37E-01	1.67E-01	8.63E+00		
TSA Transfer Station underlying soil	137	1.76E+08	Site soils	1.83E-02	1.81E-02	1.02E-03	7.76E-04	1.92E-03	1.97E-03	8.64E-04	7.05E-04	8.64E-04	4.45E-02		
TSA Equalization Basin sediment	774	9.96E+08	Site soils	1.03E-01	1.02E-01	5.78E-03	4.38E-03	1.09E-02	1.12E-02	4.88E-03	3.98E-03	4.88E-03	2.52E-01		
Ash Pond Work Zone															
Soil stockpile	426737	5.49E+11	Site soils	5.70E+01	5.64E+01	3.19E+00	2.42E+00	5.99E+00	6.15E+00	2.69E+00	2.20E+00	2.69E+00	1.39E+02	2.11%	
Vicinity Properties	10575	1.36E+10	Site soils	1.41E+00	1.40E+00	7.89E-02	5.99E-02	1.48E-01	1.52E-01	6.67E-02	5.44E-02	6.67E-02	3.44E+00		
Soils stockpiled from Pit 4 excavations	47478	6.11E+10	Site soils	6.34E+00	6.27E+00	3.54E-01	2.69E-01	6.66E-01	6.84E-01	2.99E-01	2.44E-01	2.99E-01	1.54E+01		
Soils from VP 9 cleanup	2680	3.45E+09	Site soils	3.58E-01	3.54E-01	2.00E-02	1.52E-02	3.76E-02	3.86E-02	1.69E-02	1.38E-02	1.69E-02	8.71E-01		
In-situ soil	108461	1.40E+11	Site soils	1.45E+01	1.43E+01	8.10E-01	6.14E-01	1.52E+00	1.56E+00	6.84E-01	5.58E-01	6.84E-01	3.52E+01		
Sedimentation basin sediments	785	1.01E+09	Site soils	1.05E-01	1.04E-01	5.86E-03	4.45E-03	1.10E-02	1.13E-02	4.95E-03	4.04E-03	4.95E-03	2.55E-01		
Soil under DHO equip parking area	11469	1.48E+10	Site soils	1.53E+00	1.51E+00	8.56E-02	6.50E-02	1.61E-01	1.65E-01	7.23E-02	5.90E-02	7.23E-02	3.73E+00		
Nitro soils	370	4.76E+08	Site soils	4.94E-02	4.89E-02	2.76E-03	2.10E-03	5.19E-03	5.33E-03	2.33E-03	1.90E-03	2.33E-03	1.20E-01		
Soil under cell footprint	7720	9.94E+09	Site soils	1.03E+00	1.02E+00	5.76E-02	4.37E-02	1.08E-01	1.11E-01	4.87E-02	3.97E-02	4.87E-02	2.51E+00		
MSA Work Zone															
SWTP filter cake	715	6.83E+08	MSA filter cake	6.18E+01	6.18E+01	2.84E+00	2.88E-03	4.00E-02	7.79E-03	1.20E-01	4.44E-02	1.20E-01	1.27E+02	1.93%	
13 cy rolloffs	338	4.35E+08	MSA containerized waste	2.28E+00	8.61E-02	5.66E-03	1.31E-03	6.96E-03	1.22E-02	1.31E-03	0	1.31E-03	2.39E+00		
4 cy rolloffs	180	2.32E+08	MSA containerized waste	1.21E+00	4.59E-02	3.01E-03	6.95E-04	3.71E-03	6.49E-03	6.95E-04	0	6.95E-04	1.28E+00		
20 cy rolloffs	1670	2.15E+09	MSA containerized waste	1.13E+01	4.26E-01	2.79E-02	6.45E-03	3.44E-02	6.02E-02	6.45E-03	0	6.45E-03	1.18E+01		
Drums	352	4.53E+08	MSA containerized waste	2.37E+00	8.97E-02	5.89E-03	1.36E-03	7.25E-03	1.27E-02	1.36E-03	0	1.36E-03	2.49E+00		
Waste Piles	13622	NA	MSA waste piles	6.16E-02	6.16E-02	2.89E-03	0	0	0	0	0	0	1.26E-01		
MSA in-situ soil	4856	6.25E+09		6.49E-01	6.41E-01	3.63E-02	2.75E-02	6.81E-02	7.00E-02	3.06E-02	2.50E-02	3.06E-02	1.58E+00		

Table C-2 (continued). Weldon Spring Site Disposal Cell Total Activity Final Estimate

Frog Pond Work Zone

In-situ soil	15722	2.02E+10	Site soils	2.10E+00	2.08E+00	1.17E-01	8.90E-02	2.21E-01	2.27E-01	9.92E-02	8.09E-02	9.92E-02	5.11E+00
Sediments	2291	2.95E+09	Site soils	3.06E-01	3.03E-01	1.71E-02	1.30E-02	3.21E-02	3.30E-02	1.44E-02	1.18E-02	1.44E-02	7.45E-01
Soil under sediments	2068	2.66E+09	Site soils	2.76E-01	2.73E-01	1.54E-02	1.17E-02	2.90E-02	2.98E-02	1.30E-02	1.06E-02	1.30E-02	6.72E-01
Frog Pond Outlet	473	6.09E+08	Site soils	6.32E-02	6.25E-02	3.53E-03	2.68E-03	6.64E-03	6.82E-03	2.98E-03	2.44E-03	2.98E-03	1.54E-01

SWTP & Bldg 434 Work Zones

Soil excavated from these zones	7047	9.07E+09	Site soils	9.41E-01	9.31E-01	5.26E-02	3.99E-02	9.89E-02	1.02E-01	4.44E-02	3.63E-02	4.44E-02	2.29E+00
Sediments - Train 1	155	1.99E+08	Site soils	2.07E-02	2.05E-02	1.16E-03	8.78E-04	2.17E-03	2.23E-03	9.78E-04	7.98E-04	9.78E-04	5.04E-02
Sediments - Train 2	52	6.69E+07	Site soils	6.95E-03	6.87E-03	3.88E-04	2.94E-04	7.30E-04	7.50E-04	3.28E-04	2.68E-04	3.28E-04	1.69E-02

CSS Plant Work Zone

In-situ soil	3638	4.68E+09	Site soils	4.86E-01	4.80E-01	2.72E-02	2.06E-02	5.10E-02	5.24E-02	2.29E-02	1.87E-02	2.29E-02	1.18E+00
--------------	------	----------	------------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

ASA Work Zone

In-situ soil	2081	2.68E+09	Site soils	2.78E-01	2.75E-01	1.55E-02	1.18E-02	2.92E-02	3.00E-02	1.31E-02	1.07E-02	1.31E-02	6.76E-01
--------------	------	----------	------------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

Miscellaneous

DHO decon pad recirculation pond	150	1.93E+08	Site soils	2.00E-02	1.98E-02	1.12E-03	8.49E-04	2.10E-03	2.16E-03	9.46E-04	7.72E-04	9.46E-04	4.87E-02
Soils around DHO decon pad	145	1.87E+08	Site soils	1.94E-02	1.91E-02	1.08E-03	8.21E-04	2.03E-03	2.09E-03	9.14E-04	7.47E-04	9.14E-04	4.71E-02
SWTP filter cake	213	2.74E+08	Site soils	2.85E-02	2.81E-02	1.59E-03	1.21E-03	2.99E-03	3.07E-03	1.34E-03	1.10E-03	1.34E-03	6.92E-02
Hot spots	11675	1.50E+10	Site soils	1.56E+00	1.54E+00	8.72E-02	6.61E-02	1.64E-01	1.68E-01	7.36E-02	6.01E-02	7.36E-02	3.79E+00
CMSA basin sediments	1985	2.55E+09	Site soils	2.65E-01	2.62E-01	1.48E-02	1.12E-02	2.78E-02	2.86E-02	1.25E-02	1.02E-02	1.25E-02	6.45E-01

Cell Dimple Items

Quarry soils, sediments, filter & media	1875	2.41E+09	Site soils	2.50E-01	2.48E-01	1.40E-02	1.06E-02	2.63E-02	2.70E-02	1.18E-02	9.65E-03	1.18E-02	6.09E-01
---	------	----------	------------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

Totals	1206028			2.95E+02	2.78E+02	1.38E+01	3.09E+01	5.12E+03	4.17E+02	1.77E+02	3.08E+01	2.04E+02	6.57E+03
% of Total				4.5%	4.2%	0.2%	0.5%	78.0%	6.4%	2.7%	0.5%	3.1%	

Summed for All Listed Nuclides = 6,57E+03 Ci

Notes:

^aWaste streams with < 0.01 Ci not included.

^bSource: *Chemical Plant Operable Unit Remedial Action Report* (DOE/OR/21548-909) Rev. A, September 2002, p. 13.

^cmass (g) = volume (cy) x density (g/cy). See Density Calculations worksheet for raffinate, soil, and filter cake density calculations.

^dSee Radiological Profiles worksheet.

^eNuclide Activity (Ci) = mass (g) x Nuclide Activity Concentration (pCi/g) [from Radiological Profiles worksheet] x (1E-12 Ci/pCi).

^fRn-222 assumed to be in equilibrium with Ra-226 when Rn-222 concentration not reported in reference.

Table C-3. Contamination Profiles for the Various Waste Streams

Profile	Nuclide Activity Concentration (pCi/g)									Source
	U-238	U-234	U-235	Th-228	Th-230	Th-232	Ra-226	Ra-228	Rn-222 ^a	
Site soils	103.8	5.8	102.6	4.4	10.9	11.2	4.9	4	4.9	Table C-4
TSA bulk waste	198	198	9.1	96.4	328	25.7	109	96.4	109	Ref. 1 Tbl 2-2
Raffinate ^{b,c}	410	410	19	60	27000	320	840	61	988	Ref. 1 Tbl 2-10
Raffinate pit soils ^{c,d}	41	41	2	6	2700	32	84	6.1	98.8	Ref. 1 Tbl 2-2 footnote (e)
MSA waste piles ^{c,e}	Total surficial activity = 0.126 Ci									Ref. 1 Tbl 2-15
MSA containerized waste	5239	198	13	3	16	28	3	0	3	Ref. 1 Tbl 2-16
MSA WTP filter cake	90420	90420	4159	4.22	58.6	11.4	175	65	175	Ref. 1 Tbl 2-17
TSA filter cake ²	1563	1563	73	0.8	58.6	11.4	6.3	5.3	6.3	Ref. 2 Tbl 3-3
TSA non-filter cake containerized waste ²	3200	3200	150	96.4	23000	86000	108.8	96.4	108.8	Ref. 2 Tbl 3-5

References:

1. *Hazard Categorization for the Disposal Cell* (DOE/OR/21548-579) Rev. 2, September 1997
2. *Interim Facility Safety Documentation for the Temporary Storage Area* (DOE/OR/21548-513) Rev. 3, December 1997

Notes:

- ^aRn-222 assumed to be in equilibrium with Ra-226 when Rn-222 concentration not reported in reference.
- ^bThis is raffinate concentrations, not grout (i.e. first column of Table 2-10).
- ^cReference provides either total U only, or U-238 only. Natural U ratios assumed to calculate isotopic i.e. U-238 = U-234 = total U/2.047, and U-235 = total U x (0.047/2.047).
- ^dRaffinate pit soils activity is assumed to be equivalent to 10% of raffinate activity.
- ^eMSA waste piles were building components surficially contaminated with uranium. Total (surficial) uranium activity is 0.126 Ci.

Table C-4. Site Soils Radiological Profile Calculation

Source ^a	Source Vol (cy)	Wtd Vol ^b	Activity Concentration (pCi/g)							
			U-238	U-235	U-234	Th-228	Th-230	Th-232	Ra-226	Ra-228
Imhoff Tank sludge Tbl 3-1	510	0.001972	843.0	35.9	831.1	5.6	26.0	5.2		
Weighted Activity (pCi/g) ^c			1.7	0.1	1.6	0.0	0.1	0.0		
Decon sump Tbl 3-2	56	0.000217	256.4	10.9	252.7					
Weighted Activity (pCi/g) ^c			0.1	0.0	0.1					
Bldg demo waste Tbl 3-3	73270	0.283327	250.0	15.0	246.0	2.7	25.7	28.0	3.4	
Weighted Activity (pCi/g) ^c			70.8	4.2	69.7	0.8	7.3	7.9	1.0	
Vicinity prop. soils Tbl 3-4	3640	0.014075	20.0	0.9	20.0	1.4	1.2	0.8	1.3	1.4
Weighted Activity (pCi/g) ^c			0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Bldg found. soils Tbl 3-5	170000	0.657371	42.3	2.0	42.3	5.5	5.4	5.0	6.0	6.0
Weighted Activity (pCi/g) ^c			27.8	1.3	27.8	3.6	3.5	3.3	3.9	3.9
Bldg found. conc. Tbl 3-6	11130	0.043038	73.3	3.4	73.3					
Weighted Activity (pCi/g) ^c			3.2	0.1	3.2					
Total waste volume (cy)	258606									
Sum of Weighted Activities			103.8	5.8	102.6	4.4	10.9	11.2	4.9	4.0

Notes:

^aFrom *Interim Facility Safety Documentation for the Ash Pond Storage Area* (DOE/OR/21548-551) Rev. 1, December 1996

^bWeighted volume = source volume / total waste volume

^cWeighted Activity = weighted volume x activity concentration

Table C-5. Density Calculations

From *Hazard Categorization for the Chemical Stabilization and Solidification Facility* (DOE/OR/21548-570) Rev. 4, November 1997:

1. Section 2.1, p. 4: maximum sludge concentration (i.e. dry sludge solids in water) in raffinate pits before dredging = 27%
2. Section 2.1, p. 5: density of dry sludge solids = 1.8148 g/cu cm

$$\begin{aligned}\text{in-situ sludge density} &= [\text{fractional sludge concentration} \times \text{density of dry sludge solids}] + [\text{fractional water concentration} \times \text{density of water}] \\ &= [0.27 \times 1.8148] + [0.73 \times 1.00] \\ &= 1.22 \text{ g/cu cm} \\ &= 1.22 \text{ g/cu cm} \times [2.54 \text{ cm}/(1/12) \text{ ft}]^3 \times (27 \text{ cf/cy}) \\ &= 932754 \text{ g/cy} \\ &= 76 \text{ lb/cf}\end{aligned}$$

From e-mail from Serban Grozescu to David Fleming dated 9-9-02, subject "sludge":

$$\begin{aligned}\text{Soil density} &= 105 \text{ lb/cf} \\ &= 105 \text{ lb/cf} \times (454 \text{ g/lb}) \times (27 \text{ cf/cy}) \\ &= 1287090 \text{ g/cy}\end{aligned}$$

From *Interim Facility Safety Documentation for the Temporary Storage Area* (DOE/OR/21548-513) Rev. 3, December 1997, p. 10:

$$\begin{aligned}\text{Density of filter cake} &= 1.25 \text{ g/cu cm} \\ &= 1.25 \text{ g/cu cm} \times [2.54 \text{ cm}/(1/12) \text{ ft}]^3 \times (27 \text{ cf/cy}) \\ &= 955694 \text{ g/cy}\end{aligned}$$

Appendix D
Legal Descriptions of DOE Property
and Use Restriction Areas



Legal Description for the Chemical Plant Area

All that parcel of land lying within St. Charles County, Missouri, comprising the Federal facility identified as the Weldon Spring Site Remedial Action Project, as shown on maps dated September 2002 prepared by St. Charles Engineering Surveying, Inc. and titled *Dept. of Energy, Weldon Spring Site Remedial Action Project, MO, Boundary Survey for WSSRAP Site*. The bearings and distances are based on the Missouri State Plane Coordinate System (NAD 83). Said parcel is more particularly described as follows:

Being a parcel of land lying within Section 31, Township 46 North, Range 3 East of the 5th Principal Meridian in St. Charles County, Missouri. Beginning at a point identified by concrete Monument WS 1 set at Missouri State Plane Coordinates N=1,042,054.0867 and E=756,224.5074, said point also being located North 29° 04' 06" West for a distance of 1789.86 feet from the southeast corner of Section 31; thence along the following bearings and distances:

South 84° 59' 43" West, 511.53 feet to set Monument WS 2,
South 77° 59' 16" West, 839.83 feet to set Monument WS 3,
South 45° 55' 46" West, 894.25 feet to set Monument WS 4,
South 89° 59' 22" West, 812.12 feet to set Monument WS 5,
North 00° 02' 16" East, 749.79 feet to set Monument WS 6,
North 70° 25' 08" West, 105.03 feet to set Monument WS 7,
North 48° 12' 56" West, 618.60 feet to set Monument WS 8,
North 04° 34' 10" West, 189.65 feet to set Monument WS 9,
North 29° 11' 22" East, 384.67 feet to set Monument WS 10,
North 05° 22' 06" West, 474.62 feet to a point that is offset 20 feet from set Monument WS 11,
North 63° 03' 07" East, 485.67 feet to set Monument WS 12,
North 00° 04' 28" West, 1,355.33 feet to set Monument WS 13,
South 81°55'03" East, 389.64 feet to set Monument WS 14,
North 00° 05' 38" West, 109.85 feet to set Monument WS 15,
North 89° 54' 31" East, 499.21 feet to set Monument WS 16,
South 00° 00' 02" East, 93.62 feet to set Monument WS 17,
North 86° 28' 56" East, 705.14 feet to set Monument WS 18,
South 48° 44' 32" East, 828.97 feet to set Monument WS 19,

Thence along a curve to the right having a radius of 1,862.61 feet with a chord bearing and distance of South 36° 47' 33" East, 771.35 feet for an arc length of 776.97 feet, passing set Monument WS 20, to set Monument WS 21; thence, South 24° 50' 33" East, 1171.92 feet to set Monument WS 22, South 28° 17' 16" West, 801.90 feet to the point of beginning and containing 219.50 acres, more or less.

Legal Description for the Disposal Cell Buffer Zone

All that parcel of land located in part of Fractional Section 31 and part of U.S. Survey 1798, Township 46 North, Range 3 East, of the 5th Principal Meridian, St. Charles County, Missouri, as shown on a map dated May 2004, prepared by ABNA Engineering, Inc., and titled *Dept. of Energy, Weldon Spring Site Remedial Action Project, MO, Survey for 300-Foot Buffer Limits of Disposal Cell*, the basis of bearing being the Missouri State Plane Coordinate System of 1983—East Zone (adopting the 1993 adjustment values for first-order control points used), and being more particularly describes as follows:

Commencing at an aluminum disk marking the southeast corner of Section 31, Township 46 North, Range 3 East, of the 5th Principal Meridian, thence North 12° 52' 09" West a distance of 2,950.67 feet to set concrete Monument WS 23 having coordinates of N=1,043,428.02 and E=756,295.20, and being the point of beginning of the buffer limit of the disposal cell of the Weldon Spring Site. Thence along the following bearings and distances:

South 30° 44' 40" West, 462.46 feet to iron pipe WS 24P,
South 30° 44' 40" West, 499.04 feet to iron pipe WS 25P,
South 30° 44' 40" West, 498.13 feet to set monument WS 26, which bears South 88° 17' 31" East, 35.00 feet,
North 88° 17' 31" West, 689.97 feet to iron pipe WS 27P,
North 88° 17' 31" West, 690.00 feet to set Monument WS 28,
North 03° 43' 25" West, 523.66 feet to iron pipe WS 29P,
North 03° 43' 25" West, 523.66 feet to iron pipe WS 30P,
North 03° 43' 25" West, 523.67 feet to iron pipe WS 31P,
North 03° 43' 25" West, 523.65 feet to set Monument WS 32,
North 88° 58' 37" East, 516.13 feet to iron pipe WS 33P,
North 88° 58' 37" East, 516.14 feet to iron pipe WS 34P,
North 88° 58' 37" East, 516.13 feet to set Monument WS 35,
South 39° 59' 11" East, 569.72 feet to iron pipe WS 36P,
South 39° 59' 11" East, 454.14 feet to set Monument WS 37,
South 24° 48' 28" East, 132.23 feet to set Monument WS 23, being the point of beginning and containing 89.81 acres, more or less.

Legal Description for the Chemical Plant Groundwater Use Restriction Area

A groundwater use restriction area, being in U.S. Survey 887, U.S. Survey 457, and U.S. Survey 1798 of Township 46 North, Range 2 East, and Township 46 North, Range 3 East; Sections 25 and 36, Township 46 North, Range 2 East; and Sections 19, 30, 31, and 32, Township 46 North, Range 3 East of St. Charles County, Missouri, and being more particularly describes as follows:

Commencing at an iron pin with aluminum cap, found to be the southeast corner of Section 31, Township 46 North, Range 3 East, St. Charles County, Missouri, state plane coordinates (NAD83, adjustment of 1993) N=317,161.314 m, E=230,720.511 m, recorded as Document No. 600-27639 and Index No. Z-5 with the Land Records Repository of the Land Survey Program of the Geological Survey and Resource Assessment Division of the Department of Natural Resources of the State of Missouri. Bearings contained herein are referenced to the Missouri State Plane Coordinate System; distances contained herein are grid distances; grid factor for the project is 0.999909366;

Thence, leaving the southeast corner of said Section 31, North 89° 09' 34" West, a distance of 1,599.78 feet to a set concrete monument with an aluminum cap (WS 40), said point being the point of beginning of a herein described ground water use restriction area; thence, the following courses and distances:

North 88° 53' 16" West, 427.44 feet to iron pin WS 41P,
North 88° 53' 16" West, 384.00 feet to set Monument WS 42,
North 61° 04' 10" West, 327.00 feet to iron pin WS 43P,
North 61° 04' 10" West, 363.28 feet to set Monument WS 44,
South 53° 00' 20" West, 454.35 feet to iron pin WS 45P,
South 53° 00' 20" West, 233.47 feet to set Monument WS 46,
North 82° 26' 24" West, 478.94 feet to iron pin WS 47P
North 82° 26' 24" West, 451.86 feet to set Monument WS 48,
North 50° 52' 03" West, 448.49 feet to iron pin WS 49P,
North 50° 52' 03" West, 293.49 feet to set Monument WS 50,
North 23° 31' 58" West, 519.51 feet to iron pin WS 51P,
North 23° 31' 58" West, 495.37 feet to set Monument WS 52,
North 08° 59' 03" West, 706.90 feet to iron pin WS 53P,
North 08° 59' 03" West, 493.35 feet to iron pin WS 54P,
North 08° 59' 03" West, 482.48 feet to iron pin WS 55P,
North 08° 59' 03" West, 568.70 feet to iron pin WS 56P,
North 08° 59' 03" West, 490.52 feet to iron pin WS 57P,
North 08° 59' 03" West, 490.40 feet to iron pin WS 58P,
North 08° 59' 03" West, 802.23 feet to iron pin WS 59P,
North 08° 59' 03" West, 767.74 feet to iron pin WS 60P,
North 08° 59' 03" West, 387.24 feet to iron pin WS 61P,
North 08° 59' 03" West, 499.50 feet to iron pin WS 62P,
North 08° 59' 03" West, 481.00 feet to iron pin WS 63P,
North 08° 59' 03" West, 472.87 feet to iron pin WS 64P,
North 08° 59' 03" West, 497.29 feet to iron pin WS 65P,
North 08° 59' 03" West, 499.16 feet to iron pin WS 66P,
North 08° 59' 03" West, 200.50 feet to iron pin WS 66AP,

North 08° 59' 03" West, 488.76 feet to set Monument WS 67,
North 56° 29' 12" East, 425.25 feet to iron pin WS 68P,
North 56° 29' 12" East, 561.97 feet to iron pin WS 69P,
North 56° 29' 12" East, 436.49 feet to iron pin WS 70P,
North 56° 29' 12" East, 190.09 feet to iron pin WS 70AP,
North 56° 29' 12" East, 361.68 feet to iron pin WS 71P,
North 56° 29' 12" East, 403.91 feet to iron pin WS 72P,
North 56° 29' 12" East, 468.84 feet to set Monument WS 73,
South 31° 22' 09" East, 628.00 feet to iron pin WS 74P,
South 31° 22' 09" East, 350.87 feet to iron pin WS 75P,
South 31° 22' 09" East, 373.67 feet to iron pin WS 76P,
South 31° 22' 09" East, 269.73 feet to iron pin WS 77P,
South 31° 22' 09" East, 496.98 feet to iron pin WS 77AP,
South 31° 22' 09" East, 440.41 feet to iron pin WS 78P,
South 31° 22' 09" East, 260.24 feet to iron pin WS 78AP,
South 31° 22' 09" East, 570.08 feet to iron pin WS 79P,
South 31° 22' 09" East, 460.05 feet to iron pin WS 80P,
South 31° 22' 09" East, 470.05 feet to iron pin WS 81P,
South 31° 22' 09" East, 497.80 feet to iron pin WS 82P,
South 31° 22' 09" East, 477.05 feet to iron pin WS 83P,
South 31° 22' 09" East, 420.10 feet to iron pin WS 83AP,
South 31° 22' 09" East, 499.55 feet to iron pin WS 84P,
South 31° 22' 09" East, 499.36 feet to iron pin WS 85P,
South 31° 22' 09" East, 805.66 feet to iron pin WS 86AP,
South 31° 22' 09" East, 632.22 feet to iron pin WS 87P,
South 31° 22' 09" East, 482.82 feet to iron pin WS 88P,
South 31° 22' 09" East, 470.53 feet to iron pin WS 89P,
South 31° 22' 09" East, 229.85 feet to set Monument WS 90,
South 09° 57' 24" East, 456.66 feet to iron pin WS 91P,
South 09° 57' 24" East, 495.04 feet to iron pin WS 92P,
South 32° 40' 53" West, 625.07 feet to iron pin WS 93P,
South 32° 40' 53" West, 497.15 feet to set Monument WS 94,
South 80° 40' 16" West, 557.94 feet to iron pin WS 95P
South 80° 40' 16" West, 600.00 feet to set Monument WS 96,
South 21° 35' 27" West, 681.73 feet to iron pin WS 97PNS, a point from which bears
iron pin WS 97P, South 68° 24' 33" East, a distance of 158.91 feet.

Thence, leaving said point, South 21° 35' 27" West, 625.93 feet back to the point of beginning, and containing 49,724,563 square feet, or 1,141.519 acres, more or less, according to field surveys and computations by Hanson Professional Services Inc., performed during the month of February 2004.

Chemical Plant Groundwater Use Restriction Area
Exception No. 1
DOE Chemical Plant

All that parcel of land lying within St. Charles County, Missouri, comprising the Federal facility identified as the Weldon Spring Site Remedial Action Project, as shown on maps dated

September 2002 prepared by St. Charles Engineering Surveying, Inc. and titled *Dept. of Energy, Weldon Spring Site Remedial Action Project, MO, Boundary Survey for WSSRAP Site*. The bearings and distances are based on the Missouri State Plane Coordinate System (NAD 83). Said parcel is more particularly described as follows:

Being a parcel of land lying within Section 31, Township 46 North, Range 3 East of the 5th Principal Meridian in St. Charles County, Missouri. Beginning at a point identified by concrete Monument WS 1 set at Missouri State Plane Coordinates N=1,042,054.0867 and E=756,224.5074, said point also being located North 29° 04' 06" West for a distance of 1789.86 feet from the southeast corner of Section 31; thence along the following bearings and distances:

South 84° 59' 43" West, 511.53 feet to set Monument WS 2,
South 77° 59' 16" West, 839.83 feet to set Monument WS 3,
South 45° 55' 46" West, 894.25 feet to set Monument WS 4,
South 89° 59' 22" West, 812.12 feet to set Monument WS 5,
North 00° 02' 16" East, 749.79 feet to set Monument WS 6,
North 70° 25' 08" West, 105.03 feet to set Monument WS 7,
North 48° 12' 56" West, 618.60 feet to set Monument WS 8,
North 04° 34' 10" West, 189.65 feet to set Monument WS 9,
North 29° 11' 22" East, 384.67 feet to set Monument WS 10,
North 05° 22' 06" West, 474.62 feet to a point that is offset 20 feet from set Monument WS 11,
North 63° 03' 07" East, 485.67 feet to set Monument WS 12,
North 00° 04' 28" West, 1,355.33 feet to set Monument WS 13,
South 81° 55' 03" East, 389.64 feet to set Monument WS 14,
North 00° 05' 38" West, 109.85 feet to set Monument WS 15,
North 89° 54' 31" East, 499.21 feet to set Monument WS 16,
South 00° 00' 02" East, 93.62 feet to set Monument WS 17,
North 86° 28' 56" East, 705.14 feet to set Monument WS 18,
South 48° 44' 32" East, 828.97 feet to set Monument WS 19,

Thence along a curve to the right having a radius of 1,862.61 feet with a chord bearing and distance of South 36° 47' 33" East, 771.35 feet for an arc length of 776.97 feet, passing set Monument WS 20, to set Monument WS 21; thence, South 24° 50' 33" East, 1171.92 feet to set Monument WS 22, South 28° 17' 16" West, 801.90 feet to the point of beginning and containing 219.50 acres, more or less.

**Chemical Plant Groundwater Use Restriction Area
Exception No. 2
U.S. Department of the Army**

Being in U.S. Survey 1798 of Township 46 North, Range 2 East and Township 46 North, Range 3 East; Section 36, Township 46 North, Range 2 East; Section 31, Township 46 North, Range 3 East; and Section 6, Township 45 North, Range 3 East of St. Charles County, Missouri and being more particularly described as follows:

Beginning at a concrete monument with a brass disk marked WS 44, Missouri State Plane Coordinates (NAD83, adjustment of 1993) N=1,040,926.55 and E=753,940.51, thence, the following courses and distances:

South 53° 00' 20" West, 454.35 feet to WS 45P,
South 53° 00' 20" West, 233.47 feet to WS 46,
North 82° 26' 24" West, 478.94 feet to WS 47P,
North 82° 26' 24" West, 451.86 feet to WS 48,
North 50° 52' 03" West, 448.49 feet to WS 49P,
North 50° 52' 03" West, 293.49 feet to WS 50,
North 23° 31' 58" West, 519.51 feet to WS 51P,
North 23° 31' 58" West, 495.37 feet to WS 52,
North 08° 59' 03" West, 706.90 feet to WS 53P,
North 08° 59' 03" West, 493.35 feet to WS 54P,
North 08° 59' 03" West, 482.48 feet to WS 55P,
North 08° 59' 03" West, 568.70 feet to WS 56P,
North 08° 59' 03" West, 194.93 feet to a point in fence line,
North 70° 23' 55" East, 1,854.01 feet to fence corner,
South 87° 57' 05" East, 585.24 feet to fence corner,
South 00° 15' 05" East, 84.30 feet to WS 13,
South 00° 04' 28" East, 1,355.33 feet to WS 12,
South 63° 03' 07" West, 485.67 feet to WS 11,
South 05° 22' 06" East, 474.62 feet to WS 10,
South 29° 11' 22" West, 384.67 feet to WS 9,
South 04° 34' 10" East, 189.65 feet to WS 8,
South 48° 12' 56" East, 618.60 feet to WS 7,
South 70° 25' 08" East, 105.03 feet to WS 6,
South 00° 02' 16" West, 749.79 feet to WS 5,
North 89° 59' 22" East, 812.12 feet to WS 4,
South 47° 19' 10" West, 427.22 feet back to the point of beginning, and containing 183.46 acres more or less.

**Chemical Plant Groundwater Use Restriction Area
Exception No. 3
Missouri Department of Transportation**

Being in Section 31, Township 46 North, Range 3 East of St. Charles County, Missouri, and being more particularly described as follows:

Beginning at a concrete monument with a brass disk marked WS 22, Missouri State Plane Coordinates (NAD83, adjustment of 1993) N=1,042,764.7573 and E=756,602.4254; thence North 25° 50' West 465.4 feet to a point (the western most point of said property described in Deed Book 314, Page 439 in the St. Charles County, Missouri, Recorder's Office); thence North 65° 10' East 615.78 feet to a point in the west right-of-way line of Missouri State Highway 94; thence South 0° 40' West 111.67 feet to a curve right, radius 438.34 feet; thence along curve 360.8 feet to a tangent; thence South 43° 58' West 178.5 feet to a curve left, radius 1,82.14 feet;

thence along curve 182.9 feet back to the point of beginning, and containing 4.3 acres more or less.

**Chemical Plant Groundwater Use Restriction Area
Exception No. 4
Missouri Department Of Conservation**

Being in U.S. Survey 887, U.S. Survey 453, and U.S. Survey 1798 of Township 46 North, Range 2 East and Township 46 North, Range 3 East; Sections 25 and 36, Township 46 North, Range 2 East; and Sections 19, 30, 31 and 32, Township 46 North, Range 3 East of St. Charles County, Missouri, and being more particularly described as follows:

Beginning at a concrete monument with a brass disk marked WS 40, Missouri State Plane Coordinates (NAD83, adjustment of 1993) N=1,040,576.88 and E=755,355.94, thence, the following courses and distances:

North 88° 53' 16" West, 427.44 feet to WS 41P,
North 88° 53' 16" West, 384.00 feet to WS 42,
North 61° 04' 10" West, 327.00 feet to WS 43P,
North 61° 04' 10" West, 363.28 feet to WS 44,
North 47° 19' 10" East, 427.22 feet to WS 4,
North 45° 55' 46" East, 894.25 feet to WS 3,
North 77° 59' 16" East, 839.83 feet to WS 2,
North 84° 59' 43" East, 511.53 feet to WS 1,
North 28° 17' 16" East, 801.90 feet to WS 22 which is on the west right-of-way line of Missouri State Route 94, thence, in a northeasterly direction along said right-of-way to a point, thence,
South 65° 09' 37" West, 612.41 feet to a point, thence,
North 24° 50' 33" West, 708.57 feet to WS 21, thence, along a curve having a radius of 1,862.61 feet with a chord bearing and distance of north 36° 47' 33" West, 771.35 feet for an arc distance of 776.97 feet to WS 19, thence,
North 48° 44' 32" West, 828.97 feet to WS 18,
South 86° 28' 56" West, 705.14 feet to WS 17,
North 00° 00' 02" West, 93.62 feet to WS 16,
South 89° 54' 31" West, 499.21 feet to WS 15,
South 00° 05' 38" East, 109.85 feet to WS 14,
North 81° 55' 03" West, 389.64 feet to WS 13,
North 00° 15' 05" West, 84.30 feet to a fence corner,
North 87° 57' 05" West, 585.24 feet to a fence corner,
South 70° 23' 55" West, 1,854.01 feet to point in a fence line,
North 08° 59' 03" West, 295.59 feet to WS 57P,
North 08° 59' 03" West, 490.40 feet to WS 58P,
North 08° 59' 03" West, 802.23 feet to WS 59P,
North 08° 59' 03" West, 767.74 feet to WS 60P,
North 08° 59' 03" West, 387.24 feet to WS 61P,
North 08° 59' 03" West, 499.50 feet to WS 62P,

North 08° 59' 03" West, 481.00 feet to WS 63P,
North 08° 59' 03" West, 472.87 feet to WS 64P,
North 08° 59' 03" West, 497.29 feet to WS 65P,
North 08° 59' 03" West, 499.16 feet to WS 66P,
North 08° 59' 03" West, 200.50 feet to WS 66AP,
North 08° 59' 03" West, 488.76 feet to WS 67,
North 56° 29' 12" East, 425.25 feet to WS 68P,
North 56° 29' 12" East, 561.97 feet to WS 69P,
North 56° 29' 12" East, 436.49 feet to WS 70P,
North 56° 29' 12" East, 190.09 feet to WS 70AP,
North 56° 29' 12" East, 361.68 feet to WS 71P,
North 56° 29' 12" East, 403.91 feet to WS 72P,
North 56° 29' 12" East, 468.84 feet to WS 73,
South 31° 22' 09" East, 628.00 feet to WS 74P,
South 31° 22' 09" East, 350.87 feet to WS 75P,
South 31° 22' 09" East, 373.67 feet to WS 76P,
South 31° 22' 09" East, 269.73 feet to WS 77P,
South 31° 22' 09" East, 496.98 feet to WS 77AP,
South 31° 22' 09" East, 440.41 feet to WS 78P,
South 31° 22' 09" East, 260.24 feet to WS 78AP,
South 31° 22' 09" East, 570.08 feet to WS 79P,
South 31° 22' 09" East, 460.05 feet to WS 80P,
South 31° 22' 09" East, 470.05 feet to WS 81P,
South 31° 22' 09" East, 497.80 feet to WS 82P,
South 31° 22' 09" East, 477.05 feet to WS 83P,
South 31° 22' 09" East, 420.10 feet to WS 83AP,
South 31° 22' 09" East, 499.55 feet to WS 84P,
South 31° 22' 09" East, 499.36 feet to WS 85P,
South 31° 22' 09" East, 805.66 feet to WS 86P,
South 31° 22' 09" East, 632.22 feet to WS 87P,
South 31° 22' 09" East, 482.82 feet to WS 88P,
South 31° 22' 09" East, 470.53 feet to WS 89P,
South 31° 22' 09" East, 229.85 feet to WS 90,
South 09° 57' 24" East, 456.66 feet to WS 91P,
South 09° 57' 24" East, 495.04 feet to WS 92,
South 32° 40' 53" West, 625.07 feet to WS 93P,
South 32° 40' 53" West, 497.15 feet to WS 94,
South 80° 40' 16" West, 557.94 feet to WS 95P,
South 80° 40' 16" West, 600.00 feet to WS 96,
South 21° 35' 27" West, 681.73 feet to a point from which bears a set rebar with an
aluminum cap (WS 97P), South 68° 24' 33" East, a distance of 158.91 feet, thence,

Leaving said point, south 21° 35' 27" West, 625.93 feet back to the point of beginning, and
containing 734.23 acres more or less.

Legal Description for Quarry Area

All that parcel of land lying within St. Charles County, Missouri, comprising the Federal facility identified as the Weldon Spring Site Remedial Action Project, as shown on maps dated September 2002 prepared by St. Charles Engineering Surveying, Inc. and titled *Dept. of Energy, Weldon Spring Site Remedial Action Project, MO, Boundary Survey for WSSRAP Site*. The bearings and distances are based on the Missouri State Plane Coordinate System (NAD 83). Said parcel is more particularly described as follows:

Being a parcel of land lying within Section 13, Township 45 North, Range 2 East of the 5th Principal Meridian in St. Charles County, Missouri. Beginning at a point identified by concrete monument WQ 1 offset 5 feet from Missouri State Plane Coordinates N=1,029,029.9933 and E=747,488.7459, said point also being located South 39° 59' 07" West a distance of 14,950.05 feet from the northeast corner of Section 6; thence along the following bearings and distances:

South 83° 48' 22" East, 406.92 feet to an old iron pipe now designated as Monument WQ 2,
South 88° 30' 22" East, 635.69 feet to an iron pipe at a point that is offset 5 feet from Monument WQ 3,
South 15° 08' 38" West, 170.00 feet to an iron pipe at a point that is offset 5 feet from Monument WQ 4,
South 39° 49' 38" West, 208.99 feet to set Monument WQ 5,
South 72° 20' 38" West, 370.41 feet to set Monument WQ 6,
South 70° 27' 38" West, 258.04 feet to set Monument WQ 7,
North 27° 15' 22" West, 483.80 feet to set Monument WQ 8,
North 15° 59' 50" West, 159.83 feet to the point of beginning. Said parcel contains 8.66 acres, more or less.

Legal Description for the Quarry Reduction Zone Restrictive Easement

All that parcel of land identified as Tract 110E-2 and located in part of U.S. Survey 476 and part of U.S. Survey 1670, Township 45 North, Range 2 East of the 5th Principal Meridian, St. Charles County, Missouri, as shown on a map dated May 2004, prepared by ABNA Engineering, Inc., and titled *Dept. of Energy, Weldon Spring Site Remedial Action Project, MO, Survey for North Slough Area (Peapod), Soil Disturbance Restriction Area*, the basis of bearing being the Missouri State Plane Coordinate System of 1983—East Zone (adopting the 1993 adjustment values for first-order control points used), and being more particularly described as follows:

Commencing at an aluminum disk marking the northeast corner of Section 6, Township 45 North, Range 3 East of the 5th Principal Meridian, thence South 34° 02' 16" West a distance of 14,341.81 feet to set concrete Monument WQ 12, having coordinates of N=1,028,666.88 and E=748,924.69, and being the point of beginning of the soil disturbance restriction area of the North Slough area of the Weldon Spring Site Remedial Action Project. Thence along the following bearings and distances:

South 52° 14' 58" West, 992.12 feet to set Monument WQ 13,
North 83° 33' 13" West, 629.26 feet to set Monument WQ 9,
North 73° 06' 55" East, 506.22 feet to set Monument WQ 10,
North 64° 23' 25" East, 505.18 feet to set Monument WQ 11,
North 69° 57' 36" East, 500.07 feet to set Monument WQ 12, being the point of beginning and containing 4.67 acres, more or less.

Legal Description for the Quarry Groundwater Use Restriction Area

All that parcel of land identified as Tract 110E-1 and located in part of U.S. Survey 476 and part of U.S. Survey 1670, Township 45 North, Range 2 East of the 5th Principal Meridian, St. Charles County, Missouri, as shown on a map dated May 2004, prepared by ABNA Engineering, Inc., and titled *Dept. of Energy, Weldon Spring Site Remedial Action Project, MO, Survey for Femme-Osage Slough Groundwater Restriction Area*, the basis of bearing being the Missouri State Plane Coordinate System of 1983—East Zone (adopting the 1993 adjustment values for first-order control points used), and being more particularly described as follows:

Commencing at an aluminum disk marking the northeast corner of Section 6, Township 45 North, Range 3 East of the 5th Principal Meridian, thence South 35° 16' 27" West a distance of 14,065.71 feet to set concrete Monument WQ 14, having coordinates of N=1,029,068.24 and E=748,829.61, and being the point of beginning of the restriction area of the Femme-Osage Slough area of the Weldon Spring Site Remedial Action Project. Thence along the following bearings and distances:

South 13° 19' 39" East, 412.47 feet to set Monument WQ 12,
North 71° 42' 15" East, 533.24 feet to set Monument WQ 15,
North 69° 59' 08" East, 530.50 feet to set Monument WQ 16,
North 68° 28' 50" East, 553.70 feet to set Monument WQ 17,
North 59° 19' 46" East, 473.87 feet to set Monument WQ 18,
South 07° 15' 50" East, 568.13 feet to a wooden hub WQ 19P,
South 07° 15' 50" East, 569.14 feet to set Monument WQ 20,
South 29° 51' 25" West, 455.54 feet to a wooden hub WQ 21P,
South 29° 51' 25" West, 455.54 feet to a wooden hub WQ 22P,
South 29° 51' 25" West, 455.54 feet to a wooden hub WQ 23P,
South 29° 51' 25" West, 455.52 feet to set Monument WQ 24,
South 65° 46' 47" West, 441.81 feet to a wooden hub WQ 25P,
South 65° 46' 47" West, 441.89 feet to a wooden hub WQ 26P,
South 65° 46' 47" West, 441.89 feet to a wooden hub WQ 27P,
South 65° 46' 47" West, 441.89 feet to a wooden hub WQ 28P,
South 65° 46' 47" West, 441.98 feet to a set Monument WQ 29,
North 58° 39' 14" West, 347.84 feet to set Monument WQ 30,
North 44° 03' 19" West, 478.37 feet to iron pipe WQ 31P,
North 44° 03' 19" West, 478.37 feet to iron pipe WQ 32P,
North 44° 03' 19" West, 478.37 feet to iron pipe WQ 33P,
North 44° 03' 19" West, 478.38 feet to set Monument WQ 34,
North 38° 31' 53" East, 261.79 feet to set Monument WQ 35,
North 47° 17' 12" East, 344.82 feet to set Monument WQ 36,
North 61° 55' 03" East, 481.51 feet to set Monument WQ 37,
North 74° 47' 59" East, 235.88 feet to set Monument WQ 9,
North 17° 27' 16" West, 669.24 feet to set Monument WQ 38,
North 62° 35' 43" East, 244.65 feet to set Monument WQ 8,
South 27° 15' 22" East, 483.80 feet to set Monument WQ 7,
North 70° 27' 38" East, 258.04 feet to set Monument WQ 6,
North 72° 20' 38" East, 370.41 feet to set Monument WQ 5,
North 39° 49' 38" East, 208.99 feet to iron pipe WQ 4A,

North 15° 08' 38" East, 170.00 feet to iron pipe WQ 3A,
North 72° 44' 16" East, 316.48 feet to set Monument WQ 14, being the point of
beginning and containing 211.23 acres, more or less. Said acreage includes 4.67 acres,
more or less, overlapped into Tract 110E-1 identified as the north slough Reduction Zone
Restrictive Easement ("peapod") and that portion of the above which falls within the
right-of-way of State Highway 94.

Appendix E
Institutional Control Documentation

Appendix E

Institutional Control Documentation

Notation on Ownership Record for Notification to Potential Owners of Contaminated Groundwater and Applied Restrictions Chemical Plant Site and Quarry Areas (Recorded Book 3754, Pages 419-424, St. Charles County, Missouri).....	E-1
Real Estate License, Groundwater Wells and Sampling on property owned by Missouri Department of Conservation (not recorded)	E-7
Real Estate License, Effluent Water Pipeline on property owned by Missouri Department of Conservation (not recorded)	E-21
Real Estate License, Access to North Gate Area on property owned by Missouri Department of Conservation (not recorded)	E-27
Southeast Drainage Easement, open outfall sewer, on property owned by Missouri Department of Conservation (Recorded Book 292, Pages 597-601, St. Charles County, Missouri)	E-33
Real Estate License, Groundwater Wells and Sampling on property on which Missouri Department of Natural Resources holds an interest (not recorded).....	E-39
Real Estate License, Effluent Water Pipeline on property on which Missouri Department of Natural Resources holds an interest (not recorded)	E-45
Memorandum of Understanding between the U.S. Department of Energy and the U.S. Department of Army Concerning Transfer of Custody and Accountability for, and Funding of Remedial Actions at, the Weldon Spring Chemical Plant	E-51

End of current text

6
S-3
L-1
E-5

20040108000017370 NOTICE
Bk: DE3754 Pg: 419
01/08/2004 08:10:12AM 1/6

CERTIFIED-FILED FOR RECORD
Barbara J. Hall
Recorder of Deeds
St. Charles County, MO
BY: Janice James

- 1) Title of the Document: NOTATION ON OWNERSHIP RECORD FOR NOTIFICATION TO POTENTIAL OWNERS OF CONTAMINATION IN GROUNDWATER AND APPLIED RESTRICTIONS CHEMICAL PLANT SITE AND QUARRY AREAS
- 2) Date of the Document: December 11, 2003
- 3) Grantors' Names: United States Department of Energy
- 4) Grantees' Names: United States Department of Energy
- 5) Any Statutorily required addresses: United States Department of Energy
Katy Kates, AD-42
Procurement and Contracts Division
P.O. Box 2001
Oak Ridge, TN 37830

- 6) The legal description of the property affected:
 - Chemical Plant Site Area:
 - a. Tract 1-A (later B-136) was acquired from Daisy Sutton Johnson et al through the filing of a Declaration of Taking on June 18, 1941 under Civil Action 984.
 - b. Tract 16/38 (later D-322) was acquired from Chiles F. Stewart et ux through the filing of a Declaration of Taking on April 9, 1941 under Civil Action 805.
 - c. Tract 94 (later B-135) was acquired by deed dated December 14, 1940 from Howard W. Carrico et ux. Deed was recorded in Deed Book 194, Page 471 in St. Charles County, Missouri.
 - d. Tract 186 (later B-137) was acquired from Addie M. Sutton et al through the filing of a Declaration of Taking on April 8, 1941 under Civil Action 790.
 - e. Tract 202 (later D-321) was acquired from George H. Hackmann et ux through the filing of a Declaration of Taking on April 8, 1941 under Civil Action 794.
 - f. Tract 209 (later B-138) was acquired from Marvin Howell through the filing of a Declaration of Taking on April 9, 1941 under Civil Action 804.
 - g. Tract 189 (later D-252) was acquired from Elizabeth Thiele through the filing of a Declaration of Taking on May 7, 1945 under Civil Action 980.

Quarry Area:
Tract 11-A (later D-242) was acquired from Ed J. and Emma Linnenbringer through the filing of a Declaration of Taking on May 7, 1945 under Civil Action 987.

- 7) Reference book and pages for statutory requirements:

PAM THOMPSON/PROJECT MANAGER - US
DEPARTMENT OF ENERGY - WELDON SPRI

Erw- 7295 HIGHWAY 94 SOUTH
ST CHARLES, MO 63304

This document prepared by
Katy Kates, Realty Officer
U.S. Dept. of Energy, P.O. Box 2001
Oak Ridge, Tennessee 37831

NOTATION ON OWNERSHIP RECORD
FOR NOTIFICATION TO POTENTIAL OWNERS OF CONTAMINATION
IN GROUNDWATER AND APPLIED RESTRICTIONS
CHEMICAL PLANT SITE AND QUARRY AREAS

This action was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, 42 USC, Section 9601 et seq.

The United States of America, Department of Energy (DOE), is the current jurisdictional owner of the areas identified as the chemical plant portion and the quarry portion of the Weldon Spring Site Remedial Action Project in Missouri and depicted on the attached survey maps of the site. Said survey maps are titled *Weldon Spring Site Remedial Action Project, MO., Boundary Survey for WSSRAP Site*, dated September 2002, prepared by St. Charles Engineering & Surveying, Inc. DOE gives notice that certain activities occurred on the sites that resulted in contamination of underground water and soils which could pose risks to human health and the environment. DOE has completed the remedies for the Chemical Plant Site Area and the Quarry area in accordance with CERCLA but some restrictions are required to maintain the protectiveness of these remedies.

With the exceptions noted below, DOE hereby places the following restrictions and/or prohibitions on the land:

- a. Current owners or users of these areas shall not disturb the land and its soils by drilling, boring, or digging within the restricted areas and shall not access the groundwater for any use-type activity. Exceptions to these restrictions include DOE's rights to perform or grant rights for landscaping activities; to perform ongoing environmental restoration including planting of interpretive gardens; maintenance; and investigation and sampling by DOE, including drilling of necessary monitoring wells, to discern the types and extent of possible contamination.
- b. Current owners or users of the areas shall not construct, erect nor permit to be constructed or erected any type of residential dwelling or facility for human occupancy on the premises, other than for facilities to be occupied for mission-connected purposes including activities associated with performing environmental investigation and/or restoration and expansion of the existing Interpretive Center.

DOE shall continue to monitor and analyze the groundwater through approved investigative techniques. Should the land be conveyed to another party, notice of the restrictions and/or prohibitions cited herein shall be placed within the conveyance document(s) noting such restrictions and/or prohibitions on use.

Title to the land, which is the subject of this Notation, was originally acquired by the United States of America (Department of Army) in connection with the Weldon Spring Ordnance Works as follows. Civil Actions were filed in the Eastern Division of the United States District Court for the Eastern District of Missouri:

1. Chemical Plant Site Area:

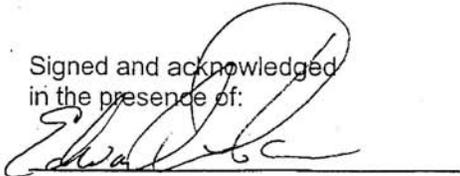
- a. Tract 1-A (later B-136) was acquired from Daisy Sutton Johnson et al through the filing of a Declaration of Taking on June 18, 1941 under Civil Action 984.
- b. Tract 16/38 (later D-322) was acquired from Chiles F. Stewart et ux through the filing of a Declaration of Taking on April 9, 1941 under Civil Action 805.
- c. Tract 94 (later B-135) was acquired by deed dated December 14, 1940 from Howard W. Carrico et ux. Deed was recorded in Deed Book 194, Page 471 in St. Charles County, Missouri.
- d. Tract 186 (later B-137) was acquired from Addie M. Sutton et al through the filing of a Declaration of Taking on April 8, 1941 under Civil Action 790.
- e. Tract 202 (later D-321) was acquired from George H. Hackmann et ux through the filing of a Declaration of Taking on April 8, 1941 under Civil Action 794.
- f. Tract 209 (later B-138) was acquired from Marvin Howell through the filing of a Declaration of Taking on April 9, 1941 under Civil Action 804.
- g. Tract 189 (later D-252) was acquired from Elizabeth Thiele through the filing of a Declaration of Taking on May 7, 1945 under Civil Action 980.

2. Quarry Area

Tract 11-A (later D-242) was acquired from Ed J. and Emma Linnenbringer through the filing of a Declaration of Taking on May 7, 1945 under Civil Action 987.

The Realty Officer hereunto subscribes her name on this 11th day of December, 2003.

Signed and acknowledged
in the presence of:



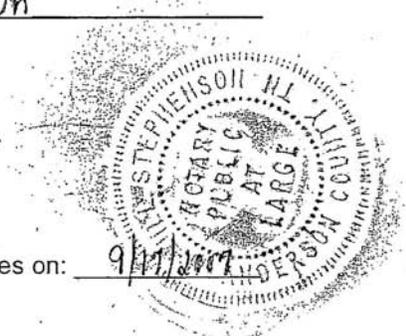

Katy Kates
Realty Officer
U.S. Department of Energy

ACKNOWLEDGEMENT

State of Tennessee)
Anderson County)

On this the 11th day of December, 2003, before me M. Will Stephenson, a Notary Public in and for said state, personally appeared Katy Kates, Realty Officer of the Oak Ridge Operations Office of the U.S. Department of Energy, known to me to be the person who executed the within Notation on Ownership Record on behalf of said U.S. Department of Energy and acknowledged to me that she executed the same for the purpose therein stated.

M. Will Stephenson
Notary Public



(Seal)
My commission expires on: 9/17/2007
9/17/2007



958 26 - 10

Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831

January 13, 2003

Joel W. Porath, Wildlife District Supervisor
Missouri Department of Conservation
August A. Busch Conservation Area
2360 Highway D
St. Charles, Missouri 63304

Dear Mr. Porath:

REAL ESTATE LICENSE REORDER-7-03-0102, GROUNDWATER WELLS AND SAMPLING, WELDON SPRING SITE, MO

Enclosed is a fully executed copy of the subject license designed to grant the Department of Energy (DOE) permission to install and operate groundwater wells and perform water sampling on property owned by the Missouri Department of Conservation (MDOC).

It was noted that when this was signed by MDOC, Mr. Erickson inadvertently signed the Exhibit "C" attached to the license. Since that exhibit is intended to be used only in the event that additional wells are required or existing wells must be relocated, I took the liberty of reprinting that page and inserting it in its unexecuted form back into the license.

If you have any questions, please feel free to contact me at 865-576-0977. Thank you for your coordination of this action.

Sincerely,

Katy Kates
Realty Officer

Enclosure
As stated

cc: Pamela Thompson, DOE Site Manager at WSSRAP
Scott Anderson, MK Ferguson at WSSRAP

DEPARTMENT OF ENERGY

LICENSE

PROJECT: WELDON SPRING SITE REMEDIAL ACTION PROJECT, MO
PURPOSE: GROUNDWATER WELLS; SAMPLING

THIS LICENSE, between the Missouri Department of Conservation, known as the "Grantor" and the U.S. Department of Energy, known as the "Grantee", is subject to the following terms and conditions.

1. Rights Granted - The Grantor grants to the Grantee, its agents, employees, or representatives permission to use the premises or facilities, together with ingress and egress, for the purpose of installing, operating, and maintaining groundwater monitoring well(s); performing well sampling and water sampling; and for performing miscellaneous sampling to determine the levels of contamination, if any, at the locations shown depicted on Exhibits "A-1", "A-2", and "B" attached to this instrument.
2. Term/Termination Rights - This License is effective upon the date of execution by the Grantee of this instrument and shall continue in effect for a period of ten (10) years unless terminated by either of the parties on not less than thirty (30) days prior written notice given to the other; provided, however, that the Grantor may not terminate this License without the Grantee's approval.
3. Authority to License - The Grantor represents and warrants that it is the owner of the property and has full right, power, and authority to enter into this License and grant the rights set out in this License.
4. Grantor Responsibility - The Grantor responsibility is set out within the terms and conditions of the rights granted under this License. The Grantor makes no representation as to the suitability or fitness of the premises for the intended purpose.
5. Grantee Responsibility - The Grantee, its agents, employees, or representatives will be responsible for property damage or injury to persons caused by the sole and direct negligence of their respective employees in performing on the Grantor's premises the activities and restoration which are the subject of this License. Grantee shall obtain all necessary permits, licenses, and approvals in connection with the activities to be conducted by the Grantee on the premises. During the performance of the activities specified in this License, the Grantee shall not unreasonably interfere with the use and enjoyment of the premises by the Grantor.
6. Access - During the term of this License, the Grantee, its agents, employees, or representatives shall have the right of access to and egress from the premises as needed and shall have the right to bring necessary equipment upon the premises in connection with the performance of the Grantee's activities as set out in Condition 1.
7. Installation, Maintenance, Closure of Groundwater Monitoring Wells - As deemed necessary in connection with the groundwater well sampling and analysis program of the Grantee, groundwater monitoring wells have been installed at the various locations shown on Exhibits "A-1", "A-2", and "B" attached to this License. If the Grantor deems it necessary to expand its facility or operation within the premises, the wells may be relocated at the expense of the Grantee. The exact siting of each

REAL ESTATE LICENSE NO.
REORDOER-7-03-0102

well shall be agreed on by the Grantor and Grantee following a walkover survey of the premises. The Grantee shall properly dispose of cuttings and development water from its well installation activities. The Grantee shall maintain the wells throughout the term of this License in a manner to ensure their continued usefulness for groundwater monitoring purposes. Following completion of the installation of any additional wells as provided for in subsequent Supplemental Agreements to this License or upon closure of any well, the Grantee shall restore the premises in accordance with Condition No. 11. Upon termination of this License, the Grantee shall seal, close and abandon the wells in place following established industry standards and environmental regulations and guidance applicable at the time of closure.

8. Additional or Relocated Wells - As required by Grantee's groundwater monitoring program, additional sites or the need to relocate the location of existing wells may be deemed necessary. If this occurs, appropriate Supplemental Agreements to this License in the format shown in Exhibit "C" will be executed by the Grantor and the Grantee's Federal Realty Officer.

9. Well Sampling - During the term of this License, the Grantee will from time to time bore, drive, sample and analyze surface water and water from any existing well (to include all existing groundwater wells) and from any newly installed groundwater monitoring wells on the premises in order to determine the levels, if any, of contaminants and other constituents of interest to the Grantee. Grantee shall attempt to notify the Grantor of the times at which samples will be taken at least twenty-four (24) hours in advance, and afford the Grantor an opportunity to observe the sampling. Grantee shall properly dispose of purge water from its boring and sampling activities.

10. Title to Equipment, Fixtures - Title to all equipment, fixtures, appurtenances, and other improvements furnished and installed in connection with the Grantee's activities under this License shall remain with the Grantee.

11. Restoration - Upon termination of this License, the Grantee shall remove all its equipment, fixtures, appurtenances, and other improvements furnished and installed on the premises in connection with the Grantee's activities under this License. The Grantee shall restore the premises, when such restoration is required in connection with the Grantee's activities, to the extent reasonably practical, to the condition existing at the time of initiation of the Grantee's activities. With the consent of the Grantor, the Grantee may abandon Grantee-owned equipment, fixtures, appurtenances, and other improvements in place in lieu of restoration when it is in the best interests of the Grantee.

12. Successors in Interest - This License and the parties' commitments within, shall be binding on both parties, their successors, and assigns.

13. Funding - Obligations of the Grantee under this License shall be subject to the availability of funds appropriated by the Congress which the Grantee may legally spend for such purposes and nothing in this License implies that Congress will appropriate funds to perform this License.

14. Notices - All notices regarding the specific terms and conditions of this License, and within the restrictions of this License, shall be in writing and shall be deemed effectively given upon personal delivery, upon verified facsimile receipt, or upon mailing by registered or certified mail, postage prepaid, and addressed to the parties at the following respective addresses; or to such other persons or at such other addresses as may be designated in writing by either party to the other.

REAL ESTATE LICENSE NO.
REORDOER-7- 03-0102

If to the Grantee:

Katy Kates, Realty Officer
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, Tennessee 37831

If to the Grantor:

Joel W. Porath, Wildlife District Supervisor
Missouri Department of Conservation
August A. Busch Conservation Area
2360 Highway D
St. Charles, Missouri 63304

15. Entire Agreement - This License represents the entire understanding of the parties on this matter and no oral statements or collateral documents (except as noted within) may modify this License.

16. Amendment - This License may not be amended or superseded except by an agreement in writing executed by the Grantor and Grantee's Realty Officer.

The above terms and conditions are acknowledged and agreed upon as indicated by the signatures affixed below:

GRANTOR: Missouri Department of Conservation

GRANTEE: U.S. Department of Energy

By: *Joel W. Porath*

By: *Katy Kates*

Title: *Wildlife District Supervisor*

Title: Realty Officer

Date: *1/2/05*

Date: *January 13, 2013*

EXHIBIT "C"

SUPPLEMENTAL AGREEMENT OF LICENSE

SUPPLEMENTAL AGREEMENT NO. _____ EFFECTIVE DATE _____

TYPE OF GRANT License GRANT NUMBER REORDOER-7-03-0102

GRANTOR Missouri Dept. of Conservation GRANTEE Dept. of Energy

PROJECT Weldon Spring Site Remedial Action Project, MO PURPOSE Groundwater Monitoring Wells, Sampling

The above numbered grant is modified in the following respects:

a. Under Condition No. 8 of the basic License, (an) additional _____ groundwater well(s) may be installed on property of the Grantor at the location(s) shown on revised Exhibit _____ attached hereto and made a part of the basic License.

Except as provided herein, all terms and conditions of the document referred to above remain unchanged and in full force and effect.

The above terms and conditions are acknowledged and agreed upon as indicated by the signatures affixed below:

GRANTOR: Missouri Department of Conservation GRANTEE: U.S. Department of Energy

By: _____ By: _____

Katy Kates
DOE Real Estate Office

Title: _____ Title: Realty Officer

Date: _____ Date: _____

SUPPLEMENTAL AGREEMENT OF LICENSE

SUPPLEMENTAL AGREEMENT NO. 1 EFFECTIVE DATE 6-14-2004
TYPE OF GRANT License GRANT NUMBER REORDOER-7-03-0102
GRANTOR Missouri Dept. of Conservation GRANTEE Dept. of Energy
PROJECT Weldon Spring Site, MO PURPOSE Groundwater Monitoring Wells,
Sampling

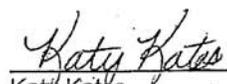
The above numbered grant is modified in the following respects:

- a. Under Condition No. 8 of the basic License, one additional groundwater well will be installed on the property of the Grantor at the location shown on revised Exhibit "A-1" attached hereto and made a part of the basic License. Grantee will select one groundwater well location from the three (3) boreholes to be drilled at the locations shown on Exhibit "A-1". Said well will be designated as MW-4041.

Except as provided herein, all terms and conditions of the document referred to above remain unchanged and in full force and effect.

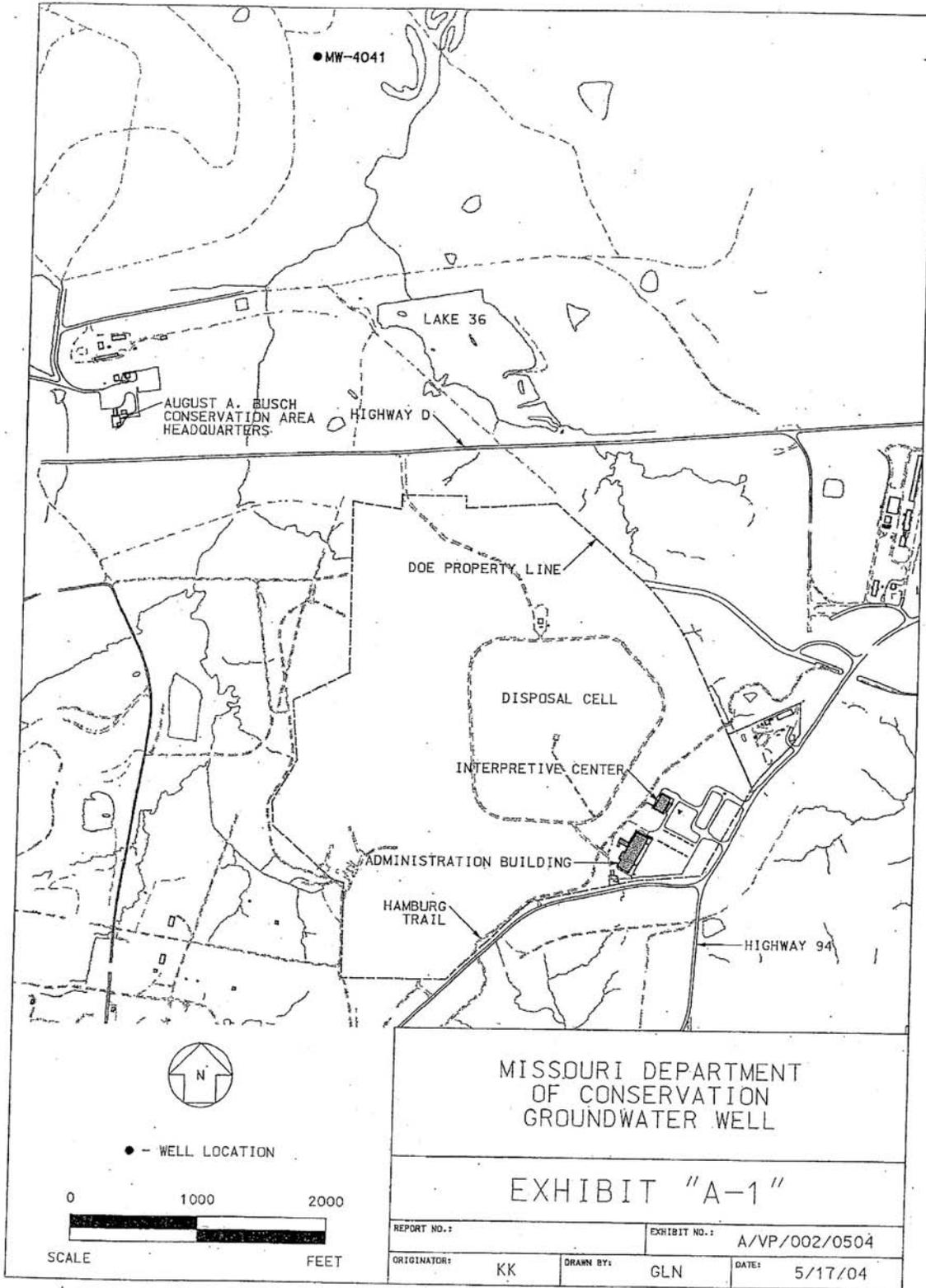
The above terms and conditions are acknowledged and agreed upon as indicated by the signatures affixed below:

GRANTOR: Missouri Department of Conservation GRANTEE: U.S. Department of Energy

By:  By: 
Katy Kates
DOE Real Estate Office

Title: Wildlife Dir. Conservation Title: Realty Officer

Date: 6/8/04 Date: June 14, 2004



EASEMENT

To 100E

THIS AGREEMENT, made and entered into as of the 3rd day of August, 1956, by and between THE CURATORS OF THE UNIVERSITY OF MISSOURI (hereinafter called the "Grantor"), and the UNITED STATES ATOMIC ENERGY COMMISSION acting for and in behalf of the UNITED STATES OF AMERICA (hereinafter called the "Grantee").

WITNESSETH THAT:

The Grantor does by these present grant, bargain, sell, convey, and confirm to the Grantee a right-of-way and easement, for as long as said property is used for the purposes described herein, in the following described property located in St. Charles County, Missouri to wit:

A strip of land 200 ft. in width, approximately 6,989 ft. in length, containing approximately 32 acres and having a center line description as follows: *32.09*

Commencing at the Northeast corner of Section 6, T.45 N - R.3 E thence South 300 ft. to a point, thence 1,740 ft. West to the point of beginning; thence South 52 degrees East for a distance of 990 ft. to a point, thence South 25 degrees East for a distance of 730 ft. to a point, thence South 1 degree East for a distance of 820 ft. to a point, thence South 21 degrees East for a distance of 960 ft. to a point, thence South 56 degrees East for a distance of 630 ft. to a point, thence South 13 degrees 30 minutes West for a distance of 730 ft. to a point, thence South 25 degrees East for a distance of 1,009 ft. to a point, thence South 33 degrees East for a distance of 1,120 ft. to a point that is identical to the center line of the Missouri-Kansas-Texas Railroad Bridge.

To 100E

This easement is conveyed for use in the construction and maintenance of an open outfall sewer for the conveyance of plant process and sanitary waste from the Grantee's plant facilities adjacent to the land of the Grantor, and the Grantee shall have the right, privilege, and authority to construct and maintain such outfall sewer.

Later reacq. as Tr. G which subsequently was merged into Tr. I

30.25

Grantor covenants as follows:

1. Warrants that it has and owns the unencumbered title to said premises, subject only to conditions and limitations set forth in a Quitclaim Deed made the thirtieth day of November, 1948, between the United States of America, acting by and through the Federal Farm Mortgage Corporation, and The Curators of the University of Missouri, recorded in Book 230, page 481, of the Deed Records of St. Charles County, Missouri.

2. That the Grantee performing the terms and conditions hereunder shall quietly hold and enjoy said premises for the full term herein created.

3. That it will give to Grantee reasonable ingress and egress across its property for the purpose of construction and maintenance of the fence hereinafter described.

Grantee covenants:

1. That for and in consideration of the easement granted herein, the Grantee shall erect a five-strand, barbed-wire fence upon the Grantor's property on a line described as follows, excepting that no fence shall be erected along that portion of said line which runs along the bluff of the Missouri river, consisting of approximately 2,590 feet:

Commencing at the Southeast corner of Section 31, T.46 North R.3 E thence West 2,438 ft, thence North 1,120 ft. to the point of beginning; thence North 47 degrees 06 minutes 15 seconds East a distance of 50 ft, thence South 42 degrees 53 minutes 45 seconds East a distance of 170.7 ft, thence South 10 degrees 02 minutes 30 seconds East a distance of 360.7 ft, thence North 70 degrees 57 minutes 30 seconds East a distance of 200 ft, thence South 10 degrees 02 minutes 30 seconds East a distance of 267.54 ft, thence South 24 degrees 01 minute 41 seconds East a distance of 393.8 ft, thence South 65 degrees 58 minutes 19 seconds West a distance of 100 ft, thence South 24 degrees 01 minute 41 seconds East a distance of 198.12 ft.

to the Northern right-of-way line of State Highway No. 94,
thence South 42 degrees 13 minutes West along the Northern
right-of-way line of State Highway No. 94 a distance of
491.7 ft, thence North 24 degrees 01 minute 41 seconds
West a distance of 395.67 ft, thence North 65 degrees 58
minutes 19 seconds East a distance of 300 ft, thence North
24 degrees 01 minute 41 seconds West a distance of 415 ft,
thence South 70 degrees 57 minutes 30 seconds West a
distance of 50 ft, thence North 19 degrees 02 minutes 30
seconds West a distance of 606.83 ft, thence North 42
degrees 53 minutes 45 seconds West a distance of 149.3 ft,
thence North 47 degrees 06 minutes 15 seconds East a
distance of 50 ft, to the point of beginning.

Commencing at the Northwest corner of Northeast one-fourth
of Section 6, Township 45 North, Range 3 East; thence South
66 degrees 12 minutes East 755.75 ft, to the point of
beginning, thence North 48 degrees 35 minutes East 384.4 ft,
thence North 87 degrees 43 minutes East 392.1 ft, thence
South 58 degrees 58 minutes East 334.4 ft, thence South 53
degrees 44 minutes East 446.5 ft, thence South 14 degrees
10 minutes East 311.7 ft, thence South 14 degrees 11 minutes
East 364.6 ft; thence South 39 degrees 32 minutes East 507.7 ft,
thence South 72 degrees 37 minutes East 678.3 ft, thence South
8 degrees 43 minutes East 511.8 ft, thence South 49 degrees
34 minutes East 281.2 ft, thence South 73 degrees 49 minutes
East 412.0 ft, thence North 15 degrees 57 minutes East 264.0 ft,
thence South 67 degrees 35 minutes East 257.4 ft, thence South
7 degrees 42 minutes East 207.1 ft, thence South 41 degrees
46 minutes East 314.9 ft, thence South 45 degrees 25 minutes
East 390.1 ft, thence South 52 degrees 42 minutes East 392.0 ft,
thence South 35 degrees 33 minutes East 353.7 ft, thence South
27 degrees 06 minutes East 685.6 ft, thence South 1 degree
26 minutes West 587.0 ft, thence South 41 degrees 46 minutes

West 93.5 ft, thence South 43 degrees 50 minutes West 253.3 ft, thence South 71 degrees 2 minutes West 131.3 ft, thence South 51 degrees 19 minutes West 176.2 ft, thence South 72 degrees 08 minutes West 100.3 ft, thence South 51 degrees 25 minutes West 79.0 ft, thence South 8 degrees 8 minutes East 98.1 ft, thence South 57 degrees 58 minutes West 996.0 ft, thence South 53 degrees 02 minutes West 1,031.6 ft, thence North 16 degrees 45 minutes West 100.2 ft, thence North 44 degrees 37 minutes East 83.0 ft, thence North 65 degrees 52 minutes East 103.1 ft, thence North 38 degrees 09 minutes West 415.4 ft, thence North 20 degrees 52 minutes West 316.1 ft, thence North 39 degrees 22 minutes West 253.3 ft, thence North 50 degrees 37 minutes West 423.7 ft, thence North 57 degrees 57 minutes West 224.4 ft, thence North 7 degrees 10 minutes West 182.6 ft, thence North 34 degrees 09 minutes West 202.4 ft, thence North 60 degrees 23 minutes West 190.6 ft, thence North 39 degrees 59 minutes West 211.5 ft, thence North 42 degrees 33 minutes West 360.1 ft, thence North 31 degrees 08 minutes West 254.8 ft, thence North 12 degrees 55 minutes West 243.6 ft, thence North 35 degrees 57 minutes East 213.4 ft, thence North 27 degrees 00 minutes West 330.7 ft, thence North 26 degrees 24 minutes East 155.5 ft, thence North 7 degrees 05 minutes West 361.6 ft, thence South 88 degrees 49 minutes West 195.5 ft, thence North 11 degrees 03 minutes West 484.0 ft, thence North 22 degrees 45 minutes West 178.3 ft, thence North 29 degrees 18 minutes West 211.0 ft, thence North 50 degrees 42 minutes West 1,029.4 ft, thence North 29 degrees 29 minutes East 975.8 ft, thence North 23 degrees 33 minutes East 247.9 ft, to the point of beginning.

2. That it will maintain said fence along the line above described in good and serviceable condition for the term of the easement, or so long as the Grantor shall request but not to exceed the term of this easement.

3. That it will use due care in the maintenance and use of said outfall sewer, taking into consideration the nature of the discharge and waste running there through, and that it will comply with all rules and regulations of the Board of Health of the State of Missouri, or other governmental agencies, with reference to discharging the waste into the Missouri River.

4. That Grantor shall have the right to remove any timber that is growing or may grow upon said easement right-of-way and the free use of said strip of land in any way that shall not interfere or conflict with use and maintenance of said outfall sewer.

5. That it will, subject to the availability of funds, save and hold the Grantor harmless from any liability that the Grantor may, without fault or negligence of Grantor, incur on account of the Grantee's use of the rights granted hereunder; provided, however, that the Grantee shall not be liable for any claim settlement or judgment made or obtained against the Grantor unless the Grantee has been notified of such claim and has had the opportunity to defend such claim or agree to any settlement made by the Grantor.

6. That its maintenance of the fence herein provided shall give it no interest or right in any lands of the Grantors other than the 200 foot strip hereinabove specifically described.

7. That this easement is accepted subject to the terms and conditions set forth in the Quitclaim Deed made the thirtieth day of November, 1948, by and between the United States of America, acting by and through the Federal Farm Mortgage Corporation, and The Curators of the University of Missouri, recorded in Book 230, page 481, of the Deed Records of St. Charles County, Missouri.

IN WITNESS WHEREOF, the Grantor has caused this lease to be executed and its corporate seal hereto affixed the day and year first above written.

Approved: J. H. Longwell
J. H. Longwell, Director
Agricultural Experimental
Station

THE CURATORS OF THE UNIVERSITY OF MISSOURI

ATTEST: Mary Robnett
Mary Robnett, Secretary

By: James A. Finch, Jr.
James A. Finch, Jr.
President



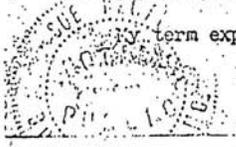
ACCEPTED FOR THE UNITED STATES ATOMIC
ENERGY COMMISSION

By: [Signature]

State of Missouri }
County of Boone } ss

On this 3rd day of August, 1956, before me
appeared James A. Finch, Jr., to me personally known, who, being by me
duly sworn, did say he is President of The Curators of the University of
Missouri, a public corporation of the State of Missouri, and that the
seal affixed to the foregoing instrument is the corporate seal of said
corporation and that said instrument was signed and sealed in behalf of
said corporation by authority of its Board of Curators, and said James
A. Finch, Jr. acknowledged said instrument to be the free act and deed
of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my
notarial seal at my office in Columbia, Missouri, Boone
County, Missouri, the day and year last above written.



My term expires: October 13, 1958

Sue Wagner
Notary Public within and for Boone
County, Missouri

STATE OF MISSOURI }
County of St. Charles, } ss.

I, the undersigned, Recorder of Deeds for said County and State do hereby certify that the foregoing and
annexed instrument of writing was filed for record in my office on the 20th day of August, A. D.
1956 at 2:00 o'clock P. M. and is truly recorded in Book 292 Page 527

Witness my hand and official seal on the day and year aforesaid.
Deputy [Signature] Recorder of Deeds



Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831--

March 7, 2003

Joel W. Porath, Wildlife Regional Supervisor
Missouri Department of Conservation
August A. Busch Conservation Area
2360 Highway D
St. Charles, Missouri 63304

LICENSE REORDOER-7-03-0105, WELDON SPRING SITE REMEDIAL ACTION PROJECT, MO

Enclosed is a fully executed copy of the subject license designed to grant the Department of Energy (DOE) continuing operation and maintenance of a pipeline for effluent water flow across your agency's property.

As a matter of information, it was noted on the license you returned to this office that you had highlighted a portion of the license identifier at the top right-hand corner. Perhaps it was your assumption that there was a typographical error in that identifier. Actually, it is correct and stands for "Real Estate Oak Ridge Deartment of Energy Realty" or REORDOER. I was able to make the change you had indicated on page 2 to revise your title to Wildlife Regional Supervisor as opposed to the Wildlife District Supervisor that the license initially carried.

Thank you again for your coordination of this action. Please feel free to contact me at 865-576-0977 for any questions or comments you may have.

Sincerely,

A handwritten signature in cursive script that reads "Katy Kates".

Katy Kates
Realty Officer

Enclosure
As stated

Cc: Pamela Thompson, WSSRAP Site Manager
Scott Anderson, Project Director, MK Ferguson

DEPARTMENT OF ENERGY

LICENSE

PROJECT: WELDON SPRING SITE REMEDIAL ACTION PROJECT, MO
PURPOSE: EFFLUENT WATER PIPELINE

THIS LICENSE, between Missouri Department of Conservation, known as the "Grantor" and the U.S. Department of Energy, known as the "Grantee", is subject to the following terms and conditions:

1. Rights Granted - The Grantor grants to the Grantee, its agents, employees, or representatives permission to use the premises or facilities, together with ingress and egress, for the purpose of continuing operation, maintenance and repair of an underground eight-inch (8") polyethylene pipeline for effluent water flow under Grantor's property at the approximate location shown depicted on Exhibit "A" attached to this instrument. Said exhibit may depict a greater area than owned by the Grantor; however, this License is intended to grant rights only over the property of the Grantor.
2. Term/Termination Rights - This License is effective upon the date of execution by the Grantee of this instrument and shall continue in effect for a period of ten (10) years unless terminated by either of the parties on not less than thirty (30) days prior written notice given to the other; provided, however, that the Grantor may not terminate this License without the Grantee's approval, which approval shall not be unreasonably withheld.
3. Authority to License - The Grantor represents to the extent of its interest in the property that it has full right, power, and authority to enter into this License and grant the rights set out in this License.
4. Grantor Responsibility - The Grantor's responsibility is set out within the terms and conditions of the rights granted under this License. The Grantor makes no representation as to the suitability or fitness of the premises for the intended purpose.
5. Grantee Responsibility - The Grantee, its agents, employees, or representatives will be responsible for property damage or injury to persons caused by the sole and direct negligence of their respective employees in performing on the Grantor's premises the activities which are the subject of this License. Grantee shall obtain all necessary permits, licenses, and approvals in connection with the activities to be conducted by the Grantee on the premises. During the performance of the activities specified in this License, the Grantee shall not unreasonably interfere with the use and enjoyment of the premises by the Grantor.
6. Access - During the term of this License, the Grantee, its agents, employees, or representatives shall have the right of access to and egress from the premises as needed and shall have the right to bring necessary equipment upon the premises in connection with the performance of the Grantee's activities as set out in Condition 1.
7. Title to Equipment, Fixtures - Title to all equipment, fixtures, appurtenances, and other improvements furnished and installed in connection with the Grantee's activities under this License shall remain with the Grantee.

8. Restoration – Upon termination of this License, the Grantee shall remove all its equipment, fixtures, appurtenances, and other improvements furnished and installed on the premises in connection with the Grantee's activities under this License. The Grantee shall restore the premises, when such restoration is required in connection with the Grantee's activities, to the extent reasonably practical, to the condition existing at the time of initiation of the Grantee's activities: With the consent of the Grantor, the Grantee may abandon Grantee-owned equipment, fixtures, appurtenances, and other improvements in place in lieu of restoration when it is in the best interests of the Grantee.

9. Successors in Interest - This License and the parties' commitments within, shall be binding on both parties, their successors, and assigns.

10. Funding - Obligations of the Grantee under this License shall be subject to the availability of funds appropriated by the Congress which the Grantee may legally spend for such purposes and nothing in this License implies that Congress will appropriate funds to perform this License.

11. Notices - All notices regarding the specific terms and conditions of this License, and within the restrictions of this License, shall be in writing and shall be deemed effectively given upon personal delivery, upon verified facsimile receipt, or upon mailing by registered or certified mail, postage prepaid, and addressed to the parties at the following respective addresses, or to such other persons or at such other addresses as may be designated in writing by either party to the other.

If to the Grantee:

Katy Kates, Realty Officer
AD-42 (865-576-0977)
Department of Energy
P.O. Box 2001
Oak Ridge, Tennessee 37831

If to the Grantor:

Joel W. Porath, Wildlife Regional Supervisor
Missouri Department of Conservation
August A. Busch Conservation Area
2360 Highway D
St. Charles, Missouri 63304

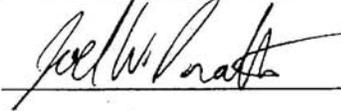
12. Entire Agreement - This License represents the entire understanding of the parties on this matter and no oral statements or collateral documents (except as noted within) may modify this License.

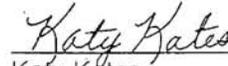
13. Amendment - This License may not be amended or superseded except by an agreement in writing executed by the Grantor and Grantee.

The above terms and conditions are acknowledged and agreed upon as indicated by the signatures affixed below:

GRANTOR: Missouri Department
of Conservation

GRANTEE: U.S. Department of Energy

By: 

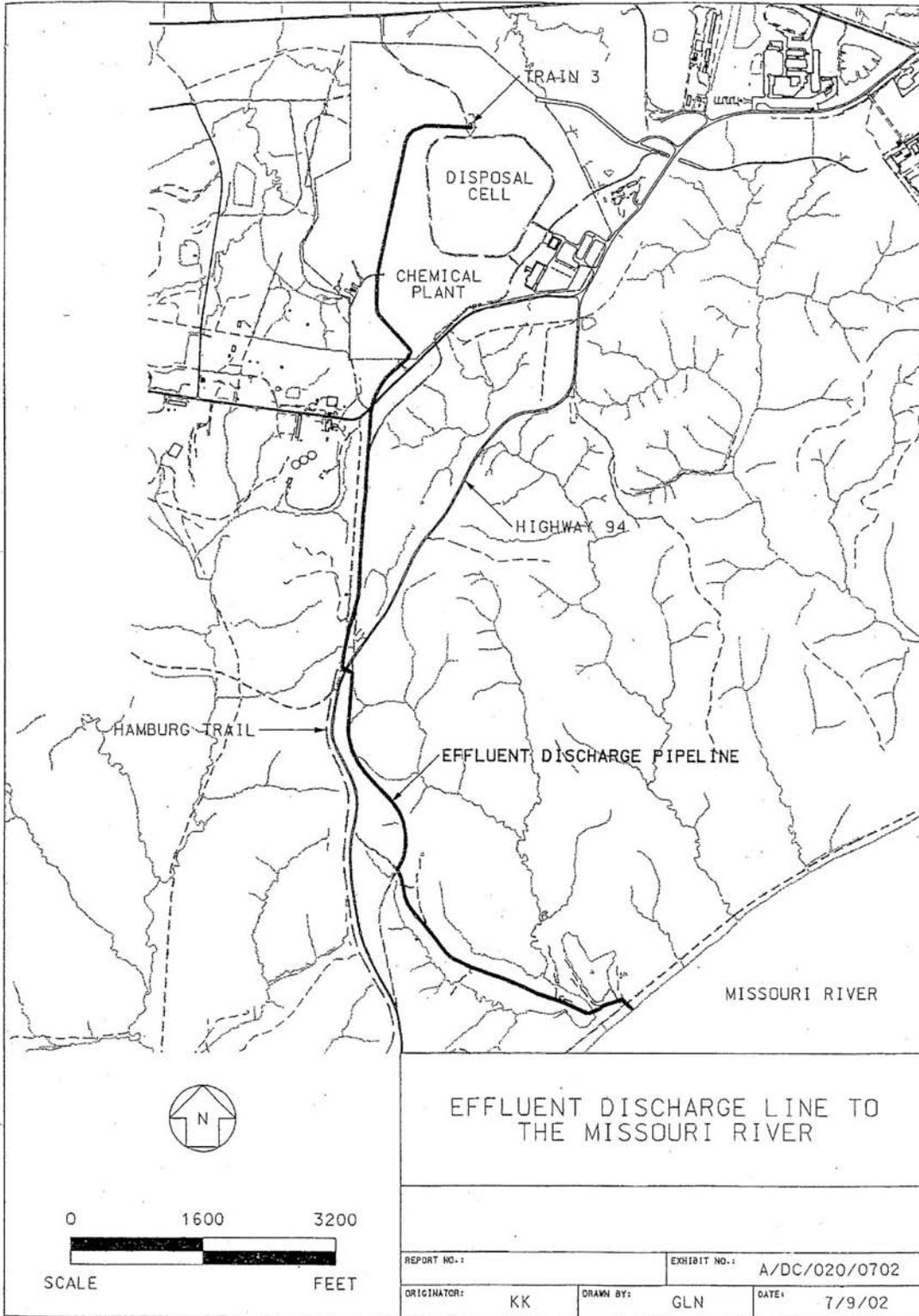
By: 
Katy Kates
DOE Real Estate Office

Title: Wildlife Regional Supervisor

Title: Realty Officer

Date: 3 March 2003

Date: 3-7-2003



End of current text



Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

October 7, 2002

Joel W. Porath, Wildlife District Supervisor
Missouri Department of Conservation
August A. Busch Conservation Area
2360 Highway D
St. Charles, Missouri 63304

Dear Mr. Porath:

**REAL ESTATE LICENSE REORDOER-7-03-0100, ACCESS TO NORTH GATE AREA,
WELDON SPRING SITE REMEDIAL ACTION PROJECT, MO**

Enclosed is a fully signed copy of the subject license designed to permit the Department of Energy (DOE) access to its North Gate entrance at the site. Thank you for your coordination of this action. Should you have any questions, please feel free to call me at 865-576-0977.

I look forward to meeting you next time I am at Weldon. Please extend my greetings to John Vogel of your staff. He has been most helpful during my trips to your area and truly represents the desired dedication required for public interaction.

Sincerely,

A handwritten signature in cursive script that reads "Katy Kates".

Katy Kates
Realty Officer

Enclosure
As stated

DEPARTMENT OF ENERGY

LICENSE

PROJECT: WELDON SPRING SITE REMEDIAL ACTION PROJECT, MO
PURPOSE: NORTH ACCESS TO SITE

THIS LICENSE, between the Missouri Department of Conservation, known as the "Grantor" and the U.S. Department of Energy, known as the "Grantee", is subject to the following terms and conditions.

1. Rights Granted - The Grantor grants to the Grantee, its agents, employees, or representatives permission to use the premises or facilities, together with ingress and egress, for the purpose of serving as Grantee's northerly ingress/egress to the Weldon Spring Site Remedial Action Project, MO at the location shown depicted on Exhibit "A" attached to this instrument. Said location, connected between St. Charles State Highway D and the Grantee's site, is locally identified as the "Gate D Access".
2. Term/Termination Rights - This License is effective upon the date of execution by the Grantee of this instrument and shall continue in effect for a period of ten (10) years unless terminated by either of the parties on not less than thirty (30) days prior written notice given to the other; provided, however, that the Grantor may not terminate this License without the Grantee's approval.
3. Authority to License - The Grantor represents and warrants that it is the owner of the property and has full right, power, and authority to enter into this License and grant the rights set out in this License.
4. Grantor Responsibility - The Grantor responsibility is set out within the terms and conditions of the rights granted under this License. The Grantor makes no representation as to the suitability or fitness of the premises for the intended purpose.
5. Grantee Responsibility - The Grantee, its agents, employees, or representatives will be responsible for property damage or injury to persons caused by the sole and direct negligence of their respective employees in performing on the Grantor's premises the activities and restoration which are the subject of this License. Grantee shall obtain all necessary permits, licenses, and approvals in connection with the activities to be conducted by the Grantee on the premises. During the performance of the activities specified in this License, the Grantee shall not unreasonably interfere with the use and enjoyment of the premises by the Grantor.
6. Access - During the term of this License, the Grantee, its agents, employees, or representatives shall have the right of access to and egress from the premises as needed and shall have the right to bring necessary equipment upon the premises in connection with the performance of the Grantee's activities as set out in Condition 1.
7. Title to Equipment, Fixtures - Title to all equipment, fixtures, appurtenances, and other improvements furnished and installed in connection with the Grantee's activities under this License shall remain with the Grantee.

REAL ESTATE LICENSE NO.
REORDOER-7- 03-0100

8. Restoration - Upon termination of this License, the Grantee shall remove all its equipment, fixtures, appurtenances, and other improvements furnished and installed on the premises in connection with the Grantee's activities under this License. The Grantee shall restore the premises, when such restoration is required in connection with the Grantee's activities, to the extent reasonably practical, to the condition existing at the time of initiation of the Grantee's activities. With the consent of the Grantor, the Grantee may abandon Grantee-owned equipment, fixtures, appurtenances, and other improvements in place in lieu of restoration when it is in the best interests of the Grantee.

9. Successors in Interest - This License and the parties' commitments within, shall be binding on both parties, their successors, and assigns.

10. Funding - Obligations of the Grantee under this License shall be subject to the availability of funds appropriated by the Congress which the Grantee may legally spend for such purposes and nothing in this License implies that Congress will appropriate funds to perform this License.

11. Notices - All notices regarding the specific terms and conditions of this License, and within the restrictions of this License, shall be in writing and shall be deemed effectively given upon personal delivery, upon verified facsimile receipt, or upon mailing by registered or certified mail, postage prepaid, and addressed to the parties at the following respective addresses, or to such other persons or at such other addresses as may be designated in writing by either party to the other.

If to the Grantee:

Katy Kates, Realty Officer
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, Tennessee 37831

If to the Grantor:

Joel W. Porath, Wildlife District Supervisor
Missouri Department of Conservation
August A. Busch Conservation Area
2360 Highway D
St. Charles, Missouri 63304

13. Entire Agreement - This License represents the entire understanding of the parties on this matter and no oral statements or collateral documents (except as noted within) may modify this License.

14. Amendment - This License may not be amended or superseded except by an agreement in writing executed by the Grantor and Grantee.

The above terms and conditions are acknowledged and agreed upon as indicated by the signatures affixed below:

REAL ESTATE LICENSE NO.
REORDOER-7-03-0100

Missouri Department of
GRANTOR: Conservation

GRANTEE: U.S. Department of Energy

By: *Joel W. Parath*
Joel W. ParATH

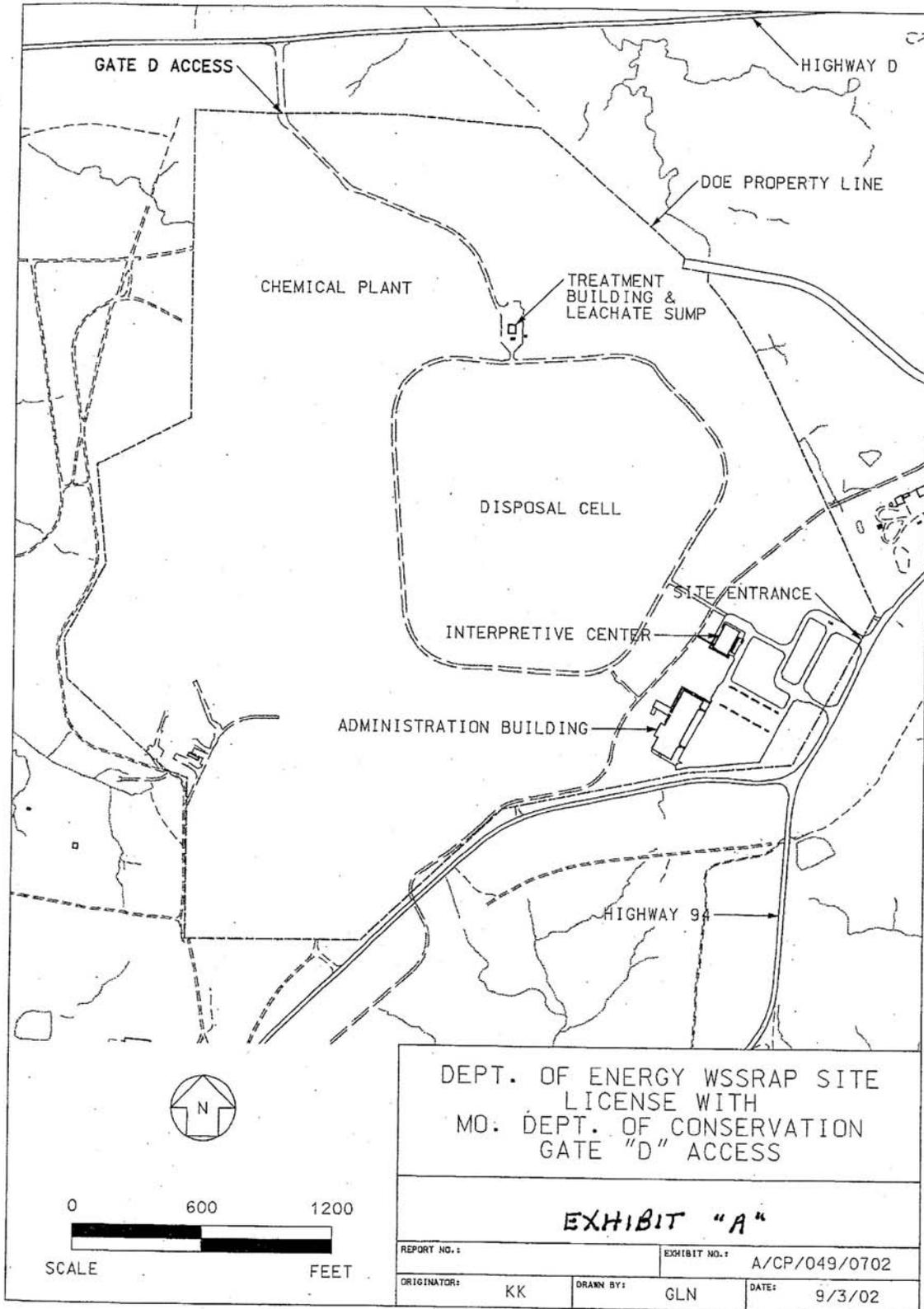
By: *Katy Kates*
Katy Kates

Title: *WILDLIFE Regional Supervisor*

Title: Realty Officer

Date: *2 October 2002*

Date: *October 7, 2002*



End of current text

EASEMENT

THIS AGREEMENT, made and entered into as of the 3rd day of August, 1956, by and between THE CURATORS OF THE UNIVERSITY OF MISSOURI (hereinafter called the "Grantor"), and the UNITED STATES ATOMIC ENERGY COMMISSION acting for and in behalf of the UNITED STATES OF AMERICA (hereinafter called the "Grantee").

WITNESSETH THAT:

The Grantor does by these present grant, bargain, sell, convey, and confirm to the Grantee a right-of-way and easement, for as long as said property is used for the purposes described herein, in the following described property located in St. Charles County, Missouri to wit:

A strip of land 200 ft. in width, approximately 6,989 ft. in length, containing approximately 32 acres and having a center line description as follows:

Commencing at the Northeast corner of Section 6, T.45 N - R.3 E thence South 300 ft. to a point, thence 1,740 ft. West to the point of beginning; thence South 52 degrees East for a distance of 990 ft. to a point, thence South 25 degrees East for a distance of 730 ft. to a point, thence South 1 degree East for a distance of 820 ft. to a point, thence South 21 degrees East for a distance of 960 ft. to a point, thence South 56 degrees East for a distance of 630 ft. to a point, thence South 13 degrees 30 minutes West for a distance of 730 ft. to a point, thence South 25 degrees East for a distance of 1,009 ft. to a point, thence South 33 degrees East for a distance of 1,120 ft. to a point that is identical to the center line of the Missouri-Kansas-Texas Railroad Bridge.

This easement is conveyed for use in the construction and maintenance of an open outfall sewer for the conveyance of plant process and sanitary waste from the Grantee's plant facilities adjacent to the land of the Grantor, and the Grantee shall have the right, privilege, and authority to construct and maintain such outfall sewer.

3075

Grantor covenants: as follows:

1. Warrants that it has and owns the unencumbered title to said premises, subject only to conditions and limitations set forth in a Quitclaim Deed made the thirtieth day of November, 1948, between the United States of America, acting by and through the Federal Farm Mortgage Corporation, and The Curators of the University of Missouri, recorded in Book 230, page 481, of the Deed Records of St. Charles County, Missouri.

2. That the Grantee performing the terms and conditions hereunder shall quietly hold and enjoy said premises for the full term herein created.

3. That it will give to Grantee reasonable ingress and egress across its property for the purpose of construction and maintenance of the fence hereinafter described.

Grantee covenants:

1. That for and in consideration of the easement granted herein, the Grantee shall erect a five-strand, barbed-wire fence upon the Grantor's property on a line described as follows, excepting that no fence shall be erected along that portion of said line which runs along the bluff of the Missouri river, consisting of approximately 2,590 feet:

Commencing at the Southeast corner of Section 31, T.46 North R.3 E thence West 2,438 ft, thence North 1,120 ft. to the point of beginning; thence North 47 degrees 06 minutes 15 seconds East a distance of 50 ft, thence South 42 degrees 53 minutes 45 seconds East a distance of 170.7 ft, thence South 10 degrees 02 minutes 30 seconds East a distance of 360.7 ft, thence North 70 degrees 57 minutes 30 seconds East a distance of 200 ft, thence South 10 degrees 02 minutes 30 seconds East a distance of 267.54 ft, thence South 24 degrees 01 minute 41 seconds East a distance of 393.8 ft, thence South 65 degrees 58 minutes 19 seconds West a distance of 100 ft, thence South 24 degrees 01 minute 41 seconds East a distance of 198.12 ft.

to the Northern right-of-way line of State Highway No. 94, thence South 42 degrees 13 minutes West along the Northern right-of-way line of State Highway No. 94 a distance of 491.7 ft, thence North 24 degrees 01 minute 41 seconds West a distance of 395.67 ft, thence North 65 degrees 58 minutes 19 seconds East a distance of 300 ft, thence North 24 degrees 01 minute 41 seconds West a distance of 415 ft, thence South 70 degrees 57 minutes 30 seconds West a distance of 50 ft, thence North 19 degrees 02 minutes 30 seconds West a distance of 606.83 ft, thence North 42 degrees 53 minutes 45 seconds West a distance of 149.3 ft, thence North 47 degrees 06 minutes 15 seconds East a distance of 50 ft, to the point of beginning.

Commencing at the Northwest corner of Northeast one-fourth of Section 6, Township 45 North, Range 3 East; thence South 66 degrees 12 minutes East 755.75 ft, to the point of beginning, thence North 48 degrees 35 minutes East 384.4 ft, thence North 87 degrees 43 minutes East 392.1 ft, thence South 58 degrees 58 minutes East 334.4 ft, thence South 53 degrees 14 minutes East 446.5 ft, thence South 14 degrees 10 minutes East 311.7 ft, thence South 14 degrees 11 minutes East 364.6 ft, thence South 39 degrees 32 minutes East 507.7 ft, thence South 72 degrees 37 minutes East 678.3 ft, thence South 8 degrees 43 minutes East 511.8 ft, thence South 49 degrees 34 minutes East 281.2 ft, thence South 73 degrees 49 minutes East 412.0 ft, thence North 15 degrees 57 minutes East 264.0 ft, thence South 67 degrees 35 minutes East 257.4 ft, thence South 7 degrees 42 minutes East 207.1 ft, thence South 41 degrees 46 minutes East 314.9 ft, thence South 45 degrees 25 minutes East 390.1 ft, thence South 52 degrees 42 minutes East 392.0 ft, thence South 35 degrees 33 minutes East 353.7 ft, thence South 27 degrees 06 minutes East 685.6 ft, thence South 1 degree 26 minutes West 587.0 ft, thence South 41 degrees 46 minutes

West 93.5 ft, thence South 43 degrees 50 minutes West 253.3 ft, thence South 71 degrees 2 minutes West 131.3 ft, thence South 51 degrees 19 minutes West 176.2 ft, thence South 72 degrees 08 minutes West 100.3 ft, thence South 51 degrees 25 minutes West 79.0 ft, thence South 8 degrees 8 minutes East 98.1 ft, thence South 57 degrees 58 minutes West 996.0 ft, thence South 53 degrees 02 minutes West 1,031.6 ft, thence North 16 degrees 45 minutes West 100.2 ft, thence North 44 degrees 37 minutes East 83.0 ft, thence North 65 degrees 52 minutes East 103.1 ft, thence North 38 degrees 09 minutes West 415.4 ft, thence North 20 degrees 52 minutes West 326.1 ft, thence North 39 degrees 22 minutes West 253.3 ft, thence North 50 degrees 37 minutes West 423.7 ft, thence North 57 degrees 57 minutes West 224.4 ft, thence North 7 degrees 10 minutes West 182.6 ft, thence North 34 degrees 09 minutes West 202.4 ft, thence North 60 degrees 23 minutes West 190.6 ft, thence North 39 degrees 59 minutes West 211.5 ft, thence North 42 degrees 33 minutes West 360.1 ft, thence North 31 degrees 08 minutes West 254.8 ft, thence North 12 degrees 55 minutes West 243.6 ft, thence North 35 degrees 57 minutes East 213.4 ft, thence North 27 degrees 00 minutes West 330.7 ft, thence North 26 degrees 24 minutes East 155.5 ft, thence North 7 degrees 05 minutes West 361.6 ft, thence South 88 degrees 49 minutes West 195.5 ft, thence North 11 degrees 03 minutes West 484.0 ft, thence North 22 degrees 45 minutes West 178.3 ft, thence North 29 degrees 18 minutes West 211.0 ft, thence North 50 degrees 42 minutes West 1,029.4 ft, thence North 29 degrees 29 minutes East 975.8 ft, thence North 23 degrees 33 minutes East 247.9 ft, to the point of beginning.

2. That it will maintain said fence along the line above described in good and serviceable condition for the term of the easement, or so long as the Grantor shall request but not to exceed the term of this easement.

3. That it will use due care in the maintenance and use of said outfall sewer, taking into consideration the nature of the discharge and waste running there through, and that it will comply with all rules and regulations of the Board of Health of the State of Missouri, or other governmental agencies, with reference to discharging the waste into the Missouri River.

4. That Grantor shall have the right to remove any timber that is growing or may grow upon said easement right-of-way and the free use of said strip of land in any way that shall not interfere or conflict with use and maintenance of said outfall sewer.

5. That it will, subject to the availability of funds, save and hold the Grantor harmless from any liability that the Grantor may, without fault or negligence of Grantor, incur on account of the Grantee's use of the rights granted hereunder; provided, however, that the Grantee shall not be liable for any claim settlement or judgment made or obtained against the Grantor unless the Grantee has been notified of such claim and has had the opportunity to defend such claim or agree to any settlement made by the Grantor.

6. That its maintenance of the fence herein provided shall give it no interest or right in any lands of the Grantors other than the 200 foot strip hereinabove specifically described.

7. That this easement is accepted subject to the terms and conditions set forth in the Quitclaim Deed made the thirtieth day of November, 1948, by and between the United States of America, acting by and through the Federal Farm Mortgage Corporation, and The Curators of the University of Missouri, recorded in Book 230, page 481, of the Deed Records of St. Charles County, Missouri.

IN WITNESS WHEREOF, the Grantor has caused this lease to be executed and its corporate seal hereto affixed the day and year first above written.

Approved: J. H. Longwell THE CURATORS OF THE UNIVERSITY OF MISSOURI
J. H. Longwell, Director
Agricultural Experimental
Station

ATTEST: Mary Robnett By: James A. Finch, Jr.
Mary Robnett, Secretary James A. Finch, Jr.
President



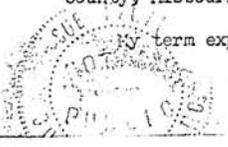
ACCEPTED FOR THE UNITED STATES ATOMIC
ENERGY COMMISSION

By: [Signature]

State of Missouri)
County of Boone) ss

On this 3rd day of August, 1956, before me
appeared James A. Finch, Jr., to me personally known, who, being by me
duly sworn, did say he is President of The Curators of the University of
Missouri, a public corporation of the State of Missouri, and that the
seal affixed to the foregoing instrument is the corporate seal of said
corporation and that said instrument was signed and sealed in behalf of
said corporation by authority of its Board of Curators, and said James
A. Finch, Jr. acknowledged said instrument to be the free act and deed
of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my
notarial seal at my office in Columbia, Missouri, Boone
County, Missouri, the day and year last above written.



My term expires: October 13, 1958

Sue Wagon
Notary Public within and for Boone
County, Missouri

STATE OF MISSOURI)
County of St. Charles,) ss.

I, the undersigned, Recorder of Deeds for said County and State do hereby certify that the foregoing and
annexed instrument of writing was filed for record in my office on the 20th day of August A. D.
1956 at 2:00 o'clock P M. and is truly recorded in Book 292 Page 597

Witness my hand and official seal on the day and year aforesaid.
Deputy [Signature] Recorder of Deeds



Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

April 7, 2003

Lori Huber, Parks Operations Officer
Missouri Department of Natural Resources
Division of State Parks
P.O. Box 176
Jefferson City, Missouri 65102

Dear Ms. Huber:

**REAL ESTATE LICENSE REORDOER-7-03-0116 (STATE STC0303), WELDON
SPRING SITE REMEDIAL ACTION PROJECT, MO**

Enclosed is a fully executed copy of the subject license designed to grant the Department of Energy (DOE) permission for continued use of groundwater wells within the Katy Trail State Park right-of-way limits.

May I also thank you, Lori, for your excellent coordination of our recent actions with your agency. We appreciate your willingness to work with DOE in a common sense approach to the various issues related to both our entities.

Sincerely,

A handwritten signature in cursive script that reads "Katy Kates".

Katy Kates
Realty Officer

Enclosure
As stated

Cc: ~~Pamela Thompson~~, DOE Site Manager at WSSRAP
Scott Anderson, MK Ferguson, Project Director at WSSRAP

DEPARTMENT OF ENERGY

LICENSE

PROJECT: WELDON SPRING SITE REMEDIAL ACTION PROJECT, MO
PURPOSE: GROUNDWATER WELLS, SAMPLING

THIS LICENSE, between the Missouri Department of Natural Resources, known as the "Grantor" and the U.S. Department of Energy, known as the "Grantee", is subject to the following terms and conditions.

1. Rights Granted - The Grantor grants to the Grantee, its agents, employees, or representatives permission to use the premises or facilities, together with ingress and egress, for the purpose of installing, operating, and/or maintaining groundwater monitoring well(s); performing well and water sampling; and performing miscellaneous sampling to determine the levels of contamination, if any, at the locations shown depicted on Exhibit "A" attached to this instrument.

2. Term/Termination Rights - This License is effective upon the date of execution by the Grantee of this instrument and shall continue in effect for a period of ten (10) years unless terminated by either of the parties on not less than thirty (30) days prior written notice given to the other; provided, however, that the Grantor may not terminate this License without the Grantee's approval, which approval shall not be unreasonably withheld. Grantee may terminate this License upon ninety (90) days written notice if right-of-way is required for railroad purposes pursuant to the National Trails System Act, Public Law 90-543 (16 U.S.C. § 1241, et seq.), as amended. No termination or expiration shall affect the rights and liabilities, if any, of the parties hereto then existing.

3. Authority to License - The Grantor represents to the extent of its interest in the property that it has full right, power, and authority to enter into this License and grant the rights set out in this License.

4. Grantor Responsibility - The Grantor's responsibility is set out within the terms and conditions of the rights granted under this License. The Grantor makes no representation as to the suitability or fitness of the premises for the intended purpose. The Grantor shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the use and occupation of the premises nor shall it be responsible for damages to the property or injuries to the persons of the Grantee arising from Grantee activities.

5. Grantee Responsibility - The Grantee, its agents, employees, or representatives will be responsible for property damage or injury to persons caused by the sole and direct negligence of their respective employees in performing on the Grantor's premises the activities and restoration which are the subject of this License. Grantee shall obtain all necessary permits, licenses, and approvals in connection with the activities to be conducted by the Grantee on the premises. During the performance of the activities specified in this License, the Grantee shall not unreasonably interfere with the use and enjoyment of the premises by the Grantor nor endanger or interfere with the safe operation of the Katy Trail. All work and restoration performed by Grantee under this License shall be at Grantee's sole expense.

6. Access - During the term of this License, the Grantee, its agents, employees, or representatives shall have the right of access to and egress from the premises as needed and shall have the right to bring necessary equipment upon the premises in connection with the performance of the Grantee's

REAL ESTATE LICENSE NO.
REORDOER-7-03-0116

activities as set out in Condition 1. Grantee shall take all reasonable measures to prevent unauthorized use of the Grantee's areas of access/exit from the premises. Trail users will be given the right-of-way and encourage to proceed without stopping within any Grantee current zone of activity on the Katy Trail State Park.

7. Installation, Maintenance, Closure of Groundwater Monitoring Wells – As deemed necessary in connection with the groundwater well sampling and analysis program of the Grantee, groundwater monitoring wells have been installed at the locations shown on Exhibit "A" attached to this License. If the Grantor deems it necessary to expand its facility or operation within the premises, the wells may be relocated at the expense of the Grantee. The exact siting of each relocated well shall be agreed on by the Grantor and Grantee following a walkover survey of the premises. The Grantee shall properly dispose of cuttings and development water from its well installation activities. Grantee will assure prompt removal of any equipment, tools and materials placed on the trail property by the Grantee in order that it does not unreasonably interfere with the public's use of the Katy Trail. The Grantee shall maintain the wells throughout the term of this License in a manner to ensure their continued usefulness for groundwater monitoring purposes. Following completion of the installation of any replacement wells as provided for within this License or upon closure of any well, the Grantee shall restore the premises in accordance with Condition No. 10. Upon termination of this License, the Grantee shall seal, close and abandon the wells in place following established industry standards and environmental regulations and guidance applicable at the time of closure.

8. Well Sampling – During the term of this License, the Grantee will from time to time bore, drive, sample and analyze surface water and water from any existing well (to include all existing groundwater wells) and from any relocated groundwater monitoring wells on the premises in order to determine the levels, if any, of contaminants and other constituents of interest to the Grantee. Grantee shall attempt to notify the Grantor of the times at which samples will be taken at least twenty-four (24) hours in advance, and afford the Grantor an opportunity to observe the sampling. Grantee shall properly dispose of purge water from its boring and sampling activities.

9. Title to Equipment, Fixtures - Title to all equipment, fixtures, appurtenances, and other improvements furnished and installed in connection with the Grantee's activities under this License shall remain with the Grantee.

10. Restoration - Upon termination of this License, the Grantee shall remove all its equipment, fixtures, appurtenances, and other improvements furnished and installed on the premises in connection with the Grantee's activities under this License. The Grantee shall restore the premises, when such restoration is required in connection with the Grantee's activities, to the extent reasonably practical, to the condition existing at the time of initiation of the Grantee's activities. The phrase "to the extent reasonably practical" is intended to indicate that should certain construction materials no longer be available, an equal or better product will be used in restoring the site. With the consent of the Grantor, the Grantee may abandon Grantee-owned equipment, fixtures, appurtenances, and other improvements in place in lieu of restoration when it is in the best interests of the Grantee.

11. Successors in Interest - This License and the parties' commitments within, shall be binding on both parties, their successors, and assigns.

12. Funding - Obligations of the Grantee under this License shall be subject to the availability of funds appropriated by the Congress which the Grantee may legally spend for such purposes and nothing in this License implies that Congress will appropriate funds to perform this License. In the event funding for a subsequent fiscal year shall not provide for the ongoing activities, Grantee shall restore the premises in accordance with Condition No. 10 of this License.

REAL ESTATE LICENSE NO.
REORDOER-7-03- 0116

13. Notices - All notices regarding the specific terms and conditions of this License, and within the restrictions of this License, shall be in writing and shall be deemed effectively given upon personal delivery, upon verified facsimile receipt, or upon mailing by registered or certified mail, postage prepaid, and addressed to the parties at the following respective addresses, or to such other persons or at such other addresses as may be designated in writing by either party to the other.

If to the Grantee:

Katy Kates, Realty Officer
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, Tennessee 37831

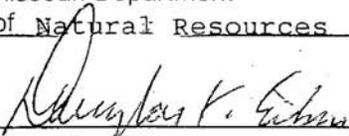
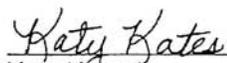
If to the Grantor:

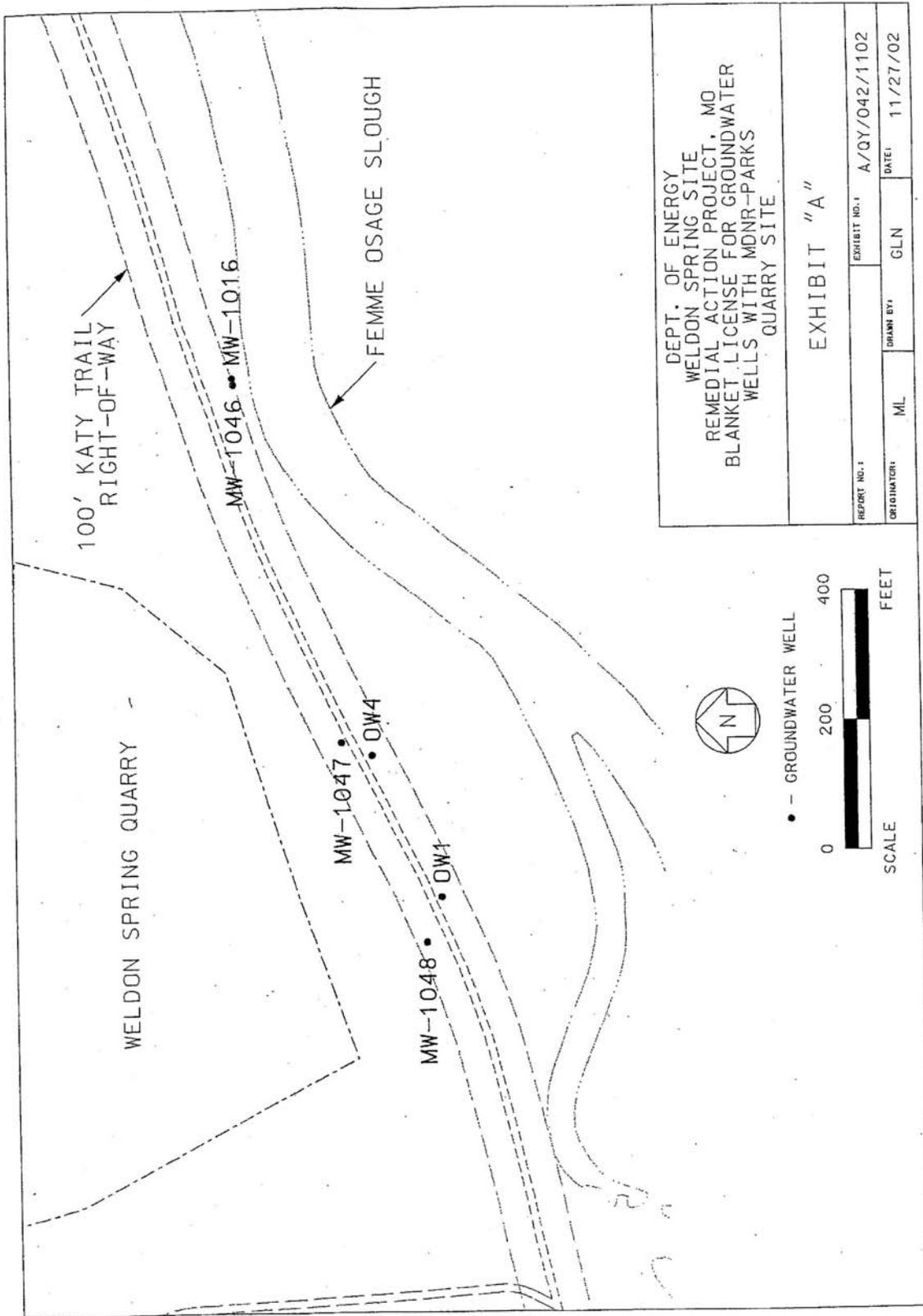
Missouri River District
Park Operations Officer
Department of Natural Resources
P.O. Box 166
Boonville, Missouri 65233

14. Entire Agreement - This License represents the entire understanding of the parties on this matter and no oral statements or collateral documents (except as noted within) may modify this License. This License does not create any rights, claims, or causes of action between the parties to this License in favor of any third parties or nonparties to this License.

15. Amendment - This License may not be amended or superseded except by an agreement in writing executed by the Grantor and Grantee's Realty Officer.

The above terms and conditions are acknowledged and agreed upon as indicated by the signatures affixed below:

GRANTOR: <u>Missouri Department of Natural Resources</u>	GRANTEE: <u>U.S. Department of Energy</u>
By: <u></u> Douglas K. Eiken	By: <u></u> Katy Kates
Title: <u>Director, Div. of State Parks</u>	Title: <u>Realty Officer</u>
Date: <u>3/25/03</u>	Date: <u>April 1, 2003</u>



End of current text



Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

November 1, 2002

Lori Huber, Parks Operations Officer
Missouri Dept. of Natural Resources
Division of State Parks
P.O. Box 176
Jefferson City, Missouri 65102

Dear Ms. Huber:

LICENSE REORDOER-7-03-0101 (STC OO1PX), WELDON SPRING SITE REMEDIAL ACTION PROJECT, MO

Enclosed for your records is the fully executed copy of the subject license designed to grant the Department of Energy (DOE) continuing rights for the 8-inch underground water effluent pipeline which crosses beneath the Katy Trail.

Please feel free to contact me at 865-576-0977 for any questions you may have.

Sincerely,

A handwritten signature in cursive script that reads "Katy Kates".

Katy Kates
Realty Officer

Enclosure
As stated

cc: Pamela Thompson, DOE WSSRAP Site Manager
Scott Anderson, MK Ferguson Project Director

DEPARTMENT OF ENERGY *STC 001 Px*

LICENSE

PROJECT: WELDON SPRING SITE REMEDIAL ACTION PROJECT, MO
PURPOSE: EFFLUENT WATER PIPELINE CROSSING

THIS LICENSE, between Missouri Department of Natural Resources, known as the "Grantor" and the U.S. Department of Energy, known as the "Grantee", is subject to the following terms and conditions.

1. Rights Granted - The Grantor grants to the Grantee, its agents, employees, or representatives permission to use the premises or facilities, together with ingress and egress, for the purpose of continuing operation, maintenance and repair of an underground eight-inch (8") polyethylene pipeline for effluent water flow under Grantor's linear state park identified as the Katy Trail State Park at the location shown depicted on Exhibit "A" attached to this instrument and more specifically identified in whole or in part as Parcel No.(s) N/A filed in Deed/Plat Book N/A, Page N/A in the records of St. Charles County, Missouri. For purposes of further identification, the Katy Trail is comprised of the 100-foot width interest held by the Grantor; the portion of the Katy Trail affected by this License is identified by the Grantor as follows:

Being situated within Section 8, Township 45 North, Range 3 East of the Fifth Principal Meridian in St. Charles County, Missouri with the centerline of said pipeline crossing being situated at chaining station 2883+46 near milepost 55.

2. Term/Termination Rights - This License is effective upon the date of execution by the Grantee of this instrument and shall continue in effect for a period of ten (10) years unless terminated by either of the parties on not less than thirty (30) days prior written notice given to the other; provided, however, that the Grantor may not terminate this License without the Grantee's approval, which approval shall not be unreasonably withheld. Grantor may terminate this License upon ninety (90) days written notice if right-of-way is required for railroad purposes pursuant to the National Trails System Act, Public Law 90-543 (16 U.S.C. § 1241, et seq.), as amended. No termination or expiration shall affect the rights and liabilities, if any, of the parties hereto then existing.

3. Consideration - Upon execution of this License by the Grantee, the Grantee shall initiate action to pay to the Grantor the sum of \$ One Thousand Six Hundred and Forty Dollars (\$1,640.00) as full and complete payment for the rights granted within this License.

4. Authority to License - The Grantor represents to the extent of its interest in the property that it has full right, power, and authority to enter into this License and grant the rights set out in this License. Grantee waives the right to challenge the validity of the License issued by the Grantor or the power of the Grantor to execute and enforce the same.

5. Grantor Responsibility - The Grantor's responsibility is set out within the terms and conditions of the rights granted under this License. The Grantor makes no representation as to the suitability or fitness of the premises for the intended purpose. The Grantor shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the use and occupation of the premises nor shall it be responsible for damages to the

property or injuries to the persons of the Grantee arising from Grantee activities.

6. Grantee Responsibility - The Grantee, its agents, employees, or representatives will be responsible for property damage or injury to persons caused by the direct negligence of their respective employees in performing on the Grantor's premises the activities which are the subject of this License. Grantee shall obtain all necessary permits, licenses, and approvals in connection with the activities to be conducted by the Grantee on the premises. During the performance of the activities specified in this License, the Grantee shall not unreasonably interfere with the use and enjoyment of the premises by the Grantor nor endanger or interfere with the safe operation of the Katy Trail. All work and restoration performed by Grantee under this License shall be at Grantee's sole expense. Grantee shall submit final plans and specifications of proposed work and materials to Grantor five (5) days in advance and obtain his/her written approval prior to initiation of activities. Said work shall be performed by or on behalf of Grantee in such a manner and at such times as shall not endanger or interfere with the safe operation of the Trail established along the railroad right-of-way with Grantor's permission, or any railroad operation which may be required pursuant to the National Trails System Act, 16 U.S.C. § 1241, et seq., as amended, at said location.

7. Access - During the term of this License, the Grantee, its agents, employees, or representatives shall have the right of access to and egress from the premises as needed and shall have the right to bring necessary equipment upon the premises in connection with the performance of the Grantee's activities as set out in Condition 1. Grantee shall take all reasonable measures to prevent unauthorized use of the Grantee's areas of access/exit from the premises.

8. Title to Equipment, Fixtures - Title to all equipment, fixtures, appurtenances, and other improvements furnished and installed in connection with the Grantee's activities under this License shall remain with the Grantee.

9. Grantee's Activities on Katy Trail - In the active performance of its permitted activities, any construction vehicles used during the operation, maintenance and repair of the pipeline, will have lights on at all times while in operation, will be equipped with backup (reverse gear) alarms, and will be restricted to 15 mph on the Katy Trail. Dust from any Grantee's activities will be controlled by potable water spray. Trail users will be given the right-of-way and encouraged to proceed without stopping within any Grantee current zone of activity on the Katy Trail State Park. Grantee will assure prompt removal of any equipment, tools and materials placed on the trail property by the Grantee in order that it does not unreasonably interfere with the public's use of the Katy Trail.

10. Restoration - Within twenty-one (21) days of termination of this License, the Grantee shall remove all its equipment, fixtures, appurtenances, and other improvements furnished and installed on the premises in connection with the Grantee's activities under this License. The Grantee shall restore the premises, when such restoration is required in connection with the Grantee's activities, to the extent reasonably practical, to the condition existing at the time of initiation of the Grantee's activities. The phrase "to the extent reasonably practical" is intended to indicate that should certain construction materials no longer be available, an equal or better product will be used in restoring the site. With the consent of the Grantor, the Grantee may abandon Grantee-owned equipment, fixtures, appurtenances, and other improvements in place in lieu of restoration when it is in the best interests of the Grantee.

11. Successors in Interest - This License and the parties' commitments within, shall be binding on both parties, their successors, and assigns.

12. Funding - Obligations of the Grantee under this License shall be subject to the availability of funds appropriated by the Congress which the Grantee may legally spend for such purposes and nothing in this License implies that Congress will appropriate funds to perform this License. In the event funding for a subsequent fiscal year shall not provide for the ongoing activities, Grantee shall restore the premises in accordance with Condition No. 9 of this License.

13. Notices - All notices regarding the specific terms and conditions of this License, and within the restrictions of this License, shall be in writing and shall be deemed effectively given upon personal delivery, upon verified facsimile receipt, or upon mailing by registered or certified mail, postage prepaid, and addressed to the parties at the following respective addresses, or to such other persons or at such other addresses as may be designated in writing by either party to the other.

If to the Grantee:

Katy Kates, Realty Officer
AD-421 (865-576-0977)
Department of Energy
P.O. Box 2001
Oak Ridge, Tennessee 37831

If to the Grantor:

Missouri River District
Park Operations Officer
Department of Natural Resources
P. O. Box 166
Boonville, Missouri 65233

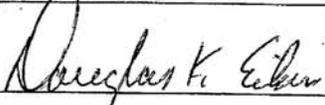
14. Entire Agreement - This License represents the entire understanding of the parties on this matter and no oral statements or collateral documents (except as noted within) may modify this License. This License does not create any rights, claims, or causes of action between the parties to this License in favor of any third parties or nonparties to this License.

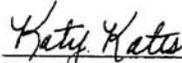
15. Amendment - This License may not be amended or superseded except by an agreement in writing executed by the Grantor and Grantee.

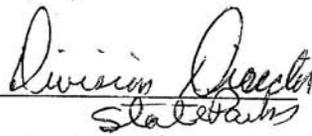
The above terms and conditions are acknowledged and agreed upon as indicated by the signatures affixed below:

GRANTOR: Missouri Department of
Natural Resources

GRANTEE: U.S. Department of Energy

By: 

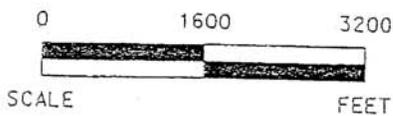
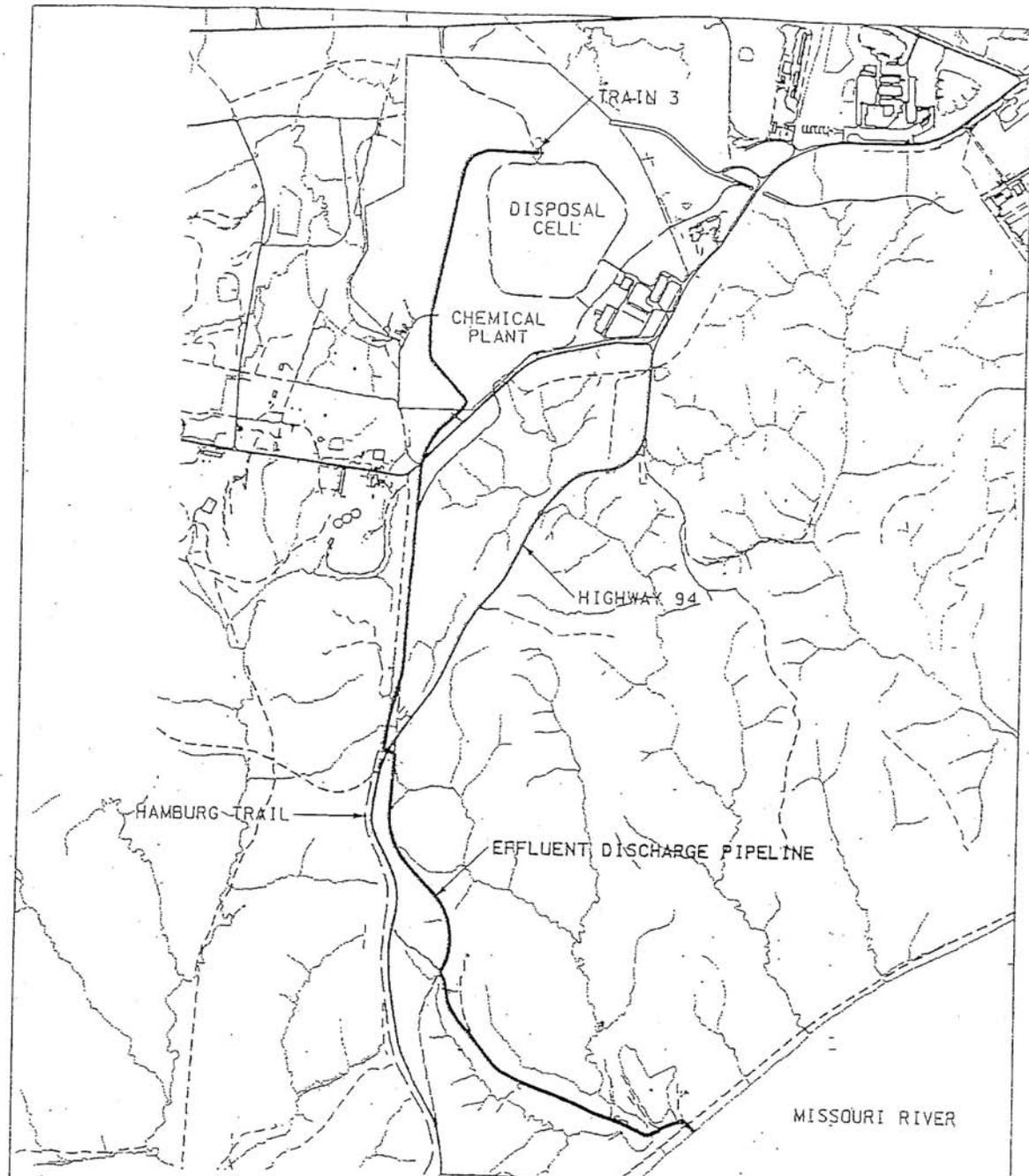
By: 

Title: 
State Parks

Title: Realty Officer

Date: 10/23/02

Date: November 1, 2002



EFFLUENT DISCHARGE LINE TO
 THE MISSOURI RIVER

REPORT NO. 1	EXHIBIT NO. 1	A/DC/020/0702	
ORIGINATOR: KK	DRAWN BY: GLN	DATE: 7/9/02	

End of current text

Memorandum of Understanding
Between the
U.S. Department of Energy
and the
U.S. Department of Army
Concerning Transfer of Custody and Accountability for,
and Funding of Remedial Actions at, the Weldon Spring Chemical Plant

1. Objective and Purpose

The Department of Army (DA) and Department of Energy (DOE) are entering into this Agreement to set forth the understandings and commitments of the parties with respect to transfer of custody and accountability for the Weldon Spring Chemical Plant (WSCP) from the DA to the DOE, and funding arrangements and responsibilities for remedial actions and further disposition regarding the WSCP (see attachment 1, OMB Letters to DA and DOE). DOE will integrate the remedial action at the WSCP with DOE remedial actions to be conducted at the Weldon Spring Raffinate Pits and Weldon Spring Quarry sites in future years.

2. Definitions

WSCP - defined as the land and easements outlined in red and shown in purple and blue on the attached map (Attachment 2) together with all buildings, equipment, materials, improvements, and appurtenances, including radioactive and chemical wastes thereon and interest to the easement to St. Charles County with equipment and facilities shown in green on the map.

Remedial Action - the actions taken to plan and bring the WSCP in conformance with applicable standards and guidelines for managing radioactive and other wastes on the WSCP, the surveillance, maintenance, and further actions needed to assure continued conformance with these standards and guidelines, actions for long-term management and disposal of these wastes in conformance with applicable laws, rules and regulations and the activities required to close out and document final completion of these actions, and any other action necessary to address contamination from WSCP.

3. Transfer of Custody and Accountability

DA will take all necessary action to report WSCP to General Services Administration (GSA) and will request that GSA transfer WSCP to DOE without reimbursement effective 1 October 1985. DOE agrees to accept transfer of the WSCP and easements from GSA and to take such actions as may be required on its part to perfect the transfer. DA will request the Nuclear Regulatory Commission (NRC) to terminate the DA license with the NRC for WSCP effective at the date of turnover. DA agrees to terminate all outgrants on WSCP. DOE will assume radiological custody and accountability for the site for disposition in accordance with its orders, requirements, standards and guidelines, and all other applicable laws.

DA will provide DOE assistance in preparing for the turnover. DA will provide assistance, both prior to and for a short period after the transfer, in the training of DOE and contractor personnel in maintenance and surveillance of the site and in the preparation of relevant procedures for these activities.

4. Access to the WSCP, DA Monitoring Data, and WSCP Records Prior to Transfer

Prior to transfer of custody and accountability to the DOE, DA will allow DOE and its contractors access to the WSCP site to conduct characterization (radiological, chemical and geologic) studies and to obtain other information as may be necessary for preliminary engineering studies. Permits for such work, if required, will be in DOE's name with DA cooperating in such instances as may be required. These studies will include measuring and sampling surface and subsurface soils and stored materials, drilling of wells for geologic and water sampling purposes, air monitoring, civil and radiological surveys, and other sampling and tests within buildings and surrounding areas as may be necessary to plan the remedial action. The DA will make available its data from environmental monitoring at and near the WSCP. DA will provide DOE access to all records relating to the WSCP as soon as possible or by February 28, 1985. All records will be turned over to DOE at the time of transfer.

5. Remedial Action Responsibility

The DOE is responsible for designing, managing and implementing remedial actions at WSCP. Upon completion, DOE is responsible for further disposition of WSCP. The Army will be given 45 days to review and comment on plans for each phase of work. Extension of this time will be upon mutual agreement.

6. Funding Arrangement for Remedial Actions at WSCP

The DA and DOE will each pay 50 percent of the remedial action costs as set forth below and subject to the availability of appropriated funds. Adjustments will be made as appropriate during conduct of the WSCP remedial actions to maintain a 50 percent sharing. Beginning with the FY 1987 budget, each agency will request its prorated share of the WSCP costs each subsequent fiscal year from the Office of Management and Budget and Congress.

DA funding responsibility is limited to 50 percent of the cost incurred to address contamination at WSCP. This includes interim control actions, remedial action planning and engineering, site characterization, NEPA documentation, plant demolition, site cleanup, and waste disposal. DOE is responsible for 100% of the costs of guards, groundskeeping, long-term management (including monitoring), other actions at WSCP unrelated to decontaminating WSCP, and for all funding of other sites including the raffinate pit and quarry areas. Where indirect and general purpose expenses (See Attachment 3) are incurred to decontaminate the Weldon Spring Quarry, Weldon Spring raffinate pits, and/or WSCP, the share attributable to WSCP will be fairly apportioned, i.e., by WSCP's share of direct cost as compared to total project direct cost.

DOE will advise DA of funds to be requested by DA by January 1, each year for the budget to be submitted to Congress in the following January. DOE will revise this estimate later as needed. The estimate will describe the work to be accomplished, an itemization of expenses, and the apportioning of expenses to the Army's share. By January 1 of each year, DOE will provide to DA an annual WSCP report which includes accounting of costs for the preceding fiscal year. }

7. Liabilities

Except as expressly provided herein, this Agreement does not affect federal contractual and other rights against third parties, and allocation of responsibility among DOE, DA, or other federal entities for contractual and other liabilities to third parties (including federal entities). All actions undertaken by the parties pursuant to this Agreement shall be subject to applicable laws.

8. Resolution of Interagency Conflicts

Any conflict arising under this Agreement will be resolved at successive levels of Agency decisionmaking until agreement is reached. If no agreement can be reached, the conflict shall be referred to OMB for resolution in accordance with applicable law.

9. Amendments

This agreement may be amended at any time by mutual agreement of DA and DOE. Amendments will be in writing and will be signed by appropriate DA and DOE officials.

10. Period of Agreement

This Agreement will continue in effect until terminated by agreement of both parties.

11. Points of Contact

The points of contact for the parties are:

DOE: John E. Baublitz, Director or successor
Division of Remedial Action Projects
Telephone: 233-5272 (FTS)
301-353-5272 (Commercial)

DA: Lewis D. Walker, Deputy for Environment, or successor
Safety & Occupational Health, OASA(I&L)
Telephone: (202) 695-7824

Appendix F
Official Contact List

Long-Term Stewardship Emergency Contact List

Environmental Protection Agency

Mr. Dan Wall
Remedial Project Manager
Superfund Division
U.S. EPA Region 7
901 North 5th Street
Kansas City, Kansas 66101
(913) 551-7710

Missouri Department of Natural Resources

Mr. Robert Geller
Chief, Federal Facilities Section
Missouri Department of Natural Resources
1738 East Elm
Jefferson City, MO 65102
(573) 751-3907

St. Charles County

Mr. Mike Duvall
Director, Division of Environmental Services
St. Charles County Government
201 North Second Street, Suite 537
St. Charles, MO 63301
(636) 949-7583

Missouri Department of Health and Senior Services

Mr. Gale Carlson
Assessment Unit Chief
Missouri Department of Health and Senior Services
210 El Mercado
Jefferson City, MO 65102
(573) 751-6160

Long-Term Stewardship Emergency Notification List

Weldon Spring Citizens Commission

Helene Diller
Administrative Assistant
Weldon Spring Citizens Commission
7295 Highway 94 South
St. Charles, MO 63304
636-300-0037

Francis Howell School District

Mr. Daniel O'Donnell
Superintendent
Francis Howell School District
4545 Central School Road
St. Charles, MO 63304
636-851-4026

Francis Howell High School

Ms. Pam Sloan
Principal
Francis Howell High School
7001 Highway 94 South
St. Charles, MO 63304
636-851-4700

Missouri Department of Conservation

Mr. John Vogel
August A. Busch Memorial Conservation Area
2360 Highway D
St. Charles, MO 63304
636-300-1953 ext, 318

U.S. Department of Army

Mr. Roy Stevenson, Facility Manager
Weldon Spring Training Area
7301 Highway 94 South
St. Charles, Missouri 63304
636-329-1200 x231

Missouri Department of Transportation

Mr. Kevin Wideman, Environmental Compliance Coordinator
Missouri Department of Transportation
P.O. Box 270
Jefferson City, Missouri 65102
573-526-4171

Annual Inspection Contact List

Detailed Contact Information is included in Appendix H.

Regulatory Agencies (Notify 30 days in advance)

Environmental Protection Agency
Missouri Department of Natural Resources

Stakeholders

Weldon Spring Citizens Commission
Francis Howell High School
St. Charles County

Responding Agencies

St. Charles County Sheriff Office
Cottleville Fire Department
Simplex Grinnell (Alarm Company)

Institutional Control Contacts

Missouri Department of Conservation
Missouri Department of Natural Resources – Parks
Missouri Department of Transportation
U.S. Department of Army
St. Charles County Planning and Zoning
St. Charles County Recorder of Deeds – Check Institutional Control Instruments

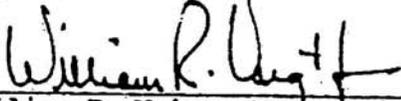
End of current text

12. Public Information

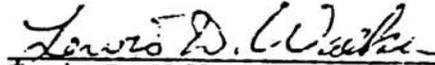
DOE will provide information to the local citizens and public officials relative to activities at the WSCP, including records on the period when DA controlled the site, consistent with applicable laws.

13. Effective Date

This Agreement will become effective upon signature of both parties.



William R. Voigt, Jr., Acting
Director, Office of Terminal Waste
Disposal and Remedial Action



Lewis D. Walker, Deputy for
Environment, Safety and
Occupational Health, OASA(I&L)

Date

2/11/85

Date

2/4/85

- Attachment 1 - Nov 27, 1984 ltrs fm Stockman to Hodel and Stockman to Marsh
- Attachment 2 - Figure 1 - Property Diagram
- Attachment 3 - Examples of Indirect & General Purpose Expenses



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

NOV 27 1984

Honorable Donald Paul Hodel
Secretary of Energy
Washington, D.C. 20585

Dear Don:

Enclosed for your information and review is a copy of my response to Army Secretary Marsh's request earlier this year for assistance in resolving the dispute between the Departments of Energy and Army over which agency should assume responsibility for decontaminating the former Weldon Spring Chemical Plant complex located outside St. Louis, Missouri.

The implementing details of this agreement will be contained in a Memorandum of Understanding (MOU), being prepared by your agency, in cooperation with the Department of the Army. It is requested that a copy of this MOU be provided to the Office of Management and Budget following its approval by both agencies, but in no case, later than January 30, 1985.

I would like to express my personal appreciation to all Department of Energy officials, but particularly the Office of Nuclear Energy, whose fine work, cooperation and valued assistance were so instrumental in achieving a solution to this dispute.

Sincerely,

David A. Stockman
Director

Enclosure

cc:
Mr. Earl Jones, GSA
Mr. Richard E. Cunningham, NRC

Attachment 1

91 S HY S-333 1861

RECEIVED
NOV 27 1984



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

NOV 27 1984

Honorable John D. Marsh, Jr.
Secretary of the Army
Washington, D.C. 20310

Dear Secretary Marsh:

Earlier this year you wrote me asking OMB's assistance in resolving a long-standing dispute between the Departments of the Army and Energy over which agency should assume responsibility for decontaminating the former Weldon Spring Chemical Plant (WSCP) complex located outside St. Louis, Missouri. This letter is in response to that request.

To gain a full understanding of this issue and of the respective positions of each agency, discussions were held between OMB officials and representatives of the Environmental Protection Agency, the Nuclear Regulatory Commission, General Services Administration, and the Department of Justice. These meetings were held concurrent with ongoing deliberations between OMB and the Departments of the Army and Energy. The results of these discussions--and a tentative recommendation for a solution to the problem--were then reviewed and approved by the OMB General Counsel's office.

As a result of this process, the following Terms of Agreement are presented in settlement of this dispute:

a. Duties and Responsibilities of the Department of Energy

- DOE shall assume responsibility for cleanup of the main plant site and facilities. Ongoing DOE decontamination activities at Weldon Spring will now be integrated with this effort. Responsibility for decontamination at Weldon Spring will now be consolidated under one Federal agency, the Department of Energy.

- DOE shall assume custody and possession for all radioactive materials located on the plant site.

- DOE shall assume funding responsibility for one-half (50%) the costs incurred in decontaminating the main plant complex.

- DOE shall accept transfer from Department of the Army of the property comprising the main plant complex to include custodial and guard responsibilities thereof.

b. Duties and Responsibilities of the Department of the Army

- Army shall be responsible for one-half (50%) the costs incurred in decontaminating the main plant complex.

- Army shall transfer all licensed materials to DOE and subsequently request that its license with the U.S. Nuclear Regulatory Commission (NRC) be terminated.

- Army shall transfer to Department of Energy all property, records and data pertinent to the main plant complex and custodial guard responsibilities. Because the property has no value in its current condition, the transfer will be accomplished at no cost and through the General Services Administration (GSA).

Both the Departments of Army and Energy should identify resources in their respective budget requests to Congress sufficient to initiate this decontamination program. Out-year funding for this program will be included as an integral part of each agency's normal budget process. Currently appropriated funds should be utilized for Weldon Spring activities, as planned.

The implementing details of this agreement will be contained in a Memorandum of Understanding (MOU) between the Departments of Army and Energy. It is requested that a copy of this MOU be provided to the Office of Management and Budget following its approval by both agencies, but in no case, later than January 30, 1985.

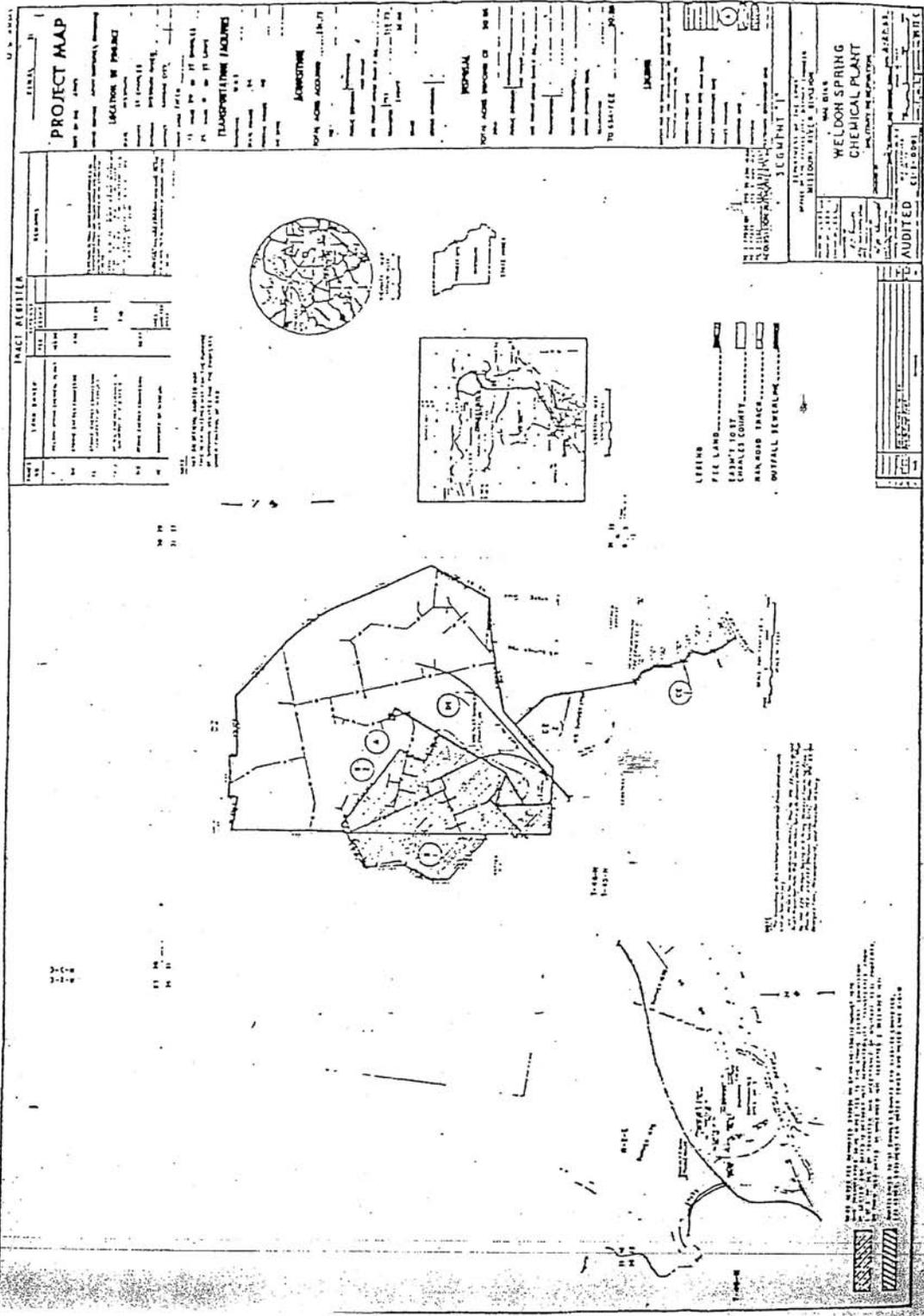
I would like to express my appreciation to all Department of the Army officials, but particularly Assistant Secretary Hillier, his Deputies, Messrs. Lewis D. Walker and Paul W. Johnson, and Captain Barry Breen of the General Counsel's office, whose cooperation and valued assistance were so instrumental in achieving a solution to this dispute.

Sincerely,

David A. Stockman

David A. Stockman
Director

cc:
Mr. Earl Jones, GSA
Mr. Richard E. Cunningham, NRC



EXAMPLES OF INDIRECT AND GENERAL PURPOSE EXPENSES

Listed below are examples of indirect and general purpose expenses that are necessary for the performance of remedial actions at WSCP and should be shared on a fairly apportioned basis:

*Costs associated with obtaining office space, change rooms, lunch room, first aid station, etc., either via repair or modification of WSCP building, temporary trailers or prefab buildings. Where it is cost effective to utilize an existing WSCP building(s) for this service, the necessary costs to modify and maintain such space in a habitable condition.

*Costs to hook-up to water, installation of temporary sanitary sewer lines, development of a sewage drain field, and similar efforts.

*Costs to hook-up to electrical services, either via modification or repair of existing installed lines or via installation of new auxiliary substation and auxiliary power lines, and similar effort.

*Costs to develop access roads and parking areas.

*Costs associated with environmental surveillance, effluent and occupational monitoring, offsite shipments of samples, etc., during the remedial action phase of the effort.

Attachment 3

Appendix G
Distribution List

Except for individual stakeholders, this distribution list is composed of people representing organizations, which have expressed interest in site activities. When individual turnover occurs in these positions, DOE will revise the list to reflect the current holder of these positions. This type of revision is considered minor and not subject to review. All individuals on this list will receive notices of upcoming meetings or the availability of certain documents such as the annual site inspection report, the 5-Year Review and proposed revisions of this Long-Term Surveillance and Maintenance Plan. If a document is the subject of the notice, then those individuals without an asterisk will also receive the document with the notice.

DISTRIBUTION LIST

Stakeholders

Ms. Linda Covilli
202 North Benton Avenue
St. Charles, MO 63301

Mr. Karl Daubel
15022 Willow Lake Court
Chesterfield, MO 63017

Ms. Kay Drey
515 West Point Avenue
University City, MO 63130

Ms. Shannon Dougherty
1 Strawgrass Court
St. Charles, MO 63304

Ms. Clarissa Eaton
3419 Kathleen Drive
Festus, MO 63028

Dr. Michael Garvey
208 Pitman Hill Road
St. Charles, MO 63304

Dr. Dawn Garzon
2748 Royal Valley Way
O'Fallon, MO 63366

Ms. Mary Halliday
3675 Highway D
Defiance, MO 63341

Stakeholders (continued)

Mr. John Hammerschmidt
Church of the Immaculate Heart of Mary
26 West Highway D
P.O. Box 100
New Melle, MO 63365-0100

Mr. Brian Harcek
120 Keystone Crossing
O'Fallon, MO 63366

Ms. Cindy Hebenstreit
535 N. New Ballas Road
St. Louis, MO 63141

Mr. David Hosking*
4 Monet Court
O'Fallon, MO 63366

Immaculate Conception Church of Dardenne
2083 Hanley Road
O'Fallon, MO 63366

Ms. Karen Johnson
220 Maryland Drive
O'Fallon, MO 63366

Dr. Daniel W. McKeel, Jr.
5587-C Waterman Blvd.
St. Louis, MO 63112

Stakeholders (continued)

Mrs. Louise McKeel
5587-C Waterman Blvd.
St. Louis, MO 63112

Mr. Gene Pfautsch
9 Kemper
Lake St. Louis, MO 63367

John & Sharon Prokovich
1026 Meadow Lane
St. Charles, MO 63303

Ms. Elsa Steward
Great Rivers Environmental Law Center
705 Olive St., Suite 614
St. Louis, MO 63103

Mr. Jack Strick
1343 Pine Bluff Drive
St. Charles, MO 63304

Ms. Rebecca Wright
2011 Rutger Street
St. Louis, MO 63104

Schools/Universities

Mr. Pat Houlahan,
Exec. Dir. of Admin. Services
Francis Howell School District
4545 Central School Road
St. Charles, MO 63304

Dr. Daniel O'Donnell, Superintendent *
Francis Howell School District
4545 Central School Road
St. Charles, MO 63304

Ms. Pam Sloan, Principal
Francis Howell High School
7001 Highway 94 South
St. Charles, MO 63304

Julie Mueller, Chief Operations Officer
Lindenwood University
209 S. Kingshighway
St. Charles, MO 63301

Media Contact List

Mr. Shane Anthony
St. Louis Post Dispatch
190 Spring Drive
St. Charles, MO 63303-3255

Mr. Raymond Castile
St. Charles Journal
1529 Old Highway 94 South
Suite 108
St. Charles, MO 63303

Mr. Kevin Lavery
KWMU
8001 Natural Bridge Road
St. Louis, MO 63121

Ms. Sara Shipley, Environmental Reporter
St. Louis Post-Dispatch
900 North Tucker Boulevard
St. Louis, MO 63101

Municipalities

The Honorable Paul Lambi, Mayor*
City of Wentzville
310 W. Pearce Blvd.
Wentzville, MO 63385

The Honorable Shawn Brown, Mayor*
City of St. Peters
One St. Peters Centre Blvd.
St. Peters, MO 63376

The Honorable Donald D. Lickliger,
Mayor*
City of Weldon Spring
711 Nancy Lane
Weldon Spring, MO 63304

The Honorable Michael Potter, Mayor*
City of Lake St. Louis
1000 Lake St. Louis Boulevard, Suite 16
Lake St. Louis, MO 63367

Municipalities (continued)

The Honorable Robert Powers, Mayor*
City of Cottleville
1280 Motherhead Road
Cottleville, MO 63304

The Honorable Paul F. Renaud, Mayor*
City of O'Fallon
100 North Main Street
O'Fallon, MO 63366

The Honorable Francis G. Slay, Mayor*
City of St. Louis
City Hall, Room 200
1200 Market Street
St. Louis, MO 63103

The Honorable Patricia York, Mayor*
City of St. Charles
St. Charles City Hall
200 North Second Street
St. Charles, MO 63301

The Honorable Joe Nolkemper, Mayor*
City of New Melle
P.O. Box 114
New Melle, MO 63365

Ms. Catherine Davis, Chairperson
Weldon Spring Heights
16 Weldon Spring Heights
St. Charles, MO 63304

The Honorable Tom Diehl, Mayor*
City of Augusta
P.O. Box 42
Augusta, MO 63332

Ms. Virginia Dowden
League of Chambers
10 Hobie Cat Drive
Defiance, MO 63341

St. Charles County Agencies/ Companies/Organizations

The Honorable Joe Ortwerth, County
Executive*
St. Charles County Courthouse
100 North Third Street
St. Charles, MO 63301

The Honorable Jeff Morrison, Councilman*
District #1, County Council
St. Charles County Courthouse
100 North Third Street
St. Charles, MO 63301

The Honorable Joseph Brazil, Councilman*
District #2, County Council
St. Charles County Courthouse
100 North Third Street
St. Charles, MO 63301

The Honorable Robert Schnur, Councilman*
District #3, County Council
St. Charles County Courthouse
100 North Third Street
St. Charles, MO 63301

The Honorable Doug Funderburk,
Councilman*
District #4, County Council
St. Charles County Courthouse
100 North Third Street
St. Charles, MO 63301

The Honorable Sally A. Faith,
Councilwoman *
District #5, County Council
St. Charles County Courthouse
100 North Third Street
St. Charles, MO 63301

The Honorable Dan Foust, Councilman*
District #6, County Council
St. Charles County Courthouse
100 North Third Street
St. Charles, MO 63301

**St. Charles County Agencies/
Companies/Organizations** (continued)

The Honorable John White, Councilman*
District #7, County Council
St. Charles County Courthouse
100 North Third Street
St. Charles, MO 63301

Mr. Mike Duvall
Director – Division of Environmental
Services
St. Charles County
201 North Second Street, Suite 537
St. Charles, MO 63301

Mr. Gil Copley
St. Charles County Department of Health
1650 Booneslick
St. Charles, MO 63301

Mr. Barry Drucker, Environmental
Sanitarian*
St. Charles County Health Department
1650 Booneslick
St. Charles, MO 63301

Ms. Bettie Yahn-Kramer, CPRP Director
St. Charles County Parks and Recreation
Department
201 North Second Street, Suite 510
St. Charles, MO 63301

Middendorf-Kredell Library
Ms. Anna Sylvan, Documents Manager
2750 Highway K
O'Fallon, MO 63366

Mr. Steve Wilkins, Water Superintendent
St. Charles County Water Department
1635 Highway 94 South
Defiance, MO 63341

Lieutenant Jim Hudson
St. Charles County Sheriff Office
301 North Second Street
St. Charles, MO 63301

**St. Charles County Agencies/
Companies/Organizations** (continued)

Weldon Spring Citizens Commission
(8 copies)
c/o Helene Diller
7295 Highway 94 South
St. Charles, MO 63304

Ms. Nancy Dickens
Technical Consultant to Weldon Spring
Citizens Commission
150 E. Dunn
Edwardsville, IL 62025

Mr. Richard Hoormann, County Program
Director*
University of Missouri-Cooperative
Extension Service
260 Brown Road
St. Peters, MO 63376

Mr. Ron Molly, Manager*
Missouri American Water Company
P.O. Box 355
Cottleville, MO 63338-0355

Mr. Mike Dougherty*
Division Manager
Alliance Water Resources
410 East Elm St.
O'Fallon, MO 63366

Tim Geraghty, P.E.
Manager of Engineering and Operations
Public Water Supply District #2
P.O. Box 370
O'Fallon, MO 63366

Fire Chief
Cottleville Fire Department
P.O. Box 385
Cottleville, MO 63338

**St. Louis County Agencies/
Companies/Organizations**

The Honorable Charlie A. Dooley*
County Executive
St. Louis County
Administration Building, 9th floor
41 South Central Avenue
Clayton, MO 63105

Ms. Jacquelynn A. Meeks, Director*
Environmental Administration
County Health Department
111 South Meramec, 2nd Floor
Clayton, MO 63105

Mr. Roland A. Biehl
Environmental Associate Engineer
Metropolitan St. Louis Sewer District
10 East Grand Avenue
St. Louis, MO 63147-2913

Director*
Environmental Engineering &
Site Services Department
Anheuser Busch
One Busch Place
St. Louis, MO 63118

Dr. Robert Nicolotti*
St. Louis County Health Department
111 South Meremac
Fifth Floor
St. Louis, MO 63105

Mr. Frank Hartman*
Vice President for Production
Missouri American Water Company
535 North New Ballas Road
St. Louis, MO 63141

Mr. Don Rea*
City of St. Louis Water Division
Chain of Rocks Plant
10450 Riverview Drive
St. Louis, MO 63137

**St. Louis County Agencies/
Companies/Organizations (continued)**

Mr. Gary Schmidt*
Hanson Professional Services
4227 Earth City Expressway, Suite 130
St. Louis, MO 63045

Mr. Curtis Skouby*
City of St. Louis Water Division
Howard Bend Plant
14769 Olive St.
Chesterfield, MO 63017

Mr. Mike Zlatic*
St. Louis County Department of Health
111 S. Meramec
Clayton, MO 63105

Mr. Jack Frauenhoffer*
Director, Site Development & Community
Relations
Mallinckrodt Inc.
P.O. Box 5840
St. Louis, MO 63134

Dan Hoffman
Pangea Group
743 Spirit 40 Park Drive, Ste. 232
Chesterfield, MO 63005

State - Elected Officials

The Honorable Matt Blunt, Governor*
State of Missouri
Missouri Capitol Building
Room 216
P.O. Box 720
Jefferson City, MO 65102

State - Elected Officials (continued)

The Honorable Jon Dolan
D-2nd District
Missouri State Senator
State Capitol, Room 428
201 West Capitol Avenue
Jefferson City, MO 65101

The Honorable Charles Gross*
R-23rd District
Missouri State Senator
State Capitol, Room 227
201 West Capitol Avenue
Jefferson City, MO 65101

Ms. Vicky Huesemann*
Office of Senator Charles Gross
415 N. 2nd Street
St. Charles, MO 63301

The Honorable Sherman Parker*
R-12th District
Missouri House of Representatives
State Capitol, Room 130-DA
201 West Capitol Avenue
Jefferson City, MO 65101

The Honorable Scott T. Rupp*
R-13th District
Missouri House of Representatives
State Capitol, Room 304-B
201 West Capitol Avenue
Jefferson City, MO 65101

The Honorable Joe Smith*
R-14th District
Missouri House of Representatives
State Capitol, Room 316
201 West Capitol Avenue
Jefferson City, MO 65101

The Honorable Sally Faith*
R-15th District
Missouri House of Representatives
State Capitol, Room 200 BC
201 West Capitol Avenue
Jefferson City, MO 65101

State - Elected Officials (continued)

The Honorable Carl L. Bearden*
R-16th District
Missouri House of Representatives
State Capitol, Room 301
201 West Capitol Avenue
Jefferson City, MO 65101

The Honorable Vicki Schneider*
R-17th District
Missouri House of Representatives
State Capitol, Room 407B
201 West Capitol Avenue
Jefferson City, MO 65101

The Honorable Thomas D. Dempsey*
R-18th District
Missouri House of Representatives
State Capitol, Room 309
201 West Capitol Avenue
Jefferson City, MO 65101

The Honorable Kevin Threlkeld *
R-109th District
Missouri House of Representatives
State Capitol, Room 415A
201 West Capitol Drive
Jefferson City, MO 65101

State Agencies

Mr. Doyle Childers *
Director, Missouri Department of Natural
Resources
Post Office Box 176
Jefferson City, MO 65102

Mr. Robert Geller
Missouri Department of Natural Resources
Post Office Box 176
Jefferson City, MO 65102

Mr. Larry Erickson
Missouri Department of Natural Resources
Post Office Box 176
Jefferson City, MO 65102

State Agencies (continued)

Mr. Thomas Siegel
Missouri Department of Natural Resources
7545 S. Lindbergh Blvd., Suite 210
St. Louis, MO 63125

Mr. Ben Moore
Missouri Department of Natural Resources
Post Office Box 176
Jefferson City, MO 65102-0176

Ms. Mimi Garstang
Director, Geological Survey and Resource
Assessment Division
Missouri Department of Natural Resources
Post Office Box 250
Rolla, MO 65402

Ms. Myrna Rueff
Missouri Department of Natural Resources
Division of Geological Land Services
Post Office Box 250
Rolla, MO 65402

Ms. Jennier Frazier, Real Estate Manager
Missouri Department of Natural Resources
Division of State Parks
P.O. Box 176
Jefferson City, MO 65102

Ms. Ramona Huckstep*
Community Relations Coordinator
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Ms. Lorna Domke
Missouri Department of Conservation
Post Office Box 180
Jefferson City, MO 65102

Mr. John Hoskins
Missouri Department of Natural Resources
Post Office Box 176
Jefferson City, MO 65102

State Agencies (continued)

Mr. John Vogel
August A. Busch Memorial Conservation
Area
2360 Highway D
St. Charles, MO 63304

Mr. Marvin Boyer
August A. Busch Memorial Conservation
Area
2360 Highway D
St. Charles, MO 63304

Mr. Joel Porath*
August A. Busch Memorial Conservation
Area
2360 Highway D
St. Charles, MO 63304

Ms. Denise Garnier, Asst. to the Director
Missouri Department of Conservation
Post Office Box 180
Jefferson City, MO 65102-0180

Ms. Cynthia Green, Realty Specialist
Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 65102

Mr. Lee Hughes*
Missouri Department of Conservation
Post Office Box 180
Jefferson City, MO 65102

Mr. Ed Warhol, Buildings and Grounds
Specialist*
Missouri Department of Transportation
1590 Woodlake Dr.
Chesterfield, MO 63017

Mr. Thomas Ryan, Assistant District Engr.
Missouri Department of Transportation
1590 Woodlake Dr.
Chesterfield, MO 63017

State Agencies (continued)

Mr. Kevin Wideman
Environmental Compliance Coordinator
Missouri Department of Transportation
Post Office Box 270
Jefferson City, MO 65102

Mr. Gale Carlson
Assessment Unit Chief
Missouri Department of Health and Senior
Services
Post Office Box 570
Jefferson City, MO 65102

Dr. Eduardo Simoes*
Epidemiology
Missouri Department of Health and Senior
Services
P.O. Box 570
Jefferson City, MO 65102

Federal - Elected Officials

The Honorable Christopher S. Bond*
U.S. Senate
274 Russell Senate Office Building
Washington, D.C. 20510

The Honorable James Talent*
U.S. Senate
493 Russell Senate Office Building
Washington, D.C. 20510

The Honorable Russ Carnahan*
U.S. House of Representatives
1232 Longworth House Office Building
Washington, D.C. 20515

The Honorable Kenny Hulshof*
U.S. House of Representatives
412 Cannon House Office Building
Washington, D.C. 20515

Office of Congressman Kenny Hulshof*
516 Jefferson Street
Washington, MO 63090

Federal - Elected Officials (continued)

The Honorable W. Todd Akin*
U.S. House of Representatives
117 Cannon House Office Building
Washington, D.C. 20515

Mr. Jim Mitas
Office of Congressman W. Todd Akin
301 Sovereign Court, Suite 201
Ballwin, MO 63011

The Honorable William L. Clay*
U.S. House of Representatives
131 Cannon House Office Building
Washington, D.C. 20515

Office of Congressman William L. Clay*
625 North Euclid St., Suite 200
St. Louis, MO 63108

Federal Agencies

Mr. James B. Gulliford*
Regional Administrator
U.S. Environmental Protection Agency
Region VII
901 North 5th Street
Kansas City, KS 66101

Ms. Denise Jordan-Izaguire
Sr. Regional Representative
ATSDR c/o EPA Region VII
500 State Avenue, Suite 182
Kansas City, KS 66101

Mr. Dan Wall (2 copies)
Superfund Division
U.S. Environmental Protection Agency
Region VII
901 North 5th Street
Kansas City, KS 66101

Federal Agencies (continued)

Mr. Bill McFarland
Program and Project Management Division
Attn: CENWK-PM-ES
U.S. Army Corps of Engineers
Kansas City District
601 East 12th Street
Kansas City, MO 64106

Mr. Dave Nelson
Program and Project Management Division
Attn: CENWK-EC-ED
U.S. Army Corps of Engineers
Kansas City District
601 East 12th Street
Kansas City, MO 64106

Barry McFarland
Regional Environmental Program
Coordinator
89th Regional Readiness Command
3130 George Washington Blvd.
Wichita, KS 67210-1598

Mr. Roy Stevenson
89th Regional Readiness Command
Facility Manager
Weldon Spring Training Area
7301 Highway 94 South
St. Charles, MO 63304

Mr. Adam Ross
89th Regional Readiness Command
7301 Highway 94 South
St. Charles, MO 63304

Mr. Jeff Imes
U.S. Geological Survey
1400 Independence Road
Mail Stop 200
Rolla, MO 65402

Federal Agencies (continued)

Mr. Stephen McCracken, EM-90*
Assistant Manager for Environmental
Management
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, TN 37831-8545

Mr. David Geiser, LM-40
Office of Legacy Management
U.S. Department of Energy
1000 Independence Avenue S.W.
Washington, D.C. 20585

Mr. Ray Plienness, LM-50
Office of Legacy Management
U.S. Department of Energy
2597 B 3/4 Road
Grand Junction, CO 81503

Internal

Mr. Tom Pauling
U.S. Department of Energy
Weldon Spring Site
7295 Highway 94 South
St. Charles, MO 63304

Ms. Mary Picel
EAD
Argonne National Laboratory
9700 South Cass Avenue, Building 900
Argonne, IL 60439

Ms. Wendee Ryan
S.M. Stoller, Inc.
2597 B 3/4 Road
Grand Junction, CO 81503

Administrative Record
(1 Copy)

*These individuals will only be sent notices of a meeting or the availability of a specific document. The document will be sent to them upon request.

End of current text

Appendix H
Annual Inspection Checklist

4. **Local response agencies:** Contact to notify of annual inspection and to determine if there are any concerns or issues.

Agency: St. Charles County Sheriff

Contact _____ 636-949-3005
Name Title Date Phone no.

Problems; suggestions; Report attached _____

Agency: Cottleville Fire Department

Contact _____ 636-447-6655
Name Title Date Phone no.

Problems; suggestions; Report attached _____

Agency: SimplexGrinnel (LCRS and Interpretive Center Alarm Company)

Contact _____ 888-746-7539
Name Title Date Phone no.

Problems; suggestions; Report attached _____

Agency: _____

Contact _____
Name Title Date Phone no.

Problems; suggestions; Report attached _____

5. **Stakeholders:** Contact to notify of annual inspection and to determine if there are any concerns or issues.

Agency: Francis Howell School District **Contact Name:** Mr. Pat Houlahan, Exec. Dir. of Admin. Services

Contact Name Current yes no

Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 636-851-4046
Name (if different than above) Title Date Phone no.

Problems; suggestions; Report attached _____

Agency: Weldon Spring Citizens Commission **Contact Name:** Helene Diller, Admin. Assistant

Contact Name Current yes no

Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 636-926-7061
Name (if different than above) Title Date Phone no.

Problems; suggestions; Report attached _____

Agency: St. Charles County **Contact Name:** Mike Duvall, Dir. of Env. Service

Contact Name Current yes no

Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 636-949-7583
Name (if different than above) Title Date Phone no.

Problems; suggestions; Report attached _____

6. **Other interviews** (Prior to inspection, determine if any citizens or groups have expressed any concerns or interests in the site. Check site email and Grand Junction contact phone logs) Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **Documents**
- | | | | |
|--|--|-------------------------------------|------------------------------|
| <input type="checkbox"/> Surveillance and Maintenance Plan | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input type="checkbox"/> As-built drawings | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input type="checkbox"/> Maintenance logs | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |

Remarks _____

2. **Site-Specific Health and Safety Plan**
- | | | | |
|---|--|-------------------------------------|------------------------------|
| <input type="checkbox"/> Contingency plan/emergency response plan | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
|---|--|-------------------------------------|------------------------------|

Remarks _____

3.	Permits and Service Agreements	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	<input type="checkbox"/> NPDES Permits	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	<input type="checkbox"/> MSD agreement and records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks _____ _____			
4.	Groundwater Monitoring Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks _____ _____			
5.	Leachate Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks _____ _____			
6.	Interpretative Center Sign-In Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks _____ _____			
IV. O&M COSTS				
1.	Organization			
	<input type="checkbox"/> DOE	<input type="checkbox"/> Contractor for DOE		
	<input type="checkbox"/> Other participants (list organizations) _____ _____			
2.	O&M Cost Records (This information may be reviewed and completed prior to the inspection)			
	Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached			
	Total annual cost for prior federal fiscal year:			
	From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
	Date	Date	Total cost	
3.	Unanticipated or Unusually High O&M Costs During Review Period			
	Describe costs and reasons: _____ _____ _____ _____ _____			

V. INSTITUTIONAL CONTROLS

Institutional Control (IC) Inspections

1. Land and Shallow Groundwater Use within the Chemical Plant Site and Quarry Property

Inspect for indications of excavations into soil or bedrock and groundwater withdrawal or use in restricted areas. If any party has been granted use of portions of the Chemical Plant or Quarry area, inspect to ensure that land use is in compliance with the terms of the restrictions within the notation.

Note any observations: _____

2. Groundwater Use in Areas Surrounding the Chemical Plant

Groundwater use is restricted in areas. Inspect affected areas for evidence of groundwater or spring water use (Burgermeister Spring and Spring 6303). Inspect to ensure that land use continues to be in compliance with the terms of the license, easement, or permit and the restrictions contained therein.

Note any observations: _____

3. Groundwater (Quarry)

Groundwater use is restricted in areas. Inspect affected areas for evidence of groundwater withdrawal or use in the area of impact. Inspect to ensure that land use continues to be in compliance with the terms of the license and the restrictions contained therein.

Note any observations: _____

4. Land Use in Quarry Area Reduction Zone

A naturally occurring reduction zone exists in soil south of the Katy Trail and north of the Femme Osage Slough. Inspect for indications of excavations into soils and bedrock in the uranium reduction zone. Inspect to ensure that land use continues to be in compliance with the terms of the easement and the restrictions contained therein.

Note any observations: _____

5. Southeast Drainage

Check for indications of residential use or construction in the Southeast Drainage (200-foot-wide corridor), or other activity that would indicate nonrecreational use of the area. Check Springs 5303 and 5304 for residential, commercial, or agricultural use of spring water.

Note any observations: _____

6. **Highway D Culvert**

Check for signs of disturbance of the affected region where the Frog Pong outlet culverts pass beneath Highway D and in the utility rights-of-way in the affected area.

Note any observations: _____

7. **State Route 94 Culvert**

Check for signs of disturbance of the affected region where the culvert passes beneath State Route 94 and in the utility rights-of-way in the affected area.

Note any observations: _____

8. **Pipeline from LCRS to Missouri River**

Inspect the entire length of the pipeline and outfall for any disturbances or maintenance needs.

Note any observations: _____

C. Institutional Control Annual Contact Log

In accordance with the LTS Plan, the following will be contacted to verify cognizance of institutional controls and real estate agreements. Fill in all that apply.

1. **Agency:** Missouri Department of Conservation **Contact Name:** Joel Porath, Wildlife Regional Supv.
Address: August A. Busch Memorial Conservation Area, 2360 Highway D, St. Charles, MO 63304
Institutional Control and Real Estate Licenses to Verify: Chemical Plant Groundwater Use Restriction, Quarry Area Groundwater Use Restriction, Quarry Reduction Zone Land Use Restriction, Southeast Drainage Residential Use Restriction, Missouri State Highway 94 Culvert, Hwy D Culverts, North Gate Access, Blanket Well Installation and Sampling Agreement, Effluent Discharge Pipeline, Hamburg Trail Use Agreement.

Contact Name Current yes no

Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 636-441-4554
Name (if different than above) Title Date Phone no.

Problems; suggestions; Report attached _____

2. **Agency:** Missouri Department of Conservation **Contact Name:** Cynthia Green, Realty Spec.
Address: P.O. Box 180, Jefferson City, MO 65102

Institutional Control and Real Estate Licenses to Verify: See No. 1

Contact Name Current yes no

Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 573-751-4115
Name (if different than above) Title Date Phone no.

Problems; suggestions; Report attached _____

3. **Agency:** Missouri Department of Natural Resources **Contact Name:** Jennifer Frazier, Parks Operation Off.

Address: P.O. Box 176, Jefferson City, MO 65102

Institutional Controls and Real Estate Licenses to Verify: Quarry Area Groundwater Use Restriction, Quarry Reduction Zone Land Use Restriction, Southeast Drainage Residential Use Restriction, Blanket Groundwater Well Sampling Access Agreement, Effluent Discharge Pipeline

Contact Name Current yes no

Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 573-751-7987
Name (if different than above) Title Date Phone no.

Problems; suggestions; Report attached _____

4. **Agency:** Missouri Department of Transportation **Contact Name:** Don Wichern, Asst. District Engineer
Address: 1590 Woodlake Dr., Chesterfield, MO 63017
Institutional Controls to and Real Estate Licenses to Verify: Chemical Plant Groundwater Use Restriction, Missouri State Highway 94 Culvert, Highway D Culverts
Contact Name Current yes no
Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 314-340-4202
Name (if different than above) Title Date Phone no.
Problems; suggestions; Report attached _____

5. **Agency:** U.S. Dept. of Army **Contact Name:** Roy Stevenson, Facility Manager
Address: Weldon Spring Training Area, 7301 Hwy 94 S. St. Charles, MO 63304
Institutional Controls to and Real Estate Licenses to Verify: Chemical Plant Groundwater Use Restriction, Effluent Discharge Pipeline, Blanket Groundwater Well Sampling Access Agreement
Contact Name Current yes no
Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 636-329-1200
Name (if different than above) Title Date Phone no.
Problems; suggestions; Report attached _____

6. **Agency:** St. Charles County Recorder of Deeds
Address: 201 N 2nd. St. Charles, MO 63301
Institutional Controls to and Real Estate Licenses to Verify: Recorded real estate restrictions at the Recorder of Deeds Office or on the Internet at www.saintcharlescounty.org

Contact _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

7. **Agency:** St. Charles County Planning and Zoning Department **Contact Name:** Wayne Anthony
Address: 201 N 2nd. St. Charles, MO 63301
Institutional Controls to and Real Estate Licenses to Verify: Awareness of Restrictions
Contact Name Current yes no
Phone Number Current yes no _____ (new phone no. if applicable)

Contact _____ 636-949-7900x7221
Name Title Date Phone no.
Problems; suggestions; Report attached _____

General	
1.	Land Use Changes On Site <input type="checkbox"/> Yes <input type="checkbox"/> No Remarks _____ _____ _____ _____
2.	Land Use Changes Off Site <input type="checkbox"/> Yes <input type="checkbox"/> No Remarks _____ _____ _____ _____
VI. GENERAL SITE CONDITIONS	
1.	Roads <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Roads adequate Remarks _____ _____ _____ _____
2.	Vandalism <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No vandalism noted Remarks _____ _____ _____ _____
3.	Personal Injury Risks <input type="checkbox"/> Housekeeping maintained Remarks _____ _____ _____
4.	Site Markers (Four Information Plaques on Top of Cell, Historical Markers, and Other Information Markers) <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Legible and Secure Remarks _____ _____ _____
5.	Guard Rail Around Cell <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Secure Remarks _____ _____ _____

6. **Stairs to Top of Cell** Location shown on site map
 Stairs in good condition Handrail stable and in good condition
Remarks _____

7. **Other Site Conditions:**
Remarks _____

VII. EROSION

1. **Chemical Plant Areas** Location shown on site map Erosion not evident
Areal extent _____ Depth _____
Remarks _____

2. **Quarry Area** Location shown on site map Erosion not evident
Areal extent _____ Depth _____
Remarks _____

VIII. CHEMICAL PLANT DISPOSAL CELL

1. **Settlement/Bulges** Location shown on site map Settlement not evident
Areal extent _____ Depth _____

A. Annually: Walk along the grade break at the top of the side slopes, around the cell perimeter, and along 10 random transects across the cell surface. Inspect for local depressions, regional departures from planar surfaces, and shifts in intersections (vertices) of cell surface planes. Inspect for vertical shear of the cover layers indicated by sudden, abrupt steps that exceed an approximately 6-inch change of surface level over no more than 10 feet distance.

B. During 5-Year Review Inspections (Beginning 2005 and at 5-year Intervals): Conduct an aerial mapping survey with a vertical resolution not less precise than 0.5 feet. Produce and record maps and survey data for the cell surface represented by 1.0 foot contour intervals. Evaluate the data for indications of settlement. Consider the position and spacing of contour lines as indications of elevation change and possible settlement.

Remarks _____

2. **Rock Cover** Signs of degradation Signs of intrusion

A. Annually: During settlement monitoring inspection also visually inspect for departures from original rock conditions or from the previous inspection. Note observable discoloration on areas larger than 2,500 square feet, presence of finer materials at surface and apparent rock gradation changes. Document rock conditions annually with photographs.

B. During 5-Year Review Inspections (Beginning 2005 and at 5-year Intervals): Inspect cell cover for gradation changes by walking 10 randomly spaced transects across the cell. Concentrations of degraded, split, or weathered pieces of limestone will be mapped, photodocumented and visually assessed as a percentage of rock exposed within each mapped area. If degraded rock is evenly distributed, inspectors will estimate the overall percentage of degraded rock. If the amount of degraded rock appears to be increasing, based on a review of previous annual rock quality assessments, additional monitoring or gradation testing will be performed. If rock does not appear degraded, photodocumentation of several GPS located areas will establish rock conditions for future reference.

Remarks _____

3. **Vegetative Growth** Weeds Plants
 Trees/Shrubs

Remarks _____

4. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
Remarks _____

5. **Toe/Apron Drains** Proper drainage Silting Evidence of erosion
Remarks _____

6. **Slope Instability** Slides Location shown on site map No evidence of slope instability
Areal extent _____
Remarks _____

7. **Leachate Collection and Removal System** Fence/Gates/Locks in good condition
 Properly secured/locked Functioning Routinely sampled Good condition
 LCRS flow rates Flow rate issues Review data trending and Action Leakage Rate review
 Sump Containment System (Burrito) flow rates Burrito flow rate issues
 Alarm system functioning Methane Detection System functioning
 Compliance with MSD Agreement Review shipping records
 Check alarm records (note any issues)
Remarks _____

8. **Condition of 300 Ft. Buffer Zone** Evidence of erosion (shown on map)
 Vegetative growth of woody species (show location)
Remarks _____

9. **Condition of Prairie** Evidence of erosion (shown on map)
 Vegetative growth of woody species (show location)
Remarks _____

IX. GROUNDWATER MONITORING

1. **Disposal Cell Monitor Well Network**
 Properly secured/locked Functioning Sampled in accordance with LTS&M Plan
 Good condition Evidence of surface water infiltration at casing Needs maintenance
 Proper ID on each well Acceptable quality of data
 Any issues with data trends (See Section II.2)
Remarks _____

2. **Chemical Plant Groundwater Monitor Well Network**
 Properly secured/locked Functioning Sampled in accordance with LTS&M Plan
 Good condition Evidence of surface water infiltration at casing Needs maintenance
 Acceptable quality of data Any issues with data trends (see Section II.2)
List wells checked by number (> 10% of wells)_____

Remarks_____

3. **Quarry Monitor Well Network**
 Properly secured/locked Functioning Sampled in accordance with LTS&M Plan
 Good condition Evidence of surface water infiltration at casing Needs maintenance
 Acceptable quality of data Any issues with data trends (see Section II.2)
List wells checked by number (> 10% of wells)_____

Remarks_____

X. OVERALL OBSERVATIONS

A. Implementation of the Remedies

Describe issues and observations relating to whether the remedies are effective and functioning as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedies.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of one or more of the remedies may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedies.

ASA = Asbestos Storage Area
CMSA = Construction Material Staging Area
GCL = Geosynthetic Clay Liner
MSA = Material Staging Area