

FUSRAP St. Louis Site Remediation Task Force  
Alternative Sites Working Group  
February 7, 1995

A meeting of the Alternative Sites Working Group was held on February 7, 1995, at 9:30 a.m. at the Hazelwood Interim Site trailer. In attendance at the meeting were:

Jim Dwyer  
Eileen O'Connor  
Kay Drey  
Jan Titus  
Jack Fraenhoffer  
Dan Wall

Mitch Scherzinger, MO DNR, participated in the meeting in place of Dan Tschirgi, via the telephone. Eileen O'Connor distributed the Affected Environment and Site Suitability Data for Callaway Plant Area Alternate Site report that committee members requested at the last meeting. She also passed out Union Electric's response to a letter from G. A. Carlson dated January 16, 1995. Kay Drey distributed a draft letter to the Task Force Working Group on Alternative Sites dated February 7, 1995. Kay's letter outlines reasons why the surplus land at the Callaway County site should be evaluated as a possible disposal site for the radioactive waste. DOE provided copies of the Remedial Investigation Addendum that Committee members requested.

The meeting's attention turned to the spreadsheet that Committee members had developed at the last week's meeting. Jan Titus summarized the information prepared by Committee members in a spreadsheet. The Committee members began to rank the alternative sites according to how they fared with a ranking system of 1 being good, 3 being neutral and 5 being bad or negative. Committee members then engaged in a lengthy discussion of what the categories that were being evaluated actually meant. Jim Dwyer suggested that the Committee develop clear assumptions and definitions for each category to evaluate the criteria. The Committee agreed that:

- each disposal site is to be considered as a consolidated disposal site for all St. Louis FUSRAP material
- each site will provide a properly designed, contained facility for the disposal of all waste
- the removal of waste will be done in the same manner in each case
- there will be a uniform level of cleanup
- the planning horizon for which this evaluation is based is the foreseeable future

Discussion then centered on whether the categories that were being used for the evaluation process were uniform as interpreted by the Committee members. It was decided to define each category so that the Task Force would more easily understand how the Committee reached its conclusions. The Committee regrouped the categories on the spreadsheet and proceeded to define the categories.

The categories (redefined and regrouped) are as follows:

#### I Site Suitability

- A. Geology (pass/fail what would happen if the structure failed)
  - 1. floodplain (proximity of disposal structure to)
  - 2. water table (depth)
  - 3. impact on surface water
  - 4. earthquake potential
- B. Affected Environment
  - 1. land use (compatibility with current and projected land use)
  - 2. population density (recreational, residential and occupational)
- C. Accessibility (transportation routes including road and rail)
- D. Capacity

#### II Timing

- A. Approval Process
- B. Construction time

#### III Cost

- A. Transportation
- B. Construction of disposal facility
- C. Worker protection (cleanup and disposal)

#### IV Community Response

- A. Political
- B. Economic (effect disposal site would have on nearby community or properties adjacent)
- C. State or Federal Agencies
- D. Local controls that would affect the disposal site

There was a discussion on how to evaluate the impact for workers involved in the cleanup of the site. During the cleanup there are three areas that workers are involved in: remediation, transportation and disposal. Mitch Scherzinger noted that at Envirocare, one worker handles large quantities of materials because of the size of the equipment as

compared to workers at other sites and that the risk to other workers is greatly reduced. The Committee agreed that this should be taken into consideration when ranking the sites.

As a final item before closing the meeting, Jim Dwyer agreed that he will contact Dave Adler to request a copy of the new costing developed by DOE for the Envirocare alternative. Dave Adler in a phone conversation with Jim stated that the other requests for data would be available at the February Task Force meeting.

The meeting concluded at 12:40 p.m.

To: the Task Force Working Group on Alternative Sites

From: Kay Drey -- a draft memo: February 7, 1995

Re: Some reasons why Union Electric's surplus land in Callaway County should be studied as a possible disposal site for (1) the radioactive waste from the old Mallinckrodt Chemical Works and (2) Missouri's medical and other "low-level" radioactive waste, including that generated by the Callaway nuclear power plant, in the event that Ohio falls through as the initial Midwest Waste Compact "host" state.

Needless to say, I think virtually all Missourians would prefer to send our nuclear weapons wastes to Envirocare in Utah, to the Nevada Test Site, or to any other suitable site outside of our state. However, if that should prove impossible, I believe the following represents one in-state option that should be explored.

The purpose of this memo is to suggest that the U.S. Department of Energy (DOE) evaluate Union Electric's (UE)'s surplus 6500 acres contiguous to the Callaway nuclear power plant site -- that is, the acreage next to the several-hundred-acre, restricted-access power plant site.

It has been suggested that UE may have purchased this surplus land for the eventual construction of an expanded nuclear power park -- for additional reactors and related nuclear-power fuel-cycle facilities, such as an irradiated-fuel reprocessing plant. It has also been suggested that UE would be unwilling to sell any of its land for use as a Missouri low-level radioactive waste disposal or interim storage facility. Regarding the latter assumption, it seems likely that, if necessary, the U.S. Department of Energy (DOE) or the State of Missouri would be able to condemn the land.

Here are some of the reasons why the Callaway land seems to be a viable option worth considering:

1. The Callaway plant is without question Missouri's most radioactively contaminated site as both the generator of and current repository for many millions of curies of radioactive waste. UE's surplus land, next to the plant site, is also already subject to radioactive contamination. The Callaway plant has been in commercial operation since December 1984. Some of the radioactive wastes generated during operation have been vented and purged to the atmosphere from the plant buildings -- both routinely and accidentally.

- a. For example, radioactive gases, vapors, and particulate materials are released to the atmosphere, mostly after filtering, as a part of the routine operation of the Callaway plant (for example, from the Reactor Control and Radioactive Waste buildings' vents). Some of these radioactive emissions inevitably fall out on the land

within and beyond the plant site. During rain and snow, the land closest to the plant is most impacted. Filtered radioactive waste water is also released to the Missouri River. Because of these pathways to the environment, radioactivity has been contaminating the plant site and land beyond it and will continue to do so for at least as long as the plant operates.

b. No economically feasible technology exists that is capable of filtering out some of the radioactive materials generated by the operation of the power plant, such as tritium (radioactive hydrogen with a half-life of 12.3 years) and noble gases (such as krypton, which becomes radioactive strontium, and xenon, which becomes radioactive cesium, etc.). Therefore, the Nuclear Regulatory Commission (NRC) allows the release of permissible concentrations of these materials to the air and the river.

c. Even though some of the radioactive wastes may be difficult to detect accurately and precisely with today's monitoring equipment, the plant site and related land will need to continue to be kept under surveillance forever. UE has expressed concern that the possible commingling of radioactive releases from the power plant with releases from a radioactive waste facility within the Callaway plant site could cause monitoring confusion.

First, it is not suggested that a radioactive waste facility be located within the NRC-licensed power-plant-site boundaries, but next to it. Second, a close reading of the Code of Federal Regulations, Part 61, Section (a)(11) is inconclusive as to the NRC requirements regarding distance between neighboring facilities that both release radioactive wastes. "The [near-surface low-level waste] disposal site must not be located where nearby facilities or activities could ... significantly mask the environmental monitoring program." (emphasis added) Third, the uranium and thorium mill tailings and residues currently located in St. Louis do not release the same fission gases and particulate materials that the nuclear power plant does. The releases should be distinguishable.

2. No safe technology exists for the dismantling of the gigantic, contaminated Callaway plant buildings, and even if they could be dismantled, where would the radioactive debris be taken? An unknown amount of radioactively contaminated soil from the plant site would also have to be excavated and transported. How much would all this cost in energy and money?

a. The base mat or foundation, alone, of the Callaway Reactor Building contains 13,400 tons of concrete and 1470 tons of intertwined, reinforcing steel bars.

b. Exposure to the highly radioactive reactor vessel (which contains the fissioning uranium fuel rods) would mean a lethal dose to a worker at any time over the next thousands of years. And yet no safe, remote-control technology exists to dismantle it. The steel reactor vessel weighs about one million pounds. Again, where

would the radioactive pieces be taken?

3. No permanent repository exists in the United States, or anywhere else, for the high-level wastes (the irradiated fuel rods) that have already been generated at the Callaway nuclear power plant, and none may ever exist. The irradiated nuclear fuel cannot be removed from Callaway County because there is no place to take it. It is currently stored in a reinforced concrete pool while a permanent solution is sought. It, too, will need perpetual surveillance. The proposed federal Yucca Mountain repository for commercial irradiated fuel, if ever approved and built, was not designed with enough capacity to accommodate the fuel rods from all the reactors in the nation. First priority has been assigned to the irradiated fuel generated by the older reactors. Callaway is one of the newer ones. The Callaway fuel, therefore, will most likely have to be stored at the Callaway plant until a second or third repository is sited and built, if ever.

4. And what about the Callaway plant's so-called "low-level" radioactive waste? No place outside of the Callaway plant site exists for that, either.

a. First, to define "low-level" waste: the NRC defines "low-level" radioactive waste as everything except a nuclear plant's irradiated fuel rods -- that is, for example, saturated filters, evaporator sludges, and demineralizer resins, and pipes, pumps, steam generators and other replaced parts. Much nuclear power plant "low-level" waste is so radioactively hot it must be handled by remote-control equipment. But it is still defined as "low-level" waste.

b. The Midwest Low-Level Radioactive Waste Compact -- currently consisting of Missouri, Ohio, Minnesota, Wisconsin, Iowa and Indiana -- has yet to find an acceptable regional disposal site. Michigan, after being designated the first "host state," adopted siting and other criteria that effectively eliminated any Michigan location. Michigan was subsequently forced out of the Midwest Compact, and Ohio became the next host state.

c. The second host state, Ohio, is insisting on its own changes to the Compact, including a possible capacity limit. The Ohio state legislature is currently debating proposed changes in the Compact enabling legislation. The other five states will then just begin to debate Ohio's changes, many of which, of course, place increased liability and financial burdens on the member states. Furthermore, Ohio has not yet officially announced its potential sites -- the point at which citizens of the designated communities can be expected to begin organizing in opposition.

d. The last commercial low-level radioactive waste site in the U.S., located in South Carolina, shut off access as of July 1, 1994, to all states except those in the Southeast Compact.

e. Conceivably some economies of scale would occur from the development and operation of one multi-state "low-level" waste facility, but it seems increasingly unlikely that a willing host

state or an acceptable site will ever be found. In every compact where a host state has been chosen and a site has been proposed, lawsuits and citizen protests have resulted. Missouri and other states may well have to "go it alone," because no other solution will exist. If the Midwest Compact fails to find a willing first "host state," the Callaway low-level wastes will, by default, have to remain at the Callaway plant site just as they are at present, and as the high-level wastes are.

5. Callaway County is located in the center of the state. The nuclear power plant generates over 99% of the radioactivity in Missouri. I believe the second largest generator is either the Midwest Research Institute in Kansas City or Mallinckrodt. A mid-state location within the most contaminated county seems to be a reasonable option for the consolidation of our state's wastes.

6. To compare the radioactive hazards of the Callaway plant with those of the weapons wastes at the St. Louis City and County sites: the Callaway reactor vessel contains over 15 billion curies; the irradiated fuel pool contains hundreds of millions of curies; and the "interim" low-level-waste storage shed contains an unknown, but growing, number of curies. By comparison, the latest roughly estimated "preliminary draft" total of the St. Louis Site soils is 533.5 curies. (February 1993) This would represent a modest addition to the already huge concentration of curies located in Callaway County.

7. Currently UE's surplus acreage next to the Callaway plant site is being managed by the Missouri Department of Conservation as the Reform Wildlife Area. I believe there is a far greater public need in Missouri for a suitable radioactive waste site -- away from people and away from water -- than there is for recreational land for hunters and fishermen for which there are many options within Missouri.

8. St. Louis City and County electric ratepayers have been contributing property taxes to Callaway County since the late 1970s through their electric utility rates. That is, St. Louisans have been paying toward the Callaway schools, roads and bridges, police and fire protection, and other public support services.

9. The NRC determined that the Callaway site's geology and hydrology were adequate for the construction of a nuclear power plant which was to contain the equivalent long-lived radioactivity of 1000 Hiroshima bombs. This land should therefore be at least as safe for an above-ground "low-level" radioactive waste facility.

I believe the DOE should begin as soon as possible to undertake a thorough evaluation of UE's surplus acreage adjacent to the Callaway plant site as a possible site for the consolidation and permanent disposal of all low-level radioactive waste located within the State of Missouri.

	HISS	SLAPS	SLDS	WSSRAP	Hanford	Envirocare	NTS	UE Surplus Callaway Co Property	Other Missouri Sites	Oak Ridge
<b>Affected Environment</b>										
land use										
air quality										
water quality	5	5	5	5						
transportation	1	1	3	3	5	5	5	5	3	5
threatened species	1	1	1	1	1	1	1	1	3	1
floodplains	5	5	5							
population density	5	5	5	3	1	1	1	1	1	1
hist. / arch.	1	1	1	1						
health risk										
worker impact	3	3	3	1	3	1	3	3	3	3
<b>Timing</b>										
approval process	3	3	3	4 (2)*	4 (2)*	2	4 (2)*	4 (3)*	4 (3)*	4 (3)*
construction	3	3	3	2	3	3	3	3	3	3
<b>Cost</b>										
impl/constr.	5	5	5	5	5	3	5	5	5	5
disposal	1	1	1	1	5	3	5	1	1	5
mtc. & monitoring										
trans.	1	1	3	5	5	5	5	5	5	5
<b>Community Response</b>										
political										
economic										
agency										
institutional controls										



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	HISS	SLAPS	SLDS	WSSRAP	Hanford	Envirocare	NTS	UE Surplus Callaway Co. Property	Other Missouri Sites	Oak Ridge
<i>~Site Suitability</i>										
capacity	5	3	3	1		1		1	1	
facility, geology / hydrology	3	3	5	3		1		5	1	
accessibility	3	3	3	3		3		3	3	
availability	3	3	5	3		1		5	3	
overall	3	3	5	3		1		3	1	
<i>~geology / hydrology given 2x weight</i>										

**Assumptions**

-Ranking is from 1 to 5 with 1 indicating the greatest positive impact and 5 indicating the greatest negative impact or greatest degree of difficulty. All criteria are considered to be of equal weight at this time. High-5, medium-3, low-1

-Constructing a new facility has greater worker impacts than using an existing facility (WSSRAP is considered an existing facility).

-Constructing a new facility in a clean area has greater impacts to the environment than using an existing facility or constructing in a contaminated area.

-Out-of-state approval processes are considered more difficult and time consuming than in-state approval.

Subcommittee - St Louis Rel. Task Force

February 7, 1995

John Peters

hannover

Jack Fraenkel

Mallinckrodt

Daniel Wall

EPA

Kay Drey

Glen B. Morris

UE

MITCH SCHERZINGER

MDNR (by tel.)

Jim Dwyer



DAVE ADLER - UPDATED COSTING - ENVIRONMENTAL  
+ ON SITE (STATE OF THE ART)  
STRESS TIMING NEEDS - NTS / OAKRIDGE

FEB. 7, 1995

ASSUMPTIONS:

AFFECTED ENVIRONMENT -

Properly designed, contained facility for disposal  
of all waste - (consolidated) - uniform level of clean-up  
at the optimum site - for permanent disposal.

Identical risks to workers ~~separately~~ involved  
in excavation

worker impact (cleanup)

remedial action workers

transportation workers

disposal facility workers

(disposal site)

residential base

employment base

PLANNING HORIZON - 20 YEARS

## ASSUMPTIONS

Capacity - Proposed cell at SLAPS was 30 Acres. Assume 50 Acres needed at a minimum.

Geology/Hydrogeology - Use MDNR Hazardous Waste Landfill site location standard as a comparison

Accessibility - Look for problems. Rail becomes preferred transport mode at some undefined distance.

Availability - Current DOE owned and/or controlled sites receive preference. US Government owned sites preferred over privately owned sites.

## SITE INFORMATION

HISS - total land area HISS/Futura 11 Acres

- Hydrogeology similar to SLAPS
- No access problems
- Site is privately owned. HISS controlled by DOE, Futura is current manufacturing operation

SLAPS - land area 22 Acres, total including ballfields 70+ Acres

- May be "functionally equivalent" to MDNR Hazardous Waste Landfill location standard
- No access problems
- Availability of SLAPS good (owned by City, controlled by DOE). Ballfields are owned by local municipalities.

SLDS - land area 45 Acres

- Alluvial setting not considered to be favorable to waste disposal due to shallow aquifer and high permeability
- No access problems
- Privately owned, extensive manufacturing operation

WSSRAP - land area at DOE portion 217 Acres, cell footprint with buffer is 80 Acres. US Army area 1700 acres.

- Location of proposed disposal cell judged acceptable under MDNR Hazardous Waste Landfill location standard, rest of DOE area not acceptable. May be acceptable area on Army property, detailed exploration required.
- Not currently served by rail. No other problems known.
- DOE property available notwithstanding commitments made to public (Cell would not handle entire FUSRAP volume). US Army would likely resist use of land.

Hanford

Envirocare - Envirocare has stated they have capacity for this material. Verify with Utah officials/NRC

- Site appears to be excellent hydrogeologic setting for this material
- Rail access available
- Site is currently available to receive waste

NTS

UE Surplus Callaway Co. - Land area several thousand acres

- MDNR would not recommend further exploration in attempt to demonstrate site meets Hazardous Waste Landfill location standards
- Rail access not available, no other problems
- Land privately owned.

Other Missouri Site - This is a hypothetical site. Assume that site selection involves a site that at a minimum has adequate capacity and good hydrogeologic characteristics. Rail access may or may not be available. Regarding availability, if DOE must go to the extent of condemnation, successful siting is unlikely, so assume site is available.

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Formerly Utilized Sites Remedial Action Program (FUSRAP)

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# ADMINISTRATIVE RECORD

for the St. Louis Site, Missouri

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U.S. Department of Energy

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