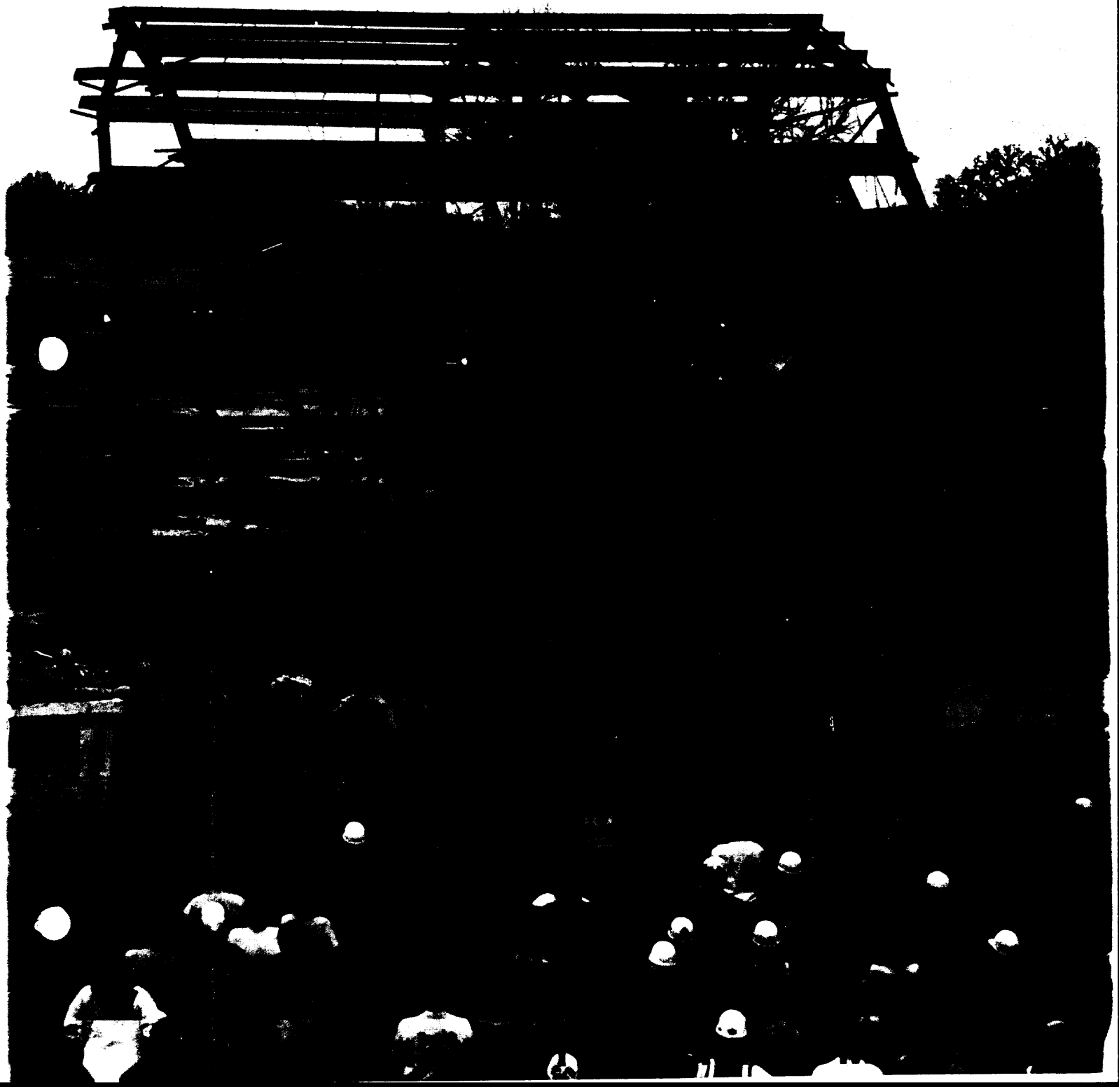
WSSRAP

UPDATE

VOL. 6 NO. 2

WINTER 94-95

Distributed to residents of St. Charles County to report on the progress of the Weldon Spring Site Remedial Action Project



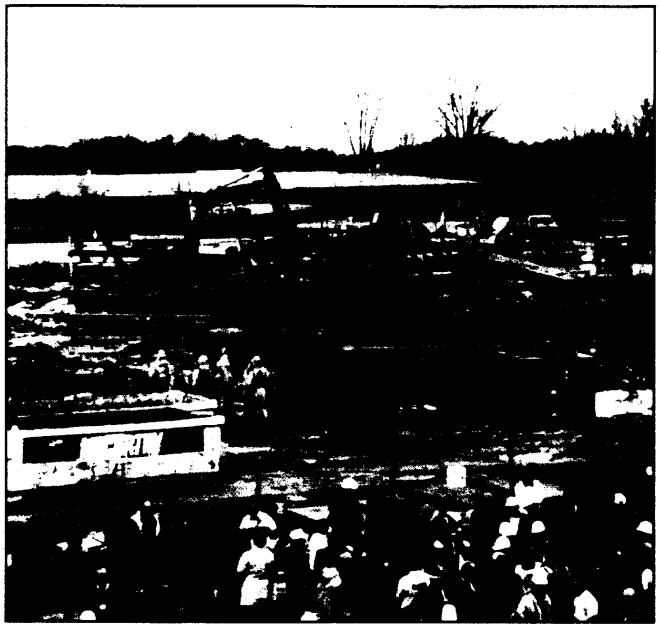
Chemical Plant Building Demolition

On Thursday, December 8, the final building fell at the Weldon Spring Site marking the completion of a major WSSRAP milestone.

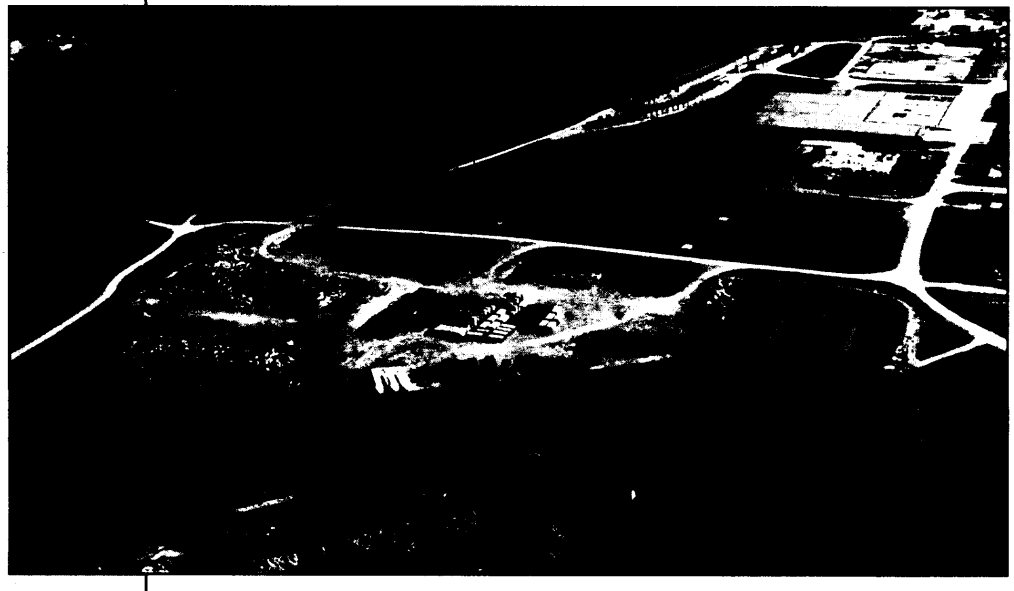
The razing of building 404 marked the successful dismantlement of the 44 buildings and structures that made up the former Weldon Spring Uranium Processing Plant.

Department of Energy Project Manager Steve McCracken said, "This is an example of when everyone, including the EPA, state officials, the public, and the DOE work together and get results."

"It is also important to note, " Mr. McCracken added, "that the overall work is one-third complete. We will focus now on the work at the quarry, the removal and treatment of the sludges in the raffinate pits and the building of the disposal cell."



Building 404 is successfully dismantled.



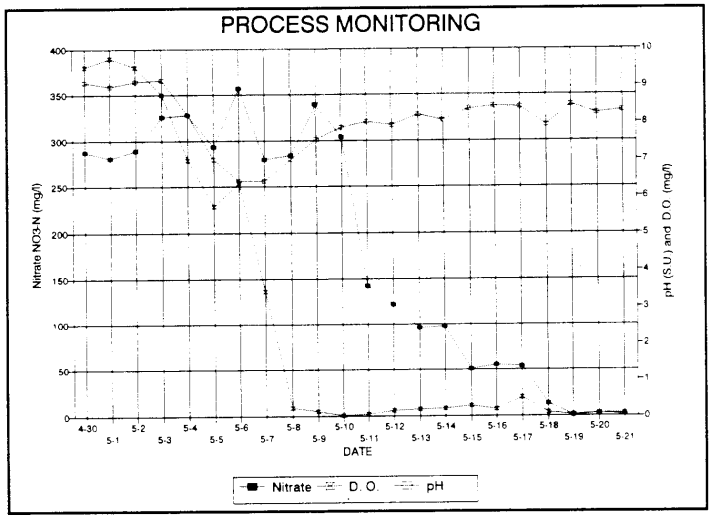
Structural steel and other building materials stacked in the Material Staging Area.

Cover photo shows the final dismantlement of building 404 (the metallurgical pilot plant) on December 8, 1994.

Biodenitrification Successfully Destroys Nitrates In Contaminated Water

A full scale system that biologically destroys nitrates from contaminated water was successfully implemented last spring and summer at the Weldon Spring Site.

Cleanup at the chemical plant site necessitates the treatment of chemically and radiologically contaminated water from the four waste pits and small impoundments. The current water treatment plant at the site is capable of removing contaminants found at the site with the exception of nitrates and other anions.



Unusually high precipitation in 1993 caused water levels in raffinate pit 3 to increase to a level threatening overtopping and a possible requirement to move water from raffinate pit 3 to pit 4. This would not have been desirable because, whereas pit 3 water contains high levels of nitrates, pit 4 water does not. The existing wastewater treatment facilities were not capable of treatment of this high nitrate water. Alternatives had to be identified to reduce the water level. Biodenitrification in the waste pits was identified as a potential alternative to reduce the nitrate concentration, and then the water can be treated in the existing treatment facility.

Bench and pilot scale studies were conducted first to evaluate the feasibility of the process and to support the full scale design and application.

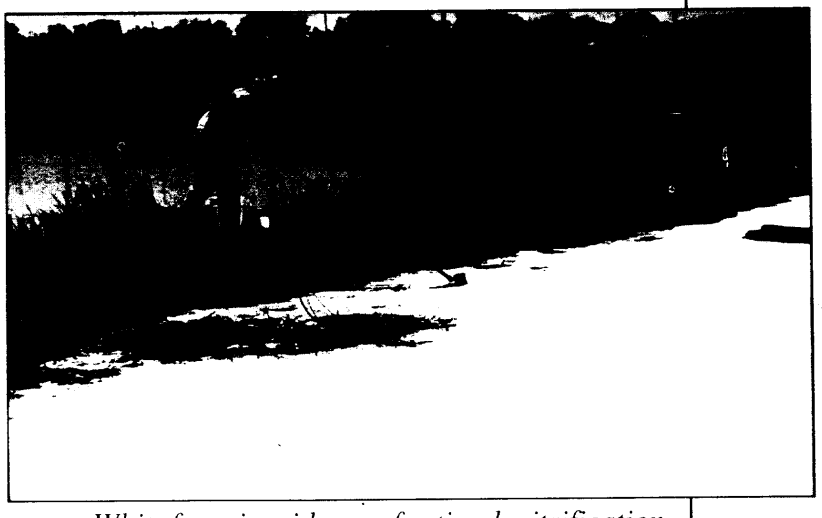
The studies conducted demonstrated that when nutrients are provided to the water, the microorganisms that exist in the water will consume the nitrate. The studies indicated that the water can be successfully denitrified biologically.

"This treatment process is an innovative approach that biologically converts nitrates to nitrogen and carbon dioxide," explains Glen Schmidt, project process engineer. "And the treatment process is effective at reducing nitrates to an environmentally safe level."

Full scale operations were initiated in June to denitrify 900,000 gallon batches. The ponds were monitored daily for nitrates, pH, dissolved oxygen, temperature, total organic carbon and sulfates. Nitrate levels were reduced from 400 milligrams per liter to less than 1 milligram per liter. The discharge level for nitrates set by the State of Missouri is less than 20 milligram per liter.

Treatment times for each batch have varied from three days to 15 days per batch depending on operating conditions. Over 5 million gallons of water from raffinate pit 3 were treated by biodenitrification.

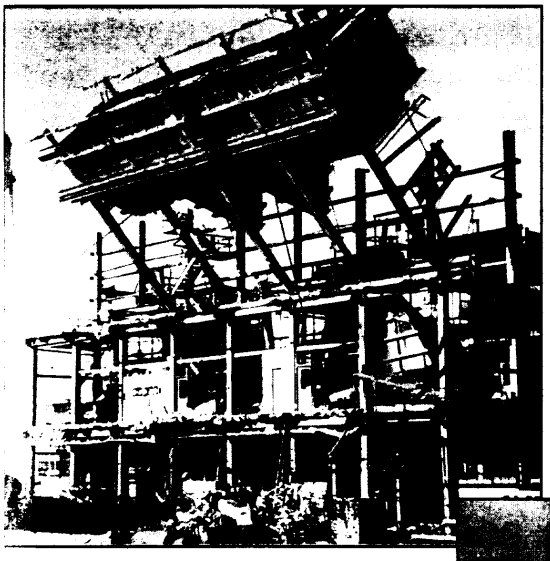
The Missouri Department of Natural Resources and the U.S. Environmental Protection Agency supported the process.



White foam is evidence of active denitrification as nitrogen gas is produced.

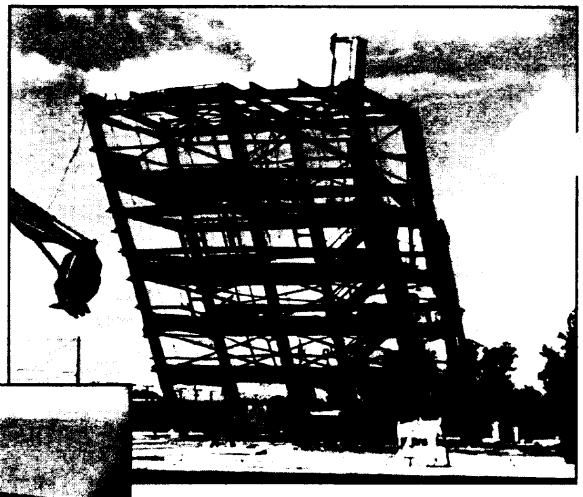
WE'RE GETTING

1991



1989

The plant's administration building and steam plant become the first two dismantlement activities conducted on site.



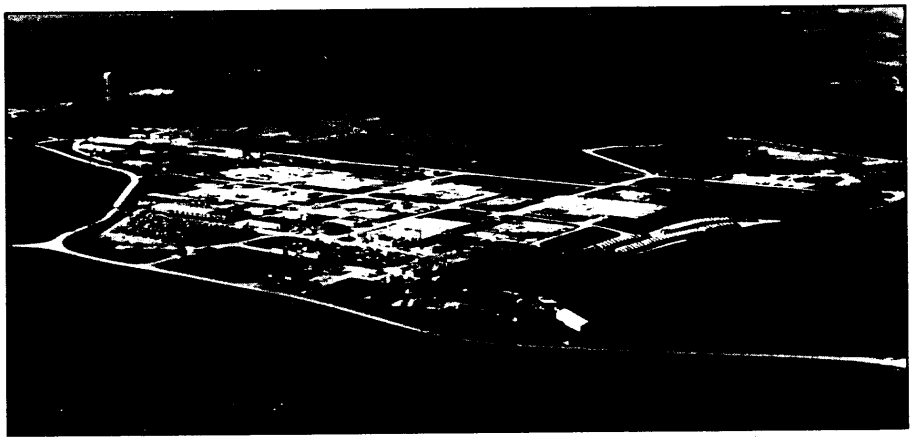
July, 1993

The Metals Production Building, (301), the largest and one of the most contaminated buildings on site, is successfully dismantled.

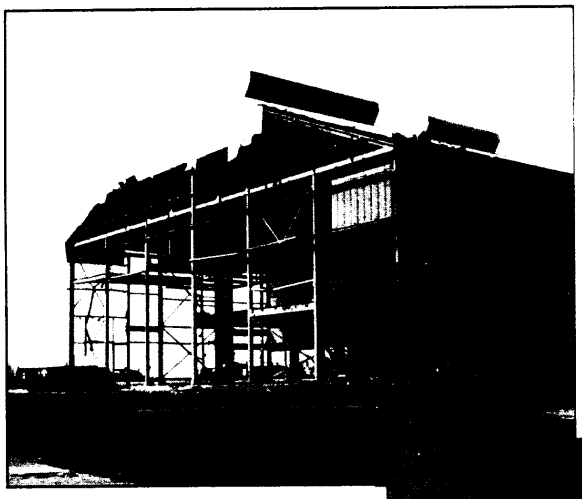
1991

Dismantlement of 15 non-process buildings is undertaken to make way for the construction of a site water treatment plant and a temporary storage area for quarry bulk waste.

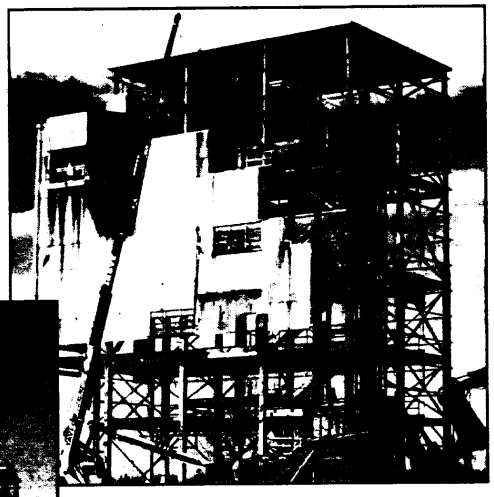
THE JOB DONE



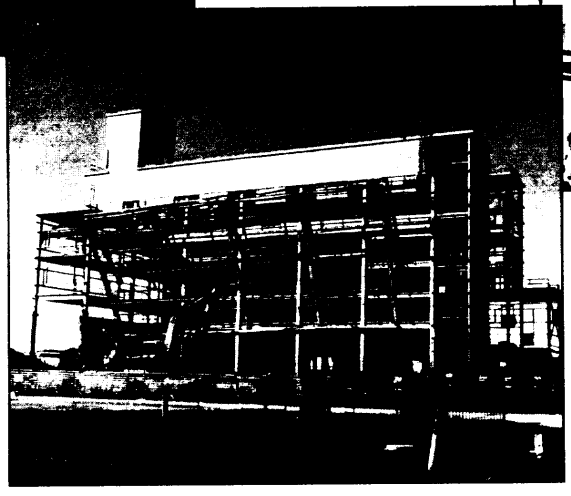
1994



November, 1993
Building 103, the Digestion and Denitration Plant, is successfully dismantled.



March, 1994
Building 101, the six-story Feed Preparation and Sampling Plant, is dismantled.



February, 1994
The Green Salt Building (201), the most contaminated structure on site is dismantled.

December, 1994
Building 404, the Pilot Plant was the last of 44 buildings and structures to be successfully dismantled at the site. Pad removal and disposal cell construction can begin.

Treating Waste At The Weldon Spring Site

Waste pit sludges and selected soil at the WSSRAP are scheduled to be treated in order to provide a structurally stable waste form before it is placed in the on-site engineered disposal cell.

Department of Energy Project Manager Steve McCracken said that on-site chemical stabilization/solidification (CSS) was chosen as the technology for treatment of contaminated materials such as sludges from site waste pits, selected soil, and possibly sludge resulting from treatment of water, and selected containerized waste.

In the CSS process, fly ash and portland cement are mixed with contaminated sludges and soils to produce either a grout or soil-like product that is suitable for permanent storage in the on-site disposal facility. The objective of the full-scale CSS plant is to produce a product that provides necessary physical characteristics for waste placement in the disposal facility and better immobilizes the contaminants.

"CSS is a widely accepted technology that has proven itself at numerous contaminated sites," said Mr. McCracken.

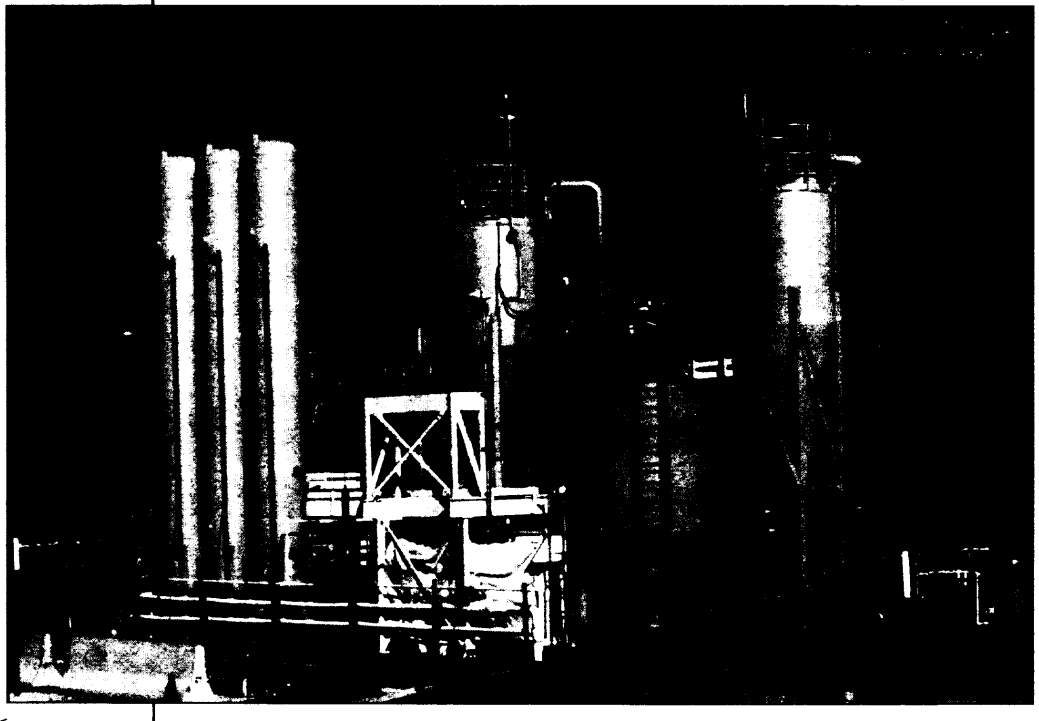
After processing, the waste will be either a grout-like or soil-like product. In the disposal cell, the grout-like product can be poured onto contaminated debris and equipment in order to fill voids. The soil-like product has a soil consistency capable of being placed and compacted with standard earth-moving equipment.

The Pilot Plant

In support of designing a full-scale CSS treatment plant, a CSS pilot-scale testing facility is being constructed. The pilot facility is almost complete, and associated dredge tests in one of the waste pits were performed in December, 1994. In the spring of 1995, the pilot facility will be operated according to a testing plan developed for collection of specific data. The data will be used to confirm bench tests results and design the full-scale CSS treatment plant.

After the design data is collected, the CSS pilot facility may also be used to treat selected on-site containerized wastes such as drummed process materials and wastes from the uranium plant operations (e.g., sump sludges). Also, the pilot facility will produce limited quantities of CSS treated sludge and soil to be used in determining the best waste placement methods.

The full-scale CSS treatment plant is scheduled to start treatment of wastes in mid-1998. The full scale CSS treatment plant will resemble a concrete plant engineered to efficiently handle waste and binders, produce CSS product, and control particulate and radon emissions.



The CSS pilot-scale testing facility at the Weldon Spring Site

Quarry Cleanup: Excavation 0f Quarry Bulk Waste Shows No Surprises

"No surprises," that is how Gene Valett, Quarry Bulk Waste Project Manager, describes the excavation work going on at the quarry.

With more than 4,000 loads (representing nearly 50,000 cubic yards) of waste transported to the site without incident, Mr. Valett is pleased that the records of dumping activities that took place in the 40s, 50s and 60s are consistent with what has been excavated to date.

From 1942 to 1969, contaminated debris from various operations was dumped into the Weldon Spring Quarry, located four miles south of the site on Highway 94 South. This dumping caused groundwater contamination that was spreading in the direction of the St. Charles County Well Field. This well field supplies water to homes and industry throughout the area. Monitoring conducted by the county, state and DOE assures water users that the water is safe. Responding to the potential threat to the Well Field, the DOE is carrying out plans to treat impounded water at the quarry and remove the bulk waste buried there.

Investigations conducted in 1988 and 1989 outlined types and amounts of material excavation workers could expect. It is estimated that approximately 95,000 cubic yards of contaminated materials consisting of structural debris, drummed and unconfined wastes, process equipment, sludges and other solid materials were buried in the quarry area.

"We are constantly checking and rechecking this data to see what we can expect at the next level of excavation," said Mr. Valett. "Historical photos of the dumping activities at the quarry have also been helpful in predicting what is buried there." Most notable have been discussions with Ken Gronewald, a long time resident of St. Charles County, who helped pinpoint the location of more than 1,000 drums and material buried in the quarry in the late 60s.

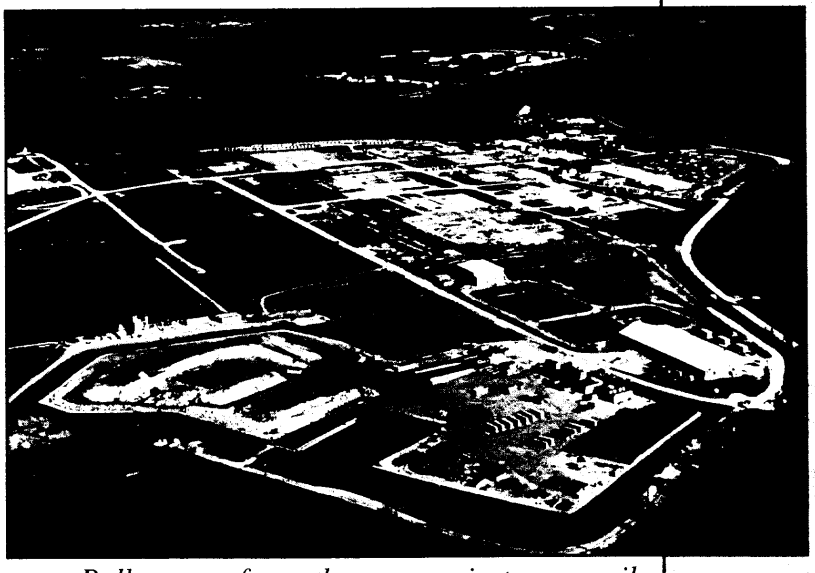
In May, 1993 the first load of waste was transported from the quarry to a temporary storage area at the chemical plant by way of a dedicated haul road. Material recovered so far includes processing tanks of various sizes, drummed waste, equipment, structural steel, building debris and soils.

The Quarry project staff is always looking for safe improvements to production, schedule and costs. One change implemented by Quarry operations is the method of transporting bulk waste from the Quarry to the TSA. A pilot study utilizing a direct load/haul system was conducted in August and September of 1994 in hopes of increasing productivity. As a result, quarry bulk waste removal has evolved from a roll-off system into a direct load and haul system.

"The direct load and haul system may help accelerate the schedule which automatically provides cost saving while not compromising health, safety or the environment," says Mr. Valett.

This new method was implemented in November, 1994.

The quarry bulk waste removal operation is approximately 50% complete. This phase of the cleanup at the Weldon Spring Site should be complete in late 1995.



Bulk waste from the quarry is temporarily placed in this specially engineered storage area at the chemical plant site.

A Letter From The DOE Project Manager

Neighbors:

Currently, two Superfund Projects are underway at Weldon Spring. At one project, the Department of Energy (DOE) is in the process of cleaning up the old uranium processing area. At the other, the Department of Defense (Army) is in the process of cleaning up the old ordnance works. As a part of both cleanups, construction of on-site disposal cells or landfills is part of the final remedy for the waste materials.

At the DOE project, planning and construction is well underway toward building a structure that will contain approximately 1,000,000 cubic yards of waste. Planning is still underway for the Army project, and construction of a landfill has not been initiated for an estimated 5,000 to 50,000 cubic yards of material (less than 5% of the DOE waste volume).

A suggestion was raised recently to consider placing the smaller volume of Army waste into the DOE disposal cell. This would be in lieu of the current Army proposal which is to build a separate disposal facility adjacent to the DOE facility. At first glance, a decision that would result in one disposal facility instead of two side-by-side facilities appears to be a good idea. Only wastes from the former ordnance works would be considered for disposal in the DOE disposal cell.

We are in the early stages of considering the viability of this option. The intent of this letter is to let you know that these discussions are occurring, and if further analysis is favorable, then we will begin a process that will include public input. In the meantime, we anticipate that the St. Charles County Citizen's Commission will be in place next month, and we will involve them in these early discussions as soon as possible.

If you have any comments or questions, please contact the Community Relations Department at (314)441-8086 or write. In addition, a Status Update Meeting with the public is scheduled for February 21. This would be a good opportunity to comment or ask questions about this or any WSSRAP issue.

Sincerely,
Stephen H. McCracken
Project Manager
Weldon Spring Site Remedial Action Project

FEBRUARY 21, 1995
WSSRAP STATUS UPDATE MEETING
HOLIDAY INN, ST. PETERS
7:00 P.M.

WSSRAP UPDATE PRESENTATION
AND
QUESTION AND ANSWER SESSION

DOE AND CONTRACTOR REPRESENTATIVES WILL BE ON HAND FROM 6:00 P.M. TO 7:00 P.M. FOR INFORMAL DISCUSSIONS WITH THE PUBLIC.

WSSRAP Update

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