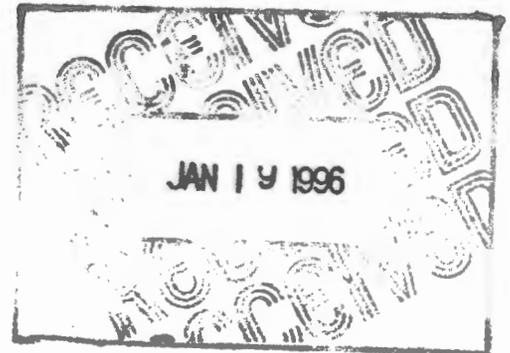




Department of Energy
Albuquerque Operations Office
P. O. Box 5400
Albuquerque, New Mexico 87115

*Ron KX
Bartman*
SH

JAN 18 1996



Mr. Benito Garcia, Chief
New Mexico Environment Department
Hazardous and Radioactive Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Garcia:

I am pleased to provide you with a copy of the FY 95 Albuquerque Operations Office Environmental Management Success Stories. During FY 1995 the U.S. Department of Energy Albuquerque Operations Office (DOE AL) made significant progress in implementing a "results-oriented" Environmental Management (EM) Program. The attached document provides information on EM activities at all of the DOE AL installations and provides photographs and descriptions of some of our notable successes. Our projected future progress looks even better as we accelerate our rate of cleanup activities. As we proceed into FY 96 we have the following management goals:

- ▶ Continue compliant/cost effective waste management activities to support mission objectives
- ▶ Complete the environmental restoration programs at DOE AL sites, including Sandia National Laboratories, Pantex Plant, and the Kansas City Plant, by the year 2000 or sooner
- ▶ Complete Los Alamos National Laboratory environmental restoration program by the year 2008 or sooner
- ▶ Complete remedial actions and closure of the Pinellas, Florida Plant by the end of Fiscal Year 1997
- ▶ Pursue commercial and portable mixed waste treatment options to assure results in the mixed waste management program
- ▶ Implement aggressive waste minimization program and achieve a 50% reduction of waste
- ▶ Complete the Uranium Mill Tailings Remedial Action Project by the end of Fiscal Year 1998

This document is a supplement to one prepared in December 1994, and we will continue to update our success stories and distribute on an annual basis. I hope you find this a useful reference. If you have any questions or need further information please contact Rich Sena, Environmental Restoration Division, (505) 845-6307; Mona Williams, Waste Management Division, (505) 845-5405; John Themelis, Project and Facilities



9684

Garcia

2

Management Division, (505) 845-6682; Jim Lampley, Grand Junction Projects Office, (970) 248-6001; or me (505) 845-6210. As always, we look forward to your involvement in our program.

Sincerely,

A handwritten signature in black ink, appearing to read "W. John Arthur, III". The signature is fluid and cursive, with a prominent initial "W" and a long, sweeping underline.

W. John Arthur, III
Acting Assistant Manager for
Environment/Project Management

cc w/o attachment:

B. Twining, OOM

D. Geary, OPA



EM Success Stories

U.S. Department of Energy - Albuquerque Operations Office



December 1995

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- Kansas City Plant
- Pantex Plant
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- Los Alamos National Laboratory
- Sandia National Laboratories
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- Grand Junction Projects Office
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Executive Summary/General Information



Doing More With Less

The AL EM program, like EM programs throughout the DOE complex over the last few years, has been challenged to “do more with less.” As one of the DOE sites with responsibility for on-going operations, AL has looked for opportunities in management reform and program re-engineering as a means of accommodating the decrease in available funds while progressing toward our goals and maintaining the integrity of operations. To this end, in FY95 AL EM:

- sponsored **independent reviews by private sector experts** of the WM program and the UMTRA groundwater program;
- established an **internal AL EM quarterly management review**;
- established an **integrated prioritization of the budget for FY 97**, with the initial prioritization based on the Risk Analysis Data Sheets, and factoring in mission viability, national priorities, program results/reduced liability, and stakeholder concerns;
- successfully bid for **102 new Federal FTE positions**, competitively awarded by EM Headquarters, and committed to performance improvement and support contractor conversion savings over the period of FY 1995 and FY 1996 in the amount of \$62 Million and \$1.3 Million respectively; and
- committed to **decreasing the number of existing support contractors by 65** as new federal FTEs assumed the contractor support duties.

Improving Performance

At AL, we recognize that doing more with less requires us to improve our performance despite adjustments in funding. Throughout FY95 we placed the emphasis on achieving results:

- In the ER program, we **completed 116 more site closures than originally projected** for FY 95.
- In the WM program, we **submitted 29 proposals to DOE-HQ for funding** of the “Pollution Prevention High Return on Investment Program.”¹ In addition, **AL is serving as the national lead** for the Pollution Prevention Generator Set-Aside Fee Pilot Program.

-
- We **increased public involvement in budget planning** by including key stakeholders and local state and tribal government leaders in key planning meetings and in a video conference with DOE-HQ to discuss environmental management objectives, activities, and priorities associated with the FY97 budget.
 - We are **expanding privatization efforts** and have published two expressions of interest for waste facilities at Los Alamos National Laboratory.

These and other accomplishments are detailed in the following section.

II. Working Toward the EM Strategic Goals

Throughout FY 95, AL EM placed special emphasis on working toward the six EM Strategic Goals. Progress for the year can be tracked by reviewing AL's work in each of these six areas.

1. MANAGING AND ELIMINATING THE URGENT RISKS AND INHERENT THREATS IN OUR SYSTEM

While AL does not have ownership of any site that ranks among the national list of urgent risks, **prioritization of work on the basis of risk elimination** is part of the AL approach.

2. PROVIDING A SAFE WORKPLACE

A number of steps have been taken at several facilities **to ensure the continued safety of AL employees in the work place.**

- Sandia National Laboratories has installed a Real Time Radiography (RTR) Unit which reduces employee exposure by eliminating direct contact with radioactive and hazardous wastes.
- The Los Alamos National Laboratory has instituted numerous actions to ensure health and safety throughout their Environmental Restoration activities. One of these significant elements involved instituting a Basic Ordering Agreement (BOA) which allows the ability to select construction contractors based on health and safety performance.

3. EFFECTING MANAGERIAL AND FINANCIAL CONTROL OVER THE SYSTEM

In FY95, AL initiated changes and established mechanisms that have resulted in significant progress toward achieving this goal. **Uncosted balances are down to an average of 19%** for all programs, **significant cost savings have been achieved in both the ER program and WM programs, and productivity improvements have resulted in major cost reductions** for a number of programs.

Among the tools and strategies used in pursuit of this goal are:

- **Internal DOE-AL EM quarterly management reviews** to track progress, problems, and trends. The reviews look at the budget bottom line, performance measures, and productivity improvements among all key participants. They take the form of written reports followed by video conferences with all area offices and program managers.
- **The AL Strategic Plan and Operational Plan**, which are directly linked to the EM plans, including the six Strategic Goals and the Critical Few metrics.
- **Privatization of waste management activities**, starting with the Radioactive Liquid Waste Treatment Facility and the Mixed Waste Disposal Facility at the Los Alamos National Laboratory. In addition, waste characterization, sampling and analysis, handling of hazardous wastes, and operations at the low level waste disposal area are all being evaluated for privatization or outsourcing.
- **Utilization and refinement of major program metrics** showing plans and performance. These are maintained on a computer database and are included in the quarterly reports. They will ultimately track to the Critical Few metrics being used by DOE EM to show national program performance.
- **AL commitment to improvements** as determined at the Change Summit. Included in these are a commitment to achieve a 20 percent cost efficiency in the Pantex Plant ER Project, award a contract for the treatment and clean-up of mixed waste at the sites designated under a "Privatization Effort," and reform the project management process to reduce the investment in new facility construction and the cost of managing projects.
- **Contract reform**, with the issuance of solicitations to all interested small businesses for the award of two performance-based management contracts by the Grand Junction Source Evaluation Board (SEB). **The procurements are a first for DOE in the area of restructuring a**

Management and Operating type of contract into two performance-based contracts and in expanding the role of small business in the ER field.

4. SHOWING RESULTS

For AL EM programs and Area Offices, FY95 has been a year of measurable results. Special emphasis has been given to mortgage reduction and performance improvements and the accomplishments show the degree of success:

- **Six AL sites are in compliance with the Federal Facilities Compliance Act.** Pantex Plant became the **first site in the nation to come into compliance with the Federal Facilities Compliance Act by a negotiated "Agreed Order"** with the State of Texas. The plan will result in a significant cost avoidance and acceleration of the schedule for site cleanup and close-out.
- Implementation of three ER Facility Action Plans (FAPs) at Pantex, LANL, and SNL resulted in **FY95 cost savings of \$23 million compared with the FY94 baseline.** An additional **465 No Further Action proposals were submitted and 84 additional cleanups were performed** beyond what was scheduled in the FY94 baseline.
- An effort to treat mixed waste by using joint commercial contracts and treatability studies **helped reduce the total number of sites needing compliance orders to three.** This saved over **\$70,000 in legal and technical fees associated with negotiating orders.**
- The UMTRA program **completed remediation on the 4000th Grand Junction Vicinity Property.** By the end of the fiscal year, **remedial action at 97 percent of all UMTRA vicinity properties was completed.**
- The Pinellas Plant is moving towards a majority completion and site **shutdown in FY98.**
- Surface remedial action was completed at the **14th and 15th UMTRA sites.** The draft Programmatic Environmental Impact Statement for the groundwater phase of UMTRA was released for public comment.
- After reaching agreement with the local community on disposal of tailings in an on-site repository, the **Monticello Remedial Action Program issued the Millsite Remediation subcontract** more than three weeks ahead of schedule.

5. FOCUSING THE TECHNOLOGY DEVELOPMENT PROGRAM ON OBSTACLES TO PROGRESS

AL EM, with the assistance of SNL and LANL, aggressively pursues science-based environmental stewardship. Virtually all types of environmental clean-up and waste management challenges present in the DOE complex can be found at one or more of AL's many sites. As a result, the kinds of technologies being developed at AL's laboratories have broad application to remediation and waste management solutions at locations throughout the complex.

Accomplishments in FY95 for the AL Environmental R&D program include:

- 38 technologies demonstrated, 24 available for commercialization, 11 with Cooperative Research and Development Agreements (CRADA) in place, and 18 with leveraging of industrial partners.
- 2 separate studies by the Albuquerque Technology Resource Center resulted in significant lifecycle cost savings. First, a study on alternative remediation solutions for high explosives contamination at the Pantex Plant identified previously unresearched technologies as both cost effective and viable solutions. Second, characterization methods for a remediation effort in the South Valley of Albuquerque identified two available commercial characterization systems as capable of performing the necessary tasks at significant savings.

6. STAKEHOLDER AND GOVERNMENT RELATIONS

DOE-AL's relationship with its stakeholders and state, tribal, and local government leaders was greatly enhanced by a number of FY95 accomplishments. Some of the key activities which occurred over the past year include:

- AL EM continued its support of state environmental monitoring activities at DOE facilities. The Agreement-in-Principle (AIP) program provides funding to state environmental departments to conduct independent environmental monitoring programs. AL successfully renegotiated its AIP with the State of New Mexico, which allows the New Mexico Environmental Department to conduct monitoring programs at four DOE facilities in New Mexico. In addition, an AIP was signed with the State of Missouri to oversee DOE environmental activities at the Kansas City Plant. The AIP with the State of Texas is currently being renegotiated.

-
- AL awarded close to \$1.2 Million through cooperative agreements to three pueblos in close proximity to Los Alamos National Laboratory. The pueblos are utilizing the agreements to establish pueblo environmental monitoring programs similar to those conducted by the state.
 - AL was successful in bringing two Citizens Advisory Boards on line: one for the Sandia National Laboratories and the Inhalation Toxicology Research Institute and one for Los Alamos National Laboratory. Each board has been meeting monthly since August.
 - State, tribal, and local elected officials, along with state regulator entities and environmental organizations, came together to meet and discuss AL's environmental management priorities. In a first of its kind event, key stakeholders and government leaders participated in a video conference with DOE-HQ to discuss the FY97 budget.

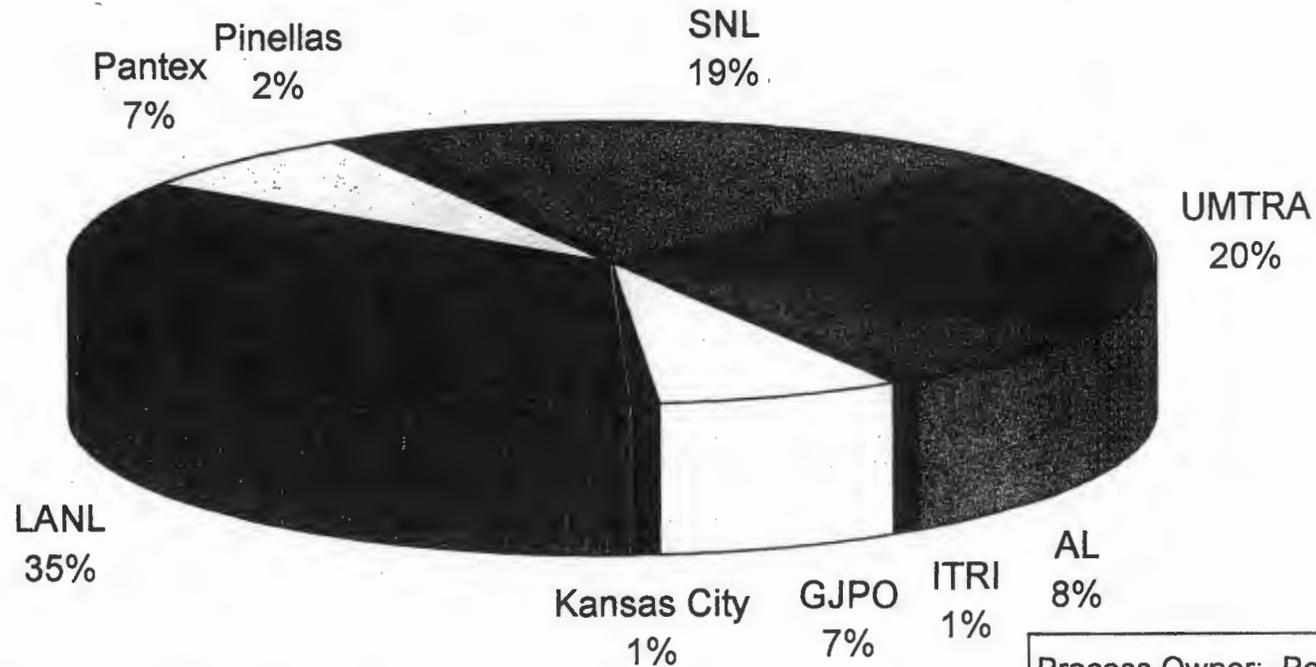
III. Challenges for FY96

As we take an accounting of what we accomplished in FY95, we are already preparing for the challenges of FY96. While substantial progress was made in working towards our goals, clearly much remains to be done. For FY96, our major areas of work will be:

- Benchmarking to the private sector
- Re-engineering the WM Program, including evaluating alternatives to manage waste at multiple program generator sites
- Privatizing EM initiatives
- Prioritizing high and medium risk ER sites

FY95 BUDGET AUTHORITY

Objective: Represent the distribution of funds among the EM Program Offices



Total Budget \$452.9M

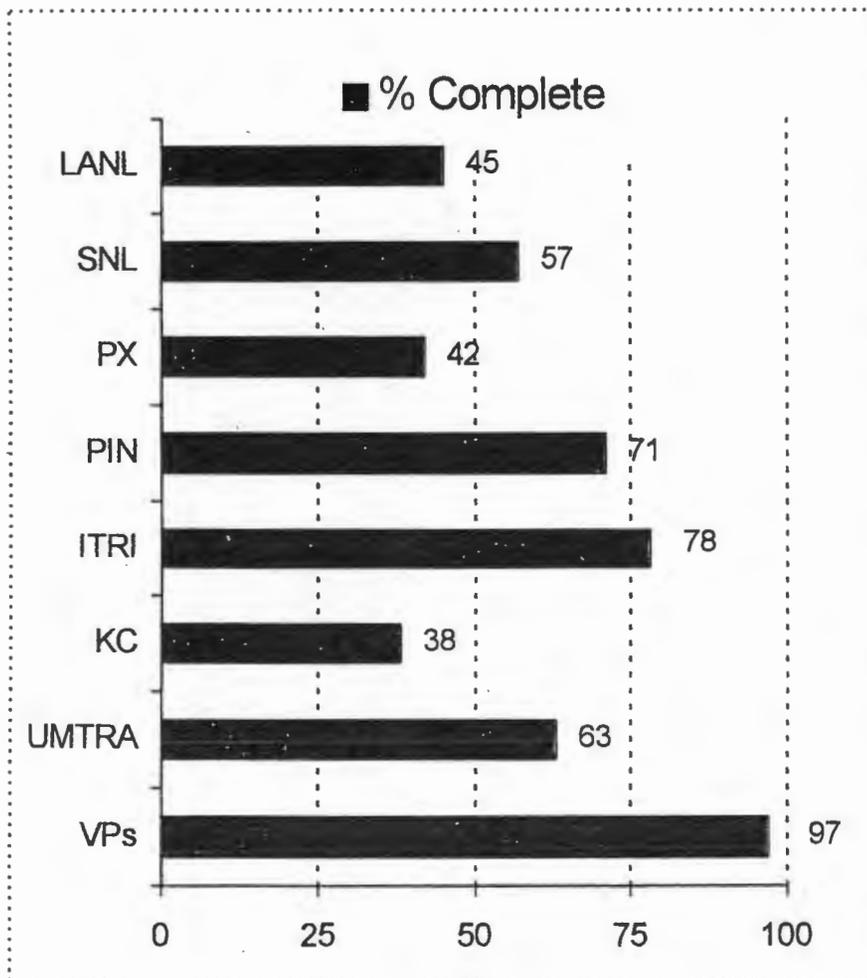
Note: For all sites except SNL/CA, these numbers include funding for ER, WM, Nuclear Materials and Facility Stabilization, Transportation Management and Technical Development

Process Owner: Peggy Hanson
Telephone: 845-5266
Organization: BRMD
Last Update: 10/17/95

AL ER SITE CLOSURE STATUS

SWMU/PRS Level

As Of September 30, 1995

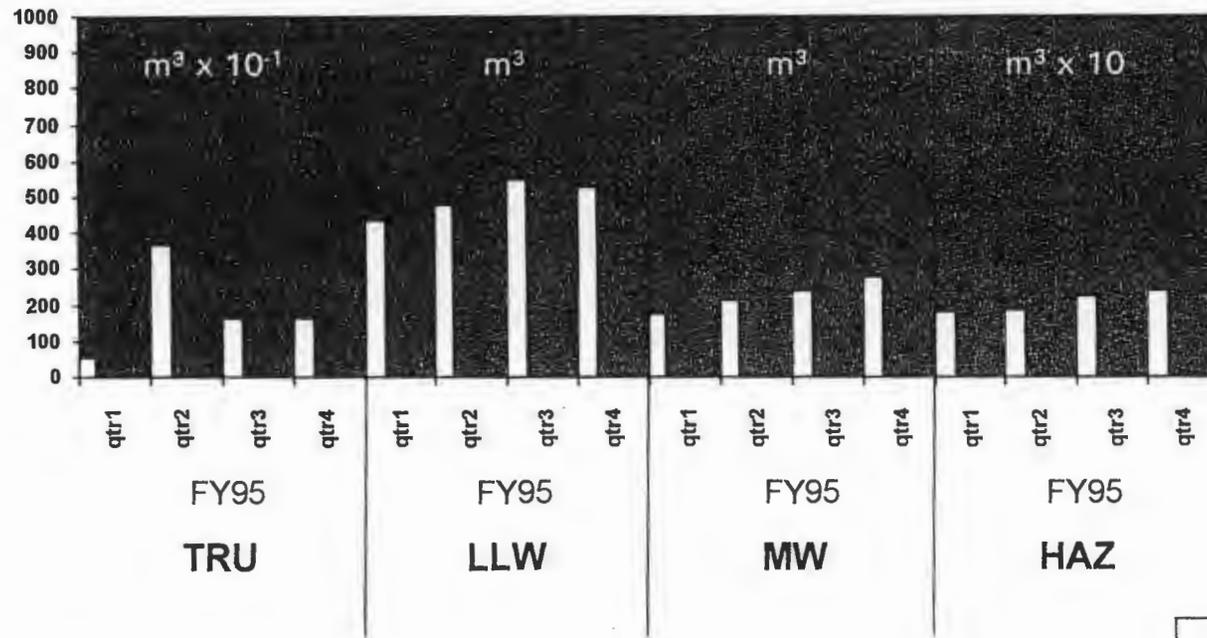


Site	Total	Closed *	%Comp
LANL	2092	932	45
SNL	219	124	57
Pantex	144	61	42
Pinellas	17	12	71
ITRI	9	7	78
Kansas City	42	16	38
<i>Subtotal</i>	2523	1157	46%
UMTRA- Proc. Sites	24	15	63
Vicinity Prop's	5275	5113	97
<i>Subtotal</i>	5299	5128	97
GRAND TOTAL	7822	6285	80%

* Pending Regulatory Approval

QUANTITIES AND TRENDS OF WASTE STORED

- OBJECTIVE:**
- Be more outcome-oriented and demonstrate accomplishments in the AL EM Program.
 - Focus the EM technology development program on the major environmental issues while involving the best talent in DOE and the national science and engineering communities.



Process Owner: Gary Lanthrum
Telephone: 845-5277
Organization: WMD
Update Frequency: Quarterly
Last Update: Nov 4, 1995

SUCCESS INDICATOR: Volumes

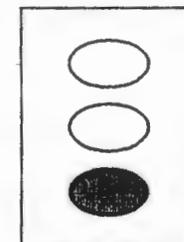
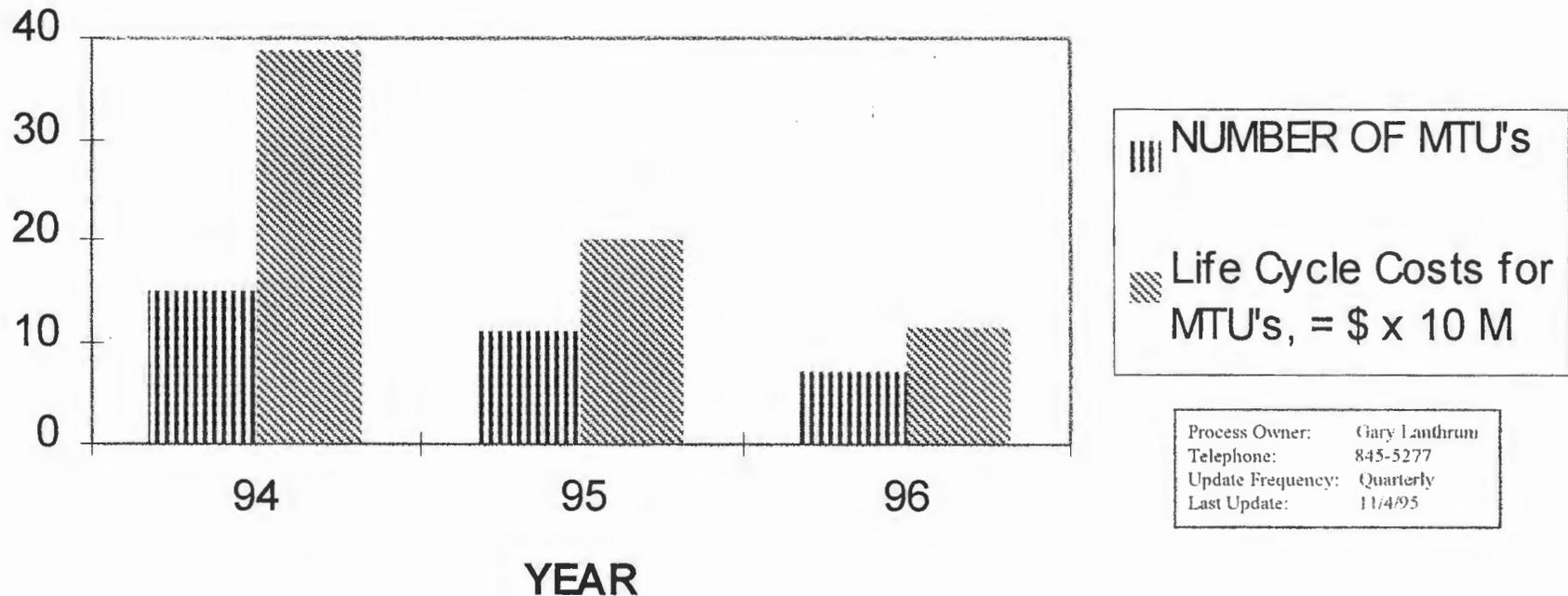


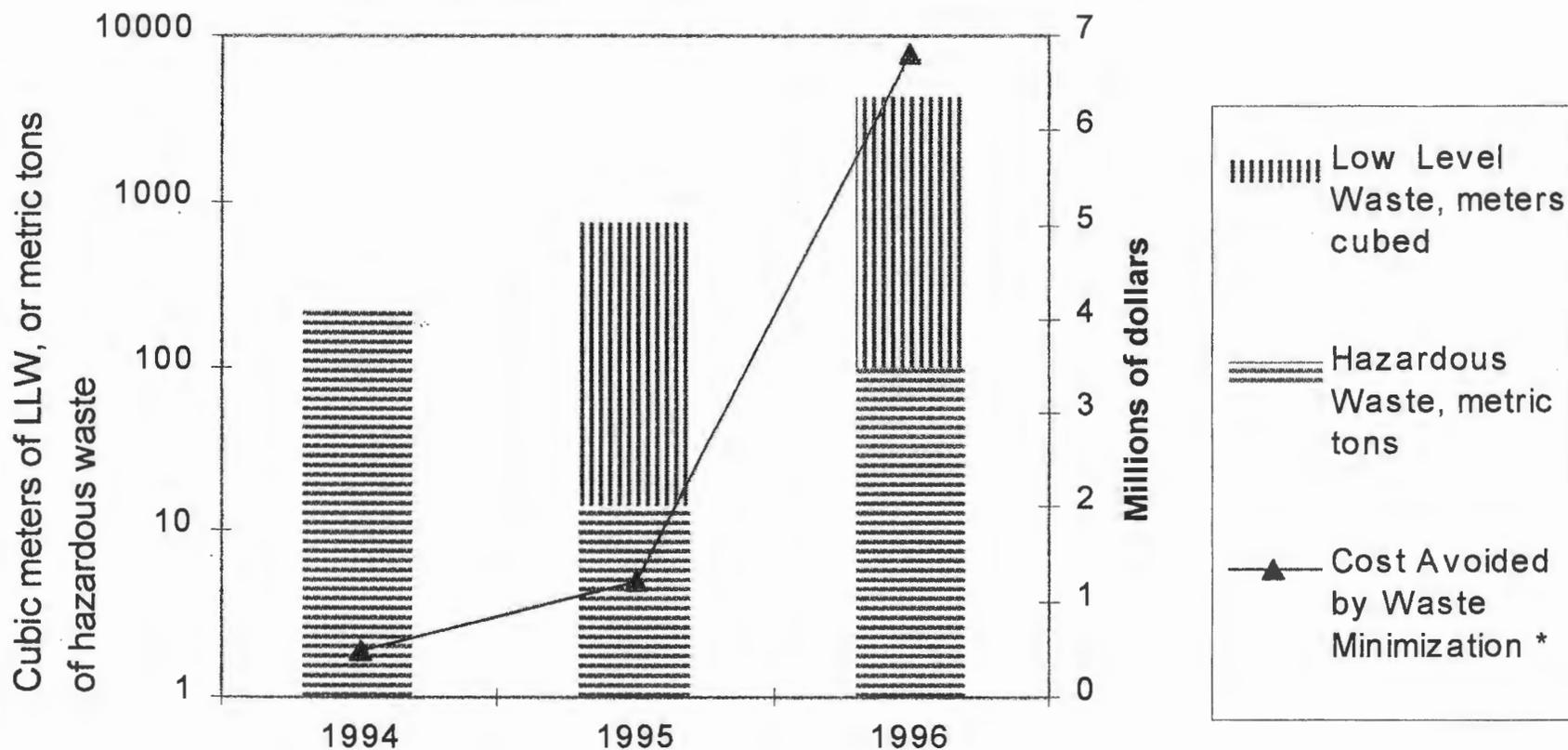
Chart 2.4

AL VALUE ENGINEERING IMPACT ON MIXED WASTE TREATMENT UNIT PLANS & COSTS



This graph shows the impact that AL value Engineering efforts have had on MTU plans. The quantity of waste to be treated remains the same for each scenario, but the cost has been reduced from \$390M to \$115M, and the number of units required has been reduced from 15 to 7. Better yet, the completion date for treatment has been shortened from the year 2006, to 2003.

WASTE REDUCED BY ROI PROJECTS

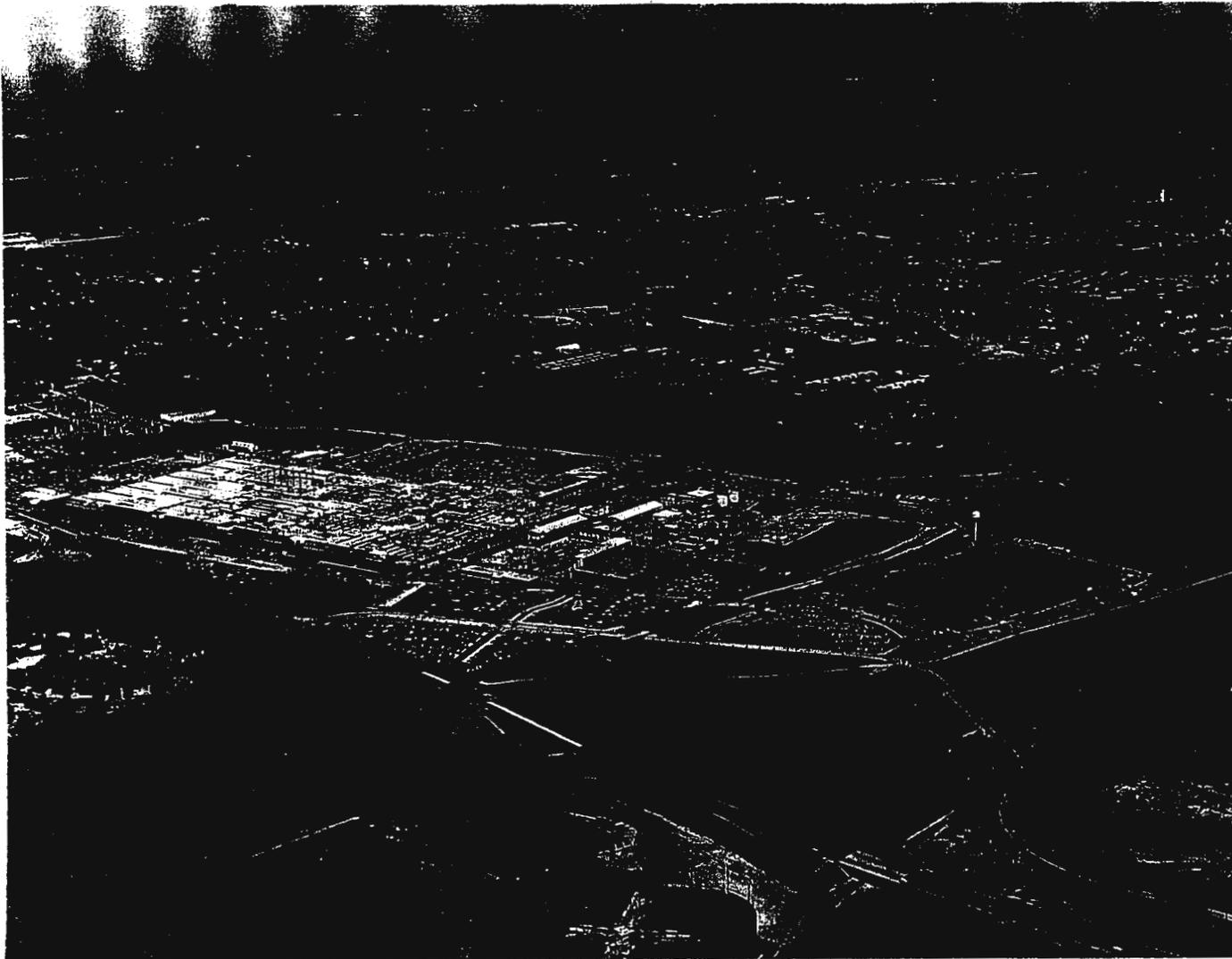


This chart shows the impact that AL's Return On Investment Program has had on reducing wastes and saving money. The cost avoidance for 1994 & 1995 has been realized. The cost avoidance for 1996 is based on projects that are planned and funded. An additional \$7M in savings is possible through unfunded projects.

* The cost savings are calculated from INEL-94/0205, Avoidable Waste Management Costs. To be conservative, only 1/30 of the hazardous waste costs were used in this graph.



Kansas City Plant



Kansas City Plant Environmental Restoration



Kansas City Plant - EM Success Stories *Environmental Restoration*

- There are no urgent risks or threats at the Kansas City Plant. No injuries were recorded in FY 1995 due to EM activities.
GOALS: 1 & 2
- All ER remediation activities were rescoped and re-estimated to reflect more reasonable cleanup assumptions, resulting in a baseline reduction of nearly \$153 million (69%).
- The ER FY 1995 carryover was reduced from 46% (FY 1994 carryover) to 16% of available funding.
- Nearly \$1 million in ER productivity improvements were identified. These savings were used to absorb funding cuts and to accelerate cleanup activities.
- An internal cost estimate validation process utilizing a cross-functional team approach was implemented for all new ER cost estimates.

GOAL: 3

- The removal of the waste oil tank at the Plating Building site was accelerated more than 2 1/2 years and cleanup was 75% complete at the end of the year. The Interim Measures cleanup for the Miscellaneous PCB Sites was accelerated nearly 2 years with completion of the cleanup pending regulatory approval. An Alternate Concentration Level petition was submitted to the regulators that, if approved, would establish criteria for ending groundwater treatment. A draft multi-site Corrective Measures Study (CMS) was prepared covering five projects at a savings of over \$1 million compared with individually prepared CMSs.

Contracts were awarded and treatability studies completed for two in situ innovative groundwater remediation technologies, Deep Soil Mixing and Microwave Technology. An additional groundwater treatment technology study utilizing zero-valent iron filings was completed.

GOAL: 4



Kansas City Plant - EM Success Stories *Environmental Restoration*

- Data Quality Objectives (DQO) Policy - ERD responded to an action from EM-1, requesting the Field to establish a policy that will require sites to implement the DQO process. The ER Team coordinated a meeting with ER Program Managers, in conjunction with a EPA sponsored DQO workshop that was scheduled for Albuquerque, NM on September 20-21, 1995. Over 100 participants attended the DQO workshop, and Waste Management/Environmental Restoration representatives from all of the AL sites attended the ER Managers "break-out" session to finalize a draft policy for Albuquerque sites. As a result of the "break-out" session, we were able to reach a consensus on the next steps needed to finalize a DOE/AL DQO policy.

GOAL: 3

- Waste Minimization in Environmental Restoration - The ER Team within ERD has been working with the WMin/Pollution Prevention team within the Waste Management Division to assure that ER personnel at the sites are considering WMin opportunities during the assessment and remediation phases, and to assure that ER personnel are aware of WMin Return-on-Investment opportunities. A pilot study was initiated at Sandia National Laboratory (SNL) to help them in implementing WMin., other sites will be considered in the future. Also, WMin performance criteria for ER activities will be established in the future.

GOAL: 3

Kansas City Plant Waste Management



Kansas City Plant - EM Success Stories *Waste Management*

- The hazardous and radioactive waste acceptance criteria program has been implemented.
- Wastestreams are now certified by process at the generating departments.
- Project control has been enhanced through the development of the FY 1996-2001 Waste Management baseline using a new Project Control System software. The Work Breakdown Structure was revised to be activity-based as opposed to resource-driven.

GOAL: 3

- Legacy low-level and classified hazardous wastes were shipped, which combined with the sanitization of eight drums of classified hazardous waste completed on-site, resulted in the elimination of all hazardous classified waste streams in inventory.
- Two outside hazardous waste storage lots were coated with an impervious material to eliminate cracking due to weather exposure.
- Utilization of an automated barcode waste tracking system has reduced state regulatory reporting cycle time by approximately 75%.
- Shipment of mixed waste avoided entering into a Consent Order with the Missouri Department of Natural Resources as required under the Federal Facilities Compliance Act.
- Lime slurry was added to the Industrial Wastewater Pretreatment Facility (IWPF) main treatment process resulting in annual savings of approximately \$70,000.

GOAL: 4

- Approximately 10 tons of high BTU value hazardous waste has been diverted from incineration to fuel-blending energy recovery. This diversion represents approximately 7.5% of the hazardous waste mass and reduces disposal costs by approximately 30%.
- Recharacterization of hazardous waste as special waste has diverted disposal from a permitted RCRA/TSCA facility to a sanitary landfill.
- As a part of the DOE-HQ Return-on-Investment program, a sealed chamber was installed around a thermal chemical bath to reduce emission of VOCs. The upgraded unit contains a hermetically sealed refrigeration unit to provide cooling, eliminating the need for liquid nitrogen coolant. This upgrade is projected to save nearly \$9,000 per year.
- The pH level of Reverse Osmosis/De-Ionized (RO/DI) reject water is now being monitored continuously and is only sent to the IWPF when city discharge requirements are exceeded. If discharge requirements are not exceeded, it is discharged to the sanitary sewer. This will result in an annual savings of \$59,000 and reduce treatment of an estimated 21 million gallons of RO/DI reject water.

GOAL: 4

- EPA 33/50 Program Chemicals were reduced approximately 20% from 1994 levels. The use of these chemicals has been reduced a total of 99% since the reduction program was initiated in 1988.
- Recycling in 1995 diverted an estimated 1000 tons of material that originally would have been landfilled. Landfill volumes have been reduced further through the installation of a 5:1 trash compactor.

GOAL: 4

Kansas City Plant - EM Success Stories *Waste Management*

- A Community Involvement Group was formed consisting of representatives of local government, community groups, business groups, and environmental organizations. A future land use proposal was presented to this group as well as other occupants of the federal complex and a consensus opinion was reached that the site will continue to be used for industrial purposes.
- An Agreement-in-Principle was achieved with the Missouri Department of Natural Resources for oversight of Environmental and Emergency Management programs.
- Articles have been published in the environmental newsletter "Focus on the Environment" regarding the Site Treatment Plan and the Barcode Waste Tracking System.
- Pollution Prevention efforts were recognized by the community and local government by receipt of the 1995 Environmental Excellence Award.

GOAL: 6

- Waste Generator Assistance - The largest TCE user at the plant has been eliminated by identifying an aqueous cleaner to replace the TCE in a vapor degreasing operation.

GOAL: 4

- Improved Financial Controls
Waste Management
Reduced operating carryover by 46% from FY94.

GOAL: 3



Pantex Plant



Pantex Plant Environmental Restoration



Pantex Plant - EM Success Stories *Environmental Restoration*



- In-Field Assessment of Chemical High Explosives Using Immunoassay Techniques
Date of Success: FY95
 - Pantex Plant has experienced both time and cost avoidance from its use of the DTECH Kit, which uses immunoassay techniques in the field to conduct site characterizations and/or preliminary screens for high explosives within 20 minutes.
 - DTECH reduces sampling excavation and disposal costs because of the improved definition of contamination plumes that it provides virtually on the spot in the field
 - It compresses the project schedule and contributes to waste minimization and frees up resources that can be dedicated to other projects
 - Uses an enhanced technology enabling site characterization with one field mobilization effort

- Participated in ER-95 and the American Chemical Society Environmental Conference sharing the commitment of Pantex Plant to responsible, innovative, and cost-effective environmental restoration

Cost: \$15,000

GOALS: 3, 4, 5, & 6



- Integration of the CERCLA and RCRA processes at an industrial facility using Texas Risk Reduction Standards
Date of Successes: August and September 1995
 - Pantex Plant was successful in developing an integrated CERCLA and RCRA program that received positive regulatory review. The plan will result in a significant cost avoidance and acceleration in the schedule of site clean-up and closeout.
 - This process achieves the goals of CERCLA and RCRA while eliminating duplication of effort typically required under both Acts.

Pantex Plant - EM Success Stories *Environmental Restoration*

- Participated in ER-95 and American Chemical Society Environmental Conference sharing innovative ways of integrating the CERCLA and RCRA processes

GOALS: 3, 4, & 6

- **Burning Ground Waste**

Date of Success: August 1995

- Through a technical review of records and data by Pantex scientists and engineers, 600 drums of potential low-level waste was able to be recharacterized as a Class II nonrad waste.
- This resulted in a cost avoidance to DOE of \$500K.

GOAL: 3



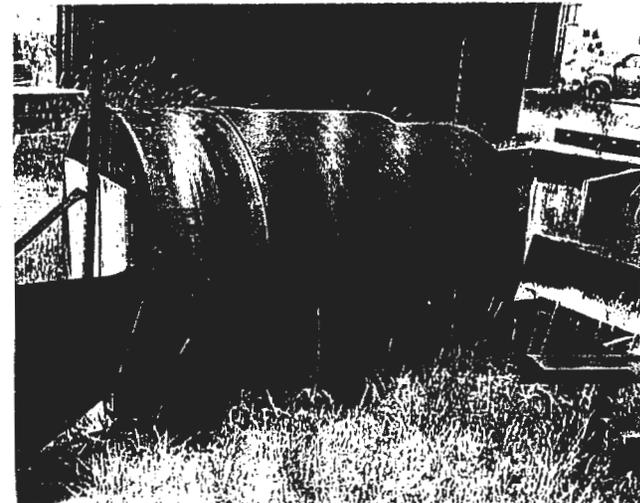
- **High Priority Potential Release Sites (Firing Site 22 - Gun barrel removal)**

Date of Success: September 1995

- Pantex Plant accomplished an accelerated corrective measure at one of the site SWMUs. A lead gun barrel was removed which was previously used to contain high explosive tests without using outside contractors which resulted in a cost avoidance of \$400K. In addition, the gun barrel is to be cleaned and sent to a recycler avoiding waste disposal.

Cost: (Cost-to-date) \$25K

GOAL: 3



Pantex Plant - EM Success Stories *Waste Management*



and cost status while providing a forum for rescheduling resources so that schedules and milestones will be maintained

GOAL: 3

- **Mixed Waste Inventory Reduction**

Date of Success: FY95

- After evaluation of the Pantex Mixed Waste Inventory, it was determined that 338 cubic feet of this waste could be reclassified as non mixed waste, thereby reducing the inventory of mixed waste at Pantex Plant. This activity will result in substantial cost avoidance to the DOE due to the reduced cost for storage, treatment, and disposal of the resulting classification of waste.

GOALS: 3, 4, & 5

- **Pantex Plant Federal Facility Compliance Act Compliance Plan**
Date of Success: September 1995
 - The Pantex Plant site treatment and compliance plan was the first to receive state approval in the entire DOE complex
 - All mixed waste was inventoried, and disposal methods were identified to match needs
 - Target dates and milestones were identified for the treatment of all mixed waste at Pantex Plant
 - A Waste Treatment Technology Group was created to identify and resolve technical issues and implement mixed waste treatment technologies
 - Involved the Pantex Plant Citizens Advisory Board and the general public in discussions and entertained their comments about the treatment of mixed waste at Pantex Plant
 - Achieved cost avoidance of \$176,000 by not contracting out work related to the site treatment plan

GOALS: 3, 4, 5, & 6

Pinellas Plant



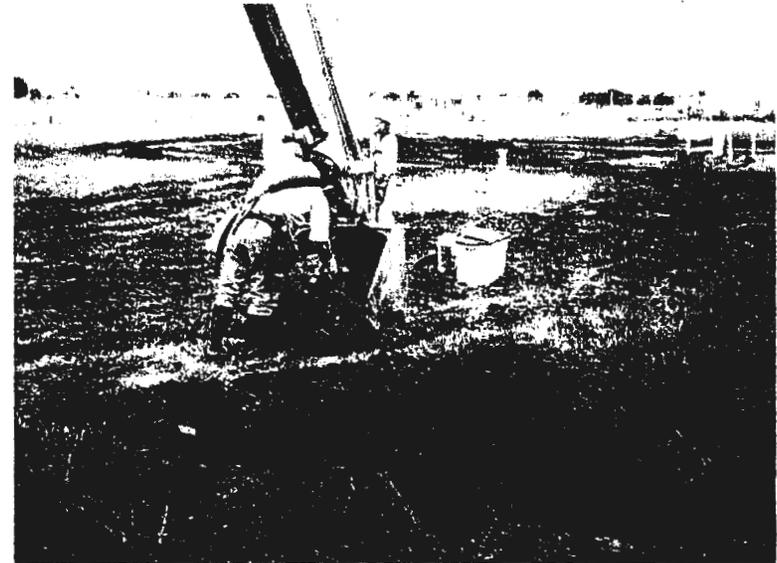
Pinellas Plant Environmental Restoration



Pinellas Plant - EM Success Stories *Environmental Restoration*

- Debris and Hazardous Waste Buried Drum Removal Project at the Northeast Site
 - Slurry Wall Installation at the Northeast Site to Enhance Groundwater Cleanup
 - Innovative Groundwater Cleanup at the West Fenceline
- Date: FY95
Cost: \$1.5M

GOAL: 1



- No ER Injuries or Lost Workdays in FY95
 - Effective Utilization of Preventive Change Analysis Process to Deal with Unexpected
 - Weekly Safety Meetings with Subcontractors
 - Successful Safety Citation Program Ensures Subcontractor Compliance
- Date: FY95

GOAL: 2



Pinellas Plant - EM Success Stories *Environmental Restoration*

- Reduced FY95 Carryover by 84% of Prior Year - from 63% to 10%
 - 100% of Carryover Obligated or Committed
 - Six D&D Cost Avoidance Projects - Complete 9/95
- Date: FY95
Cost: \$1.5M

GOAL: 3



- Building 100 Subsurface Characterization to Define SWMU Area and Contamination Beneath an Active Manufacturing
 - Building and Optimize Design of Cleanup Systems -
Cost: \$0.3M
 - Building 100/Old Drum Storage Area Recovery Well Installed, Northeast Site Treatment System Capital Equipment Obtained, and Utility Trench Completed Well Ahead of EPA Required Schedule -
Cost: \$0.3M
 - Developed Draft Consent Agreement with Landowner and State Agency for Voluntary Site Cleanup — Concurrently Completed Draft Remedial Action Plan (RAP) First Consent Order Deliverable -
Cost of RAP: \$0.75M
- Date: FY95

GOAL: 4



Pinellas Plant Waste Management



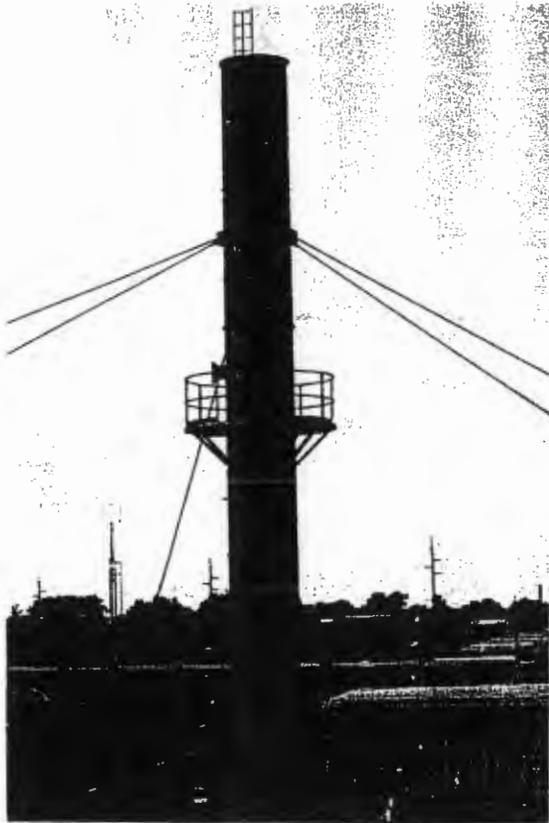
Pinellas Plant - EM Success Stories *Waste Management*

- West Stack Cleaning Project - Saved the DOE In Excess of \$300K in Low-Level Waste (LLW) Disposal Costs by Cleaning and Selling as Scrap Metal
- Equipment Cleaning Project - LLW Disposal Savings by Placing Equipment on Excess List or Selling as Scrap
- Completed a Pollution Prevention Opportunity Assessment on Thermal Battery Building Process — Identified and Eliminated

- Pollution Producing Processes, thus Lowering Production Costs
- Decommissioned West End of Pinellas Plant to Make Available to New Business

Date: FY95

GOAL: 4



- Mercury Amalgamation Study - Joint Effort Between Pinellas and Nuclear Fuel Services to Treat Radioactively Contaminated Mercury — Eliminates Need to Dispose as Mixed Waste

Date: FY95

GOAL: 5

Pinellas Plant - EM Success Stories *Waste Management*

- Reduced the Number of Radioactive Materials Management Areas by 33%, Thereby Reducing the Risk to New Tenants
- Removed Hazardous Waste Tank Farm — Eliminated Risk to DOE and Public and Provided Savings on Disposal Costs
- Achieved Approval for Low-Level Waste Shipment From Two DOE Off-Site Disposal Sites
- Resumed Low-Level Waste Shipments to the Savannah River Site
Date: FY95

GOAL: 2



- Developed Revised FY96-97 Waste Management Baseline
- Implemented First Phase of Fixed Price Contracting for Waste Management
Date: FY95

GOAL: 3

- Participated in Discovery Day at Eckerd College — Showcase of Various Technologies and Capabilities
Supported the Florida Environmental Expo — Exhibit of the Plant's HAZMAT Equipment
Date: FY95

GOAL: 6

Pinellas Plant Landlord



Pinellas Plant - EM Success Stories *Landlord*

- Removed Tritium from Pinellas Plant Ahead of Schedule
 - Removed Excess Used in Fabrication of Neutron Generators
 - Completed 3 Months Ahead of Schedule
 - Joint Effort with Livermore and Savannah River

Cost: \$50,000

- Completed Explosive Disposition Ahead of Schedule
 - Demilitarized and Sanitized 1500 Classified Explosive Components
 - Completed 3 Months Ahead of Schedule
 - Carefully Coordinated with Regulatory and Technical Personnel

Cost: \$100,000

- Building 100 Decontamination
 - Removed, Decontaminated, and Disposed of Tritium Contaminated West Stack
 - Decontaminated Industrial Areas in West End of Building 100 for Alternate Uses

Cost: \$1,480,000

Date: FY95



GOAL: 1

- Supported the Transfer of the Facility to the Community Reuse Organization (CRO) for Alternate Uses
- Cooperative Project Reviews to Integrate Cleanup with Alternate Use Plans of CRO
- Expanded and Completed the Environmental Baseline Report Conducted Public Meeting and Response to Comments on Facility Decontamination and Dismantlement Environmental Assessment

Date: FY95

GOAL: 6

Pinellas Plant - EM Success Stories *Landlord*

- Pinellas County Industry Council (PCIC) Tenant and Commercial Business Ventures Evaluated and Added to Existing Plant Permits
- Continued with 4th Consecutive Year Fully Compliant Program in Radiological and Nonradiological Permit and Regulations for Air Emission, Wastewater, Stormwater, and Tanks
- Developed an Applicable Requirements Report for Clean Air Act Amendments (CAAA) Titles I to XI for the DOE, PCIC, and Tenant Ventures
- Developed Permit Requirements Summary for CAAA
Lost Workdays and Workmen's Compensation Cases for FY95 Less Than Previous 2-Year Average 30% Reduction in OSHA Cases
70% Fewer Lost Workday Cases
80% Decrease in Lost Workdays
47% Fewer Workmen's Compensation Cases
Date: FY95

GOAL: 2

- Implemented First Phase of Fixed Price Contracting
- Converted from Cost Plus Contract Structure
- Covers Environmental Monitoring/Sampling, Parts of Waste Management, Safety and Fire Protection
Date: September 1995
Cost: \$2,800,000

GOAL: 3

- Sold the Pinellas Plant Facility to the Community Reuse Organization (CRO)
- Transferred Ownership with an Agreement to Complete Cleanup by End of 1997
- Supports Economic Development, While Potentially Reducing Workforce
- Released Buildings 1200, 400, and 1400 for Alternate Use by CRO
- Released Area 175 in Building 100 for Use by CRO in Economic Development Efforts
- Transferred Excess Personal Property for Reuse by CRO in Economic Development Efforts
Date: March 1995
Cost: \$2,600,000

GOAL: 4



Pinellas Plant

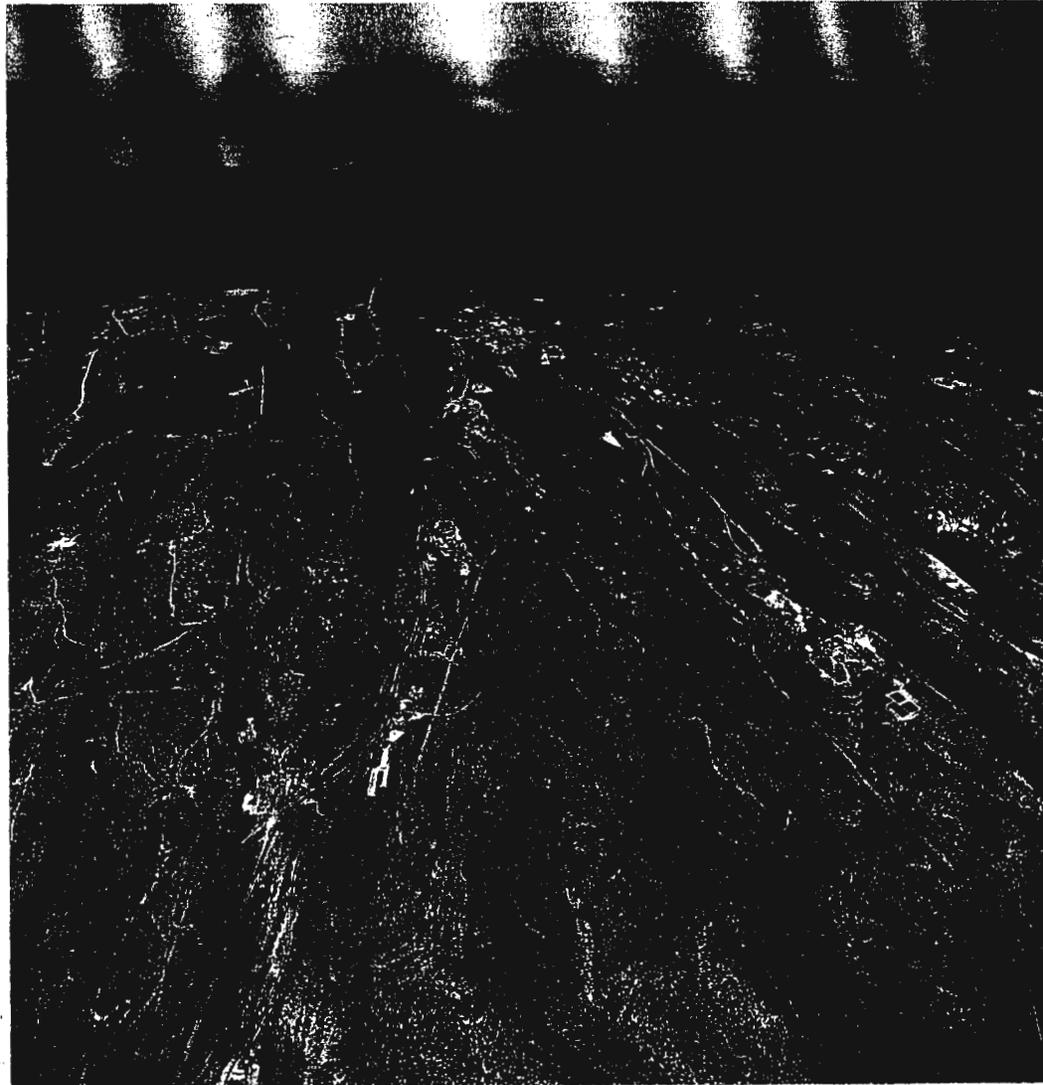
D&D



Pinellas Plant - EM Success Stories *D&D Success*

- A 10-ton carbon steel exhaust stack that vented gases from the tritium processing area was cleaned to allow the metal to be recycled. 163 cubic meters of LLW was avoided, saving \$20K in transportation and \$280K in waste disposal costs.

Los Alamos National Laboratory



Los Alamos National Laboratory Environmental Restoration



LANL - EM Success Stories *Environmental Restoration*

- Decommissioning of High Explosives Processing Facilities at TA-16
 - Completed removal and site restoration at 7 concrete bunkers and 2 wooden structures
 - Removed 600 yd³ of concrete and set aside for crushing and reuse as backfill, roadbase, or landscaping material
 - Removed 1000 yd³ of soil and stored for reuse as backfill
 - Clean wood remove for fuel in burn pit for flashing high explosives residues



- Asbestos and lead-based paint shipped off site for disposal at commercial TSD facility
Sept. 95

GOAL: 4

- Facility has no urgent risks or threats to human health or the environment
 - Liabilities exist at about 200 sites located on non-Laboratory land including county, private, and other federal ownership
 - 8 of these sites were cleaned up in 1995
 - 46 have been proposed for no further action in a permit modification request submitted to the EPA
 - 35 have been informally proposed for no further action in investigation reports submitted to the EPA

GOAL: 1

- Reduced carry over as a percentage of funds available from 17% in FY 1994 to 3% in FY 1995
- Established 2 fixed-price contracts for work in decommissioning at TA-35 and remediation at Material Disposal Area M, TA-8

GOAL: 3

- Cleaned up 45 remedial action sites in FY 1995
- Decommissioned and removed 12 facilities in FY 1995
- Proposed permit modifications to EPA to remove 573 sites
- Proposed informally to the EPA after site investigation that 240 sites be considered for no further action

GOAL: 5

LANL - EM Success Stories *Environmental Restoration*

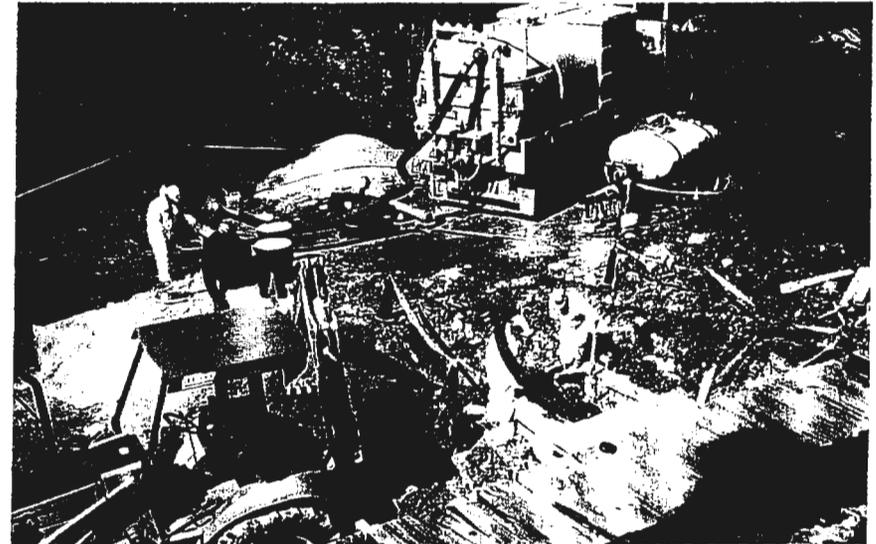
- Cleanup of Hillside 140, Los Alamos Town Site
 - Location of effluent from 1940s uranium radiochemistry facility
 - Site on DOE land but used by adults and young people for hiking and other recreational use
 - Site immediately behind residential development
 - Site on rugged cliffside terrain
 - Removed about 15 cubic yards of uranium contaminated soil and backpacked it out of site
 - Protected the site from erosion after soil removalSept. 1995

GOAL: 4



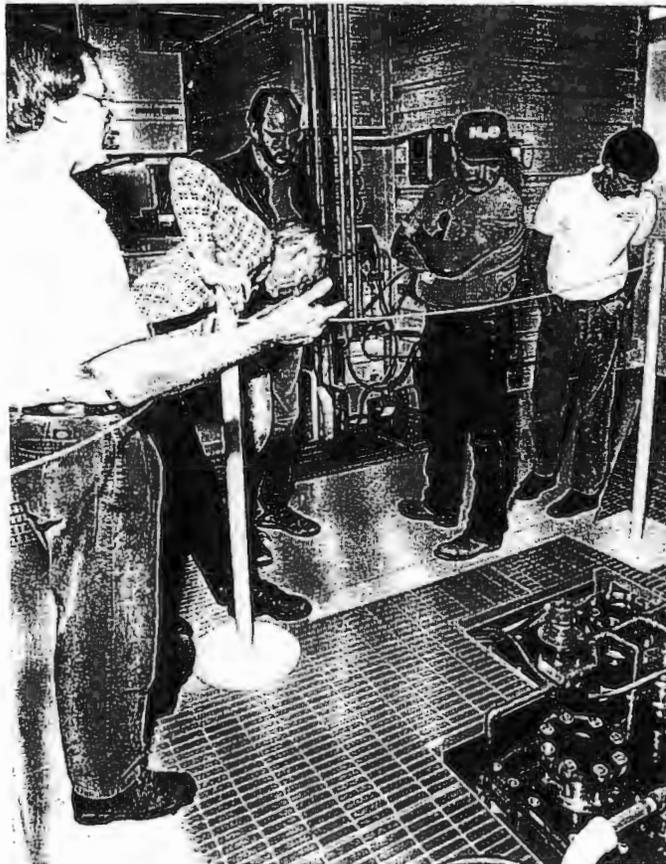
- Clean Up of Septic Tank in TA-8, High Explosives Processing Area
 - Septic tank serviced buildings using photo-chemicals, radionuclides, and high explosives
 - Tank contained chlorinated organic solvents, including trichloroethane
 - Vacuum pump used to remove sludge and wash water in contained system, eliminating spillage
 - System allowed tank to be cleaned and left in place, reducing amount of bulk waste generated
 - Removed sludge and waste water was transported off site in normal process for disposition of hazardous wasteSept. 95

GOAL: 4



LANL - EM Success Stories *Environmental Restoration*

- Stakeholders participated in tour of Radioactive Liquid Waste Treatment Facility
 - Steve Hanson, group leader of RAD and Industrial Waste Science (CST-13), explained how the Radioactive Liquid Waste Treatment Facility operates.
 - The facility collects wastes 365 days a year and is staffed 10 to



- 12 hours a day, five to six days a week for operations.
- It is the goal of the project to provide a safe workplace free from serious accidents and fatalities and to continuously reduce injury and adverse health effects
- The ER Project had no lost time accidents or incidents in Fiscal Year 1995

GOAL: 2

- Established a Citizens' Advisory Board in FY 1995
 - Developed a publicly accepted plan for stakeholder involvement in clean up decisions
 - Conducted discussions with 15 community organizations to develop commitments to help in clean up decision making
 - Continued to develop strong ties with the local Pueblos

GOAL: 6



Los Alamos National Laboratory Waste Management



LANL - EM Success Stories *Waste Management*

- Transuranic Waste Inspectable Storage Project (TWISP)

Date of Success: 9/30/95

The first of three phases of facility construction for TWISP was completed in FY95. The first two of six temporary storage domes and a mobile retrieval dome, all of which are tension-support structures were constructed. In addition, the following technical accomplishments were achieved.:

- Accelerated design
- Preliminary safety analysis report
- RCRA permit/permit modification
- Fire hazard analysis

GOAL: 1



- LANL Certification Plan

Date of Success: 8/7/95

- Effort: A certification team was created to bring the LANL - TRU certification program into compliance with WIPP WAC Rev 5.
 - Representing: CST-3, CST-7, CST-9, CST-13, CST-14, NMT, CMR, Benchmark Environmental Corporation, Stone and Webster/Weston.
 - Issues Dealt With:
 - The team has initiated the rewrite of the LANL TRU Certification plan to incorporate requirements from WIPP WAC Rev 5.
 - Attachments to the Certification Plan which must be completed for every generating site have been started. The team will work closely with the generators to help them complete these documents.
 - The team has been working with the generators to develop new TRU Code for shipment and disposal of waste at WIPP.
- Validation of the TRU database has been started and will be completed by January 1996.

GOAL: 5

- Approval of the TA-54 Area G FSAR

Date of Success: 09/19/95

The TA-54 Area G Final Safety Analysis Report (FSAR) was approved in FY 95. This document was one of the first to be written and approved to DOE Order 5480.23 and its associated standards. This document, which serves as a safety envelope and operating agreement with DOE, was completed in a timely fashion with minimal cost to the Laboratory.

Cost: \$450 K

GOAL: 2

LANL - EM Success Stories *Waste Management*

- Approval of the TA-54 Area G Fire Hazard Analysis

Date of Success: 09/22/95

The Fire Hazard Analysis was approved for operations and facilities at LANL, TA-54, Area G. This document serves as the technical basis for fire protection requirements at Area G. It was started and developed in parallel with the TA-54 Area G FSAR.

Cost: \$40 K

GOAL: 2

- Stakeholder Participation in the Radiological Performance Assessment for the Low-Level Radioactive Solid Waste Disposal Area at Los Alamos National Laboratory Technical Area 54, Area G

Date of Success: March 1994 through October 1995

- Series of meetings held with San Ildefonso Pueblo, and staff of pueblo invited to participate in LANL technical meetings on the Radiological Performance Assessment for Area G
- A draft Memorandum of Understanding has been negotiated with San Ildefonso Pueblo for continued participation in this topic
- Presentation and discussion held with local elected officials for Northern New Mexico
- Discussions also held at meetings of community organizations and a professional radiation protection society
- Radiological performance assessment process is on-going and stakeholder comments will be reflected in future reports

GOAL: 6

- Stakeholder Participation in the Los Alamos National Laboratory Site Treatment Plan for Mixed Waste

Date of success: November 1994 through June 1995

- Extensive series of meetings with stakeholders regarding draft Site Treatment Plan
- Stakeholders involved in meetings included general public, Indian Pueblos, local elected officials, State legislators, environmental activists, and local emergency response personnel
- Some 2000 people also informed by mailings of availability of a draft order from the New Mexico Environment Department to implement the Site Treatment Plan
- Public involvement reflected in increased emphasis on off-site treatment in the final plan and order

GOAL: 6

- Stakeholder Participation in Conceptual Design of Radioactive Liquid Waste Treatment Facility at Los Alamos National Laboratory

Date of success: January through June 1995

- Extensive series of meetings with stakeholders regarding Radioactive Liquid Waste Treatment Facility
- Two public tours of existing facility conducted (May 30 and June 9, 1995)
- Stakeholders involved in meetings included surrounding Indian Pueblos (Cochiti, Jemez, Santa Clara, and San Ildefonso), State of New Mexico Environment Department, elected officials of Northern New Mexico communities, public interest groups, and general public
- The total number of stakeholders attending all meetings was 161, although some individuals attended more than one meeting

LANL - EM Success Stories *Waste Management*

Public involvement has resulted in a separate, more detailed study of radiological liquid effluents that will consider a variety of zero-discharge options for the project

- Discussions with the Indian Pueblos will result in further discussions on water quality standards for effluent for the project

GOAL: 6

- Tour of Solid Hazardous, Mixed, Transuranic, and Low-Level Radioactive Waste Management Areas (Technical Area 54, Areas G and L) at Los Alamos National Laboratory by the Northern New Mexico Citizens' Advisory Board (CAB)

Date of success: June 23, 1995

- Tour provided CAB with background information, and opportunity to observe solid waste management practices at LANL and to discuss important waste management issues
- Issues discussed included the LANL Site Treatment Plan and Expansion of Area G Low-Level Radioactive Waste Disposal Area

GOAL: 6

- Public Tour of Solid Hazardous, Mixed, Transuranic, and Low-Level Radioactive Waste Management Areas (Technical Area 54, Areas G and L) at Los Alamos National Laboratory

Date of success: August 25, 1995

- Provided 30 members of the public with background information, and opportunity to observe solid waste management practices at LANL and discuss important waste management issues
- Was very well received, and participants were very enthusiastic and complimentary of the tour

GOAL: 6

- Submittal of information on the waste management program requested by the Northern New Mexico Citizens' Advisory Board

Date of success: September 11, 1995

- Information was provided to the CAB on:

- Shipment of hazardous waste off site
- Status of preparations in communities surrounding LANL to deal with transportation of waste through the communities
- Quantities and origin of wastes managed at LANL
- Environmental analyses
- LANL experiences with public participation
- Status of cleanup of the Rendija Canyon area north of LANL
- Background on ownership of lands before LANL was established

GOAL: 6

- Reduction in Low Level Waste Volume

Date of Success: 3/1/95

The available disposal volume at Area G is a valuable resource. To conserve this resource, CST-14 recently purchased a 200-ton waste compactor. The Environmental Assessment has been completed and construction will be completed in FY96. The compactor has a 5 to 1 compaction ratio. This will result in a significant volume reduction. This unit will extend the life of Area G and reduce LANL's cost for solid LLRW disposal. The compactor is equipped with state-of-the-art safety features such as a HEPA filtration system with an interlocking operation switch so that the compactor cannot operate unless the air filtration system is operational. The system has a continuous air monitoring system to ensure protection of the environment.

LANL - EM Success Stories *Waste Management*

Cost: \$350,000

GOAL: 1

- Low Level Waste Disposal Cost Reduction

Date of Success: 2/1/95

A great deal of the work at LANL involves the use of radioactive materials. Waste developed during this work must be properly disposed of. To ensure that LANL can economically dispose of this waste, CST-14 has initiated a project to streamline the waste disposal process. The project involves re-engineering the waste receipt and records process. The first phase has been completed and has reduced direct costs by \$100,000/yr. With the completion of Phase 2, which involves the replacement of paper records with an electronic system, an additional \$99.151/yr. in direct costs will be saved.

Cost: \$75,000

GOAL: 4

- The Pollution Prevention Program Office has assisted the project personnel working on the Upgrade of the Chemistry and Metallurgy Research (CMR) Building in the development of a Waste Minimization Strategic Plan. This plan identifies wastes which have been avoided to date, and establishes goals for further waste reductions for this project.

Date of Success: 8/1/95

- Cost Avoidance: To date, approximately \$50M of DOE Complex costs related to the generation and management of these wastes, including estimated replacement radioactive landfill space costs, have been avoided. This represents about \$29M savings to DOE EM. The waste reduction goals for this project represent an additional DOE Complex savings of \$6M, of which about \$4M would be DOE-EM costs.

- Waste Avoidance: To date, 16,200 cubic yards of wastes have been avoided. The plan establishes a goal to reduce the wastes projected to be generated by this project by another 40 percent.

Cost: About \$500K to date. Future project commitments of \$1.2M for waste minimization actions.

GOAL: 3

- The Pollution Prevention Program intervened in the disposal of 150,000 kg of clean soils from Environmental Restoration drill cuttings, avoiding these soils being managed as RCRA waste.

Date of Success: 7/1/95

- Waste Avoidance: 150,000 kg of RCRA wastes eliminated from disposal.

- Cost Avoidance: Approximately \$3.5M in avoided costs for waste generation and management.

Cost: Nominal

GOAL: 1

- The Pollution Prevention Program conducted a Value Engineering Study of the proposed Omega West Reactor decommissioning to identify waste minimization techniques which can be incorporated into that project.

Date of Success: 9/1/95

- Cost Avoidance: An estimated \$1.3M in project waste management costs can be avoided as a result of applying the actions identified. An additional \$650K of Waste Management Program costs will be avoided as a result of not generating these wastes.

Cost: Nominal. Personnel time was supported as level of effort activities by the Pollution Prevention and Environmental Restoration programs.

GOAL: 3

LANL - EM Success Stories *Waste Management*

- Los Alamos has reduced its annual sulfuric acid use from 59,000 to 31,000 pounds by installing new deionizer columns which condition water used for cooling in the power plant.
Date of Success: 7/1/95
 - Waste Avoidance: 28,000 pounds of RCRA waste eliminated.
 - Cost Avoidance: Approximately \$1M in waste generation and management costs, annually.*Cost: \$125K*

GOAL: 1

- The Pollution Prevention Program intervened in the disposal of machine tools as PCB-contaminated wastes and, through oil sampling and analysis, eliminated 13,150 kg of PCB wastes.
Date of Success: 6/1/95
 - Waste Avoidance: 13,150 pounds of PCB-contaminated wastes eliminated from disposal.
 - Cost Avoidance: Approximately \$364K in avoided costs for waste generation and management.*Cost: Nominal.*

GOAL: 1

- Through materials substitution, the Laboratory has reduced its annual tetrachloroethylene use from 6,000 pounds to only 158 pounds.
Date of Success: 6/1/95
 - Waste Avoidance: 5,842 pounds of RCRA waste eliminated.
 - Cost Avoidance: Approximately \$312K in waste generation and management costs, annually.*Cost: Nominal.*

GOAL: 1

- Materials substitution has enabled the Laboratory to reduce its annual trichloroethylene use from 2,200 pounds to 250 pounds.
Date of Success: 4/1/95
 - Waste Avoidance: 1,950 pounds of RCRA waste eliminated annually.
 - Cost Avoidance: Approximately \$104K in waste generation and management costs, annually.*Cost: Nominal.*

GOAL: 1

- The Pollution Prevention Program has restructured recycling activities at Los Alamos to assure that FY96 proceeds from profitable commodities are utilized to support continued recycling actions, including the recycle of paper, oil, and other items which are currently not self-sustaining.
Date of Success: 8/1/95
 - Cost Avoidance: Approximately \$200K was supplied annually by the Pollution Prevention Program to support the recycling of unprofitable commodities. In addition, Waste Management Program costs are avoided when materials are recycled rather than disposed.
 - Waste Avoidance: In FY95, Los Alamos recycled the following

Oils	4,714 gallons
Tires	10,650 pounds
Paper	380,080 pounds
Electric Cable	14,841 pounds
Aluminum Shavings	2,210 pounds
Iron/Steel	14,640 pounds
Tin	171,004 pounds
Aluminum Solid	30,734 pounds

LANL - EM Success Stories *Waste Management*

Copper	759 pounds
Stainless Steel	3,875 pounds
Brass	110 pounds

Cost: Nominal.

GOAL: 3

- A new machine milling technique decontaminated 1.3 tons of lead bricks stores as mixed waste, enabling the bricks to be released as clean material for recycling. Only 330 pounds of contaminated lead shavings, milled from the surfaces of the bricks, were returned to mixed waste storage.

Date of Success: 9/30/95

- Waste Avoidance: 2,420 pounds of waste eliminated from mixed waste storage

Cost: \$20K

GOAL: 1

- The Laboratory has changed its heavy metals recovery operations. The HCl formally used in this process has been replaced with a common solvent which is also continuously reused, rather than disposed. This has reduced the annual HCl use by 700 pounds.

Date of Success: 4/1/95

- Waste Avoidance: 700 pounds of RCRA waste eliminated.

- Cost Avoidance: Approximately \$40K in waste generation and management costs, annually.

Cost: \$15K

GOAL: 1

- A commercially-available, proprietary chemical decontamination process has been identified which can be applied to the old, underground acid waste pipelines currently scheduled to be

removed from the Los Alamos Chemistry and Metallurgy Research (CMR) Building. It is projected that use of this technique will eliminate the need for workers to use Supplied Breathing Air while removing these lines and, in fact, the technique may be so successful that the lines may not require removal at all.

Date of Success: 9/20/95

- Waste Avoidance: About 1,000 cubic yards of potential mixed waste.

- Cost: None to date. Project costs will be estimated once a test has established the decontamination efficiency of the process.

GOAL: 2

- The Pollution Prevention Program Office has assisted the project personnel working on the Upgrade of the Chemistry and Metallurgy Research (CMR) Building in the development of a Waste Minimization Strategic Plan. This plan identifies wastes which have been avoided to date, and establishes goals for further waste reductions for this project.

Date of Success: 8/1/95

- Cost Avoidance: To date, approximately \$50M of DOE Complex costs related to the generation and management of these wastes, including estimated replacement radioactive landfill space costs, have been avoided. This represents about \$29M savings to DOE-EM. The waste reduction goals for this project represent an additional DOE Complex savings of \$6M, of which about \$4M would be DOE-EM costs.

- Waste Avoidance: To date, 16,200 cubic yards of wastes have been avoided. The plan establishes a goal to reduce the wastes projected to be generated by this project by another 40 percent.

- Cost: About \$500K to date. Future project commitments of \$1.2M for waste minimization actions.

GOAL: 3

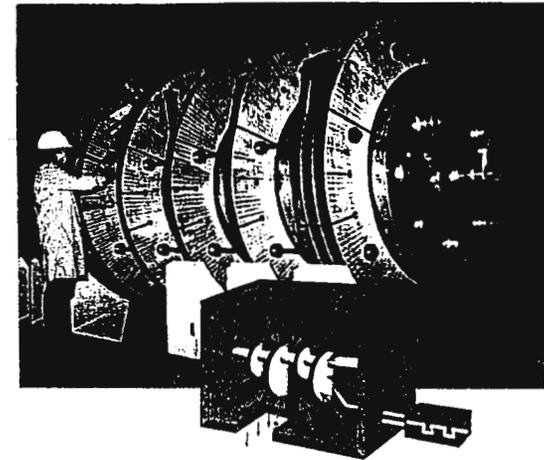
Los Alamos National Laboratory Technology



LANL - EM Success Stories *Technology*

- Laboratory Directed R&D

Plasma Source Ion Implantation



v(t)

Plasma Dry Cleaning

- Object is immersed in oxygen plasma
- Oxygen bombardment breaks up hydrocarbons (such as oils) and forms H_2O and CO_2 which are pumped away
- A dry alternative to cleaning solvents
- No hazardous waste production

The diagram illustrates the plasma dry cleaning process. It shows a central vertical chamber where an object is being cleaned. Arrows indicate the flow of oxygen (O_2) from the top and the resulting products, water (H_2O) and carbon dioxide (CO_2), being pumped away. The hydrocarbons being broken down are shown as small spheres at the bottom of the chamber.

hydrocarbons

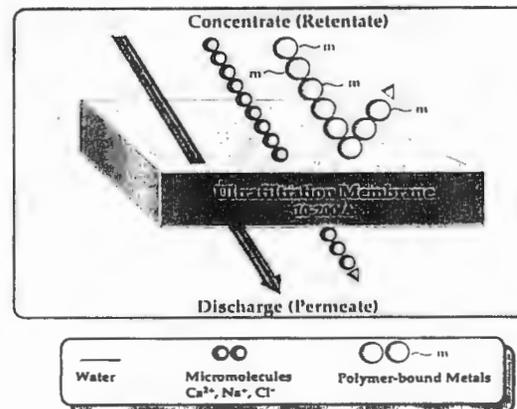
Image Processing Technology
Biosensors for Organic Contaminants



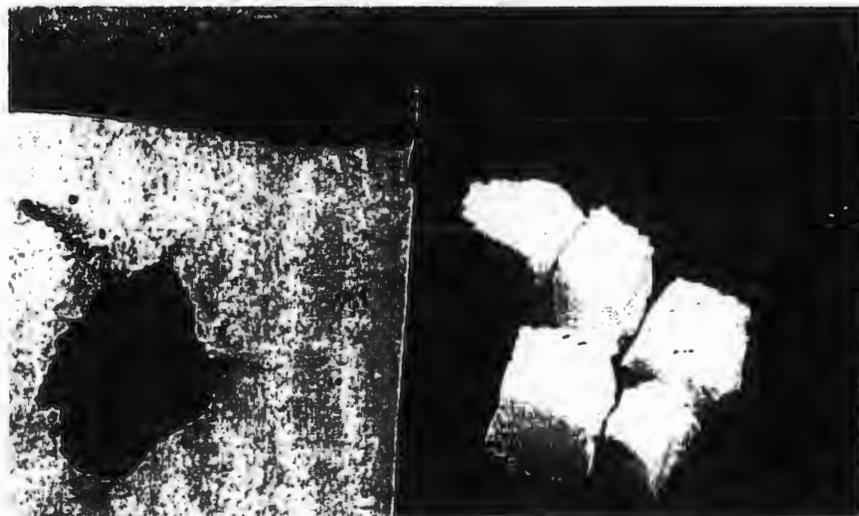
LANL - EM Success Stories *Technology*

- Mixed Waste
Flow - Through Alpha Monitor
- Plume
Microsensor for Volatile Organic
Compounds (received R&D 100 award)
- Landfills
In Situ RCRA Metals Analysis
Migration Barrier Covers for Mixed Waste
Prototype Decision Support/Cover System

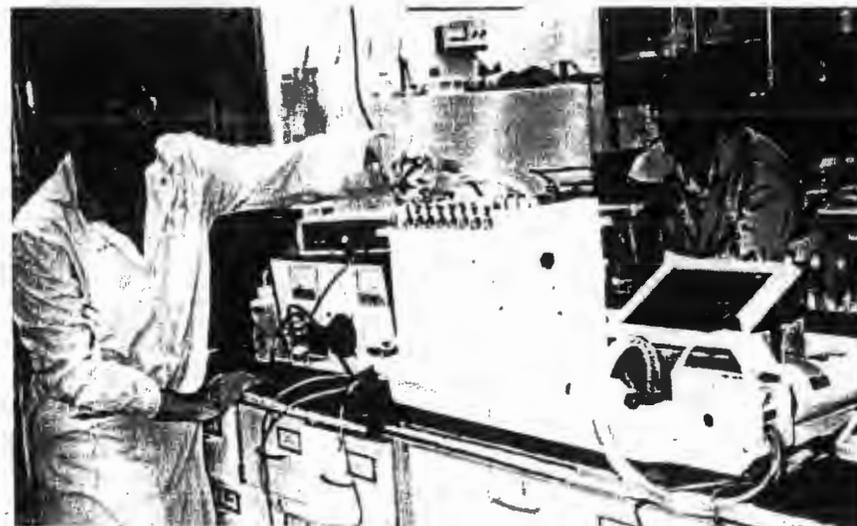
Water Soluble Polymers for Removal of Metals from Waste
Waters (received R&D 100 award)



Salt Distillation of Plutonium Residue Salts



Electrochemical Treatment of Waste





Sandia National Laboratories



New Mexico



California

Sandia National Laboratories Environmental Restoration



SNL - EM Success Stories *Environmental Restoration*

- SNL/NM has no urgent threats to human health or the environment
- Gas Cylinder Disposal Pit cleanup completed (Sites 78, 6 and 6A)
Date of Success: Feb., April, and August 1995 for the 3 different sites

Removed all gas cylinders which could have breached at any time. Additionally, removed materials not previously known to exist in the pits which include items such as thermal batteries and lithium metal. The project was completed ahead of schedule without serious incident. This project removed the most potentially dangerous site from the Sandia ER Program.
Cost: \$3,200K

GOAL: 1

- SNL/NM Carryover reduced to less than 5 percent of total funds available in FY 1995 a 23 percent reduction from FY 1994.
- Developed and obtained EPA approval of a "One Pass Class 3 Permit Modification Process"
Date of Success: March 1995
 - SNL/NM ER management team worked with KAO ER team to develop a streamlined Class 3 permit modification that will expedite the administrative work for completing a site and getting EPA approval.
 - This new permit process will help streamline EPA's workload and SNL/NM effort for permit preparation and public meetings.

GOAL: 3

- Implementation of the Action Plan for SNL/NM

Date of Success: FY 1995

Implementation of the action plan has reduced the project costs by over \$100 million dollars and reduced the schedule by at

least 5 years. Clear lines of communication are established between SNL/NM, DOE/KAO and DOE/AL to reduce administrative burden and focus on advancing cleanup.

GOAL: 3

- The SNL/NM ER Project met or exceeded all of the performance metrics in the FY95 ER Action Plan. Accomplishments are itemized as follows:
- Removal of Radioactive Surface Contamination completed
 - Activities involved 29 sites and was completed in April 1995
 - Completed cost \$570K
- Building 838/839
 - Cleanup of tritium and PCBs
 - Completed cost \$280K

GOAL: 4

- Explosive Burn Pit (Site 114) cleanup 80% complete
 - Cleanup for site 114 projected to be complete by March 1996
 - Estimated cost to date \$15K
 - Estimated cost to complete \$30K
- Housekeeping
 - Cleanup of 4 sites for non-hazardous, non-radioactive material completed
 - Completed cost \$15K

GOAL: 4

- No Further Action (NFA) proposals:
 - Administrative No Further Actions
 - Submitted in FY95: 34

SNL - EM Success Stories *Environmental Restoration*

- Granted approval by EPA/NMED: 13
Completed cost \$1.6M
- Confirmatory No Further Actions
 - Submitted in FY95: 25
 - Granted approval by EPA/NMED: 0*Completed cost \$1.5M*
- Site Investigation Report submission to EPA Region 9
 - Submitted 3 sites from the Kauai Test Field Operable Unit in May 1995FY95 Investigation cost \$120K
Total project cost \$800K

GOAL: 4
- Liquid Waste Disposal System (LWDS) RCRA Facility Investigation Report
 - Included 3 sites that are addressed as No Further Action in the ReportFY95 Investigation cost \$510K
Total project cost \$3.5M

GOAL: 4
- Administrative Transfer to Kirtland Air Force Base
 - Included 2 sites*Cost (minimal)*

GOAL: 4
- The DOE Citizens' Advisory Board for Sandia National Laboratories and the Inhalation Toxicology Research Institute
Date of success: First met May, 1995, ongoing monthly meetings now in progress.

- Effort to Establish: Representatives from Sandia's Environmental Operations Center teamed with Sandia's Community Involvement and Issues Management Department, the Kirtland Area Office of DOE, and the New Mexico Conference of Churches to reach out to the community and recruit volunteer board members. A community-based working group drafted a partnering agreement, established a nominating committee and reached out to the community through meetings, advertisements, and other methods to seek nominees. By late 1994, the nominating committee had some 60 nominations for the board. Eventually, 31 members were selected to serve and approved by DOE.
- Issues and outcomes: The Kirtland Area Office Manager defined four major issues for board advice during an early meeting of the group. These were: input on the Federal Facilities Compliance Act as it impacts Sandia; future land use for DOE sites on Kirtland Air Force Base, Sandia National Laboratories' proposal for a Corrective Management Action Unit (CAMU) to handle wastes generated by its Environmental Restoration Program; and environmental site prioritization. To date, the board has been briefed on all of these issues and has formed subcommittees to address the future land use and CAMU requests.
- Entities represented: The thirty-one original board members show a diversity in ethnicity and areas of expertise that reflects Albuquerque's own diversity. Among the various entities represented are: several neighborhood associations, American Indians, an association of elderly Americans, the Sierra Club, a local social activist organization, a regional environmental policy group, the Chamber of Commerce and other local business sectors, the African-American Community Coalition, the NAACP, two Albuquerque-based environmental groups, a City

SNL - EM Success Stories *Environmental Restoration*

of Albuquerque councilor, the National Tribal Environmental Council, the New Mexico League of Women Voters, the local education community (including one student), and several trade associations. Six ex-officio members sit on the board representing Sandia, the DOE, city, county, and state environmental offices, and the Environmental Protection Agency.

GOAL: 6

- The DOE Citizens' Advisory Board For Sandia National Laboratories and the Inhalation Toxicology Research Institute
Date of success: Established in May 1995, with ongoing monthly meetings now in progress
 - Established a forum for stakeholder involvement through meetings, advertisements, and other methods, established a nominating committee of 31 volunteer board members
 - Approximately 25 environmental, local, and governmental organizations including the Sierra Club, the NAACP, and the National Tribal Environmental Council
 - Issues dealt with: Input on the Federal Facilities Compliance Act; future land use; handling generated wastes; and prioritizing waste sites
 - Formed subcommittees to address the above issues

GOAL: 6

Sandia National Laboratories

Waste Management



SNL - EM Success Stories *Waste Management*

- **Advanced Landfill Cover Demonstration (ALCD)**

Phase I of the this five-year project was completed on September 30, 1995. In Phase I, three model landfill sites were constructed to replicate three landfill cover types: an RCRA-standard municipal landfill site cover, an RCRA-sanctioned hazardous waste landfill cover, and an alternative hazardous waste landfill cover.

The alternative design used a manufactured "geosynthetic clay liner" instead of the natural two-foot clay layer stipulated in the RCRA guidelines. We expect the alternative cover to cost much less than the covers currently approved by RCRA. Evaluation of the covers will be based on their respective construction costs, ease of construction, and physical performance. This project has been endorsed by the Western Governors' Association (WGA) under the auspices of the DOIT Mixed Waste Working Group. A plan for Stakeholder participation has been developed.

GOAL: 5

- **Dry Barrier Application for Landfills**

A side-by-side comparison of a Sandia-developed design (dry barrier) and a conventional design (capillary barrier) has been made in Area III. Under constant infiltration of about 0.5cm/day, the Sandia design diverted more than 99% of the water whereas the conventional design diverted about 25% of the water.

GOAL: 5

- **SNL/NM First Low-Level Waste Shipment to the Nevada Test Site**

Date of Success: September 25, 1995

- First step toward historical waste mortgage reduction

- Effort to Establish: Culmination of 3-Year Low-Level Waste Program Development

- NVO-325 Application and Approval

- Environmental Assessment of Transportation

- Contract with Commercial Company (SEG) for on-site waste handling

- Type of Waste Shipped: Personal Protective Equipment including gloves, booties, Tyvex coveralls, rags, paper towels, absorbents, and plastic sheets

- Volume of Waste Shipped: 688 ft³ (19.5m³), consisting of 44 55-gallon drums and 3 4'x4'x7' boxes

Mortgage Reduction Investment Cost: ~\$3M

GOAL: 4



SNL - EM Success Stories *Waste Management*

- Shipment to Nevada Test Site:

October 1994

- Worked with the multiple Departments at SNL/CA to characterize, certify, package and ship initiated waste to Nevada Test Site
- Accomplished goal of "less than 1000 Ci of Tritium on Site" by January 1995
- Disposed of 300 cubic feet of low-level radioactive waste

GOAL: 4

- November 1994 Shipment to Nevada Test Site:

- Completed the removal, clean-up activities and packaging of a

64,000 pound, 14'x12'x16' (LxWxH) Vertical Lathe from the Machining Shop. The building from which it was removed was built around the machine in the late 1960s.

- The machine waste shipped to NTS on a low-bed trailer. SNL/CA followed the trailer to NTS for proof of safe arrival.
- Disposed of 2800 cubic feet of low-level radioactive waste.

GOAL: 4



SNL - EM Success Stories *Waste Management*

- Mixed Waste Sort and Survey Project (Historical Disposal Request Validation)

Project Field Operations Start Date: June 2, 1995

Within the first 3 months of the project, 954 batteries were validated as nonradioactive and removed from SNL/NM's mixed waste inventory. These batteries were able to be handled as RCRA hazardous waste instead of mixed waste, thereby saving approximately \$500K.

- Sort and validate all historical mixed waste by the end of FY1996
 - Reduce mixed waste inventory
 - Assign waste to treatability groups per FFCA Compliance Order
- Infrastructure Development:
 - Modification of the High-Bay Waste Storage Facility
 - Development of work plans and procedures
 - Purchase and installation of a Kelly Building (contamination containment workspace)
 - Contract with commercial company (SEG) for on-site waste handling
- Project Costs:
 - Investment Cost: ~\$2M
 - FY 1995 Operational Cost: \$590K
 - Estimated FY 1996 Operational Cost: \$545K

GOALS: 3 & 4

- Radioactive Waste Facilities Improvements

- Purpose: Develop facilities and capabilities to characterize, treat, and certify waste for disposal
- Effort to Establish:
 - Completed Upgrades to the High-Bay Waste Storage Facility (February 27, 1995)

- Secure and Permitted for Low-Level Waste and Mixed Waste
- Temporary Location for Low-Level and Mixed Waste Inventory Sort and Survey
- Completed Construction of the Radioactive and Mixed Waste Management Facility (August 29, 1995)
 - Site for Mixed Waste Treatment per FFCA Site Treatment Plan
- Completed Waste Assay Facility (March 1995)
 - On-Site Radiological Analysis Capabilities
 - Reduced Costs for ER Waste Characterization
- Installed Real-Time Radiography (RTR) Unit
 - Instrumental in Transfer of ITRI transuranic waste to SNL/NM
 - Jointly Utilized by Waste Management and R&D to Reduce Waste Management Costs

GOALS: 2, 3, & 4

- FFCA Compliance Order Development

Date: FFCA Compliance Order issued on October 4, 1995

- Establish basis for acceptable conditions in FFCA Compliance Order
- Effort to Establish:
 - Completed Site Treatment Plan on Schedule
 - Negotiated Acceptance of Site Treatment Plan with Regulators
 - Achieved Regulator and Stakeholder Acceptance of Mobile Treatment Strategy
 - Transferred SNL/CA Mixed Waste to SNL/NM to Avoid Development of Separate Site Treatment Plan and Compliance Order for SNL/CA

GOALS: 3, 4, & 6

SNL - EM Success Stories *Waste Management*

- Re-Certification of the Low Level Radioactive Waste Program for Shipment to Nevada Test Site:

- Approval granted June 1995
- SNL/CA completed the rigorous re-certification process to continue low-level radioactive waste shipments to Nevada Test Site.
- With this accomplishment, SNL/CA was able to successfully complete the clean-up and transition of the Tritium Research Facility.

GOAL: 4

- Mixed Waste Transfer and Agreement:

- Reached an agreement with SNL/NM to transfer all the mixed waste in storage and future generation from SNL/CA
- This action reduced the Sandia's Corporate liability, costs, and associated management activities with the management of the Mixed Waste Treatment Plans
- SNL/CA has successfully completed the shipment of all mixed waste in storage by March 1995, totaling 225 cubic feet.
- Shipment to SNL/NM completed September 1995, totaling 2.5 cubic feet
- Due to the transfer agreement, SNL/CA is not required to complete the FFC Act Site Treatment Plans

GOALS 4 & 5

- Mercury Salts Disposal:

- Known for being very difficult to dispose, a disposal facility was located in Kansas.
- Mercury Salts disposed of September 1995 through Rollins in Aptus, Kansas

GOAL 4

- June - October 1995 - Shipments to Nevada Test Site

- A total of six shipments were completed between June through October to support the Clean-Up and Transition of the Tritium Research Facility
- Disposed of 82,000 cubic feet of low-level radioactive waste
- Received DOE Recognition and Award for "Exceptional Service" as part of the Tritium Research Team Clean-Up and Transition

GOAL: 4



- Improved Financial Controls (Waste Management) - SNL/NM
- Reduced operating carryover by 20% from FY94 to 4% in FY95

GOAL: 3

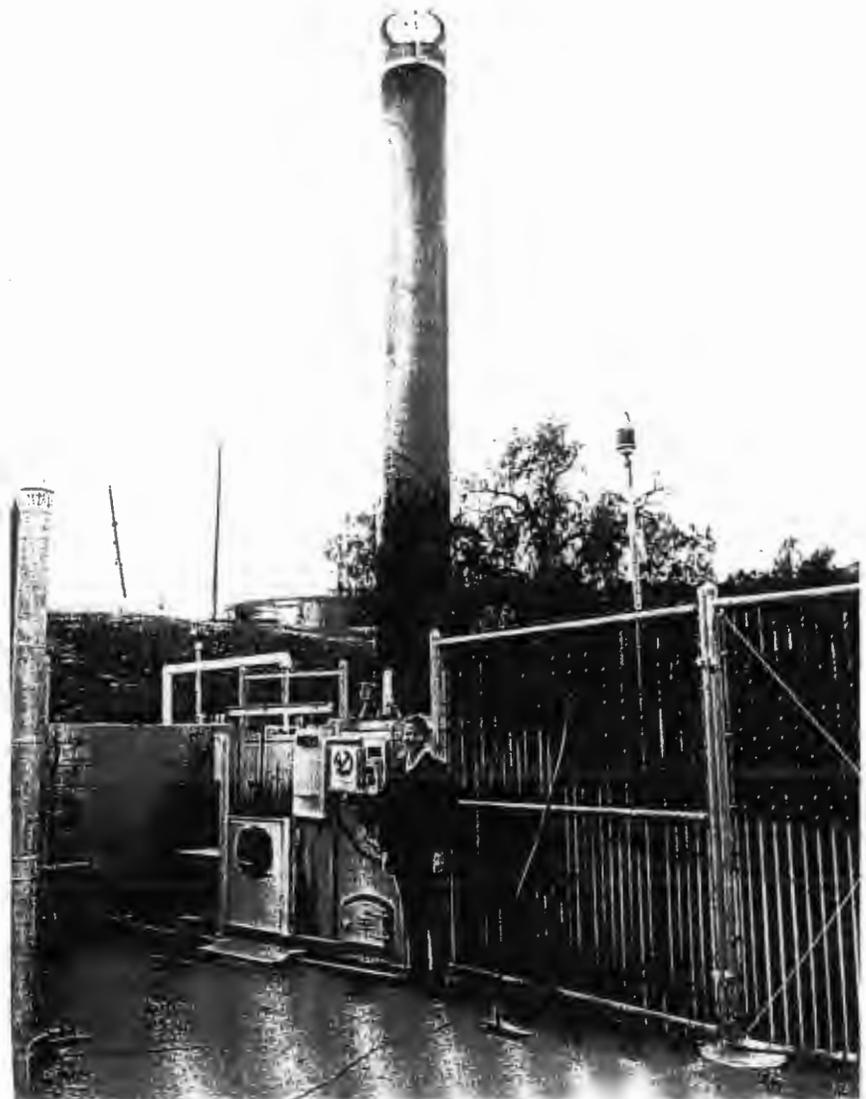
SNL - EM Success Stories *Waste Management*

- Improved Financial Controls (Waste Management) - SNL/CA
 - Reduced operating carryover by 71% from FY94 to 7% in FY95

GOAL: 3

- Incinerator Closure:
 - Economic Cost/Benefit performed, January 1995
 - Closure Plan submitted to Department of Toxic Substance Control (DTSC) February 1995
 - Final Closure Plan provided to DTSC September 1995
 - Contract awarded August 1995 to demolition contractor.
 - Public Comment October 1995
 - Demolition shall be completed by December 1995

GOALS: 4 & 5



Sandia National Laboratories Technology



SNL - EM Success Stories *Technology*

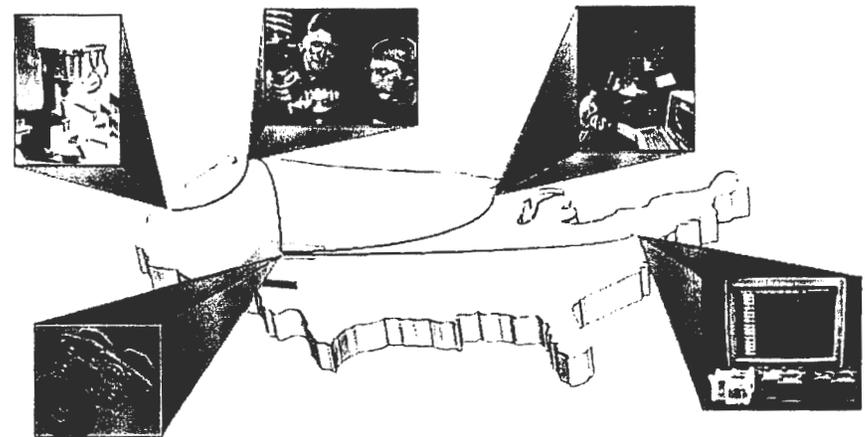
- Thermal Enhanced Vapor Extraction System (TEVES) Success
TEVES is a remediation demonstration project that was designed to assess the technical and economic utility of soil heating to enhance baseline vacuum vapor extraction technology. This was performed on a real environmental restoration waste site at the Sandia Chemical Waste Landfill starting in October 1994 through June 1995. The TEVES first evaluated the merits of 60 Hz AC heating and found that removal rates for organic vapors increased 2 to 4 times over the ambient temperature vacuum extraction condition. Average soil temperatures for the treatment zone reached 70°C after 30 days of AC heating. The TEVES project then evaluated RF heating and found that concentrations of organics increased up to 3 to 6 times and found that oils co-disposed with the solvents were being extracted, even though the boiling points of the oils were found to be much higher than the soil temperatures reached through the heating process. Average soil temperatures reached 95°C after 30 days of RF heating. Initial estimates of costs for have shown that, even with the extra equipment and labor costs of thermal enhancement, the reduced time required for site restoration makes thermal enhancement a cost competitive technology over baseline vacuum vapor extraction.

GOAL: 5

- Remote operation of robotics laboratories demonstrated.
Date of Success: This technology has been demonstrated many times between SNL, PNL, ORNL and the National Institute for Standards and Technology (NIST) since May, 1995.
Virtual Collaborative Environments (VCEs) make it possible to remotely share robots, machine tools, sensors, and other machine

and software resources over the internet. Software developed by Sandia National Laboratories enables users at many sites to simultaneously share and interact with commercial software packages and robot controllers. When combined with videoconferencing, robotic or other machines are brought virtually to the user's desk with simulated (detailed 3-D graphical) representations. Operators at Sandia, Pacific Northwest Laboratory, Oak Ridge National Laboratory, and the Department of Commerce's National Institute for Standards and Technology have begun sharing equipment at each of the sites using VCE's. The principle value of VCE's is the ability for DOE to make very expensive, one-of-a-kind hardware and software available to remote users. This can lead to faster technology development without expensive duplication of hardware and software. Low-cost methods to establish VCEs with other labs, universities and industries are being developed.

GOAL: 5



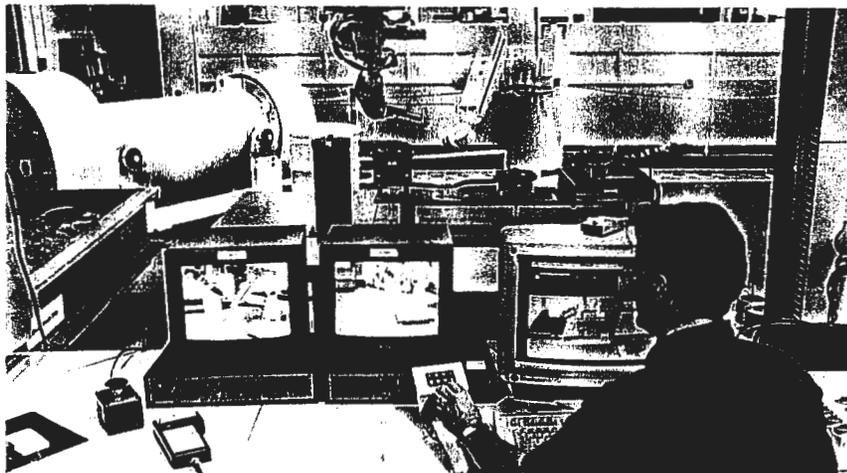
SNL - EM Success Stories *Technology*

- Automatic rapid building of “virtual reality” models for robotic operations demonstrated.

Date of Success: Demonstrated at Sandia National Laboratories during the 6th Annual Industry/University/Laboratory Robotics Forum in Albuquerque, NM on August 17, 1995.

Robots use a mathematical model of the world around them (a “virtual reality”) to know where objects are and how to perform operations on them. Sandia National Laboratories demonstrated the capability to scan an area with a laser and within seconds (vs. days to weeks with previous methods) build a world model that a robot can use to interact with objects. The technique can be used to quickly build detailed virtual reality models of complex environments, such as old nuclear material processing facilities, and to track rapidly changing environments, such as waste tanks and landfills where bulk material is being removed from the robot’s surroundings. The models can be used to plan manual operations and train personnel as well as for robotic applications.

GOAL: 5



- Task-based control of robots demonstrated.

Date of Success: Demonstrated at Sandia National Laboratories during the 6th Annual Industry/University/Laboratory Robotics Forum in Albuquerque, NM on August 17, 1995.

Task-based robot control allows facility operators who are unfamiliar with robots to immediately command complex robotic operations in an intuitive manner. This Sandia-developed technology allows operators to command a robot with simple commands, such as “put that over there,” using only a mouse to point and click on 3-D graphical models and menu buttons. This method of control will dramatically simplify and speed up the operation of robots in planned cleanup applications. Task-based robot control can be applied to virtually any autonomous robotic system.

GOAL: 5



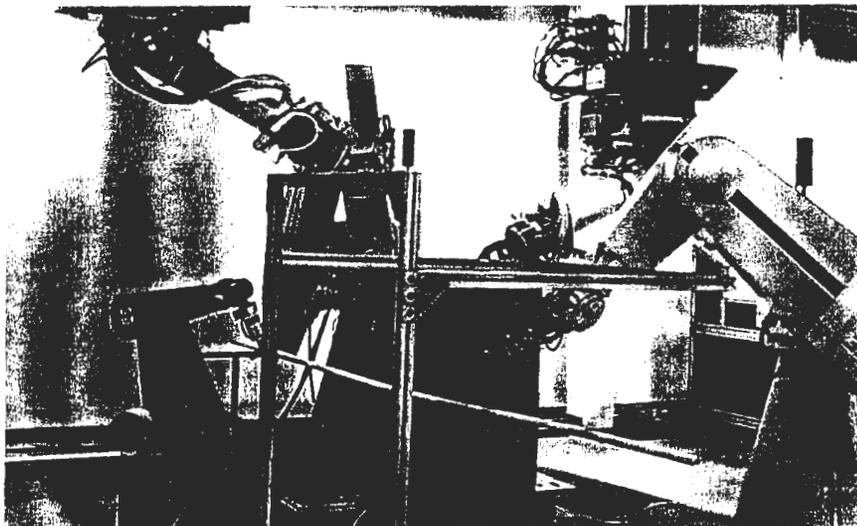
SNL - EM Success Stories *Technology*

- Coordinated multi-arm robot control demonstrated.

Date of Success: Demonstrated at Sandia National Laboratories during the 6th Annual Industry/University/Laboratory Robotics Forum in Albuquerque, NM on August 17, 1995.

The development of cooperative multi-arm manipulator control provides three substantial benefits over single-arm robots: (1) cleanup operations are faster because less robot time is spent on changing tools, and awkward waste forms can be handled, (2) operations are cheaper because the faster operations result in savings in costs for support personnel, and (3) some activities are safer because some tasks in hazardous environments simply cannot be done by single-arm manipulators. This Sandia-developed technology will be used to operate the Dual Arm Work Module being fabricated at Oak Ridge National Laboratory for the decontamination and dismantlement of Y-12 and other ORNL facilities.

GOAL: 5



- Landfill Assessment and Monitoring System (LAMS)

The initial phase of the LAMS Target Verification and Calibration task identified and evaluated numerous anomalous or suspicious environmental targets outside of known landfills at Tech Area II. An important factor in the success of this system is the MAPER (Multi-sensor Analysis Program for ER) software that takes all existing data on a site and integrates it into the program using sophisticated algorithms. MAPER then allows the operator to more quickly and correctly evaluate target areas. The results of this work indicated that there appeared to be no targets of environmental concern, allowed the elimination of hundreds of targets that were once potential areas of concern, and resulted in saving the SNL ER Project an estimated \$500,000 by not having to perform extensive conventional site characterization, sampling and analyses, waste management, and remediation activities.

GOAL: 1 & 5

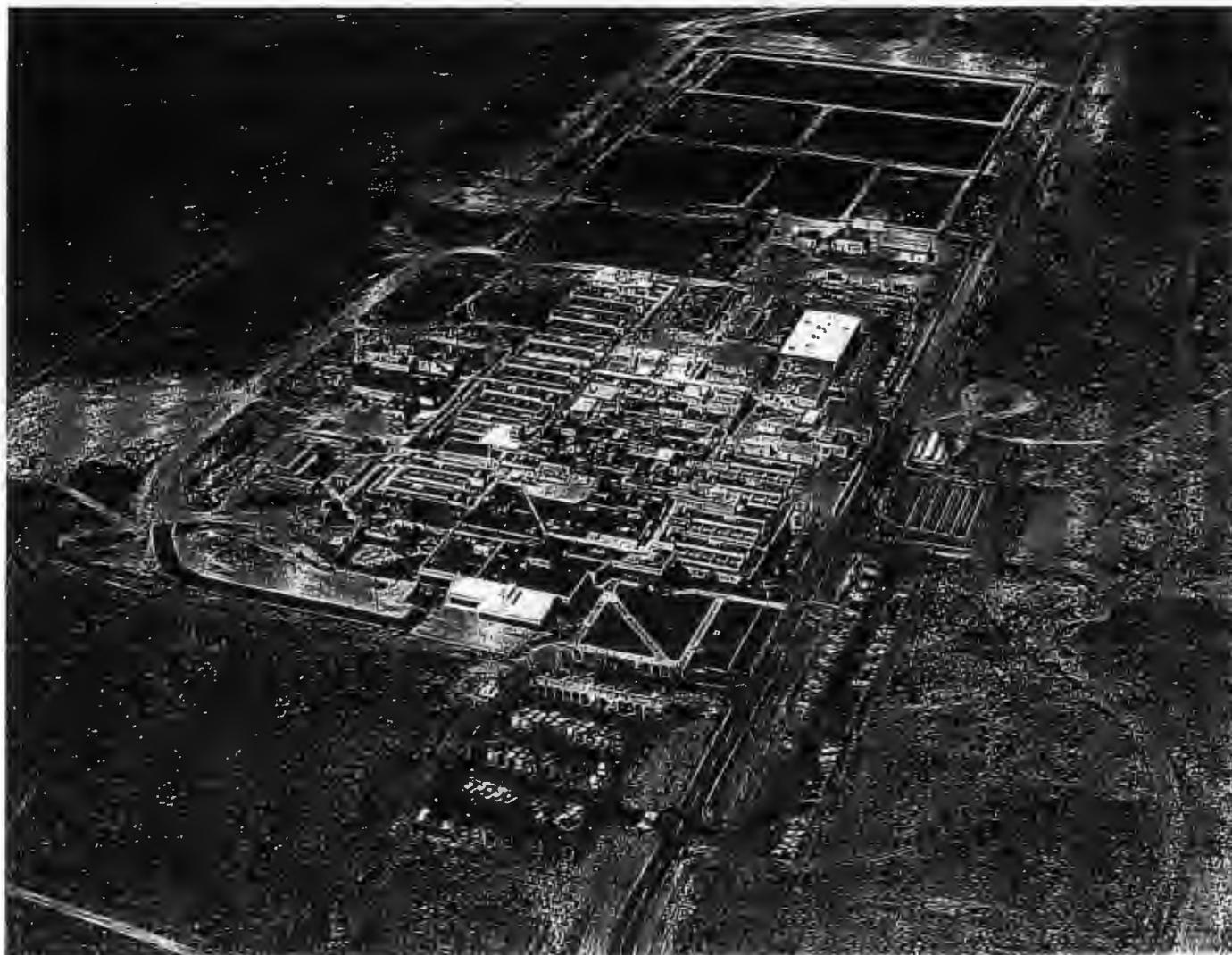
- EM's BESTT Information System Established on EM-50's LAN Pilot completed September 30, 1995

The Information for Decisions Project, lead by Susan Johnson (DOE/EM-50), has resulted in a pilot online system that consolidates environmental information into a single architecture. Called EM's BESTT (Better Environmental Solutions Through Technology), EM managers have access to a variety of current information sets on their desktop computers and can locate contaminated sites and technologies through searches, view focus area goals and activities, and access a variety of other technical and administrative information.

During FY 96, EM's BESTT will continue to consolidate and qualify its information base through EM-50's unified data-collection effort, and will employ full multi-media capabilities.

GOAL: 3

Inhalation Toxicology Research Institute



Inhalation Toxicology Research Institute

Environmental Restoration



ITRI - EM Success Stories *Environmental Restoration*

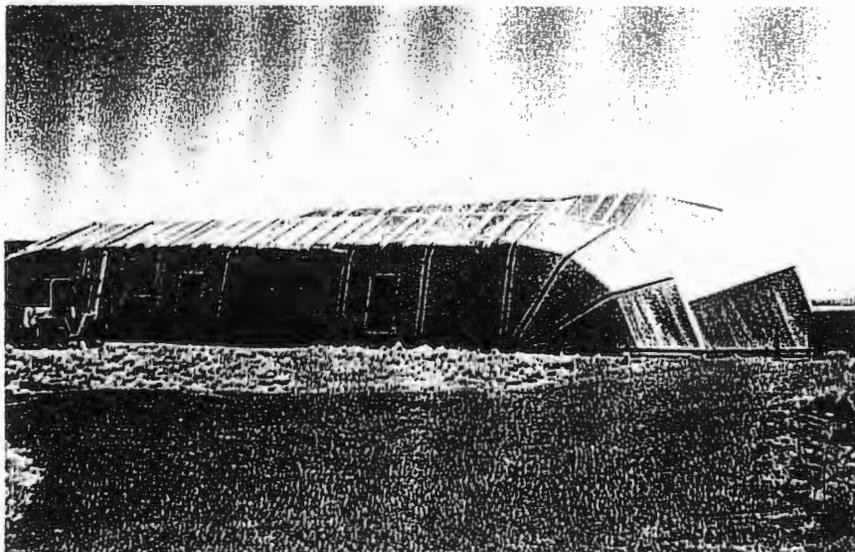
- Completed sort and survey of radionuclide contaminated lead shielding
- Use of a tensioned fabric structure to conduct remediation work inside a building in order to eliminate and manage risks perceived by the Isleta Reservation

Date of Success: 1995 (used all year)

The Isleta Reservation is located adjacent to the ITRI Hot Pond Site, which is a remediation site. The site was completely remediated in FY 1995. The tensioned fabric structure, approximately 10,000 square feet, was used to conduct the remediation work in a closed environment, thereby, reducing risks to the Isleta Reservation.

Cost: \$90,0000

GOAL: 1



- Hot Pond Site Remediation Completed

Date of Success: May, 1995

The Hot Pond Site had the highest risks to manage at ITRI in terms of its environmental restoration sites. Because of its proximity to the Isleta Reservation, the condition of the structures and the waste types involved, the completion of the site was a major step forward in limiting the facilities environmental liabilities.

Cost: \$750,000

GOAL: 1

- Safely disposed of outdated laboratory chemicals
- Transferred TRU waste to offsite storage facility
- Completed shipment of LLW to offsite disposal facility
- There were no accidents, injuries or adverse health effects from ITRI Environmental Restoration activities.

Date of Success: 1995

With over 20,000 man-hours of contractor remediation work, there were no accidents, injuries and adverse health effects from the activities.

- There were no accidents, injuries or adverse health effects from ITRI Waste Management activities.

Date of Success: 1995

With over 7,000 man-hours of Waste Management employee work, there were no accidents, injuries and adverse health effects from the activities.

GOAL: 2

Inhalation Toxicology Research Institute

Waste Management



ITRI - EM Success Stories *Waste Management*

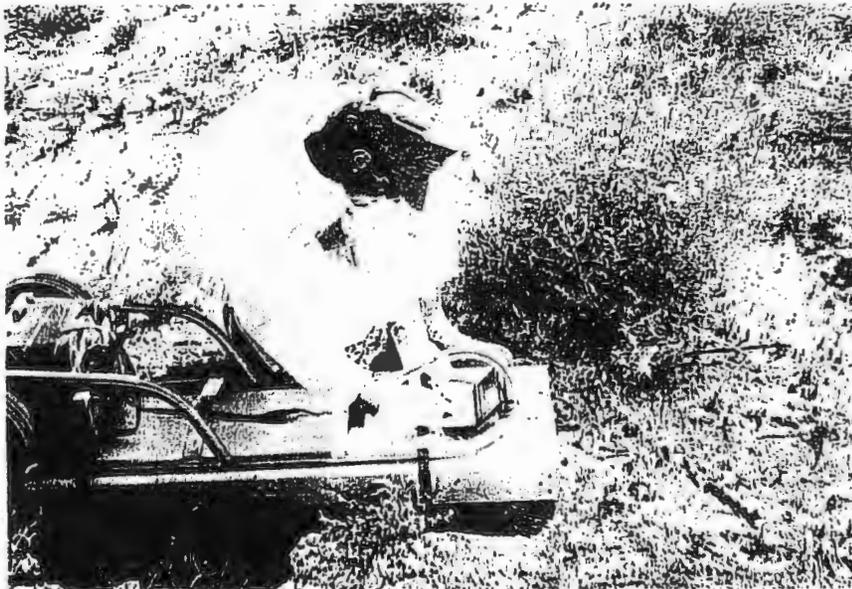
- Development of real-time site and workplace air monitoring devices to better manage the remediation of radioactive contaminated sites

Though ITRI has no formal technology development program, the Environmental Restoration program initiated the development of real-time air monitors in order to allow us to remediate the Hot Pond Site and the Sewage Lagoons Site.

*Estimated Savings as a result of the technology being deployed:
\$300,000*

Cost: \$100,000

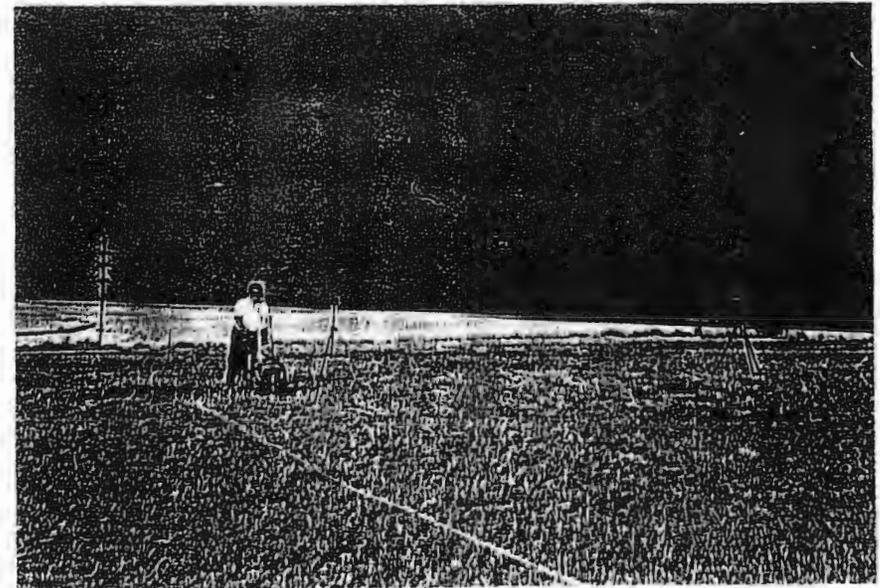
GOAL: 5



- ITRI's DOE Order 5820.21 Exemption Request for low level-waste disposal to Envirocare for Hot Ponds and Lagoon remedial activities was approved, resulting in a savings of 2 million over initial disposal plans.

Date of Success: October 5, 1995

GOAL: 3



ITRI - EM Success Stories *Waste Management*

- Implemented chemical tracking system to control the purchase and use of all chemicals at the institute
- During Fiscal Year 1995, the ITRI Environmental Restoration Program was ahead of schedule, under budget, and reduced its carryover dollars to about 10% of the previous year's carryover amount and 5% of total FY 1995 funds available.
- Expenditures for FY 1995 were nearly \$5,000,000
- All activities were ahead of schedule and under budget
- Even with budget cuts, ITRI has accomplished all of its remediation goals
- FY 1995 carryover dollars were only about \$200,000 compared to FY 1994 carryover of nearly \$2,000,000
- Completed the development of a chemical tracking system for the facility to control the purchase and inventory of chemicals

GOAL: 3

- Development of real-time cesium and strontium detectors to better manage the remediation of radioactive contaminated sites
Though ITRI has no formal technology development program, the Environmental Restoration program initiated the development of real-time cesium and strontium detectors for field applications. The real time detectors allow us to remediate the Hot Pond Site and the Sewage Lagoons Site quickly and without waiting long periods of time for laboratory results.

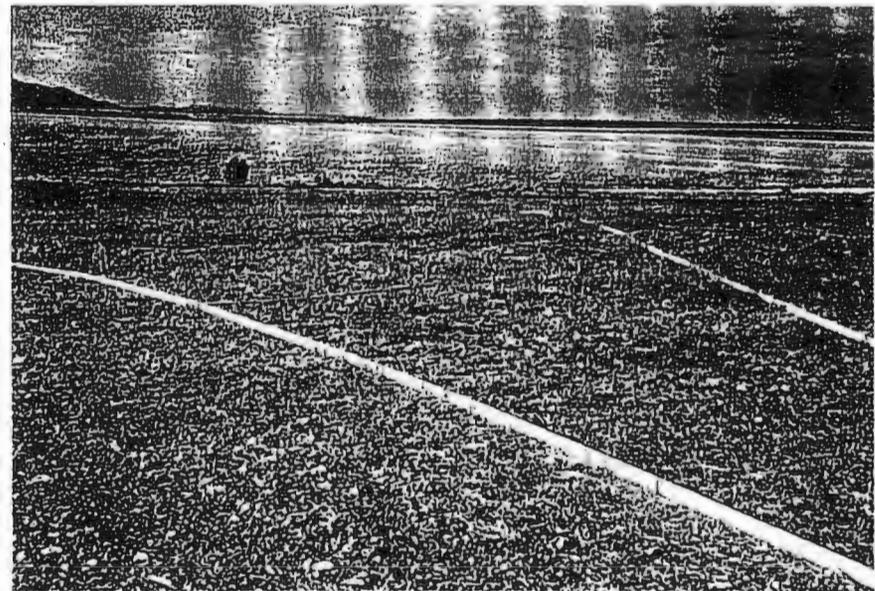
*Estimated Savings as a result of the technology being deployed:
\$200,000*

Cost: \$75,000

GOAL: 5

- ITRI completed the remediation of the ITRI Hot Pond Site and nearly completed the remediation of the Sewage Lagoon site.

GOAL: 4



Grand Junction Projects Office



Grand Junction Projects Office Environmental Restoration



GJPO - EM Success Stories *Environmental Restoration*

- GJPO performs characterization and remediation of 800+ acres at Sandia National Laboratory/New Mexico
GJPO personnel characterized over 800 acres at Kirtland AFB to delineate and remediate areas contaminated with depleted uranium using radiological survey expertise developed on earlier DOE programs, including NURE and UMTRAP. Development of instruments, survey methodologies, and site specific parameters was accomplished cost effectively, and ensured that survey results met Sandia's data quality objectives. Characterization was followed by cleanup through soils removal. 29 sites covering these 800 acres have been successfully remediated to date. Survey and cleanup of sites with widely dispersed contamination continue.

- This work has been accomplished with no safety or environmental problems, and has been performed 5% under budget through careful project planning, field team management, and close coordination and cooperation between GJPO, Sandia, and Kirtland personnel
- To extend the benefits of this expertise within DOE, GJPO is assisting INEL with the performance of surface radiological surveys, and is assisting the Amarillo Area Office in evaluation of proposed approaches to locate and remediate areas at the Pantex site contaminated with depleted uranium.
The result is an established GJPO team that is assisting Sandia with cleanup and successfully transferring this expertise to other DOE facilities

GOAL: 4

- GJPO completed restoration of wetlands and decontamination projects
The Grand Junction Projects Office is on the DOE Small Sites

Completion Strategy List for facility free-release in 1998. During FY 1995, GJPO completed restoration of the remediated wetlands in compliance with Corps of Engineers requirements. Three buildings were decontaminated during FY 1995 and activities implemented for the decontamination and/or demolition for six more buildings in FY 1996. The GJPO approach to decontamination and decommissioning of its contaminated buildings is to prioritize funding on cleanup. This is accomplished by combining available radiological survey information with process knowledge and engineering reviews to minimize the need for extensive building characterizations. The closeout report for certification of the remediated open spaces and the plan for facility free-release were issued.

- The result is that DOE has completed activities associated with the cleanup of the open spaces and is performing building decontamination to meet the 1998 project completion
- GOAL: 4*
- GJPO completed environmental site assessment for transfer of the Oxnard facility to private industry
 - The Oxnard facility is a metal working plant that supported the DOE Rocky Flats facility. The Oxnard, California, facility has been placed on the DOE Small Sites Completion Strategy List for transfer to private industry.
 - GJPO was tasked with the characterization, remediation, and free-release of the facility for DOE-HQ. GJPO planned and implemented the characterization in accordance with California EPA and local environmental regulations.
 - GJPO has completed the investigations, and analysis of soils, structures, groundwater and sludges. A facility physical site assessment was also performed. Remediation and disposal of

GJPO - EM Success Stories *Environmental Restoration*

PCB contaminated soils and closeout documentation is planned for 1996.

- As a result, the Oxnard facility will be ready to transfer to private industry during 1996.

GOAL: 4

- GJPO assists with characterization of former Soviet Navy Training Facility

- DOE-HQ selected the GJPO to participate with a team of experts to assist the Estonian government with the characterization of a former Soviet Navy nuclear submarine training facility in Paldiski, Estonia.
- GJPO developed the sampling plans, performed non-intrusive characterization surveys of the exterior areas and reported the results. GJPO's next tasks include managing the installation of groundwater monitoring wells by the Estonians.
- As a result of GJPO mentoring, the Estonian people are becoming self reliant in environmental restoration.

GOAL: 4



GJPO - EM Success Stories *Environmental Restoration*

- GJPO completed remediation of 4,000 Grand Junction Vicinity Property
September 22, 1995.
 - A celebration was held with state and local stakeholders during which the DOE was praised for its performance. GJPO also exceeded all other UMTRA performance measures while coming in under budget: 25 Radiological Engineering Assessments were submitted on a plan of 24; 42 construction starts were initiated on a plan of 35 by accelerating 6 new inclusions and owner refusal turn arounds; 46 construction completes were achieved on a plan of 38; 111 completion reports were submitted on a plan of 110; and DOE performed 410 certifications.
 - Major issues were also resolved with the Colorado Department of Public Health and Environment (CDPHE) during this period. Through a team effort involving many stakeholders, the details of leaving the Cheney disposal cell open after 1998 were developed. EM-40 endorsed this plan, now referred to as the Long Term Radon Management Act, which will result in at a minimum, a \$20M cost avoidance to the DOE. GJPO also assisted DOE in resolving the false exclusion study with CDPHE. The study will now only impact 20 properties instead of 300, resulting in a \$20M cost avoidance.
 - DOE and CDPHE resolved the regulatory hurdles to allow treatment of hazardous waste mixed with mill tailings. After almost two years of negotiations, the parties agreed to use the provisions of the Colorado Hazardous Waste Act, Permit by Rule, in lieu of a formal agreement. Working with the State and City of Grand Junction, terms of a remedial action agreement were worked out to assign the appropriate risk of encountering hazardous wastes to each party. Remedial Action Agreements

have been signed by DOE, City, and CDPHE to allow treatment of hazardous waste and to allow remediation of the city's former landfill property, American Auto. Remediation is planned for FY 1996.

- The result is that DOE reached a significant milestone in the vicinity properties project and resolved the issues that will now allow remediation of the commingled properties.

GOAL: 4

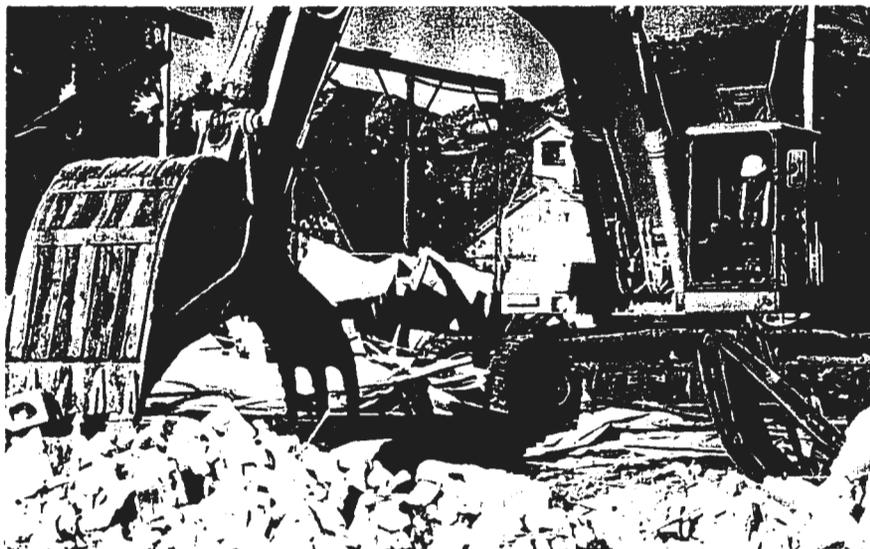


- GJPO performs fast tract remediation design and procurement effort
 - On December 22, 1994, the DOE decided that disposal of uranium mill tailings in an on-site repository was the preferred remedy for the Monticello Mill Tailings Site remediation.

GJPO - EM Success Stories *Environmental Restoration*

- Through extraordinary efforts by the Monticello team, the Millsite Remediation Prefinal Design/Specifications package, Prefinal Design Report, Prefinal Long-Term Surveillance and Maintenance Plan, and Draft Construction Quality Assurance Plan were all submitted to DOE in April.
- Through very close coordination between GJPO and their prime contractor, Rust Geotech, timely and satisfactory resolution of minor comments from the EPA and State of Utah on the Intermediate Design was achieved and the Pre-Final Design completed. Notice of Award was issued on September 8, 1995, only nine months after the DOE had selected a preferred disposal option.
- The result is that the DOE, with community and regulator support, is moving quickly toward final disposal of the Monticello mill tailings.

GOAL: 4



Grand Junction Projects Office Waste Management



GJPO - EM Success Stories *Waste Management*

- GJPO Conduct of Operations Assessment Program rated as a mature above-average program
 - Following guidance from DOE-HQ, DOE-GJPO implemented changes to further strengthen the Conduct of Operations Program. GJPO developed applicability matrices, trained staff to use the matrices, provided support to assessments and corrected, in a timely fashion, findings and concerns resulting from the assessments. GJPO established a streamlined program exempting 130 contractor employees from mandatory training, saving approximately \$24K. Of the 11 DOE-EA site programs appraised by DOE-HQ, the GJPO Conduct of Operations program is one of only four rated satisfactory. A Conduct of Operations review of a Mixed Waste Treatment Program (MWTP) treatment process resulted in timely correction of deficiencies and contributed to the completion of the testing without an injury or an environmental release. An observation visit of the GJPO Assessment Program was performed by AL/Operations Management Division personnel (Debbie Christensen and Alan Yeazel) on August 16-17, 1995, to evaluate the effectiveness of conduct of assessments in improving operations, and to determine if program requirements were being met. A matrix for GJPO operations was developed and approved by DOE-AL. The matrix meets the requirements of 5480.19. Additional detailed specific matrices are in place for other activities including the UMTRA Project. This is over and above the order requirements and viewed by AL/OMD as a best management practice. As a result, implementation of the Operations Assessment Program at GJPO was rated as a mature above-average program.
GOAL: 3
- GJPO Waste Minimization Results
 - A Pollution Prevention Opportunity Assessment (PPOA) team was established at the GJPO during FY95 to assess different waste generation scenarios. This team, in conjunction with the GJPO waste minimization staff, Waste Minimization Committee, and employee training have resulted in developing more outcome oriented waste minimization practices at the GJPO.
 - The results of a facility cafeteria PPOA waste evaluation resulted in a 100 percent reduction of nonrecyclable waste. Other solid waste reductions during FY95 include approximately 2,500 fluorescent lamps which were recycled instead of being landfilled; the recycling of approximately 116,900 pounds of paper and cardboard (recycling goals were exceeded in two quarters); and the substantial efforts which were made to increase procurement of office supplies manufactured with recycled materials.
 - Examples of hazardous waste minimization successes achieved during FY95 include changing Analytical Chemistry Laboratory procedures which resulted in a solvent waste volume reduction of approximately 30 liters per year; shipping halon to the DOE's halon bank at the Savannah River Site; and recycling spent lead-acid batteries. Beyond saving thousands of dollars in hazardous waste disposal and treatment costs, these minimization efforts aided the GJPO in maintaining its Resource Conservation and Recovery Act conditionally exempt small quantity generator status.
 - As a result of comprehensive lighting upgrades at the GJPO, a Certificate of Appreciation was issued to the DOE-GJPO by the Environmental Protection Agency (EPA) for commitment to voluntary pollution prevention and ongoing efforts to maximize

GJPO - EM Success Stories *Waste Management*

energy savings. Additionally, the GJPO received recognition from the EPA as a participant in the EPA Green Lights Program for the third consecutive year.

- Waste minimization efforts at the GJPO and throughout the community have helped to develop a stronger partnership between the DOE and its stakeholders. For example, GJPO volunteers coordinated and participated in the first county-wide Special Recycling Day for household wastes. Over 6,000 gallons of paint, 2,500 gallons of used oil, and 500 lead-acid batteries were collected. Outdated telephone directories were provided to a local high school which assisted them in winning a new computer as a second place prize in a recycling competition. Additionally, the GJPO has adopted two highway/roadway stretches where litter is routinely cleaned up.

GOALS: 4 & 6



- **GJPO Achieves RCRA LDR Compliance Prior to FFC Act Deadline**
Mixed waste compliance with the RCRA LDRs and Section 3004(j) was achieved by GJPO in late September. Compliance was achieved through cooperative efforts with the State of Colorado; the use of treatability studies in lieu of longer-term permitted treatment; use of available commercial treatment capacity; use of the Sort, Survey, and Decontamination project to survey and analyze potentially mixed waste to redesignate as non-mixed waste; and the innovative use of on-site generator treatment, including separation, stabilization, and neutralization. As a result, the need for finalizing the GJPO Site Treatment Plan and for implementing a State-issued compliance order was eliminated.

GOAL: 4

- **GJPO Sort, Survey, Decontamination Project Successfully Reduces Inventory of Suspect Mixed Waste**
DOE-AL, as a part of their Mixed Waste Treatment Program, identified a category of mixed waste that is known to have a hazardous component, but was only suspected of having a radioactive component. The Sort, Survey, and Decontamination Project, managed by the DOE Grand Junction Projects Office (GJPO) is effectively implementing a program to identify the absence or presence of the radiological component in the suspect mixed-waste, and to remove the mixed waste from the overall DOE-AL inventory.
Through a systematic and cooperative effort with the DOE-AL sites, timely reviews and approvals, and proven field techniques, the project team has reduced the mixed-waste inventory at

GJPO - EM Success Stories *Waste Management*

GJPO by an overall 89 percent. Similar reductions were realized at other DOE sites, including a 70 percent reduction at the Mound plant in Ohio, and an 82 percent reduction at the Inhalation Toxicology Research Institute in New Mexico. The project team is currently processing more than 1,400 drums of suspect mixed-waste at Los Alamos National Laboratory in New Mexico.

Mobile field teams have been used for survey and sampling analysis of the waste streams. The equipment utilized is portable and includes hand survey instruments, alpha/beta monitors, a mobile laboratory, and ventilated waste sorting tables for surveying and sampling waste streams. Written certification reports are provided to each site to document the results so that the waste can be handled as hazardous only.

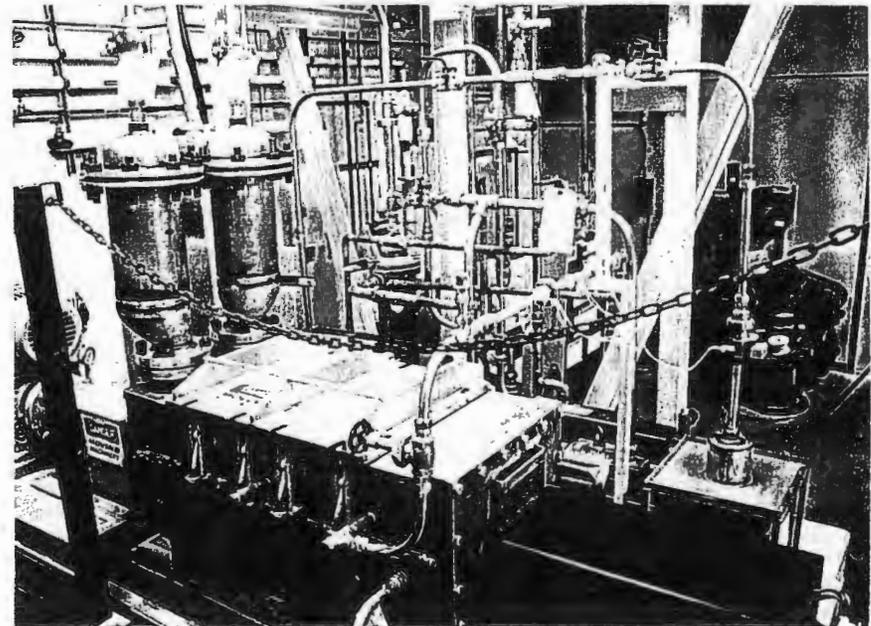
GOAL: 4

- GJPO Treatability Testing Successfully Demonstrates Two Treatment Technologies & Eliminates Small Waste Stream Inventories
 - Grand Junction Projects Office has successfully conducted treatability tests on a variety of mixed-waste from various sites within the Department of Energy (DOE) Albuquerque Operations Office (AL) complex. These treatability tests were conducted to evaluate the performance capability of evaporative oxidation and thermal desorption technologies. As a part of the treatability testing, a number of small waste streams from Pantex, Kansas City, and Sandia were completely treated, thus allowing those sites to remove the waste streams from their Site Treatment Plans.

The treatability tests with evaporative oxidation have demonstrated that the process effectively treats aqueous wastes that are contaminated with volatile organics, metals, and radionuclides.

Residuals from the treatment process consist of concentrated slat from the evaporator that is stabilized with cement, and a scrubber salt solution that is recirculated through the evaporator or stabilized with cement. The off gases are safely vented to the atmosphere. Treatability testing of the evaporative oxidation process utilized a pilot-scale PO*WW*ER unit obtained from the Rust Clemson Technical Center. The data obtained from the testing has been utilized to finalize the design of a mobile treatment unit which will be used to treat aqueous wastes at various DOE-AL sites.

The treatability tests with thermal desorption have demonstrated that the process effectively treats volatile contaminants in soil, sludge, and other solids. The main residuals are treated solids, condensed water containing dissolved organics, and condensed organics. Some of the residual solids containing heavy metals



GJPO - EM Success Stories *Waste Management*

may need to be stabilized. Condensed water and organics, which contain no radioactive material, are suitable for shipment for off-site treatment and/or disposal. The filtered off-gases can be safely vented to the atmosphere. GJPO designed and fabricated a pilot-scale, skid mounted unit utilizing a vacuum-assisted dryer and a hot oil system for heating the dryer. The design of the unit was based on the VAC*TRAX technology developed by Rust. Over fifty different test runs have been conducted to date with this unit. The data obtained from the testing is now being utilized to finalize the design of a mobile thermal desorption unit which will be used to treat solid wastes at various DOE-AL sites.

GOALS: 4 & 5

- Hazardous, Mixed PCB, and Low-Level Radioactive Waste Shipments from the Grand Junction Projects Office
The Grand Junction Projects Office (GJPO) has successfully made shipments of hazardous, mixed, polychlorinated biphenyl (PCB) and low-level radioactive waste to off-site commercial treatment and disposal facilities in FY95. The shipments were made since the GJPO does not conduct permitted treatment and disposal.
Shipments of hazardous and PCB waste were made to Rollins Environmental Services, Inc. in Deerpark, TX. on January 25, 1995 and August 15, 1995 totaling approximately 1,100 kilograms. The wastes were generated from the GJPO's analytical chemistry laboratory (ACL) and from on-site operational activities. They included flammable and corrosive liquids, spent solvents, and spent nickel/cadmium batteries. In addition, over 2500 spent, non-hazardous fluorescent lamps were included for recycling. The shipments were conducted in compliance with the GJPO's

Performance Objective for Certification of Nonradiological Hazardous Waste, Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), Department of Transportation (DOT), and State of Texas regulations.

A shipment of approximately 380 kilograms of mixed and low-level radioactive waste was made on August 22, 1995 to Diversified Scientific Services, Inc. in Kingston, TN. Wastes included cyclohexane and dodecane trioctylphosphine oxide, liquid scintillation cocktails; all generated from the site's ACL and resulting from environmental sample analyses. The shipment required the approval of DOE through the DOE Order 5820.2A exemption process. A drum of mixed waste generated from a GJPO treatability study was included in the shipment and necessitated an additional waste-specific campaign exemption. Compliance was maintained with RCRA, DOT and State of Tennessee regulations. By accomplishing these shipments, Rust demonstrated efficiency in preparing the shipping and waste characterization documentation; coordinating efforts between DOE-GJPO and DOE-AL, the treatment and disposal facilities, and the States of Tennessee and Texas; securing the necessary approvals; and maintaining compliance with applicable federal regulations.

GOAL: 4

- Improved Financial Controls (Waste Management)
Reduced operating carryover by 34%

GOAL: 3

- GJPO successfully accomplished a downsizing and maintained the skills needed to meet the DOE mission for GJPO
The GJPO contractor announced a reorganization in early May

GJPO - EM Success Stories *Waste Management*

1995 that reduced the number of manager and supervisory positions, increased the ratio of managers to employees from 16:1 to 22:1, and reduced the total full-time staff by 38 without sacrificing safety, quality, or productivity. Planned actions to accomplish further required staff reductions by June 30, 1996, were made. In August, GJPO completed a Voluntary Separation Incentive Program (VSIP) with 59 participants from across the contractor organization with minimal impact on the Grand Junction community. GJPO resolved employee and community concerns with restructuring and eliminated the need for any further significant involuntary separations. The GJPO subsequently initiated a number of activities to align resources and skills in order to continue to meet GJPO mission goals and milestones in light of the reduction in force. Among those initiatives were a series of meetings to prioritize needs, reduce or eliminate nonessential reports, and streamline training requirements. Monday morning "stand-up" meetings were established to communicate immediate resource needs or availability, and to expedite the process of meeting program requirements and optimizing personnel utilization.

As a result, the GJPO work force has been retained at the appropriate skill and resource levels to continue to meet the DOE mission at GJPO.

GOAL: 3

- Grand Junction Project Office - SSAB Advisory Board
Improved Relationships with Monticello Stakeholders
The Monticello Site Specific Advisory Board (SSAB) has come a long way after a contentious first year that was spent gathering community input on options for disposal of 2.6 million cubic

yards of uranium mill tailings. Once the decision was made to dispose of the tailings in an on-site repository in Monticello, Utah, a great deal of progress was performed in 10 months, including a repository design and a subcontract awarded for the work to be performed. During this time, the SSAB has been involved in the design process, working with DOE to develop a design that met aesthetical considerations of the community. Based on SSAB and community input, the slopes of the repository were changed to ensure gradual grading and less visual impact. DOE also decided to cover the repository with native vegetation as a result of SSAB discussions.

Community relations have significantly improved with the presence of a DOE site manager in Monticello. This presence was enhanced by Rust's hiring of a local community relations coordinator. Both the DOE site manager and the community relations coordinator have established a more active presence in the local community through regular attendance at City Council meetings, Chamber of Commerce meetings, and other meetings that may be of importance to the Monticello projects. A point-of-contact is now available for the community and its officials to resolve any problems, complaints, or other issues, and the Monticello community relations coordinator is more readily available for the local SSAB.

- The Monticello SSAB has also helped address issues pertaining to local training and hiring, assisting in sponsorship of an 80-hour training course in hazardous materials handling as part of the effort to hire locally.

As a result, the community and DOE are working together on resolution of issues and planning for the future.

GOAL: 6

Grand Junction Projects Office

Waste Management



GJPO - EM Success Stories *Technology*

- GJPO implements \$4.8 million of documented cost savings
 - The GJPO, through productivity and performance improvement initiatives, documented cost savings exceeding \$4.8 million. GJPO employees identified, implemented, and documented cost reduction, cost avoidances, and productivity improvements across all projects and functions. Significant cost savings were also identified by value engineering teams.

GOAL: 5

- Several GJPO Recommendations Help the Hanford Site Save Program Costs
 - GJPO took over the task of developing software for collecting and analyzing the data from spectral gamma logging trucks to be used in the Hanford Tank Farm Vadose Zone Characterization from the on-site contractor. The task was budgeted for \$477K. GJPO evaluated the efficiency of developing software and using off-the-shelf software developed the appropriate links in-house. The task was completed at \$130K and thus showed a cost avoidance of approximately \$347K.

GOAL: 5

- GJPO Identifies Cost Savings for the DOE Miamisburg Area Offices through a Critical Review Process
 - GJPO recommended that the DOE Miamisburg Area Office (DOE-MB) eliminate a Treatability Study for Mound Operable Unit One. GJPO reviewed existing documents, prepared a technical analysis and justification, and conducted a series of meetings with the M&O contractor to explain the recommendations. All documentation and recommendations were presented to DOE-MB and the Ohio and U.S. EPA for review and

approval. The resulting cost avoidance for the DOE-MB environmental restoration program was \$400K.

GOAL: 5

- GJPO Facilitated Value Engineering Team Identifies Potential Savings of \$4 million at the Los Alamos National Laboratory
 - A Value Engineering effort co-facilitated by GJPO identified potential savings of close to \$4 million for the Los Alamos Nuclear Materials Storage Facility Renovation Project. Using the VE problem-solving methodology, the team identified a new approach to the storage array for canisters containing nuclear materials. Savings were also identified in other areas including ventilation modifications, material access area boundary configurations, and equipment layout. The interdisciplinary team included Los Alamos National Laboratory and Hanford site personnel who had expertise in structural engineering, estimating, environmental regulations, health and safety.

GOAL: 5

- Increased Efficiency and Cost Savings Resulting from Improved Management and Financial Control
 - Focus on EM objectives, improve efficiency, and reduce costs
 - Implementation of a comprehensive baseline and project control system
 - Carryover Reduction: 92 percent since FY 1992
 - Completion of Program Execution Guidance (PEG) Milestone:
 - Submit Final Proposed Site Treatment Plan to the State of New Mexico (March 30, 1995)
 - FY 1995 Cost Savings and Avoidance: Over \$4.5M

GJPO - EM Success Stories *Technology*

- Transfer of rocket motors to the Department of Defense: \$1M
- Transfer of mixed waste from SNL/CA to SNL/NM: \$500K
- Transfer of transuranic waste from ITRI to SNL/NM: \$2M
- Progressive use of baselines for ADS and BEMR submittals: \$200K
- Mixed waste inventory reduction through characterization: \$500K
- In-house completion of RCRA permit: \$250K
- Improved control of training, travel, and purchases: \$200K

GOALS: 3 & 4

- Improved Nonintrusive Characterization Using a Tensor Magnetic Gradiometer System

Date of Success: August 1995

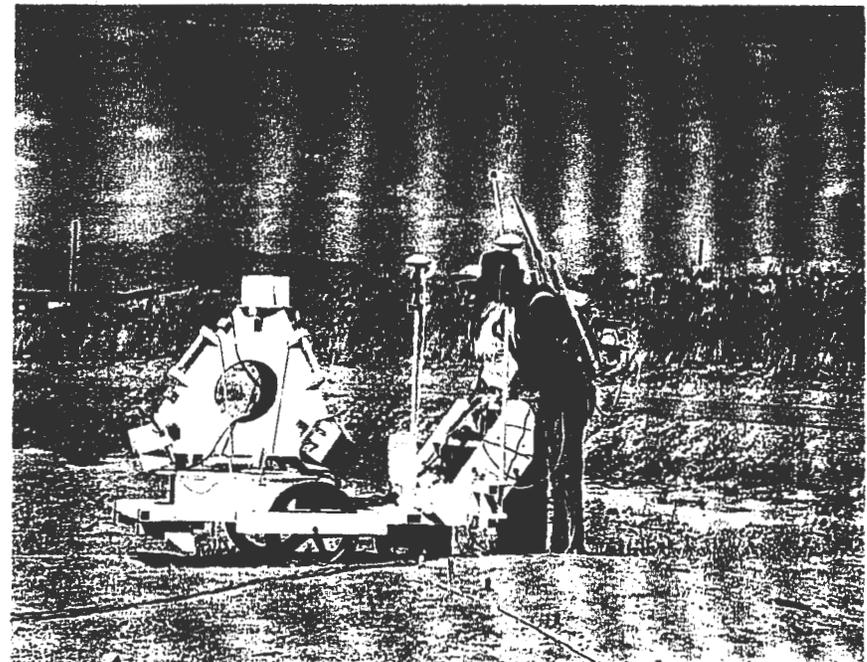
- In cooperation with the U.S. Geological Survey (Branch of Geophysics), the Department of Energy (DOE) conducted a proof-of-principle demonstration of a full tensor magnetic gradiometer system (TMGS) at the Cold Test Pit site located at the Radioactive Waste Management Complex in Idaho. The demonstration was funded by the Landfill Stabilization Focus Area, a major area of DOE (EM-50) research and development aimed at developing innovative technology of the characterization, treatment, and disposal of hazardous waste. The measurement of the gradient tensor of the magnetic field represents a significant improvement over conventional single-component magnetic surveys for the location and characterization of buried waste. The additional information provided by measuring the gradient tensor at each spatial location permits the detection, localization, and characterization of buried ferrous objects without the need for the generation of a map. The test demonstrated the ability

to acquire magnetic tensor data from a mobile platform. Tensor magnetic gradiometers have long been of interest to the U.S. Navy for application for mine and submarine detection. However, this project and demonstration are among the first to attempt to exploit the benefits of a TMGS for non-military applications.

The DOE-GJPO recommends the development of a smaller, more-stable sensor employing new innovative three-sensor gradiometer technology recently developed by IBM.

Cost: \$99K

GOAL: 5



GJPO - EM Success Stories *Technology*

- 3D/3C Seismic for Site Characterization

Date of Success: September 1995

Through the sponsorship of the Department of Energy's Office of Environmental Management, the GJPO has acted as principal investigator in a three-year technical task to develop the shallow, three-dimensional, multicomponent seismic technique for site characterization. The task has been a cooperative effort between the GJPO, the U.S. Geological Survey, the Colorado School of Mines, and private industry (Bay Geophysical Associates, Inc.). Because of health hazards and possible breach of contaminant caps, permission to conduct geophysical surveys directly across repositories is often denied. However, knowledge of the condition of confined aquifers and pathways beneath these sites is necessary for contaminant control or remediation activities. With the three-dimensional



seismic method, data may be acquired around the perimeter of a restricted-access area while lines which traverse the area may be selected for processing and interpretation. Three-dimensional, multicomponent seismic data were acquired at the DOE Savannah River Site (SRS) downdip from a large burial area containing both hazardous and radioactive wastes. Using technology developed in this task, the spatial variability of aquiclude thickness and continuity that could control migration and containment of contaminants was determined.

The DOE-GJPO recommends DOE-AL support a full-scale demonstration of this technology at the SRS or other suitable DOE sites.

Cost: \$710K

GOAL: 5

- Integrated Geophysical Characterization at the Savannah River Site and Paldiski, Estonia. DOE-GJPO

Date of success: August 1995

Integrated non-intrusive geophysical surveys were conducted at the Savannah River Site and at the Paldiski, Estonia nuclear submarine crew training facility. The objective of the SRS demonstration was to locate trenches, trench boundaries, and objects within the trenches to precise coordinates; this allows further remediation work to be accomplished without having to resort to excavation to locate the subsurface objects. The Paldiski characterization was performed to confirm and delineate utility corridors and contained utility lines, repositories, process facilities, and other subsurface features in preparation for facility closure. The results of both projects met or exceeded

GJPO - EM Success Stories *Technology*

expectations and represented successful implementation of the integrated geophysics approach developed under DOE-EM sponsorship.

The DOE-GJPO recommends the performance of similar characterization projects to further demonstrate and understand the integrated geophysics process.

Cost: \$300K

GOAL: 5



- Rabbit Valley Geophysics Performance Evaluation Range
Date of Success: September 1995

Through the sponsorship of the Department of Energy's Office of Environmental Management, the GJPO has constructed a unique test range for evaluating the performance of geophysical

techniques and instruments with well characterized targets under known background conditions. The Rabbit Valley Site is free of cultural effects and is open to the public. The geophysical techniques that can be evaluated at the Geophysics Performance Evaluation Range (GPER) include magnetics, induction electromagnetics, frequency and time domain electromagnetics, resistivity/induced polarization, ground penetrating radar, seismic, and gravity. Since its completion in late 1994, government, industry, and academia personnel have used the site in support of multiple projects involving environmental, military, and engineering objectives.

The DOE-GJPO recommends DOE-AL support of expanded facilities and usage of the GPER.

Cost: \$700K

GOAL: 5



GJPO - EM Success Stories *Technology*

- Real-Time Radiation Monitoring During Removal of Surface Contamination from Concrete Floors

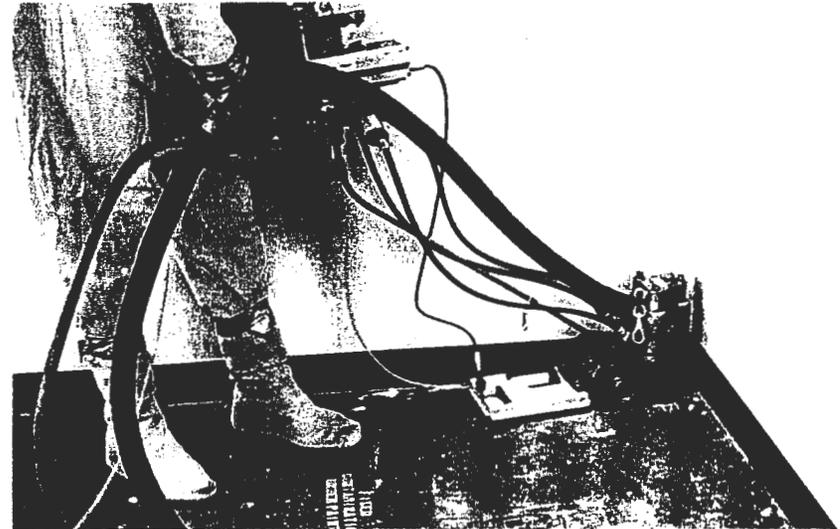
Date of Success: September 1995

A feasibility test was conducted to determine if real-time radiation-monitoring instruments could be mounted on decontamination machines during remediation activities to provide useful and immediate feedback to equipment operators. The U.S. Department of Energy (DOE) sponsored this field test under the Grand Junction Projects Office (GJPO) Remedial Action Project to identify a more efficient method to remove radiological contamination from concrete floor surfaces. This test demonstrated that project durations and costs may be reduced by combining radiation-monitoring equipment with decontamination machines. The test also demonstrated that a microprocessor-based instrument such as a radiation monitor can withstand the type of vibration that is characteristic of floor scabblers with no apparent damage.

The DOE-GJPO recommends more extensive and rigorous testing of this real-time radiation monitoring to include a variety of surfaces and decontamination machines.

Cost: \$25K

GOAL: 5



- A Chemical Barrier to Remediate Groundwater Contaminated with Metals and Radionuclides

Date of Success: 1993 - 1995

Laboratory batch and column tests successfully demonstrated the potential of a chemical barrier for controlling the migration of groundwater contaminants including U, Mo, As, Ra, Se, V, and Cr. The chemical barrier consists of amorphous ferric oxyhydroxide (AFO) emplaced in the surface such that as contaminated groundwater passes through the barrier, contaminants are removed by sorption. Both cations and anions are sorbed by AFO at the pH of most groundwaters. The barrier can be emplaced as a landfill liner, trench, or by injection into the subsurface downgradient of the plume. Funding to perform field experiments and demonstrations of this promising technology is being pursued.

Cost: \$500K

GOAL: 5

GJPO - EM Success Stories *Technology*

- Characterization of Radioactive Contamination Inside Pipes

Date of Success: April 1995

Science and Engineering Associates, Inc. (SEA) and the Grand Junction Projects Office (GJPO) teamed to demonstrate that radioactive contamination inside pipes can be characterized sufficiently to make decontamination decisions. The Beta Snake detector system developed at the GJPO was integrated into the Pipe Explorer™ system developed by SEA and the combination applied to suspect contaminated pipes at the General Motors (GM) Plant (a DOE Formerly Utilized Sites Remedial Action Program - FUSRAP location) in Adrian, Michigan. It has been estimated by FUSRAP that utilization of this Pipe Explorer™/Beta Snake system at the GM plant resulted in a savings to the Department of Energy of approximately 1.5 million dollars.

Cost: \$35K

GOAL: 5





Uranium Mill Tailings Remedial Action Project Office

Uranium Mill Tailings Remedial Action Project Office Environmental Restoration



UMTRA - EM Success Stories *Environmental Restoration*

- The UMTRA Project reached new milestones in FY 1995 in both the surface and ground water phases of the project. The UMTRA Project team completed surface remedial action at the 14th and 15th UMTRA sites — Mexican Hat, Utah, and Ambrosia Lake, New Mexico -- and started surface work at Maybell and Slick Rock, Colorado. The team also took a giant step forward with the groundwater phase with the release of the draft groundwater Programmatic Environmental Impact Statement (PEIS) for public comment.

GOAL: 4

- Ambrosia Lake, New Mexico — Remedial action at the Ambrosia Lake UMTRA Project site was completed in June 1995, making it the 15th of the 24 UMTRA sites completed. During construction activities, which began in September 1992, construction crews stabilized and encapsulated more than 2,000,000 cubic yards of contaminated materials in an engineered disposal cell.

GOAL: 4



As of September 30, 1995, surface cleanup is complete at Monument Valley and Tuba City, Arizona; Durango and Grand Junction, Colorado; Lowman, Idaho; Ambrosia Lake and Shiprock, New Mexico; Lakeview, Oregon; Canonsburg, Pennsylvania; Falls City, Texas; Green River, Mexican Hat and Salt Lake City, Utah; and Riverton and Spook, Wyoming. Remedial action is in progress at seven Colorado sites — Gunnison, Maybell, Naturita, Rifle (two sites), and Slick Rock (two sites).

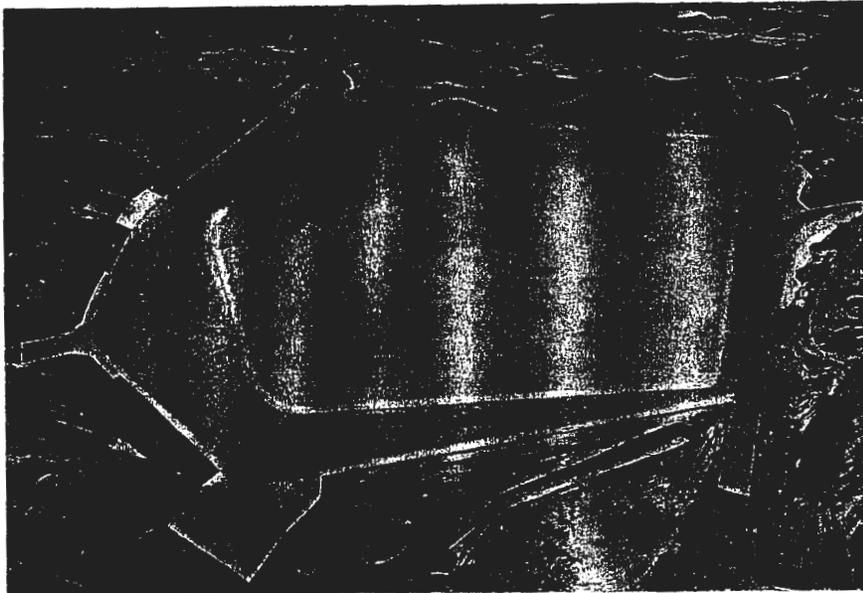
GOAL: 4



UMTRA - EM Success Stories *Environmental Restoration*

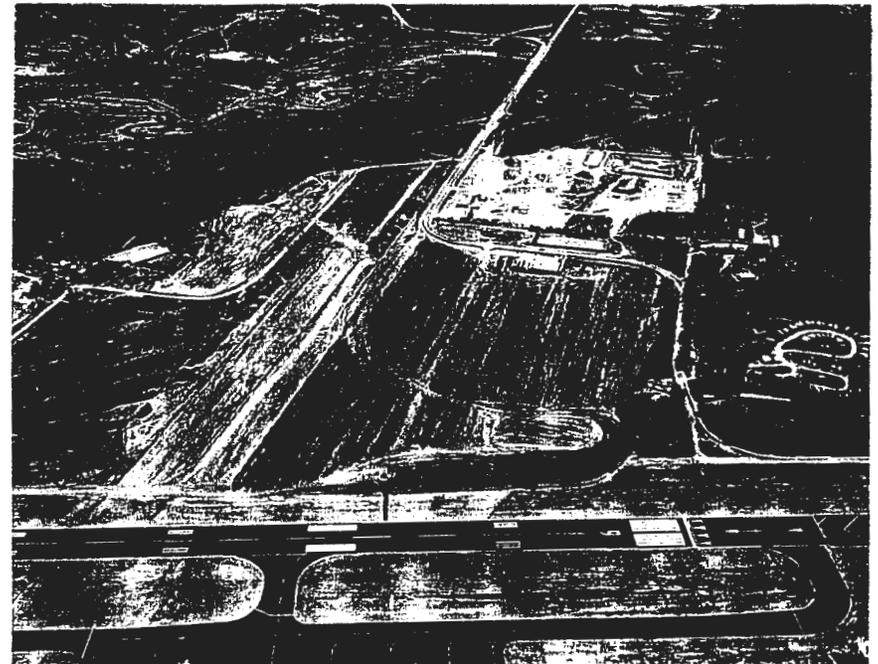
- Mexican Hat, Utah — Approximately 3,000,000 cubic yards of contaminated materials from the former uranium processing site at Mexican Hat were stabilized in place at the disposal cell in Halchita, Utah. In addition, contaminated materials from the Monument Valley, Arizona, UMTRA site were also placed in the cell, bringing the total amount of contaminated materials in the cell to more than 4,000,000 cubic yards. Remedial action at Mexican Hat was completed in February 1995. At the beginning of FY 95, the Monument Valley, AZ/Mexican Hat, UT Uranium Mill Tailings Sites celebrated 1,636 consecutive days without an accident or lost time due to injury.

GOALS: 1 & 4



- Gunnison, Colorado — Remedial action at the Gunnison UMTRA site is now 94 percent complete. Construction activities at the former processing site are complete and activities at the disposal cell site, six miles east of the former processing site, should be complete by the end of November. The estimated final quantity of contaminated material placed in the disposal cell is 750,000 cubic yards.

GOAL: 4



UMTRA - EM Success Stories *Environmental Restoration*

- Since FY 1988, the CR/PIP has saved or avoided \$70 M of costs. In FY 1995, the Project Office saved \$10.3 M by implementing 167 ideas which reduced costs, improved productivity or safety, and/or enhanced quality. The CR/PIP savings were 11 percent of UMTRAs federal funding. Thirty-five percent of UMTRA employees (230) participated. The Program has won the National Performance Review Hammer Award and the DOE Quality Team Award.
- The Cost Reduction/Productivity Improvement Program is a formal beneficial suggestions program which saves taxpayers money and improves the quality of the environment. It has been successful because it empowers DOE and contractor employees to implement innovative ideas. Also it recognizes all contributors to creativity and continuous improvement through letters and tokens of appreciation such as a CR/PIP pin and luncheon. To be recognized, the idea must improve existing procedures or be new, must be implemented, and positively impact cost, quality or safety. The Cost Reduction Program principles are simple to apply and are documented in the recently updated CR/PIP manual. The CR/PIP continues to improve itself and serve as a mentor for other organizations seeking continuous improvement.

FY 1995 EXAMPLES:

DOE, the Technical Assistance Contractor (TAC) and the Colorado Dept. of Public Health and Environment agreed to survey a select group of vicinity properties which Colorado believes may have been falsely excluded from UMTRA. This selective approach eliminates surveys of over 4,000 vicinity properties and avoids \$5.5 M of costs.

DOE used existing personnel and two additional federal workers to avoid hiring five new support contractors for the Title X Reimbursement Project, saving \$300 K.

By implementing a just in time approach to RADCON radiation and safety training, the Remedial Action Contractor (RAC) will eliminate the need for 15 additional technicians and save \$944.6 K.

RAC used a germanium detector to analyze differentiation between tailings and in-situ ore, saving \$620 K.

Grand Junction Vicinity Property Remediation Contractor changed construction subcontractor work to a four day work week and to night shift, avoiding \$171.4 K.

RAC dewatered tailings at the Rifle, CO, site without having to build a lined retention basin at a cost of \$702 K.

- As of September 30, 1995, remedial action at 97 percent of all vicinity properties near UMTRA sites was completed, bringing the total number of properties remediated to 5,121. NRC concurred with DOE's certification of remedial action at Canonsburg. Additionally, the NRC issued licenses for Lakeview and Lowman, certifying that the Long-Term Surveillance Plans (LTSP) for those sites meets NRC requirements. A total of 33 public meetings, hearings, public events, displays, briefings, VIP visits, and task force meetings were held at 21 different locations in FY95. The UMTRA Project Office responded to 175 public inquiries on two toll-free telephone lines.

GOALS: 4 & 6