

## 2008 LANL Pollution Prevention Awards

LA-UR-08-2578

The following projects won Best-in-Class awards from NNSA:

**Ultrapure Carbon and Carbon-Nitride Nano-Materials.** New solvent-free methods were developed to prepare ultrapure carbon and carbon-nitride nano-particles. The new methods are faster, involve less purification, and eliminate the need for high temperatures and pressures so that the preparation work is safer for employees. These useful materials can now be produced without generating hazardous fumes or waste in the process.

My Hang Huynh, Michael Hiskey, Michael Coburn, Ernie Hartline, Jose Archuleta, Dennis Montoya, Edward Roemer, Darren Naud, Anna Giambra

**Wastewater Recycling at LANL.** The Radioactive Liquid Waste Treatment Facility reduced the amount of reverse osmosis concentrate (ROC) that needs treatment by the evaporator. Instead of sending all of the ROC directly to the evaporator, it was recycled to an intermediate storage tank before being recycled and blended with influent. The amount of ROC that is wasted was reduced fourfold, and total cost savings exceed \$1.3 million per year.

Bob McClenahan Jr., Manny Fierro, Mary Beth Garcia, Ben Martinez, Tom Morrison, Matt Filer, Vangie Hodge, Wendy Staples, David Moss, Chris Del Signore

The following projects won Environmental Stewardship awards from NNSA:

**Steam Generator Optimization.** This project eliminated approximately half of the low-level liquid waste produced at the Plutonium Facility for a waste reduction of over 500,000L and a cost avoidance of over \$900,000 annually. This was accomplished by changing the operation of the steam generators so that they only run as needed instead of non-stop.

Kevin Barbour, Paula Jaramillo, Ron Chavez

**Perchloric Acid Exhaust System.** Activities involving perchloric acid were consolidated at TA-48 so that just one exhaust system could be used for this work instead of the original four separate exhaust systems. This project is expected to eliminate the generation of about 500,000L per year of low-level liquid waste since fewer ducts require washing and also avoid costs of approximately \$1 million annually.

Carol Burns, Wes Eford, George Martinez, Jenna Casias, Pete Rice

**Recycling of Soil, Asphalt, and Mulch.** The Chemistry and Metallurgy Research Replacement Project reused soil, asphalt, and mulch from vegetation instead of paying for their disposal. Approximately 207,000 cubic yards of soil and 486 cubic yards of asphalt will be used at the Laboratory and at the Los Alamos county landfill. Trees and other vegetation will be turned into mulch to help with dust suppression. Total cost avoidance could be up to \$1,735,000.

Terrill Lemke, Tim Zimmerly, Austin Commercial, CMRR Project Team

**Mixed Office Paper Recycle Program.** The new mixed office paper recycle program simplifies collection of paper at the Laboratory while addressing safety and security concerns. The combined collection is more efficient and user-friendly because all unclassified paper can be recycled together. The program reduces the amount of sanitary waste disposed and alleviates previous environmental impacts and security issues related to using out-of-state recyclers.

Monica Witt, Angelica Gurule, Luce Salas, Tom Baca, Janice Taylor, Regina Wheeler

**Integrating Safety and Security into the Environment Management System Life-cycle: A Body-contact Sport.** Full integration of Environmental Management Systems (EMS) with Integrated Safety Management Systems (ISMS) is required by DOE Order 450.1 and Executive Order. However, such integration depends on sustained effort and the cumulative effect of many individual steps to assure that meaningful results are demonstrated at the worker level of the organization. In FY07, the Laboratory executed efforts at every stage of the EMS life-cycle to continuously improve such integration.

Dennis Hjeresen, Patricia Gallagher, James Biggs, Deborah Bryan, Jen Nisengard, Marjorie Wright, EMS Core Team

**The Uninterruptible Power Supply Project.** The Uninterruptible Power Supply (UPS) project was an educational, electrical safety, pollution prevention, waste reduction, and environmentally preferable purchasing initiative. Unnecessary UPSs were removed, and workers were educated about the proper uses of UPSs. This project will help avoid future legacy waste materials and assist in Laboratory clean up efforts.

Marc Gallegos, Michelle Coriz, Sunee Sandoval, Alice Trujillo, Mark Gardner, Brian MacDonald, Monica Witt

The following projects won Best-in-Class Pollution Prevention Awards from LANL:

**Containment Vessels at DARHT Firing Point.** Four fully-contained high explosive experiments were performed at DARHT in FY07. Using vessels to contain the explosion prevents fragment waste from contaminating the surroundings. Aqueous foam was previously used to capture small shot debris, but now the foam is unnecessary. Noise and fire danger are also reduced with vessel containment. During FY07, performing vessel shots avoided approximately 96 m<sup>3</sup> of low-level waste and 40,000 gallons of radioactive liquid waste. Cleanup time after an experiment is now reduced by approximately 600 man-hours per shot. Turnaround time between shots is also reduced, and this has increased productivity.

Kurt Anast, Dave Melton, Scott Hickman, Brandy Duran, Dennis Royer, Shad Glidewell, James Maestas, Theresa Montoya, Gary McMath, Kelkenny Bileen

**Lowering Radioactive Air Emissions at LANL.** This team discovered a tiny crack in a valve that was responsible for an unexpected increase in radioactive air emissions. To maintain compliance with air regulations, LANSCE had reduced beam power by 18%.

After the repair was made, the air emissions dropped back to their previous low levels and full beam power was restored.

Dave Fuehne, Mike Baumgartner

**TA-21 DP Site Aggregate Area Project – Reuse of Overburden Soil.** During this remediation project, the uncontaminated overburden soil was set aside. After the contaminated soil was removed from the site, the overburden soil was used to refill the excavated area. Reusing the overburden avoided the generation of 2420 yd<sup>3</sup> of low-level waste soil and avoided the purchase of that much clean fill. This team also used magnesium chloride spray instead of plastic sheeting to control dust at the site. Overall cost savings are estimated at \$2,087,970.

Mark Thacker, Roy Bohn, Darrel Blain, Kelly Vanderpoel, Ron Desotel

**Containment Vessels at EENIE Firing Point.** Using contained vessels for dynamic testing at EENIE firing point avoids the generation of approximately 90 m<sup>3</sup> of low-level waste debris per year for a cost savings of over \$290,000. There is no need to build shot stands while using vessel containment, so about 17 m<sup>3</sup> of wood and steel are avoided during each shot. Cleanup time after each shot is reduced, and the turnaround time between shots is much faster with vessel containment.

Mike Archuleta, Rudy Archuleta, Steve Hare, Joe Lynch, Pam Scott, Joe Bainbridge, John Echave, Brandy Duran, Jerry Lopez, Gerald Espinoza, Steve Martinez, Steve Vigil, Steve DiMarino

**Server Virtualization and Cost/Energy Savings.** This team implemented a new technology to decommission 105 computer servers without decreasing capacity. The estimated energy savings are over 873,000 kWh/year. This project saved \$605,000 in the first year and expects to avoid about \$1.4 million/year in the future.

Chris Olsen, Anil Karmel, Chris Samora, Theresa Sandoval, Keith Morgan

The following projects won Pollution Prevention awards from LANL:

**1L Target Water System.** The team designed, tested, and installed target water system upgrades. The upgrades annually avoid approximately 10 m<sup>3</sup> of low-level waste and about 1000 hours of work time that can now be used more productively. The new system substantially reduces time that the beam is shut down, so more research can be accomplished.

Steve Morgan, Lawrence Quintana, Mike McCormick, Eron Kerstiens

**A Green Synthesis Path to the Explosive DAAF.** This team invented a new method of producing an explosive called DAAF that produces only non-hazardous waste and cuts time requirements by over 90%. The team eliminated sulfuric acid and organic solvents from the process. An industrial partner plans to adopt the new process and scale it up for manufacturing.

Elizabeth Francois, David Chavez

**ARAMARK Goes Green.** ARAMARK is now using environmentally-preferable cups and plates that are made with recycled paper instead of Styrofoam. The team also replaced Styrofoam take-out boxes with bamboo containers. The paper is biodegradable, and the bamboo can be composted.

Vance Boone, Kevin Finn, Mike Boule

**Bioscience Division Chemical Removal.** This team removed over 1300 excess chemicals from Bioscience labs. This improves safety in the labs and reduces time spent on managing inventory.

Jeffrey Treasure, Alice Trujillo, Phillip Martinez, Jose Ortega, Darryl Garcia, Elizabeth Schmidt, David Lalonde, Steve Shelton

**Canned Air Disposition Day.** This team collected over 400 cans of compressed air for disposal or reuse. Compliance risk for the Laboratory was reduced because most of these cans were not listed in the ChemLog inventory. The team implemented extra requirements for purchasing compressed air since more environmentally-friendly alternatives exist for cleaning electronics.

Jennifer Nisengard, Sunee Sandoval, Jonathan Tapia, Steve DiMarino

**CMRR Facility Green Team.** CMRR Division formed a “Green Team” to implement pollution prevention and waste minimization projects within the Division. The team meets biweekly to brainstorm, and they have implemented over 20 of their ideas.

Entire CMRR Project Team, Debra Gardner, Bob Grace, Tony Ladino, Joe Quintana Shannan Baker, Bruce Bingham, Yvette Branch, Amy Reeves, Nicole Seguin

**CMRR Facility Project Nuclear Facility LEED Certification.** The team is pursuing Leadership in Energy and Environmental Design (LEED) silver certification for the new Radiological Laboratory/Utility/Office Building. The team plans to pursue LEED gold certification for the nuclear facility. These efforts will reduce operational costs of both buildings.

Anthony Ladino, Cathy Flavin, Bruce Bingham, Michael Bodelson, Nicole Seguin

**Contaminated Lead Recycle.** The team sent 2380kg of unwanted lead to Duratek for recycling. If the lead had not been recycled, it would have all been handled as mixed-low level waste. The savings for waste disposal from this project are over \$82,000.

Alice Trujillo, Charles Villareal, Debra Baca, Mark Martinez, Jennifer Pitt, Kenneth Ault, Bob Wingo

**Disposal of Excess Rocket Motors.** The team inventoried about 100 old rocket motors at HX-3 and then found an off-site disposal facility that could treat them. They were not handled onsite due to the potential for surface water and groundwater contamination by propellants that contain perchlorate.

Larry Hull, Pamela Scott, Rudy Archuleta, Connie Gerth, Steve DiMarino, Kelkenny Bileen, Elmer Velasquez, Francis Sena, Louie Salazar, Sara Maynard, Manuel L'Esperance

**Elimination of Canned Air in Director's Office.** The team eliminated all Dust-Off compressed air from the Director's Office. The compressed air cans contain tetrafluoroethane or difluoroethane, and these chemicals have negative air quality impacts. The team plans to use manual methods for cleaning keyboards in the future.

Michael Brown, Christie Davis, Tammy Milligan, Denise Derkacs, Renee Salazar, Ellen Louderbough, Susie Salazar, Josephine Olivas, Aimee Schnedler, Evelyn Martinez, Julia Mundt, David Holmes, Melissa Robinson, Carolyn Bossert, Deborah Smith, Tim Martinez

**Empty Aerosol Can Recycle.** The team purchased a handheld aerosol can puncturer that punctures empty aerosol cans so they can be sent directly for recycling. The team expects to puncture about 1200 cans each year and avoid over \$4000 in waste disposal costs.

Jeffrey Treasure, Alice Trujillo, Philip Martinez, Jose Ortega, Darryl Garcia, Sunee Sandoval, Karen Dewees-Lee, Ken Oshel

**Extending Reuse Period of Anti-C Lab Coats at CMR.** The team discovered that there was no additional contamination risk in wearing an Anti-C lab coat for a week of normal activities instead of one day. Using the coats longer reduces the amount of laundry at CMR by about half and saves an estimated \$280,000 per year on laundry bills. Employees spend less time surveying and handling laundry, and this provides an estimated time savings of about 1800 manhours per year.

Amy Wong, Sharla Dempsey, Deann Dierks, Lisa Townsend, Garth Beers, Conrado Sandoval, Charles Riebe, Gary Martin, Beraldo Montoya

**Human Resources Center Recycling.** David Dreesen made business cards to remind employees how to recycle various materials. He also gave several presentations on recycling to groups within Human Resources Division.

David Dreesen

**Improved Process and Waste Reduction by Microwave Assisted Peptide Synthesizers.** The team purchased new peptide synthesizers that can make longer chains of protein while using 90% less organic solvent in the process. The new synthesizers work faster than the old machines, so productivity has been increased by about 80%.

Jennifer Martinez, Jurgen Schmidt

**Improving Silver Recovery in Film Processing Laboratories.** The team purchased four new silver recovery units to recover silver from film-processing waste. The new equipment will prevent the generation of about 300 gallons of hazardous waste annually and avoid over \$8000 in disposal costs.

John Stearns, Ringo Beaumont, Troy Childers, Brian Skibyak, Al Stadelmeier, Connie Gerth

**Inter-Group Cooperating Nets More than Dollars.** The Hazardous and Mixed Waste Operations Group worked out an arrangement to package together some similar wastes

from different generators. Shipping the waste items in the same container saved approximately \$30,000 in transportation and disposal costs.

Paul Newberry, Chris Duy, Randy Axtell, Billy Romero, Matt Lavy, Steve Kosler, Sean French

**ISR-6 Cost Reduction through Oil Reuse and Recycling.** The team was able to reuse about 4000 gallons of transformer oil for multiple projects before sending it away for recycling. Since the oil was not handled as hazardous waste, over \$100,000 in waste disposal costs were avoided. Over \$35,000 was saved since the oil was reused and new oil was not purchased.

Ronnie Garcia, Lance Kloefkorn, Frank Romero, Robert Wheat

**Large Quantity Bioscience Chemical Reduction Program.** Bioscience Division has a large inventory of regulated chemicals, and all of these chemicals require time and effort to safely manage. The team made a clean-out effort at TA-43 and TA-35 and removed about 1300 unwanted chemicals for disposal.

Elizabeth Schmidt, Cheryl Lemanski, Jose Ortega, Phillip Martinez, Darryl Garcia, Francisco Galvez, Jeffrey Treasure, Alice Trujillo

**LED Lights as Replacement Lights for Glove Boxes at TA-55.** A team at TA-55 is replacing about 90 fluorescent light fixtures in glove boxes with LED lights each year. LED lights use less electricity, last longer, have a smaller volume, and contain no hazardous components, so LED lights can be disposed of at a lower cost than fluorescent fixtures. The team expects annual savings to be over \$24,000.

Harvey Decker, David Paulson, Paul Lewis, Kevin Bailey, Tom McNaughton, Marilyn Peabody, Missy Trujillo

**MEENIE Firing Site Cold and Dark.** This team relocated the capabilities of the MEENIE firing site to other LANL firing sites and cleaned everything up at MEENIE. Unwanted metal was surveyed and recycled if it was not contaminated. Some of the wood was reused at other firing sites.

Robert McInroy, James Carothers, Robert Lopez, Joe Bambridge, Kelkenny Bileen, Steve DiMarino, Ken Huff, Sarah Maynard, Steve Westerhold, Willie Haynes, Nancy Anderson, Robert Vigil

**Mixed Paper Recycle Program.** The team implemented a new program at LANL that allows employees to recycle white and colored paper together. The mixed paper is recycled at a nearby New Mexico business instead of being sent out of state.

Angelica Gurule, Monica Witt, Tom Baca, Luce Salas, Janice Taylor, Regina Wheeler

**Promoting P2 through Prior Proper Planning.** The team found a non-hazardous cleaning system for detector tubes so that a large acid wash tank system did not need to be installed. Not having the acid wash tank avoids the generation of approximately 5500 gallons of hazardous waste annually and avoids disposal costs of about \$143,000.

Jeff Bacon, Ronnie Garcia

**New Use for Cobalt-60 Source.** This team transferred their unwanted cobalt-60 source to LANL's Emergency Response group. This group is using the cobalt-60 source for threat reduction and emergency scenario training. By using this existing source, LANL avoided the cost of purchasing a new source and disposal costs of at least \$25,000.

David Fry, Michael Howe, Dwain Keith, Steve DiMarino, Connie Gerth, Kelkenny Bileen, Jonetta Zerbee, Don Thorp, Alvin Valdez, Loretta Gurule

**Equipment and Furniture Reuse.** SAFE 2 reused furniture, computer equipment and training equipment to assist SAFE 2's transition to ADSS savings approximately \$100,000 in new equipment costs.

Margie Trujillo, Lila Pacheco, Debra Lowe, Noel Johns, Andrew Wall, Ken Casados, Barbara Dominguez, Donna Martinez

**Reconditioner Extends Service Life of Two-Way Radio Batteries.** This team purchased a battery conditioner to extend the service life of its radio batteries by 12-18 months each. The number of batteries disposed of each year has dropped by 80%, and annual savings are estimated at \$12,400.

Joseph Gonzales, Daniel Lane Taylor, Natalie Montoya, Kelkenny Bileen, Connie Gerth

**Recycling Copper and Other Metals by WMC-3.** The Detonator Fabrication group manufactures cables for various LANL projects. The team implemented a recycling program in the shop so that unusable cables or unwanted copper wiring and sheets can be recycled. The estimated savings on waste disposal are \$2200 per year.

Leona Baca, Kathryn Smith, Candie Edwards, Eva Campos, Michael Johnson, Patrick MacDonald

**Replacement of Aerosol WD-40 Cans with Refillable Spray Bottles at TA-55.** A team at TA-55 replaced all of the aerosol cans of WD-40 with spray bottles of WD-40. Since the spray bottles can be refilled, no container waste gets generated. Purchasing WD-40 in recyclable bulk containers instead of in aerosol cans cuts purchasing costs by over 75%.

Bob Dodge, Tom McNaughton, David Taylor

**Retrofit of an Engineered Gloveport.** This team retrofitted five gloveports with a new technology that makes changing glove box gloves faster, safer, and easier for employees. Changing gloves with the new gloveports generates less transuranic waste than the existing process, and plans are in place to retrofit many more gloveports at LANL.

Michael Cournoyer, David Rael, Toby Vigil

**Reusing Lead Bricks.** This team inventoried unwanted lead at TA-18 and gave 300 lead bricks to a Los Alamos company called NSTEC. LANL saved over \$150,000 by not disposing of 7500lb of lead as potential mixed low-level waste, and NSTEC saved about \$37,000 by not purchasing new lead bricks.

Nick Wilcox, Dave Schwellenbach, Leonard Trujillo, David Hayes, Sonja Salzman, Michael Cournoyer

**TA-21 Excess Cardboard Box Redistribution.** As part of cleaning out the old archives buildings at TA-21, 14,000 new cardboard moving boxes were given away to users through LANL's Warehouse. No new moving boxes were ordered until this supply was distributed.

Patricia Nelson, Christopher Cdebaca, Patricia Aguilar, Beverly Martinez, Jose Aragon, Jerome Archuleta, Gary Chavez, Freddy Garcia, Richard Grasmick, Kris Martinez, Matthew Munoz, Danny Pacheco, Paul Rivera, Edwin Serrano, Jeannette Trujillo, Martin Trujillo, Raymond Trujillo, Derrick Valdez, Diedrie Valdez

**TA-48 Cleanup Effort.** To reduce the regulatory liability of having excess contaminated equipment onsite, a team removed about 112m<sup>3</sup> of low-level waste equipment for disposal. This work improved the overall safety basis of the TA-48 complex.

Ken Oshel, Audrey Garcia, Kevin Krause, Dale Melton, Arthur Montoya, John Urban, Grant Valentine

**Ten Year Site Plan: "SharePoint" Project Process.** SharePoint software was used to create LANL's Ten Year Site Plan. Employees edited and shared documents electronically and saved approximately 200 reams of paper and 600 manhours while getting the report together.

Michelle Marean, Joan Stockum, Mona Valencia, Annabelle Almager

**UPS Salvage and Disposal of Batteries.** This team accepted over 1700 unwanted uninterruptible power supplies (UPS) and removed the batteries for recycling. Not using a UPS saves about 20% of the energy that a computer normally uses.

Alan Gibson, Nicole Mattson, Vince Valdez, Suzie Archuleta

**UPS Working Group for Collection and Prevention.** The team recovered 202 uninterruptible power supplies (UPS) and recycled the batteries. Waste disposal would have cost almost \$17,000 if the batteries had been handled as hazardous waste. About \$1800 in electricity costs will be saved each year without these UPSs.

Marc Gallegos, Michelle Coriz, Sunee Sandoval, Alice Trujillo, Mark Gardner, Brian MacDonald, Monica Witt

**Waste Reduction Realized by Change in Process by WCM-3.** The team stopped using hydrochloric acid to remove mineral deposits from an etcher and now uses high pressure hot water. The annual use of 32 Liters of hydrochloric acid is avoided, and savings are approximately \$2300.

Lance Watson, Joe Bonner, Jason Burkhart

**Waste Removal and Salvage of Property from TA-55 Warehouse.** A multi-directorate team was formed to help identify, evaluate, process, and dispose of excess materials stored in the TA-55 warehouse. About 20yd<sup>3</sup> of metal was recycled, and over 21 pallets of materials were removed from the warehouse.



Bill Williams, Michael Gallegos, Jason Krylowicz, Tommy Martinez, Kenny Salazar, Michael Trujillo, Ronnie Chavez, Robert Tafoya, Voil Lattin, Egan McCormick, Charlene Montague, Randy Martinez, Missy Trujillo, Rudy Lovato, Angela Duran, Ubaldo Gallegos, Jeff Hollander, Leo Urbina, Leo Archuleta, Larry Vigil, Danny Borrego

**WNR Target Disposal Drum – MLLW Reduction Through Reuse.** A team at LANSCE reused unwanted lead shielding by using it to line a drum that was used to ship some waste targets offsite for disposal. The team saved over \$10,000 by not purchasing a new lead-lined cask for shipping this waste, and the team prevented the unwanted lead from becoming a separate drum of mixed low-level waste.

Leo Bitteker, Art Bridge, Greg Chaparro, Ronnie Garcia

**Implementation of Pipettes Calibration in the Radioactive Containment.** This team set up an unused open-front box in their lab to perform monthly calibrations of pipettes. Before this improvement was implemented, over 70 pipettes per year were disposed of as low-level waste because there was no appropriate space where they could be calibrated.

MaryAnn Abeyta, Lawrence Garcia, Jay Samuels, Alice Slemmons, Donivan Porterfield

**Utilization of Commercially Available Resin for Plutonium Removal Chromatography.** The team purchased commercially available columns of resin for particular analytical procedures instead of preparing the resin themselves. Using the premade columns avoids the use of almost 400 Liters of liquid low-level waste and saves about 100 hours of time per year.

David Gallimore, Ning Xu, Joseph Rodriguez

**Use of Excess Slip-Top Cans for Sharp Storage and Waste Disposal at CMR.** There were 500 metal slip-top cans in storage at CMR that were no longer usable for their original purpose. The team distributed the cans within the building to store small, sharp waste or objects in glove boxes and open-front boxes. This practice improves employee safety.

C-AAC Group, PMT-1 Group

**CMR Legacy Clean Up in Chemistry Division Space.** The team cleaned out unwanted materials from wings 3, 5, and 7 in the CMR building. More than 60 pallets of usable items were recycled, two dumpsters of paper and metal were recycled, and over 1500 chemicals were removed from the wings. The area is now safer for employees due to the improved housekeeping, and there is less risk of violating any environmental regulations.

Sharla Dempsey, Victor Salazar, Robert Geyer, Russ Keller, Grace Vuyisich, Andres Valdez, Terry Hahn, Lisa Colletti, Marty Vialpando, Thomas Marshall

**Reuse/Recycle of Chemicals and Equipment from CMR to Sigma Building.** The team that cleaned out wings 3, 5, and 7 of the CMR building transferred some valuable materials to users at Sigma building. These materials included 6kg of titanium powder,

200 ceramic crucibles, and 30 expensive chemical standards. The value of these materials is estimated at \$100,000.

Sharla Dempsey, Jason Cooley, Lisa Colletti, Georgiana Vigil, Robert Cox

**Apex Sample Introduction System.** The team purchased an Apex sample introduction system so that smaller samples can be analyzed with spectroscopy. The Apex system reduced the sample size and waste volume by 90%. The analytical process is also faster with the Apex system, so employees save about 500 hours per year.

Ning Xu, David Gallimore, Alex Martinez

**TA-53 Orphaned Gas Cylinder Project.** Workers identified 122 gas cylinders at TA-53 with no identified owners and researched the contents of the cylinders. Empty cylinders were recycled, and the other cylinders were returned to their manufacturers to recover the gases. If all of these cylinders had to be sampled and disposed of as hazardous waste, the cost would have been approximately \$477,000.

Joseph Price, Rudy Abeyta, Earl Martinez, Roberto Trujillo, Ronnie Garcia, John Graham

**Reuse of Mobile Radiological Laboratories.** This team found another user for three 25-foot long trailers that were no longer needed for their original purpose. The trailers were cleaned out and decontaminated. This team avoided costs of over \$600,000 and over 200 m<sup>3</sup> of low-level waste generation by reusing the trailers instead of disposing of them.

John Urban, Ed Gonzales, Dustie Rich

**KSL Erosion Control.** KSL employees built a lined retention pond on Sigma Mesa as part of a stormwater control project. This pond ensures that no salt or sediment gets discharged to the nearby surface water.

Dan McReynolds, Barbara Hoditschek, Terrill Lemke, Jillian Burgin, Tim Zimmerly

**KSL Environmentally Preferable Custodial Cleaning Products.** KSL employees evaluated custodial cleaning products to ensure that these chemicals do not have a negative impact on the sanitary wastewater treatment plant. The team implemented a new testing methodology for these chemicals that provides results four times faster than before.

Dan McReynolds, Barbara Hoditschek, Terrill Lemke, Jillian Burgin, Tim Zimmerly

**KSL Waste Oil Recycling Increase.** KSL staff changed the procedures for collecting oil for recycling, and the amount of oil getting recycled increased by 21%. Waste management coordinators are now responsible for recycling oil instead of staff from the heavy equipment shop.

Audrey Garcia, Ken Oshel, Kevin Krause, Beverly Aguino, Daniel Sanchez, Donald Bednar

**KSL Footprint Reduction Effort – Recycled Pro-Panel.** The group saved 8000 ft<sup>2</sup> of metal pro-paneling from a demolition project and sold it at an auction. This effort prevented about two tons of material from becoming solid waste.

Kelly Gee, Doug Salazar

**KSL Reduction of Herbicide Use.** KSL employees determined that 30% less of an herbicide called Velpar could be used with no change in effectiveness. This improvement saves over \$8000 per year and prevents accumulation of this herbicide in the environment.

Dan Humbles, Richard Gonzales

**Historical Metal Recycle Initiative.** The Lujan Center Mechanical team recycled over 200,000lb of stored steel shielding that was no longer needed. This project made a significant amount of space available for other uses and reduced safety hazards onsite for employees.

Melvin Borrego, Tim Medina, Joshua Martinez, Tommy Holder