

FISCAL YEAR 2006  
SECRETARY OF DEFENSE ENVIRONMENTAL AWARDS  
U.S. ARMY NOMINATION

# FORT LEWIS, WA

POLLUTION PREVENTION, NON-INDUSTRIAL INSTALLATION



**SUSTAINING THE ENVIRONMENT** FOR A SECURE FUTURE

## INTRODUCTION

Fort Lewis is home to I Corps and offers an unmatched spectrum of military capabilities. The installation mission has four components: 1) Operate a state-of-the-art power generation and sustainment platform for war fighters by providing them with superior training support and Infrastructure; 2) Support the transformation of I Corps and Fort Lewis; 3) Transform the well being of our Soldiers, civilians, retirees and their families; and 4) Remain a committed Pacific Northwest neighbor.

Among the units and activities that call Fort Lewis home are the 1st Special Forces Group (Airborne), 2nd Battalion, 75th Ranger Regiment, three Stryker Brigade Combat teams, the Western Reserve Officer Training Corps (ROTC) Region Brigade and Army Madigan Medical Center. Fort Lewis is a "city" ranking fifth in the state in size, serving 31,000 military, 11,000 civilians, 125,000 retirees and 80,000 family members. As the only Power Projection Platform in the Pacific Rim, more than 33,000 active, reserve and National Guard Soldiers have deployed/mobilized at Fort Lewis in support of Operation Enduring Freedom and Iraqi Freedom in the past year. Fort Lewis' 86,000 acres encompasses 32 maneuver areas, four impact areas, 67 live fire ranges, 50 artillery firing points and many state-of-the-art training facilities, all of which reside in a natural environment that consists of forests, prairies/grasslands, Oregon white oak woodlands, wetlands and open water.

Fort Lewis is situated approximately 35 miles south of Seattle, Wash. and seven miles northeast of Olympia. Interstate 5 (I-5), which is the main transportation corridor in the Puget Sound region, runs through the installation. Fort Lewis is bordered on the north by McChord Air Force Base (AFB) and suburban and commercial development; on the east and south by rural areas, forest land, and several small communities; and on the west by the Puget Sound and the Nisqually Indian Reservation. As the second largest employer in the state, Fort Lewis plays an important role in the financial health of the community. This economic benefit has translated into development and tremendous growth around the installation boundaries.



*Fort Lewis, the Army's Gateway to the Pacific Rim.*

## BACKGROUND

The military units at Fort Lewis maintain a high training tempo, presenting a potentially large environmental impact. Additionally, the thousands of Soldiers, civilians and family members that call Fort Lewis home put a significant strain on the local and regional environment. Commuting, water use, energy use, waste generation and air emissions factor into Fort Lewis' overall environmental footprint. In order to proactively address the total environmental impact of these activities, Fort Lewis has established one of the most comprehensive and aggressive environmental programs in the Department of Defense (DoD).

### **Environmental Program Description**

The Fort Lewis environmental program encompasses the full spectrum of environmental disciplines, from conservation to range management to traditional air, water and waste compliance programs to more holistic environmental management systems (EMS) and sustainability programs. In the 15 years since the Army first began seriously addressing pollution prevention (P2), the Fort Lewis P2 program has matured to the point where it has truly begun to address the root causes of waste generation and has expanded to become the Installation Sustainability Program (ISP). Fort Lewis began the shift to the ISP in early 2002, with the development and adoption of 12 aggressive goals to maintain the installation's status as an effective military

training base, as well as a valued member of the community and a proactive leader in conserving the environment. Senior leadership support has been in place from the beginning and continues through monitoring and guidance of the Installation Sustainability Board (ISB), which is chaired by the installation's Deputy Commanding General. Achievement of the 12 goals is accomplished through the Fort Lewis EMS and the cooperation of the major organizations on the installation. The 12 strategic goals are as follows:

1. Reduce traffic congestion and air emissions by 85 percent by 2025.
2. Reduce air pollutants from training without a reduction in training activity.
3. Reduce stationary source air emissions by 85 percent by 2025.
4. Sustain all activities on post using renewable energy sources and generate all electricity on post by 2025.
5. All facilities adhere to the LEED Platinum standard for sustainable facilities by 2025.
6. Cycle all material use to achieve zero net waste by 2025.
7. Attain healthy, resilient Fort Lewis and regional lands that support training, ecosystem, cultural and economic values by 2025.
8. Recover all listed and candidate federal species in South Puget Sound Region.
9. Zero discharge of wastewaters to Puget Sound by 2025.
10. Reduce Fort Lewis potable water consumption by 75 percent by 2025.
11. Fort Lewis contributes no pollutants to groundwater and has remediated all contaminated groundwater by 2025.
12. Develop an effective regional aquifer and watershed management program by 2012.

### **Environmental Management System**

The Fort Lewis EMS provides the framework to facilitate the achievement of the aforementioned 12 ISP 25-year goals. Strategic goal six, "Cycle all material use to achieve zero net waste by 2025," relates to sustainable waste management practices, which is a part of the installation's overall P2 program. In FY 2005, Fort Lewis addressed several of its EMS objectives and targets by applying new and innovative strategies to resource conservation

and waste reduction through reuse, composting and other preventive measures.

The Fort Lewis Directorate of Public Works (DPW) recently obtained third party ISO 14001 recertification of their EMS, validating the first and longest continually certified EMS in the Army. To date, Fort Lewis has achieved all of the DoD EMS goals and metrics and the P2 team is integrally involved in expanding and implementing EMS across the entire installation in order to meet the Army goal of a fully conformant ISO 14001 EMS by September 2009. In doing so, they work closely with the Garrison Commander, mission commanders and the civilian workforce to train personnel, promote issue awareness and clearly convey the roles and responsibilities that everyone has regarding the environment and the impact that their actions can have.

Because EMS awareness is considered a major factor in achieving full conformance with ISO 14001 standards, Fort Lewis leaders and supervisors are making EMS a part of normal operations beginning with the Garrison Commander's environmental policy (posted on organizational bulletin boards and on Web sites) and continuing with 16 EMS awareness training classes conducted for senior leaders as well as various stakeholders and process owners. Between FY 2005 and FY 2006, 2,115 Soldiers received training in Environmental Operations Management to maintain hazardous materials/hazardous waste (HM/HW) compliance with federal, state and other regulatory agencies. Fort Lewis is also implementing an innovative Environmental Operating Permit (EOP) program intended to educate individual units on the specific scope of their environmental responsibilities and how to properly manage their activities to ensure total compliance.

### **Green Procurement**

Fort Lewis promotes the Green Procurement policy through awareness and education for all Soldiers and more directed training for procurement personnel. As part of this overall initiative, Fort Lewis staff created the Army's first Sustainable Interiors Showroom (SIS), partnering with GSA vendors to convert an existing administrative area

into a working model furnished with sustainable furniture and flooring materials in a variety of configurations and cost options. They also implemented an informational campaign including weekly tours to educate buyers on sustainable options to meet Green Procurement requirements, all while streamlining the requisition process. In FY 2005, one of the SIS vendors was awarded the first major contract to furnish the new Soldiers Readiness Processing Site, which supports 500-600 Soldiers per day. The \$180,000 contract included a lifetime warranty, eliminating the estimated five-year, \$50,000 replacement cost for non-sustainable furnishing. This effort will result in lower costs, reduced resource requirements and reduced volume and toxicity of the waste stream over the entire lifecycle of the project. Between 2005 and 2006 more than \$2 million in sustainable furnishing and flooring was installed in 50 buildings on Fort Lewis.

The team had several achievements and milestones regarding Green Procurement in FY 2006:

- Fort Lewis celebrated Earth Day by hosting its first "Green Procurement Vendor Day," featuring the first anniversary of the SIS. Twenty-five vendors hosted display areas showcasing green products – office furniture made with recyclable materials, eco-friendly office products, and preferred hazardous waste disposal products. This event facilitated an increase in post-wide procurement of environmentally preferable products and services.
- A SIS vendor was awarded a \$659,000 contract to install 23,000 sq. yards of carpet tile in six barracks serving 1,800 Soldiers. All existing carpeting will be recycled.
- A SIS vendor furnished a 3,150 sq. foot office consisting of 15 workstations and two private offices at the Army Field Support Brigade, Army Sustainment Command.

## PROGRAM SUMMARY

With the goal of reducing net waste generation to zero by 2025, the Fort Lewis Solid Waste Program, with the assistance of the Corps of Engineers-Seattle District, has focused much of

its effort within the award period on reducing the amount of waste, both municipal solid waste (MSW) and construction and demolition (C&D) waste, generated by the installation. Like many installations, Fort Lewis is undergoing significant changes as a result of and in response to base realignment and closure (BRAC), global defense posture realignment and Army transformation. The scale of the increase in mission requirements, combined with aging buildings and infrastructure, has called for the demolition of many older buildings and the

"Team Lewis has worked hard to create an environment in which sustainability practices are the norm throughout our daily routine, and we hope this will have a lasting impact on the post and also beyond the walls of Fort Lewis. With the support of our many federal, state and local partners, we will continue to push the envelope."

- COL Cynthia Murphy, Fort Lewis Garrison  
Commander

construction of many new ones. By FY 2008, all new construction on Fort Lewis seeks to adhere to the LEED Silver standard, a mandate that the Army is beginning to aggressively pursue. The demolition of older structures represents the greatest source of solid waste on Fort Lewis – the Solid Waste program's efforts to minimize the waste generated have been highly effective, resulting in a total solid waste diversion rate of 56.8 percent in 2005.

## ACCOMPLISHMENTS

### Deconstruction Program to Mitigate Solid Waste Generation

In FY 2005, Fort Lewis began the first phase of a multi-year Military Construction (MILCON) redevelopment in its North Fort Lewis area. To make room for the redevelopment, 100-200 World War II era wood framed buildings are scheduled for removal. In an effort to reduce the amount of solid waste disposed at local landfills, Fort Lewis and the Seattle District U.S. Army Corps of Engineers (USACE) partnered to pursue sustainable waste management practices. In FY 2005, Fort Lewis hosted its first "Alternatives to Demolition"

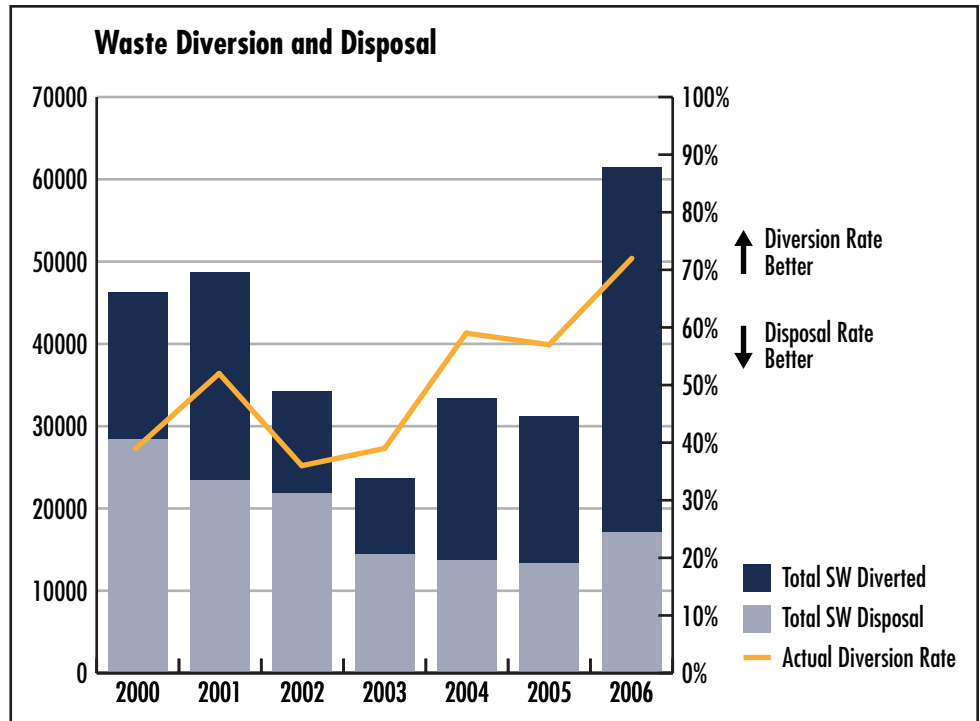
workshop, with the goal of educating contractors and local reuse/recycling companies on the new diversion requirements. The workshop facilitated communication between contractors and reuse resources and helped set the conditions for success as the Fort Lewis program moved forward.

### Reuse of Building Materials

In FY 2006, in accordance with the Assistant Chief of Staff for Installation Management (ACSIM) Policy Memo "Sustainable Management of Waste in Military Construction, Renovation and Demolition Activities," a contract requiring a minimum 50 percent waste diversion rate, with penalties and incentives for increased performance built in, was awarded for the removal of 12 buildings covering a combined total of 48,000 sq. feet. To attain the highest diversion possible, the contractor devised an innovative "panelization" deconstruction technique that was both cost effective and efficient. The majority of reusable lumber, plywood, flooring materials, electrical power boxes and other miscellaneous materials were sold to the relatively robust local material reuse and recycling market, generating revenue for the project. Additionally a portion of the materials were donated to several repair and upgrade projects on Fort Lewis, including the mock-up training facility. These efforts, combined with other aggressive material recovery initiatives, resulted in a remarkable 100 percent diversion rate of all non-hazardous solid waste at project completion. Being the first of its kind to be executed at Fort Lewis, this project was monitored very closely and the results were recorded for use in future building removal projects.

### Innovative Recovery of Materials

Fort Lewis was the first installation to test and demonstrate a new technology to salvage wood coated with lead-based paint (LBP). The



The chart depicts progress in decreasing total waste disposal and increasing total waste diverted from the Fort Lewis waste stream.

"These materials positioned us to better meet training objectives and provided expensive materials that cut our request for funding by one quarter."

- MAJ Michael Christiansen, Team Chief, 191st Infantry Brigade

demonstration project used a total of 16,000 linear feet of lumber from the World War II era buildings, which was planed using a vacuum process to remove and fully contain the sawdust and LBP. The remaining wood was then reused in various construction projects and sold in local secondary markets. The sawdust and LBP were then introduced into an innovative thermal treatment process, producing a concentrated lead-rich ash material, which was sent to a secondary smelter for elemental lead recovery and eventual use in other products. The added benefit of this new process is that the previously LBP coated wood was made available to local markets rather than depositing it into a hazardous waste landfill. The USACE Construction Engineering Research Laboratory (CERL), U.S. Environmental Protection Agency and USACE-Seattle District partnered on this project to develop a sustainable process that allows for the recovery of valuable resources while removing dangerous lead from the environment.

## Recycling of Construction and Demolition Debris

Building materials that cannot be reused or recovered for equivalent applications are recycled to the greatest extent possible. During FY 2006, C&D projects on



*Workers remove the building in partitions to maximize recovery during the deconstruction project at Fort Lewis.*

Fort Lewis yielded 9,138 tons of recycled asphalt and concrete. This recycled material, which would otherwise have been disposed of in a C&D landfill, was instead used as a natural aggregate replacement product across the installation. Fort Lewis Forestry used 5,000 tons of recycled concrete for road restoration, repair and access improvement to timber sales and the remaining material was used for road maintenance and future modularity project parking lots. In FY 2006 alone this new business practice achieved a cost avoidance of \$82,000 for disposal costs and \$73,000 for new product procurement.

## Organics Composting and Recycling

Another major source of solid waste is waste wood and other organic material. Waste wood consists of pallets, packaging material, blocking and bracing, mill work/construction waste, tree trimmings from grounds maintenance and tree debris from storm damage. The primary sources of organic material are biosolids from the wastewater treatment plant; leaf and grass clippings from post-wide yard maintenance; manure from the horse stables, mulch and wood chips; and destructed paper. Full-scale composting began in FY 2005 and has resulted in more than 725 tons of organic material and 1,400 tons of waste wood diverted from the solid waste stream, resulting in approximately \$174,000 in disposal cost avoidance for FY 2005 and FY 2006.

## Community Involvement and Outreach

Owing to the generally well-informed and environmentally conscious local population, Fort Lewis has many allies and supporters for its

environmental programs. Between 2005 and 2006, numerous briefings and tours of the P2 and Sustainability Program were conducted for local, state and federal political leaders including Washington State Governor Christine Gregoire and her Executive Policy Advisor for Sustainable Washington. Fort Lewis also actively maintains strong connections to the local community and regularly holds educational and promotional events. Some recent examples include:

- Conducted educational activities at “Kids Fest 2006” where 3,000 Fort Lewis youths participated. Hosted booths with children’s activities related to the theme “Oceans Away” including an interactive watershed model focused on P2 in homes and communities.
- Participated in the Pierce County Livable Communities. More than 6,000 visitors from the Puget Sound Region attended the event where Fort Lewis showcased its ability to support the Army’s mission while fulfilling its commitment as a proactive community partner and environmental steward.
- Hosted an Environmental Council of States (ECOS), a DoD Sustainability Working Group tour of several sustainability and P2 initiatives to include: the Sustainable Interiors Showcase (SIS); the Model Motor Pool/Stryker-GDLS facility; new barracks (LEED construction); and the Sequalitchew Creek EcoPark.

## CONCLUSION

Fort Lewis has been and will continue to be a strong advocate for the environment, a tireless supporter of the military mission of the U.S. Army and a leader in innovation. Always willing to take the lead, Fort Lewis has pioneered the adoption of ISO 14001 as the DoD EMS, as well as the establishment of the ISP. Fort Lewis made significant progress in waste reduction during FY 2005 and FY 2006 and continues to seek out new challenges and answers to environmental issues. The bold sustainability goals that the installation has set will continue to guide their efforts far into the future and spur the continued development of innovative and well-crafted programs.

*On the cover: U.S. Army Soldiers with 2nd Squadron, 14th Cavalry Regiment, Fort Lewis, WA, in their M1126 Stryker Infantry Carrier Vehicle. (DoD photo by: SSG Kyle Davis)*