

# TINKER AIR FORCE BASE

PROVEN EXCELLENCE IN ENVIRONMENTAL MANAGEMENT

FY2006

SECRETARY OF DEFENSE  
ENVIRONMENTAL AWARD

AWARD CATEGORY:  
ENVIRONMENTAL QUALITY —  
INDUSTRIAL INSTALLATION

**NOMINEE**

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## PROVEN EXCELLENCE IN ENVIRONMENTAL MANAGEMENT

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#### SUMMARY

Striking a balance between mission achievement and environmental stewardship, Tinker Air Force base's Environmental Management Division has taken its environmental program to a level beyond compliance. Their commitment to excellence in environmental management is demonstrated in the following accomplishments:



- Implemented a successful Environmental Management System by training 20,000+ employees and contractors and conducting the first assessment in the Spring of 2005
- Converted B-1, B-52, and C-130 aircraft surface treatment to an environmentally friendly process using PreKote, which saves \$120,000 annually and results in better paint adhesion
- Optimized environmental monitoring activities basewide, resulting in a \$10-million savings over the next 20 years
- Operated 75 percent of base vehicles using alternative fuels
- Successfully tested TF-33 engine using Fischer-Tropsch fuel, which is a domestic, non-petroleum alternative to jet fuel
- Integrated GIS mapping to process over 4,100 requests for environmental impact, with most requests processed within 1 to 2 days —no mission delays!



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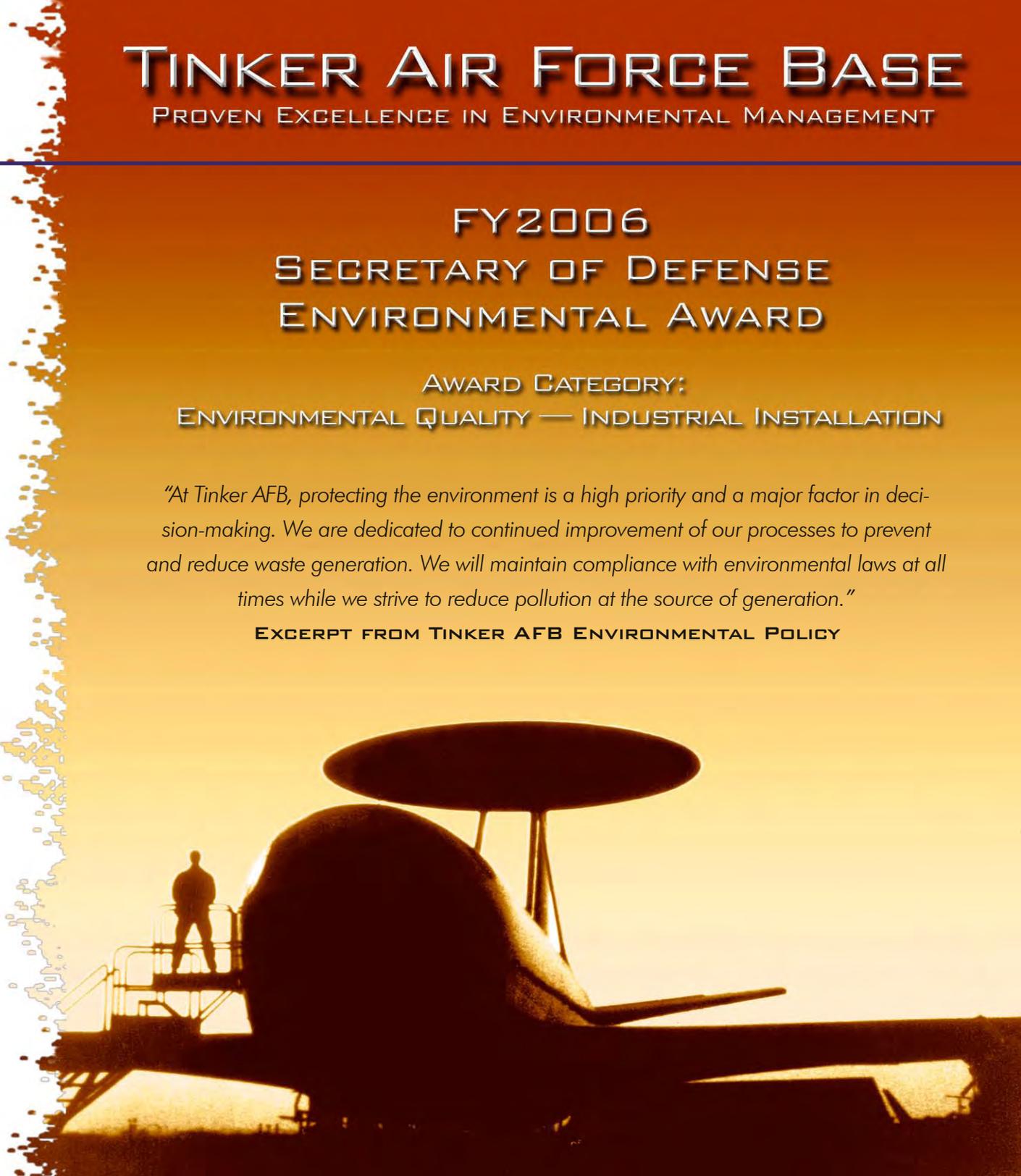
*"At Tinker AFB, protecting the environment is a high priority and a major factor in decision-making. We are dedicated to continued improvement of our processes to prevent and reduce waste generation. We will maintain compliance with environmental laws at all times while we strive to reduce pollution at the source of generation."*

**EXCERPT FROM TINKER AFB ENVIRONMENTAL POLICY**

### INTRODUCTION

Tinker Air Force Base (TAFB) is the home of the Oklahoma City Air Logistics Center (OC-ALC), the largest logistics center in the Air Force. The mission at TAFB provides worldwide technical logistics support to Air Force and Navy weapon systems. TAFB manages 2,261 aircraft, including the B-1, B-2, B-52, C/KC-135, and E-3, and an inventory of approximately 23,000 jet engines.

TAFB is the largest industrial employer in Oklahoma, with more than 26,000 civilian and military employees and an economic impact of \$3.1 billion on the six counties surrounding the installation. Complementing TAFB's dynamic defense mission is its mission of environmental restoration and protection. Tinker's Environmental Management Division (CEV) is the active steward of the base's water, soil, plant, and animal resources. TAFB's natural resources include three creek systems, 15 base ponds, more than 280 species of plants, and 220 species of fish and wildlife. CEV is responsible for ensuring environmental compliance is considered at each level of installation decision making and surrounding communities are properly notified of environmental activities taking place at TAFB.



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Tinker Air Force Base

### BACKGROUND

As TAFB's support of Homeland Defense, Operation Enduring Freedom, Operation Iraqi Freedom, and the Global War on Terror continues, striking a balance between national security and environmental stewardship has become progressively more difficult. Tinker's significant environmental aspects encompass 2,000 air emission sources, 14 regulated outfalls on three creek systems, 71 regulated storage tanks, 11 miles of industrial wastewater lines and associated treatment plant, two groundwater treatment facilities, and 40 restoration sites.

TAFB's complex industrial manufacturing processes, aging infrastructure, and ever changing environmental regulations all pose significant environmental challenges to its dual mission of military readiness and environmental stewardship. The 72 Air Base Wing (ABW)/CEV serves as the program manager for environmental matters. CEV develops and implements policies and procedures that ensure basewide compliance with environmental requirements, conservation of natural/cultural resources, implementation of pollution prevention investments, and completion of restoration actions. CEV serves as the focal point and spokesperson for environmental matters with regulatory agencies, other governmental units, and civic leaders. CEV provides all base activities with professional expertise, technical support, and consultation on environmental matters.

Tinker's senior leadership demonstrates commitment to the environment through their public environmental policy and management approach. Using a two-tiered system, the Environmental Safety and Occupational Health (ESOH) Council, chaired by the installation commander, integrates top-level involvement into the environmental program, while the media-specific working groups obtain input from the workforce. In addition, TAFB maintains solid working relationships with more than 50 active partners including universities, government agencies, industry, Indian tribes, and local communities.

### PROGRAM SUMMARY

Over the past two years, CEV has remained focused on its mission - to serve as the TAFB focal point for all environmental issues by developing and implementing policies, programs, and procedures that ensure base-wide compliance with environmental requirements while fully supporting base missions. CEV has demonstrated continued commitment to its mission by implementation of its strategic vision:

- **Reach out to neighbors** – Partner with the community, be honest and fair, learn from mistakes, and provide clear and open communication.
- **Seek new ways to fulfill TAFB's environmental mission** – Explore industrial processes that are cheaper and faster, reduce flow time, reduce the use of chemicals, and meet or exceed all environmental compliance requirements.
- **Apply cutting-edge technologies to processes** – Locate, develop, and implement innovative technologies and methods to accomplish the base's environmental mission.
- **Provide state-of-the-art training** – Prepare training programs geared toward a new generation of workers, the base's greatest asset.



TAFB ENCOMPASSES 5,031 ACRES AND EMPLOYS MORE THAN 26,000 MILITARY AND CIVILIAN EMPLOYEES, THE LARGEST INDUSTRIAL EMPLOYER IN OKLAHOMA. THE PRIMARY AREA OF THE BASE'S INDUSTRIAL ACTIVITIES IS SHOWN ABOVE.

To accomplish this strategic vision, CEV has performed the following activities:

- Implemented an Environmental Management System (EMS)
- "Closed the loop" through Green Procurement; program recognized as a model for the Air Force Materiel Command
- Empowered personnel at all levels to sustain mission-readiness and exceed compliance
- Maintained good neighbor relationship with local communities and state regulators
- Provided comprehensive multimedia training to base procurement, maintenance, and base contractor personnel; increased awareness and improved compliance

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## ACCOMPLISHMENTS

Year after year, TAFB continually goes beyond compliance and demonstrates innovative ways to improve the environmental quality program. This section describes the base's most outstanding accomplishments in each program area.

### ENVIRONMENTAL MANAGEMENT SYSTEM

Tinker's innovative management approach has facilitated the local implementation of all phases of the EMS — planning, implementation and operation, checking and corrective action, and management review. Tinker's commander issued a base-wide Environmental Policy Statement on March 25, 2005, stressing a commitment to preserving the environment. TAFB set goals consistent with the policy statement, performed a gap analysis, and hosted a local review by the U.S. Environmental Protection Agency (EPA).

An implementation plan for developing an ISO-14001-like EMS prior to December 31, 2005 was developed, and this goal was achieved meeting the Executive Order 13148 requirement. CEV created an Aspect Register from the Inventory of Activities and worked in conjunction with base stakeholders to identify and prioritize all environmental impacts associated with the aspects. Capitalizing on the existing environmental management program, the prioritized aspects are being used to systematically perform opportunity assessments, improve stakeholder

environmental awareness, and encourage their involvement in reducing their respective aspects' impacts to the environment. With 3,000+ compliance sites and 26,000 personnel, CEV is meeting the challenge head-on.

EMS accomplishments include:

- EMS awareness training provided to 20,000+ employees and contractors, resulting in more informed decision-making process at all levels
- A comprehensive EMS Web site established to provide employees access to current base policies, procedures, and objectives of environmental requirements.
- Multiple EMS assessments by various Air Force groups that resulted in validation of TAFB's progress

Tinker has complied with all requisite Federal Compliance "Right-To-Know" Laws and Pollution Prevention Requirements. A database was created and refined to increase the accuracy of Toxics Release Inventory reporting. TAFB met the associated Executive Order goal three years ahead of schedule with a **93% reduction of more than 1.4 million pounds; the largest reduction in the U.S. Department of Defense (DoD)**. TAFB takes a proactive role in the Local Emergency Planning Committee and participates in joint exercises with the surrounding community.

### POLLUTION PREVENTION

The purpose of the Pollution Prevention (P2) Program at TAFB is to prevent pollution by reducing hazardous materials (HAZMAT) and releases of pollutants into the environment to as near zero as is technically and economically feasible. TAFB accomplishes this purpose by applying the environmental management hierarchy to our practices.

The first step in the environmental management hierarchy requires that TAFB practice source



THE TAFB P2 TEAM SUCCESSFULLY IMPLEMENTED A NON-CHROMATED SURFACE TREATMENT (PREKOTE), WHICH ACHIEVES BETTER PAINT ADHESION AND SAVES \$120,000 ANNUALLY.

reduction. This is accomplished through the use of chemical substitutions, process changes, and other techniques. If hazardous materials must be used, TAFB minimizes their use as much as possible. Second, TAFB recycles and reuses spent material or waste whenever possible. And third, as a last resort, TAFB disposes of hazardous waste in an environmentally safe manner, consistent with the requirements of all applicable laws. The table (shown right) highlights some of the most notable P2 accomplishments.



TINKER'S P2 ACCOMPLISHMENTS WERE NOTED BY THE NATIONAL P2 ROUNDTABLE, WHO PRESENTED TAFB WITH THE 2006 MOST VALUABLE POLLUTION PREVENTION PROGRAM AWARD.

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The base has also entered into a partnership with the EPA to reduce the use of priority chemicals on base. These chemicals are either bioaccumulators or environmentally persistent. TAFB was recognized as the 100th partner to join the National Partnership for Environmental Priorities (NPEP) Program and has voluntarily agreed to reduce five chemicals used on base. These reduction plans have been incorporated as environmental management plans under the EMS.



**A SUCCESSFUL TF-33 ENGINE TEST OF FISCHER-TROPSCH FUEL (A DOMESTIC, NON-PETROLEUM FUEL) AT TINKER LED TO A B-52 FLIGHT TEST AT EDWARDS AFB.**

As recipient of the National P2 Roundtable’s 2006 Most Valuable Pollution Prevention Program Award, the TAFB P2 Team demonstrates their commitment to environmental

excellence through significant progress in pollution prevention and proven results in base operations efficiency.

**THE MOST SUBSTANTIAL ACCOMPLISHMENTS OF THE P2 PROGRAM DURING THE ACHIEVEMENT PERIOD**

Process Change	Benefits Realized
Converted to a non-chromated surface treatment (using PreKote) to replace alodine on the B-1, B-52, and C-130 aircraft	<ul style="list-style-type: none"> <li>Reduced chrome generation by 28,000 gallons per year</li> <li>Saved \$120,000 annually by providing lower initial and operational costs</li> <li>Achieved a better paint adhesion from this process</li> <li>Provided an environmentally friendly alternative</li> </ul>
Developed database to increase accuracy of Toxic Release Inventory (TRI) reporting, and streamlined process for identifying reductions in TRI	<ul style="list-style-type: none"> <li>Met Executive Order 13148—3 years ahead of schedule</li> <li>Achieved a 93% reduction of chemicals basewide</li> <li>Eliminated over 1.4 million pounds of releases—One of the largest reductions in DoD!</li> </ul>
Operated over 75% of base vehicles on alternative fuels, such as compressed natural gas, biodiesel, propane, and electricity.	<ul style="list-style-type: none"> <li>Used more than 200,000 gallons annually of alternative fuels</li> <li>Reduced air emissions by 20 tons per year</li> </ul>
Aggressively worked with Tinker AFB Hazardous Materials users to avoid requirement for Clean Air Act Risk Management Plan. This was accomplished by assuring that storage levels were established and maintained below regulatory trigger levels.	<ul style="list-style-type: none"> <li>Saved over \$200,000 per year in plan development and implementation costs</li> </ul>
Conducted successful test of Fischer-Tropsch (F-T) fuels on TF-33 engine.	<ul style="list-style-type: none"> <li>A potential domestic replacement to petroleum jet fuels</li> </ul>

**ENVIRONMENTAL COMPLIANCE ASSESSMENT AND MANAGEMENT PROGRAM**

CEV aggressively ensures TAFB facilities meet all environmental regulatory requirements. Activities include all compliance issues dealing with permits, inspections, and environmental sampling/monitoring. The division implements and coordinates the Environmental Compliance Assessment and Management Program (ECAMP).

The base performed two comprehensive internal ECAMP audits in the Spring of 2005 and 2006 to ensure compliance with environmental regulations. CEV briefed Commanders on the audit findings to procure top-level support and aggressively pursued corrective actions. This team effort resulted in 73% of the findings being corrected within 90 days, well ahead of the AFMC closure goal of 50%.

**EFFECTIVE USE OF FUNDS**

Demonstrating exceptional use of funds, TAFB reduced funding expenditures, enhanced performance, and increased productivity within the environmental budget. The following achievements were documented:

**Reduced Funding Expenditures**

- Tinker performed an in-house Remedial Process Optimization (RPO) study that resulted in regulatory approval to substantially decrease basewide groundwater monitoring. Partnering with regulatory agencies throughout the RPO study enabled buy-in upfront for the desired monitoring network, eliminating multiple drafts of documents. The reduction in life-cycle monitoring costs will save the Air Force \$10 million over the next 20 years! This type of optimization process can be applied throughout the Air Force.

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- Tinker improved sludge dewatering at the industrial wastewater treatment plant (IWTP), reducing Tinker's largest waste stream by 6.9 million pounds. The improvements eliminated 90% of Tinker's waste volume, providing a \$1.3-million annual savings!
- Five environmental documents were written by in-house staff. This initiative provided a savings of over \$500,000 during the achievement period. All of the documents were accepted by AFMC Headquarters and regulatory officials.
- Tinker AFB preserved funds for other environmental efforts by eliminating unnecessary chromium remediation through partnering with universities. This partnership determined that chromium is a naturally occurring metal in the soils on-base, and that this was the cause for detected chromium groundwater contamination.

#### Enhanced Performance

- TAFB negotiated issuance of a new flexible Title V Permit with the Oklahoma Department of Environmental Quality (ODEQ). The new permit, while ensuring compliance, also reduces the air permitting process up to 90% for transformation lean cell activities.
- Combined with best management practices, Tinker used innovations, such as hot-air deicing and catch basin inserts on ramp storm drains, to achieve outstanding results with permit compliance. No permit exceedances

have occurred in the past four consecutive deicing seasons.

- Tinker operates an aggressive Hazardous Waste Management Program that emphasizes employee empowerment and responsibility at all levels. The base has not had one Notice of Violation since 1991. ODEQ says it is one of the best programs they have seen.

#### Increased Productivity and Innovations

- Through the Small Business Innovation Research (SBIR) Program, Tinker CEV staff has led an on-going research project using nano-materials. Using nano-particle iron has not only provided a 'proof of concept,' but it has helped in achieving site remediation. Because of this innovative technology success in the remediation of trichloroethylene (TCE), the recommended remedial option will be long-term monitoring.
- TAFB demonstrated the use of a handheld laser paint stripping process that eliminated hazardous materials used and hazardous waste generated from the traditional process. The demonstration validated this innovation and the potential use of robotic laser stripping of large aircraft parts, which will be tested. This process completely eliminates chemical usage, has no water discharges, and is more efficient.
- An AirLog recordkeeping system was implemented using handheld scanners to capture data for surface coatings/solvents. Paper logs were replaced by e-files. This process provides a significant increase in reporting accuracy as well as a substantial decrease in manhours.

#### COMMUNITY RELATIONS

Staying in touch with community concerns is one of our most important environmental efforts at TAFB. Through a successful community-based Restoration Advisory Board (RAB), Tinker is able

to address environmental issues with an open, two-way exchange of information. The RAB has greatly supported base activities.

#### A Proven Partnering Approach

Partnering with base activities and regulatory agents at the local and federal levels has brought proven success to the environmental management program at TAFB. Some recent accomplishments include:

- Partnered with adjacent communities of Oklahoma City and Midwest City to monitor stormwater quality using a watershed approach, which provides efficient transfer of stormwater data and corrects any problems rapidly with teamwork.
- Developed a 30-second video featuring "Stormwater Okie" that airs in industrial shops, emphasizing ways to prevent pollutants from reaching stormwater. Several communities have asked permission to use the spots.
- Developed a 60-second Clean Air Act training video for viewing in industrial shops, which contains animated messages to reinforce requirements for maintaining compliance with the Aerospace Maximum Achievable Control Technology standard.



IN CELEBRATION OF BASE ENVIRONMENTAL AWARENESS, DEMONSTRATIONS WERE HELD AT BUILDING 3001 TO EMPHASIZE EACH WORKER'S ROLE IN ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP.

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### Proactive Community Outreach

TAFB has an extensive proactive community outreach program that is designed to heighten environmental awareness by providing opportunities for the TAFB staff and the public to participate in several environmental activities/events. Activities include:



**SUPERHERO RECYCLOWOMAN SPREADS THE GOOD NEWS ABOUT RECYCLING AT TINKER ELEMENTARY SCHOOL.**

- To celebrate Base Environmental Awareness Day, CEV set up information booths and provided environmental demonstrations at historic Building 3001 for more than 1,000 workers. This provided the opportunity to emphasize each employee's role in maintaining compliance. TAFB received positive local media coverage!
- Tinker's neon green superduo, Recycloman and Recyclowoman, use their "super powers" to spread the word about recycling. The superduo participated in community events such as America Recycles Day, Sciencefest, and Septemberfest.
- Multiple schools were visited to encourage conservation and recycling, and TAFB was

featured in a local TV spot as part of Oklahoma City's Litterfest Rally.

- CEV co-sponsored a Veteran's Day Trout Tournament, two bass tournaments, and a special needs children fishing derby, providing hands-on experiences with casting, fish identification, and angler ethics. Fishing permit sales increased 300 percent for the second consecutive year!

### NEPA PLANNING, ANALYSIS, AND IMPLEMENTATION

The Air Force utilizes the Environmental Impact Analysis Process (EIAP), Air Force Instruction 32-7061, to implement the National Environmental Policy Act (NEPA). The EIAP fosters more informed decision-making based on an understanding of the potential environmental consequences of proposed actions and alternatives. At Tinker, CEV proactively promotes long-term operational sustainability and has streamlined many environmental impact analysis processes in identifying proposed actions, appropriate alternatives, and mitigation measures. In accomplishing these basewide process improvements, CEV establishes a partnering approach involving interdisciplinary teams. These interdisciplinary teams evaluate major federal actions prior to the irreversible and irretrievable commitment of resources.

CEV initiated a basewide NEPA working group. This group meets quarterly to discuss proposed actions and long-range planning. In addition, CEV representatives are included in both the Architectural Engineering Review Panel and Facility Board. These groups focus on specific upcoming projects and address siting as well as remediation issues. Changes are negotiated to enhance the environment while allowing the proponent to meet the mission more effectively. Specific projects during the achievement period include the 3 CCS Relocation, Child Development Center, Building 3001 Revitalization/Transformation, and Far Field Range.

The NEPA Program at TAFB was inspected by ECAMP, Unit Compliance Inspection (UCI), and Operational Readiness Inspection (ORI). CEV also inspected the program. There were **no** findings from these inspections.

#### THE MOST NOTABLE ACCOMPLISHMENTS OF THE NEPA PROGRAM DURING THE ACHIEVEMENT PERIOD

Activities Performed	Benefits Realized
Integrated Geographical Information System (GIS) mapping to process over 4,100 environmental impact analysis requests	<ul style="list-style-type: none"> <li>■ Requests processed within 1 to 2 days</li> <li>■ Issues mitigated in planning stage—no mission delays!</li> </ul>
In-house expertise completed EA for relocation of Air Force Flight Standards Agency to the Mike Monroney Aeronautical Center	<ul style="list-style-type: none"> <li>■ Saved Air Force over \$100,000</li> </ul>
Actively involved with the Military Family Housing privatization effort by identifying environmental concerns upfront	<ul style="list-style-type: none"> <li>■ Partnered with AFCEE to ensure that NEPA documents are revised and completed on-time and on-cost</li> </ul>
Created a tracking system for AF Form 813 process	<ul style="list-style-type: none"> <li>■ Ensures data received and returned within 30 days</li> </ul>
Updated comprehensive NEPA document database	<ul style="list-style-type: none"> <li>■ Provides the ability to search NEPA documents produced within the past 30 years</li> </ul>
Reviewed 12 proposed actions and 4 draft NEPA documents through a round-table process with multi-disciplinary teams	<ul style="list-style-type: none"> <li>■ Addresses concerns at one time and ensures that required documents are properly reviewed</li> </ul>
Implemented inspection program, and conducted more than 25 inspections	<ul style="list-style-type: none"> <li>■ Ensures that contractors comply with terms of mitigation</li> </ul>

### SUMMARY

Over the past two years, CEV was instrumental in eliminating pollution, saving over \$2 million. CEV implemented actions that will continue to save tens of millions of dollars over years to come. But even more important, CEV will continue to be at the forefront of investigating new technologies to save costs and preserve the environment.