SUPPLEMENTAL

ENVIRONMENTAL ASSESSMENT

ANTI-TERRORISM/FORCE PROTECTION UPGRADES AT BEALE AIR FORCE BASE, CALIFORNIA

MAY 2010

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FINDING OF NO SIGNIFICANT IMPACT

NAME OF THE PROPOSED ACTION: Anti-Terrorism/Force Protection Upgrades at Beale Air Force Base (AFB), California

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

Proposed Action. The Proposed Action consists of four construction projects, which include reconfiguring the Anti-Terrorism/Force Protection (AT/FP) infrastructure at the Main and Wheatland Gates, installing new perimeter fencing, and constructing a gravel pad and perimeter fence at the Air Force Combat Ammunition Center (AFCOMAC). No changes in personnel requirements or aircraft operations would occur.

No Action Alternative. Under the No Action Alternative, Beale Air Force Base (AFB) would continue to use the two entry control points (ECP) and existing perimeter fencing in their current condition and configuration. In addition, the AFCOMAC would continue their mission requirements with their current pad and fence configuration. There would be no change from the existing conditions at the installation. This alternative would not address the security and safety requirements of the Air Combat Command (ACC) and Beale AFB or the traffic congestion problems, or meet the standards specified in UFC 4-010-01.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES. The scoping process focused the analysis on the following environmental resources: Biological Resources, Water Resources, Geological Resources, Cultural Resources, Air Quality, Hazardous Materials, Transportation, and Safety. Details of the environmental consequences can be found in the Environmental Assessment which is hereby incorporated by reference.

The original Draft AT/FP Environmental Assessment (EA) was made available for a 30-day public comment period in September 2004. A Notice of Availability was published in the local newspaper, the Marysville Appeal-Democrat and the Beale AFB public affairs website. The EA was revised as a result of a state agency request for additional information and has been released for a 30-day public comment period again. The Draft Supplemental AT/FP Environmental Assessment (EA) was made available to the public for a 30-day public comment period. A Notice of Availability was published in the local newspaper, the Marysville Appeal Democrat.

CONCLUSION:

Finding of No Significant Impact: Based on the information and analysis presented in the Environmental Assessment conducted in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality Regulations, and implementing regulations set forth in 32 CFR 989 (Environmental Impact Analysis Process), as amended, and review of the public and agency comments submitted during the 30-day public comment period, I conclude that implementation of the proposed action would not result in significant impacts to the quality of the human or natural

environment. For these reasons, a finding of no significant impact is made and preparation an Environmental Impact Statement (EIS) is not warranted.

Robert A Yahn

ROBERT A. YAHN, Colonel, USAF
Vice Commander, 9th Reconnaissance Wing

26 JUL 10

Date

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Acronyms and Abbreviations

AFB……Air Force Base

AQCR……Air Quality Control Region

ATFP……Anti-Terrorism/Force Protection

CAA……Clean Air Act

CAAQS……California Ambient Air Quality Standards

CARB……California Air Resources Board

CEQ……Council on Environmental Quality

CFR……Code of Federal Regulations

CNDDB……California Natural Diversity Database

CRLF……California Red-Legged Frog

EA……Environmental Assessment

ESA……Endangered Species Act

FRAQMD……Feather River Air Quality Management District

FONSI……Finding of No Significant Impact

FONPA……Finding of No Practicable Alternative

GHG……Greenhouse Gas

HAP……Hazardous Air Pollutant

MBTA……Migratory Bird Treaty Act

NAAQS……National Ambient Air Quality Standards

NEPA……National Environmental Policy Act

NO_x …… Nitrogen Oxides

NO_2 …… Nitrogen Dioxide

O_3……Ozone

Pb……Lead

$PM_{2.5}$…… Particulate Matter Equal to or Less Than 2.5 Microns in Diameter

PM_{10}…… Particulate Matter Equal to or Less Than 10 Microns in Diameter

PSD……...Prevention of Significant Deterioration

SMAQMD……Sacramento Metropolitan Air Quality Management District

SIP……State Implementation Plan

SVI……Sacramento Valley Intrastate

SO_x ……..…Sulfur Oxides

tpy ……..…Tons Per Year

TSP……..Total Suspended Particulate

USEPA…….……United States Environmental Protection Agency

USFWS…….……...United States Fish and Wildlife Service

VELB……..…Valley Elderberry Longhorn Beetle

VOCs…….…….... Volatile Organic Compounds

1.0 Purpose and Need

1.1 Purpose and Need for Supplemental Environmental Assessment

A Finding of No Significant Impact (FONSI) and Finding of No Practicable Alternative (FONPA) for the original environmental assessment (EA) entitled *Anti-Terrorism/Force Protection Upgrades at Beale Air Force Base, California* was signed in January, 2005 (Appendix A). Since the FONSI and FONPA for the original EA were signed, a supplemental EA has been prepared to satisfy a state agency request for additional information. This supplemental EA was released for a 30-day public comment period in April 2010 (Appendix B).

1.2 Purpose and Need for Proposed Action

The original Anti-Terrorism Force Protection (AT/FP) Upgrades Environmental Assessment (EA), located at Appendix C, addresses projects to increase base security, improve base structure and personnel safety, and decrease traffic congestion at the three main entry points. The Purpose and Need for these projects as described in Chapter 1.0 of the original EA has not changed and does not require supplemental information.

1.3 Organization of this Supplemental Environmental Assessment

This supplemental EA is intended to be used in conjunction with the EA entitled *Anti-Terrorism/Force Protection Upgrades at Beale Air Force Base, California*. Chapter 1.0 presents the purpose and need. Chapter 2.0 provides a Description of the Proposed Action and Alternatives. Chapter 3.0 presents the affected environment. This supplemental EA includes primarily updated information regarding environmental consequences of the proposed action. The results of the environmental analysis are presented in Chapter 4.0. Chapter 5.0 lists individuals and organizations consulted during the preparation of the supplemental EA. Chapter 6.0 contain references; and chapter 7.0 provides a list of preparers and reviewers for this supplemental EA.

2.0 Description of Proposed Action and Alternatives

The original AT/FP Upgrades EA (Appendix C) provides project descriptions for each project analyzed in the EA. These projects include modifications and upgrades to the Main and Wheatland Gates, the installation of perimeter fencing around the installation, and projects at the Air Force Combat Ammunitions Center (AFCOMAC) which include fencing, a gravel pad, and gravel roads. The project descriptions as described in Chapter 2.0 of the original EA have not changed and do not require supplemental information.

3.0 Affected Environment

Chapter 3.0 of the original EA provides a description of the affected environment at Beale Air Force Base. Although the affected environment has not changed, some of the environmental regulations pertinent to the Proposed Action have been revised. Supplemental information about the affected environment is provided in this section. Supplemental information about the potential environmental and socioeconomic impacts of the Proposed Action and No Action Alternative are described in Section 4.0.

In the original EA, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. Some environmental resources and conditions were omitted from further detailed analysis. A description of those resources and the reasons for their omission from detailed analysis is provided in Section 3.0 of the original EA, starting on page 3-1. Additional information is provided here regarding other resources and conditions that were considered but are not subject to impacts from the proposed action. The following details the basis for such exclusions:

- ***Aesthetics.*** Resources at Beale AFB with aesthetic value include scenic resources such as scenic vistas, historic buildings, trees, rock outcroppings, and day or nighttime views. Scenic resources in the vicinity of the Proposed Action include trees, rock outcrops, and riparian areas. No scenic vistas or scenic resources are located in or near the project area. Fencing and entry control points are in place at the proposed project locations, so the existing visual character of the site would not change. Lighting improvements will not impact views in the area. Aesthetics will not be impacted by the proposed action.

- ***Agricultural Resources.*** Prime locations of agricultural land in California are determined by soil quality and irrigation status, which make particular locations attractive for agricultural operations. Feasibility of agricultural operations is generally based on climate and quality of the soils in the area together with the economic infrastructure that makes farming possible. The combination of soils, topography, and land use constraints at Beale AFB are generally not conducive to agricultural production. There is no prime or unique farmland or farmland of statewide importance at Beale AFB. Agricultural resources will not be adversely impacted by the Proposed Action.

- ***Mineral Resources.*** Mineral resources include metals, industrial minerals (e.g., aggregate, sand and gravel), oil and gas, and geothermal resources that would be of value. There are no known mineral resources on Beale AFB. Mineral resources will not be impacted by the Proposed Action.

- ***Recreation.*** Recreation resources at Beale AFB include a recreation facility (the Harris Fitness center), walking trails, designated hunting and fishing areas, and other open spaces. The proposed action does not involve construction or expansion of recreational facilities, would not impact existing recreation facilities and would not impact recreation activities. Recreation at Beale AFB would not be impacted by the Proposed Action.

- ***Utilities and Infrastructure.*** Utilities and infrastructure at Beale AFB include electrical transmission lines, communication lines, emergency generators, a storm-water drainage system, a drinking water treatment plant and a wastewater treatment plant. The Proposed Action would result in a temporary increase in the use of infrastructure, utilities and service systems; however, impacts on infrastructure and utilities from the Proposed Action would be negligible to minor, compared to the existing demand. Implementation of the proposed action would not require construction of new service facilities. Therefore, utilities and infrastructure will not be adversely impacted by the Proposed Action.

- ***Population/Housing.*** As discussed in Section 3.0 - Socioeconomics of the original EA, the Proposed Action would not directly or indirectly induce substantial population growth in the area, would not displace or necessitate replacement of existing housing, and would not displace people or necessitate construction of replacement housing.

- ***Public Services.*** As discussed in Section 3.0 - Socioeconomics of the original EA, the Proposed Action would have no impact on governmental services and would not create a need for new governmental facilities.

3.1 Biological Resources

As described in the original EA, biological resources include native or naturalized plants and animals and the habitats (i.e., wetlands, forests, and grasslands) in which they exist. Sensitive and protected biological resources include plant and animal species listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS). Since the list of special-status species provided in the original EA may not adequately reflect the current list of special status species, this sub-section has been updated. Additional information is provided about the affected environment as it pertains to biological resources and, in particular, special-status species.

Special-Status Species

Federally Listed Species. There are 15 federally protected plant animal species with potential to occur at Beale AFB. Of these 15 species, only three have been detected at Beale:

- Vernal pool fairy shrimp (*Lepidurus packardi*)
- Vernal pool tadpole shrimp (*Branchinecta lynchi*)
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).

There are three additional species that have been detected near Beale AFB and for which potential habitat exists on Base:

- California red-legged frog (*Rana draytonii*)
- Giant garter snake (*Thamnophis gigas*)
- Central Valley steelhead (*Oncorhynchus mykiss*)

No federally listed plant species have been detected at Beale AFB.

Other Federally Protected Species. The Bald Eagle Protection Act of 1940 provides protection of the Bald eagle and the Golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The Bald eagle (*Haliaeetus leucocephalus*) is an irregular migrant to the area, and is considered to use the installation for occasional foraging. The Golden eagle (*Aquila chrysaetos*) uses grasslands and savannas for foraging and is a year-round visitor.

Several other special-status bird species occur on Beale AFB and have the potential to fly over or forage in the vicinity of the proposed project site. The Migratory Bird Treaty Act (MBTA) of 1918, as amended provides protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA covers all birds listed as special-status species along with all other migratory birds.

California Listed Species. According to the Department of Fish and Game's California Natural Diversity Database (CNDDB), there are five species legally protected under the California Endangered Species Act (ESA) that either utilize or have the potential to utilize Beale AFB.

- Swainson's hawk (*Buteo swainsoni*)
- American peregrine falcon (*Falco peregrinus anatum*)
- California black rail (*Laterallus jamaicensis coturniculus*)
- Greater sandhill crane (*Grus canadensis tabida*)
- Bank swallow (*Riparia riparia*)

The Swainson's hawk prefers to nest in riparian areas with isolated trees bordered by open foraging habitat (grasslands, agricultural lands, etc.) and was first confirmed to be nesting on base in 2004. The base also provides suitable winter foraging habitat for the American peregrine falcon, which has been documented on the base many times in the winter. The California black rail has been detected through auditory surveys in several freshwater marshes on Beale AFB and is thought to be a yearlong resident. The greater sandhill crane is an irregular winter visitor on base; it uses annual and perennial grasslands, moist croplands, and open emergent wetlands for foraging. The Bank swallow has not been reported on Beale AFB, but it's preference of riparian areas make its occurrence very likely. Beale AFB is a federal installation and therefore not required to protect state listed species; however, surveys are performed and management plans are in place to avoid impacting state listed species and their habitats.

Species of Special Concern. Species of special concern are sensitive species that have not been listed, proposed for listing nor placed in candidate status, but do not have any formal protection. Species of concern is an informal term used by some but not all U.S. Fish & Wildlife Service offices. Species of concern receive no legal protection, and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered. Several special-status species utilize or have the potential to utilize Beale Air Force Base. The most likely to occur at Beale AFB are:

- Western Burrowing Owl (*Athene cunicularia hypugaea*)
- Tri-colored Blackbird (*Agelaius tricolor*)
- White-tailed Kite (*Elanus leucurus*)
- Prairie Falcon (*Falco mexicanus*)
- Northern Harrier (*Circus cyaneus*)
- Grasshopper Sparrow (*Ammodramus savannarum*)
- Loggerhead Shrike (*Lanius ludovicianus*)
- Yellow Warbler (*Dendroica petecha*)
- Western Pond Turtle (*Clemmys marmorata*)
- Ringtail (*Bassariscus astutus*)

3.2 Water Resources

Water resources are described in Section 3.2, starting on page 3-6 of the original ATFP EA.

3.3 Geological Resources

Geological resources are described in Section 3.3, starting on page 3-9 of the original EA.

3.4 Cultural Resources

Cultural resources are described in Section 3.4, starting on page 3-9 of the original EA.

3.5 Air Quality

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

Under the CAA, the USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to affect human health and the environment. The NAAQS represent the maximum allowable concentrations for ozone (O_3) - measured as either volatile organic compounds (VOCs) or total nitrogen oxides (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb) (40 CFR Part 50). The CAA also gives the authority to states to establish air quality rules and regulations. The State of California has adopted the NAAQS and promulgated additional California Ambient Air Quality Standards (CAAQS) for criteria pollutants. The CAAQS are more stringent than the Federal primary standards. Table 3-1 presents the current USEPA NAAQS and CAAQS.

USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore designated as either "attainment," "nonattainment," "maintenance," or "unclassified" for each of the six criteria pollutants.

Attainment means that the air quality within an AQCR is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed NAAQS; maintenance indicates that an area was previously designated nonattainment but is now attainment; and an unclassified air quality designation by USEPA means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment. USEPA has delegated the authority for ensuring compliance with the NAAQS to the California Air Resources Board (CARB). CARB has delegated responsibility for implementation of the Federal CAA and California CAA to local air pollution control agencies. In accordance with the CAA, each state must develop a State Implementation Plan (SIP), which is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS.

The General Conformity Rule requires Federal actions meet the requirements of a SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS. The General Conformity Rule applies only to regionally significant actions in nonattainment or maintenance areas.

Table 3-1. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Standard Value		Federal Standard Type
		Federal	State	
CO	8-hour [a]	9 ppm (10 mg/m^3)	Same	Primary
	1-hour [a]	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)	Primary
NO_2	Annual Arithmetic Mean	0.053 ppm (100 µg/m^3)	0.030 ppm (57 µg/m^3)	Primary and Secondary
	1-hour	--	0.18 ppm (339 µg/m^3)	None
O_3	8-hour [b]	0.075 ppm (147 µg/m^3)	0.070 ppm (137 µg/m^3)	Primary and Secondary
	1-hour [c]	--	0.09 ppm (180 µg/m^3)	Primary and Secondary
Pb	Quarterly average	1.5 µg/m^3	--	Primary and Secondary
	30-Day	--	1.5 µg/m^3	None
PM_{10}	Annual Arithmetic Mean	--	20 µg/m^3	None
	24-hour	150 µg/m^3 [d]	50 µg/m^3	Primary and Secondary
$PM_{2.5}$	Annual Arithmetic Mean [e]	15 µg/m^3	12 µg/m^3	Primary and Secondary
	24-hour [f]	35 µg/m^3	Same	Primary and Secondary

SO_2	Annual Arithmetic Mean	0.030 ppm	--	Primary
	24-hour [a]	0.14 ppm	0.04 ppm	Primary
	3-hour [a]	0.5 ppm (1,300 µg/m^3)	--	Secondary
	1-hour	--	0.25 ppm	None
Visibility Reducing Particles	8-hour	0.23 per km[g]	--	None
Sulfates	24-hour	25 µg/m^3	--	None
Hydrogen Sulfide	1-hour	0.03 ppm	--	None
Vinyl Chloride	24-hour	0.01 ppm	--	None

Sources: USEPA 2008 and CARB 2008

Notes: Parenthetical values are approximate equivalent concentrations.

a. Not to be exceeded more than once per year.
b. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. This standard is effective on May 27, 2008, and replaces the 1997 8-hour ozone standard of 0.08 ppm. However, the 1997 standard and its implementing rules remain in effect while USEPA undergoes rulemaking to transition to the 2008 standard.
c. As of June 15, 2005, USEPA revoked the Federal 1-hour ozone standard in all areas except the 14 8-hour ozone nonattainment Early Action Compact Areas.
d. Not to be exceeded more than once per year on average over 3 years.
e. To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.
f. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3. This standard is effective December 17, 2006.
g. Extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is < 70%.

Key: ppm = parts per million; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter; km = kilometer

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be "significant" if (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 µg/m^3 or more (40 CFR 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's Class designation (40 CFR 52.21[c]). According to 40 CFR Part 81, no Class I areas are located in the vicinity of Beale AFB. Therefore, Federal PSD regulations would not apply to the Proposed Action (USEPA 2009b).

On September 22, 2009, the USEPA issued a final rule for mandatory greenhouse gas (GHG) reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on carbon dioxide (CO_2) and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO_2 equivalent per year. The first emissions report is due in 2011 for 2010 emissions. Although GHGs are not currently regulated under the CAA, the USEPA has clearly indicated that GHG emissions and climate change are issues that need to be considered in future planning. GHGs are produced by the burning of fossil fuels and through industrial and biological processes.

Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant (HAP), or 25 tpy of any combination of HAPs. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality. Section 112 of the CAA defines the sources and kinds of HAPs.

Beale AFB is in Yuba County, which is within the Sacramento Valley Intrastate (SVI) AQCR. The Proposed Action is in the FRAQMD and is subject to rules and regulations developed by the FRAQMD. The FRAQMD is responsible for implementing and enforcing state and Federal air quality regulations in Yuba County, Sutter County, and portions of the Northern Sacramento Valley Air Basin. The air quality in Yuba County has been characterized by the USEPA as unclassified/attainment for all criteria pollutants (USEPA 2009a). However, CARB has designated Yuba county as a nonattainment-transitional area for 8-hour O_3 and nonattainment PM_{10} (CARB 2010).

3.6 Hazardous Materials and Wastes Management

Hazardous Materials are described in Section 3.6, starting on page 3-15 of the original EA.

3.7 Transportation

Transportation is described in Section 4.7, starting on page 3-15 of the original EA.

3.8 Safety

Safety is described in section 3.8, starting on page 3-18 of the original EA.

4.0 Environmental Consequences

The results of the environmental analysis are presented in Chapter 4.0. This supplemental EA includes updated and additional information regarding environmental consequences of the proposed action.

4.1 Biological Resources

Implementation of the Proposed Action would result in an insignificant loss of nonnative grassland habitat during construction. The Proposed Action will result in a loss of foraging habitat for federally protected, state-listed, and special status species. However this loss of foraging habitat is insignificant, due to the abundance of comparable grasslands in the surrounding areas at Beale AFB. Gaps will be left in the security fence where it intersects riparian areas, in order to provide a corridor for wildlife movement.

The Proposed Action avoids and minimizes potential construction-related disturbances (direct or indirect) on special-status plant and wildlife species and their habitat. Additional avoidance measures would be used to minimize impacts on vernal pools or seasonal wetland areas. As described in Section 4.1 of the original EA, starting on page 4-2, environmental protection measures will be implemented to minimize or compensate for potential impacts from the Proposed Action. These measures are intended to minimize potential impacts to protected species.

Environmental impacts of the Proposed Action and No Action Alternative on biological resources are discussed in Section 4.1 of the original EA, starting on page 4-1. Additional information about potential impacts to special status species is provided in this section.

Impacts to Federally Protected Species

- **Vernal Pool Fairy Shrimp** - A small amount of potential vernal pool fairy shrimp habitat could be directly or indirectly impacted by the Proposed Action. Avoidance and minimization measures will ensure that impacts to this species are minimal. A Biological Opinion has been approved by the USFWS for the Proposed Action (see Appendix D).
- **Vernal Pool Tadpole Shrimp** – Potential Vernal Pool Tadpole Shrimp (*Lepidurus packardi*) habitat could be directly or indirectly impacted by the Proposed Action. Avoidance and minimization measures will ensure that impacts to this species are minimal. A Biological Opinion has been approved by the USFWS for the Proposed Action (see Appendix D).
- **Valley Elderberry Longhorn Beetle (VELB) –** VELB habitat occurs along Dry Creek and Best Slough on Beale AFB. There is one elderberry shrub that would provide VELB habitat in the project areas (BAFB 2008); this shrub will not be impacted by the Proposed Action.
- **California Red-Legged Frog (CRLF)** - CRLF is not believed to occur on Beale AFB. Surveys conducted from 2005-2007 found no evidence of CRLF occurring on the base. Habitat assessments for the species have concluded that little, if any, adequate habitat

occurs on the base, due to the presence of bullfrogs and non-native warm water fish (URS 2008). Additionally, the construction work will occur during the dry season (May-November) and will not impact any aquatic features that could be considered potential habitat for the species. Habitat potentially suitable to support the CRLF is present at three locations and marginally suitable habitat at two locations on Beale AFB (URS 2008). Gaps will be left in the security fence where it intersects riparian habitat; there will be no significant impacts to this species as a result of the Proposed Action.

- **Giant Garter Snake** - Habitat assessment and trapping surveys were conducted in 2005; no snakes were detected but a few locations had potentially or marginally suitable habitat. The nearest documented record of the species is approximately 3 miles north of the base (Pers. Comm with Richard Montgomery, 2010). A portion of Reed's Creek is "potentially suitable habitat", and portions of Hutchinson Creek, Dry Creek, and Best Slough are considered "marginally suitable habitat" for the giant garter snake (Hansen 2005). Gaps will be left in the security fence where it intersects riparian areas. No fencing will be placed across the Dry Creek/Best Slough area. Additionally, the work will occur during the dry season, when snake mortality is least likely to occur.
- **Central Valley Steelhead** - Central Valley steelhead habitat occurs in Dry Creek downstream from Beale AFB and may occur on Beale AFB during high flow events. Gaps will be left in the security fence where it intersects riparian areas. No fencing will be placed across the Dry Creek/Best Slough area. The Proposed Action will not disrupt the upstream migration of salmonids.
- **Bald Eagle** – The Bald eagle prefers habitat near large open water bodies, such as rivers and lakes. The Bald eagle is an irregular migrant to the area, and is considered to use Beale AFB only for occasional foraging during the winter (BAFB 2007). However, it does not nest on the base, and would not be impacted by the project.
- **Golden Eagle** – The golden eagle is a year-round visitor to the base, but does not use the project areas for more than occasional foraging.

Impacts to State-Listed Species

- **Swainson's Hawk** – The Swainson's Hawk has been observed foraging at Beale AFB as a summer visitor. In the Central Valley, Swainson's hawk nest sites are more commonly found in riparian forest vegetation. Gaps will be left in the security fence where it intersects riparian areas; tree trimming and removal near riparian corridors (primarily Hutchinson Creek) would be postponed until the end of the nesting season, when fledglings are independent and able to survive on their own (as soon as early September). Many other trees are available for nesting in adjacent areas in the future. It is unlikely that this species would be significantly impacted by the Proposed Action.
- **American Peregrine Falcon** – The American peregrine falcon is known to use grassland and woodland habitat at Beale AFB as an irregular fall/winter visitor. All work would be conducted during the summer season; this species would not be impacted by the Proposed Action.
- **California Black Rail** – The California black rail has been observed in several freshwater marshes on Beale AFB and is thought to be a yearlong resident. The Proposed Action does not involve any work near freshwater marshes; the California black rail would not be impacted by the Proposed Action.

- **Greater Sandhill Crane** – The greater sandhill crane uses grassland and marsh habitat types and is an irregular winter visitor. All work will be conducted during the summer season; this species would not be impacted by the Proposed Action.
- **Bank Swallow** – The bank swallow prefers riparian habitat types and nests along streamsides and on river banks. Bank swallows were not detected during surveys conducted on base, but there is potential for this species to use the base. Gaps will be left in the security fence where it intersects riparian areas; this species would not be impacted by the Proposed Action.

Impacts to Species of Special Concern

- **Western Burrowing Owl** – The western burrowing owl is known to be a yearlong resident at Beale AFB. The species lives in open grassland ecosystems and nest in holes in the ground. If a burrowing owl burrow is detected during preconstruction surveys or construction activities, a buffer would be set up around the location of the occupied burrow. No disturbance would occur within 50 m (approx. 160 ft.) of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 m (approx. 250 ft.) during the breeding season of February 1 through August 31.
- **Tri-colored Blackbird** - The Tri-colored blackbird is generally considered a marsh species, nesting primarily in tule and cattail marshes. The Proposed Action does not involve work near any freshwater marshes. This species will not be impacted by the Proposed Action.
- **White-Tailed Kite** – This species nests in oak woodlands or in trees along marsh edges, it forages in grassland or other open vegetative communities. Peak nesting season for this species occurs between March and May. The white-tailed kite is assumed to be present on base year-round, but it cannot be considered to use the project areas for more than occasional foraging. Tree trimming and removal near riparian corridors will be postponed until peak nesting season is over. This species will not be impacted by the Proposed Action.
- **Prairie Falcon** – The prairie falcon spends most of its time in annual grasslands and other open areas, but prefers to nest in cliff ledges. Prairie falcons are known to use Beale AFB in the fall and winter months. All work will be conducted during the summer season; this species would not be impacted by the Proposed Action.
- **Northern Harrier** – The northern harrier is a year round resident at Beale AFB, and breeds and forages in a variety of open vegetative communities. If a northern harrier nest is detected during preconstruction surveys or construction activities, a buffer would be set up around the location of the occupied nest. Due to the abundance of open vegetative communites at Beale AFB, this species would not be impacted by the Proposed Action.
- **Grasshopper Sparrow** – The grasshopper sparrow prefer large tracts of open grassland for nesting and foraging, and is a summer resident in the Central Valley. Due to the abundance of open grassland at Beale AFB, it is unlikely that this species would be impacted by the Proposed Action.
- **Loggerhead Shrike** – The loggerhead shrike breeds mainly in shrublands and open woodlands, usually in riparian edges. Breeding takes place between January and July. As the removal of trees will take place after this time period, no significant impact is expected. No active nests will be disturbed by the Proposed Action. The loggerhead

shrike forages in the open grasslands, using trees/power lines/fences/etc for perches. Due to the abundance of shrublands/woodlands/riparian edges at Beale AFB, it is unlikely that this species would be impacted by the Proposed Action.

- **Yellow Warbler** – The yellow warbler occurs principally as a migrant and summer resident from late March through early October and breeds from April to late July. As the removal of trees will take place after July, no significant impact is expected. No active nests will be disturbed by the Proposed Action. Yellow warblers generally occupy riparian vegetation. Due to the abundance of riparian areas at Beale AFB, it is unlikely that this species would be impacted by the Proposed Action.
- **Western Pond Turtle** – The western pond turtle prefers ponds, marshes, and streams for foraging and cover; along with adjacent grasslands and savannas for nesting. It occurs in several locations on Beale AFB. Gaps will be left in the security fence where it intersects riparian areas; there will be no impacts to this species as a result of the Proposed Action.
- **Ringtail** - Ringtails prefer riparian forests, brushland, oak woodlands, and rocky hillsides. During trapping surveys conducted by the CSUS in 2000, scat was observed in the Dry Creek area. Gaps will be left in the security fence where it intersects riparian areas; there will be no significant impacts to this species as a result of the Proposed Action.

Environmental Protection Measures

Measure 1: Monitor Construction Activities. A qualified biologist would monitor all construction activities to ensure compliance with avoidance, minimization, and compensation components of the Proposed Action. The biological monitor would assist construction personnel in compliance with all conservation measures and guidelines. The monitor would be responsible for directing the placement of all stakes, flags, and barriers protecting sensitive resources.

Measure 2: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions. The biological monitor should conduct environmental awareness training for construction crews before and during project implementation. The education program would briefly cover vernal pools and their associated endangered species and wetlands that might be encountered during construction. Awareness training would cover all restrictions and guidelines that must be followed by construction crews to avoid or minimize impacts on vernal pools, sensitive species, and wetlands.

Measure 3: Environmental Awareness Training. Environmental awareness training would be conducted prior to construction, when crews are about to enter potentially sensitive areas, and when new personnel join the construction crews.

Restrictions and guidelines that would be observed by construction crews include:

- All vehicle operators would observe the posted speed limit on paved roads and a 20-mile per hour speed limit on unpaved roads.
- Off-road travel by vehicles or construction equipment would be prohibited outside of designated work areas.
- No nonmilitary firearms or pets would be allowed in the Proposed Action area.
- Motor vehicles and equipment would be fueled and serviced in designated service areas.

- Any worker that inadvertently kills or injures a special status species, or finds one injured or trapped, would immediately report the incident to the biological monitor. The biological monitor would inform 9 CES/CEV of the incident. Furthermore, 9 CES/CEV would verbally notify the USFWS, Sacramento Endangered Species Office, within 3 days and would provide written notification of the incident within 5 days.

Measure 4: Stake and Flag Boundaries of Work Areas. The project proponent should stake and flag the boundaries of all work and staging areas in portions that have the potential to support vernal pool tadpole and fairy shrimp or their habitat. Staking and flagging should be done before construction commences to ensure that construction vehicles, equipment, and personnel would not enter areas that have the potential to be occupied by vernal pool tadpole and fairy shrimp. The project proponent should remove all stakes and flagging within 60 days of construction completion.

Measure 5: Stake and Flag Boundaries of Adjacent Vernal Pools and Other Wetlands. Potential wetlands adjacent to the construction area should be protected by placing orange barrier material or stakes and flagging around the perimeter of the wetland or vernal pool area. The location of these barriers should be clearly marked on construction plans and their placement supervised by the biological monitor.

Measure 6: ***Disposal of Excavated Soil.*** All soil excavated during construction of the perimeter fence, gates, and AFCOMAC projects occurring in potential branchiopod habitat should be removed and disposed of outside the project area. Coordination with 9 CES/CEV is required prior to disposing of this excavated soil.

Measure 7: Compensation for Direct and Indirect Impacts on Special-Status Species. The project proponent should avoid, minimize, or compensate for project-related impacts on federally listed species. According to the USFWS Programmatic Biological Opinion, projects must compensate for adverse effects on the habitat of listed vernal pool invertebrates by preserving unaffected habitat and restoring new habitat that is eliminated as a result of the Proposed Action (Beale 2002).

- For every acre of habitat directly affected by the Proposed Action, 2 acres of branchiopod habitat (vernal pools and depressional seasonal wetlands) would be preserved and 1 acre would be restored on Beale AFB or at another ecosystem preservation bank approved by the USFWS.
- For every acre of branchiopod habitat indirectly affected by the Proposed Action, 2 acres of similar branchipod habitat would be preserved on Beale AFB or at another ecosystem preservation bank approved by the USFWS.

To minimize or compensate for potential impacts from the project Action, approximately 64.112 acres of suitable branchiopod habitat would be preserved and 24.941 acres of suitable branchiopod habitat would be restored (see Table 4-1). Because of water flows and the presence of vertebrate and invertebrate predators, all other type of waters of the U.S. are not likely to provide habitat for the vernal pool tadpole and fairy shrimp. Therefore, measures to minimize or compensate for impacts on these wetland types are not proposed.

It is assumed that all vernal pools and depressional seasonal wetlands within the project area provide potential habitat for vernal pool tadpole and fairy shrimp. It is further assumed that all wetlands within the Proposed Action area would be directly and permanently impacted by the Proposed Action. These impacts are considered adverse.

Measure 8: Pre-construction Bird Surveys

A qualified biologist will survey the proposed project site for special-status species and MBTA birds and their nests or burrows. Unoccupied trees would be removed only after it has been verified that the trees do not harbor any birds; removal of occupied trees would be postponed until after nesting season, after field verification that all fledglings have left the nest(s). If a nest or burrow of a special-status bird species is detected during pre-construction surveys or construction activities, a buffer would be set up around the location of the occupied nest/burrow. No disturbance would be allowed to occur within 50 m of occupied nests/burrows during the non-breeding season (varies by species) or within 75 m of occupied nests/burrows during the breeding season (varies by species).

4.2 Water Resources

Impacts to water resources are described in Section 4.2, starting on page 4-5 of the original EA. Implementation of the Proposed Action is expected to have no direct or indirect adverse effects on water quality.

4.3 Geological Resources

Impacts to geological resources are described in Section 4.3, starting on page 4-7 of the original ATFP EA. Beale Air force Base is not in or near any Alquist-Priolo Earthquake Fault Zones. The projects will not be located on soils that are unstable or expansive, and will not cause seismic activities or landslides. The project will conform to current seismic design standards and will not impact seismic activity in the area. Direct or indirect impacts on soils, regional or local topography, or physiographic features at the base would not be significant from implementation of the Proposed Action.

4.4 Cultural Resources

Impacts to cultural resources are described in Section 4.4, starting on page 4-7 of the EA. Avoidance of known cultural resources during project design will reduce potential impacts to these sites to a level of less than significant. Environmental protection measures would be implemented in the vicinity of archaeological sites to further reduce potential impacts to cultural resources.

4.5 Air Quality

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS "attainment"

areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard. Although not applicable to Federal actions, significance thresholds as defined by FRAQMD guidelines are compared to the Proposed Action as a frame of reference. Significance thresholds for FRAQMD are shown in **Table 4-1**.
- Expose sensitive receptors to substantially increased pollutant concentrations.
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory.
- Exceed any Evaluation Criteria established by a SIP.

Table 4-1. FRAQMD Significance Thresholds

Project Type	Ozone Precursor Emissions		Respirable Particulate Matter Emissions
	NO_x (pounds per day)	ROG (pounds per day)	PM_{10} (pounds per day)
All	25	25	80

Source: FRAQMD 2009

Key:

NO_x = nitrogen oxides

ROG = reactive organic gases

PM_{10} = respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter)

In addition to the *de minimis* emissions thresholds, Federal PSD regulations define air pollutant emissions to be significant if the source is within 10 kilometers of any Class I area, and emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more (40 CFR 52.21[b][23][iii]).

4.5.1.1 Proposed Action

The Proposed Action would have short-term, minor, adverse impacts on air quality. **Table 4-2** summarizes the annual estimated air quality emissions from construction, demolition, and operational activities. The estimated emissions from the Proposed Action would represent a minor percentage of the air emissions inventory locally in Yuba County and would represent a negligible percentage of the air emissions inventory regionally within the SVI AQCR.

Table 4-2. Annual Estimated Air Emissions Resulting from the Proposed Action

Activity	NO_x tpy	VOC tpy	CO tpy	SO_2 tpy	PM_{10} tpy	$PM_{2.5}$ tpy
2010 Construction Emissions	3.30	0.95	2.27	0.0004	9.01	2.03
Percent of SVI AQCR Inventory	**0.004%**	**0.001%**	**0.001%**	**0.000004%**	**0.016%**	**0.011%**

2011 Construction Emissions	1.74	0.22	1.02	0.0001	8.89	1.92
Percent of SVI AQCR Inventory	**0.002%**	**0.0003%**	**0.0003%**	**0.000001%**	**0.016%**	**0.010%**

Note: Annual emissions reported are unmitigated. URBEMIS estimates emissions of reactive organic gas (ROG). Emissions of ROG are assumed to equal VOC emissions.

Since Beale AFB is located in an unclassified/attainment area for criteria pollutants identified by the USEPA, no formal conformity analysis is required. Emissions for the construction activities in the Proposed Action were calculated using the Urban Emissions Model (URBEMIS), which is used in California to evaluate the air quality impacts of land development projects. URBEMIS is approved by the FRAQMD. URBEMIS2007 Version 9.2.4 was run primarily in default mode as described in the URBEMIS2007, Version 9.2 User's Guide. For paving, rather than using the default of 25 percent of the total building project acreage, which underestimates the paved area, the actual proposed paved area was entered into URBEMIS. For construction conservation measures, the most conservative conservation measure in URBEMIS was chosen although actual conservation measures may be more stringent and result in lower emissions.

Daily construction emissions estimated using URBEMIS2007 are presented in **Table 4-3**. Emissions estimated with and without conservation measures exceed the FRAQMD significance thresholds for NO_x and PM_{10} for both 2010 and 2011. Including conservation measures drops daily PM_{10} emissions below the FRAQMD significance threshold, however NO_x emissions remain above threshold. The most conservative conservation measure in URBEMIS was chosen although actual conservation measures may be more stringent and result in lower emissions. Although the Proposed Action's daily NO_x emission rate exceeds the FRAQMD threshold, emissions would be temporary in nature and would only be slightly higher than the FRAQMD significance thresholds.

Table 4-3. Daily Construction Emissions Resulting from the Proposed Action for Comparison to FRAQMD Significance Thresholds

Activity	NOx lbs/day	VOC lbs/day	CO lbs/day	SO2 lbs/day	PM10 lbs/day	PM2.5 lbs/day
2010 Construction Emissions Conservation Measures Not Employed	59.92	17.17	41.20	0.01	163.83	36.91
2010 Construction Emissions Including Conservation Measures	50.50	17.17	41.20	0.01	11.75	2.86
Feather River AQMD Significance Threshold	**25**	**25**	**--**	**--**	**80**	**--**

2011 Construction Emissions Conservation Measures Not Employed	31.71	3.96	18.55	0.0001	161.69	34.97
2011 Construction Emissions Including Conservation Measures	26.97	3.96	18.55	0.0001	11.41	2.57
Feather River AQMD Significance Threshold	**25**	**25**	**--**	**--**	**80**	**--**

Note: URBEMIS estimates emissions of reactive organic gas (ROG). Emissions of ROG are assumed to equal VOC emissions.

Construction and Demolition Emissions. Emissions from construction and demolition activities associated with the Proposed Action would have short-term, minor, adverse impacts on local air quality and would have negligible impacts on regional air quality. Implementation of the Proposed Action would not result in violations of any ambient air quality standards. The construction activities as described in **Section 2.1** would generate air pollutant emissions because of grading, filling, compacting, trenching, and operation of construction equipment and generators. Construction activities would also generate total suspended particulate and PM_{10} & $PM_{2.5}$ emissions as fugitive dust from ground-disturbing activities (e.g., grading, trenching, soil piles) and from combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Construction activities would incorporate BMPs and Environmental Protection Measures to minimize fugitive particulate matter emissions. Additionally, construction workers commuting daily to and from the construction site in their personal vehicles would result in criteria pollutant emissions. All portable construction equipment larger than 50 brake-horse-power would be registered in the CARB Portable Equipment Registration Program prior to commencing construction activities. **Appendix E** contains detailed calculations and the assumptions used to estimate the air quality emissions from construction activities.

Operational and Area Source Emissions. The Proposed Action would only have negligible amounts of operation and area source emissions.

Greenhouse Gas Emissions. The Proposed Action would contribute directly to emissions of greenhouse gases from the combustion of fossil fuels from construction equipment. CO_2 accounts for 92 percent of all greenhouse gas emissions; electric utilities are the primary source of anthropogenic CO_2, followed by transportation. The California Energy Commission estimates that in 2004, gross CO_2 emissions in California were 492 million metric tons of CO_2 equivalents (CEC 2006). Construction and demolition activities associated with the Proposed Action would emit 295 metric tons of CO_2 in 2010 and 156 metric tons of CO_2 in 2011. CO_2 emissions in 2010 from the Proposed Action would be 0.00006 percent of the California state CO_2 emissions and CO_2 emissions in 2011 from the Proposed Action would be 0.00003 percent of the California state CO_2 emissions. Therefore, the Proposed Action would have negligible contribution towards statewide greenhouse gas emissions.

Summary. As shown in **Tables 4-2** and **4-3**, air quality emissions from the Proposed Action would be minor, would be less than 10 percent of the emissions inventory for SVI AQCR, and are below FRAQMD significance thresholds when employing FRAQMD conservation measures with the exception of NO_x. There would be a negligible, adverse impact on local or regional air quality from implementation of the Proposed Action. Therefore, a conformity determination in accordance with 40 CFR 93-153(1) is not required, as the total of direct and indirect emissions from the Proposed Action would not be regionally significant (e.g., the emissions are not greater than 10 percent of the SVI AQCR emissions inventory). **Appendix E** contains detailed calculations and the assumptions used to estimate the air quality emissions from the Proposed Action's construction, demolition, and operational activities.

4.5.1.2 No Action Alternative

Under the No Action Alternative, Beale AFB would not construct the proposed Anti-Terrorism/Force Protection Upgrades, which would result in the continuation of the existing condition. Therefore, no direct or indirect adverse impacts would be expected on local or regional air quality from implementation of the No Action Alternative.

4.5.2 Environmental Protection Measures

Measure 1: Fugitive Dust Control. Contractors would be required to follow FRAQMD fugitive dust control measures, such as wind breaks and barriers, frequent water applications, application of soil additives, control of vehicle access, vehicle speed restrictions, covering of piles, use of gravel at site exit points, washing of equipment at the end of each work day and prior to site removal, and work stoppage.

The environmental protection measures used in the URBEMIS model for fugitive dust control include the following for fine and mass grading:

- Soil stabilizing measures such as replacing ground cover in disturbed areas as quickly as possible; watering exposed surfaces at least two times daily; and strategic equipment loading/unloading;
- Unpaved roads measures to include managing haul road dust by watering these roads at least two times daily.

Measure 2: Construction Equipment Emission Controls. Construction equipment exhaust emissions would not exceed FRAQMD Regulation II, Rule 3.0, *Visible Emissions* limitations (40 percent opacity or Ringlemann 2.0). All construction equipment would be properly tuned and maintained prior to and for the duration of the Proposed Action. In addition, construction equipment and vehicles would reduce idling times to 5 minutes or less when possible.

The environmental protection measures used in the URBEMIS model for construction equipment emission controls include the following for demolition, grading, trenching, paving, and building construction:

- Construction equipment would use diesel particulate filters
- Construction equipment would use diesel oxidation catalysts.

Measure 3: Power Sources. The Proposed Action would utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.

4.6 Hazardous Materials and Wastes Management

Impacts to hazardous materials and hazardous wastes are discussed in Section 4.6 of the original EA, starting on page 4-13. The quantity of hazardous wastes generated from proposed construction activities would be negligible. Therefore, hazardous materials and wastes at Beale AFB would not be impacted by the proposed construction activities.

4.7 Transportation

Impacts to transportation are discussed in Section 4.7 of the original EA, starting on page 4-15. No adverse direct or indirect impacts on transportation systems are expected.

4.8 Safety

Impacts to safety are discussed in Section 4.8 of the original EA, starting on page 4-15. Projects associated with the Proposed Action would not pose a safety risk to base personnel or activities at the base.

5.0 Cumulative and Adverse Impacts

During the timeframe of the Proposed Action, several other construction actions are scheduled to take place on Beale AFB.

- Land-Based Discharge (2010-2011)
- Replace Bridge 2627 (2009-2010)
- Construct New Fitness Center (2011-2012)
- J Street Water Main Repair (2010-2011)
- Anti Terrorism/Force Protection Gate Improvements (2010-2011)
- Base Perimeter Fencing (2009-2011)
- Munitions Complex Upgrades (2010-2011)
- Small Arms Range Construction (2011-2012)
- Military Family Housing Water Main Replacement (2010-2011)
- Connect Contingency Water Well to Base Water Supply (2011-2012)
- Construction Bulk Construction Material Storage Area (2011-2012)
- Antenna Installation (2009-2010)
- Construction of a Child Development Center (2010 -2011)

Table 5-1 of the original EA summarizes potential cumulative effects on resources from the Proposed Action, when combined with other past, present, and future activities. Cumulative effects from the Proposed Action and other projects are similar to those described in Table 5-1 of the original EA, even though the time frame has changed. As seen in Table 5-1, no significant impacts on the environment would be anticipated from the Proposed Action in conjunction with these projects.

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7.0 List of Preparers and Reviewers

This report has been prepared by the United States Air Force at Beale Air Force Base, California. Those involved in preparation of this report are listed below:

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Appendix A

Original Signed FONSI and FONPA

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

AND

FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)

1.0 NAME OF THE PROPOSED ACTION

Anti-Terrorism/Force Protection Upgrades at Beale Air Force Base, California: Main and Wheatland Gates, Phases I, III, IV, V, and VI Perimeter Fence, and AFCOMAC Fence and K-5 Pad.

The purpose is to improve Base security and personnel safety, to reduce traffic congestion while maintaining access control requirements, and to meet the standards specified in Unified Facilities Criteria (UFC) 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings.*

2.0 DESCRIPTION OF PROPOSED ACTION AND NO ACTION ALTERNATIVES

Proposed Action. The Proposed Action consists of four construction projects, which include reconfiguring the Anti-Terrorism/Force Protection (AT/FP) infrastructure at the Main and Wheatland Gates, installing new perimeter fencing, and constructing a gravel pad and perimeter fence at the Air Force Combat Ammunition Center (AFCOMAC). No changes in personnel requirements or aircraft operations would occur.

No Action Alternative. Under the No Action Alternative, Beale Air Force Base (AFB) would continue to use the two entry control points (ECP) and existing perimeter fencing in their current condition and configuration. In addition, the AFCOMAC would continue their mission requirements with their current pad and fence configuration. There would be no change from the existing conditions at the installation. This alternative would not address the security and safety requirements of the Air Combat Command (ACC) and Beale AFB or the traffic congestion problems, or meet the standards specified in UFC 4-010-01.

3.0 SUMMARY OF ENVIRONMENTAL EFFECTS

Biological Resources. Approximately 32.056 acres of potential branchiopod habitat (vernal pools and depressional seasonal wetlands) will be directly or indirectly impacted by the Proposed Action. A Biological Opinion has been approved by the United States (U.S.) Fish and Wildlife Service (USFWS) for the Proposed Action. According to the USFWS Biological Opinion Terms and Conditions, approximately 64.112 acres of suitable branchiopod habitat will be preserved and 24.941 acres of suitable branchiopod habitat will be restored on Beale AFB or at another ecosystem preservation bank approved by the USFWS. Because of water flows and the presence of vertebrate and invertebrate predators, all other types of waters of the United States are not likely to provide habitat for the vernal tadpole and vernal pool fairy shrimp, both federally listed species. Therefore, measures to minimize or compensate for impacts on these wetland types are not proposed.

Water Resources. Other than as stated in biological resources above, there would be no significant impact to surface waters or groundwater as a result of implementation of the Proposed Action. The effects from minor increases in storm water runoff could lead to erosion, transfer of pollutants, or flooding; however, these effects would not be substantial.

The Proposed Action involves installing base perimeter fencing within the 100-year floodplain on Beale AFB. The U.S. Air Force (USAF) has prepared a FONPA demonstrating there are no practicable

alternatives that would bring the Proposed Action into conformance with fewer impacts on floodplains. The Proposed Action would only impact 2.36 acres of the 100-year floodplain area on-base, and would not stimulate further development in the floodplain. Most of the construction activities occur in areas that are already disturbed. Breaks in the proposed perimeter fence were designed in areas that occur in riparian areas and drainages to reduce the number of acres of potential impacts on the 100-year floodplain. Once constructed, the proposed perimeter fence would allow free-flow of water. In addition, construction impacts would be kept as minimal as possible during construction activities. Therefore, the Proposed Action would not have an adverse impact on the 100-year floodplain on Beale AFB.

The Proposed Action will directly impact 201 jurisdictional waters of the U.S. Section 401 and 404 permit applications have been submitted to the U.S. Army Corps of Engineers (USACE), Sacramento District and the California Regional Water Quality Control Board, Central Valley Region for their review and approval. Approval of the Section 401 and 404 permit applications would be obtained prior to commencement of construction activities.

Geological Resources. There would be no significant impacts on geological resources as a result of implementation of the Proposed Action. The effects on soil erosion and sedimentation from construction activities are considered minor because erosion and sediment controls would be in place during construction to reduce and control siltation or erosion impacts to areas outside of the construction site.

Cultural Resources. There is a potential for direct and indirect impacts on the eight archaeological sites within the APE resulting from subsurface excavation, grading, operation, or maintenance associated with construction of the proposed perimeter fence line. Project engineers will coordinate all project designs with Environmental Flight to avoid direct and indirect impacts to these eight sites. Avoidance of known cultural resources during project design will reduce potential impacts to these sites to a level of less than significant. Construction activities would be limited to areas that have already been impacted by ground-disturbing activities associated with the construction of the existing fence line, the grading of the installation perimeter associated with the construction and maintenance of the existing firebreak, or the construction of the canal along the northwest boundary of the site to reduce potential impacts on these sites. Consultation is being undertaken with SHPO during the finalization of this EA. Completion of Section 106 consultation with SHPO is required prior to commencement of construction activities.

Air Quality. There would be no significant impacts on regional or local air quality from the Proposed Action. The effects on air quality would be a temporary increase in construction-related emissions during project construction. The Proposed Action would generate emissions well below conformity *de minimis* limits as specified in 40 Code of Federal Regulations Part (CFR) 93.153. Because the emissions generated would be below *de minimis* levels, it is reasonable to assume that the temporary construction emissions caused by the Proposed Action would not cause a violation of the National Ambient Air Quality Standards (NAAQS), and a full Conformity Determination would not be required.

Hazardous Materials and Wastes Management. There would be no significant impacts on hazardous materials and wastes management due to implementation of the Proposed Action. Minor hazardous materials and wastes would be generated during project construction. In addition, the Proposed Action is within or in close proximity to three Environmental Restoration Program (ERP) sites: SD-01, West Side Drainage Ditch; LF-13, Landfill Number 1; and SS-35, Weapons Storage Area. The ERP Program Manager has consulted with the HQ Restoration Program Manager and has preliminarily arranged for a waiver to the restrictions on disturbing an ERP site. Because of the potential threat of contamination from ERP sites during construction, it is recommended that a health and safety plan be prepared in accordance with Occupational Safety and Health Administration (OSHA) requirements prior to commencement of construction activities. In addition, should contamination be encountered, handling, storage, transportation, and disposal activities would be conducted in accordance with applicable Federal,

state, and local regulations, Air Force Instructions, and Beale AFB programs and procedures. While working within ERP Site SD-01, workers should either be 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) trained, or should be overseen by a supervisor with OSHA Site Supervisor certification.

Transportation. There would be no significant impacts on transportation due to implementation of the Proposed Action.

Safety. There would be no significant impacts on structure or personnel safety due to implementation of the Proposed Action. Implementation of the Proposed Action would slightly increase the short-term risk associated with construction contractors performing work at Beale AFB during the normal workday because the level of such activity would increase.

Phases I, III, IV, and V perimeter fence and the AFCOMAC K-5 pad and fence are located within ranges sites. These range sites contain various munitions, unexploded ordnance (UXO), and Chemical Agent Identification Sets (CAIS). Most of the munitions, UXO, and CAIS on the surface have been removed. However, munitions, UXO, and CAIS still can be found below the ground surface. Although Phase VI perimeter fence and the Main and Wheatland Gates are not located within a range site; munitions, UXO, and CAIS may have still be encountered within these project areas. The need for munitions, UXO, and CAIS screening at potential UXO sites would be determined on a case by case basis. Any projects located within potential UXO sites would obtain an environmental restoration waiver from Headquarters (HQ) ACC/CEVR prior to commencement of construction activities. The ERP Program Manager has consulted with the HQ Restoration Program Manager and has preliminarily arranged for a waiver to the restrictions on disturbing areas with potential munitions, UXO, and CAIS.

The Proposed Action would also provide a positive direct impact on the base. Improving the security and upgrading the safety requirements at all the ECPs of Beale AFB and installing new perimeter fencing would reduce the potential of a terrorist attack and harm to base personnel and facilities.

4.0 CONCLUSION

Based on the provisions set forth in the Proposed Action, all activities were found to comply with the criteria or standards of environmental quality and coordinated with the appropriate Federal, state, and local agencies. The attached Environmental Assessment (EA) and a draft of this Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) were made available to the public on October 1, 2004 for a 30-day review period. All public and agency comments received were addressed in the EA.

FINDINGS

Finding of No Practicable Alternative. Reasonable alternatives were considered, but no other alternative to the Proposed Action meets the safety or operational requirements of the 9th Reconnaissance Wing (9 RW). Pursuant to Executive Orders 11988 and 11990 and the authority delegated by Secretary of the Air Force Order 791.1, and taking the above information into account, I find that there is no practicable alternative to this action and that the Proposed Action includes all practicable measures to minimize harm to the environment. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

Finding of No Significant Impact. After review of the EA prepared in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations, and *Environmental Impact Analysis Process (EIAP)*, 32 CFR Part 989, as amended, I have

determined that the Proposed Action would not have a significant impact on the quality of the human or natural environment. An Environmental Impact Statement (EIS) will not be prepared. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

Bruce A. Wright

BRUCE A. WRIGHT
Lieutenant General, USAF
Commander

18 Jan '05

Date

Appendix B

Public Notice

PUBLIC NOTICE

Notice of Availability

DRAFT SUPPLEMENTAL

ANTI-TERRORISM/FORCE PROTECTION UPGRADES

ENVIRONMENTAL ASSESSMENT (EA)

AT BEALE AIR FORCE BASE, CALIFORNIA

The U.S. Air Force at Beale Air Force Base (AFB), California, proposes projects to increase base security, improve base structure and personnel safety, and decrease traffic congestion at the three main entry points. The objective of the EA is to analyze and disclose any potential environmental impacts. In accordance with 32 CFR 989, the Air Force is required to prepare an EA and provide documentation for public review. A draft supplement to the 2004 EA has been prepared and is available for review.

The review period for this EA is thirty (30) days. The document will be available for review at the Beale AFB Environmental Office for 30 days from the date of this publication. Copies can also be obtained by calling (530) 634-2593 or by mailing a request to 9 CES/CEAO, 6601 B Street, Beale AFB, CA 95903, Attn: Ms. Sheri Rolfsness.

Appendix C

Original Environmental Assessment

(CD attached)

Appendix D

Biological Opinion

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In reply refer to:
1-1-04-F-0294

SEP 2 1 2004

Lt. Col. Gregory P. Long
Base Civil Engineer
Department of the Air Force
9th CES/CEV
6451 B Street
Beale Air Force Base, California 95903-1708

Subject: Formal Endangered Species Consultation on the Proposed Anti Terrorism/Force Protection Upgrades, Beale Air Force Base, Yuba County, California

Dear Lt. Col. Long:

The U.S. Fish and Wildlife Service (Service) has reviewed the information you have provided for the proposed Anti Terrorism/Force Protection Upgrades projects, Yuba County, on Beale Air Force Base (Beale AFB). Your August 27, 2004 request for formal consultation was received on August 30, 2004. This document represents the Service's biological opinion on the potential effects of the proposed actions on the threatened vernal pool fairy shrimp (*Branchinecta lynchi*) and the endangered vernal pool tadpole shrimp (*Lepidurus packardi*) in accordance with section 7(a) (2) of the Endangered Species Act of 1973, as amended (Act).

This biological opinion is based, in part, on information provided in the: (1) *Final Conceptual Vernal Pool Restoration and Monitoring for the Habitat Conservation and Management Plan for Beale Air Force Base* (CVPRM) (Jones and Stokes 1998a); (2) the *Integrated Natural Resources Management Plan, Volumes I and II* (U.S. Army Corps of Engineers 1999); (3) the April 2000 *Final Soil Suitability Assessment for a Portion of the Vernal Pool Restoration Area, Beale Air Force Base*; (4) the June 2000 *Wetland Delineation for the Vernal Pool Seasonal Wetland Restoration Design at Beale Air Force Base*; (5) the August 2001, *Delineation of Waters of the Unites States for Areas Potentially Included in the Habitat Conservation and Management Plan for Beale Air Force Base*; (6) the *Biological Assessment of Anti-Terrorism/Force Protection Upgrades at the Beale AFB: Phases I,III,IV,V, and VI Perimeter Fence and AFCOMAC Fence and K-Pad* prepared by Engineering-Environmental Management, Inc., August 2004; (7) the August 27, 2004, letter from Robert L. Nordahl of Beale AFB to the

Service requesting formal consultation on the proposed projects; (8) a July 20, 2004, meeting between representatives of Beale AFB and the Service; (9) a July 30, 2004, site visit to the proposed project areas attended by Ken Fuller of the Service and Kirsten Christopherson of Beale AFB; (10) telephone calls, electronic mail communications between Kirsten Christopherson and Ken Fuller, and other information available to the Service.

Consultation History

April 26, 2003. Beale AFB conducted an informal consultation with the Service regarding the presence of vernal pool fairy shrimp in the proposed project areas and the applicability of using the Service's 1996 U. S. Army Corps of Engineers *Programmatic Formal Endangered Species Act Consultation on the Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California.*

April 30, 2003. Beale AFB requested a species list from the Service.

July 20, 2004. A meeting between the representatives of the Service and Beale AFB was held in Sacramento, California, to discuss funding and proposed projects at Beale AFB.

July 30, 2004. Ken Fuller attended a site visit that was conducted by Kirsten Christopherson at the proposed project areas at Beale AFB.

August 30, 2004. The Service received a letter requesting formal consultation and a biological assessment for the proposed projects.

Project Description

The proposed Anti Terrorism/Force Protection Upgrades consist of two construction projects. The proposed projects were redesigned to avoid and minimize adverse effects to wetlands during the project pre-construction process. Design changes included horizontal drilling underneath wetlands for utilities, rerouting the new perimeter fence and relocating the proposed new K-5 training pad and fence line to minimize adverse effects to suitable vernal pool branchiopod habitats. The first project is the six-phase construction of a new security fence around the perimeter of Beale AFB. The six phases would be based and phased upon perceived security risks. The 30.85 miles of 7-foot (ft.) high chain link fence with metal posts set at 10-ft. intervals would be constructed in the existing firebreak 8 feet inside the existing barbed wire perimeter fence that surrounds Beale AFB. Within the existing graded and plowed firebreak, three-foot deep and one-foot wide holes would be drilled and filled with concrete to support the metal fence posts for the new chain link fence. Each 10-ft. section of fence would be anchored at the bottom with J-shaped rebar driven 24 inches into the ground to prevent fence movement. Installation warning signs would be placed every 100 yards along the new perimeter fence. At selected locations, solar-powered video cameras would be placed along the new perimeter fence to

provide real-time viewing of any activities. Electrical conduits would be installed along the inside of the new fence to provide power to the video cameras that would be solar powered. Two gaps in the new perimeter fence would have video cameras installed. One 1,030-ft. gap would occur where Dry Creek leaves the base. Another 150-ft. gap would occur where Best Slough exits the base. Both gaps would avoid adverse effects to riparian habitats and allow for unimpeded wildlife movements. At twenty-four locations, drainage passage gaps in the new perimeter fence would occur in places that have greater than a 10-ft. length across the drainage passages. A solar-powered "hotwire" would be installed along the entire length inside of the new fence to protect the fence from potential cattle damage. The action area of the proposed perimeter fence is within a 50-ft. area from the proposed fence line. The directly affected area is a 12-ft. area from the proposed fence centerline or existing base perimeter fence. The indirectly affected area is from 12 to 50 feet out from the proposed perimeter fence. All suitable habitats for federally-listed vernal pool crustaceans that touch or are completely contained within these affected areas are considered adversely affected by the proposed action.

The second project of the Anti Terrorism/Force Protection Upgrades projects is the construction and use of the Air Force Combat Ammunition Center (AFCOMAC) K-5 training pad and AFCOMAC fence. This kind of training is for Air Force personnel learning munitions storage, build-up, and tear-down procedures. A 43,726-square foot pad would be graded and graveled and the two short gravel two-lane access roads connecting the new AFCOMAC K-5 pad to existing asphalt roads would be regraveled. A 6,982-ft new chain link fence would be constructed around the new pad and tied into the new perimeter fence. The new AFCOMAC fence would have the same construction design and construction methods as the new perimeter fence. The action area for the proposed K-5 training pad is 50 feet out from the edge of the pad. That area from the pad edge out to 12 feet is considered the directly affected area and that area from 12 feet out to 50 feet is considered to be indirectly affected. The AFCOMAC fence has an action are of 50 feet. The directly affected area is 12 feet from the inside of the proposed fence to 2 feet of the outside of the proposed fence. The indirectly affected area on the inside of the proposed fence is from 12 to 50 feet and on the outside of the fence from 2 to 42 feet. All suitable vernal pool crustacean habitats that touch or are contained completely within these direct or indirectly affected areas are considered adversely affected by the proposed action.

Proposed Projects Avoidance, Minimization and Compensation Measures

A qualified biologist will monitor all construction activities to ensure compliance with the avoidance, minimization, and compensation components of the proposed actions. The biological monitor would assist construction personnel in compliance with conservation measures and guidelines. The biological monitor would be responsible for conducting environmental awareness training for construction crews before and before any new construction personnel join the work force. Awareness training will include all restrictions and guidelines to avoid and minimize effects to vernal pools, sensitive species and wetlands.

Construction crews would observe the following guidelines and restrictions: (1) all vehicle operators will observe the posted 20 mph speed limit on unpaved roads and posted speed limits on paved roads, (2) off-road vehicle travel will be prohibited outside of designated work areas, (3) no non-military firearms or pets will be allowed in the proposed work areas, and (4) all motor vehicles and equipment will be fueled in designated service areas. All construction work and staging areas near suitable vernal pool crustacean habitat will be staked and flagged before construction begins and all stakes and flagging will be removed within 60 days after construction completion. Likewise, all suitable vernal pool crustacean habitats located adjacent to construction areas will be protected by placing orange fencing barrier material or stakes and flagging around the wetland perimeter or vernal pool area. The locations of these barriers would be supervised by the biological monitor and clearly marked on all construction plans.

Rather than engage in wet- and dry-season surveying of all wetland features, Beale AFB has decided to agree that the federally-listed vernal pool invertebrate species occur in the vernal pools and swales and depressional seasonal wetlands given the amount of species present in the wetland features on the base. Beale AFB proposes to compensate for direct and indirect effects to suitable vernal pool branchiopod habitat from the proposed projects on the base vernal pool existing preservation and restoration areas. For every acre of habitat directly affected by the proposed actions, two acres of branchiopod habitat would be preserved and one acre would be restored on the base or at another ecosystem preservation bank approved by the Service. For every acre of suitable branchiopod habitat indirectly affected, Beale AFB proposes to compensate with two acres of similar brachiopod habitat preserved on Beale AFB or at another ecosystem preservation bank approved by the Service. The proposed projects would directly affect a total of 23.33 acres and indirectly affect 7.11 acres of suitable vernal pool and depressional seasonal wetlands of branchiopod habitat. Beale AFB proposes to preserve 60.89 acres and restore 23.333 acres of suitable branchiopod habitat.

History of Former Consultations at Beale AFB

The Service has completed twelve formal section 7 consultations with Beale AFB (Service file numbers 1-1-95-F-019, 1-1-97-F-025, 1-1-97-F-029, 1-1-97-F-035, 1-1-97-F-092, 1-1-98-F-0164, 1-1-98-F-094 (which amended 1-1-98-F-0164), 1-1-99-F-0159, 1-1-00-F-0226 (which was amended by 1-1-01-F-0104), 1-1-01-F-0192, 1-1-03-F-0218, and 1-1-04-F-0249. These formal consultation addressed effects to federally listed vernal pool invertebrates and, to a lesser extent, the threatened valley elderberry longhorn beetle (*Desmocerus californica dimorphus*). As a result of these formal consultations involving federally listed vernal pool crustaceans, Beale AFB has agreed to provide both preservation and restoration of vernal pools within the conservation areas designated in the Conceptual Vernal Pool Management Plan (CVPMP). The current historical Beale AFB obligation of vernal pool preservation and restoration acreage is outlined in Table 1.

The Service has issued twelve biological opinions for losses of vernal pool complexes and depressional seasonal wetlands at Beale AFB. Preservation of 10.974 wetted vernal pool acres

and restoration of 8.296 wetted vernal pool acres have already been accomplished in the vernal pool conservation areas on the western side of Beale AFB. Additional future vernal pool preservation and restoration would occur within the same vernal pool conservation areas that have been reserved for future proposed but nonspecific projects. Beale AFB completed Phase 1 of vernal pool restoration work in the Vernal Pool Restoration Area on the western side of Beale AFB. In 2001, a little over 16.24 wetted acres of vernal pools were restored to ecological signature in vernal pool restoration areas on the western side of Beale AFB and exceeds the 8.296 acres of restoration required from previous biological opinions.

Table 1
Vernal Pool Preservation and Restoration Compensation

Service Consultation Number	Preservation	Restoration	Total
95-F-019	paid TNC	paid Wildlands	none
97-F-025	0.054 acre	0.027 acre	0.081 acre
97-F-029	0.402 acre	0.016 acre	0.418 acre
97-F-035	0.068 acre	0.034 acre	0.102 acre
97-F-092	0.020 acre	0.010 acre	0.030 acre
98-F-0164	5.78 acres	4.34 acres	10.12 acres
99-F-0159	0.42 acre	0.021 acre	0.441 acre
00-F0226, (Well Fields Laterals, unauthorized fill, only)	0.00 acre	2.88 acres	2.88 acres
01-F-0104	0.684 acre	0.342	1.026 acres
01-F-0192	0.186 acre	0.066 acre	0.252 acre
03-F-0218	0.34 acre	0.04 acre	0.38 acre
04-F-0248	3.02 acres	0.52 acre	3.54 acres
Total Acres:	10.974 acres	8.296 acres	16.084 acres

In a letter to the Corps dated September 14, 1998, the Service commented on the Draft CVPMP for the Habitat Conservation and Management Plan (HCMP), Beale AFB, Yuba County, California. As stated in the September 14, 1998, letter and subsequent biological opinions issued by the Service to Beale AFB, the Air Force should preserve in perpetuity any vernal pool compensation acreage committed as a result of the completed consultations, regardless of whether the HCMP is finalized. In order to be in compliance with these previous biological opinions and this biological opinion, Beale AFB will need to commit to providing suitable occupied vernal pool crustacean habitat in perpetuity upon any future base disposal and reuse.

In 1998, Beale AFB developed a Base Comprehensive General Plan (General Plan) that outlined future development areas to support potential mission and workload expansion at Beale AFB. Implementation of the General Plan will result in the construction of facilities and other actions in areas presently classified as wildlife habitat. Some of these natural areas support or have suitable habitat to support threatened and endangered vernal pool shrimp species. In March of 1999, Beale AFB developed a draft HCMP to provide compensation for adverse effects on natural resources associated with implementation of the General Plan. The Draft Final Habitat Conservation and Management Plan was finalized in April 2002 and serves as a management guide for identifying effects and developing compensation for the vernal pool fairy shrimp and vernal pool tadpole shrimp. The main purpose of the HCMP is to streamline the compliance process with the Act and Clean Water Act (CWA) for future projects, and it also provides a comprehensive multi-habitat and multi-species approach to natural resource conservation at Beale AFB. The HCMP serves as a biological assessment under Section 7 of the Act and provides part of the information needed to initiate consultation with the Service and National Oceanographic and Atmospheric Administration. Upon implementation of the HCMP, any action taking place in specified development areas will have pre-approved conservation measures that would allow Beale AFB to implement the proposed projects identified in the General Plan while incorporating needed species conservation. Although the proposed projects in this biological opinion are not included in the General Plan, the proposed activities have similar intents and purposes to those of the General Plan, have similar effects to listed vernal pool crustaceans, and have the same compensation.

Implementation of the General Plan would result in the potential loss of up to 28.51 acres or more of existing seasonal wetland habitat for the vernal pool fairy shrimp and vernal pool tadpole shrimp. Subsequent wetland delineations may increase somewhat but not significantly the number of seasonal wetland features that may be occupied habitat for federally listed shrimp species. Adverse effects to other federally listed species have not been identified. The HCMP includes both seasonal wetland preservation and restoration components to compensate for adverse effects to federally-listed vernal pool invertebrates.

The Beale AFB Integrated Natural Resources Management Plan (INRMP) addresses natural resource management goals and objectives at the ecosystem level and was prepared in concert with the Base Comprehensive Plan, the Base General Plan, the HCMP, and the Cultural Resources Management Plan. Beale AFB prepared the INRMP to provide broad and specific management

recommendations with goals to achieve some aspects of preserving, improving, enhancing, and monitoring ecosystem integrity while meeting the mission requirements of Beale AFB. Although no specific set of projects are anticipated at this time other than what this biological opinion addresses, Beale AFB requested and received approval for exempting take authorization up to the amount of restoration extra credits that have resulted from the vernal pool restoration work that took place in 2001. The Service is exempting incidental take under this biological opinion for only those activities described in the project description and not any activities outlined in the General Plan, in concert with the INRMP, and addressed in the HCMP.

The HCMP is intended to conserve and off-set adverse effects to natural resources associated with implementation of some activities in any of the 14 General Plan Developments Areas through preservation, restoration, and creation of sensitive species habitats. The HCMP identifies one riparian area, two vernal pool creation areas, one vernal pool restoration area, and three vernal pool preservation areas totaling over 2,200 acres on mostly the west side of Beale AFB. The HCMP provides pre-conservation for any activities involving vernal pool resources in any of the development areas and limits the amounts of developments that can occur in three (the Golf Course, Munitions, and Flightline) of the 14 development areas. The HCMP and the seven habitat conservation areas provide sufficient size and quality of vernal pool complexes to off-set the removal of any threatened and endangered vernal pool invertebrates habitat within any of the 14 general plan areas. Specifically regarding vernal pools, Beale AFB contains a total of 332.4 wetted acres of vernal pools.

Status of the Species

On September 19, 1994, the vernal pool fairy shrimp was federally listed as threatened and the vernal pool tadpole shrimp was federally listed as endangered (59 **FR** 48136), primarily due to ongoing declines of habitat for these species. Critical habitat has been designated for these species (Service 2003); however, no critical habitat has been designated in the action area.

Vernal pool fairy shrimp inhabit seasonally ponded depressions in the Central Valley of California and a disjunctive occurrence on the Agate Desert in Oregon. The adults can be found in vernal pools from early December to early May. Females carry their eggs in a brood sac, and the eggs are either dropped to the pool bottom or remain in the brood sac until the female dies and sinks. The resting or "summer" eggs are known as "cysts." The cysts are capable of withstanding heat, cold and prolonged desiccation. When the pools refill in the same or subsequent seasons, some, but not all, of the cysts may hatch. The cyst bank in the soil may contain cysts from several years of breeding. The cysts hatch when the pools fill with rainwater, and the fairy shrimp develop rapidly into adults which often disappear early in the season, long before the vernal pools dry up. The vernal pool fairy shrimp ranges from Stillwater Plain in Shasta County through most of the length of the Central Valley to Paisley in Tulare County, and along the central coast range from northern Solano County to Pinnacles National Monument in San Benito County. Other occurrences are in Monterey County, one in Ventura County, one on the Santa Rosa Plateau in Riverside County, one near Rancho California in Riverside County, and one on the Agate Desert near Medford, Oregon.

Vernal pool tadpole shrimp also inhabit seasonally ponded pools in the Central Valley. Like vernal pool fairy shrimp, the tadpole shrimp occurrences lie dormant as cysts in pool sediments during the dry season and the eggs hatch after winter rainwater fills the pools. Sexually mature tadpole shrimp adults have been observed in vernal pools three to four weeks after the pools filled. Some cysts hatch immediately and the rest remain in the soil to hatch during later rainy seasons.

The vernal pool tadpole shrimp ranges from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Merced County, and from a single vernal pool complex on the San Francisco Bay National Wildlife Refuge in the City of Fremont, Alameda County (California Natural Diversity Database 2004).

Both the vernal pool tadpole shrimp and the vernal pool fairy shrimp occur on Beale AFB lands. In a 1996 vernal pool study on five geomorphic surfaces that occur on Beale AFB, the vernal pool tadpole shrimp adults were found in 21 vernal pools on Riverbank and two Modesto geologic surfaces. Active vernal pool fairy shrimp were found in vernal pools on Laguna, Modesto, and Riverbank geomorphic surfaces. Vernal pool depth had a positive effect and vernal pool surface area had a negative effect on the frequency of active vernal pool fairy shrimp (California Native Plant Society 1996).

Environmental Baseline

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated effects of all proposed Federal projects in the action area that have undergone section 7 consultation and the effects of State and private actions that are contemporaneous with the consultation in progress.

The vernal pool fairy shrimp and vernal pool tadpole shrimp are imperiled by habitat loss caused by a variety of human-caused activities, primarily urban development, water supply/flood control projects, and conversion of land to agricultural use. Only small proportions of the habitats of these crustaceans are protected from these threats. State and local laws and regulations have not been adequate to protect the listed vernal pool crustaceans. Other regulatory mechanisms necessary for the conservation of the habitat of the vernal pool fairy shrimp and the vernal pool tadpole shrimp have proven ineffective.

Holland (1978) estimated that between 60 and 85 percent of the habitat that once supported vernal pools, the endemic habitat of the vernal pool fairy shrimp and vernal pool tadpole shrimp, had been destroyed by 1973. In the ensuing 25 years, a substantial amount of the remaining habitat has been converted for human uses. The rate of loss of vernal pool habitat in the state has been estimated at 2 to 3 percent per year (Holland and Jain 1988). Rapid urbanization of the Central Valley of California currently poses the most severe threat to the continued existence of

the vernal pool fairy shrimp. The vernal pools under the jurisdiction of the Sacramento District of the U.S. Army Corps of Engineers include most of the known populations of the vernal pool fairy shrimp and the vernal pool tadpole shrimp (Coe 1988). Coe (1988) estimated that within 20 years, 60 to 70 percent of the habitat will be destroyed by human activities.

The habitat of the listed vernal pool crustaceans is highly fragmented throughout their ranges due to conversion of natural habitat for urban and agricultural uses. This fragmentation results in small isolated vernal pool fairy shrimp and vernal pool tadpole shrimp populations. Ecological theory predicts that such populations will be highly susceptible to extinction due to chance events, inbreeding depression, or additional environmental disturbance (Gilpin and Soule 1986; Goodman 1987a, b). Should an extinction event occur in a population that has been fragmented, the opportunities for recolonization are thought to be greatly reduced due to geographical isolation from other source populations.

The ephemeral wetlands that support this network of occurrences are remnants of what was formerly a pristine vernal pool ecosystem, but which has been converted to primarily agricultural and urban uses. This highly disturbed remnant habitat is not protected and the existing populations of the vernal pool fairy shrimp are imperiled by numerous human activities. These activities include excavations and maintenance procedures that alter local hydrological conditions, conversion of grasslands to vineyards, and activities that result in the introduction of toxic substances (*e.g.*, pesticides and spills, illegal dumping of hazardous materials).

Yuba County contains occurrences of both the vernal pool tadpole shrimp and vernal pool fairy shrimp. Vernal pools on Beale AFB are Northern Hardpan Vernal Pools and occur predominantly in the western central and southern portions of the base (Sawyer and Keeler-Wolf 1995). Beale AFB has identified and established three vernal pool preservation areas, one vernal pool restoration area, and two vernal pool construction areas to compensate for the adverse effects to the vernal pool tadpole shrimp and vernal pool fairy shrimp. On Beale AFB, dry season vernal pool sampling for federally-listed branchiopod cysts was conducted in 1,000 randomly selected vernal pools in 1995 and revealed that cysts of both vernal pool crustaceans were present. Wet season sampling was conducted in the same 1,000 vernal pools in 1996; vernal pool fairy shrimp were found in 134 pools and vernal pool tadpole shrimp were discovered in 29 pools (Jones and Stokes 1998b). Given the presence of the vernal pool crustacean species on Beale AFB, the Air Force has decided to assume the presence of the vernal pool tadpole shrimp and the vernal pool fairy shrimp in the vernal pools and depressional seasonal wetlands in the firebreak along the perimeter around Beale AFB and on the proposed new K-5 pad and fence areas.

Effects of the Action

Five of the six phases of the perimeter fence, the AFCOMAC K-5 pad, and the AFCOMAC fence would aversely affect suitable habitat for the federally-listed vernal pool crustaceans that are known to occur on Beale AFB. The proposed projects would result in direct effects to 23.333

acres of wetted vernal pool habitat and indirect effects to 7.111 acres of wetted vernal pool habitat for the listed vernal pool crustaceans. These direct and indirect effects are a result of digging holes for the metal poles every 10 feet in vernal pools and depressional seasonal wetlands, vehicle and construction equipment use, and access and activities needed for the proposed projects. Because construction activities would be limited to the dry season, it is anticipated that adverse effects to the species would be limited to the direct losses of vernal pool crustacean habitats, including vernal pools and depressional seasonal wetlands, along the perimeter fence and K-5 pad and associated fence. The proposed activities would result in vernal pool branchiopod cysts being destroyed, damaged or harmed as a result of soil hole drilling activities and vehicles and equipment driving on and crushing the cysts located in the vernal pool soils of the vernal pool grasslands that occur within the perimeter fence and K-5 pad and fence construction zones. Beale AFB proposes to compensate project-related effects by preserving existing vernal pool habitat and restoring additional suitable vernal pool branchiopod habitat on the base. Table 2 details the amounts of adverse effects and associated compensation for each part of the proposed actions.

Table 2
Summary of Proposed Project Components, Effects, and Associated Compensation (in acres)

Project	Affected Area		Preservation		Restoration		Total Compensation
	Direct	Indirect	Direct	Indirect	Direct	Indirect	
Phase 1 Fence	0.320	0.053	0.640	0.106	0.320	-	1.066
Phase 3 Fence	0.806	0.235	1.612	0.470	0.806	-	2.888
Phase 4 Fence	16.185	5.333	32.370	10.666	16.185	-	59.221
Phase 5 Fence	0.430	0.125	0.860	0.250	0.430	-	1.540
Phase 6 Fence	5.080	0.929	10.160	1.858	5.080	-	17.098
AFCOMAC K-5 Pad	0.088	0.231	0.176	0.462	0.088	-	0.726
AFCOMAC Fence	0.424	0.205	0.848	0.410	0.424	-	1.682
Total acres	23.333	7.111	46.666	14.222	23.333	-	84.221

As stated in the November 1998 *Final Conceptual Vernal Pool Restoration and Monitoring Plan,* Beale AFB proposes to compensate all vernal pool effects within the Beale General Plan

development area through preservation at a minimum target ratio of 2.0:1 and restoration/creation at a 1.0:1 ratio. The proposed compensation for the proposed projects that are subject of this biological opinion will result in the preservation of 60.44 acres and the restoration of 23.333 acres. Conservation of habitat at these ratios would offset effects to vernal pool fairy shrimp and vernal pool tadpole shrimp resulting from activities associated with the proposed perimeter fence construction and K-5 pad and fence construction projects. Additionally, implementation of the General Plan and Phase 2 of the CVPRM plan that would provide restored vernal pool habitat that is preserved and managed in perpetuity in those compensation areas would meet the conservation needs of the species.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act. The Service anticipates that a range of activities at Beale AFB will affect the vernal pool tadpole shrimp and the vernal pool fairy shrimp. Such activities may include, but are not limited to, flood control, roadway and utility projects, use of chemical products that may be result in non-target contamination, as well as expansion of on-base facilities for military or military-relayed activities. We anticipate that most, if not all, of these activities at Beale AFB will be funded or carried out by the Air Force.

Conclusion

After reviewing the current status of the listed vernal pool crustaceans, the environmental baseline for the action area, the effects of the proposed actions and the cumulative effects, it is the Service's biological opinion that the proposed actions are not likely to jeopardize the continued existence of the vernal pool fairy shrimp or vernal pool tadpole shrimp. The Service reached this conclusion because the project-related effects to these species would be not rise to the level of precluding recovery of either species or reducing the likelihood of survival of the species. Additionally, the proposed conservation measures would offset the adverse effects from the proposed actions through habitat compensation as proposed and already implemented in the CVPRM and HCMP. Currently, no critical habitat has been designated for vernal pool fairy shrimp and vernal pool tadpole shrimp in the action area; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulations issued pursuant to section 4(d) of the Act, prohibit take of endangered and threatened species without a special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is

defined by the Service as an action that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), such incidental taking is not considered to be a prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary and must be implemented by the Air Force, as appropriate, in order for the exemption in section 7(o)(2) to apply. Beale AFB has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Air Force fails to comply with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates incidental take of the listed vernal pool crustaceans will be difficult to detect for the following reasons: (1) these species have small body size, therefore finding a dead or injured specimen is unlikely; (2) these species occur in habitats that makes detection difficult; and (3) losses may be masked by seasonal and annual fluctuations in numbers, chance events, changes in water regime, or additional environmental disturbance. Due to the difficulties in quantifying the number of individuals that will be taken as a result of the proposed action, the Service is quantifying take incidental to this project as the number of acres of suitable habitat for the listed crustacean species that will become less suitable for this species as a result of the action. The Service estimates that all vernal pool fairy shrimp and all vernal tadpole shrimp inhabiting 23.333 acres of vernal pool habitat would be directly lost and 7.111 acres of vernal pool habitat (including 3.287 acres off-base but contiguous with wetlands on the base) will be indirectly affected as a result of the proposed projects.

Upon implementation of the following reasonable and prudent measures, the proposed project loss of 30.444 wetted acres (23.333 plus 7.111) of suitable vernal pool branchiopod habitat will become exempt from the prohibitions described under section 9 of the Act. The listed vernal pool crustaceans may be harmed, harassed, killed, or injured in association with the project-related activities that are exempted under Section 9 of the Act. No take that is not associated with the proposed projects described in this document is authorized under this biological opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take of 30.444 acres of suitable vernal pool crustacean habitat is not likely to result in jeopardy to the vernal pool fairy shrimp, vernal pool tadpole shrimp, or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the impact of taking vernal pool crustaceans:

1. Minimize direct and indirect effects to the vernal pool tadpole shrimp and vernal pool fairy shrimp during project construction.

2. The effects of habitat loss to the two federally-listed vernal pool crustaceans shall be minimized through preservation of natural vernal pools and restoration of vernal pools that will contribute to the conservation of the species.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, Beale AFB must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary:

1. The following terms and conditions implement reasonable and prudent measure number one (1):

    A. The Air Force shall minimize the potential for take of the vernal pool fairy shrimp and the vernal pool tadpole shrimp from project-related activities by implementation of the conservation measures as described in the biological assessment and the project description of this biological opinion. However, the terms and conditions of this biological opinion will take precedence over the Air Forces Plans in instances where the actions in the terms and conditions exceed those in the Plans as noted in the Project Description.

    B. If the Air Force utilizes an outside contractor to implement the proposed projects, the Air Force shall include a copy of this biological opinion within its solicitations and contracts for construction on the proposed Perimeter Fence and AFCOMAC K-5 pad and fence projects making the prime contractor responsible for implementing all requirements and obligations included in this biological opinion, and to educate and inform all other contractors involved in the proposed projects as to the requirements of the biological opinion.

    C. High visibility fencing that is at least 1.5 meters (5 feet) in height shall be placed and maintained around any avoided vernal pool habitat to prevent vehicle entry during project construction. No construction material or soil shall be placed within 50 feet of the any avoided vernal pools.

D. All garbage and construction-related materials in construction areas shall be removed immediately following project completion.

E. The Air Force shall implement Best Management Practices (BMPs) to prevent sediment from entering the avoided vernal pools that will not be permanently destroyed at the project sites, including, but are not limited to, silt fencing, hay bales, no cleaning equipment in or near the vernal pools and other wetlands, and temporary sediment disposal.

F. A qualified biologist shall be on-site or on-call during all activities that could result in the take of the vernal pool fairy shrimp and the vernal pool tadpole shrimp. The qualifications of the biologist must be presented to the Service for review and approval prior to any ground-breaking at the project sites. The biologist must be given the authority to stop any work that may result in take of the vernal pool tadpole shrimp or the vernal pool fairy shrimp. If the biologist exercises this authority, the Service and the California Department of Fish and Game (CDFG) must be notified by telephone and letter within one (1) working day.

G. A worker training program about the vernal pool fairy shrimp and vernal pool tadpole shrimp for construction personnel shall be conducted before groundbreaking at the proposed projects. The program shall provide workers with information on their responsibilities with regard to listed vernal pool species, an overview of the life-history of the species, and a description of the measures being taken to reduce effects to these species during project construction. The Air Force shall submit proof of the training to the Chief of the Endangered Species Division (Central Valley), Sacramento Fish and Wildlife Office (SFWO), 2800 Cottage Way, Room W-2605, Sacramento, California, 95825-1846.

H. The Air Force shall ensure that, if pesticides and herbicides at the proposed project sites are implemented, label and other restrictions mandated by the U.S. Environmental Protection Agency and California Department of Food and Agriculture are observed as well as any additional project-related recommendations by the Service or the California Department of Fish and Game.

I. Upon completion of the project, all vernal pool fairy shrimp and vernal pool tadpole shrimp habitat subject to temporary ground disturbances, including storage and staging areas, etc. shall be re-contoured to original contours, and be allowed to revegetate to promote restoration of the area to its original conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that, after project completion, will not be subject to further disturbance and has the potential to revegetate.

J. If requested, during or upon completion of construction activities, the on-site biologist, or a representative from the Air Force shall accompany Service and/or California Department of Fish and Game personnel on an on-site inspection of the site to review project effects to the vernal pool fairy shrimp and the vernal pool tadpole shrimp, and their habitats.

2. The following terms and conditions implement reasonable and prudent measure number two (2):

A. As described on pages 5-2 and 5-3 of the biological assessment and in the project description of this biological opinion, the direct effects to vernal pool crustacean habitat resulting from the proposed project shall be minimized through vernal pool preservation at a 2.0:1 ratio. No less than 60.888 (46.666. plus 14.333) wetted acres of vernal pools shall be preserved within the CVPRM areas. The preserved vernal pools and their surrounding watershed shall be protected as vernal pool habitat, managed for the benefit of listed vernal pool crustaceans, and preserved in perpetuity from future development.

B. As described on pages 5-2 and 5-3 of the biological assessment and in the project description of this biological opinion, the indirect effects to vernal pool crustacean habitat resulting from the proposed project shall be minimized through vernal pool restoration at a 1.0:1 ratio. No less than 23.333 wetted acres of suitable vernal pool crustacean habitat shall be restored within areas identified by the CVPRM plan. The 23.333 acres of restored vernal pools and their surrounding watershed shall be protected as vernal pool crustacean habitat, managed for the benefit of federally-listed listed vernal pool crustaceans, and preserved in perpetuity from future development.

C. Beale AFB shall report to the Service the completion of vernal pool restoration work in association with the proposed projects.

D. If the Air Force would ever vacate or transfer title to any part of the lands set aside as vernal pool preservation or restoration/creation, the Air Force shall assure provisions are in place, prior to vacating or transferring title, for the protection of the vernal pool tadpole shrimp and vernal pool fairy shrimp and their habitat in perpetuity.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can

be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of informational databases.

1. The Air Force should implement conservation measures, assist or fund any research, or allow access for research on Beale AFB that promotes the recovery of listed vernal pool crustaceans or their habitats.

2. The Air Force should provide educational opportunities addressing the value and importance of maintaining healthy ecosystems, including vernal pool habitat to local school districts, interested groups, or individuals.

3. In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the proposed Perimeter Fence and K-5 pad and fence projects. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if; (1) the amount or extent of incidental take is exceeded, (2) new information reveal effects of the proposed action may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the proposed action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Ken Fuller or the Acting Sacramento Valley Branch Chief of my staff at (916) 414-6645.

Sincerely,

for Kenneth Sanchez
Acting Field Supervisor

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Appendix E

Air Emissions Calculations and Report

Summary	Summarizes total emissions by calendar year.
Construction Emissions	Estimates emissions from demolition, grading, trenching, building construction, building painting, and paving along with equipment exhaust and vehicle traffic from construction workers. Assumes two generator sets running during the construction phase. URBEMIS 2007 Version 9.2.4 Combined Annual Emissions Report (Tons/Year) provides annual emission estimates. URBEMIS 2007 Version 9.2.4 Combined Summer Emissions Report (Pounds/Day) provides daily emission estimates. Refer to these URBEMIS reports for detailed information on assumptions made in the emission estimates.
Operational Emissions	Emissions from permitted heater stationary source.
AQCR Tier Report	Summarizes total emissions for the Sacramento Valley Intrastate AQCR Tier Reports for 2001, to be used to compare project to regional emissions.

Air Quality Emissions from the Proposed Action

Construction Emissions

	Emission Source	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
CY2010	Construction Emissions	3.296	0.945	2.266	0.00039	9.010	2.030	324.870
	TOTAL CY2010	***3.296***	***0.945***	***2.266***	***0.00039***	***9.010***	***2.030***	***324.870***

	Emission Source	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
CY2011	Construction Emissions	1.744	0.219	1.020	0.000068	8.893	1.923	172.426
	TOTAL CY2011	***1.744***	***0.219***	***1.020***	***0.000068***	***8.893***	***1.923***	***172.426***

Note: All CY2010 and CY2011 emissions from URBEMIS2007 Version 9.2.4 (See Combined Annual Emissions Report)
Annual emissions reported are unmitigated.
PM_{10} emissions are the sum of PM_{10} Dust and PM_{10} Exhaust.
$PM_{2.5}$ emissions are the sum of $PM_{2.5}$ Dust and $PM_{2.5}$ Exhaust.
URBEMIS estimates emissions of reactive organic gas (ROG). For purposes of this worksheet ROG = VOC.

Greenhouse Gas Emission Comparison

				Percent of California
	California CO_2 emissions in 2006 =	492,000,000	metric tons	CO_2 Emissions
CY2010	Proposed Action CO_2 emissions converted to metric tons =	295	metric tons	0.00006%
CY2011	Proposed Action CO_2 emissions converted to metric tons =	156	metric tons	0.00003%

Since future year budgets were not readily available, actual 2001 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Sacramento Valley Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2001	77,802	66,345	350,347	10,819	57,082	18,787

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 24 March 2009.

Determination Significance (Significance Threshold = 10%)

CY2010

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	77,802	66,345	350,347	10,819	57,082	18,787
CY2010 Emissions	3.296	0.945	2.266	0.000	9.010	2.030
CY2010 %	**0.0042%**	**0.0014%**	**0.0006%**	**0.0000036%**	**0.016%**	**0.011%**

CY2011

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	77,802	66,345	350,347	10,819	57,082	18,787
CY2011 Emissions	1.744	0.219	1.020	0.000	8.893	1.923
CY2011 %	**0.0022%**	**0.00033%**	**0.00029%**	**0.00000063%**	**0.016%**	**0.010%**