DRAFT FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT FOR SOCCER FIELD COMPLEX
TRAVIS AFB, CALIFORNIA

Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States Code (USC) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ) Regulations, Title 40, Code of Federal Regulations (CFR) §1500-1508, and 32 CFR §989, Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential environmental consequences associated with the proposed construction of a Soccer Field Complex at Travis AFB, Solano County, California.

The purpose of the Proposed Action is to create year-round recreational services for military and civilian personnel and their families. The need is to increase the network of support and leisure services at Travis AFB, thus improving morale and wellbeing.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with construction of a Soccer Field Complex at Travis AFB, and provides environmental protection measures to avoid or reduce adverse environmental impacts.

The EA considers all potential impacts of Alternative 1, Alternative 2 (Preferred Alternative), and the No-Action Alternative. The EA also considers cumulative environmental impacts with other projects at Travis AFB.

ALTERNATIVE 1
Alternative 1 includes the construction of a Soccer Field Complex, including a parking lot and support facilities, on a site west of the Twin Peaks Chapel, north of Hackett Avenue and east of Armstrong Street, in the northwest portion of the Base. Access to the parking lot and soccer field would be from Armstrong Street. The site was previously residential housing, but all structures and interior roads have been demolished and cleared, and the site is now a grassy field with a few large trees.

ALTERNATIVE 2 (PREFERRED ALTERNATIVE)
Alternative 2 includes the construction of a Soccer Field Complex, including a parking lot and support facilities, at the site of an existing blue running track. The running track would remain in place, with the soccer field placed inside the loop. Alternative 2 is bounded by Turner Street to the north, Collins Drive to the south, Burgan Boulevard to the west, all located on Travis AFB

NO-ACTION ALTERNATIVE
Under the No-Action Alternative, the Preferred Alternative (or any of the action alternatives) would not occur and the Soccer Field Complex would not be constructed. This alternative would not meet the goal of providing the most useful of year-round recreational opportunities to base personnel and their dependents. There would be no official soccer-dedicated fields or facilities on Travis AFB. This alternative would not meet the goal of increasing the network of support and leisure services at Travis AFB.

SUMMARY OF FINDINGS
The analyses of the affected environment and environmental consequences of implementing the Proposed Action (or alternatives) presented in the EA concluded that by implementing conservation

measures in Appendix A of the EA [Project Analysis submitted to United States Fish and Wildlife Service (USFWS)], Travis AFB would be in compliance with all terms and conditions and reporting requirements for implementation of the reasonable and prudent measures stipulated by the USFWS.

All of the emissions projected from the Proposed Action would fall well below the *de minimis* thresholds for the general conformity rule. As such, a rigorous Conformity Determination is not required for the Proposed Action.

The Air Force has concluded that no significant adverse effects would result to the following resources as a result of the Proposed Action: air quality, greenhouse gas emissions and climate change; water resources; biological resources; cultural resources; and recreation. No significant adverse cumulative impacts would result from activities associated with Alternative 1 or Alternative 2 (Preferred Alternative), when considered with past, present, or reasonably foreseeable future projects at Travis AFB. In addition, the EA concluded that the action alternatives would not affect airspace, noise, hazardous materials/waste, utilities and infrastructure, safety and occupational health, environmental justice, and socioeconomics.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that the Construction of a Soccer Field Complex would not have a significant environmental impact, either by itself or cumulatively with other projects at Travis AFB. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

_____ Date _____

COREY A. SIMMONS, Colonel, USAF
Commander, 60th Air Mobility Wing

Draft

Environmental Assessment for Soccer Field Complex

Travis Air Force Base, California

September 2020

Prepared for:
United States Air Force
Civil Engineer Center

BPA W9128F-11-A-0031, 0006

ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AMW	Air Mobility Wing
APE	Area of Potential Effect
BA	Biological Assessment
BAAQMD	Bay Area Air Quality Management District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CEQ	Council on Environmental Quality
CES	Civil Engineering Squadron
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CTS	California tiger salamander
CWA	Clean Water Act
DoD	Department of Defense
EA	Environmental Assessment
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
GIS	Geographic Information System
HAP	hazardous air pollutant
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrous oxide
NRHP	National Register of Historic Places
O_3	ozone
Pb	lead
PM_{10}	particulate matter less than or equal to 10
$PM_{2.5}$	particulate matter less than or equal to 2.5
ROG	reactive organic compound
ROI	region of influence
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
TBD	to be determined
UFC	Unified Facilities Criteria
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

COVER SHEET

ENVIRONMENTAL ASSESSMENT FOR CONSTRUCTION OF A SOCCER FIELD COMPLEX AT TRAVIS AIR FORCE BASE, CALIFORNIA

a. Responsible Agency: U.S. Air Force (USAF)

b. Proposed Action: The USAF proposes to construct a Soccer Field Complex (including the field, parking area, and support buildings) at Travis Air Force Base (AFB).

c. Written comments and inquiries regarding this document should be directed to: Seth Merdler, 60th Civil Engineering Squadron, 411 Airmen Drive, Bldg. 570, Travis AFB, CA 94535-2001.

d. Designation: Draft Environmental Assessment (EA).

e. Abstract: The USAF has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 and other applicable laws. This EA analyzes the potential environmental impacts resulting from the proposed construction of a Soccer Field Complex at Travis AFB in Fairfield, California. The EA evaluates two Action Alternatives and the No-Action Alternative. This EA includes a detailed analysis of the Proposed Action's potential environmental consequences on the following resources: air quality, greenhouse gas emissions, and climate change adaptation; water resources; biological resources; cultural resources; and recreation.

Executive Summary

The United States (U.S.) Air Force (USAF) has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §§ 4321-4370h), as implemented by the Council on Environmental Quality implementing regulations (40 Code of Federal Regulations Parts 1500-1508). The USAF has prepared this EA to analyze the potential environmental impacts resulting from the proposed construction of a Soccer Field Complex at Travis Air Force Base (AFB) in Fairfield, California.

The purpose of the Proposed Action is to create year-round recreational services for military and civilian personnel and their families. The need is to increase the network of support and leisure services at Travis AFB, thus improving morale and wellbeing. Providing this network of support and leisure services to military personnel and their families is an integral part of the mission of each installation and armed services branch.

The Proposed Action is to construct a new Soccer Field Complex; the following alternatives were examined: Alternative 1, Alternative 2 (Preferred Alternative), and the No-Action Alternative. Alternative 1 would involve the construction of a Soccer Field Complex west of Twin Peaks Chapel. Alternative 2 (Preferred Alternative) would involve construction of a Soccer Field Complex at the Blue Track Location. Under the No-Action Alternative, no Soccer Field Complex would be constructed.

The following resource areas were evaluated for potential environmental consequences: air quality, greenhouse gas emissions, and climate change adaptation; water resources; biological resources; cultural resources; and recreation. Based on the nature of the activities that would occur under the Proposed Action and alternatives and the potential environmental consequences analyzed in this EA, the USAF has determined that no significant impacts would occur with implementation of the Proposed Action.

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1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The United States (U.S.) Air Force (USAF) and 60th Civil Engineering Squadron (CES)/Civil, Environmental, and Infrastructure Engineering at Travis Air Force Base (AFB) prepared this Environmental Assessment (EA) analyzing the potential impacts of establishing a soccer field facility (including the field, parking area, and support buildings) at Travis AFB. This EA was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) (Public Law 91-190), Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508), and the USAF's implementing regulations (32 CFR § 989) to determine the potential environmental consequences of implementing the Proposed Action at Travis AFB. In addition to the Proposed Action, NEPA requires the USAF to analyze the No-Action Alternative. Under the No-Action Alternative, no soccer field, parking lot, or support facilities would be constructed at this time.

1.2 Background

1.2.1 Travis Air Force Base Location

Travis AFB occupies 6,383 acres within the city limits of Fairfield. It is located 50 miles northeast of San Francisco, and about 40 miles southwest of Sacramento (U.S. Army Corps of Engineers [USACE] 2015). The Base is just north of Suisun Bay and Marsh, which is northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region (Figure 1-1).

1.2.2 Travis Air Force Base Major Tenants and Organizations

Travis AFB is under the operational control of the USAF's Air Mobility Command (AMC) and hosts the 60th and 349th Air Mobility Wings (AMWs). The 60th AMW is the largest air mobility organization within the USAF (in terms of personnel) and supports operations of C-5 Galaxy cargo aircraft, the KC-10 Extender refueling aircraft, and the C-17 Globemaster III cargo aircraft. In partnership with the 60th AMW the largest reserve wing, the 349th AMW, also makes its home at Travis AFB with its four flying squadrons, three Aerial Port Squadrons, and three Aircraft Maintenance Squadrons.

1.3 Purpose of and Need for the Action

The purpose of the Proposed Action is to create year-round recreational services for military and civilian personnel and their families. The need is to increase the network of support and leisure services at Travis AFB, thus improving morale and wellbeing. Providing this network of support and leisure services to military personnel and their families is an integral part of the mission of each installation and armed services branch. Although facilities vary from installation to installation, it is notable that there are currently no official soccer-dedicated fields or facilities at Travis AFB. Soccer is commonly considered the most popular and most played sport in the world, which most school-aged children in the U.S. play at some point during their formative years.

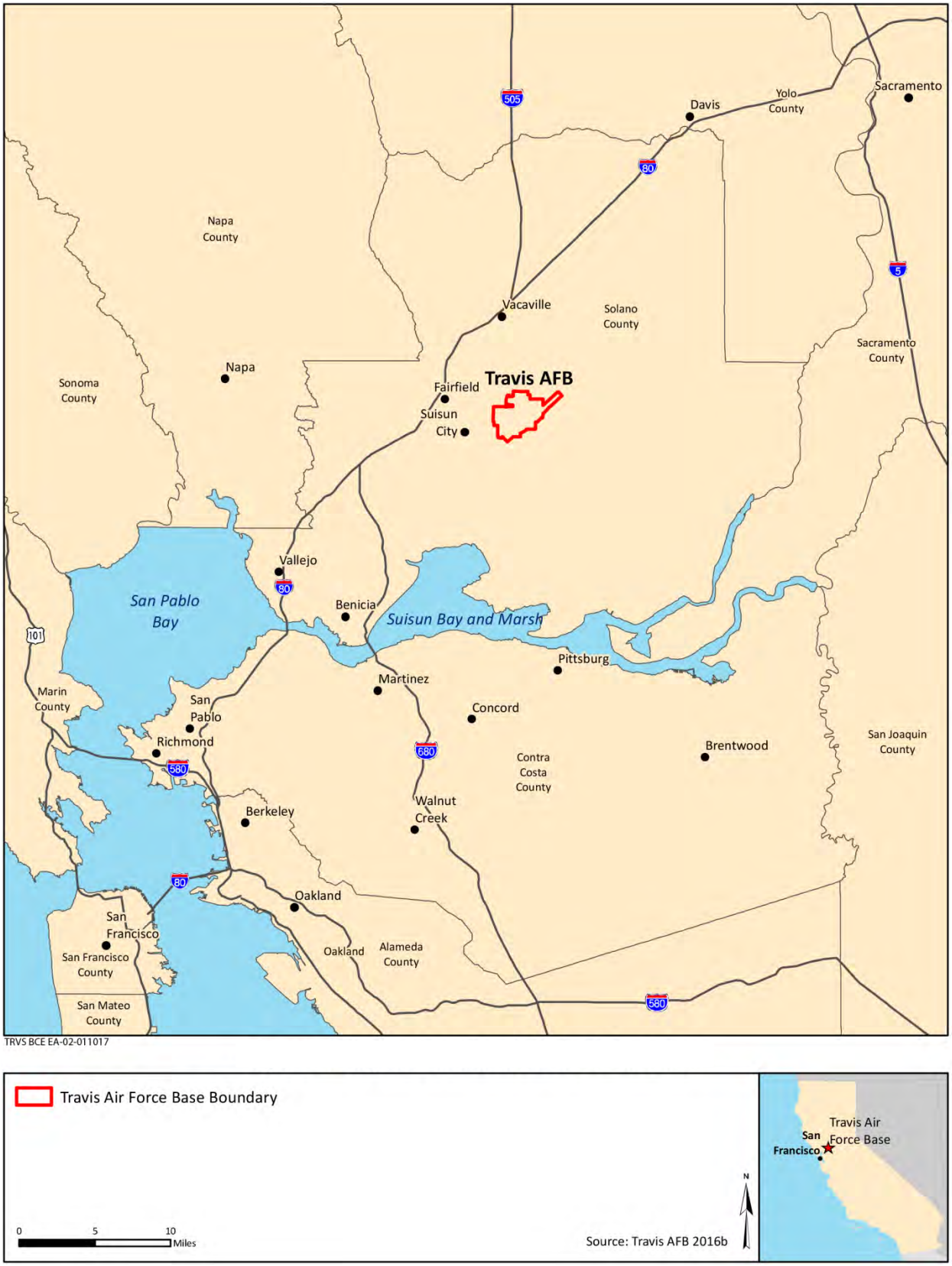

Figure 1-1. Regional Location of Travis Air Force Base

1.4 Decision to Be Made

This EA evaluates the potential environmental consequences of implementing the Proposed Action on Travis AFB, which is to provide useful recreational opportunities for its personnel and families. Based on the analysis in this EA, the USAF, specifically 60 AMW, will make one of three decisions regarding the Proposed Action. The first is to choose the alternative action that best meets the purpose of and need for this project and sign a Finding of No Significant Impact (FONSI), allowing implementation of the selected alternative. Second, initiate preparation of an Environmental Impact Statement if it is determined that significant impacts would occur through implementation of the action alternatives; or third, select the No-Action Alternative, whereby the Proposed Action would not be implemented. As required by NEPA and its implementing regulations, preparation of an environmental document must precede final decisions regarding the proposed project and be available to inform decision makers of the potential environmental impacts.

1.5 Cooperating Agency and Intergovernmental Coordination and Consultations

1.5.1 Cooperating Agency

A cooperating agency is one that has special expertise with respect to any particular environmental issue that must be addressed in the document. Upon request of the lead agency, in this case the USAF, any federal, state, or local agency of similar qualifications or that has jurisdiction by law can participate in the environmental impact analysis process as a cooperating agency. When the effects are on lands of tribal interest, a Native American tribe can also participate as a cooperating agency. There are no cooperating agencies associated with this EA.

1.5.2 Interagency and Intergovernmental Coordination and Consultations

As required by the Intergovernmental Coordination Act of 1968, and Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, interagency and intergovernmental coordination is being conducted. The USAF sent letters to interested and affected government agencies, government representatives, elected officials, and interested parties potentially affected by the Proposed Action on October 13, 2016 and American Indian Tribes (including both federally and State of California recognized tribes) on April 10, 2017. The persons and agencies contacted for this coordination and the associated correspondence are provided in Appendix A. Letters sent to agencies, interested parties, Chambers of Commerce, and libraries announced the USAF's intent to prepare an EA, summarized the Proposed Action and preliminary alternatives, and solicited comments. Relevant comments were considered and addressed (as applicable) in this Draft EA.

1.5.2.1 State Historic Preservation Office and United States Fish and Wildlife Service

In accordance with the National Historic Preservation Act Section 106 consultation(s), the California State Historic Preservation Office (SHPO) was sent a letter on October 13, 2016, notifying them of the Proposed Action and the USAF determination that the action would have no effects on historic properties. This is because construction would be minimal, and the activities are not anticipated to harm or affect any of the known historic properties. The SHPO concurred with this finding on June 14, 2017. Appendix A provides a copy of the letter and any agency response.

Several special status species may be present or have been previously documented at Travis AFB (Travis AFB 2016b, U.S. Fish and Wildlife Service [USFWS] 2016). As a result, the letter to the USFWS, sent

October 13, 2016, requested concurrence of the USAF determination that Endangered Species Act (ESA) section 7 consultation would apply to this Proposed Action and a Biological Assessment is needed to determine whether the Proposed Action may affect listed or proposed species and designated and proposed critical habitat. The USAF conducted a Base-wide programmatic section 7 consultation with the USFWS in 2018 for multiple classes of actions at Travis AFB, which resulted in a Base-wide Biological Opinion being issued by the USFWS (USFWS 2018). Per the Programmatic Agreement between Travis AFB and USFWS, a Project Analysis for the Proposed Action was submitted to the USFWS on February 18, 2020 that outlines potential impacts to federally listed species (see Appendix A for correspondence).

1.5.2.2 Government-to-Government

The EO 13175, *Consultation and Coordination with Indian Tribal Governments* (November 2000), directs federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. Consistent with EO 13175, Department of Defense (DoD) Instruction 4710.02 (*DoD Interactions with Federally-Recognized Tribes*) and Air Force Instruction 90-2002 (*Air Force Interactions with Federally-Recognized Tribes*), tribes that are historically affiliated with the Travis AFB geographic region were invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal coordination process is distinct from NEPA consultation or the interagency coordination process and requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The Travis AFB point-of-contact for Native American tribes is the Wing Commander and the Installation Tribal Liaison Officer. In accordance with these requirements, the USAF sent letters on April 6, 2017 to two federally recognized tribes: Yocha Dehe Wintun Nation and Cortina Indian Rancheria Indians of California. The letters requested consultation with the tribes, asked for input on any concerns or information of traditional resources within Travis AFB with the potential to be impacted by the Proposed Action, and requested meetings at their convenience to discuss their concerns. On June 1, 2017 representatives of the Yocha Dehe Wintun Nation visited Travis AFB for site inspections. Representatives of the Yocha Dehe Wintun Nation and Cortina Indian Rancheria Indians of California both verbally stated that they have no concerns with either of the Soccer Field Complex alternative sites. Appendix A contains copies of the correspondence.

1.5.2.3 Public Notification and Review

Publication of the Notice of Availability was announced in The Vacaville Reporter, The Daily Republic, and The Tailwind newspapers, notifying the public of the availability of the Draft EA and unsigned Draft FONSI. The advertisement provided the list of libraries where the EA and FONSI were available for review (Appendix A).

1.6 Applicable Laws and Environmental Regulations

1.6.1 National Environmental Policy Act

In accordance with NEPA, federal agencies are required to take into consideration potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process. The CEQ subsequently issued *Regulations for Implementing the Procedural Provisions of the NEPA* (40 CFR §§ 1500-1508). These regulations specify that an EA be prepared to:

- briefly provide sufficient analysis and evidence for determining whether to prepare an EIS or a FONSI;
- aid in an agency's compliance with NEPA when no EIS is necessary; and
- facilitate preparation of an EIS when one is necessary.

To comply with NEPA and other pertinent environmental requirements, such as the ESA and the National Historic Preservation Act (NHPA), and to assess impacts on the environment, the decision-making process includes a study of baseline environmental conditions and an analysis of the potential impacts on these conditions that may result from implementing the Proposed Action alternatives. The USAF's regulatory requirements with respect to NEPA are promulgated at 32 CFR § 989.

1.6.2 Water Resources Regulatory Requirements

The Clean Water Act (CWA) of 1972 (33 USC § 1251 et seq.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA, and EO 11990, Protection of Wetlands, regulate development activities in or near streams or wetlands. Section 404 also regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in wetlands.

Floodplain Management, EO 11988 (1977), requires all federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains. To improve the Nation's resilience to current and future flood risk that is anticipated to increase over time due to the effects of climate change and other threats, the President's *Climate Action Plan* (June 2013) directs federal agencies to take the appropriate actions to reduce risk to federal investments, specifically to update their flood-risk reduction standards. On January 30, 2015, the President signed EO 13690, establishing a *Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, which amended EO 11988 and established Federal Flood Risk Management Standards. These new standards require all future federal investments in and affecting floodplains to meet a higher level of resilience.

Storm water runoff is a leading contributor to water pollution in urban and developing areas in the U.S. Section 438 of the Energy Independence and Security Act of 2007 requires agencies to protect water resources by reducing storm water runoff from any federal development projects. Federal projects with a footprint larger than 5,000 square feet must maintain predevelopment hydrology and prevent any net increase in storm water runoff as outlined in Unified Facilities Criteria (UFC) 3-210-10, *Low Impact Development* (as amended, 2015), and consistent with the USEPA's Technical Guidance on Implementing the Storm Water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act (2009). Additionally, projects must comply with the permit requirements for stormwater discharges from Small Municipal Separate Storm Sewer Systems (MS4).

In September of 2014, California Governor Brown signed several bills related to groundwater management, Senate Bill (SB) 1168, Assembly Bill (AB) 1739, and SB 1319 composing the groundwater management legislation package and the Sustainable Groundwater Management Act (SGMA), which became effective on January 1, 2015. SGMA gives local agencies the authorities to manage groundwater in a sustainable manner and allows for limited state intervention when necessary to protect groundwater resources. SGMA requires the creation of groundwater sustainability agencies (GSA) to develop and implement local plans, allowing 20 years to achieve sustainability. SGMA provides a state framework to regulate groundwater for the first time in California history (Solano County Water Agency 2016a).

1.6.3 Cultural Resources Regulatory Requirements

The National Historic Preservation Act (NHPA) of 1966 (54 USC § 300101 et seq., as amended) was enacted to preserve historical and archaeological sites in the U.S. The act created the National Register of Historic Places (NRHP), the SHPOs, and the Advisory Council on Historic Preservation. Cultural resources include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. The NHPA requires federal agencies to consider potential impacts to cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their traditional culture. Section 106 (54 USC 306108) requires federal agencies to consult with the SHPO if their undertakings might affect such resources. *Protection of Historic and Cultural Properties* (36 CFR § 800 [2004]) provided an explicit set of procedures for federal agencies to meet their obligations under the NHPA, which includes inventory of resources and consultation with SHPO.

The *American Indian Religious Freedom Act* (42 USC § 1996) established federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The *Native American Graves Protection and Repatriation Act* (25 USC §§ 3001-3013) requires consultation with Native American tribes prior to excavation or removal of human remains and certain objects of cultural importance. The *Archaeological Resources Protection Act of 1979* (16 USC §§ 470aa-mm) was created to protect archaeological resources and sites on public and Native American lands in addition to encouraging cooperation and exchange of information between governmental authorities, professionals, and private individuals. The act established civil and criminal penalties for destruction and alteration of cultural resources.

On November 27, 1999, the DoD promulgated its *Annotated American Indian and Alaska Native Policy*, which emphasizes the importance of respecting and consulting with tribal governments on a government-to-government basis. This policy requires an assessment, through consultation, of the effect of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands before decisions are made by the respective services, as does DoD Instruction 4710.02, *Interaction with Federally Recognized Tribes* (September 14, 2006). In addition, coordination with federally recognized Native American tribes must occur in accordance with EO 13175, *Consultation and Coordination with Indian Tribal Governments* and AFI 90-2002, *Air Force Interactions with Federally Recognized Tribes* (November 19, 2014). Cultural resources management is directed by the base's Integrated Cultural Resources Management Plan (ICRMP) (Travis AFB 2016a). Section 106 consultation and government-to-government consultation for this project is on-going (see Appendix A for correspondence).

1.6.4 Air Quality Requirements

The Clean Air Act (CAA) (42 USC §§ 7401-7671q, as amended) provided the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants: ozone (O_3), nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), both coarse and fine inhalable particulate matter (less than or equal to 10 microns in aerodynamic diameter [PM_{10}], and particulate matter less than or equal to 2.5 microns in aerodynamic diameter [$PM_{2.5}$]), and lead (Pb). The CAA also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. In

nonattainment and maintenance areas, the Clean Air Act requires federal agencies to determine whether their proposed actions conform with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP. This EA presents the project conformity applicability analysis and documents the conformity related emission calculation estimates. Conformity with the SIP must be demonstrated prior to implementation of the action.

1.6.5 Climate Change Adaptation and Greenhouse Gas Emissions

Climate change refers to any significant change in the measurement of climate lasting for an extended period of time (USEPA 2016). It is now well established that rising global atmospheric greenhouse gas (GHG) emissions are significantly affecting the earth's climate (CEQ 2016). GHGs are gas emissions that trap heat in the atmosphere; the primary GHGs are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. These gases act like a blanket around the earth, trapping energy in the atmosphere and causing it to warm. According to the USEPA, the global average temperature has increased by more than 1.5 degrees Fahrenheit since the late 1800s. The buildup of GHGs in the atmosphere and the warming of the planet are responsible for other changes, such as:

- changing precipitation patterns;
- increases in ocean temperatures, sea level, and acidity;
- melting of glaciers and sea ice;
- changes in the frequency, intensity, and duration of extreme weather events;
- changing ecosystems, which influence the geographic ranges of many plant and animal species and the timing of their lifecycle events, such as migration and reproduction;
- increasing threats to human health; and
- worsening air and water quality, increasing the spread of certain diseases (USEPA 2016).

Natural causes alone cannot explain all of these changes. Human activities that release GHGs are contributing to climate change. A variety of human activities generate GHGs, including burning fossil fuels for heat and energy, clearing forests, fertilizing crops, storing waste in landfills, raising livestock, and producing some kinds of industrial products (USEPA 2016). The climate change associated with this global warming has negative economic and social consequences across the globe (USEPA 2016).

The federal government has been active over the past decade in planning for climate change. Most recently, President Obama signed the Paris Agreement in December 2015, establishing a long term, durable global framework to reduce global GHG emissions. Over the past decade, multiple policies have been implemented to address issues surrounding climate change. These include the Energy Independence and Security Act of 2007; Greenhouse Gas Reporting Program (74 *Federal Register* 56260, 2008) (40 CFR § 98); President Obama's *Climate Action Plan* (2013); EO 13693, *Planning for Federal Sustainability in the Next Decade* (March 2015); and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 2009). Several states, including California, have promulgated laws and/or policies as a means to reduce statewide levels of GHG emissions. Together these policies aim to reduce carbon pollution and increase renewable energy generation.

To implement these policies, the DoD issued a new directive, *Climate Change Adaptation and Resilience*, which integrates climate change considerations into all aspects of the department (DoD Directive 4715.21, January 2016). The directive furthers DoD's effort to adapt current and future operations to address the impacts of climate change. Mission planning and execution include identification and assessment of the

effects of climate change on the mission; consider climate change adaptation and resiliency in installation planning and basing processes; integrate climate change considerations into acquisition strategies across the life cycle of weapons, platforms, and equipment; and DoD training range sustainment policies. DoD components are also charged with assessing and managing risks, and mitigating the effects of climate change on natural and cultural resource management, force structure, basing, and training and testing activities in the field environment. The directive affects every aspect of DoD, from assessing security risks posed by climate change to planning for disaster relief in the case of climate change impacts and instability sparked by a lack of natural resources.

Additionally, the DoD 2016 *Operational Energy Strategy* sets forth plans to reduce the demand for energy and secure energy supplies. This policy directs DoD components to reduce GHG emissions from operational forces. Other policies, updates, and/or directives include the *DoD Sustainability Performance Plan* (2015), and the *Climate Change Adaptation Roadmap* (2014), which focus on various actions DoD is taking to increase its resilience to the impacts of climate change.

1.6.6 Endangered Species Act

The 1973 ESA (16 USC §§ 1531-1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and subsequent Biological Opinion, and can require formal consultation with the USFWS under section 7 of the ESA. Habitat conservation and protected species management is directed by the base's Integrated Natural Resources Management Plan (INRMP) (Travis AFB 2016b). The USAF conducted a Base-wide programmatic section 7 consultation with the USFWS in 2018 for multiple classes of actions at Travis AFB, which resulted in a Base-wide Biological Opinion being issued by the USFWS (USFWS 2018). Per the Programmatic Agreement between Travis AFB and USFWS, a Project Analysis for the Proposed Action was submitted to the USFWS on February 18, 2020 that outlines potential impacts to federally listed species (see Appendix A for correspondence).

1.6.7 Other Environmental Requirements

Additional regulatory legislation that potentially applies to the implementation of this action includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected. Additionally, potential health and safety impacts that could disproportionately affect children are considered under guidelines established by EO 13045, P*rotection of Children from Environmental Health and Safety Risks*. Finally, in accordance with the USAF *Sustainable Design and Development* policy (July 2007), all USAF construction projects, regardless of scope or funding source, shall endeavor to use the U.S.'s Green Building Council's LEED Green Building Rating Systems as their self-assessment metric. Starting in fiscal year 2009, all vertical Military Construction projects with climate control are designed and constructed to achieve a LEED Silver certification (EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*).

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action, evaluates all reasonable alternatives, and alternatives considered and those not carried forward. In accordance with CEQ regulations (40 CFR § 1502.14[d]) and the USAF Environmental Impact Analysis Process regulation (32 CFR § 989.8), this chapter details the process the USAF followed to identify reasonable alternatives that met the purpose of and need for the Proposed Action. This chapter also discusses the No-Action Alternative, as required under CEQ regulations (40 CFR § 1502.14[d]).**Proposed Action**

Under the Proposed Action the Soccer Field Complex would be composed of the following elements.

Soccer Field: The soccer field would be used by base personnel and dependents for soccer matches and practices. The field would be composed of artificial turf rather than irrigated grass to minimize water use and support a subdrainage system that allows year-round playing. The soccer field would be oriented north/south to minimize having the sun in the eyes of one team and hence an unfair advantage to the other team (TranSystems 2013). The field would be constructed as a reduced-sized soccer field measuring approximately 155 by 275 feet including sideline and endline areas (approximately 1 acre), with two adjacent semicircular exercise areas at either end of the field (approximately 0.8 acre total). The field would have a longitudinal crown through the middle of it, with the edges slightly sloped to allow for adequate drainage. Surrounding the field would be a drainage swale designed to collect storm runoff, which would terminate into a detention basin. In addition, an equipment storage shed with a concrete pad, as well as a bleacher with a concrete pad would be included in the Proposed Action (TranSystems 2013).

Detention Basin: The detention basin would be adequately sized to hold stormwater runoff from both the soccer field and the parking lot; preliminary designs of the basin measure 0.16 acre, with a depth of 3 feet (TranSystems 2013). The detention basin would be designed to temporarily hold water and gradually drain into the storm system. A retention basin differs from a detention basin in that it holds water and allows the water to percolate into the soil which can cause ponding if the impermeability of the soil is low. A retention basin is not planned for this action.

Parking Lot: Construction would include an asphalt concrete parking lot with 25 stalls, one of which would be handicapped accessible. Overall dimensions of the parking lot would be approximately 165 by 44 feet, with two 30-feet wide entrance/exit driveways (0.31 acre). The parking lot would also be designed to have stormwater drain into the detention basin (TranSystems 2013).

Lighting: The soccer field would be illuminated with close to 30-foot tall candles, which are the minimum lighting level standard dictated by the U.S. Soccer Foundation. This level corresponds to “Competition, no special spectator considerations.” The 1500-watt metal halide sports lighting, especially suited for soccer fields, would be mounted to crossarms atop 50-foot high aluminum poles with concrete foundations. In addition, the parking lot would require three light poles with single, 250-watt metal halide fixtures to attain the appropriate lighting levels (TranSystems 2013).

Additional details regarding design of the complex can be found in Appendix B.

2.2 Selection Standards

Alternatives form the core of the NEPA process. In compliance with NEPA, 32 CFR § 989, and CEQ regulations, the USAF must consider reasonable alternatives to the Proposed Action. Only those alternatives determined as reasonable relative to their ability to fulfill the need for a Proposed Action warrant detailed analysis. To be considered reasonable, an alternative must not only fulfill the purpose of and need for the action, it must be technically feasible. Through rigorous evaluation, the proponent needs to examine a range of alternatives, determining those deemed reasonable and those not carried forward for detailed analysis.

Selection standards assisted Travis AFB in defining the minimum thresholds that any alternative must achieve to meet the purpose of and need for the Proposed Action. They helped to identify a reasonable range of alternatives to be analyzed within the EA. Selection standards were established based on feasibility and base planning documents. The standards applied included:

1. Proximity/adjacency to customers using the facility;
2. Compatibility with existing adjacent facilities, including accommodating safety requirements such as avoiding explosive arc restrictions and airfield clear and accident potential zones;
3. Providing an area large enough to accommodate the facility;
4. Avoiding environmentally contaminated areas to the extent practicable;
5. Avoiding placement in areas supporting special status species and their habitat;
6. Avoiding placement in areas with sensitive cultural resources;
7. Minimizing wetlands disturbance; and
8. Avoiding floodplains to the extent practicable.

Additionally, all possible alternative locations must be consistent with:

- Federal and state regulations, including NEPA, and the CEQ regulations implementing NEPA.
- Agency consultations, permits, and certifications, including National Historic Preservation Act Section 106 consultation(s) with the SHPO; ESA section 7 consultation(s) or Biological Opinion(s) with the USFWS; and CWA Sections 401 and 404 permits/certifications by the USACE and Regional Water Quality Control Board.
- DoD directives, instructions, and regulations, including AFI 32-7061 Environmental Impact Analysis Process, as promulgated in 32 CFR § 989, and UFC 4-750-02N, *Design: Outdoor Sports and Recreation Facilities*.
- All applicable Travis AFB planning documents, including the INRMP for Travis AFB (Travis AFB 2016a) and the Integrated Cultural Resources Management Plan (ICRMP) (Travis AFB 2016c).

2.3 Screening of Alternatives

The following alternatives were reviewed against the selection standards. Alternative locations across the base were screened against the Selection Standards and are presented below and in Table 2-1. Figure 2-1 identifies the locations of the alternatives described below Table 2-1.

Figure 2-1. Alternative Locations for Soccer Field Complex

Table 2-1. Alternatives Screening Process

Selection Standards	Alternatives	
	Alternative 1	***Alternative 2 (Preferred Alternative)***
Proximity/adjacency to customers using the facility	Meets	Meets
Compatibility with existing adjacent facilities, including accommodating safety requirements such as avoiding explosive arc restrictions and airfield clear and accident potential zones	Meets	Meets
Providing an area large enough to accommodate the facility	Meets	Meets
Avoiding environmentally contaminated areas to the extent practicable	Meets	Meets
Avoiding placement in areas supporting special status species and their habitat	Meets	Meets
Avoiding placement in areas with sensitive cultural resources	Meets	Meets
Minimizing wetlands disturbance	Meets	Meets
Avoiding floodplains to the extent practicable	Meets	Meets

2.3.1 Alternative 1: Construction of Soccer Field Complex West of Twin Peaks Chapel

Under Alternative 1, the Soccer Field Complex, including a parking lot and support facilities, would be constructed on a site west of the Twin Peaks Chapel (Figure 2-2). The Alternative 1 location is bounded by Upson Avenue to the north, Hackett Avenue to the south, Fairchild Drive to the east, and Armstrong Street to the west. Access to the parking lot and soccer field would be from Armstrong Street. The site was previously residential housing, but all structures and interior roads have been demolished and cleared, and the site is now a grassy field with a few large trees.

Construction of the Soccer Field Complex under Alternative 1 would introduce approximately 2.19 acres of new impervious surfaces, to include the asphalt parking lot, concrete pathway, and the concrete bleacher and equipment shed pads. Also included in the total, is the artificial turf comprising the soccer field and two semicircular exercise areas at either end of the field, which is considered semi-pervious and includes a drainage system to direct water away from the playing field. For purposes of analysis and to be conservative, it was assumed the entire field would be impervious, even though some water may seep through the turf. A total of 1.11 acres of new pervious surface would include the detention basin and landscaping. Total temporary disturbance because of construction under Alternative 1 would be approximately 1.60 acres. Table 2-2 presents the facility element, whether the disturbance is temporary or permanent, the type of surface being introduced, and the disturbance footprint size. To account for construction work and equipment laydown areas, modifications to final designs, and associated disturbance related to clearing, grading, and landscaping, this analysis included a construction buffer of 20 feet either side of the middle line for linear features (such as roads, utility extensions, etc.) and a 50-foot buffer around all other structures, facilities, and parking lot areas (Figure 2-2).

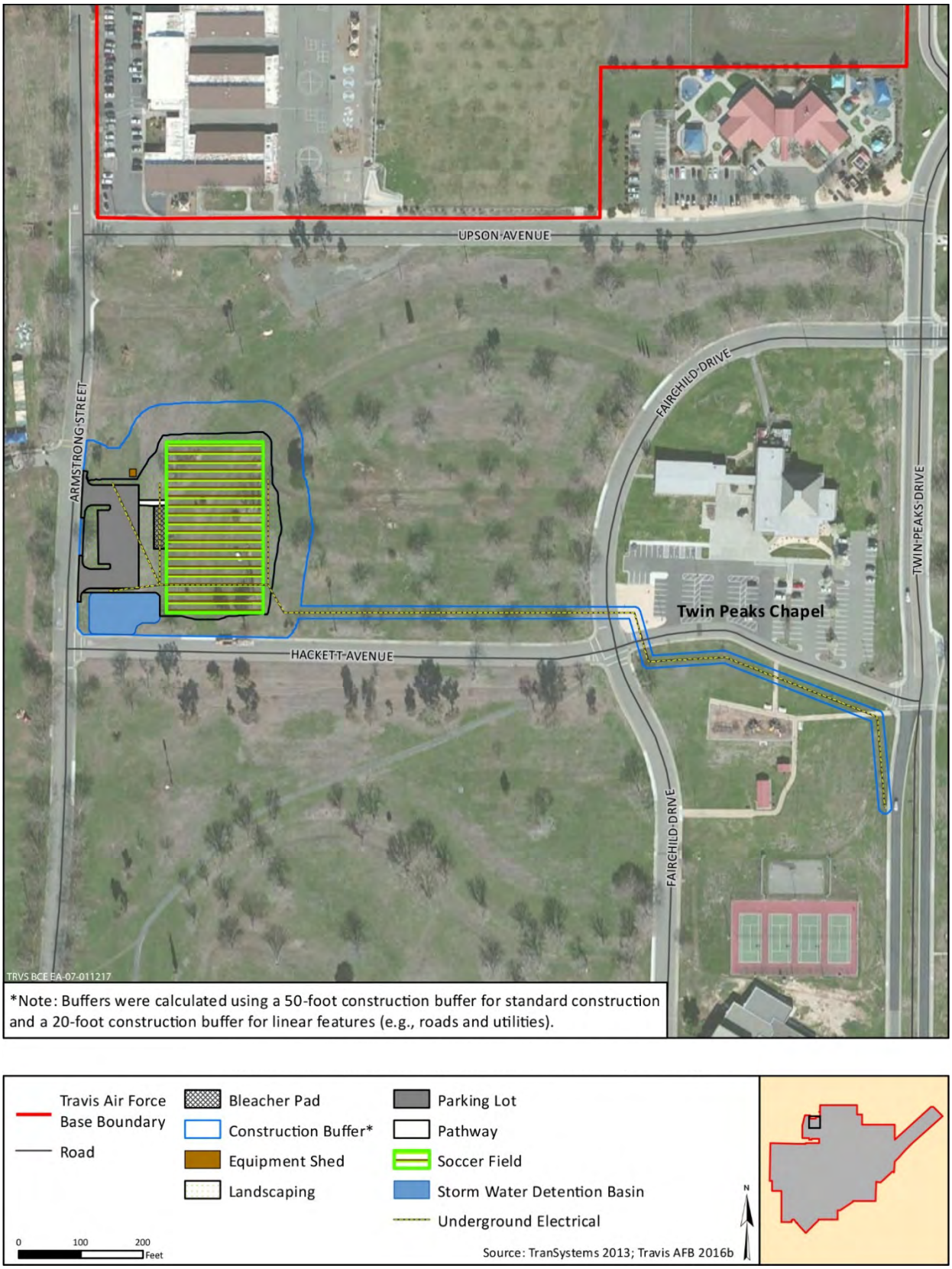

Figure 2-2. Alternative 1 Proposed Site Layout

Table 2-2. Construction Disturbance under Alternative 1

Proposed Action Feature	Disturbance Type	Permeability	Alternative 1 (acres)
Artificial Turf Soccer Field and Adjacent Semicircular Exercise Areas	Permanent	Impervious[1]	1.80
Bleacher Pad, Equipment Shed, and Concrete Pathway	Permanent	Impervious	0.08
Asphalt Parking Lot	Permanent	Impervious	0.31
Detention Basin	Permanent	Pervious	0.16
Landscaping	Permanent	Pervious	0.95
Construction Buffer	Temporary	Pervious	1.60
Total Acres New Impervious	Permanent	Impervious	**2.19 acres**
Total Acres New Pervious	Permanent	Pervious	**1.11 acres**
Total Acres Temporary Disturbance	Temporary	Pervious	**1.60 acres**

Source: TranSystems 2013; Travis AFB 2016c.
Notes:
[1]The proposed soccer field would be composed of artificial turf and a drainage system to direct water away from the playing field; as such, the soccer field is considered impervious even though some water may seep through the turf.

The design requirements for the soccer field are shown in Table 2-3 and civil and electrical requirements provided in Appendix B. In addition to evaluating the ability of Alternative 1 to meet these design requirements, calculations were done for lighting and foundation design, and a geotechnical report was completed.

Table 2-3. Design Requirement for Soccer Field Complex

Civil Requirements	Electrical Requirements	Additional Considerations
• Design Criteria • Existing Conditions • Geotechnical • Demolition • New Site Work • Sustainable Design • Grading • Water Supply • Fire Water Supply • Sanitary Sewer • Storm Drainage System and Stormwater Management • Erosion and Sediment Control	• Design Criteria • Existing Conditions • New Work – Wiring Systems – Conductors – Standards of Design – Grounding Systems – Special Considerations	• Lighting Calculations • Foundation Design Calculations • Geotechnical Report

Source: TranSystems 2013.

2.3.2 Alternative 2 (Preferred Alternative): Construction of Soccer Field Complex at Blue Track Location

Alternative 2, the Preferred Alternative, would construct a Soccer Field Complex, including a parking lot and support facilities, at the site of an existing blue running track (Figure 2-3). The running track would remain in place, with the soccer field placed inside the loop. Alternative 2 is bounded by Turner Street to the north, Collins Drive to the south, Burgan Boulevard to the west, all located on Travis AFB.

Notes:
*The exact location of the parking lot and associated landscaping, irrigation and lighting has yet to be determined; therefore, the entire parcel will be analyzed for potential construction impacts to allow flexibility in parcel design.
**landscape area is approximate and would vary slightly based on the exact location of project citing.

Figure 2-3. Alternative 2 (Preferred Alternative) Proposed Site Layout (Notional)

Privately owned, open space that appears to be managed with grazing is located to the east of the parcel. Access to the parking lot and soccer field has not yet been determined, but one option would be to make the access from Burgan Boulevard (Figure 2-3). To allow flexibility in the Soccer Field Complex design, the entire parcel is analyzed for potential construction impacts.

Proposed construction under Alternative 2 would also result in approximately 2.19 acres of new impervious surfaces, as the general specifications of the Soccer Field Complex are the same as Alternative 1. Under Alternative 2, the entire site is being analyzed for potential construction impacts and once a location is cited, temporary disturbance would be similar to that under Alternative 1, approximately 1.60 acres. Table 2-4 presents the facility element, whether the disturbance is temporary or permanent, the type of surface being introduced, and the disturbance footprint size.

Table 2-4. Construction Disturbance under Alternative 2

Proposed Action Feature	Disturbance Type	Permeability	Alternative 2 (acres)
Artificial Turf Soccer Field and Adjacent Semicircular Exercise Areas	Permanent	Impervious[1]	1.80
Bleacher Pad, Equipment Shed, and Concrete Pathway	Permanent	Impervious	0.08
Asphalt Parking Lot	Permanent	Impervious	0.31
Detention Basin	Permanent	Pervious	0.16
Landscaping	Permanent	Pervious	0.95
Construction Buffer[2]	Temporary	Pervious	1.60
Total Acres Permanent New Impervious	Permanent	Impervious	**2.19 acres**
Total Acres Permanent New Pervious	Permanent	Pervious	**1.11 acres**
Total Acres Temporary Disturbance	Temporary	Pervious	**1.60 acres**

Source: TranSystems 2013; Travis AFB 2016c.

Notes:

[1]The proposed soccer field would be composed of artificial turf and a drainage system to direct water away from the playing field; as such, the soccer field is considered impervious even though some water may seep through the turf.

[2]The exact location of the parking lot, concrete pathway, detention basin, and associated landscaping, irrigation, and lighting for Alternative 2 has yet to be determined; therefore, numbers may vary slightly upon actual citing of project. However, the entire parcel will be analyzed for potential construction impacts to allow flexibility in parcel design (construction buffer includes whole site). Once a location is cited, temporary disturbance would be similar to that under Alternative 1, approximately 1.60 acres.

2.3.3 No-Action Alternative

The No-Action Alternative means that no construction of the Soccer Field Complex would occur, and the Proposed Action would not be implemented. This alternative would not meet the goal of providing the most useful of year-round recreational opportunities to base personnel and their dependents. There would be no official soccer-dedicated fields or facilities on Travis AFB. This alternative would not meet the goal of increasing the network of support and leisure services at Travis AFB.

2.4 Alternatives Eliminated from Further Consideration

There exist two unofficial soccer fields on Travis AFB. One is located in the dormitory area for use by the dorm residents, but it lacks the space for bleachers, parking, and the other facilities requisite for an official Soccer Complex. The other is located behind the Travis Outdoor Recreation office in the industrial area of the base and is incompatible with recreational activities. Despite the name, the Travis Outdoor Recreation office manages outdoor activities, rents outdoor equipment, houses the tickets and travel, outdoor recreational activities typically do not occur at the site. As a result, neither field presents a viable option

for developing a Soccer Field Complex. All alternatives considered are included for analysis in this EA; no other on-Base locations could meet the selection standards identified to successfully fulfill the purpose of and need for the Proposed Action.

2.5 Summary of Potential Environmental Impacts by Alternative

For comparison purposes, Table 2-5 outlines potential environmental impacts by resource area that could occur under Alternative 1, Alternative 2 (Preferred Alternative), and the No-Action Alternative.

Table 2-5. Summary of Potential Resource Impacts

Resource Area	Alternative 1	Alternative 2 (Preferred Alternative)	No-Action Alternative
Air Quality, Greenhouse Gas Emissions, and Climate Change Adaptation	No significant impacts to air quality would occur. Emissions generated by proposed construction activities would be temporary and short-term; no long-term increases in emissions would occur. Implementation of Alternative 1 would not appreciably add to global climate change due to its relative minor GHG emissions.	No significant impacts to air quality would occur. Air quality impacts under Alternative 2 would be similar to those described for Alternative 1.	No significant impacts to air quality would occur. Under this alternative, no change in emissions from baseline conditions would occur. There would therefore be no potential for adverse air quality impacts.
Water Resources	Construction would result in 2.19 acres of new impervious surface. Impacts to water resources would not be significant. Any potential impacts resulting from erosion or temporary increases in surface runoff during construction activities would be minimized by standard erosion control measures. In addition, in accordance with UFC 3-210-10, pre-development site hydrology must be maintained or restored to the maximum extent technically feasible. There are no floodplains, wetlands, vernal pools, or other Waters of the U.S. located within or near the construction footprint under Alternative 1. Therefore, Alternative 1 would not impact wetlands or other waters of the U.S.	Impacts under Alternative 2 would be the same as those described under Alternative 1.	Impacts to water resources would not be significant. Under this alternative, there would be no change to baseline water resources.
Biological Resources	Alternative 1 project area is developed/disturbed and provides little natural habitat for wildlife. No CTS breeding habitat would be impacted. Approximately 3.30 acres of permanent impacts to medium risk CTS upland habitat would be mitigated via purchase of credits at an approved mitigation bank. No significant impacts.	Alternative 2 project area is developed/disturbed and provides little natural habitat for wildlife. No CTS breeding habitat would be impacted. Approximately 3.30 acres of permanent impacts to medium risk CTS upland habitat would be mitigated via purchase of credits at an approved mitigation bank. No significant impacts.	Impacts to wildlife and special status species would not be significant. Under this alternative, there would be no change to baseline biological resources.

Table 2-5. Summary of Potential Resource Impacts

Resource Area	Alternative 1	Alternative 2 (Preferred Alternative)	No-Action Alternative
Cultural Resources	The Area of Potential Effect (APE) near Alternative 1 was previously subject to an archaeological survey, and no NRHP-eligible resources including architectural or traditional resources were identified. Therefore, construction of the Soccer Field Complex would not result in impacts to cultural resources.	Impacts under Alternative 2 would be the same as those described under Alternative 1.	There would be no adverse effects, and therefore, no significant impacts on cultural resources under the No-Action Alternative. Under this alternative, there would be no change to baseline cultural resources.
Recreation	Construction of the Soccer Field Complex would expand year-round recreational opportunities for military personnel, their families, and civilian personnel on Travis AFB. In turn, this would increase the network of support and leisure services at Travis AFB, thus improving morale and wellbeing. As a result, there would be beneficial impacts to recreation under Alternative 1.	Impacts under Alternative 2 would be the same as those described under Alternative 1.	Under this Alternative, there would be no official soccer-dedicated fields or facilities on Travis AFB. This alternative would not meet the goal of providing the most useful of year-round recreational opportunities to Base personnel and their dependents to increase the network of support and leisure services at Travis AFB. Therefore, minor negative long-term impacts to recreational resources and the mission at Travis AFB would occur.

3 AFFECTED ENVIRONMENT

3.1 Scope of the Analysis

NEPA requires focused analysis of the areas and resources potentially affected by an action or alternative. It also provides that a NEPA document should consider, but not analyze in detail, those areas or resources not potentially affected by the proposal. Therefore, a NEPA document should not be encyclopedic; rather, it should be succinct and to the point. Both description and analysis in an EA should provide sufficient detail and depth to ensure that the agency (i.e., USAF) took a critical look at all resources potentially impacted by an action. NEPA also requires a comparative analysis that allows decision makers and the public to differentiate among the alternatives. This EA focuses on those resources that would be affected by the proposed construction of the Soccer Field Complex at Travis AFB.

CEQ regulations (40 CFR §§ 1500-1508) for NEPA also require an EA to discuss impacts in proportion to their potential magnitude and present only enough discussion of peripheral issues as necessary to demonstrate why more study is not warranted. The analysis in this EA considers the current (baseline) conditions of the affected environment and compares those to conditions that might occur should the USAF implement one of the alternatives.

3.1.1 Resources Analyzed

Based on the components of the Proposed Action, the USAF identified the area or environment potentially affected by the proposed construction of the Soccer Field Complex at Travis AFB. As a result, five resource categories were identified for detailed analysis based on their potential to be impacted by Alternative 1, Alternative 2 (Preferred Alternative), and the No-Action Alternative. These include air quality, greenhouse gas emissions, and climate change adaptation; water resources; biological/natural resources; cultural resources; and recreation.

3.1.2 Resources Eliminated from Detailed Analysis

Several resources were not evaluated in this EA because it was determined that implementing any of the alternatives would have negligible to no impacts. The resources not carried forward for detailed analysis are airspace, noise/acoustic environment, hazardous materials/waste, earth resources, land use, infrastructure/utilities, safety and occupational health, socioeconomic resources (including population, economics, housing, and public and emergency services), and environmental justice (including protection of children and the elderly). A brief explanation of the reasons why each resource was eliminated from further consideration is provided below.

3.1.2.1 Airspace

Under Alternative 1, Alternative 2, and the No-Action Alternative, there would be no changes to airspace management or use. There would be no changes to aircraft operations and no new aircraft would be introduced at Travis AFB. Therefore, because there are no impacts to airspace, this category was eliminated from further analysis.

3.1.2.2 Noise/Acoustic Environment

Under Alternative 1 and Alternative 2, a temporary, short-term, and intermittent increase in noise would occur resulting from construction. Construction noise is generated by heavy equipment on job sites and is short-term in duration (i.e., the duration of the construction period). Commonly, use of heavy equipment

occurs sporadically throughout daytime hours. However, the proposed construction would involve no demolition and no construction of major infrastructure elements (like buildings). Construction would only include that necessary to install an artificial turf field, two concrete pads, a walkway, and an asphalt parking lot. The long-term acoustic environment (dominated by aviation activities) at Travis AFB would not be influenced by the short-term, small-scale construction activities such as this one. Therefore, only negligible, short-term effects to the noise/acoustic environment are anticipated, and this category was eliminated from further analysis.

3.1.2.3 Hazardous Materials/Waste

The Travis AFB Environmental Restoration Program Management Action Plan (Travis AFB 2016d), Travis AFB Installation Development Plan (Travis AFB 2016e), and the most recent Geographic Information System (GIS) data available were reviewed for potential impacts resulting from implementing the Proposed Action. Following the review, it was determined that there would be no impacts to wastes, hazardous materials, Environmental Restoration Program sites, and stored fuel conditions. The Proposed Action would not result in the creation of any hazardous or toxic materials or waste streams at Travis AFB and there are no permitted hazardous waste streams located within the parcels proposed for construction. There are currently no known hazardous materials, petroleum products, hazardous wastes, solid wastes, or toxic substances stored or generated at the parcels proposed for construction of the Soccer Field Complex. Therefore, only negligible effects to hazardous materials/waste are anticipated, and this category was eliminated from further analysis.

Construction of the proposed Soccer Field Complex would cause short-term, temporary, and minor increases in the use and storage of hazardous materials (e.g., paint) and petroleum products (e.g., vehicle fuel) and associated construction wastes. The contractor would be responsible for managing these materials in accordance with federal, state, and local regulations to protect their employees from occupational exposure to hazardous materials and to protect the public health of the surrounding community. Any hazardous materials used and disposed would comply with the Hazardous Materials Transportation Act under 49 CFR. Therefore, only negligible effects to hazardous materials/waste are anticipated, and this category was eliminated from further analysis.

3.1.2.4 Utilities and Infrastructure

The Travis AFB 60 AMW Storm Water Pollution Prevention Plan (Travis AFB 2015), Travis AFB Installation Development Plan (Travis AFB 2016e), and the most recent GIS data available were reviewed for potential impacts associated with implementing the Proposed Action. Establishing a Soccer Field Complex would not affect utility or infrastructure provisions. Potable water and power would be connected at the field; however, this would not exceed the capacity of the base to provide such. Wastewater treatment, communications, and solid waste services would not be needed. Therefore, no impacts would occur. No further analysis of utility resources was carried forward in this EA.

3.1.2.5 Safety and Occupational Health

Under the Proposed Action, there would be a minor, short-term health and safety risks for construction. Best management practices would be employed, and strict adherence to all applicable Occupational Safety and Health Administration standards and procedures would further minimize the relatively low risk associated with construction activities. No changes to existing USAF ground safety procedures would occur. Day-to-day operations and maintenance activities conducted on Travis AFB would not be affected

by the Proposed Action and continue in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF Occupational Safety and Health requirements.

In addition, there are no changes proposed that could affect flight safety or ordnance/explosive safety; therefore, they are omitted from further analysis. The Proposed Action would not be located within Clear Zones or Accident Potential Zones and would be in full compliance with Anti-Terrorism/Force Protection requirements. Therefore, no effects to Safety and Occupational Health are anticipated, and this category was eliminated from further analysis.

3.1.2.6 Socioeconomic Resources

Under the Proposed Action, there would be no changes in military or civilian personnel; therefore, population numbers, housing, public schools, healthcare facilities, and emergency (fire and police) services would not be affected. Construction would be performed by contractors from the regional work force; there is capacity in the area to support this construction project. Over a period of 1 year, there would be a short-term, economic beneficial input resulting construction. However, this input would be negligible when compared to the regional economy. Because only negligible effects are anticipated to the socioeconomic character of the surrounding communities, this resource was eliminated from further analysis.

3.1.2.7 Environmental Justice

Executive Order 12898, *Environmental Justice*, requires analysis of the potential for a federal action to cause disproportionate health and environmental impacts on minority and low-income populations. Areas with noise levels exceeding 65 decibels Day-Night Average Sound Levels were analyzed. Under this proposal, noise generated by construction activities would not exceed the standards outlined above to disproportionally affect low-income or minority populations. The closest population that could support low-income and minority populations, as well as children and the elderly is located at least 1 mile away from the Proposed Action alternative sites.

Protection of Children from Environmental Health and Safety Risks (EO 13045), was introduced in 1997 to prioritize the identification and assessment of environmental health and safety risks that may affect children and to ensure that federal agencies' policies, programs, and activities address environmental health and safety risks to children. Multiple locations where concentrations of children may gather, including Travis Elementary School and the hospital, are located over 0.8 mile from the Proposed Action development sites. While there could be potential construction health and safety risks introduced, they would be confined to the construction site. Children would not have access to the construction site and barrier fences would be erected to preclude their entry. Once the Soccer Field Complex is open, activities associated with playing soccer would be the anticipated safety risks introduced to affect children. Only negligible impacts to children playing soccer are anticipated.

Neither environmental justice nor protection of children and the elderly are carried forward for further analysis.

3.2 Air Quality, Greenhouse Gas Emissions, and Climate Change Adaptation

3.2.1 Definition of the Resource

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern related to the health and welfare of the general public and the environment. Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source

or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants.

Primary pollutants, such as CO, SO_2, lead, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as O_3, nitrogen dioxides (NO_2), and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. Suspended particulate matter in the form of PM_{10} and $PM_{2.5}$ is generated as primary pollutants by various mechanical processes (for example, abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants that condense into fine aerosols. In general, emissions that are considered "precursors" to secondary pollutants in the atmosphere (such as volatile organic compounds [VOCs] and NO_x, which are considered precursors for O_3) are the pollutants for which emissions are evaluated to control the level of O_3 in the ambient air.

Travis AFB is located in central Solano County, which is at the eastern edge of the San Francisco Bay Area Air Basin. The basin extends from Napa County in the north, to Santa Clara County in the south. The Basin encompasses 5,340 square miles and 19 percent of California's population. The Basin is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) pursuant to a mandate from the California Air Resources Board (CARB). Only the golf course at Travis AFB extends into a neighboring jurisdiction, the Yolo-Solano Air Pollution Control District. The purpose of this section is to provide an overview of regional air quality and includes a discussion of applicable federal and state regulations, regional air quality management programs, and the current air quality conditions. The affected environment for the air quality analysis includes portions of the BAAQMD relevant to the Proposed Action at Travis AFB.

3.2.2 Air Quality Standards

3.2.2.1 National Ambient Air Quality Standards and California Ambient Air Quality Standards

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. The National Ambient Air Quality Standards (NAAQS) are established by the USEPA for criteria pollutants including O_3, CO, NO_x, SO_2, PM_{10}, $PM_{2.5}$, and Pb. The USEPA only regulates NO_2 for all NO_x because it is the most prevalent of the NO_x compounds produced by human activity. The NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare. In addition, the CARB established California Ambient Air Quality Standards (CAAQS) for criteria pollutants, as well as for hydrogen sulfide, sulfates, and vinyl chloride. Both VOCs and reactive organic compounds (ROGs) are categories of organic gases that participate in atmospheric photochemical reactions that are also regulated under NAAQS and CAAQS. The difference between ROGs and VOCs are that the CARB and the USEPA independently list exemptions for gases that have negligible photochemical reactivity. The exemption lists differ slightly; therefore, they are used interchangeably. Table 3.2-1 provides the CAAQS and NAAQS standards and the attainment status of criteria pollutants in Solano County.

Table 3.2-1. National and California Ambient Air Quality Standards for Solano County, California

Pollutant	Averaging Time	CAAQS		NAAQS	
		Standard	***State Attainment Status***	***Standard***	***Federal Attainment Status***
O_3	8-Hour 1-Hour	0.07 ppm 0.09 ppm	Nonattainment Nonattainment	0.075 ppm	Nonattainment No 1-hour standard
CO	8-Hour 1-Hour	9.00 ppm 20.00 ppm	Attainment	9.0 ppm 35.0 ppm	Attainment
NO_2	Annual 1-Hour	0.03 ppm 0.18 ppm	Attainment	0.053 ppm 0.100 ppm	Attainment Undetermined
SO_2	24-Hour 1-Hour	0.04 ppm 0.25 ppm	Attainment Attainment	0.075 ppm	Attainment
PM_{10}	Annual geometric mean 24-Hour	20.00 µg/m3 50.00 µg/m3	Nonattainment	150 µg/m3	Attainment
$PM_{2.5}$	Annual arithmetic mean 24-Hour	12.00 µg/m3	Nonattainment	15 µg/m3 35 µg/m3	Attainment Nonattainment
Pb	Calendar Quarter 30-Day Average	1.50 µg/m3	Attainment	1.5 µg/m3	Attainment
Sulfates	24-Hour	25.00 µg/m3	Attainment	NA	NA
Hydrogen Sulfide	1-Hour	1.50 µg/m3	Unclassified	NA	NA
Vinyl Chloride	24-Hour	0.01ppm	Undetermined	NA	NA

Source: BAAQMD 2016.
Notes: NA = not applicable; ppm = parts per million; µg/m3 = micrograms per cubic meter.

3.2.2.2 Hazardous Air Pollutants

Hazardous air pollutants (HAPs) have the potential to cause serious health impacts and are regulated under Section 112(b) of the 1990 CAA Amendments. While no ambient standards for local concentrations exist, HAPs are controlled by limiting emissions. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from stationary sources (40 CFR § 61 and 63). HAPs emitted from mobile sources are called Mobile Source Air Toxics (MSAT); these are compounds emitted from highway vehicles and non-road equipment, known or suspected to cause serious health and environmental effects. In 2001, USEPA issued its first MSAT Rule, which identified 21 compounds as being HAPs that required regulation. In February 2007, USEPA issued a second MSAT Rule that generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The rule also identified several engine emissions certification standards that must be implemented. Unlike the criteria pollutants, there are no NAAQS for HAPs.

The primary control methodologies instituted by federal regulation for MSATs involve technological improvements for reducing their content in fuel and altering engine operating characteristics to reduce the volume of pollutants generated during combustion. MSATs would be the primary HAPs emitted by mobile sources during construction and operations. At the state level, CARB regulates toxic air contaminants, which include federal HAPs and other pollutants. CARB requires the use of Best Available Control Technology to limit toxic air contaminant and HAP emissions.

3.2.2.3 Climate Change Adaptation and Greenhouse Gas Emissions

Final guidance from CEQ, dated August 1, 2016, recommends that agencies consider both the potential effects of a proposed action on climate change, as indicated by its estimated greenhouse gas emissions, and

the implications of climate change to the proposed action (CEQ 2016). The guidance also emphasizes that agency analyses should be commensurate with projected GHG emissions and climate impacts and should employ appropriate quantitative or qualitative analytical methods to ensure useful information is available to inform the public and the decision-making process in distinguishing between alternatives and mitigations. It recommends that agencies use the "rule of reason" inherent in NEPA and the CEQ regulations to determine, based on their expertise and experience, how to consider the environmental effects of the proposed action and prepare an analysis based on the available information.

The USEPA issued the Final Mandatory Reporting of Greenhouse Gases Rule on September 22, 2009. Greenhouse gases covered under the Final Mandatory Reporting of Greenhouse Gases Rule are CO_2, methane, NO_x, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers. Each GHG is assigned a global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to CO_2, which has a value of one. The equivalent CO_2 rate is calculated by multiplying the emissions of each GHG by its global warming potential and adding the results together to produce a single, combined emissions rate representing all GHGs designated as carbon dioxide equivalents (CO_2e). Under the rule, suppliers of fossil fuels and/or industrial GHGs, manufacturers of mobile sources and engines, and facilities that emit greater than 75,000 metric tons or more per year of GHG emissions as CO_2e must submit annual reports to the USEPA.

In an effort to reduce energy consumption, GHGs, and dependence on petroleum, and to increase the use of renewable energy resources, the USAF has implemented a number of renewable energy projects. The USAF has established fiscal year 2020 GHG emissions reduction targets of 34 percent from a fiscal year 2008 baseline for direct GHG emissions and 13.5 percent for indirect emissions. Examples of USAF-wide GHG reduction projects include energy efficient construction, thermal and photovoltaic solar systems, and energy conservation programs (USAF 2012). The USAF continues to promote and install new renewable energy projects.

3.2.3 Regulatory Framework

The CAA Amendments of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. California is geographically divided into Air Pollution Control Districts, each of which is required to adopt strategies for achieving NAAQS, as well as the state's CAAQS. Each Air Pollution Control District must also adopt a State Implementation Plan (SIP), which is a compilation of goals, strategies, schedules, and enforcement actions designed to lead the state into compliance with all NAAQS. Air Pollution Control Districts not in compliance with a standard can be declared nonattainment areas by the USEPA or CARB. In order to reach attainment, NAAQS may not be exceeded more than once per year, except for 8-hour O_3, for which the fourth-highest value in a year may not exceed the NAAQS. A nonattainment area can reach attainment when NAAQS have been met for a period of 10 consecutive years. During this period, the area is in transitional attainment, also termed maintenance.

3.2.3.1 General Conformity

Federal actions are required to conform to the approved SIP for those areas of the U.S. designated as nonattainment or in maintenance for any criteria air pollutant under the CAA (40 CFR parts 51 and 93). As Travis AFB is located in an area of nonattainment for two criteria pollutants (1- and 8-hour O_3 and 24-hour $PM_{2.5}$), the action is subject to the general conformity rule. When an area is designated in nonattainment and/or in maintenance, the CAA Section 176(c), General Conformity Rule, is applied. The intent of this

rule is to ensure that federal actions do not adversely affect the timely attainment of air quality standards in areas of nonattainment or maintenance. Because Travis AFB is within areas designated in nonattainment, the USAF evaluated: 1) whether a conformity determination is required, and, if it is, 2) a conformity determination was undertaken to evaluate whether the action conforms to the California SIPs for pollutants in nonattainment. The General Conformity Rule consists of three major parts: applicability, analysis, and procedure.

3.2.3.2 Applicability

3.2.3.2.1 Nonattainment Areas

This applies to federal actions occurring in geographic regions designated as nonattainment for criteria pollutants or areas designated as maintenance areas. A nonattainment area consists of a region that fails to meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard (i.e., NAAQS) for the pollutant. A maintenance area represents a re-designated nonattainment area that has achieved attainment of the national primary ambient air quality standard.

3.2.3.2.2 De Minimis Emissions Levels

Threshold (or *de minimis*) levels of emissions are established to focus conformity requirements on those federal actions with the potential to produce significant air quality impacts. With the exception of lead, the *de minimis* levels are based on the CAA Amendments major stationary source definitions for criteria pollutants (and precursor criteria pollutants) and vary by the severity of the nonattainment area. USEPA's implementing regulation requires a conformity applicability analysis for nonattainment or maintenance area criteria pollutants to identify whether the annual total of direct and indirect emissions equals or exceeds the annual *de minimis* levels. Table 3.2-2 lists the *de minimis* levels by criteria pollutant, applicable to federal actions in nonattainment.

Table 3.2-2. *De Minimis* Levels for Criteria Pollutants in Nonattainment Areas by Designation

Pollutant	Designation	NAAQS Tons/Year
O_3*	Serious Nonattainment	50
	Severe Nonattainment	25
	Extreme Nonattainment	10
	Other nonattainment areas outside of ozone transport region	100
	Marginal/Moderate nonattainment areas inside ozone transport region	50 (VOCs)/100 (NO_x)
CO	All nonattainment areas	100
SO_2**	All nonattainment areas	100
Pb	All nonattainment areas	25
NO_2	All nonattainment areas	100
PM	Moderate Nonattainment (PM_{10})	100
	Serious Nonattainment (PM_{10})	70
	Nonattainment ($PM_{2.5}$)	100

Source: 40 CFR § 51.853.
Notes: * Includes precursors: VOCs or NO_x.
**Sulfur dioxide is often reported as SO_x.

3.2.3.3 Exemptions and Presumptions

Certain federal actions are deemed by the USEPA to conform because of the thorough air quality analysis required to comply with other statutory requirements. Examples of these actions include those subject to the New Source Review program and remedial activities under the Comprehensive Environmental Response, Compensation, and Liability Act. Other federal actions that are exempt from the conformity process include those actions that would result in no increase in emissions, or an increase in emissions that is clearly *de minimis*.

Examples include continuing or recurring activities, routine maintenance and repair, administrative and planning actions, land transfers, and routine movement of mobile assets. A federal agency can establish its own presumptions of conformity through separate rulemaking actions. Section 176(c) of the CAA Amendments does not specifically exempt any activity, thus a separate analysis would need to show that the activity presumed to conform has no impacts to air quality. Based on this analysis, a federal agency can document that certain types of future actions would be *de minimis*.

3.2.3.4 Analysis

A conformity analysis for the federal action examines impacts of both direct and indirect emissions from mobile and stationary sources. Indirect emissions are those caused by the federal action but may occur later in time and/or may be farther removed in distance from the action itself but are still reasonably foreseeable, and the federal agency can control and will maintain control over the indirect action due to a continuing program responsibility of the federal agency. Reasonably foreseeable emissions are projected future indirect emissions that are identified at the time the conformity determination is made and the location of such emissions is known and the emissions are quantifiable, as described and documented by the federal agency based on its own information and after reviewing any information presented to the federal agency.

The conformity determination procedure is detailed in 40 CFR § 93.158-159. The analysis is based upon the latest planning assumptions, emission estimation techniques, applicable air quality models, databases, and other requirements of the USEPA, and on the total of direct and indirect emissions from the action(s). Finally, a formal general conformity determination must provide for mitigation measures and undertake a thorough public notification process. Exempt actions are not required to go through this process.

3.2.3.5 Procedural Requirements

General Conformity Rule procedural requirements allow for public review of the federal agency's conformity determination. Although the conformity determination is a federal responsibility, state and local air agencies are provided notification and their expertise is consulted. The federal agency must provide a 30-day notice of the federal action and draft conformity determination to the appropriate USEPA Region, and state regulating entity, and local air control agencies. The federal agency must also make the determination available to the public for review and comment (40 CFR § 93.156).

3.2.4 Affected Environment

The affected environment for air quality includes the area comprising of the local air quality in the vicinity of Travis AFB and the surrounding areas.

3.2.4.1 Local Air Quality

The western part of Solano County, including the part of Travis AFB relevant to this document, is located within the San Francisco Bay Area Air Basin and governed by the BAAQMD (USAF 2003); the eastern

part is located within the Sacramento Valley Air Basin. The San Francisco Bay Area Air Basin is currently designated by the USEPA as a NAAQS attainment area for CO, NO_2, SO_2, Annual $PM_{2.5,}$ and Pb; and nonattainment for 1- and 8-hour O_3 and 24-hour $PM_{2.5}$ standards. The basin is currently designated by BAAQMD as a CAAQS attainment area for CO, NO_2, SO_2, Pb, and sulfates, and a nonattainment area for $PM_{2.5}$, PM_{10}, hydrogen sulfide, and state 1- and 8-hour O_3 standards. Vinyl chloride is still being determined (BAAQMD 2016).

3.2.4.2 Baseline Criteria Pollutant Emissions

3.2.4.2.1 Thresholds and Permitting

CAA Amendments Title V Operating Permit thresholds are defined as emissions from stationary sources in excess of 100 tons per year of any of the criteria pollutants, or 10 to 25 tons per year of any single or combination of HAPs, respectively (BAAQMD 2001). Because Travis AFB emissions are below Title V thresholds, it is considered a minor source for air emissions.

Travis AFB operates under a BAAQMD Synthetic Minor Operating Permit, which contains provisions to limit the base's potential emission levels to below defined thresholds. As part of the base-requested and BAAQMD-approved revision to Condition 19843 of the BAAQMD Permit to Operate for Plant #770, allowable 12-month rolling emissions of precursor organic compounds including NO_x and ROGs were 34 tons per year and are 95 tons per year for all other regulated criteria pollutants (Travis AFB 2016f).

Emissions sources include permitted abrasive blasting booths and cleaning solvent tanks. The latest annual Synthetic Minor Operating Permit report spanned from August 2015 through July 2016 and includes emissions for CO, NO_x, PM_{10}, SO_2, VOCs, and HAPs. Emissions from stationary combustion sources at Travis AFB totaled roughly 20.5 tons during the reporting period from August 2015 to July 2016 and fell well within the BAAQMD Synthetic Minor Operating Permit threshold. Table 3.2-3 shows the Synthetic Minor Operating Permit emissions by source and criteria pollutants during the 2015 to 2016 reporting period. Currently, Travis AFB emissions for all of the criteria pollutant emissions are well below permit limits.

Table 3.2-3. Criterial Air Pollutants for 12-Month Period from August 2015 through July 2016

Source Group	Criteria Emissions (tons per year)				
	PM	***CO***	***SO_2***	***NO_x***	***VOCs***
Boilers	0.42	4.66	0.03	5.55	0.31
Emergency Generators	0.07	0.20	0.06	0.96	0.08
Fuel Storage/Distribution	NA	NA	NA	NA	0.91
Surface Coating	NA	NA	NA	NA	0.24
Other	0.66	NA	NA	NA	6.36
Emissions Total	**1.15**	**4.87**	**0.10**	**6.51**	**7.90**
Emissions Limit	**95**	**95**	**95**	**34**	**34**

Source: Travis AFB 2016d.
Notes: NA = not applicable.

3.2.4.3 Greenhouse Gas Emissions

Review of the USEPA GHG inventory website (https://ghgdata.epa.gov/ghgp/main.do) indicated that 3,181,501 metric tons of CO_2e were generated in June 2015 (USEPA 2015) in Solano County. Of these, 2,990,000 metric tons (94 percent) were emitted by Valero Refinery Company.

3.2.4.4 Climate Change Adaptation

Due to its elevation, lands within Travis AFB are not subject to rising sea levels; however, this area is susceptible to weather changes. According to the USEPA Climate Change website (https://www3.epa.gov/climatechange), the average annual temperatures in the southwestern U.S. have risen by about 2 degrees Fahrenheit over the last century, with temperatures projected to increase by approximately 3.5 to 9.5 degrees Fahrenheit by the end of the century. Drought conditions are already common in the west and drought periods are expected to become more frequent, intense, and longer. Drought will affect important water sources. Combined with expected population growth, climate change will exacerbate existing stresses (USEPA 2016).

3.3 Water Resources

3.3.1 Definition of the Resource

Water resources analyzed in this EA include surface water and ground water, floodplains, and wetlands. Further, this section provides descriptions of the qualitative and quantitative characteristics of water resources.

Surface water includes lakes, rivers, and streams and is important for a variety of reasons including irrigation, power generation, recreation, flood control, and human health. The nation's waters are protected under the statutes of the CWA; the goal of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's water so that they can support "the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water." Under the CWA Section 402, it is illegal to discharge any point and/or nonpoint pollution sources into any surface water without a National Pollutant Discharge Elimination System permit. The USEPA is charged with administering the National Pollutant Discharge Elimination System permit program; however, the State of California has legal authority to implement and enforce the provisions of the CWA, while the USEPA retains oversight responsibilities.

In December 2007, Congress enacted the Energy Independence and Security Act; Section 438 of this legislation established into law new stormwater design requirements for all federal projects with a footprint greater than 5,000 square feet. This act triggered updates to the DoD issued UFC on *Low Impact Development* (UFC 3-210-10, as amended June 1, 2015) that established the technical criteria and requirements for applicable DoD projects in order to comply with the stormwater requirements under the Energy Independence and Security Act Section 438. As such, the overall design objectives for each applicable DoD project is to maintain predevelopment hydrology and prevent any net increase in stormwater runoff through interception, infiltration, storage, or evapotranspiration processes. Agencies can meet the pre-development hydrology requirements in two ways: 1) managing on site the total volume of rainfall from the 95th percentile storm, or 2) managing on site the total volume of rainfall based on a site-specific hydrologic analysis through various engineering techniques. Typical on-site design options include: bio-retention areas, permeable pavements, cisterns/recycling, and green roofs.

Ground Water includes the subsurface hydrologic resources of the physical environment. Groundwater plays an important part in the overall hydrologic cycle and its properties are described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

Floodplains are defined by EO 11988, *Floodplain Management* (as amended 2015), as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands." Floodplains and riparian habitat are biologically unique and highly diverse ecosystems providing a rich

diversity of aquatic and terrestrial species, as well as promoting stream bank stability and regulating water temperatures. In addition, losses caused by flooding affect the environment, economic prosperity, and public health and safety, each of which affects national security. To improve the nation's resilience to current and future flood risk that is anticipated to increase over time due to the effects of climate change and other threats, on January 30, 2015, the President signed EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, which amended EO 11988, *Floodplain Management* established in 1977. The revised implementing guidelines explain the use of natural systems, ecosystem processes, and nature-based approaches for identifying alternatives, and provide other technical guidance for implementing EO 11988 (as amended, 2015).

Wetlands are considered sensitive habitats and are subject to federal regulatory authority under Section 404 of the CWA and EO 11990, *Protection of Wetlands*. Jurisdictional wetlands are defined by the USACE as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987). Areas meeting the federal wetland definition are under the jurisdiction of the USACE. Wetlands generally include swamps, marshes, bogs, and similar areas. Like vegetation, the affected environment for wetlands includes only those areas potentially subject to ground disturbance. Additionally, EO 11990 extends to non-jurisdictional wetlands. In accordance with EO 11990, construction within wetlands is avoided, where practicable.

Wetland and floodplain impacts would be reduced to the maximum extent practicable through project design and implementation of environmental protection measures. Actions that include construction in a wetland or a floodplain require a Finding of No Practicable Alternative be prepared and approved by Headquarters AMC. All appropriate permits must be obtained from applicable regulatory agencies to address impacts on wetland areas and floodplains and to determine potential mitigation, if required.

3.3.2 Affected Environment

The affected environment for water resources includes the areas within and immediately surrounding the alternative locations under the Proposed Action, as well as areas downstream of the alternatives.

3.3.2.1 Surface Water

Solano County has over 150 miles of delta sloughs, channels, and bays, including the Suisun and Montezuma Sloughs; the Suisun, Honker, and Grizzly Bays; and Suisun Marsh (Solano County Water Agency 2016c). Travis AFB is located in the northeastern portion of the Fairfield-Suisun Hydrologic Basin. Within this basin, water generally flows south to southeast toward Suisun Marsh, a 116,000-acre contiguous brackish water marsh, the largest remaining on the west coast of North America. Suisun Marsh drains into Grizzly and Suisun Bays; water from these bays flow through the Carquinez Strait to San Pablo Bay and San Francisco Bay, and ultimately into the Pacific Ocean (Solano County Water Agency 2016c).

Travis AFB lies in the southern portion of the Union Creek watershed. The headwaters of Union Creek are located approximately 1-mile north of the base, near the Vaca Mountains, where the creek is an intermittent stream. Union Creek splits into two branches north of the base and enter at storm water inlets A1 and A2. There are eight sub-watersheds delineated within the installation that comprise the majority of surface water flow. Several other minor drainages flow onto and off the installation as sheet flow during storm events or from irrigation return flow from adjacent agricultural lands (Travis AFB 2015). Travis AFB has defined storm water Outfalls I through VI and B1 through B7 (eight total outfalls) that correspond with the eight

sub-watersheds. Four of these outfalls are associated with industrial discharge leaving the facility in quantities sufficient to form a measurable waterway during a storm event. These permitted outfalls are defined as Outfalls I, VI, B2, and B3. Union Creek accepts the vast majority of the storm water exposed to industrial activities (Travis AFB 2015).

As noted above, surface water from Travis AFB discharges to the south, flowing into Union Creek, several swamps, marshy areas, and troughs before discharging into Hill Slough and Loco Slough. The USEPA has grouped these waterways into the Suisun Marsh Wetlands Impairment. California has evaluated several of these waterways and found them impaired from mercury, nutrients, low dissolved oxygen and total dissolved solids/chlorides. Further studies are being conducted by the State to determine if total maximum daily loads will be implemented (Travis AFB 2015). Based on the California 2012 CWA Section 303(d) listing (the latest report available), no total maximum daily loads are associated with the base or these watersheds (California EPA 2016).

For Travis AFB, CWA requirements are administered by the State Water Resources Control Board, and enforced by Region 2—the San Francisco Bay Regional Water Quality Control Board. Travis AFB is on record with a Notice of Intent to comply with the requirements of the California General Industrial Activities Storm Water Permit (CAS000001). The base manages storm water runoff with its Storm Water Pollution Prevention Plan, which outlines engineering and management strategies designed to enhance the quality of the base's storm water discharges, especially releases related to industrial and construction activities (Travis AFB 2015).

3.3.2.2 Ground Water

Travis AFB is located within the Suisun-Fairfield Valley Groundwater Basin encompassing an area of 133,600 acres underlying the central portion of Solano County. Thick sequences of highly impermeable, marine sedimentary rock underlying the basin are classified as non-water bearing. Water yields from the basin are generally low and of poor quality (California Groundwater Bulletin 2014). Consequently, the majority of potable water supplied to the cities of Vallejo, Fairfield, and Suisun City is imported from Lake Berryessa Reservoir, located approximately 20 miles northwest of Travis AFB in nearby Napa County, and the North Bay Aqueduct (Solano County Water Agency 2016b).

Travis AFB is not underlain by extensive water-bearing materials, as shown by the absence of major water supply wells near the base and the presence of extensive well fields to the northeast and west. However, there are wells 5 miles to the north of base on Cypress Lakes Golf Course that account for approximately 10 percent, or 75 million gallons, of potable water supply annually to Travis AFB (Travis AFB 2016a). Groundwater occurs at the base in shallow deposits and flows south of the base into the Suisun Marsh, to Suisun Bay, and ultimately into the San Francisco Bay, generally following the surface topography. Recharge to the shallow groundwater table is from the foothills of Cement Hill to the north, in channel infiltration from the draining area of nearby creeks (Union Creek, Denverton Creek, and smaller unnamed creeks northwest of the base), and through direct precipitation (Travis AFB 2016a).

Over 4 million gallons per month of groundwater extracted from contaminated groundwater plumes under Travis AFB are treated and discharged to Union Creek pursuant to two interim Groundwater Records of Decision with the USEPA, the California Department of Toxic Substances Control, and the San Francisco Bay Regional Water Quality Control Board. This treated groundwater supplements the flow of the eastern branch of Union Creek (Travis AFB 2015, 2016a).

3.3.2.3 Floodplains

The Federal Emergency Management Agency (FEMA) has not completed a study to determine flood hazards at Travis AFB so a FEMA flood map is not available (FEMA 2016). However, Travis AFB recently conducted updated jurisdictional delineations for floodplains in 2014 and again in 2016. The 2016 survey indicates there are no 100-year or 500-year floodplains or any other surface water features within or near the affected environment (Travis AFB 2016c).

3.3.2.4 Wetlands

Travis AFB recently conducted updated jurisdictional delineations for wetlands and vernal pools in 2014 and again in 2016. The surveys indicate there are no wetlands or other surface water features located within or near the affected environment (Travis AFB 2016c).

3.4 Biological Resources

3.4.1 Definition of the Resource

Biological resources include plant and animal species and the habitats within which they occur. Plant associations are generally referred to as vegetation and animal species are referred to as wildlife. Habitat can be defined as the resources and conditions present in an area that produces occupancy of a plant or animal (Hall et al. 1997). Although the existence and preservation of biological resources are intrinsically valuable, these resources also provide aesthetic, recreational, and socioeconomic values to society. This analysis focuses on species or vegetation types that are important to the function of the ecosystem, of special societal importance, or are protected under federal or state law or statute. For purposes of this analysis, these resources are divided into three major categories: vegetation, wildlife, and special status species.

Vegetation includes all existing terrestrial plant communities as well as their individual component species. The affected environment for vegetation includes only those areas potentially subject to ground disturbance.

Wildlife generally includes all fish, amphibian, reptile, bird, and mammal species with the exception of those identified as special status species, which are treated separately.

Special status species are those species officially listed as endangered or threatened, or any species that is a candidate for listing as endangered or threatened under the Federal ESA; California-listed threatened, endangered, or rare species; and/or California Department of Fish and Wildlife fully protected species or species of concern in addition to any species afforded federal protection under the Migratory Bird Treaty Act and/or the Bald and Golden Eagle Protection Act. The USAF conducted a Base-wide programmatic section 7 consultation with the USFWS in 2018 for multiple classes of actions at Travis AFB, which resulted in a Base-wide Biological Opinion being issued by the USFWS (USFWS 2018). Per the Programmatic Agreement between Travis AFB and USFWS, a Project Analysis for the Proposed Action was submitted to the USFWS on February 18, 2020 that outlines potential impacts to federally listed species (see Appendix A for correspondence).

Endangered Species Act. The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to recover listed species. Section 7 of the ESA requires action proponents to consult with the USFWS or National Oceanic and Atmospheric Administration Fisheries to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of

National Oceanic and Atmospheric Administration are mainly marine wildlife such as whales and anadromous fish such as salmon. Under the ESA, species may be listed as either endangered or threatened. “Endangered” means a species is in danger of extinction throughout all or a significant portion of its range. “Threatened” means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened (USFWS 2016).

Migratory Bird Treaty Act. Most birds are protected under the Migratory Bird Treaty Act, and their conservation by federal agencies is mandated by EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*). Under the Migratory Bird Treaty Act, it is illegal for anyone, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation. Under EO 13186, each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement a Memorandum of Understanding with the USFWS that promotes the conservation of migratory bird populations.

In July 2006, the DoD and USFWS signed the Memorandum of Understanding to promote the conservation of migratory birds. In it, specific activities were identified (e.g., Partners in Flight and Integrated Natural Resources Plans) where cooperation between the two agencies will contribute to the conservation of migratory birds and their habitats. In February 2007, 50 CFR part 21.15 authorized the take incidental to military readiness activities. It states that the Armed Forces may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities that the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces must confer and cooperate with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects. Military readiness activities, as defined in Public Law 107-314, section 315(f) in the 2003 National Defense Authorization Act, includes all training and operations of the Armed Forces that relate to combat, and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use.

Bald and Golden Eagle Protection Act. Bald and golden eagles are protected by this act. It prohibits anyone, without a permit issued by the Secretary of the Interior, from taking eagles, including their parts, nests, or eggs. The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. “Disturb” means: “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (16 U.S. Code sections 668-668c).

3.4.2 Affected Environment

The region of influence (ROI) for biological resources consists of the project footprints and a 250-foot buffer surrounding the proposed project footprints.

3.4.2.1 Vegetation

The Alternative 1 site was previously residential housing, but all structures and interior roads have been demolished and cleared, and the site is now a grassy field dominated by non-native grasses and forbs that is regularly mowed, with scattered ornamental trees. No aquatic habitats occur on the site.

The Alternative 2 site was previously residential housing, but all structures and interior roads have been demolished and cleared, and the site is now a grassy field dominated by non-native grasses and forbs that is regularly mowed, with scattered ornamental trees. The site has an existing blue running track, which would remain in place. No aquatic habitats occur on the site. Immediately east of the Alternative 2 site, is open space private land that appears to be managed with grazing.

Both proposed alternative locations are highly disturbed, non-native habitats.

3.4.2.2 Wildlife

Wildlife species expected to occur within the affected environment would be similar to those found in disturbed grassland communities. Species expected to occur include jack rabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), deer mouse (*Peromyscus maniculatus*), western fence lizard (*Sceloporus occidentalis)*, gopher snake (*Pituophis melanoleucus*), and a variety of birds including house sparrow (*Passer domesticus*), red-winged black bird (*Agelaius phoeniceus*), and ring necked pheasant (*Phasianus colchicus*). Additionally, a number of bird species (e.g., raptors and songbirds) likely move through these areas during migration, transit, or during foraging/hunting. No aquatic features are found; therefore, strictly aquatic species would not be found within the affected environment.

The USAF and Partners in Flight developed a checklist that identifies 153 bird species that occur or have the potential to occur on base (DoD 2016). To support conservation, the base monitors for resident and transient migratory birds to determine population trends in association with habitat management; protects the remnant natural habitats that support migratory birds; and develops management strategies for high priority species designated in the Partners in Flight Landbird Conservation Plan (Rosenberg et al. 2016).

3.4.2.3 Special-Status Species

A list of special status species that potentially occur in the vicinity of the Proposed Action has been compiled from the results of previous studies conducted at the base, the California Natural Diversity Database (California Department of Fish and Wildlife 2017), the California Native Plant Society (CNPS [2017]), and the USFWS Information for Planning and Conservation website (USFWS 2017). Table 3.4-1 identifies 19 special status species (6 plants and 13 animals) that may occur on Travis AFB and their potential to occur within the affected environment.

Project-specific surveys were conducted for rare plants in May of 2017 (Cardno 2017a), and site assessments for CTS were conducted in January 2017 (Cardno 2017b). GIS data reflecting recent and past surveys at Travis AFB (Travis AFB 2016c) was reviewed to determine the potential presence of the other species listed in Table 3.4-1.

Table 3.4-1. Special Status Species that May be Located on Travis Air Force Base

Scientific Name	Common name	Protection Status	Presence in Affected Environment?	Critical Habitat Present?
Plants				
Gratiola heterosepala	Boggs Lake hedge hyssop	CE/CNPS 1B.2	No	NA
Neostapfia colusana	Colusa grass	FT/CE/CNPS 1B.1	No	No
Lasthenia conjugens	Contra Costa goldfields	FE/CNPS 1B.1	No	No
Tuctoria mucronata	Crampton's tuctoria	FE/CE/CNPS 1B.1	No	No
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	FT/CE/CNPS 1B.1	No	No
Trifolium amoenum	Showy Indian clover	FE/CNPS 1B.1	No	No
Animals				
Agelaius tricolor	Tricolored blackbird	CSSC	Potential	NA
Aquila chrysaetos	Golden eagle	BGEPA	Potential	NA
Athene cunicularia	Burrowing owl	CSSC	Potential	NA
Buteo swainsonii	Swainson's hawk	ST	Potential	NA
Rana draytonii	California red-legged frog	FT/CSSC	No	No
Ambystoma californiense	California tiger salamander	FT/CT	Potential upland habitat	No
Actinemys marmorata	Western pond turtle	CSSC	No	NA
Thamnophis gigas	Giant garter snake	FT/CT	No	No
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	FT	No	No
Elaphrus viridis	Delta green ground beetle	FT	No	No
Branchinecta conservatio	Conservancy fairy shrimp	FE	Not known to occur on base	No
Branchinecta lynchi	Vernal pool fairy shrimp	FT	No	No
Lepidurus packardi	Vernal pool tadpole shrimp	FE	No	No

Sources: California Department of Fish and Wildlife 2017; CNPS 2017; DoD 2016; Travis AFB 2011; USFWS 2017a.
Notes: NA = Not Applicable; BGEPA = Bald and Golden Eagle Protection Act; CE = California Endangered; CNPS = California Native Plants Ranking System; CSSC = California Species of Special Concern; CT = California Threatened; FE = Federal Endangered; FT = Federal Threatened; ST = Special Status; 1B.1 = Rare or endangered in California and elsewhere; seriously threatened in California; 1B.2 = Rare or endangered in California and elsewhere; fairly threatened in California

No rare plant species were observed during 2017 surveys, and there are no records of rare plants occurring in either of Proposed Action alternative sites Cardno 2017a). Figure 3.4-1 shows that the Proposed Action is within the 1.3-mile buffers of known California tiger salamander (CTS) breeding ponds. Therefore, both of the Proposed Action alternative sites could contain upland habitat for the tiger salamander.

3.4.2.3.1 California Tiger Salamander

The CTS is a large terrestrial salamander that is endemic to California and native to Solano County. CTS larvae develop in vernal pools and ponds in which they were born, however, the species is otherwise terrestrial and spends most of its post-metamorphic life in widely dispersed underground retreats (Shaffer et al. 2004, Trenham et al. 2001). Because CTS spend most of their lives underground, individuals are rarely encountered even in areas where CTS are abundant. Subadult and adult CTS typically spend the dry summer and fall months in the burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Loredo and Van Vuren 1996).

During winter rains between November and February, adults emerge from underground retreats to breed (Stebbins 2003, Loredo and Van Vuren 1996). Adults may travel long distances between upland sites and breeding sites. In a study of CTS conducted on the Jepson Prairie Preserve, Solano County, CA, Searcy and Shaffer (2008) found that CTS typically travel less than 0.6 miles from breeding sites. Males typically spend

6-8 weeks at breeding ponds, while females typically spend only 1-2 weeks (Loredo and Van Vuren 1996). In years of below average rainfall, or when rains occur late in the season, females may forego breeding (Trenham et al. 2000). Vernal pool and semi-permanent, quiet waters provide sites for egg-laying. Metamorphosis typically occurs from May to July. The number of larvae that reach metamorphosis is highly variable (Trenham, et al. 2000). In addition to a variety of ecological factors, the number of larvae that transform appears to be related to the timing and amount of rainfall during the previous winter (Loredo and Van Vuren 1996).

Following metamorphosis, juvenile CTS leave their pools and move to upland habitat. This emigration can occur in both wet and dry conditions (Loredo and Van Vuren 1996). Wet conditions are more favorable for upland travel, but summer rain events seldom occur as metamorphosis is completed and ponds begin to dry. As a result, juveniles may be forced to leave their ponds on rainless nights. Under dry conditions, juveniles may be limited to seeking upland refugia in close proximity to their aquatic larval pool. These individuals often wait until the next winter's rains to move further into more suitable upland refugia. Juveniles remain active in their upland habitat, emerging from underground refugia during rainfall events to disperse or forage (Trenham and Shaffer 2005).

CTS are known to travel long distances between breeding ponds and their upland refugia Searcy et al. (2013). Orloff (2011) found CTS greater than 1.2 miles from known breeding ponds in Contra Costa County. CTS are also known to travel between breeding ponds. One study found that 20 to 25 percent of the individuals captured at one pond were recaptured later at other ponds approximately 1,900 and 2,200 feet away (Trenham et al. 2001).

Multiple factors have contributed to declines of CTS, including habitat loss and fragmentation; predation from, and competition with, invasive species; hybridization with non-native barred tiger salamanders (*Ambystoma tigrinum*); mortality from road crossings; contaminants; and small mammal burrow control efforts. Other potential threats include introduction of diseases such as ranaviruses and chytrid fungi, and also climate change (USFWS 2017b).

All of Travis AFB occurs within the range of the CTS and the species is known to occupy both breeding and upland habitat on the base, in both adult and larval forms (Travis AFB 2016b). No breeding habitat occurs within either of the Proposed Action alternative sites.

An analysis of CTS risk assessment areas on Travis AFB was conducted in support of the *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* (Travis AFB 2017). Based on the analysis, the Alternative 1 and 2 sites occur in CTS “medium risk” areas (Travis AFB 2017).

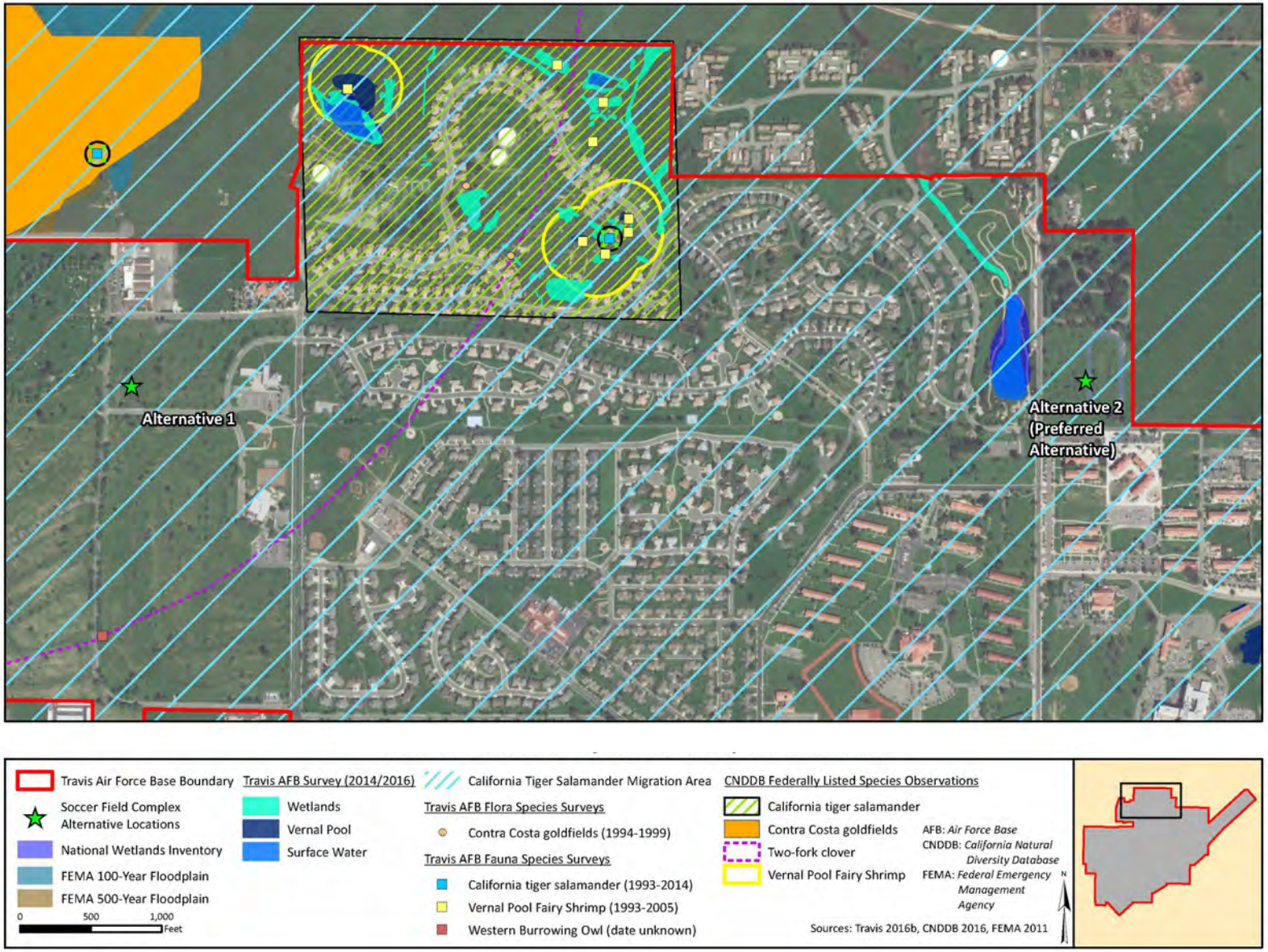

Figure 3.4-1. Water and Biological Resources in the Affected Environment

3.5 Cultural Resources

3.5.1 Definition of the Resource

Cultural resources include, but are not limited to, buildings, structures, objects, prehistoric and historical archaeological resources, or any other physical evidence of human activity considered important to a culture for scientific value, traditional use, or other reasons.

Significant cultural resources are those generally over 50 years of age that are listed in, or determined eligible for listing in, the NRHP based on having met one or more of the following criteria for significance defined in 36 CFR 60.4:

(a) Association with events that have made a significant contribution to the broad patterns of history or prehistory;
(b) Association with the lives of persons significant in our past
(c) Represent unique or distinctive architectural characteristics of a type, period, method of construction or possess high artistic values or the work of a master;
(d) Have yielded, or may be likely to yield, information important in history of prehistory.

In addition to historic significance, a cultural resource must also retain integrity, which is the ability to convey said historic significance. The NRHP criteria recognize sevens aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. A resource must retain several, if not all of these aspects, to be considered eligible for listing in the NRHP. For archaeological resources, eligibility is generally determined under Criterion D for the ability to provide important information in prehistory and/or history. The assessment of integrity for archaeological properties depends on the data requirements of an applicable research design. This includes the identification of appropriate physical remains in an intact depositional (horizontal or vertical) context. Once a federal agency has determined a cultural resource to be significant, the agency has a responsibility to manage the resource as a historic property.

While there are multiple laws, regulations, and executive orders that govern the identification and management of cultural resources on Travis AFB, the main regulatory drivers are Section 110 and 106 of the NHPA of 1966 [54 USC 300101 et seq.] and associated regulations [36 CFR 800]. Section 110 of NHPA requires all federal agencies to identify historic properties on their landholdings while Section 106 of NHPA requires all federal agencies to take into account the effects of their undertakings on historic properties and seek to avoid, minimize, or mitigate adverse effects to these properties (36 CFR 800.1(a)). Section 106 also requires agencies to consult with federally recognized Indian tribes and other stakeholders with a vested interest in the undertaking.

3.5.2 Affected Environment

The APE for cultural resources are those areas likely to be affected by the construction of the Soccer Field Complex at one of two alternative locations.

3.5.2.1 Archaeological Resources

Travis AFB has been completely surveyed for cultural resources and no known NRHP-eligible sites have been located to date. Nine archaeological sites have been recorded at Travis AFB. These include two prehistoric lithic sites, six historic farmsteads, and portions of the Leisure Town Road that dates to the early 20th century. The two prehistoric sites were removed, one through mitigation measures and the other through disturbance. The six farmsteads were all considered not eligible for listing in the NRHP and the

California SHPO concurred on July 29, 1996 (Travis AFB 2016c). The portion of the Leisure Town Road on Travis AFB was recommended not eligible and the California SHPO concurred on July 29, 1996 (Travis AFB 2016c). None of these sites is located within the APE.

In an effort to provide an overview for use in the ongoing Native American consultation, Travis AFB developed site sensitivity models for both surface and subsurface archaeological deposits at the main base and the outlying facilities managed by the base (Meyer 2017). The surface sensitivity model used the following factors: proximity to freshwater, slope, and landform age. These factors have been used to correlate site distributions in Solano County and more broadly, in Central California. Based on the surface sensitivity model, the surface site potential was "Highest" in approximately 8.8% (~467 acres) and "High" in 48% (~2,530 acres) within the study area. There was also a "Moderate" potential for surface sites in a little more than one-quarter (28.2%) and approximately 15% (~811 acres) have a "Low" or "Lowest" potential within the study area. The two main areas with the highest site potential occurred within the main base, one located along the former channel Union Creek near the central part of the main runway, and the other is located along the middle tributary of Union Creek (Meyer 2017).

The factors used for the buried site sensitivity model included proximity to water and the age of landforms. It was assumed that buried sites are more likely to be located beneath younger landforms. The majority of the study area was considered "Low" to "Lowest" potential for buried sites with approximately 5,300 acres (99.7%). This reflects the age of the surface landforms which are mostly Pleistocene in age. Fewer than 16 acres (0.3%) have a "Moderate" or "High" potential for buried sites and no "Highest" potential zones were identified. Therefore, the potential for buried prehistoric sites is restricted to very small portions of Travis AFB and the associated facilities (Meyer 2017).

3.5.2.2 Architectural Resources

Three architectural surveys were conducted at Travis AFB for buildings that dated between 1943 and 1991. Of the 271 buildings evaluated, 28 buildings were determined eligible for listing in the NRHP with SHPO concurrence as NRHP-eligible. The remaining 243 buildings were determined not eligible for listing in the NRHP (Travis AFB 2016c). There are no eligible or potentially eligible buildings located within the APE.

3.5.2.3 Traditional Cultural Properties

No traditional cultural properties or sacred sites have been identified at Travis AFB (Travis AFB 2016c). As part of the preparation of the Travis AFB 2016 ICRMP, the USAF contacted the California Native American Heritage Commission to identify any American Indian tribes who might be interested in actions occurring on Travis AFB. There are two federally recognized American Indian tribes identified by the Native American Heritage Commission, which could have interest with activities on Travis AFB. For this EA, letters initiating government-to-government consultation were sent on April 6, 2017 to the Cortina Indian Rancheria of Wintun Indians of California and the Yocha Dehe Wintun Nation (see Appendix A).

3.6 Recreation

3.6.1 Definition of the Resource

Recreational facilities are defined as those amenities that provide relaxation, rest, activity, education, or other opportunities for leisure services and community support that lead to an enhanced quality of life. These include, but are not limited to parks, lakes, trails, athletic fields, playgrounds, and community centers. Recreational areas may include any type of activity in which area residents, visitors, and tourists may

participate. Activities include hiking, boating, picnicking, playground use, boating, swimming, fishing, and organized or informal sports.

3.6.2 Affected Environment

There are numerous recreational programs and facilities available to Travis AFB personnel to support the moral, welfare, and recreation of military personnel, their families, and civilian personnel. The surrounding region provides private and public lands with an array of recreational activities from fishing and boating to camping and hunting. Recreational activities and facilities on base include the equestrian center, fishing, Family Camp, picnic/park areas, parkour and jogging courses, an interpretive nature trail, skeet and trap range, and Cypress Lakes golf course. The equestrian center includes stall/paddock facilities for 60 animals and a covered arena that is used by Saddle Club members and controlled by the 60th Force Support Squadron. On-base fishing is limited to a single 2.2-acre man-made lake. Family Camp consists of 48 recreational vehicle campsites with electrical and water hook-ups and six tent sites on 3.5 acres. Ten acres have been developed for 22 picnic sites and park areas. An exercise course is located within North Gate Park Pond and covers 1.4 miles and 20 exercise stations. The 10-acre skeet and trap range consists of a skeet course, trap course, and range safety zones. Lastly, the Cypress Lakes Golf Course is a 206-acre, 18-hole course approximately 2 miles north of the base.

4 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

Environmental impacts that would result from construction and operation of the Soccer Field Complex at Travis AFB are evaluated in this section. Impacts analyses are presented by resource area, as described in Section 3, Affected Environment. Analyses for the Proposed Action are presented for Alternative 1, Alternative 2 (Preferred Alternative), and the No-Action Alternative. Section 4.7 presents Unavoidable Adverse Effects, Relationship of Short-term Uses and Long-term Productivity, and Irreversible and Irretrievable Commitment of Resources. Cumulative impacts are presented in Section 4.8.

4.2 Air Quality, Greenhouse Gas Emissions, and Climate Change Adaptation

4.2.1 Methodology

Localized construction emissions are the primary air quality issue associated with the Proposed Action. All of the construction that would occur under the Proposed Action would involve construction and other heavy equipment operating within Travis AFB.

4.2.1.1 Thresholds of Significance

4.2.1.1.1 Construction Emissions

The following measures shall be implemented prior to construction under the Proposed Action:

- Contractor special purpose construction diesel fueled equipment and/or in-use off-road diesel fueled vehicles rated equal or greater than 25 horsepower shall be registered with the California Air Resources Board prior to operate on Travis AFB. [13 CCR 2449].
- Contractor portable diesel-fueled internal combustion engines rated equal or greater than 50 brake horsepower shall be registered with the California Air Resources Board prior to operate on Travis AFB. [13 CCR 2450]

The BAAQMD adopted thresholds of significance in 2010, but the ruling was challenged, and the 1999 guidelines are currently being used (BAAQMD 2016). Therefore, no regulatory thresholds exist for construction-related emissions (BAAQMD 1999). However, best management practices to control fugitive dust would be employed and may include some or all of the following:

- Water all active construction areas at least twice daily;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;
- Pave, apply water three times daily, or apply soil stabilizers on all unpaved access roads and parking and staging areas at construction sites;
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites; and
- Sweep daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

The following Enhanced Control Measures would be implemented at the construction site (BAAQMD 1999):

- All Basic Control Measures outlined above;

- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more);
- Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.);
- Limit traffic speeds on unimproved surfaces to 15 miles per hour;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways; and
- Replant vegetation in disturbed areas as quickly as possible.

In addition, the following Optional Control Measures are strongly encouraged for implementation at large or sensitive construction sites (BAAQMD 1999):

- Install wheel washers for all exiting trucks, or wash off tires or tracks of all trucks and equipment leaving the site;
- Install wind breaks, or plant trees/vegetative windbreaks at windward side(s) of construction areas;
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour; and
- Limit the area subject to excavation, grading, and other construction activity at any one time.

4.2.1.1.2 Operational Emissions

The BAAQMD provides quantitative thresholds of significance levels to evaluate ongoing operations of proposed projects. These thresholds must consider both direct emissions associated with ongoing project operations, as well as indirect emissions sources such as motor vehicles traveling to and from the project site (BAAQMD 1999). There are several pertinent requirements for evaluating operational emissions under BAAQMD:

- Project must evaluate localized levels of CO emissions from vehicles that would exceed 550 pounds per day;
- Projects should evaluate the potential for odor impacts;
- Toxic air contaminants should not have a probability of cancer risk of greater than ten in one million nor a hazard index greater than one for the maximum exposed individual;
- Acutely hazardous materials should be evaluated for accidental releases; and
- Cumulative impacts should be assessed.

4.2.1.1.3 Emissions Thresholds and Permitting

Travis AFB's Synthetic Minor Operating Permit limits the base's potential emission levels to 34 tons per year for emissions of precursor organic compounds [i.e., NO_x and ROGs] and 95 tons per year for all other criteria air pollutants. If the Proposed Action emissions exceed these emissions thresholds, the Proposed Action would be subject to a separate BAAQMD permit. Additionally, a BAAQMD Authority to Construct Permit would be required for construction and the Synthetic Minor Operating Permit may need to be modified if source locations and equipment in the existing permit are changed.

4.2.1.1.4 Emissions Calculation Methodology

Construction and operations emissions were calculated using the California Emissions Estimator Model (CalEEMod) Version 2013.2.2. CalEEMod is used in California for estimating criteria pollutants and GHG for NEPA analyses. CalEEMod calculates ROGs, which are the standard for California emissions reporting

and similar to the federal term of VOCs. Both are families of organic gases that participate in atmosphere photochemical reactions. The difference between ROGs and VOCs are that the CARB and the USEPA promulgated regulatory exemptions for gases that have negligible photochemical reactivity. The exemption lists differ only slightly and are used interchangeably.

4.2.2 Alternative 1

4.2.2.1.1 Construction

Emissions resulting from construction would be temporary and transient, and the short-term exposure levels would be minimal and well less than 1 ton per year for any criteria air pollutant. None of the air quality standards would be exceeded and would be well below established threshold *de minimis* limits as shown in Table 4.2-1 (see Appendix C for details on construction emissions). With implementation of BAAQMD's control measures outlined above, fugitive dust emissions would be well below thresholds of significance. Accordingly, impacts to air quality associated with construction of the Soccer Field Complex would be less than significant.

Table 4.2-1. Alternative 1 Construction Emissions

Construction Year	PM_{10}	$PM_{2.5}$	CO	SO_2	NO_x	ROG	CO2e
	Tons per Year						*Metric Tons per Year*
2021	0.0709	0.0248	0.1772	0.00027	0.2399	0.0263	24.57
Federal *de minimis* thresholds	**100**	**100**	**NA**	**NA**	**NA**	**100**	**NA**
Less than *de minimis*	**Yes**	**Yes**	**NA**	**NA**	**NA**	**Yes**	**NA**

Source: BAAQMD 2016; CalEEMod (Appendix C).
Note: NA = not applicable

4.2.2.1.2 Operation

Almost no operational emissions from the Soccer Field Complex would be generated except for emissions from vehicles driving from work or home to the complex and landscaping machinery emissions (mowers, edgers, trimmers, blowers, etc.). Since the Soccer Field Complex would be located near the housing area, most participants would have a short drive or walk to the complex and thus the emissions would be minimal. Emissions resulting from operation of the Soccer Field Complex would be well below BAAQMD operational thresholds and much less than the 100 tons per year for federal conformity. Table 4.2-2 shows that the operational emissions for any of the criteria pollutants emissions would be negligible. Consequently, impacts to air quality associated with construction of the Soccer Field Complex would be less than significant and there would be no net loss in air quality resulting from activities at the Soccer Field Complex.

Table 4.2-2. Alternative 1 Operational Emissions

	PM_{10}	$PM_{2.5}$	CO	SO_2	NO_x	ROG	CO2e
	Tons per Year						*Metric Tons per Year*
Total	0.00058	0.00011	0.1818	0.00002	0.0185	0.3364	6.8422
Federal *de minimis* thresholds	**100**	**100**	**NA**	**NA**	**NA**	**100**	**NA**
Less than *de minimis*	**Yes**	**Yes**	**NA**	**NA**	**NA**	**Yes**	**NA**

Source: BAAQMD 2016; CalEEMod (Appendix C).
Note: NA = not applicable

4.2.2.1.3 Conformity Determination

All of the emissions projected from either construction or operations would fall well below the *de minimis* thresholds (see Table 3.2-2) for the general conformity rule. As such, a rigorous Conformity Determination is not required for Alternative 1.

4.2.2.1.4 Greenhouse Gas Emissions

Greenhouse gas emissions for Alternative 1 would be dominated by construction emissions for activities during the first year of construction and would be approximately 25 metric tons per year. These emissions are minimal when compared to the overall regional GHG emissions of over 3.1 million metric tons per year, equaling less than 0.001 percent of the regional GHG emissions.

4.2.2.1.5 Climate Change Adaptation

According to the USEPA, climate changes in the southwest are predicted to continue to have warming temperatures and reduced snowpack observed in recent decades in the Southwest. Increasing temperatures and more frequent and severe droughts are expected to heighten competition for water resources for use in cities, agriculture, and energy production (USEPA 2016). Drought, wildfire, invasive species, pests, and changes in species' geographic ranges will increase threats to native forests and ecosystems (USEPA 2016c). Implementation of Alternative 1 would not appreciably add to global climate change due to its relative minor GHG emissions. As such, the effects of climate change would not have a widespread impact on Travis AFB nor would Alternative 1 be appreciably altered by climate change.

As climate science advances and better determines if and how human-generated factors may affect climate, the DoD would regularly reevaluate climate change risks and opportunities to develop policies and plans to manage its effects on the operating environment, missions, and facilities. Managing the national security effects of climate change requires the DoD to work collaboratively, through a whole-of-government approach, with local, state, and federal agencies.

4.2.3 Alternative 2 (Preferred Alternative)

4.2.3.1.1 Construction, Operation, and Conformity Determination

Under Alternative 2, emissions associated with construction and operation of the proposed Soccer Field Complex would be the same as described under Alternative 1. Although construction for the Soccer Field would take place at another location, the Soccer Field Complex would be the same size as specified under Alternative 1. All of the emissions projected from either construction or operations would fall well below the *de minimis* thresholds for the general conformity rule (see Table 3.2-2). As such, a rigorous Conformity Determination is not required for Alternative 2.

4.2.3.1.2 Greenhouse Gas Emissions and Climate Change Adaptation

Under Alternative 2, GHG emissions and climate change adaptation associated with construction and operation of the proposed Soccer Field Complex would be the same as described under Alternative 1.

4.2.4 No-Action Alternative

Under the No-Action Alternative, the proposed construction activities would not occur. Existing air quality conditions (as described in Section 3.2) would remain unchanged; therefore, no impacts to air quality would occur.

4.3 Water Resources

4.3.1 Methodology

When land is developed, the hydrology, or natural cycle of water, can be altered. Impacts on hydrology can result from land clearing activities, disruption of the soil profile, loss of vegetation, introduction of pollutants, new impervious surface, and an increased rate or volume of runoff. Without proper management controls, these actions can adversely impact the quality and/or quantity of water resources.

Criteria for evaluating impacts related to water resources associated with the proposed action and alternatives are water availability, water quality, groundwater recharge, and adherence to applicable regulations. Impacts are measured by the potential to reduce water availability to existing users, endanger public health or safety by creating or worsening health hazards or safety conditions, or violate laws or regulations adopted to protect or manage water resources. An impact to water resources would be significant if it would: 1) adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions; 2) threaten or damage unique hydrologic characteristics; or 3) violate established laws or regulations that have been adopted to protect or manage water resources of an area.

4.3.2 Alternative 1

4.3.2.1.1 Surface Water

Construction of the Soccer Field Complex under Alternative 1 would introduce approximately 2.19 acres of new impervious surfaces. The temporary disturbance and the increase in impervious surfaces resulting from construction and demolition could introduce temporary localized increases in runoff and total suspended particulate matter to nearby surface waters. However, implementation of erosion control measures prescribed in the Construction Storm Water Discharge Permit No. 2009-0009-DWQ (Construction General Permit covering Land Disturbance Activities) for construction sites of 1 acre or more, would minimize sedimentation in surface waters (Travis AFB 2015).

In accordance with UFC 3-210-10 (as amended 2015) and Section 438 of the Energy Independence and Security Act (2007), facilities having a footprint that exceeds 5,000 square feet (0.1 acre) must maintain or restore the pre-development site hydrology to the maximum extent technically feasible. Agencies can meet the pre-development hydrology requirements in two ways: 1) managing on site the total volume of rainfall from the 95th percentile storm, or 2) managing on site the total volume of rainfall based on a site-specific hydrologic analysis through various engineering techniques. Adherence to these design controls would ensure the site's hydrology would be maintained to the greatest extent possible.

A construction-specific Stormwater Pollution Prevention Plan is required to manage construction related runoff. These plans would include best management practices (e.g., silt fencing, seeding) and monitoring requirements to minimize erosion and sedimentation. In addition, the detention basin that would be constructed would be adequately sized to hold stormwater runoff from both the soccer field and the parking lot; preliminary designs of the basin measure 0.16 acre, with a depth of 3 feet (TranSystems 2013).

Any potential impacts resulting from erosion or temporary increases in surface runoff during construction activities would be temporary and minimized through erosion control measures. Therefore, impacts to surface waters under Alternative 1 would not be significant. Once operational, storm water runoff would be detained in the basins and would not introduce significant effects to surface waters.

4.3.2.1.2 Ground Water

Under Alternative 1, the increase in the amount of impervious surface (2.19 acres) would not result in a significant decrease in groundwater recharge. Of the 2.19 acres of impervious surfaces, 1.80 acres would consist of artificial turf, which would allow for some water penetration through the turf. In addition, Alternative 1 would not affect the quantity or quality of water available to the installation or surrounding areas, nor would it increase the amount of water withdrawn from ground water resources. The integration of water harvesting and natural open space into project design would further minimize potential adverse impacts due to increases in impervious surface. The use of these features would also increase groundwater recharge through direct percolation offsetting the loss of pervious surface due to future construction. In summary, no significant ground water impacts would be introduced if Alternative 1 were implemented.

4.3.2.1.3 Floodplains

Alternative 1 would not occur within the 100- or 500-year floodplain. Therefore, no floodplain impacts are anticipated under this alternative.

4.3.2.1.4 Wetlands

No wetlands occur within or near the Alternative 1 footprint. Therefore, no impacts to wetlands would occur under this alternative.

4.3.3 Alternative 2 (Preferred Alternative)

Impacts to surface water, ground water, floodplains, and wetlands would be the same as described under Alternative 1. There would be no significant impacts to water resources if Alternative 2 were implemented.

4.3.4 No-Action Alternative

Under the No-Action Alternative, the proposed construction activities would not occur. Existing conditions (as described in Section 3.3) would remain unchanged; therefore, no impacts to water resources would occur.

4.4 Biological Resources

4.4.1 Methodology

The existence and preservation of natural resources are intrinsically valuable; however, these resources also provide subsistence, recreational, aesthetic, and socioeconomic values to society and should be protected to the best means possible, and as required by law. Impact analysis was conducted using knowledge of wildlife, vegetation, wetlands, and special-status species occurrence data, where available, based on where construction-related ground disturbance would likely occur. Contributing factors considered when assessing direct and indirect impacts on natural resources are based upon determinations of the importance, rarity, and sensitivity of the resource; as well as the duration and frequency of the impact source. This section analyzes the potential for direct or indirect impacts to natural resources, as defined in Section 3.4.

Determination of the significance of potential impacts to biological resources is based on: 1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; 2) the proportion of the resource that would be affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and (4) the duration of ecological ramifications. Impacts to biological resources would be considered significant if species or habitats of concern were significantly affected over relatively large

areas or disturbances resulted in reductions in the population size or distribution of a special status species, or if laws, codes, or ordinances protecting special status species were violated.

4.4.2 Alternative 1

4.4.2.1.1 Vegetation

Under Alternative 1, approximately 3.30 acres of disturbed, non-native grassland and dispersed landscape trees would be converted to a soccer field complex. As the Alternative 1 footprint is already a heavily disturbed area, this would not represent a significant loss of natural habitat. Therefore, impacts to vegetation would be less than significant.

4.4.2.1.2 Wildlife

Construction associated with Alternative 1 would displace wildlife from approximately 3.30 acres of non-native grassland. Individuals of the smaller, less mobile, and burrowing species would likely be killed or injured by construction, whereas mobile species (e.g., birds and larger mammal and reptile species) would disperse to surrounding areas. However, any loss of commonly occurring individuals would not represent a noticeable portion of the population. Overall, no significant impacts to wildlife populations and their habitats would occur.

4.4.2.1.3 Special-Status Species

California Tiger Salamander. Under Alternative 1, no CTS breeding habitat would be impacted, as no such habitat occurs in the project area. Alternative 1 would entail approximately 3.30 acres of permanent impacts and 1.6 acres of temporary impacts to medium risk upland habitat (Travis AFB 2017). Although the project area contains suitable upland grasslands, the project area is considered a medium risk area for CTS because of the high amount of dispersal barriers and development. The project area is largely surrounded by streets with square curbs and developed/disturbed habitats.

CTS that may occur within the project area may be killed or injured from inadvertent trampling by workers from foot traffic and operation of construction equipment. Construction and operational activities may result in harassment from noise, vibration, and night-lighting and may disturb CTS causing them to leave their upland refugia and increase their exposure to desiccation and predation. During construction, CTS may potentially get trapped in open excavations or construction trenches, making them vulnerable to desiccation, starvation, and predation. Implementation of conservation measures derived from the Base-wide Biological Opinion (USFWS 2018), and provided in the Project Analysis for the Proposed Action (see Appendix A), to minimize habitat alteration and destruction and loss of individuals including clearly demarcating the project boundary, providing a worker education program, having a USFWS-approved Biologist monitor project activities and relocate CTS out of harm's way, placing escape ramps in excavated holes and trenches, and restoring temporarily disturbed sites with local native plant species would minimize such effects.

Under Alternative 1, a detention basin would be constructed adjacent to the soccer field. As the detention basin temporarily collects storm water, individual CTS may be attracted to it and interrupt their migration to suitable breeding locations. However, while the basin would be located within migration distance of CTS, there are significant dispersal barriers between known breeding ponds and the Soccer Field Complex site, as described in the paragraph above. Although the likelihood of CTS attempting to breed and/or occur in the detention basin is very low, there is a remote possibility that individuals could be found at the

detention basin if seasonal ponding of the detention pond is suitable for CTS breeding. If during the operation phase of the Soccer Field Complex, the detention basin ponds water long enough to support CTS breeding, then the basin will need to be included in the Travis AFB CTS monitoring program and appropriate actions will need to be taken to protect the species.

Implementation of conservation measures derived from the Base-wide Biological Opinion (USFWS 2018), and provided in the Project Analysis for the Proposed Action (see Appendix A), would reduce the potential for direct harm to CTS, and the permanent loss of 3.3 acres of medium risk potential aestivation habitat would not adversely affect the species at the population level.

Burrowing Owls. The non-native grassland habitat in the Alternative 1 footprint could provide nesting habitat for burrowing owls, as small mammal burrows are known to be present. A pre-construction survey for burrowing owls would be conducted prior to any ground-breaking activities. Should there be active nesting on site, re-location of the nest(s) would occur in accordance with the most recent California Department of Fish and Wildlife guidelines. No impacts to the burrowing owl are expected to occur during construction.

Other Special Status Wildlife. Other special status species, such as golden eagles, tricolored blackbirds and Swainson's hawks, would potentially occur in the Alternative 1 site during transit, foraging, and/or hunting, but would not nest or remain in the project area due to lack of habitat for these species. It is expected that these bird species, if present during construction, would temporarily vacate the area and would have the opportunity to return following construction. Alternative 1 does not represent a noticeable loss of nesting or foraging/hunting habitat for any of these species, nor any other migratory bird species.

Additionally, per California Department of Fish and Wildlife standards, if construction occurs during the migratory bird nesting season (February 1 to August 31), surveys for nesting birds within a 1,000-foot radius of the construction area would be conducted. If nests are detected, 250-foot buffers would be established around nests to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers would be maintained until young have fledged or the nests become inactive. Therefore, impacts to golden eagles and other migratory bird species would be less than significant.

4.4.3 Alternative 2 (Preferred Alternative)

4.4.3.1 Vegetation

Under Alternative 2, impacts to vegetation would be nearly identical to those described under Alternative 1. There would be no significant impacts to vegetation if Alternative 2 were implemented.

4.4.3.2 Wildlife

Under Alternative 2, impacts to wildlife would be nearly identical to those described under Alternative 1. There would be no significant impacts to wildlife if Alternative 2 were implemented.

4.4.3.3 *Special Status Species.*

Under Alternative 2, no CTS breeding habitat would be impacted, as no such habitat occurs in the project area. Alternative 2 would entail approximately 3.30 acres of permanent impacts and 1.60 acres of temporary impacts to medium risk upland habitat (Travis AFB 2017). The project area contains a developed track, is largely surrounded by streets with square curbs, and contains other developed/disturbed habitats.

CTS that may occur within the project area may be killed or injured from inadvertent trampling by workers from foot traffic and operation of construction equipment. Construction and operational activities may result in harassment from noise, vibration, and night-lighting and may disturb CTS causing them to leave their upland refugia and increase their exposure to desiccation and predation. During construction, CTS may potentially get trapped in open excavations or construction trenches, making them vulnerable to desiccation, starvation, and predation. Implementation of conservation measures derived from the Base-wide Biological Opinion (USFWS 2018), and provided in the Project Analysis for the Proposed Action (see Appendix A), to minimize habitat alteration and destruction and loss of individuals including clearly demarcating the project boundary, providing a worker education program, having a USFWS-approved Biologist monitor project activities and relocate CTS out of harm's way, placing escape ramps in excavated holes and trenches, and restoring temporarily disturbed sites with local native plant species will minimize such effects.

Under Alternative 2, a detention basin would be constructed adjacent to the soccer field. As the detention basin temporarily collects storm water, individual CTS may be attracted to it and interrupt their migration to suitable breeding locations. However, while the basin would be located within migration distance of CTS, there are significant dispersal barriers between known breeding ponds and the Soccer Field Complex site, as described in the paragraph above. Although the likelihood of CTS attempting to breed and/or occur in the detention basin is very low, there is a remote possibility that individuals could be found at the detention basin if seasonal ponding of the detention pond is suitable for CTS breeding. If during the operation phase of the Soccer Field Complex, the detention basin ponds water long enough to support CTS breeding, then the basin will need to be included in the Travis AFB CTS monitoring program and appropriate actions will need to be taken to protect the species.

Implementation of conservation measures derived from the Base-wide Biological Opinion (USFWS 2018), and provided in the Project Analysis for the Proposed Action (see Appendix A), would reduce the potential for direct harm to CTS, and the permanent loss of 3.30 acres of medium risk CTS habitat would be mitigated via purchase of credits at an approved mitigation bank at a ratio of 2:1. Therefore, Alternative 2 would not adversely affect the species at the population level.

Impacts to other special status species under Alternative 2 would be as described for Alternative 1. Under Alternative 2, no significant impacts to special status species would occur.

4.4.4 No-Action Alternative

Under the No-Action Alternative, the proposed construction activities would not occur. Existing conditions (as described in Section 3.4) would remain unchanged; therefore, no impacts to biological resources would occur.

4.5 Cultural Resources

4.5.1 Methodology

Cultural resources are subject to review under both federal and state laws and regulations. Section 106 of the NHPA of 1966 empowers the Advisory Council on Historic Preservation to comment on federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion in the NRHP. Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP)

are protected under the NHPA. Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by 1) physically altering, damaging, or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible, or atmospheric

elements that are out of character with the property or alter its setting; or 4) neglecting the resource to the extent that it is deteriorated or destroyed. Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and facilities' subsequent use can disturb or destroy cultural resources.

4.5.2 Alternative 1

4.5.2.1.1 Archaeological Resources

Under Alternative 1, the Soccer Field Complex would be constructed west of Twin Peaks Chapel, north of Hackett Avenue and east of Armstrong Street (see Figure 2-2). The site was previously residential housing, but all structures and interior roads have been demolished and cleared. The site is now a grassy field with a few large trees. There are no known archaeological resources within the APE. Therefore, no direct or indirect impacts to archaeological resources would occur by implementing Alternative 1. However, based on the geoarchaeological sensitivity model (Meyer 2017) there is a "High" potential for surface sites under the developed area and "Lowest" potential for buried sites under Alternative 1. An archaeological monitor should be present during subsurface excavations during the construction of the Soccer Field Complex under Alternative 1.

4.5.2.1.2 Architectural Resources

No buildings are located within this APE. Therefore, no direct or indirect impacts to architectural resources would occur by implementing Alternative 1.

4.5.2.1.3 Traditional Cultural Properties

No traditional cultural properties or sacred sites have been identified at Travis AFB; therefore, no direct or indirect impacts to traditional cultural properties would occur by implementing Alternative 1.

4.5.3 Alternative 2 (Preferred Alternative)

4.5.3.1.1 Archaeological Resources

Under Alternative 2, the soccer field complex would be constructed at a site within an existing blue running track, north of Collins Drive and east of Burgan Boulevard (see Figure 2-3). There are no archaeological resources within the APE for Alternative 2. Therefore, no direct or indirect impacts to archaeological resources would occur by implementing the Alternative 2. However, based on the geoarchaeological sensitivity model (Meyer 2017) there is a "High" potential for surface sites under the developed area and "Lowest" potential for buried sites under Alternative 2. An archaeological monitor should be present during subsurface excavations during the construction of the Soccer Field Complex under Alternative 2.

4.5.3.1.2 Architectural Resources

The running track would remain in place, with the soccer field placed inside the loop; no buildings are located within this APE. Therefore, no direct or indirect impacts to architectural resources would occur by implementing Alternative 2.

4.5.3.1.3 Traditional Cultural Properties

No traditional cultural properties or sacred sites have been identified at Travis AFB; therefore, no direct or indirect impacts to traditional cultural properties would occur by implementing Alternative 2.

4.5.4 No-Action Alternative

Implementing the No-Action Alternative would not result in impacts to cultural resources as no construction would occur. Therefore, no direct or indirect impacts to archaeological, architectural, or traditional cultural properties would occur by implementing the No-Action Alternative.

4.6 Recreation

4.6.1 Methodology

To provide an overall framework for evaluating recreational resources within the affected environment, recreational opportunities were identified within the adjacent communities as well as the surrounding municipalities. From there, impacts associated with the Proposed Action alternatives were considered in the context of the recreational landscape to determine the intensity of impact from any potential disruptions of recreational amenities.

4.6.2 Alternative 1

Under Alternative 1, the Soccer Field Complex would be constructed on a site west of the Twin Peaks Chapel. The addition of this complex would expand year-round recreational opportunities for military personnel, their families, and civilian personnel on Travis AFB. In turn, this would increase the network of support and leisure services at Travis AFB, thus improving morale and wellbeing. As a result, there would be beneficial impacts to recreation under Alternative 1.

4.6.3 Alternative 2 (Preferred Alternative)

Proposed recreational impacts under Alternative 2 would be similar to those described under Alternative 1. There would be beneficial impacts to recreation if Alternative 2 were implemented.

4.6.4 No-Action Alternative

The No-Action Alternative means that no construction of the Soccer Field Complex would occur, and the Proposed Action would not be implemented. There would be no official soccer-dedicated fields or facilities on Travis AFB. This alternative would not meet the goal of providing the most useful year-round recreational opportunities to base personnel and their dependents to increase the network of support and leisure services at Travis AFB. Therefore, minor negative, long-term impacts to recreational resources and the mission at Travis AFB would occur.

4.7 Other National Environmental Policy Act Considerations

4.7.1 Unavoidable Adverse Effects

This section presents unavoidable adverse impacts that would result from implementing the Proposed Action. Only resources with potential impacts are presented.

4.7.1.1.1 Air Quality

The emission of air pollutants associated with construction and operation of the proposed facilities would be an unavoidable condition, but would not be considered significant and would not impede attainment or

maintenance of standards within the Air Quality Control Region. Further, while emissions of the proposed facilities would not be subject to the emission cap currently permitted for Travis AFB by the BAAQMD, the amount of emissions associated with the proposed Soccer Field Complex would not significantly impede the emission cap.

4.7.1.1.2 Biological Resources

Travis AFB has conducted consultation with USFWS with respect to potential impacts to federally listed species (see Appendix A). Travis AFB will comply with all mitigation and conservation measures mandated by USFWS, and therefore, impacts to CTS, as well as other species potentially affected, will be less than significant.

4.7.2 Relationship of Short-Term Uses and Long-Term Productivity

NEPA requires analysis of the relationship between a project's short-term impacts on the environment and the effects those impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This means that choosing one option may reduce future flexibility in pursuing other options, or that committing a resource to a certain use may eliminate the possibility for other uses of that resource.

Implementation of the Proposed Action would not result in impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public.

4.7.3 Irreversible and Irretrievable Commitments of Resources

NEPA CEQ regulations require environmental analyses to identify any irreversible and irretrievable commitments of resources that would be involved in the PA should it be implemented (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Building construction material such as gravel and gasoline usage for construction equipment would constitute the consumption of non-renewable resources.

The Proposed Action would not have irreversible impacts because future options for using these project locations would remain possible. The sites could be used for alternative uses in the future, ranging from natural open space to urban development. No loss of future options would occur because of the Proposed Action.

The primary irretrievable impacts of the Proposed Action would involve the use of energy, labor, materials, and funds. Irretrievable impacts would occur from construction, facility operation, and maintenance activities. Direct losses of biological productivity and the use of natural resources from these impacts would be inconsequential.

4.8 Cumulative Effects

Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the ROI. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion

of cumulative impacts resulting from projects that are proposed (or anticipated over the foreseeable future) is required.

Travis AFB is an active, dynamic base where operational changes and facility upgrades occur on a frequent basis. Projects that have been identified in the ROI that have the potential to act in a cumulative manner with the Proposed Action are discussed in this section. The ROI for cumulative impacts is generally limited to Travis AFB and the immediately adjacent lands because physical impacts related to the proposal are largely confined to these properties. Planning efforts in the ROI include the actions described within this EA, as well as those other projects that are ongoing, or planned over the short term. Additional projects within the ROI are discussed below.

4.8.1 Current and Reasonably Foreseeable Actions in the Region of Influence

Currently on-going and other proposed activities over the next 5 years within the vicinity of the Proposed Action are identified in Table 4.8-1. No other activities were identified within the ROI. As Travis AFB undergoes changes in mission and training requirements in response to defense policies, current threats, and tactical and technological advances, the base may require new construction, facility improvements, infrastructure upgrades, and ongoing maintenance and repairs on a continual basis. Although some of these known projects are a part of the analysis contained in this section, some future requirements cannot be predicted. As those requirements are identified, future NEPA analysis would be conducted, as necessary.

Table 4.8-1. Current and Reasonably Foreseeable Actions at Travis Air Force Base

Project Name	*Description*
Family Camp (FamCamp) Relocation	Relocate FamCamp to create space for Main Gate expansion.
New City Light and Power Facility	Construction of a new electrical facility.
New Child Development Center (CDC)	New CDC to accommodate unmet demand for childcare services.
New School Age Facility	New school age facility to meet growing demand.
Mixed Use Enhanced-Use Lease	Possible development of an Enhanced-Use Lease that would capitalize on plans for the new Fairfield Train Station.
Travis Crash Site Memorial	Formal memorial to honor and remember the crash of General Travis.
New Dormitory	Construction of new dormitory to accommodate demand.
New Multi-Purpose Recreation Building	Part of the Scandia Elementary School expansion.
Rails to Trails Project	The Jepson Parkway Project, a Tier One Priority for Solano County, multi-use trail connecting the City of Vacaville to the proposed Fairfield Train Station and south to link to the existing bicycle lane on Air Base Parkway. Travis AFB is taking a lead role in developing a new Rails-to-Trails location near the Georgetown property.
Well Water Pipeline	Modernize utility systems to current standards.
Defense Logistics Area G Fuel Storage Expansion	Construction of new fuel storage facility.
New Veterans Administration Dental Clinic	Construction of new Dental Clinic to meet growing demand.

Source: Travis AFB 2016e.

4.8.2 Air Quality

No significant impacts to air quality are expected to result from implementation of the Proposed Action. Construction and operational emissions, when considered with current and reasonably foreseeable projects

would not exceed *de minimis* pollutant levels within the Air Quality Control Region or introduce emissions to affect attainment status of criteria pollutants. The amount of emissions associated with all projects (construction and operation) would not significantly impede the base's emission cap. Accordingly, construction and operational emissions resulting from Alternative 1, along with other current and reasonably foreseeable projects, would not introduce significant, cumulative impacts within the Air Quality Control Region.

4.8.3 Water Resources

In addition to the 2.19 acres of increased impervious surface that would result from implementation of the Proposed Action, additional land surface could be disturbed and converted to impervious surface over the next several years. However, development projects that disturb more than 1 acre of soil would be required to develop Stormwater Pollution Prevention Plans to prevent adverse water quality impacts. The minimization measures identified in the plans and corresponding erosion control measures must be adhered to regardless of the project. Therefore, construction of Alternative 1, when considered with current and reasonably foreseeable projects, would not result in significant, cumulative surface and ground water impacts.

Additionally, per UFC 3-210-10 (as amended 2015) and/or similar detention requirements by the State of California for those projects without a federal nexus, pre-development site hydrology must be maintained or restored to the maximum extent technically feasible and this applies to both Alternative 1 and current and reasonably foreseeable projects. Application of these requirements would result in minimal changes to storm water runoff, which would not cumulatively affect downstream flooding. Similarly, ground water recharge would be minimally affected by complying with UFC 3-210-10 design criteria. No significant, cumulative impacts to water resources are therefore, anticipated. Once operational, Soccer Field Complex activities and those associated with current and reasonably foreseeable projects, are not anticipated to introduce significant, cumulative affects to ground or surface waters.

4.8.4 Biological Resources

Vegetation and Wildlife

No significant impacts to vegetation and wildlife would occur if Alternative 1 or 2 were implemented. Therefore, no significant, cumulative impacts are anticipated when the Proposed Action is considered along with other current and reasonably foreseeable projects.

Special Status Species

No significant impacts to CTS are expected to occur if Alternative 1 or 2 were implemented. The USAF conducted a Base-wide programmatic section 7 consultation with the USFWS in 2018 for multiple classes of actions at Travis AFB, which resulted in a Base-wide Biological Opinion being issued by the USFWS (USFWS 2018). Per the Programmatic Agreement between Travis AFB and USFWS, a Project Analysis for the Proposed Action was submitted to the USFWS on February 18, 2020 that outlines potential impacts to federally listed species (see Appendix A for correspondence). Approximately 3.30 acres of permanent impacts to medium risk CTS upland habitat would be mitigated via purchase of credits at an approved mitigation bank. Other current and reasonably foreseeable projects would follow the guidelines and standards of the Base-wide Biological Opinion to limit any potential impacts to special status species. Therefore, no significant, cumulative impacts are anticipated when the Proposed Action is considered along with other current and reasonably foreseeable projects.

4.8.5 Cultural Resources

There are no impacts to cultural resources under Alternative 1 or 2, therefore, no significant, cumulative cultural resources impacts would result from consideration of the Proposed Action and other current and reasonably foreseeable projects.

4.8.6 Recreation

The addition of the Soccer Field Complex, as well as the FamCamp, multi-purpose recreation building, and Rails to Trails project would expand year-round recreational opportunities for military personnel, their families, and civilian personnel on Travis AFB. When considered cumulatively, these projects would introduce beneficial impacts to recreation.

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Appendix A

Coordination and Consultation

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

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To Whom It May Concern

The 60th Air Mobility Wing (AMW) of Travis Air Force Base (AFB) is preparing two Environmental Assessments (EA) and one Supplemental EA (SEA) addressing improvements and operational changes at Travis AFB. All three projects would enhance operations at Travis AFB. Because Travis AFB is steward to sensitive environmental habitats such as wetlands, and endangered species such as the California Tiger Salamander (CTS), the two EAs and the one SEA are necessary to evaluate the potential for impacts to these sensitive resources.

The Soccer Field Complex EA evaluates the proposed action of constructing a soccer field facility at a location that was previously occupied by residential housing. All structures and interior roads have since been demolished and cleared and the site is now a grassy field with a few large trees. The soccer field complex would directly support the mission of Travis AFB to provide recreational opportunities to its service men and service women and their families.

The Wildland Fire Management Plan (FMP) EA addresses the environmental considerations associated with implementing the 2015 Wildland FMP. The purpose of the Travis AFB Wildland FMP is to reduce wildfire potential, protect and enhance valuable natural resources, and implement ecosystem management goals and objectives on Travis AFB. This plan directly supports the mission and is consistent with Travis AFB emergency operations plans.

The Base Civil Engineering (BCE) Complex SEA addresses both updates and changes to the project environmental conditions and facility stakeholders since the original EA for this project was completed in 2011.

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Sincerely

Brian L. Sassaman

BRIAN SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management

Attachment:
(1) Project Sites

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

San Francisco District Regulatory Division
U.S. Army Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, CA 94103

To Whom It May Concern

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DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Transportation and Toxic Division
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

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DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244

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DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, #1400
Oakland, CA 94612

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DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812

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60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
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411 Airman Drive, Bldg 570
Travis AFB, CA 94535

California Department of Fish and Wildlife
7329 Silverado Trail
Napa, CA 94599

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Attachment:
(1) Project Areas and Species of Concern

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Mr. Kanon Artiche
AIA, Assistant Director
Solano County Department of General Services
675 Texas Street, Suite 2500
Fairfield, CA 94533

Dear Mr. Artiche

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DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

City of Fairfield Community Development Department
1000 Webster Street
Fairfield, CA 94533

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60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

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Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

City of Vacaville Community Development Department
650 Merchange Street
Vacaville, CA 95688

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DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Suisun City Community Development Department
701 Civic Center Boulevard
Sauisun, CA 94585

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60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Fairfield Civic Center Library
1150 Kentucky Street
Fairfield, CA 94533

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October 12, 2016

Mr. Brian L. Sassaman
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411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Suisun City Library
333 Sunset Avenue, Suite 280
Suisun City, CA 94585

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The Soccer Field Complex EA evaluates the proposed action of constructing a soccer field facility at a location that was previously occupied by residential housing. All structures and interior roads have since been demolished and cleared and the site is now a grassy field with a few large trees. The soccer field complex would directly support the mission of Travis AFB to provide recreational opportunities to its service men and service women and their families.

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The Base Civil Engineering (BCE) Complex SEA addresses both updates and changes to the project environmental conditions and facility stakeholders since the original EA for this project was completed in 2011.

The environmental analyses for the proposed actions are being conducted by the 60th AMW in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act (NEPA) of 1969. In addition to the NEPA analysis, both the Wildland FMP EA and the BCE Complex SEA will be California Environmental Quality Act -compliant. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we solicit your comments concerning the proposals identified above and any potential environmental consequences of the actions. We also request information regarding other recently completed, on-going, or proposed projects in the vicinity that may create cumulative impacts in association with the Proposed Actions. Please provide any comments you may have within 30 days of receipt of this letter.

Please forward your written comments, further questions, or if you would like to discuss the proposal further please feel free to contact Matt Blazek at (707) 424-5127 or matthew.blazek@us.af.mil. Thank you for your assistance.

Sincerely

Brian L. Sassaman

BRIAN SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management

Attachment:
(1) Project Sites

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Mitchell Memorial Library
510 Travis Avenue, Building 436
Travis AFB, CA 94535

To Whom It May Concern

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Sincerely

Brian L Sassaman

BRIAN SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management

Attachment:
(1) Project Sites

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Vacaville Public Library
1020 Ulatis Drive
Vacaville, CA 95687

To Whom It May Concern

The 60th Air Mobility Wing (AMW) of Travis Air Force Base (AFB) is preparing two Environmental Assessments (EA) and one Supplemental EA (SEA) addressing improvements and operational changes at Travis AFB. All three projects would enhance operations at Travis AFB. Because Travis AFB is steward to sensitive environmental habitats such as wetlands, and endangered species such as the California Tiger Salamander (CTS), the two EAs and the one SEA are necessary to evaluate the potential for impacts to these sensitive resources.

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Please forward your written comments, further questions, or if you would like to discuss the proposal further please feel free to contact Matt Blazek at (707) 424-5127 or matthew.blazek@us.af.mil. Thank you for your assistance.

Sincerely

Brian L Sassaman

BRIAN SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management

Attachment:
(1) Project Sites

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Dear Ms. Polanco

The 60th Air Mobility Wing (AMW) of Travis Air Force Base (AFB) is preparing two Environmental Assessments (EA) and one Supplemental EA (SEA) addressing improvements and operational changes at Travis AFB. All three projects would enhance operations at Travis AFB.

The Soccer Field Complex EA evaluates the proposed action of constructing a soccer field facility at a location that was previously occupied by residential housing. All structures and interior roads have since been demolished and cleared and the site is now a grassy field with a few large trees. The soccer field complex would directly support the mission of Travis AFB to provide recreational opportunities to its service men and service women and their families.

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The Base Civil Engineering (BCE) Complex SEA addresses both updates and changes to the project environmental conditions and facility stakeholders since the original EA for this project was completed in 2011. This proposal includes the construction of a consolidated BCE complex that would provide administrative space, indoor storage, maintenance spaces, and outdoor storage facilities. The current BCE buildings are dispersed throughout 55 different facilities on Travis AFB, and consolidation would provide improvements to efficiency, safety, and working conditions. Energy efficient designs would be used to reduce energy usage and greenhouse gases.

In accordance with 36 CRF Part 800 of the National Historic Preservation Act of 1966, as amended, the Air Force would like to initiate Section 106 consultation for this project. Pursuant to 36 CFR Part 800.3(a), the Air Force has determined that the revisions to the BCE construction are an undertaking and is seeking your concurrence with the determination of the area of potential effects (APE) (See attached map). Please provide any comments you may have within 30 days of receipt of this letter.

Please forward your written comments, further questions, or if you would like to discuss the proposal further please feel free to contact Matt Blazek at (707) 424-5127 or matthew.blazek@us.af.mil. Thank you for your assistance.

Sincerely

Brian L. Sassaman

BRIAN SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management

Attachment:
(1) Project Sites

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

October 12, 2016

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Bldg 570
Travis AFB, CA 94535

Ms. Julie Wolford, Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Sacramento Field Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

Dear Ms. Wolford,

The 60th Air Mobility Wing (AMW) of Travis Air Force Base (AFB) is preparing two Environmental Assessments (EA) and one Supplemental EA (SEA) addressing improvements and operational changes at Travis AFB. All three projects would enhance operations at Travis AFB. The two EAs and the one SEA would evaluate any and all potential impacts to federally listed, proposed, and candidate species. Federally listed, proposed, and candidate species that are known to potentially occur within the action areas include:

- California tiger salamander (*Ambystoma californiense*);
- Vernal pool fairy shrimp (*Branchinecta lynchi*);
- Contra Costa goldfields (*Lasthenia californica*); and
- Two-fork clover (*Trifolium amoenum*).

The Soccer Field Complex EA evaluates the proposed action of constructing a soccer field facility at a location that was previously occupied by residential housing. All structures and interior roads have since been demolished and cleared and the site is now a grassy field with a few large trees. The soccer field complex would directly support the mission of Travis AFB to provide recreational opportunities to its service men and service women and their families.

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Complex SEA will be California Environmental Quality Act -compliant. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we solicit your comments concerning the proposals identified above and any potential environmental consequences of the actions. We also request information regarding other recently completed, on-going, or proposed projects in the vicinity that may create cumulative impacts in association with the Proposed Actions. Please provide any comments you may have within 30 days of receipt of this letter.

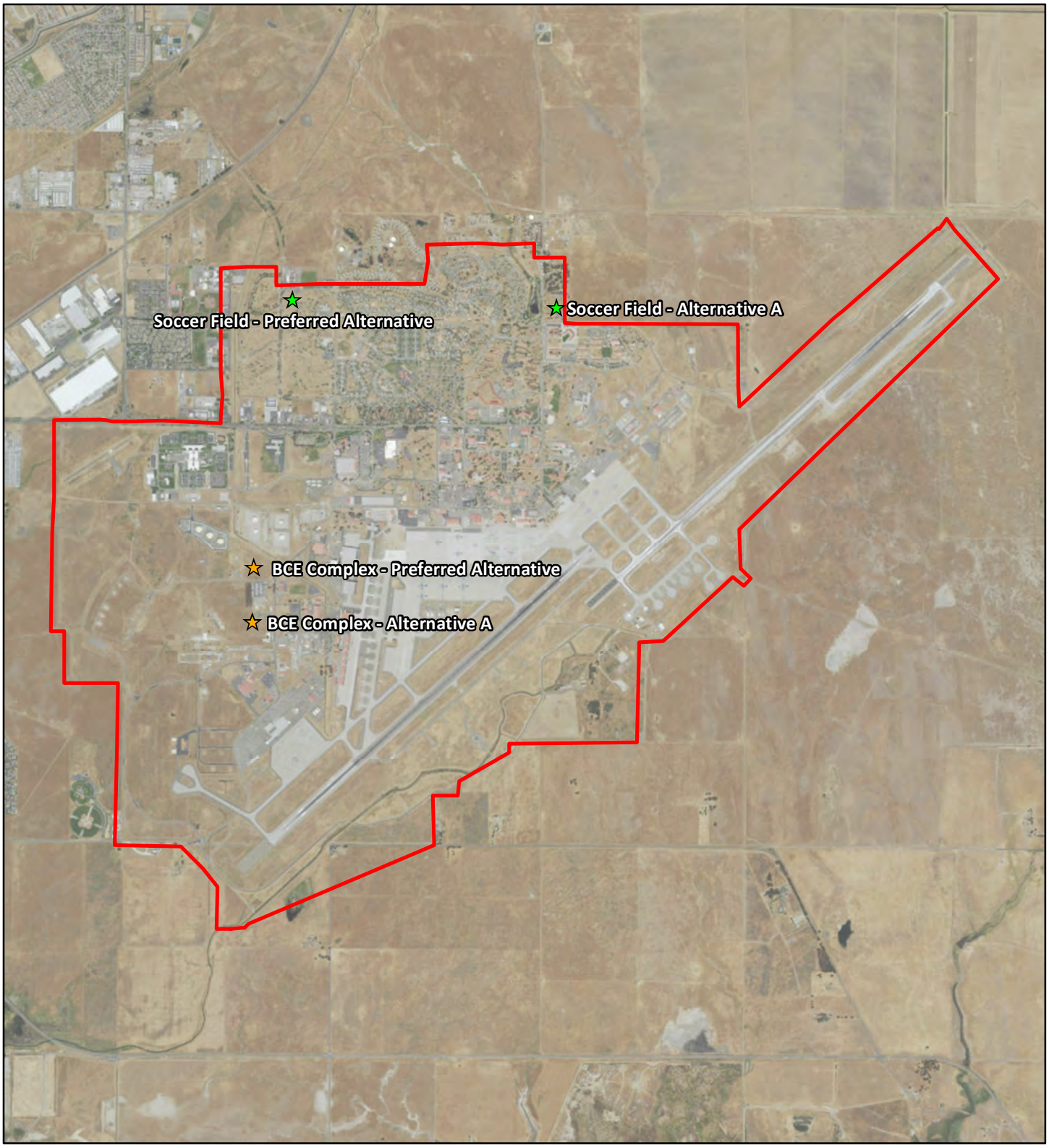
With this letter, we request an **official species list** from the Sacramento USFWS Field Office in order to address the need for and/or commence Section 7 consultation.

Please forward your written comments, further questions, or if you would like to discuss the proposal further please feel free to contact Matt Blazek at (707) 424-5127 or matthew.blazek@us.af.mil. Thank you for your assistance.

Sincerely

BRIAN SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management

Attachment:
(1) Project Areas and Species of Concern



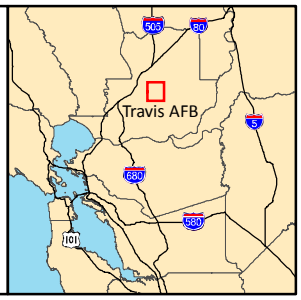
Travis Air Force Base Boundary and Wildland FMP Project Area

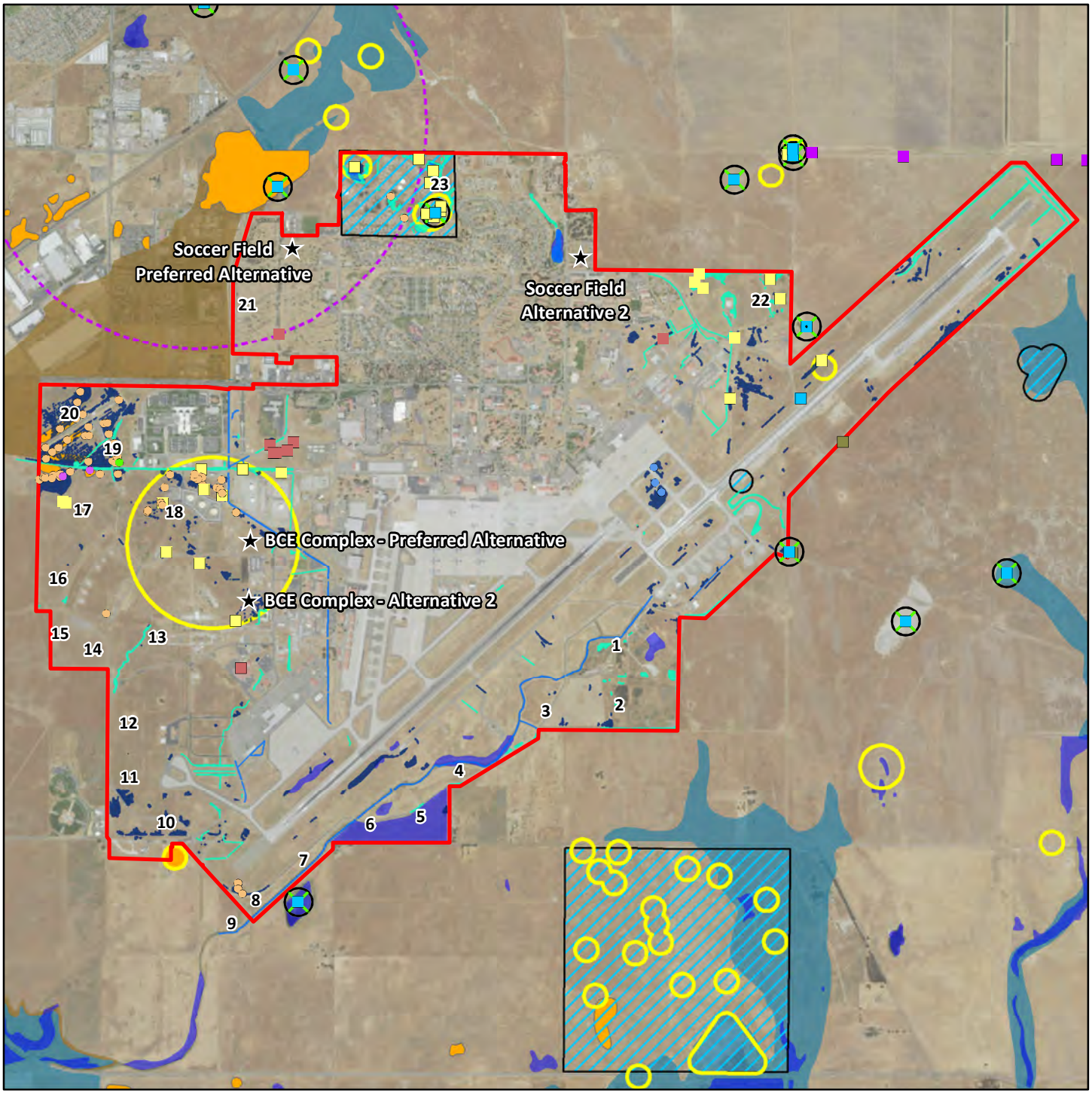
Soccer Field Project Locations

BCE Complex Project Locations

0 0.5 1 Miles

N





Travis Air Force Base Project Areas and Species of Concern

- Travis Air Force Base Boundary
- General Project Locations
- 23 Wildland Fire Management Plan Burn Plot Locations
- National Wetlands Inventory
- FEMA 100-Year Floodplain
- FEMA 500-Year Floodplain

Travis AFB Survey (2014/2016)

- Wetlands
- Vernal Pool
- Surface Water

Travis AFB Flora Species Surveys

- Alkali mil vetch (1994)
- Brittlescale (2001)
- Contra Costa goldfields (1994-1999)
- San joaquin orache (1994)

Travis AFB Fauna Species Surveys

- California tiger salamander (1993-2016)
- California tiger salamander Breeding Pond Locations
- Ricksecker's water scavenger beetle (2005)
- Vernal Pool Fairy Shrimp (1993-2005)
- Vernal Pool Tadpole Shrimp (1993-2005)
- Western Burrowing Owl (date unknown)

CNDDB Federally Listed Species Observations

- California tiger salamander
- Contra Costa goldfields
- Two-fork clover
- Vernal Pool Fairy Shrimp

0 0.5 1 Miles

N

AFB: *Air Force Base*
CNDDB: *California Natural Diversity Database*
FEMA: *Federal Emergency Management Agency*
Sources: Travis 2016b, CNDDB 2016, FEMA 2011

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airmen Drive, Bldg 570
Travis AFB, CA 94535-2001

23 May 2017

Ms. Julianne Polanco
State Historic Preservation Officer
Department of Parks and Recreation
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento CA 95816-7100

Dear Ms. Polanco

In accordance with Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR Part 800, the Department of the Air Force, Travis Air Force Base (AFB), is advising you of an undertaking that has the potential to affect historic properties. The undertaking, "Construction of a Soccer Field Complex" involves the installation of a permanent soccer field and stadium within the boundaries of the installation in Solano County. Archaeological field surveys and architectural evaluations have been conducted across the installation and there exists a low probability that undisturbed archaeological deposits are present within the installation. Currently, the proposed project location is a vacant field with no structures or architectural features, and it was previously a residential housing area that burned down in 2008.

This consultation combines a discussion of the Area of Potential Effect (APE) for the undertaking (per 36 CFR 800.4) with our finding of No Historic Properties Affected. We would like your concurrence with our finding that no properties eligible for listing on the National Register of Historic Places (NRHP) will be affected by this undertaking.

Background Information

Travis AFB occupies 6,383 acres within the city limits of Fairfield, and is located 50 miles northeast of San Francisco and about 40 miles southwest of Sacramento (Attachment 1). The base is just north of Suisun Bay and marsh, northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region. In the late prehistoric and early contact periods, this area was occupied by the Southern Patwin, native speakers of the Wintu language.

Known as the Gateway to the Pacific, Travis AFB is among the largest and busiest military air terminals in the country. More than 14,000 military and civilian personnel work on the base, which is under the operational control of the Air Mobility Command. The 60th Air Mobility

Wing (AMW) is the host unit, and is responsible for providing strategic airlift and air refueling missions around the world. The 60 AMW also supports air logistics needs for other services and agencies, moving cargo, patients, and passengers throughout the world.

800.4(a)(1) - Description of the Area of Potential Effect

The undertaking involves the construction of a soccer field and support structures such as bleachers, a stormwater detention basin, and a parking lot (Attachment 2). The APE shall be limited to the 3.9 acre footprint that will contain the new infrastructure as well as buffers for construction, laydown, and equipment transportation. Currently, the project APE is an open undeveloped area of disturbed soil that was previously a residential neighborhood that burned down in 2008. Some subsurface utility lines and main access roads still exist. The APE shall be graded and leveled prior to construction of the Soccer Field Complex. Because of the 20 foot construction buffers around roads and utility lines as well as 50 foot construction buffers around the soccer field and bleachers, the Area of Direct Impact (ADI) from grading and clearing will be smaller than the APE. The ADI will be roughly 1.6 acres. There are no other APEs associated with this undertaking.

800.11(d)(1) - Description of the Undertaking

Establishing the Soccer Field Complex will require grading and leveling of roughly 1.6 acres of previously disturbed land. The Complex will consist of an artificial turf soccer field (1.0 acre), bleachers and associated concrete pad (0.1 acres), an asphalt parking lot (0.3 acres), concrete sidewalks (0.1 acres), and equipment shed and associated concrete pad (0.1 acres). Maximum grading and leveling for the permanent structures will be up to 3.0 feet deep in some areas where foundation depressions from the former housing units remain. Temporary disturbance of 2.3 acres within the APE will include the creation of a grassy stormwater detention basin (0.2 acres), landscaping (0.5 acres) and construction buffers for equipment and material laydown and transportation (1.6 acres). The detention basin will be excavated to a depth of 2.5 feet.

Water supply and power for the Soccer Field Complex will be connected to existing service lines within the APE. Pumps to control and regulate water service will be permanently installed. During project construction, material delivery trucks will enter Travis AFB through the South Gate and staging, equipment movement, and construction activities will be limited to the APE. Once the Soccer Field Complex is completed, disturbed areas and open ground will be graded and seeded to appear similar to the surrounding area and precautions will be taken to control post-construction soil erosion.

800.11(d)(2) - Identification of Historic Properties

A field survey of all open and undeveloped areas on base was completed in 1996. No NRHP-eligible historic properties were identified, although at the time of the survey, the APE was occupied by residential housing units and there were no substantial open areas. After the housing burned in 2008, the area was cleared of fire debris and building remains. Currently, the

APE is open, seeded lawn that is generally flat, and evidence of the now missing housing units is limited to discrete areas of uneven ground surface.

Geotechnical investigations were preformed within the APE to investigate soil conditions and to support project engineering. This study encountered imported soil fill mixed with local soils in the upper 1 to 3 feet across the APE. Varying amounts of construction debris consisting of concrete fragments, wood, and abandoned pipe segments were found, as well as gravel, plastic materials, and modern trash. The debris encountered in the test pits was assumed to derive from the previously demolished and cleared residential housing.

Before work begins, contractors will be trained to identify and report any buried artifacts or other anomalies that are discovered. Examples of unexpected discoveries include: metal artifacts, historic bottles, china fragments, glass beads, prehistoric stone tool fragments, arrowheads, bone fragments, shells, and fossils. During construction activities, if artifacts are found, all work will stop in the vicinity and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be contacted. If it is determined that known or potential historic properties are endangered, the Air Force will reopen this consultation and seek comments from the California State Historic Preservation Officer (SHPO).

800.4(b) - Other Historic Property Identification Efforts

Evidence for prehistoric sites on Travis AFB is scant, and only two sites have been recorded on base in the past. Both sites were located in the northwest part of the base, in association with vernal pools, and both sites were destroyed when the David Grant USAF Medical Center was constructed in the late 1980s. However, prior to construction of the medical center, data recovery was accomplished at one of the sites, CA-SOL-313. The resulting artifact assemblage consisted of 122 mostly large, angular basalt chunks and cobbles. A recent reanalysis of this collection found that only eight items had any evidence of being intentionally used or modified. In general, these lithics do not appear to be prehistoric, and the entire assemblage could derive from local quarries or other nearby, historic-era activities (Attachment 3).

In systematic pedestrian surveys covering nearly 1000 acres of open land throughout the base, no other prehistoric sites have been located, and no areas of high probability have been identified. Recently, this lack of prehistoric cultural activity has been further examined in a site sensitivity assessment for Travis AFB (Attachment 4). Based on an analysis of landform age, type, slope, and other physical characteristics, and considering water sources, sedimentation, drainage, and other processes, the study identified less than 16.0 acres (out of 5,317) of having "high" or "moderate" potential for buried prehistoric sites. In sum, surveys have identified no historic properties near the APE, and evaluations based on geotechnical data, soils, and patterns of sedimentation all indicate that extant, unknown buried prehistoric archaeological deposits are extremely unlikely.

Views of the public, Native Americans, and interested parties will be considered regarding this undertaking and its potential effects. Interested tribal groups have been contacted, and tribal

representatives plan to visit the APE in the near future. Although few projects at Travis AFB appear in the local media, if there is coverage of any kind, or any public discussion about the Soccer Field project, all substantial comments related to the protection of historic properties will be shared with the SHPO and this consultation will be reopened.

800.11(d)(3) - Determination of No Historic Properties Affected

Field surveys and geotechnical studies in the APE identified no evidence of prehistoric archaeological sites or any other historic properties. A geoarchaeological site sensitivity study identified only 0.3 percent of Travis AFB as having moderate or high probability for the presence of buried archaeological deposits. Surveys and evaluations of architectural resources on Travis AFB, conducted between the late 1990s to 2017, identified a number of Cold War-era historic properties, including two Historic Districts and a B-36 Hangar, but none are within a mile of the APE. No historic architectural resources on Travis AFB will be adversely affected by this undertaking.

Prehistoric archaeological sites, visual resources, and architectural resources have all been considered, and none will be affected in any way by this undertaking. Native Americans are being consulted, and their views will be considered, but there are no prehistoric, ethnographic, or traditional cultural properties in or near the APE. However, as stated above, if any Native Americans express any concerns or critical interest in this undertaking, Travis AFB shall contact the SHPO, relay the concerns, and reopen this consultation as appropriate.

Summary

Travis AFB is proposing to construct a Soccer Field Complex over 3.9 acres of vacant, but previously developed, land within the installation. Project construction and staging will be limited to existing roads and construction buffers included in the APE. However, if unanticipated archaeological discoveries are made, Travis AFB will reopen consultation with the SHPO and other interested parties, per the requirements of 36 CFR Part 800.

Based on the preceding, Travis AFB requests SHPO concur with our delineation of the APE for the Soccer Field Complex undertaking. Also, we request your concurrence with our finding of no historic properties affected. If you have any questions about the undertaking discussed in this letter, please contact me (707- 424-8225), Dr. James Carucci by phone or email (707-424-8625; James.Carucci@us.af.mil), or our NEPA Program Manager Matthew Blazek (707-424-5127, matthew.blazek@us.af.mil).

Sincerely

Brian L. Sassaman

BRIAN L. SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

June 14, 2017

Reply in Reference To: USAF_2017_0530_001

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Re: Section 106 Consultation for Construction of Soccer Field Complex, Travis Air Force Base, Solano County

Dear Mr. Sassaman:

The United States Air Force (USAF) is initiating consultation regarding their efforts to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF has identified the undertaking as the construction of a soccer field complex at Travis Air Force Base. The 1.6 acre project area will be graded and prepared prior to soccer field construction and the addition of bleachers, a storm water detention basin and parking.

The results of a pedestrian survey, record search, tribal notification, geo-archaeological overview and site sensitivity assessment have led the USAF to conclude that no historic properties will be affected by the proposed project. The USAF is requesting SHPO concurrence with their Area of Potential Effects determination and with their finding of no historic properties affected. After reviewing the information provided, SHPO has the following comments:

1) Pursuant to 36 CFR Part 800.4(a)(1), the APE appears sufficient to take the undertaking's effects on historic properties into account.

2) SHPO concurs with the USAF's finding of no historic properties affected pursuant to 36 CFR Part 800.4(d)(1).

If you have any questions or concerns, please contact Ed Carroll of my staff at (916) 445-7006 / Ed.Carroll@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

Mr. Merlin J. Miller
Deputy Base Civil Engineer, 60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

The intent of this letter is to initiate formal consultation under Section 7(a) (2) of the Endangered Species Act (ESA) for the proposed Soccer Field Complex project to create year-round recreational services for military and civilian personnel and their families.

As described in the enclosed package, the Air Force believes that the proposed action is Not Likely to Adversely Affect the Contra Costa Goldfields (*Lasthenia conjugens*), Vernal Pool Fairy and Tadpole Shrimp (*Branchinecta lynchi* and *Lepidurus packardi*). However, the proposed project is Likely to Adversely Affect the California tiger salamander (*Ambystoma californiense*).

The proposed action is to construct a new Soccer Field Complex that will provide recreational opportunity for the military men and women and their families year round. The entire complex including parking lot, and other features will be located on a 10.98 acre parcel but only occupy 3.29 acres in a medium risk CTS area. Mitigation credits will be purchased at a 2:1 ratio. In addition, we are requesting that this project be appended to the 18 Jun 2018 Programmatic Biological Opinion for the species listed above.

Please contact Mr. Seth Merdler (707) 424-7516 or seth.merdler@us.af.mil of my staff regarding this consultation request.

Sincerely

Revoked certificate

X Merlin J. Miller

Merlin J. Miller, GS-14
Deputy Base Civil Engineer, 60th Civil Engineerin...
Signed by: MILLER.MERLIN.J.1152847900

Date sent to FWS:

Project Title: Soccer Field

Project Proponent:

CEIE POC: Christopher Reddin/Penn Craig

Location: Within the parcel containing the Travis AFB running track on the corner of Burgan Blvd. and Collins Dr.

Species Impacted: California DPS California tiger salamander (*Ambystoma californiense*)

Effects Assessment: LAA

Expected start date of project: Summer 2020

Project Description:

Purpose and need for the project

The purpose of the Proposed Action is to create year-round recreational services for military and civilian personnel and their families. The need is to increase the network of support and leisure services at Travis AFB, thus improving morale and wellbeing. Providing this network of support and leisure services to military personnel and their families is an integral part of the mission of each installation and armed services branch. Although facilities vary from installation to installation, it is notable that there are currently no official soccer-dedicated fields or facilities at Travis AFB. Soccer is commonly considered the most popular and most played sport in the world, which most school-aged children in the U.S. play at some point during their formative years.

Project site location including all work, staging and storage areas

The Soccer Field Complex, including a parking lot and support facilities, will be constructed at the site of an existing blue running track (Figure 1). The track sits on a parcel that was previously residential housing, but all structures and interior roads have since been demolished and cleared. The site is now a grassy field with a few large trees. The running track would remain in place, with the soccer field measuring 155ft. x 275ft. placed inside the loop (Figure 2). The site is bounded by Turner Street to the north, Collins Drive to the south, Burgan Boulevard to the west, and an off-Base grazing field to the east. A 0.31 acre, 25-stall parking lot would be constructed adjacent to the running track within the same parcel. Access to the parking lot and soccer field has not yet been determined, but one option would be to make the access from Burgan Boulevard. The final location and orientation of the various facilities within the parcel are also yet to be determined. We are considering the entire 10.98 acre parcel to be the project site, of which new construction will cover 3.29 acres. Vehicles and equipment will be staged at least 250ft. from wetlands on paved surfaces surrounding the project site.

Detailed narrative description of proposed activity to include

Description of Work: The project site will be graded to a slight incline to allow for natural drainage of rainwater. The 0.390 acres where the parking lot, bleacher pad, and the pathway between them will be shallowly excavated and refilled with a composite base (Figures 3 & 4). Asphalt will be poured over the new 0.313 acre parking lot site while concrete will be formed over the 0.077 acre bleacher pad, equipment shed, and pathway. Another 1.80 acres will have artificial turf installed over it to form the soccer field and two semicircular exercise areas at either end of the running track. An excavation up to three feet deep and covering 0.160 acres will serve as a stormwater detention basin. This basin will drain into the sewer system and will remain unlined so vegetation can regrow. A variety of native ornamental plants will be installed over 0.951 acres surrounding the facility features. All refuse and construction materials will be removed and a native seed mix will be applied to the remaining disturbed ground.

Seasonal Constraints: Work will be performed to the greatest extent practicable during the dry season (May 1- October 15) but may extend into the wet season (October 16- April 30).

Equipment:

- Excavator
- Tractor, loader, or backhoe
- Transfer trucks
- Roller
- Grader
- Rubber-tired dozer

Site Ingress and Egress: Construction materials and heavy equipment would enter the base through the South Gate. Personnel access to the Base would be through the Main Gate. All traffic would exit the Base through the Main Gate.

60 CES/CEIE Analysis:

Description of methods used in effects analysis:

- **Personnel and methods used to determine effects**: Travis historical data, Natural Resources GIS data, previous USFWS consultations between Travis AFB and USFWS, and a site visit conducted on 03/13/2019 by Christopher Reddin, Biologist were used for analysis of effects (Travis AFB, 2017).

- **Description of all potential or known listed species habitat within the project area:**

    - **Wetlands:** The North Gate Duck Pond is the only wetland within 250 feet of the Project area. It is a permanent wetland 2.2 acres in size containing roughly 12 acre-feet of water. The pond is fed by a branch of Union Creek and is managed for recreational use, including fishing. The presence of introduced fish that can prey on CTS larvae, such as largemouth bass and bluegill, likely precludes the Duck Pond's use as a breeding pond

by CTS (Fisher and Shaffer, 1996). Further, the Duck Pond is separated from the project site by Burgan Blvd.

- Known occurrences of T&E species in Project Area including closest populations of all affected species (Figure 5):

Species	**Distance**
California tiger salamander (CTS; *Ambystoma californiense)*	3,215 ft.
Vernal pool fairy shrimp (VPFS; *Branchinecta lynchi*)	2,440 ft.
Vernal pool tadpole shrimp (VPTS; *Lepidurus packardi*)	5,120 ft.
Conservancy fairy shrimp (CFS; *Branchinecta conservatio*)	To date, none on base
Delta green ground beetle (DGGB; *Elaphrus viridis*)	To date, none on base
Contra Costa goldfield (CCG; *Lasthenia conjugens*)	3,780 ft.

  At this time there are no verified occurrences of DGGB or CFS on any of the Travis AFB properties or Geographically Separated Units (GSUs); therefore, these species are removed from further discussion (Travis AFB, 2018).

- **CTS upland habitat description and risk area location:** The project occurs within a "Medium" risk zone. CTS have been documented dispersing up to 1.3 mi (6,864 ft) from breeding sites to utilize upland refugia, such as small mammal burrows. There are three known off-Base CTS breeding ponds within 1.3 miles of the project site. The nearest, at 3,420 ft. to the northeast and another to the northeast 4,920 ft. away are both on private land. Over 800 juvenile CTS were captured leaving the off-base Wilcox West CTS breeding pond in 2017, primarily in the direction of Runway 03R/21L to the south of the pond (Marty, 2017). This pond is 5,005 ft. to the south east of the project site. Dip netting of the pond and pitfall trap surveys around the pond during the summer of 2018 yielded only a single nonbreeding adult CTS, indicating a lack of breeding activity for the year (Marty 2019). Another breeding pool lies 3,215 ft. to the west in the Castle Terrace housing development, though no CTS have been observed in the area since 2010 (Marty 2016) and there are multiple curbed roads between the pond and the project site that act as barriers to CTS dispersal to the site.

  From November 2018 through March 2019 a series of surveys were conducted on Base to monitor CTS adult seasonal migration, but no CTS were reported within or near the Project Area (Figure 6; Marty, pers. comm.). Road cruising surveys on rainy nights along Perimeter Road, which encircles the two runways on Base, turned up 58 CTS. Another 3 CTS were found while checking electrical vaults along the runway. Twelve CTS were trapped in pit trap lines along the south side of the Base near suspected breeding ponds. One trap line adjacent to the east side of the Project Area captured no CTS. Of the 73 CTS encountered during the 5 month period, the closest was over 3,700ft. from the Project Area.

- **Density and abundance of small mammal burrows in any uplands to be disturbed on site:** A high density of upland burrow sites are present within the project site and the project is immediately adjacent to private land that consists of upland grassland habitat managed

with horse and cattle grazing.

Describe How Effects Were Considered for Each Species

No vernal pools occur or are hydrologically connected to wetlands within 250 feet of the Project; therefore, vernal pool species (VPFS, VPTS, CCG) are removed from further discussion (Figure 3 & 4).

California tiger salamander
Effects to CTS were determined by the project taking place in "Medium" risk CTS upland habitat, the need for ground disturbance, permanent removal of "Medium" risk CTS habitat, and both historical and current information on CTS locations and movement. Upland habitat will be temporarily disturbed by movement of vehicles and equipment, grading and site preparation, as well as temporary storage of equipment, and permanently removed by the installation of the new facilities. CTS may be present as known breeding ponds are within the dispersal range of this species, but no individual CTS have been observed within this area of the base.

Conservation Measures

Conservation Measures (CM) that will be implemented for the project are listed below. For those CMs that have been modified to fit the project the following method has been used to modify each CM: ~~strikethrough text~~ indicates text that has been ~~removed~~ from a CM. **Bold text** indicates text that has been **added** to a CM.

General minimization measures

MM-1. A Service-approved Biologist will conduct preconstruction surveys of all ground disturbance areas within sensitive habitats to determine if any federally-listed species may be present prior to the start of construction. These surveys will be conducted prior to the start of construction activities in and around any sensitive habitat. If any federally-listed species are found during the preconstruction surveys, the Service-approved Biologist will contact the Service to determine how to proceed. At least 10 business days prior to the onset of activities, TAFB will submit the name(s) and credentials of biologists who will conduct these preconstruction surveys if they have not previously received Service approval for similar surveys. No project activities will begin until proponents have received written approval from the Service that the biologist(s) is qualified to conduct the work.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~*and the California Department of Fish and Wildlife (CDFW)*~~ by telephone within one working day and in writing within five working days.

MM-3. A Service-approved Biologist will conduct environmental awareness training for all

construction personnel working within and near sensitive habitat on Base. Training will be provided at the start of work and within 15 days of any new worker arrival. The program will consist of a briefing on environmental issues relative to the proposed project. The training program will include an overview of the legal status, biology, distribution, habitat needs, and compliance requirements for each federally-listed species that may occur in the project area. The presentation will also include a discussion of the legal protection for endangered species under the Act, including penalties for violations. A fact sheet conveying this information will be distributed to all personnel who enter the project site. Upon completion of the orientation, employees will sign a form stating that they attended the program and understand all avoidance and minimization measures. These forms will be maintained at Travis AFB and will be accessible to the appropriate resource agencies.

Service notification

MM-4. Travis AFB will track the areal extent and location of impacts resulting from projects covered under the PBO and will submit an annual report to the Service listing each project covered under the PBO and summarizing the impacts to each species and their habitat on a project by project basis.

Buffers and site restoration

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the 60 CES/CEIE.

Additional measures

MM-7. Off-road travel outside of the demarcated construction boundaries will be prohibited.

MM-9. Any worker that inadvertently kills or injures a federally-listed species, or finds one injured or trapped, will immediately report the incident to the on-site Biologist. The Biologist will inform the Travis Natural Resource Manager (NRM) immediately (60 CES/CEIE). The Travis NRM will verbally notify the Sacramento Fish and Wildlife Office within one day and will provide written notification of the incident within five days.

MM-10. Motor vehicles and equipment will only be fueled and serviced in designated service areas. All fueling and maintenance of vehicles and other equipment and staging areas will occur in a designated area with appropriate spill containment. Any newly established, project specific fueling and maintenance areas will be located at least 250 feet from any wetland/drainage habitat or water body. Prior to the onset of work, Travis AFB will ensure a plan to allow a prompt and effective response to any accidental spills is in place. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed

immediately following project completion.

MM-13. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will avoid wetlands/drainage areas whenever feasible.

MM-14. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit on unpaved roads.

MM-17. No trenches will be left open at the end of the day; trenched areas will be compacted and restored to normal grade once the project is completed.

MM-18. No work requiring vehicles/equipment will be done when the ground is soft enough where travel will cause depressions.

California tiger salamander

CTS-1. Within 14 days of the start of construction activities, a Service-approved Biologist will perform a pre-construction survey and identify potential refuge habitats (burrows) suitable for CTS. In the unlikely event that a CTS is encountered, the Biologist will contact the Service for instructions.

CTS-2: A Service-approved Biologist will be on-site during all activities that could result in the take of listed species. As outlined in PBA Section 1.4.3, the qualifications of the biologist(s) will be presented to the Service for review and approval at least 10 working days prior to any groundbreaking activity at the project site. If any of the requirements associated with these measures are not being fulfilled, the Biologist will have the authority to stop project activities, through communication with the Project Manager.

CTS-3: Construction personnel will be instructed to exercise caution when commuting within the area to be disturbed.

CTS-5. At the end of every work day, trenches, pits, and excavations shall be provided with escape ramps constructed of earth fill or wooden planks at a 3:1 slope. Before such trenches, pits, and excavations are filled, they will be thoroughly inspected for trapped wildlife.

CTS-6. If CTS exclusion barriers or fencing are used, a Service-approved Biologist will be on-site to conduct morning inspections of the barrier fencing before construction activities begin each day of work activity on work days and within 30 minutes of dawn on non-work days (includes weekends and holidays). If a CTS is observed within or near the barrier fencing, the individual will be relocated outside of the project area following the procedure provided in Section 4.4.5) and the Sacramento Fish and Wildlife Office will be contacted.

CTS-7. Seasonal Avoidance/Wet Season Procedures (Oct 16 – Apr 30): Work will not be conducted in the rain. The weather forecast and hourly weather data for TAFB will be

monitored and can be found by entering the zip code 94535 (TAFB) at http://www.weather.gov/srh/. A Service-approved Biologist will be on-site for morning inspections before the start of work. Morning inspections consist of examination of all trenches, pits, excavations, equipment, California tiger salamander exclusionary barriers (if present), all suitable upland habitat including refugia habitat such as small woody debris, refuse, burrow entries, etc. will be properly inspected and all other areas within the project site. In addition, the project work crew will be notified to maintain vigilance regarding CTS activity. If feasible, the work crew will participate in the morning inspection(s). Modifications to this timing may be approved on a case-by-case basis by the Service.

CTS-8. Seasonal Avoidance Dry Season Rain/High Humidity Procedures (May 1 to October 15): Work will not be conducted if raining. The Service-approved Biologist will check the National Weather Service by 6:00 AM on the day prior to a scheduled work day to see if there is a 50% or greater probability of rain forecasted overnight. If there is, then before work begins the next morning, the Service-approved Biologist will conduct an even more extensive morning inspection. The inspection will include searching the work area and a wider perimeter of the area for presence of CTS. In addition, the work crew will be notified to maintain vigilance regarding CTS activity. If feasible, the work crew will participate in the morning inspection(s). Modifications to this timing may be approved on a case-by-case basis by the Service. The weather forecast and hourly weather data for Travis AFB should be monitored and can be found by entering the zip code 94535 (Travis AFB) at http://www.weather.gov/srh/

CTS-10. Water shall not be pumped, sprayed, or allowed to flow over undisturbed uplands that can support CTS as part of planned project activities outside of pre-approved requirements (i.e. dust control). Water applied for pre-approved requirements shall be applied in the minimum quantities necessary only to disturbed soils. If excess water accumulates as the result of construction activity, water may be pumped through a screened pump and removed from the construction area as deemed necessary by the on-site biologist in coordination with Travis Natural Resources Management (NRM) staff. If water inadvertently or purposefully enters construction trenches, pits, or excavations, a Service-approved Biologist will remain on site until water is pumped from the trench, pit, or excavation. Following pumping, the Biologist shall inspect the trench, pit, or excavation area and the surrounding uplands to determine if disturbance to CTS has occurred and implement any other measures necessary (e.g. placement of cover boards, exclusionary fencing or barriers) to protect CTS that may emerge due to the wet soil.

CTS-11. Pipes laid underground or stored on the ground shall be capped, covered, or taped in a manner that exclude CTS from entering the pipe prior to the completion of the construction project. Long-term storage of pipes and other construction material should be placed on asphalt and raised above the ground by no less than 1.5 inches (on top of 2 by 4 inch supports).

CTS-12. Trenches, pits, and excavations shall be covered in a manner that exclude CTS from entering during weekends, holidays, humid days, rain events, etc. Specifically, gaps no greater than one inch shall be allowed within cover materials if biologists will not be present the following day or if rain events or high humidity days are expected to occur.

Before such trenches, pits, and excavations are filled, they will be thoroughly inspected for trapped wildlife.

CTS-16. Erosion control Best Management Practices implemented in accordance with the Travis AFB Storm Water Pollution Prevention Plan will be placed so as not to create a hazard to CTS.

CTS-17. A Service-approved Biologist or Natural Resource Monitor (depending on effect level of project) shall perform construction site inspections to ensure the contractor completes the proposed action as described and complies with all proposed minimization measures.

CTS-18. Concrete waste and water from curing operations will be collected in washouts and will be disposed of properly and not allowed into watercourses or CTS upland habitat.

CTS-19. In the event that CTS are encountered on the project site, the Service-approved Biologist or Natural Resource Monitor will contact the TAFB Natural Resource Manager who will then contact the Service. If CTS are captured, they should be released as near as possible to the point of capture, in a manner that maximizes their survival. Refer to the CTS Relocation Plan described in Section 4.4.5.

Programmatic Biological Opinion Reference:

Under the section "Future Development" on page 17-18.

Analysis of Effects:

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres).

A total of 3.29 acres of "Medium" risk CTS upland habitat would be permanently removed by construction of the soccer field and its associated facilities. Mitigation credits will be purchased at a 2:1 ratio (i.e. 6.58 acres) to offset this permanent habitat removal per the ratios given in the Programmatic Biological Opinion (FWS 2018). An additional 7.69 acres of temporary disturbance in the form of burrow collapse from movement of vehicles and personnel, grading and site preparation, as well as temporary storage of equipment, will occur throughout the project site. As we are consulting on all of the areas that may be impacted within the parcel the project is occurring, the actual amount of habitat that will be temporarily disturbed may be smaller.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present.

At least three potential CTS breeding ponds are within the 1.3 mile known dispersal distance of CTS and the project occurs within suitable upland habitat (medium risk). Direct impacts on CTS include crushing of burrows, permanent and temporary removal of habitat, loss of upland refugia, and direct mortality

from construction activities.

Describe the impact if project not completed

The most useful year-round recreational facilities will not be available to Travis AFB personnel. Morale and well-being will not be improved by an increased network of support and leisure services.

Species-specific Minimization Measures which will NOT be implemented for this project:

General measures (PBA section 1.5)	Prefix MM 5, 8, 12, 15
Species Specific (CTS)	Prefix CTS 4, 9, 13-15
All other Species Specific (VPFS, VPTS, CFS, CCG, DGGB)	All

Summary:

"Travis AFB has determined that the proposed Project should be considered and authorized for action because:

a.) the Project fits within the scope of the actions described in the PBO,
b.) the effects analyzed are identical or similar to those that were analyzed in the PBO,
c.) sensitive time periods for listed species will be avoided to the extent practicable, and
d.) all pertinent minimization measures will be implemented.

We request concurrence from FWS within 30 days *(14 days for NLAA and 30 days for LAA)* of the date of this document. This Project will also be discussed and/or listed within our annual report.

References

Marty, J. 2017. Final Report for California Tiger Salamander Drift Fence Study and Runway Relocation Effort on Travis Air Force Base, CA. September.

Marty, J. 2019. Results of the 2018 California Tiger Salamander Study on the Wilcox Ranch West Solano County, CA. April.

Travis AFB. 2016. Travis Air Force Base Integrated Natural Resources Management Plan, Travis Air Force Base. July 2016.

Travis AFB. 2017. Programmatic Biological Assessment Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. Travis Air Force Base. Fairfield, California.

U.S. Fish and Wildlife Service (FWS). 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened

Site Photos and Project Maps:

Figure 1	Overview of project location on Base, including commercial vehicle ingress/egress route
Figure 2	Photo of project site.
Figure 3	Map of project site.
Figure 4	Overall project site map, showing project details
Figure 5	Species and habitat information
Figure 6	CTS detections on Travis AFB from November 2018-March 2019

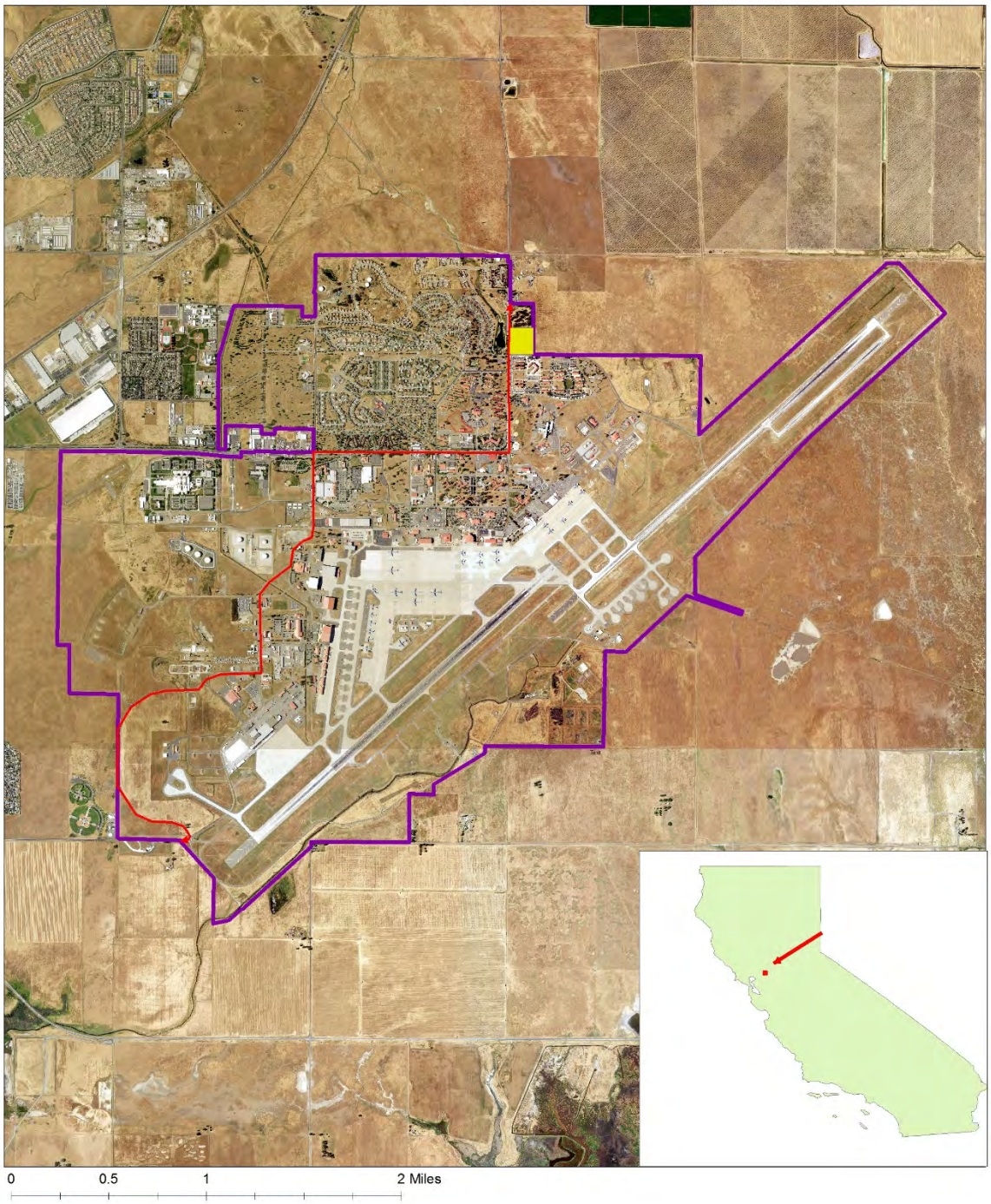


Figure 1: Overview

Ingress/egress route

Project Area

Travis AFB boundary

N

C. Reddin, Feb 2019

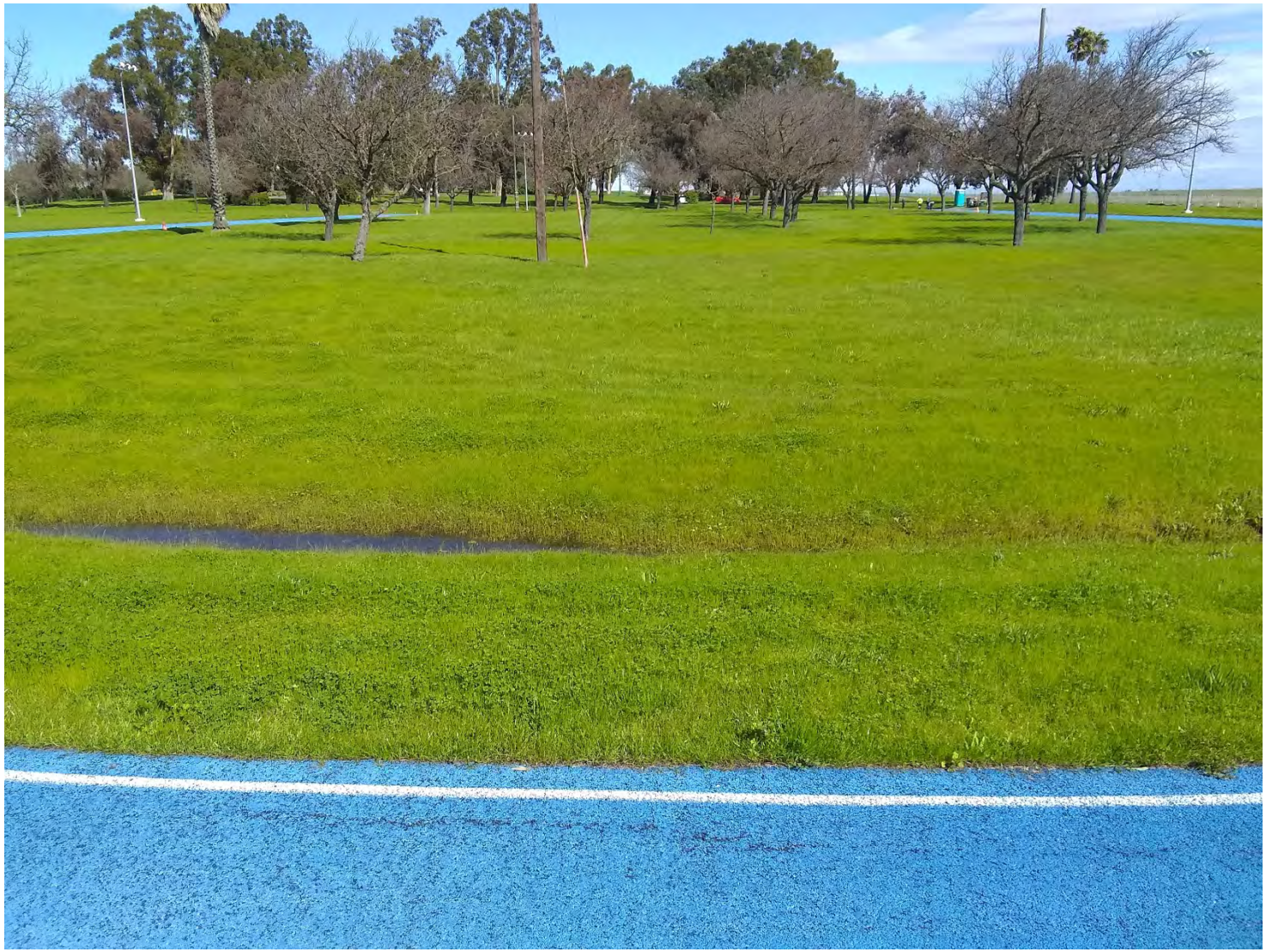


Figure 2: Project area from the south end of the blue running track looking north.

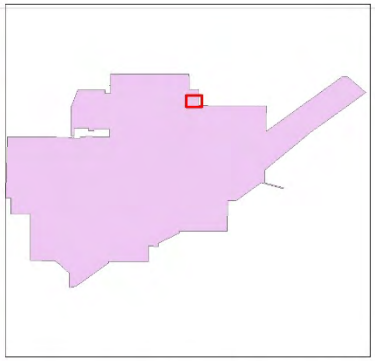


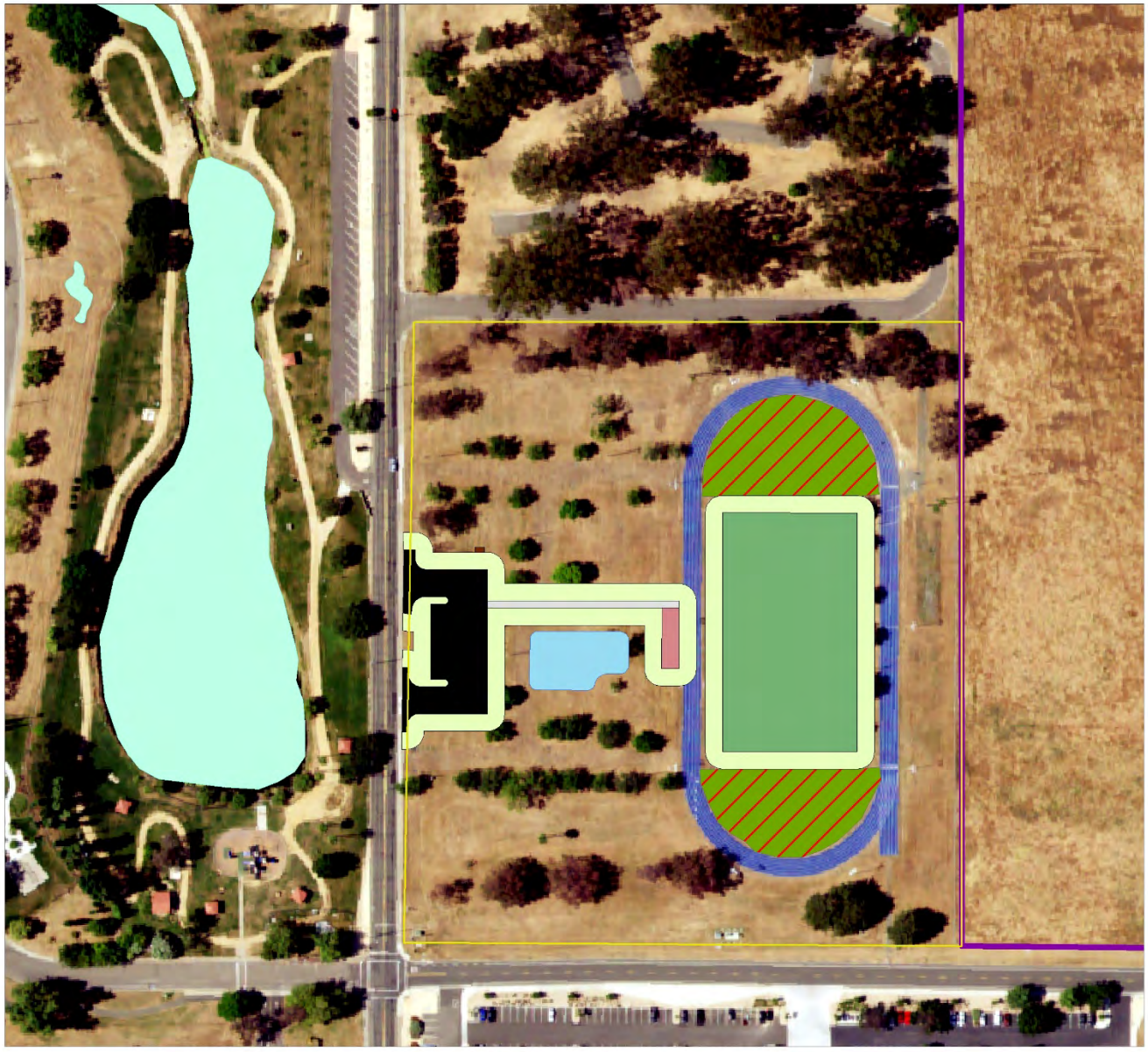
Figure 3: Project Site

Blue track parcel
Project Area
Wetlands
Travis AFB Boundary

N

0 50 100 200 Feet

C. Reddin, Mar 2019



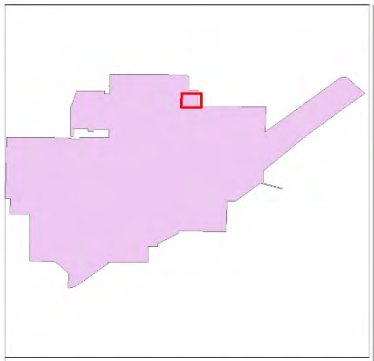


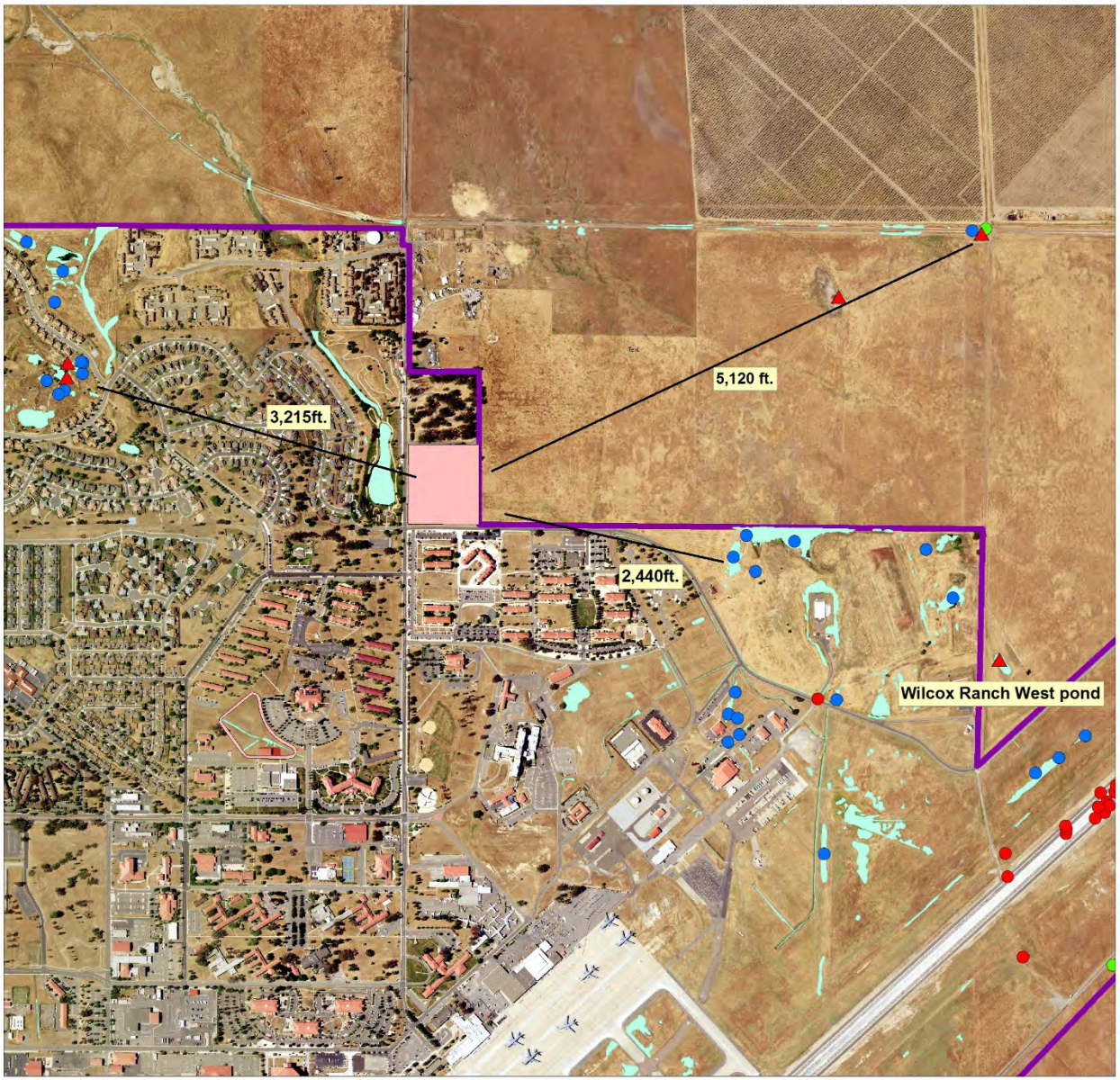
Figure 4: Project Site w/ Facilities

- Parcel boundary
- Bleacher Pad
- Equipment Shed
- Landscaping
- Parking Lot
- Pathway
- Soccer Field
- Storm Water Detention Basin
- Artificial Turf
- Wetlands
- Travis AFB Boundary

N

0 50 100 200 Feet

C. Reddin, Mar 2019



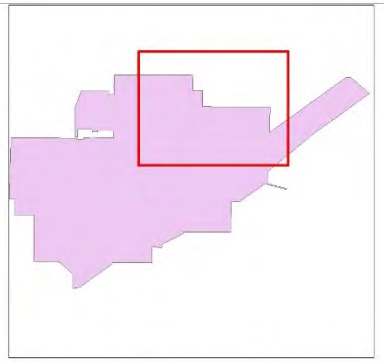


Figure 5: Listed Species Proximity

CTS breeding ponds
CTS sighting
Vernal pool fairy shrimp
Vernal pool tadpole shrimp
Contra Costa goldfields
Blue track parcel
Wetlands
Travis AFB Boundary

N

0 500 1,000 2,000 Feet

C. Reddin, Mar 2019

Figure 6: CTS detections on Travis AFB from November 2018-March 2019

APR 0 6 2017

Colonel John M. Klein, Jr.
Commander
60th Air Mobility Wing
400 Brennan Circle
Travis AFB CA 94535-5000

Mr. Charlie Wright
Chairman
Cortina Indian Rancheria Indians of California
P.O. Box 1630
Williams CA 95987-0018

Dear Chairman Wright

The United States Air Force is preparing an Environmental Assessment (EA) analyzing the development of a new Soccer Field Complex at Travis Air Force Base (AFB). The EA is being prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code (USC) §4321 et seq.); the Council on Environmental Quality Regulations (40 Code of Federal Regulations (CFR) Parts 1500-1508); and the Air Force NEPA policy and procedures (32 CFR Part 989).

As shown on the enclosed Description of the Proposed Action and Alternatives (see Attachment 1), Travis AFB is located in Solano County, and is found on the United States Geological Survey Elmira and Denverton, California 7.5-minute topographic quadrangles. It encompasses the following Sections (Sections are completely in the Elmira quadrangle unless otherwise noted):

- Township 5 North, Range 1 East: Sections 17, 18, and 19
- Township 5 North, Range 1 West: Sections 13, 14, 15, 21, 22, 23, 24, 25, 26 (Denverton), 27 (Denverton), 28, 34 (Denverton), and 35

The EA will analyze potential impacts from the proposed Soccer Field Complex. This project consists of constructing a soccer field, parking lot, support facilities, and utilities in previously developed areas of the base. The base's first Soccer Field Complex would provide year-round recreational services for military and civilian personnel and their families, improving base morale and wellbeing that is integral to the Air Force mission. See Attachment 1 for more details.

Previous archaeological field surveys have been conducted on Travis AFB, and only two prehistoric archaeological sites have been known to occur within the installation boundaries. Both sites, located near vernal pools in the northwest portion of the base, were recorded and artifacts were recovered from them in 1989 prior to the construction of the new medical center.

In addition, a field survey of undisturbed areas in 1995 located evidence for seven historic archaeological sites on Travis AFB, but subsequent consultations with the State Historic Preservation Officer determined that none of these sites were eligible for the National Register of Historic Places. Due to the amount of ground disturbance from continuous construction, operation, and maintenance activities across the base, probability analysis suggests that intact prehistoric archaeological deposits would be extremely rare.

In accordance with Executive Order 13175, the NEPA (42 USC 4321 et seq. and 40 CFR Part 1500), and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4) the Air Force would like to initiate Government-to-Government consultation regarding the proposed Soccer Field Complex. The Air Force wishes to discuss this project in detail with you, and to understand and consider any comments, concerns, and suggestions you may have. Please let us know when you would like to meet and do not hesitate to call me at (707) 424-2452 to arrange dates and times for consultation. Thank you for your cooperation and interest in this matter.

Sincerely

JOHN M. KLEIN, JR.
Colonel, USAF

Attachment:
DOPAA for the Soccer Field Complex EA

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471

February 27, 2017

Matthew Blazek
Department Of The Air Force

Sent by Email: matthew.blazek@us.af.mil
Number of Pages: 2

RE: Travis AFB Soccer Field Complex Construction, Elmira and Denverton, Solano County

Dear Mr. Blazek:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult**. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: Sharaya.souza@nahc.ca.gov.

Sincerely,

Sharaya Souza
Staff Services Analyst

Native American Heritage Commission
Native American Contacts
Solano County
2/27/2017

Cortina Indian Rancheria of Wintun Indians
Charlie Wright, Chairperson
P.O. Box 1630 Wintun / Patwin
Williams , CA 95987
(530) 473-3274 Office
(530) 473-3301 Fax

Yocha Dehe Wintun Nation
Leland Kinter, Chairperson
P.O. Box 18 Wintun (Patwin)
Brooks , CA 95606
lkinter@yochadehe-nsn.gov
(530) 796-3400
(530) 796-2143 Fax

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources assessments for the updated contact list for the Travis AFB Soccer Field Complex Construction, Elmira and Denverton, Solano County.

APR 0 6 2017

Colonel John M. Klein, Jr.
Commander
60th Air Mobility Wing
400 Brennan Circle
Travis AFB CA 94535-5000

Honorable Leland Kinter
Chairman
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks CA 95606-0018

Dear Chairman Kinter

The United States Air Force is preparing an Environmental Assessment (EA) analyzing the development of a new Soccer Field Complex at Travis Air Force Base (AFB). The EA is being prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code (USC) §4321 et seq.); the Council on Environmental Quality Regulations (40 Code of Federal Regulations (CFR) Parts 1500-1508); and the Air Force NEPA policy and procedures (32 CFR Part 989).

As shown on the enclosed Description of the Proposed Action and Alternatives (see Attachment 1), Travis AFB is located in Solano County, and is found on the United States Geological Survey Elmira and Denverton, California 7.5-minute topographic quadrangles. It encompasses the following Sections (Sections are completely in the Elmira quadrangle unless otherwise noted):

- Township 5 North, Range 1 East: Sections 17, 18, and 19
- Township 5 North, Range 1 West: Sections 13, 14, 15, 21, 22, 23, 24, 25, 26 (Denverton), 27 (Denverton), 28, 34 (Denverton), and 35

The EA will analyze potential impacts from the proposed Soccer Field Complex. This project consists of constructing a soccer field, parking lot, support facilities, and utilities in previously developed areas of the base. The base's first Soccer Field Complex would provide year-round recreational services for military and civilian personnel and their families, improving base morale and wellbeing that is integral to the Air Force mission. See Attachment 1 for more details.

Previous archaeological field surveys have been conducted on Travis AFB, and only two prehistoric archaeological sites have been known to occur within the installation boundaries. Both sites, located near vernal pools in the northwest portion of the base, were recorded and artifacts were recovered from them in 1989 prior to the construction of the new medical center.

In addition, a field survey of undisturbed areas in 1995 located evidence for seven historic archaeological sites on Travis AFB, but subsequent consultations with the State Historic Preservation Officer determined that none of these sites were eligible for the National Register of Historic Places. Due to the amount of ground disturbance from continuous construction, operation, and maintenance activities across the base, probability analysis suggests that intact prehistoric archaeological deposits would be extremely rare.

In accordance with Executive Order 13175, the NEPA (42 USC 4321 et seq. and 40 CFR Part 1500), and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4) the Air Force would like to initiate Government-to-Government consultation regarding the proposed Soccer Field Complex. The Air Force wishes to discuss this project in detail with you, and to understand and consider any comments, concerns, and suggestions you may have. Please let us know when you would like to meet and do not hesitate to call me at (707) 424-2452 to arrange dates and times for consultation. Thank you for your cooperation and interest in this matter.

Sincerely

JOHN M. KLEIN, JR.
Colonel, USAF

Attachment:
DOPAA for the Soccer Field Complex EA

cc:
Mr. James Sarmento, Cultural Resources Manager, Yocha Dehe Wintun Nation

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471

February 27, 2017

Matthew Blazek
Department Of The Air Force

Sent by Email: matthew.blazek@us.af.mil
Number of Pages: 2

RE: Travis AFB Soccer Field Complex Construction, Elmira and Denverton, Solano County

Dear Mr. Blazek:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult**. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: Sharaya.souza@nahc.ca.gov.

Sincerely,

Sharaya Souza
Staff Services Analyst

Mr. Matthew Blazek
Installation Tribal Liaison Officer
411 Airmen Drive, B570
Travis AFB CA 94535-5000

11 May 2017

Honorable Charlie Wright
Chairman
Cortina Rancheria Band of Wintun Indians
P.O. Box 1630
Williams, CA 95987 – 0018

Dear Chairman Wright,

This letter serves as a follow-up to six Government-to-Government Consultation request letters submitted by Travis Air Force Base (Travis AFB) and received by Cortina Rancheria Band of Wintun Indians on April 11, 2017. You briefly mentioned in a telephone conversation on May 1, 2017 that you had no issues at the time but we just want to confirm with you. As previously stated, the United States Air Force is preparing five Environmental Assessments (EAs) and one Supplemental Environmental Assessment (SEA) analyzing potential environmental impacts from several construction and maintenance activities on base. The EAs and SEA are being prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code (USC) §4321 et seq.); the Council on Environmental Quality Regulations (40 Code of Federal Regulations (CFR) Parts 1500-1508); and the Air Force NEPA policy and procedures (32 CFR Part 989). Our analysis shows that none of the six projects pose any threats to cultural resources, as there are no known prehistoric sites located in or near the project areas.

Below are brief summaries of the six proposed projects that we would like to discuss with the Cortina Rancheria Band of Wintun Indians:

1) Perimeter D Fencing - The EA will cover the Perimeter Fence Phase D project where approximately half of the perimeter fence that outlines the base will be upgraded. Some portions of the fence (cumulatively amount to 41,700 linear feet) are vulnerable to unauthorized vehicular intrusion which could endanger lives and result in the loss of equipment. Implementation of the proposed action would require the excavation of approximately 430, 3-foot diameter by 4.5-foot deep holes along the existing perimeter fence to anchor cables. No cultural resources will be affected by this project.

2) Batch Plant - The EA will examine potential environmental impacts from the construction of a permanent batch plant on the western side of the base. The batch plant would be used to support large construction projects and activities on base for the next 15 years. The proposed project would encompass approximately 13 acres and create two concrete pads, each 1000 square feet, for a concrete crusher plant and a batch plant as well as install water and electrical utility lines. The rest of the area will be compacted dirt

for equipment and material storage. The project site is currently a disposal waste site for broken asphalt and other debris which will be removed, and the site level and graded before batch plant construction. Only Cold War-era historic properties are located within the vicinity of this project.

3) Contingency Response Wing (CRW) Campus - The EA will assess the construction of the CRW Campus which involves the development of five facilities and parking areas that would aid the 621st Air Mobility Command in deploying people and equipment around the globe. The Campus would have a footprint of approximately 670,000 square feet, including 148,000 square feet of buildings and 522,000 square feet of sidewalk, roads, and parking areas. The new buildings will be constructed within an existing complex of similar buildings. We recently received concurrence back from the California State Historic Preservation Officer (SHPO), who agreed with our assessment that this project will have no effect on prehistoric or historic cultural resources.

4) Soccer Field Complex - The EA will analyze potential impacts from the construction of a soccer field, parking lot, support facilities and utilities in previously developed areas of the base. The base's first Soccer Field Complex would provide year-round recreational services for military and civilian personnel and their families, improving base morale and wellbeing that is integral to the Air Force mission. No prehistoric or historic cultural resources will be affected by this project.

5) Wildland Fire Management Plan - The EA will evaluate the Travis AFB Wildland Fire Management Plan and address the implementation of wildfire prevention management practices that ensure continued mission operations, protect valuable natural resources and reduce wildfire risks. These practices include prescribed burns, animal grazing, herbicide application, mowing, and the creation and/or maintenance of firebreaks in the upland grasslands throughout the base via disking. In writing this plan, the proper management of cultural resources will be considered, but there are no prehistoric archaeological sites known on Travis AFB.

6) Base Civil Engineering (BCE) Complex - The SEA will assess updates to project and environmental conditions for the proposed BCE Complex since the original EA was completed in 2011. This proposal includes the construction of a consolidated BCE Complex that would provide administrative space, indoor storage, maintenance spaces, and outdoor storage facilities. Current BCE buildings are dispersed throughout 55 different facilities on Travis AFB, and centralization would provide improvements to efficiency, safety, and working conditions. According to the 2011 BCE EA, the proposed and alternative sites for the new BCE Complex have been previously disturbed from maintenance and ongoing remediation activities. No historic properties or cultural resources will be affected.

To reiterate, previous archaeological field surveys have been conducted on Travis AFB, and those efforts identified only two sites within the installation boundaries. Both were ground surface sites, located near vernal pools in the northwest portion of the base, that were identified as prehistoric based on possible stone tool evidence. Both sites were recorded and artifacts were recovered from them in 1989 prior to the construction of the new medical center. In addition, a

field survey of undisturbed areas in 1995 located evidence for seven historic archaeological sites on Travis AFB, but subsequent consultations with the SHPO have determined that none of those sites were eligible for the National Register of Historic Places. Additionally, a recent reanalysis of all available geological, historical, and sedimentation data has shown that there is extremely low probability for the existence of ground-surface or buried archaeological deposits on Travis AFB. This is due to the amount of ground disturbance from construction, operation, and maintenance activities across the base, and also from the geologic history of the area. These data show that the existence of intact prehistoric archaeological deposits is extremely unlikely.

Within the next couple of weeks, Travis AFB intends on conducting public reviews for the EA and SEA, unless we learn of any potential concerns or issues from the Cortina Rancheria Band of Wintun Indians. Once these NEPA documents are finalized and signed, we will begin executing the six projects. Please notify me (matthew.blazek@us.af.mil or 707-424-5127) if you have any questions, concerns, or need additional information. On behalf of Travis AFB, I thank you in advance for your cooperation and interest in this matter, and we look forward to future collaborations with the Cortina Rancheria Band of Wintun Indians.

Respectfully,

Matthew Blazek
Installation Tribal Liaison Officer

Mr. Matthew Blazek
Installation Tribal Liaison Officer
411 Airmen Drive, B570
Travis AFB CA 94535-5000

11 May 2017

Honorable Leland Kinter
Chairman
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks CA 95606-0018

Dear Chairman Kinter,

This letter serves as a follow-up to six Government-to-Government Consultation request letters submitted by Travis Air Force Base (Travis AFB) and received by Yocha Dehe Wintun Nation on April 11, 2017. As previously mentioned, the United States Air Force is preparing five Environmental Assessments (EAs) and one Supplemental Environmental Assessment (SEA) analyzing potential environmental impacts from several construction and maintenance activities on base. The EAs and SEA are being prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code (USC) §4321 et seq.); the Council on Environmental Quality Regulations (40 Code of Federal Regulations (CFR) Parts 1500-1508); and the Air Force NEPA policy and procedures (32 CFR Part 989). Our analysis shows that none of the six projects pose any threats to cultural resources, as there are no known prehistoric sites located in or near the project areas.

Below are brief summaries of the six proposed projects that we would like to discuss with the Yocha Dehe Wintun Nation:

1) Perimeter D Fencing - The EA will cover the Perimeter Fence Phase D project where approximately half of the perimeter fence that outlines the base will be upgraded. Some portions of the fence (cumulatively amount to 41,700 linear feet) are vulnerable to unauthorized vehicular intrusion which could endanger lives and result in the loss of equipment. Implementation of the proposed action would require the excavation of approximately 430, 3-foot diameter by 4.5-foot deep holes along the existing perimeter fence to anchor cables. No cultural resources will be affected by this project.

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broken asphalt and other debris which will be removed, and the site level and graded before batch plant construction. Only Cold War-era historic properties are located within the vicinity of this project.

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To reiterate, previous archaeological field surveys have been conducted on Travis AFB, and those efforts identified only two sites within the installation boundaries. Both were ground surface sites, located near vernal pools in the northwest portion of the base, that were identified as prehistoric based on possible stone tool evidence. Both sites were recorded and artifacts were recovered from them in 1989 prior to the construction of the new medical center. In addition, a field survey of undisturbed areas in 1995 located evidence for seven historic archaeological sites

on Travis AFB, but subsequent consultations with the SHPO have determined that none of those sites were eligible for the National Register of Historic Places.

Finally, in discussions and letters over the past year between Travis AFB and the tribe, the Yocha Dehe Wintun Nation has expressed interest in seeing additional cultural resource studies performed across the base. A recent reanalysis of all available geological, historical, and sedimentation data was completed in April 2017 and it illustrated that there is an extremely low probability for the existence of ground-surface or buried archaeological deposits on Travis AFB. This is due to the amount of ground disturbance from construction, operation, and maintenance activities across the base, and also from the geologic history of the area. Attached is hardcopy of this analysis, an electronic copy was sent to Mr. James Sarmento on May 4, 2017. Collectively, these data show that the presence of intact prehistoric archaeological deposits is extremely unlikely.

Within the next couple of weeks, Travis AFB intends on conducting public reviews for the EA and SEA, unless we learn of any potential concerns or issues from the Yocha Dehe Wintun Nation. Once these NEPA documents are finalized and signed, we will begin executing the six projects. Please notify me (matthew.blazek@us.af.mil or 707-424-5127) if you have any questions, concerns, or need additional information. On behalf of Travis AFB, I thank you in advance for your cooperation and interest in this matter, and we look forward to future collaborations with the Yocha Dehe Wintun Nation.

Respectfully,

Matthew Blazek
Installation Tribal Liaison Officer

Attachment:

1. A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base (April 2017)

cc:

Mr. James Sarmento, Cultural Resources Manager, Yocha Dehe Wintun Nation

YOCHA DEHE
CULTURAL RESOURCES

May 18, 2017

60th Air Mobility Wing
Attn: Colonel John M. Klein, Jr.
400 Brennan Circle
Travis AFB, CA 94535-5000

RE: Soccer Field Complex Project

Dear Colonel Klein:

Thank you for your project notification dated, April 6, 2017 regarding cultural information on or near the proposed Soccer Field Compex Project, Travis AFB, Solano County. We appreciate your effort to contact us and wish to respond.

The Cultural Resources Department has reviewed the project and concluded that it is within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we have a cultural interest and authority in the proposed project area.

Based on the information provided, the Tribe has concerns that the project could impact undiscovered archaeological deposits. Additionally, Yocha Dehe Wintun Nation requests a site visit to the project area to evaluate our cultural concerns.

Please contact the following individual to coordinate a date and time for the site visit.

James Sarmento, Cultural Resources Manager
Yocha Dehe Wintun Nation
Office: (530) 723-0452
Email: jsarmento@yochadehe-nsn.gov

Please refer to identification number YD – 04282017-01 in any correspondence concerning this project.

Thank you for providing us with this notice and the opportunity to comment.

Sincerely,

Marilyn Delgado
Cultural Resources Director

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

MEMORANDUM FOR RECORD

FROM: 60 CES/CEI INSTALLATION MANAGEMENT FLIGHT

SUBJECT: Tribal Correspondence and Site Visit for Six (6) Proposed Projects at Travis Air Force Base (AFB)

National Historic Preservation Act Section 106 Government to Government (G2G) letters were sent by Travis Air Force Base (AFB) to two federally recognized tribes, the Cortina Rancheria Band of Wintun Indians and the Yocha Dehe Wintun Nation on April 6, 2017 for six projects:

1. Contingency Response Wing (CRW) Campus
2. Base Civil Engineering (BCE) Complex
3. Perimeter Fence Upgrade
4. Soccer Field Complex
5. Implementation of the Wildland Fire Management Plan
6. Permanent Batch Plant

On May 1, 2017, Matthew Blazek, Travis AFB Installation Tribal Liaison Officer (ITLO), contacted via telephone both tribes to see if they reviewed the G2G letters and project information as well as to see if the tribes wanted to discuss any concerns that they may have. The ITLO was able to reach Honorable Charlie Wright of the Cortina Rancheria Band of Wintun Indians who verbally stated he had no concerns at the time and to email him the "A Geoarchaeological Overview and Site Sensitivity Assessment" that Travis AFB recently completed. A voicemail was left with Mr. James Sarmento, Cultural Resources Manager of the Yocha Dehe Wintun Nation. Emails with the "A Geoarchaeological Overview and Site Sensitivity Assessment" were sent to both tribal contacts.

On May 11, 2017, follow-up letters were sent to both tribes to see if they had any questions or concerns regarding the six proposed projects. The letters expressed Travis AFB's intent to proceed with the NEPA process within a couple of weeks for all projects unless the base received a response from the tribes.

On May 18, 2017, the ITLO received letters dated April 21, 2017 from the Yocha Dehe Wintun Nation stating that they had concerns of impacts to undiscovered archaeological deposits from a few of the projects and requested a site visit to Travis AFB. Per instructions in the letters, the ITLO immediately contacted Mr. Laverne Bill, Cultural Resources Department Manager of the Yocha Dehe Wintun Nation, to set up a time for tribal representatives to visit the base and project sites. After subsequent correspondence with Mr. Bill and eventually Mr. James Sarmento, the date was set for June 1, 2017.

On the morning of June 1, 2017, the ITLO met with Mr. Sarmento and Mr. Larry Longee of the Yocha Dehe Wintun Nation and escorted them to the 60th Civil Engineering Squadron Command Section. Travis AFB representations from civil engineering, fire, and environment were in attendance as well as

Dr. James Carucci, California Regional Archaeologist with Travis Installation Support Team - AFCEC/CZOW (see attachment for complete list of attendees).

The ITLO provided a brief overview of the six projects as well as an introduction to an upcoming G2G consultation request from Travis AFB concerning the Main Operating Base #4 Beddown of the KC-46A tanker aircraft. In addition, methods and results from the "A Geoarchaeological Overview and Site Sensitivity Assessment" were shared. Mr. Sarmento and Mr. Longee asked some general questions of where structures were being constructed for the KC46A Beddown, how deep structures for the BCE Complex and CRW Campus were going, techniques and examples for wildland fire prevention as well as noted that they are looking forward to the G2G letter for the KC-46A Beddown effort.

Representatives from fire and civil engineering joined the ITLO, Dr. Carucci, Mr. Sarmento and Mr. Longee on the site visits to an area proposed for prescribed burning. The prescribed burning site was also the only area on base of high probability for buried cultural artifacts per the "A Geoarchaeological Overview and Site Sensitivity Assessment". At this site, Travis AFB Fire Chief explained how prescribed burning would work as well as illustrated the history of past wildfires stemming from this area. Mr. Sarmento and Mr. Longee asked about the methodology but didn't raise any issues.

Next the group visited a section of the perimeter fence that was already upgraded to illustrate what would happen at other sections. The tribal representatives verbally stated they didn't have any issues with the upgrades but noted that, before any major project begins, Travis AFB should offer a short training that highlights cultural resources and best management practices should buried artifacts be discovered during construction. The group then traveled to the CRW Campus site where Mr. Sarmento and Mr. Longee asked questions about grading and where soil would come from. Civil engineering representatives stated that soils leveled from other CRW Campus construction sites would help fill the main area. The tribal representative didn't raise any issues.

Finally, the group visited the Batch Plant and BCE Complex site where Mr. Sarmento and Mr. Longee didn't offer any concerns or issues but simply stated they were wanting to get a visual of the project areas. Dr. Carucci discussed a recent "Archaeological Analysis of a Legacy
Collection from CA-SOL-313", a potential prehistoric site where artifacts were collected in the 1980s from a nearby site that is now the hospital. The tribal representatives requested a copy of this report. Mr. Sarmento and Mr. Longee also stated that they had no concerns with the Soccer Field Complex and did not wish to see the sites since they had to leave for another arrangement.

After the site visit, the ITLO emailed Mr. Sarmento, Mr. Longee, and Mr. Bill the "Archaeological Analysis of a Legacy Collection from CA-SOL-313" and thanked them for visiting the base and discussing the projects. The ITLO re-emphasized that the base wishes to proceed on these six projects unless Travis AFB learns of any concerns from the tribes. No response has been received to date.

X

MATTHEW F. BLAZEK, GS-12, DAFC
ITLO, 60 CES/CEIE

Yocha Dehe Wintun Nation Site Visit to Travis AFB
June 1, 2017

Sign In Sheet

Name	Organization	Phone Number	Email
Matthew Blazek	60CES/CEIE	707-424-5727	matthew.blazek@us.af.mil
MILGA FRANKLIN	60 CES/CEIE	7074244321	MILGA.FRANKLIN@USAF.MIL
Carmen Chan	60 CES/CENPL	707816-3640	carmen.chan@us.af.mil
Brett Foster	60 CES/CENPL	707-424-0785	brett.foster.3@us.af.mil
Rachel Grossknueger	60 CES/CGMP	707-424-0871	rachel.grossknueger.1@us.af.mil
James Sarmento	Yocha Dehe	(530)723-0452	jsarmento@yochadehe-nsn.gov
Larry Longee	Yochadehe	5306054455	llongee@yochadehe-nsn.gov
Paul Hughes	60 CES/CD	707 424 5918	paul.hughes.1@us.af.mil
JAMES CARUCCI	AFLCC/CZOW	424-8625	James.CARucci@us.AF.MIL
JOHN SPEAKMAN	60CES/CEF	424-0850	JOHN.SPEAKMAN@US.AF.MIL
DAVID LIN	60CES/CEN	424-0886	DAVID.LIN.3@US.AF.MIL
Brian Sassaman	60CES/CEI	424-9225	brian.sassaman.1@us.af.mil

Appendix B

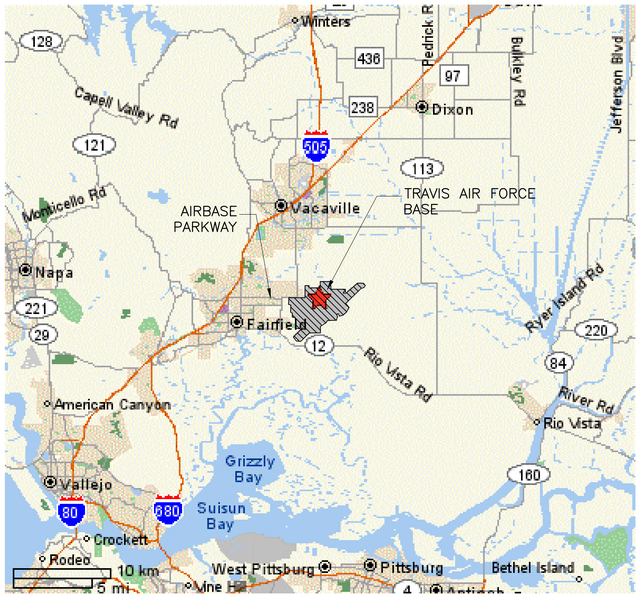
2013 Soccer Field Design Drawings

XDAT 10-1677
WEST OF TWIN PEAKS SOCCER FIELD
100% SUBMITTAL

TRAVIS AIR FORCE BASE,
FAIRFIELD, CALIFORNIA

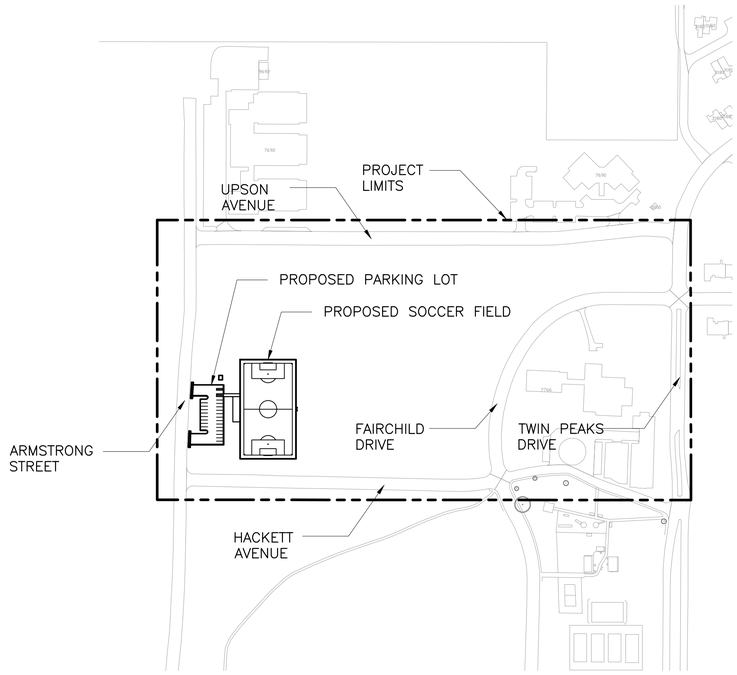
DRAWING INDEX

VICINITY MAP



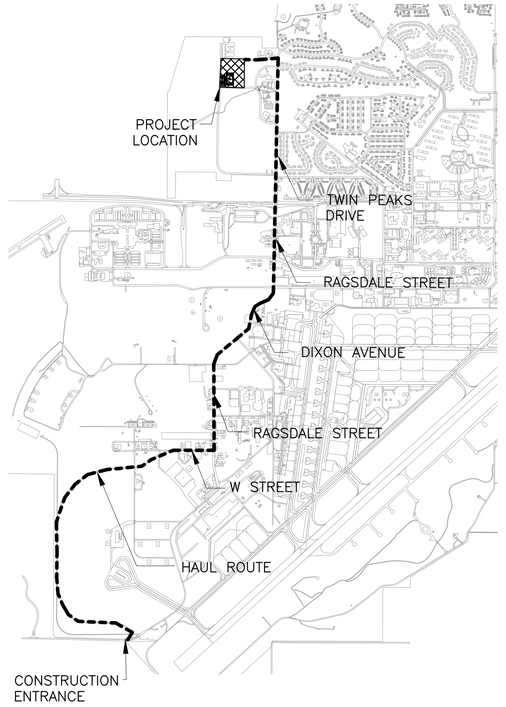
NORTH

SITE LOCATION MAP



NORTH

HAUL ROUTE



NORTH

NOTE:
IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY.

REV	DATE	DESCRIPTION	APPR.
1	17 AUG 13	100% DESIGN SUBMITTAL	
2	8 APR 13	95% DESIGN SUBMITTAL	
3	31 JUL 12	65% DESIGN SUBMITTAL	
4	27 OCT 11	35% DESIGN SUBMITTAL	

TranSystems
505 14th Street, Suite 1000
Oakland, California 94612-3741
Phone: 510-835-2761
Fax: 510-835-9839

REGISTERED PROFESSIONAL ENGINEER
JEROME DE VERRIER
No. C60334
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

DESIGNED BY: KMW
DWN BY: KMW
CKD BY: JDV
REVIEWED BY: JDV
SUBMITTED BY: KMW

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
TRAVIS AIR FORCE BASE
CALIFORNIA

WEST OF TWIN PEAKS SOCCER FIELD

COVER SHEET AND INDEX OF DRAWINGS

CODE ID. NO. –
SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 1 OF 21

G-001

GENERAL NOTES:

1. STANDARDS: THE CURRENT VERSIONS OF THE UNIFIED FACILITIES CRITERIA (UFC), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) DEPARTMENT OF LABOR PART 1926 GOVERN THE CONSTRUCTION OF THE WORK EXCEPT AS NOTED OTHERWISE. IN THE EVENT OF A CONFLICT BETWEEN THE REFERENCED STANDARDS, THE GREATER OR MORE RESTRICTIVE REQUIREMENTS SHALL GOVERN.

2. COMPLIANCE WITH REGULATIONS: BECOME THOROUGHLY FAMILIAR WITH AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL STATUTES, ORDINANCES AND DIRECTIVES.

3. SAFETY AND PROTECTION: ALL BARRICADES, WARNING SIGNS, LIGHTS, DEVICES AND OTHER SAFETY FACILITIES FOR THE GUIDANCE AND PROTECTION OF TRAFFIC AND PEDESTRIANS MUST CONFORM TO THE MOST CURRENT VERSION OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. ALL TRAFFIC SIGNS SHALL HAVE REFLECTIVE SURFACES. MAKE DAILY INSPECTIONS OF BARRICADES AND FLASHING LIGHTS TO ENSURE PROPER FUNCTIONING OF WARNING DEVICES.

4. NOISE, AIR AND WATER QUALITY: TAKE ALL MEASURES TO ELIMINATE EXCESSIVE NOISE AND ELIMINATE POLLUTION OF AIR AND WATER RESULTING FROM CONSTRUCTION OPERATIONS AND EQUIPMENT. IMPLEMENT ALL MEASURES NECESSARY TO CONTROL DUST, SMOKE AND FUMES FROM CONSTRUCTION EQUIPMENT AND FROM OPERATIONS ON THE WORK SITE IN COMPLIANCE WITH AIR QUALITY REGULATIONS. KEEP JOB SITE FREE OF DEBRIS AT ALL TIMES. DISCHARGE OF OILY, GREASY OR CHEMICAL WASTES INTO WATERWAYS AND SEWERS SHALL NOT BE PERMITTED.

5. CONTRACTOR IS RESPONSIBLE TO PREPARE A SWPPP PRIOR TO CONSTRUCTION AND SUBMIT FOR APPROVAL PRIOR TO ANY EARTH MOVING ACTIVITIES. IMPLEMENT AND MAINTAIN ALL APPROPRIATE BEST MANAGEMENT PRACTICES DURING CONSTRUCTION. THE PROPOSED EROSION CONTROL SHOWN ON THESE PLANS IS NO SUBSTITUTE FOR A SWPPP.

6. HAUL ROUTES: COORDINATE ALL HAUL ROUTES WITH THE CONTRACTING OFFICER. MAINTAINING HAUL ROUTES AND RESTORING THEM TO THE ORIGINAL CONDITION UPON COMPLETION OF WORK SHALL BE SOLELY AT THE CONTRACTOR'S EXPENSE.

7. HAUL ROUTES: KEEP EXISTING PAVED AREAS FREE FROM DIRT TRACKED BY HEAVY EQUIPMENT OPERATIONS. SWEEP AND WASH DOWN ALL HAUL ROUTES OVER PUBLIC STREETS AND PAVED FACILITIES TO/FROM THE CONSTRUCTION AREA. A SWEEPER IS REQUIRED AT ALL TIMES THE CONTRACTOR IS WORKING.

8. VERIFICATION OF DIMENSIONS: VERIFY ALL RELEVANT SITE DIMENSIONS PRIOR TO DEMOLITION.

9. VERIFICATION OF EXISTING SITE CONDITIONS: INSPECT THE PROJECT SITE AND BECOME FAMILIAR WITH ALL EXISTING SITE CONDITIONS, UNDERGROUND UTILITIES, TRAFFIC, ON-GOING OPERATIONS AND OTHER CONDITIONS THAT COULD AFFECT THE EXECUTION OF THE WORK.

10. CONSTRUCTION STAGING AREA: CONTRACTOR'S CONSTRUCTION STAGING AREA WILL BE IDENTIFIED BY THE CONTRACTING OFFICER PRIOR TO BEGINNING CONSTRUCTION.

11. CONTAMINATED SOILS: ALTHOUGH NOT ANTICIPATED FOR THIS PROJECT, IN THE EVENT THAT UNEXPECTED REGULATED SUBSTANCES ARE ENCOUNTERED DURING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL STATUES, ORDINANCES AND DIRECTIVES WITH RESPECT TO HANDLING AND DISPOSAL OF SUCH SUBSTANCES IN ACCORDANCE WITH PROJECT SAFETY DIRECTIVES. CONTRACTOR SHALL ALSO NOTIFY CONTRACTING OFFICER IMMEDIATELY, UPON ENCOUNTERING ANY SUCH SUBSTANCES.

12. MONUMENTS: RESET ANY PROPERTY, LOT OR SECTION CORNER MONUMENTS DISTURBED BY CONSTRUCTION OPERATIONS AT NO ADDITIONAL COST TO OWNER. RESET MONUMENTS UNDER THE DIRECT SUPERVISION OF A REGISTERED LAND SURVEYOR LICENSED IN THE STATE OF CALIFORNIA.

13. BURNING: NO BURNING OR INCINERATION OF RUBBISH IS PERMITTED ON SITE.

14. REMOVAL AND CLEAN-UP: PROVIDE REGULAR SITE CLEARING AND FINAL SITE CLEANING AT COMPLETION OF PROJECT.

15. THE INFORMATION ON THESE DRAWINGS IS BASED UPON ENGINEER'S FIELD INVESTIGATION, TOPOGRAPHIC SURVEY AND AVAILABLE AS-BUILT DRAWINGS PROVIDED BY THE BASE AND MAY NOT REFLECT THE ACTUAL CONDITION OF THE EXISTING FEATURES AT THE TIME OF DEMOLITION.

16. THE CONTRACTOR SHALL VISIT THE SITE TO VERIFY ALL EXISTING SITE CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING A BID.

17. CONTRACTOR SHALL COMPLY WITH EXCAVATING, BACKFILLING, AND COMPACTING PROCEDURES FOR SOILS USED AS BACKFILL MATERIALS TO FILL VOIDS, DEPRESSIONS OR EXCAVATIONS RESULTING FROM DEMOLITION.

18. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR ONSITE LOCATIONS OF EXISTING UTILITIES AND LOCATE ALL UTILITIES WITHIN THE LIMIT OF WORK. NOTIFY THE CONTRACTING OFFICER IMMEDIATELY IF UTILITIES ARE FOUND WHICH ARE NOT SHOWN ON THE PLAN. IN ADDITION, NOTIFY THE CONTRACTING OFFICER IF ELEVATIONS OF TIE-IN UTILITIES DIFFER FROM THAT SHOWN ON THE PLANS.

19. ELECTRICAL, TELEPHONE, CABLE, WATER, FIBER OPTIC CABLE AND/OR GAS LINES NEEDING TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PAY CLOSE ATTENTION TO EXISTING UTILITIES WITHIN ANY ROAD RIGHT OF WAY DURING CONSTRUCTION.

20. CONTRACTOR SHALL LIMIT SAW-CUT & PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THESE CONSTRUCTION PLANS BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL AND REPAIR.

21. A GEOTECHNICAL REPORT BY KC ENGINEERING COMPANY HAS BEEN PREPARED FOR THIS PROJECT ENTITLED, "UPDATED GEOTECHNICAL INVESTIGATION ON PROPOSED WEST TWIN PEAKS SOCCER FIELD," DATED 29 MARCH 2013. THIS REPORT IS AVAILABLE FROM THE CONTRACTING OFFICER. PRIMARY CONSIDERATIONS FOR THIS PROJECT ARE THE PRESENCE OF HIGHLY EXPANSIVE SOILS, DIFFERENTIAL SUBGRADE CONDITIONS AND PRESENCE OF CONSTRUCTION DEBRIS.

22. BASE BID INCLUDES ARTIFICIAL TURF FIELD, SUBDRAINAGE, STORM DRAINAGE, AND SEEDING IN DISTURBED AREAS. ALL OTHER ITEMS ARE OPTIONAL BID ITEMS.

23. ALL DISTURBED AREAS SHALL RECEIVE SEEDING AS INDICATED ON THE LANDSCAPE PLANS.

SURVEY NOTES:

1. TOPOGRAPHIC SURVEY PREPARED BY TRANSYSTEMS CORPORATION, FROM FIELD DATA COLLECTED IN SEPTEMBER 2011.

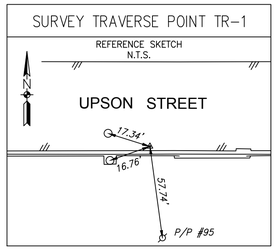
2. THIS SURVEY DOES NOT GUARANTEE THE EXISTENCE OR NONEXISTENCE, SIZE, TYPE, DEPTH, MATERIAL OR LOCATION OF ANY UNDERGROUND UTILITIES. ALL UTILITIES SHOWN ARE BASED ON ABOVEGROUND UTILITY STRUCTURES, AVAILABLE UTILITY MAPS AND SITE PLANS. THE CONTRACTOR SHALL HAVE ALL EXISTING SITE UTILITIES VERIFIED PRIOR TO ANY EXCAVATION.

3. TEMPORARY BENCHMARK #1 (TBM #1) IS A CHISELED SQUARE ON TOP OF A CONCRETE CURB AS SHOWN HEREON.
(TBM #1 ELEVATION = 81.92)

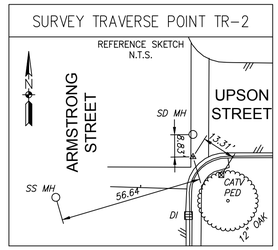
4. ELEVATIONS SHOWN HEREON ARE IN FEET AND REFER TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988. ELEVATIONS WERE ESTABLISHED FROM AN OPUS SOLUTION PROVIDE BY THE NATIONAL GEODETIC SURVEY (NGS). THE FOLLOWING CONTINUOUSLY OPERATED REFERENCE STATIONS WERE USED TO TRIANGULATE THE INITIAL POSITION: WOODLAND1, HUNTERHILL, AND SIBLEYVOLC, WITH PID #'S OF DG8213, DG8210, AND DH3879, RESPECTIVELY.

5. HORIZONTAL COORDINATES SHOWN HEREON ARE IN US SURVEY FEET AND REFER TO THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE#2, NAD83 (CORS 1996 ADJUSTMENT)(EPOCH:2002.0000). COORDINATES WERE ESTABLISHED FROM AN OPUS SOLUTION PROVIDED BY THE NATIONAL GEODETIC SURVEY (NGS). THE FOLLOWING CONTINUOUSLY OPERATED REFERENCE STATIONS WERE USED TO TRIANGULATE THE INITIAL POSITION: WOODLAND1, HUNTERHILL, AND SIBLEYVOLC, WITH PID #'S OF DG8213, DG8210, AND DH3879, RESPECTIVELY.

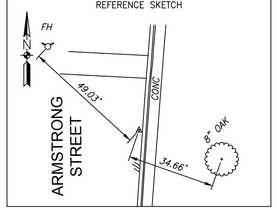
SURVEY TRAVERSE POINT TR-1



SURVEY TRAVERSE POINT TR-2



SURVEY TRAVERSE POINT TR-5



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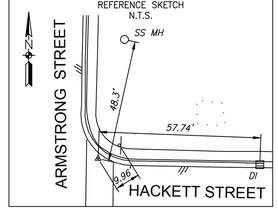
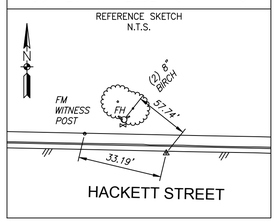


SURVEY TRAVERSE POINT TR-5



EXISTING UTILITY STRUCTURE DATA

EXISTING STORM DRAIN STRUCTURE DATA

1. *SD MH*
RIM = 92.14
BOS = 89.04

2. *SD MH*
RIM = 91.92
INV 15" RCP (S) = 87.72
INV 18" RCP (W) = 87.42

3. *DI*
RIM = 91.05
BOS = I/A
FULL OF DEBRIS

4. *SD MH*
RIM = 84.67
INV = I/A
LID SCREWED SHUT (FROZEN)

5. *SD MH*
RIM = 85.02
INV = I/A
LID SCREWED SHUT (FROZEN)

6. *SD MH*
RIM = 84.59
INV 15" RCP (N) = 79.59
INV 18" RCP (E) = 79.54
INV 15" RCP (S) = 79.59
INV 18" RCP (W) = 79.49

7. *DI*
RIM = 81.23
INV 15" RCP (N) = 78.33
INV 15" RCP (S) = 78.13
INV 15" CMP (W) = 78.43

8. *SD MH*
RIM = 82.44
INV 15" RCP (N) = 77.19
INV 18" RCP (E) = 77.34
INV 18" RCP (S) = 77.14

9. *CI*
RIM = 81.65
INV 18" RCP (N) = 76.95
INV 18" RCP (S) = 76.95

10. *CI*
RIM = 80.42
INV 18" RCP (N) = 76.32
INV 18" RCP (S) = 76.22

11. *CI*
RIM = 80.76
INV 18"RCP (N) = 75.76
INV 18" RCP (W) = 75.66

12. *CI*
RIM = 80.62
INV 18" RCP (E) = 75.42
INV 18" RCP (W) = 75.32

13. *CI*
RIM = 81.32
INV 12" RCP (S) = 79.07

14. *DI*
RIM = 81.30
INV 12" RCP (N) = 78.90
INV 15" RCP (S) = 78.85

15. *DI*
RIM = 81.40
INV 15" RCP (N) = 77.73
INV 48" RCP (E) = 74.98
INV 48" RCP (W) = 74.73

EXISTING WATER STRUCTURE DATA

(1) *WATER VAULT*
RIM = 92.58
TOP OF PIPE 8" = 90.08
BOS = 88.88

EXISTING SANITARY SEWER STRUCTURE DATA

1. *SS MH*
RIM = 82.33
INV 10" VCP (N) = 73.83
INV 8" VCP (SE) = 73.83
INV 10" VCP (NW) = 73.73

2. *SS MH*
RIM = 82.60
INV 8" VCP (E) = 75.50
INV 6" PVC (W) = 76.10
INV 8" VCP (NW) = 75.40

3. *SS MH*
RIM = 90.52
INV 6" VCP (NE) = 82.52
INV 6" VCP (SE) = 82.47
INV 8" VCP (SW) = 82.42
INV 6" VCP (NW) = 82.52

4. *SS MH*
RIM = 84.84
INV 8" VCP (NE) = 78.69
INV 8" VCP (S) = 78.59
INV 4" VCP (NW) = 79.04

5. *SS MH*
RIM = 83.23
INV 8" VCP (N) = 77.78
INV 8" VCP (E) = I/A (ABAND)
FULL OF DEBRIS

6. *SS MH*
RIM = 82.59
INV 8" VCP (N) = 75.39
INV 6" VCP (NE) = 75.44
INV 8" VCP (SW) = 75.29

7. *SSMH*
RIM = 88.01
IMV 6" VCP (E) = I/A
LID FROZEN

ABBREVIATIONS:

ABAND	ABANDONED
AC	ASPHALT CONCRETE
BOS	BOTTOM OF STRUCTURE
CATV	CABLE TV
CI	CURB INLET
CONC	CONCRETE
DI	DROP INLET
DIA.	DIAMETER
E	EASTING/EAST
EA	EACH
EX	EXISTING
FG	FINISHED GRADE
FL	FLOW LINE
G	GAS
GB	GRADE BREAK
GA	GAUGE
GV	GAS VALVE
I/A	INACCESSIBLE
INV	INVERT ELEVATION
LF	LINEAR FEET
MAX.	MAXIMUM
MH	MANHOLE
MIN.	MINIMUM
N	NORTHING/NORTH
N/F	NOT FOUND
NTS	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
OE	OVERHEAD ELECTRICAL
OH	OVERHEAD
POC	POINT OF CONNECTION
PP	PERFORATED PIPE
PD	PANEL DRAIN
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RIM	RIM ELEVATION
S	SLOPE
SAN/SS	SANITARY SEWER
SO	SIDE OPENING
SCO	SEWER CLEANOUT
SD	STORM DRAIN
TC	TOP OF CURB
TG	TOP OF GRATE
TP	TOP OF PAVEMENT
TOB	TOP OF BANK
TOS	TOE OF SLOPE
TYP.	TYPICAL
VCP	VITRIFIED CLAY PIPE
W	WATER
WV	WATER VALVE

LEGEND

	EXISTING	PROPOSED
MAJOR CONTOUR	(85)	85
MINOR CONTOUR	(86)	84
BITUMINOUS PAVEMENT		
CURB AND GUTTER		
PAVEMENT STRIPING		
CENTERLINE OF ROAD		
STORM DRAIN (SD)	18" SD	SD
SANITARY SEWER (SS)	8" SS	
DITCH/SWALE		
TOP OF BANK	TOB	
TOE OF SLOPE	TOS	
UNDERGROUND CABLE TV	CATV	
UNDERGROUND COMMUNICATION	UC	
UNDERGROUND ELECTRIC	UE	
OVERHEAD POWER	OH	
UNDERGROUND GAS	4" G	
UNDERGROUND WATER MAIN	8" W	
SHRUB		
EDGE OF WOODS		
TREE		
SIGN		
WITNESS POST		
GUY WIRE		
POWER POLE		
TELEPHONE POLE		
CABLE TV PEDESTAL	CATV PED	
FIRE HYDRANT		
WATER VALVE	WV	
POST INDICATOR VALVE	PIV	
GAS VALVE	GV	
SANITARY CLEAN OUT	SCO	
CURB INLET	CI	
DROP INLET	DI	
STORM DRAIN MANHOLE	SD MH	SD
SANITARY SEWER MANHOLE	SS MH	
BENCH MARK		
SOIL BORING		
SURVEY CONTROL POINT		

NOTE:
IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY.

APPR.	DESCRIPTION	REV	DATE
	100% DESIGN SUBMITTAL		17 AUG 13
	95% DESIGN SUBMITTAL		8 APR 13
	65% DESIGN SUBMITTAL		31 JUL 12
	35% DESIGN SUBMITTAL		27 OCT 11

REGISTERED PROFESSIONAL ENGINEER
JEROME DE VERBER
No. C60334
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA
SEAL

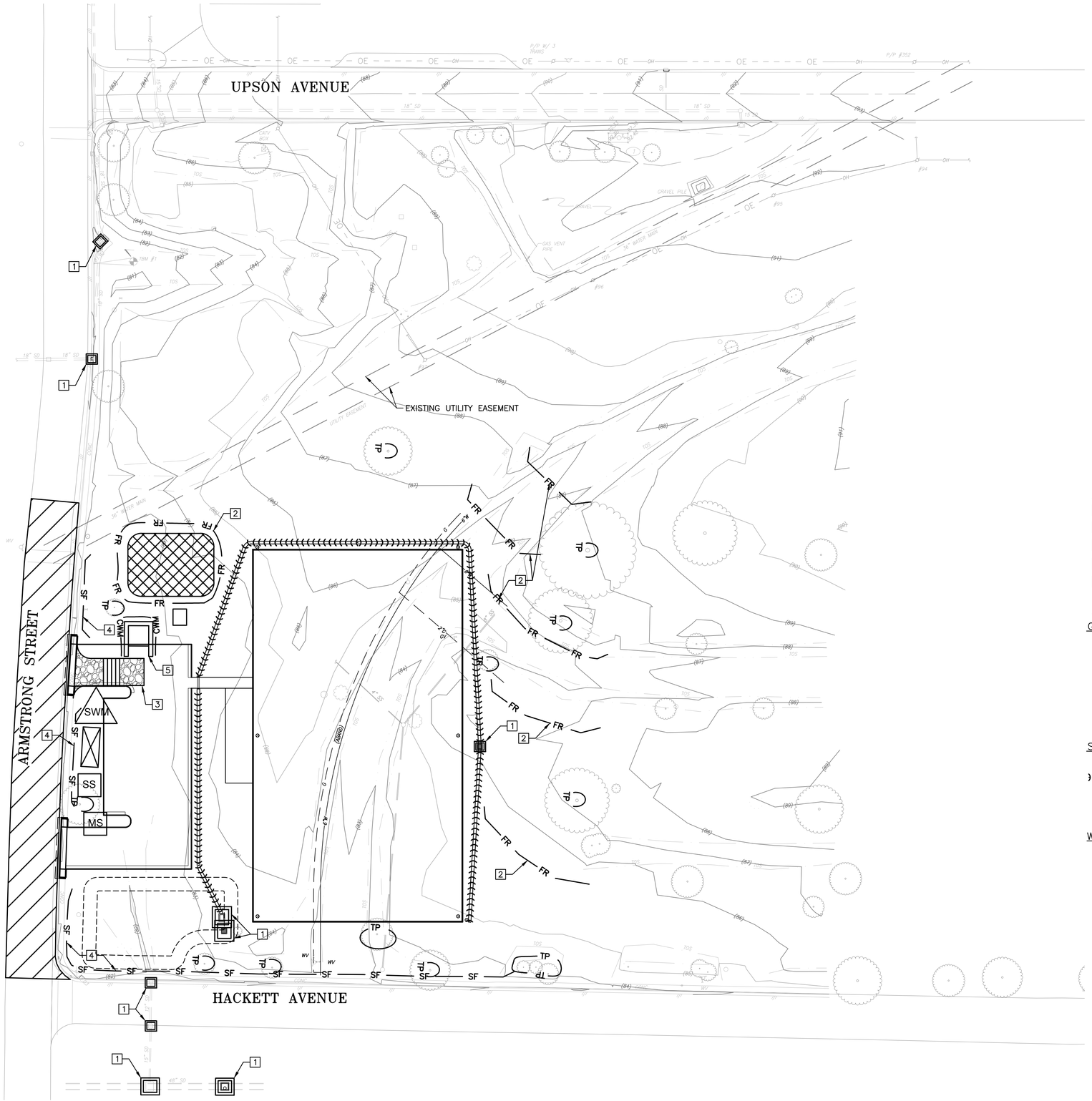
DESIGNED BY: KMW
DWN BY: KMW
CKD BY:
REVIEWED BY: JDV
SUBMITTED BY: KMW

DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
CALIFORNIA

TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
GENERAL NOTES, SURVEY INFO AND LEGEND

CODE ID. NO. -
SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. -
CONSTR. CONTR. NO. -
NAVFAC DRAWING NO.
SHEET 2 OF 21
G-002



GENERAL NOTES:

1. IMPLEMENT THE FOLLOWING BEST MANAGEMENT PRACTICES FOR ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTABILIZED WITH BUILDING, PAVING OR SIDEWALK: TEMPORARY AND PERMANENT SEEDING, MULCHING, TOPSOILING, DUST CONTROL.
2. DURING CONSTRUCTION, PROVIDE DUST CONTROL, PROCESS SAWCUTTING AND SURFACING POLLUTION PREVENTION MEASURES, CONCRETE HANDLING MEASURES.
3. THE CONTRACTOR SHALL ENSURE THAT THE OFFSITE BORROW OR FILL SITE CONDITIONS COMPLY WITH ALL STATE AND LOCAL CRITERIA. THESE CRITERIA ARE AIMED AT CONTROLLING THE RUNOFF FROM THE SITE SO AS TO REDUCE THE EROSION AND SEDIMENT PROBLEMS ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING AN EROSION AND SEDIMENTATION CONTROL PLAN THAT COMPLIES WITH THE REFERENCED CRITERIA.
5. MEASURES SHALL INCLUDE BUT NOT BE LIMITED TO:
   - SILT FENCE INSTALLATION AROUND THE DOWN SLOPE PERIMETER OF THE DISTURBED AREAS TO CAPTURE AND RETAIN THE SILT ONSITE.
   - ROCK CONSTRUCTION ENTRANCES AT ALL LOCATIONS TO REDUCE THE TRACKING OF MATERIAL ONTO THE ROADWAYS.
   - CLEANING OF THE ROADWAYS OF ALL TRACKED AND/OR SPILLED MATERIAL.
   - GRADING AND PROPERLY PLACING WASTE MATERIAL OR EXCESS EXCAVATED MATERIAL TO ESTABLISH MAINTAINABLE SOIL SLOPES.
   - SEEDING AND GRADING TO DRAIN THE AREA AFTER THE CONSTRUCTION ACTIVITIES ARE COMPLETED OR WHEN CONSTRUCTION ACTIVITIES ARE HALTED.
6. THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL COMPLY WITH THE REQUIREMENTS OF ALL STATE AND LOCAL CRITERIA.
7. APPROVAL OF THIS EROSION/SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G. SIZE AND LOCATION OF ROADS, PIPES, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.)
8. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
9. CONSTRUCTION AREA SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
10. THE EROSION MEASURES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM & ONTO ROADWAYS.
11. THE EROSION MEASURES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE MEASURES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT–LADEN WATER DO NOT LEAVE THE SITE.
12. THE EROSION MEASURES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING THROUGHOUT CONSTRUCTION.
13. THE EROSION MEASURES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 24 HOURS FOLLOWING A MAJOR STORM EVENT.
14. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A TRAPPED CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM STORM SYSTEM.
15. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

SHEET NOTES:

1 STORM DRAIN INLET PROTECTION, SEE DETAIL 1 ON SHEET CE–501.

2 FIBER ROLLS, SEE DETAIL 2 ON SHEET CE–501.

3 STABILIZED CONSTRUCTION ENTRANCE, SEE DETAIL 3 ON SHEET CE–501.

4 SILT FENCE, SEE DETAIL 4 ON SHEET CE–501.

5 CONCRETE WASHOUT AREA, SEE DETAIL 5 ON SHEET CE–501.

LEGEND:

GENERAL

SUGGESTED CONTRACTOR STAGING AREA

TREE PROTECTION

SEDIMENT CONTROL

SF — SC–1: SILT FENCE

FR — SC–5: FIBER ROLLS

SC–7: STREET SWEEPING AND VACUMMING

SC–10: STORM DRAIN INLET PROTECTION

SOIL STABILIZATION

SS–9: EARTH/DIKES/DRAINAGE SWALE AND LINED DITCHES

TRACKING CONTROL

TC–1: STABILIZED CONSTRUCTION ENTRANCE/OUTLET

TC–3: ENTRANCE/OUTLET TIRE WASH

WASTE MANAGEMENT AND MATERIAL POLLUTANT CONTROL

MS — WM–1: MATERIAL DELIVERY AND STORAGE

WM–3: STOCKPILE MANAGEMENT

SWM — WM–5: SOLID WASTE MANAGEMENT

CWM — WM–8: CONCRETE WASTE MANAGEMENT

SS — WM–9: SANITARY/SEPTIC WASTE MANAGEMENT

NORTH

0 40 80 120
SCALE FEET
1" = 40'

NOTE:
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TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
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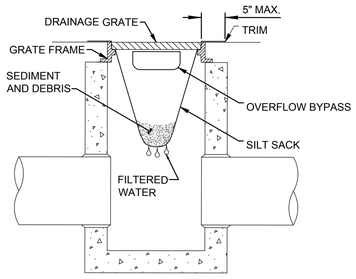
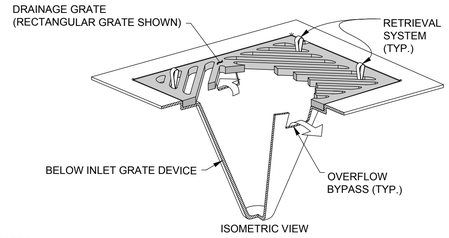
TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
EROSION CONTROL PLAN

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 3 OF 21

CE-101



SECTION VIEW

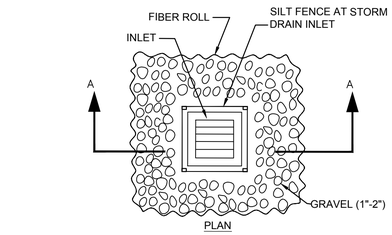


ISOMETRIC VIEW

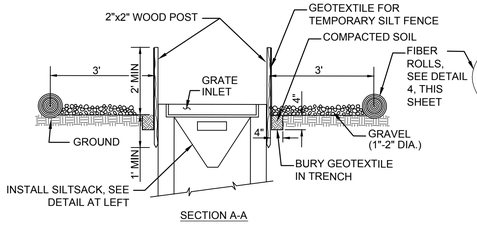
NOTES:
1. SIZE THE BELOW INLET GRATE DEVICE (BIGD) FOR THE STORM WATER STRUCTURE IT WILL SERVICE.
2. THE BIGD SHALL HAVE A BUILT-IN HIGH-FLOW RELIEF SYSTEM (OVERFLOW BYPASS).
3. THE RETRIEVAL SYSTEM MUST ALLOW REMOVAL OF THE BIGD WITHOUT SPILLING THE COLLECTED MATERIAL.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH STORMWATER POLLUTION PREVENTION PLAN STANDARD SPECIFICATION.
5. BELOW INLET GRATE DEVICE WILL BE USED ON EXISTING AND PROPOSED INLET STRUCTURES WITHIN PROJECT LIMITS, SEE CE-101 FOR LOCATION.

1 CE–501 STORM DRAIN INLET PROTECTION DETAILS

SCALE: N.T.S.



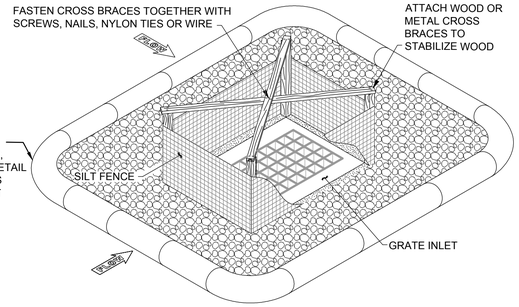
PLAN



SECTION A-A

GRAVEL/FIBER ROLL INLET
SEDIMENT FILTER FOR INLETS
OUTSIDE TRAFFIC AREA

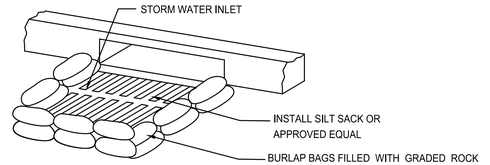
NOT TO SCALE



ISOMETRIC VIEW
(ENTIRE FENCE NOT SHOWN FOR ILLUSTRATIVE PURPOSES)

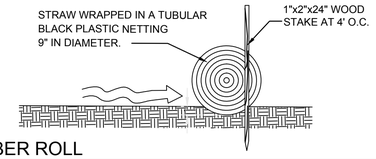
NOTES:
1. PREFABRICATED UNITS MAY BE USED IN LIEU OF THE DESIGN SHOWN ON THIS PLAN UPON APPROVAL OF THE ENGINEER.
2. STRUCTURE SHALL BE CONSTRUCTED SUCH THAT GEOTEXTILE MATERIAL SHALL BE FASTENED TO POSTS CREATING A SEAM-LESS JOINT.
3. ENSURE THAT PONDING HEIGHT OF WATER DOES NOT CAUSE FLOODING ON ADJACENT ROADWAYS OR PRIVATE PROPERTY.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH STORMWATER POLLUTION PREVENTION PLAN STANDARD SPECIFICATION.

SILT FENCE AT STORM DRAIN INLET FOR NON-TRAFFIC AREA ONLY



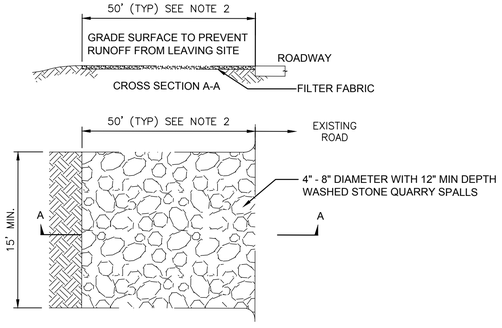
NOTES:
1. THICKNESS OF FILLED BAGS WHEN LAID FLAT SHALL NOT EXCEED 4".
2. ENSURE THERE ARE NO GAPS BETWEEN THE BAGS OR BETWEEN THE BAGS AND THE FACE OF CURB.
3. REMOVE ACCUMULATED SILT, DIRT, AND DEBRIS BEFORE IT EXCEEDS 2" THICK IN THE GUTTER.
4. INSPECT INLET PROTECTION DAILY DURING EXTENDED RAINFALL PERIODS AND BEFORE AND AFTER EACH RAIN EVENT.

BURLAP SACKS AT CURB INLET



2 CE–501 FIBER ROLL

SCALE: N.T.S.

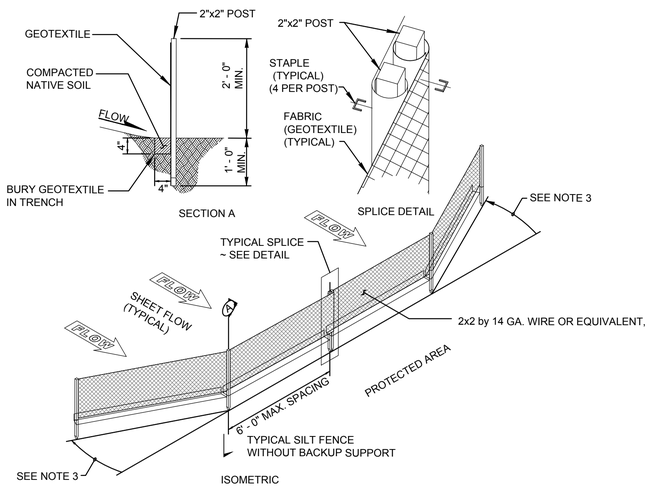


TEMPORARY GRAVEL CONSTRUCTION ENTRANCE NOTES:

1. A STONE STABILIZED PAD SHALL BE LOCATED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE TO OR FROM A PUBLIC RIGHT OF WAY, STREET, ALLEY, SIDEWALK, OR PARKING AREA.
2. UTILIZE 4 TO 8 INCH DIAMETER WASHED STONE TO A 12-INCH DEPTH MINIMUM OVER A 15-FOOT WIDTH MINIMUM OR FULL WIDTH AT ALL POINTS OF VEHICULAR INGRESS OR EGRESS. THE PAD SHALL NOT BE SHORTER THAN 50 FEET AND SHALL BE UNDERLINED BY A GEOTEXTILE FABRIC TO IMPROVE STABILITY. THE LENGTH OF THE ENTRANCE SHALL BE REDUCED TO THE MAXIMUM PRACTICABLE SIZE WHEN THE CONFIGURATION OF THE SITE DOES NOT ALLOW THE FULL LENGTH.
3. AT THE CONTRACTOR'S EXPENSE, THE PAD MAY REQUIRE ADDITIONAL TOP DRESSING OF 2-INCH STONE TO MAINTAIN THE INTEGRITY OF THE ENTRANCE.

3 CE–501 STABILIZED CONSTRUCTION ENTRANCE

SCALE: N.T.S.



SECTION A

SPLICE DETAIL

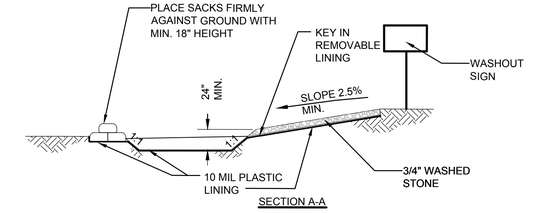
ISOMETRIC

NOTES:

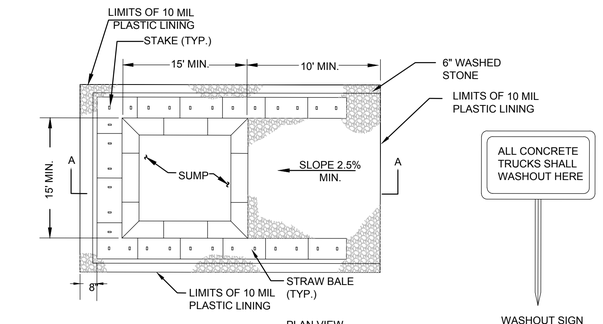
1. MAXIMIZE DETENTION OF STORMWATER BY PLACING FENCE AS FAR AWAY FROM TOE OF SLOPE AS POSSIBLE WITHOUT ENCROACHING ON SENSITIVE AREAS OR OUTSIDE OF THE CLEARING BOUNDARIES.
2. INSTALL SILT FENCING ALONG CONTOURS.
3. INSTALL THE ENDS OF THE SILT FENCE TO POINT SLIGHTLY UP-SLOPE TO PREVENT SEDIMENT FROM FLOWING AROUND THE ENDS OF THE FENCE.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH STORMWATER POLLUTION PREVENTION PLAN STANDARD SPECIFICATION.
5. SPLICED FENCE SECTIONS SHALL BE CLOSE ENOUGH TOGETHER TO PREVENT SILT LADEN WATER FROM ESCAPING THROUGH THE FENCE AT THE OVERLAP. JOINING SECTIONS SHALL NOT BE PLACED IN LOW SPOTS OR IN SUMP LOCATIONS.
6. DURING EXCAVATION, MINIMIZE DISTURBANCE OF THE GROUND AROUND TRENCH AS MUCH AS IS FEASIBLE AND SMOOTH SURFACE FOLLOWING EXCAVATION TO AVOID CONCENTRATING FLOWS.

4 CE–501 SILT FENCE

SCALE: N.T.S.



SECTION A-A



PLAN VIEW

WASHOUT SIGN

NOTES:

1. PIT IS SPECIFICALLY DESIGNATED, DIKED AND IMPERVIOUS CONTAINMENT TO PREVENT CONTACT BETWEEN CONCRETE WASH AND STORMWATER.
2. WASH WATER SHALL NOT BE ALLOWED TO FLOW TO SURFACE WATER.
3. FACILITY MUST HOLD SUFFICIENT VOLUME TO CONTAIN CONCRETE WASTE WITH A MINIMUM FREEBOARD OF 12."
4. FACILITY SHALL NOT BE FILLED BEYOND 95% CAPACITY UNLESS A NEW FACILITY IS CONSTRUCTED.
5. SAW CUT PORTLAND CEMENT CONCRETE, RESIDUE FROM SAWCUT & GRINDING TO BE DISPOSED OF IN THE PIT.
6. CONCRETE WASHOUTS SHALL BE LOCATED A MINIMUM OF 100' FROM EXISTING DRAINAGE WAYS, INLETS, & SURFACE WATERS.
7. MANUFACTURED CONCRETE WASHOUT DEVICES MAY BE USED IF REMOVED FROM THE SITE WHEN 95% FULL CAPACITY.
8. ECO-PAN COMPARTMENT CAN BE USED AS ALTERNATIVE MEASUREMENT FOR WASHOUT AREA. 2.5 CUBIC YARD/4.5TON, 600 GALLON CAPACITY COMPARTMENT SHALL BE USED.

5 CE–501 WASHOUT AREA

SCALE: N.T.S.

NOTE:
IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY.

APPR.	DESCRIPTION	REV	DATE
	100% DESIGN SUBMITTAL		17 AUG 13
	95% DESIGN SUBMITTAL		8 APR 13
	65% DESIGN SUBMITTAL		31 JUL 12
	35% DESIGN SUBMITTAL		27 OCT 11

REGISTERED PROFESSIONAL ENGINEER
JEROME DE VERRIER
No. C60334
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

DATE: 17 AUG 2013
BY: PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

DESIGNED BY: JDV
DWN BY: SYY
CKD BY:
REVIEWED BY: JDV
SUBMITTED BY:

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
CALIFORNIA

TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
EROSION CONTROL DETAILS

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 4 OF 21

CE-501

GENERAL NOTES:

1. FOR CIVIL IMPROVEMENTS SEE C SHEETS.
2. SEE SHEET G-002 FOR GENERAL NOTES ON DEMOLITION.
3. WITH THE EXCEPTION OF THE 36" WATER MAIN, ALL UTILITIES WITHIN THE LIMIT OF WORK ARE CONSIDERED ABANDONED AND SHALL BE REMOVED UNLESS OTHERWISE NOTED.
4. SEE SHEET G-002 FOR EXISTING UTILITY STRUCTURE DATA.
5. VERIFY LOCATION OF ALL EXISTING UTILITIES AND VERIFY THAT ALL ACTIVE UTILITIES HAVE BEEN SHUT OFF PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. COORDINATE TEMPORARY SERVICE DISRUPTIONS OF ACTIVE UTILITIES WITH THE CONTRACTING OFFICER.

SHEET NOTES:

1 EXISTING TREE TO PROTECT AND REMAIN IN PLACE.

2 REMOVE AND DISPOSE OF TREE.

3 SANITARY SEWER PIPE TO REMAIN.

4 STORM DRAIN PIPE/STRUCTURE TO REMAIN.

5 REMOVE AND DISPOSE OF EXISTING SANITARY SEWER MANHOLE.

6 REMOVE AND DISPOSE OF SANITARY SEWER PIPE.

7 REMOVE AND DISPOSE OF WATER PIPE. CAP PIPE TO REMAIN AT LIMIT OF WORK.

8 REMOVE AND DISPOSE OF EXISTING GAS PIPE. CAP PIPE TO REMAIN AT LIMIT OF WORK.

9 REMOVE AND DISPOSE OF EXISTING GAS VALVE.

10 REMOVE AND DISPOSE OF EXISTING FIRE HYDRANT, ASSOCIATED VALVE AND LATERAL PIPE.

11 EXISTING SANITARY SEWER MANHOLE TO REMAIN AND PROTECT IN PLACE.

12 EXISTING WATER MAIN TO REMAIN AND PROTECT IN PLACE.

13 SAWCUT AC 1' BEYOND NEW IMPROVEMENT.

14 SAWCUT CURB, GUTTER AND SIDEWALK.

15 APPROXIMATE LIMIT OF CLEARING AND GRUBBING.

16 PLUG SANITARY SEWER PIPE WITH CONCRETE.

17 GAS PIPE TO REMAIN.

NORTH

0 20 40 60
SCALE FEET
1" = 20'

NOTE:
IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY.

REV	DATE	DESCRIPTION	APPR.
	17 AUG 13	100% DESIGN SUBMITTAL	
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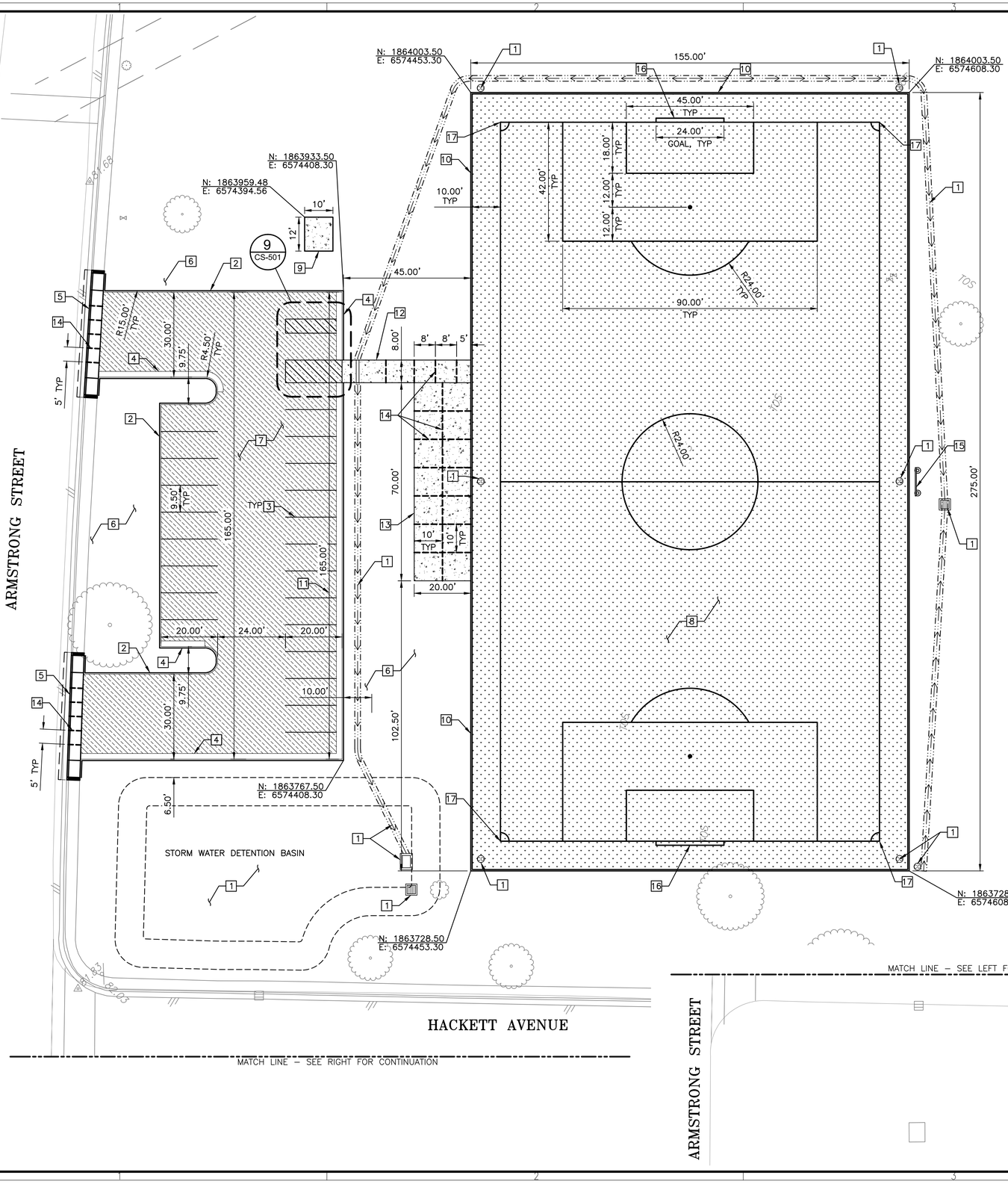
	27 OCT 11	35% DESIGN SUBMITTAL	

REGISTERED PROFESSIONAL ENGINEER
JEROME DE VERRIER
No. C60334
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA
SEAL

DATE: 17 AUG 2013
DESIGNED BY: JDV
DRAWN BY: KMW, SYY
CKD BY:
REVIEWED BY: JDV
SUBMITTED BY:
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

60th CIVIL ENGINEER SQUADRON
UNITED STATES AIR FORCE
TRAVIS AFB CALIFORNIA
TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
EXISTING CONDITIONS/DEMOLITION

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 5 OF 21
CD-101



GENERAL NOTES:

1. FOR GRADING, DRAINAGE, AND FIELD SUBDRAINAGE SEE CG SHEETS.
2. FOR LIGHTING AND ELECTRICAL SEE E SHEETS.
3. FOR LANDSCAPING, SEE LANDSCAPING SHEETS.

SHEET NOTES:

[1] DRAINAGE FEATURE, SEE CG SHEETS.

[2] 6" CURB PER DETAIL 4 ON SHEET CS-501 (OPTIONAL BID ITEM).

[3] 4" WHITE PAINTED STRIPE.

[4] CURB AND GUTTER PER DETAIL 6 ON SHEET CS-502 (OPTIONAL BID ITEM).

[5] DRIVEWAY CURB AND GUTTER PER DETAIL 3 ON SHEET CS-501.

[6] LANDSCAPING, SEE LANDSCAPE SHEETS.

[7] ASPHALT PAVEMENT PER DETAIL 1 ON SHEET CS-501 (OPTIONAL BID ITEM).

[8] ARTIFICIAL TURF PER DETAIL 5 ON SHEET CS-501, SEE SPECS.

[9] PREFABRICATED EQUIPMENT SHED ON CONCRETE PAD (OPTIONAL BID ITEM).

[10] 6" WIDE FLUSH CURB PER DETAIL 5 ON SHEET CS-501.

[11] CURB & GUTTER PER DETAIL 6 ON SHEET CS-502 WITH CURB CUTS AT 19' O.C. PER DETAIL 12 ON SHEET CS-501 (OPTIONAL BID ITEM).

[12] CONCRETE PATH PER DETAIL 2 ON SHEET CS-501.

[13] BLEACHER PAD PER DETAIL 2 ON SHEET CS-501 (OPTIONAL BID ITEM).

[14] CONTRACTION JOINTS PER DETAIL 3 ON SHEET CS-502 (OPTIONAL BID ITEM).

[15] ELECTRONIC SCOREBOARD, SPECTRUM MODEL 8010–C2 WITH NAVY BLUE FACE AND YELLOW LEDS OR APPROVED EQUAL. MOUNT ON POST AND FOOTINGS PER DETAIL 7 ON SHEET CS-502 (OPTIONAL BID ITEM).

[16] PORTABLE FULL–SIZE GOAL. KWIK GOAL PRO PREMIER EUROPEAN MATCH GOAL PART #2B2001 OR APPROVED EQUAL. USE SADDLE ANCHOR BAGS IN LIEU OF GROUND ANCHORS.

[17] CORNER FLAG. KWIK GOAL ITEM #6B1404 OR APPROVED EQUAL.

LEGEND:

ASPHALT PAVEMENT (1 / CS-501)

CONCRETE PAVEMENT (2 / CS-501)

SYNTHETIC TURF (5 / CS-501)

NORTH

0 20 40 60
SCALE FEET
1" = 20'

NOTE:
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REGISTERED PROFESSIONAL ENGINEER
JEROME DE VERRIER
No. C60334
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

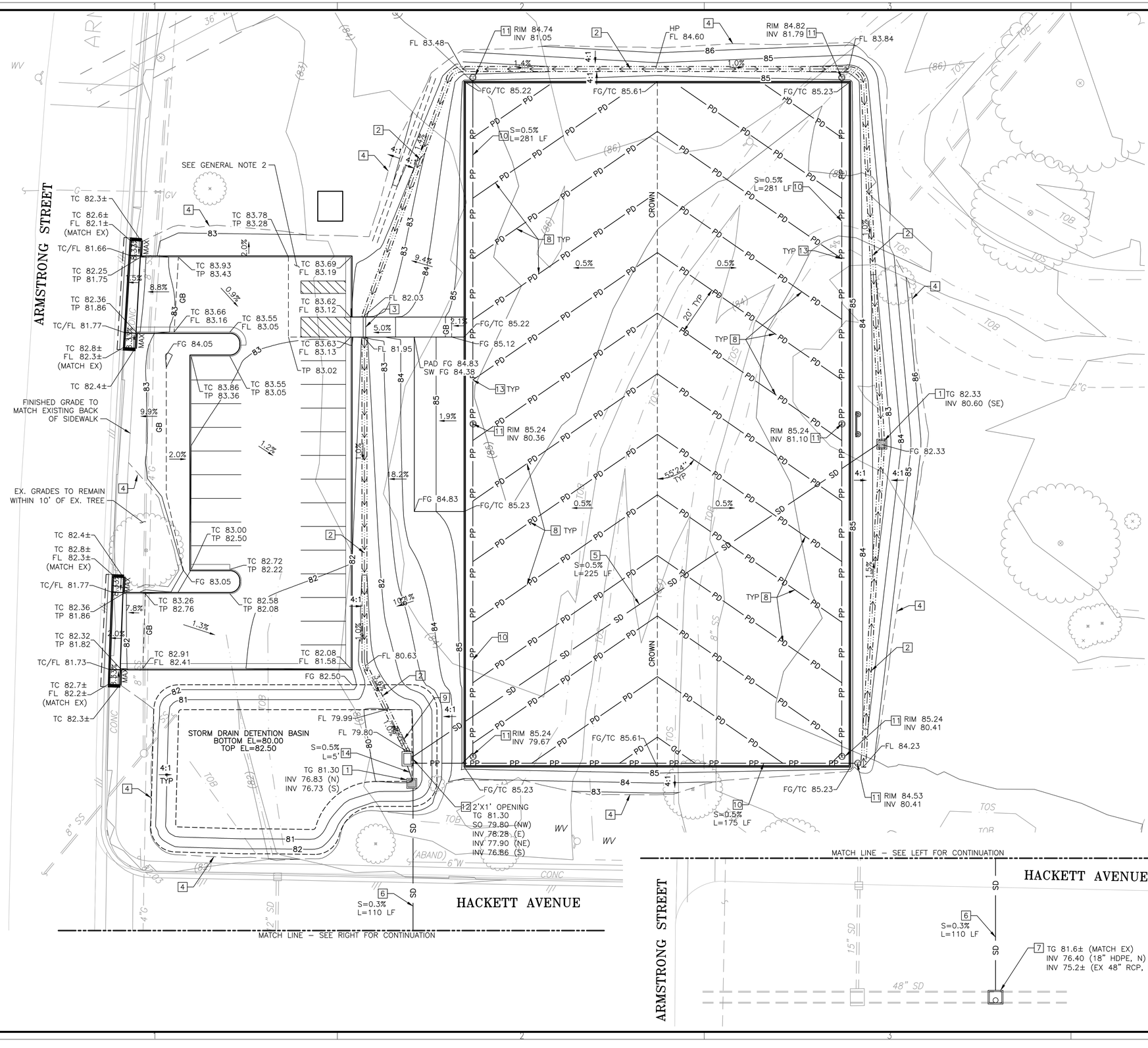
DESIGNED BY: JDV
DRWN BY: SYY
REVIEWED BY: JDV
SUBMITTED BY:
DATE: 17 AUG 2013
CKD BY:
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

60th CIVIL ENGINEER SQUADRON
UNITED STATES AIR FORCE
TRAVIS AFB CALIFORNIA

TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
LAYOUT PLAN

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 6 OF 21

CS-101



GENERAL NOTES:

1. ELEVATIONS DENOTE FINISHED GRADE.
2. PAVEMENT SLOPES MAY NOT EXCEED 2% IN ANY DIRECTION AN ADA ACCESSIBLE AREAS.
3. FOR UTILITY TRENCHING, SEE DETAIL 8 ON SHEET CS–501.

SHEET NOTES:

1. CATCH BASIN PER DETAIL 7 ON SHEET CS–501
2. BIOSWALE PER DETAIL 6 ON SHEET CS–501
3. 12" PDX TRENCH DRAIN WITH HEEL PROOF ADA GRATE BY ABT OR APPROVED EQUAL PER DETAIL 13 ON CS–501
4. APPROXIMATE LIMITS OF GRADING, MATCH EXISTING GROUND
5. 12" HDPE DRAIN PIPE, LENGTH AND SLOPE AS NOTED
6. 18" HDPE DRAIN PIPE, LENGTH AND SLOPE AS NOTED
7. STORM DRAIN MANHOLE PER DETAIL 4 ON SHEET CS–502
8. 6"X1" PERFORATED PANEL DRAIN SYSTEM, MULTI–FLOW OR APPROVED EQUAL PER DETAIL 11 ON SHEET CS–501.
9. RIP RAP
10. 8" PERFORATED HDPE PERIMETER DRAIN PIPE, SEE DETAIL 5 ON SHEET CS–501
11. STORM DRAIN CLEANOUT PER DETAIL 2 ON SHEET CS–502
12. SIDE OPENING INLET PER DETAIL 5 ON SHEET CS–502
13. DIRECT FIELD DRAINAGE FLOW FROM PANEL DRAIN SYSTEM TO PERIMETER DRAIN PIPE PER DETAIL 1 ON SHEET CS–502
14. 8" HDPE DRAIN PIPE, LENGTH AND SLOPE AS NOTED

LEGEND:

- (86) — EXISTING CONTOURS
- 85 — NEW CONTOURS
- 84 — GRADE BREAK
- APPROXIMATE LIMITS OF GRADING
- 2.6% — FINISHED SURFACE SLOPE
- BOTTOM OF SWALE
- SWALE FLOWLINE
- SD — STORM DRAIN PIPE
- PD — PANEL DRAIN SYSTEM
- PP — PERFORATED HDPE PIPE
- CLEANOUT
- RIP RAP

NORTH

0 20 40 60
SCALE FEET
1" = 20'

NOTE:
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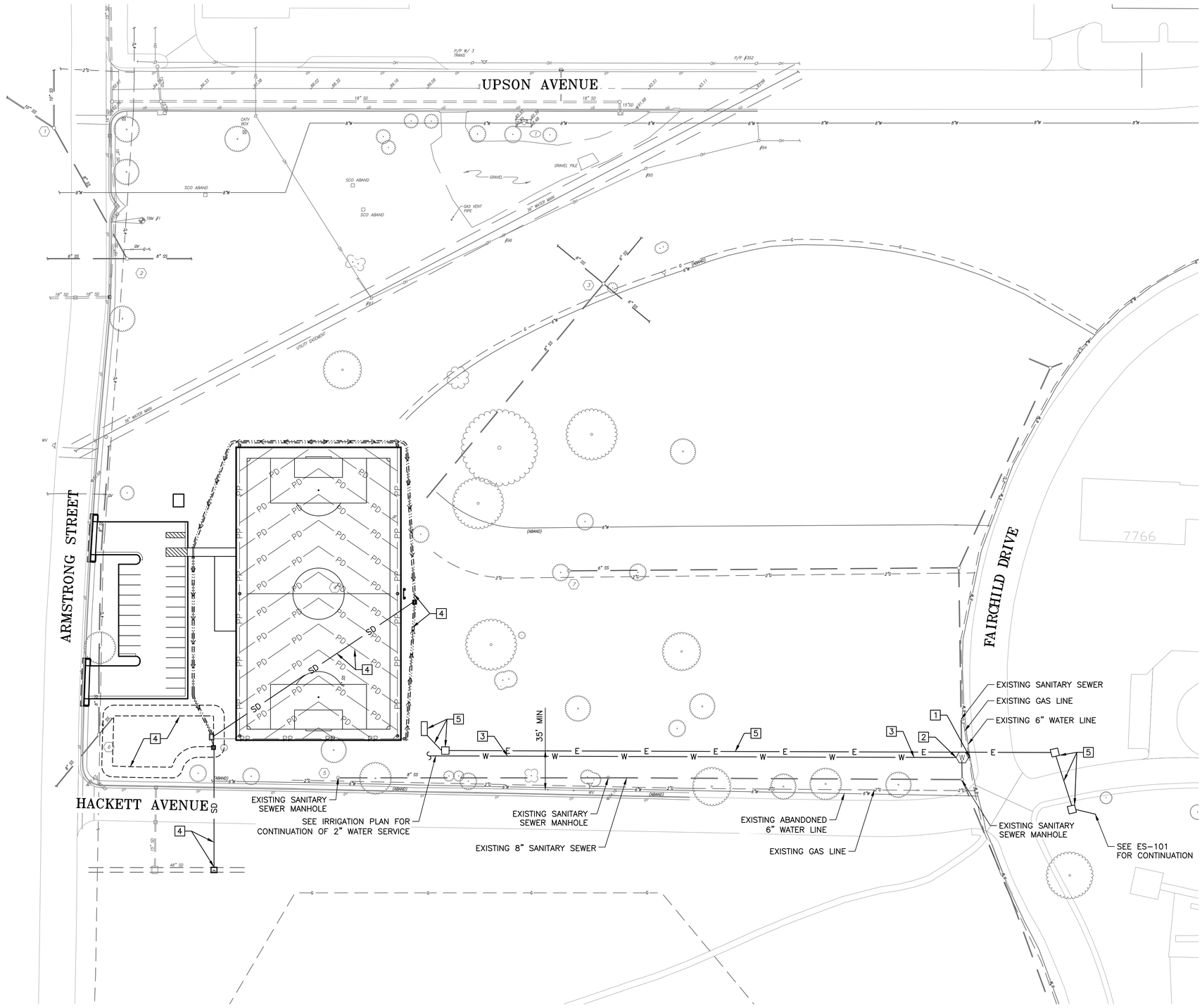
REGISTERED PROFESSIONAL ENGINEER
JEROME DE VERRIER
No. C60334
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

DESIGNED BY: JDV
DWN BY: SYY
REVIEWED BY: JDV
SUBMITTED BY:
DATE: 17 AUG 2013
CKD BY:
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

60th CIVIL ENGINEER SQUADRON
UNITED STATES AIR FORCE
TRAVIS AFB
CALIFORNIA

TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
GRADING AND DRAINAGE PLAN

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 7 OF 21
CG-101



GENERAL NOTES:

1. VERIFY LOCATION OF ALL EXISTING UTILITIES AND VERIFY THAT ALL ACTIVE UTILITIES HAVE BEEN SHUT OFF PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. COORDINATE TEMPORARY SERVICE DISRUPTIONS OF ACTIVE UTILITIES WITH THE CONTRACTING OFFICER.
2. FOR LANDSCAPING AND CONTINUATION OF 2" WATER SERVICE, SEE LANDSCAPING SHEETS.
3. FOR GRADING AND DRAINAGE SEE CG SHEETS.
4. FOR LIGHTING AND ELECTRICAL SEE E SHEETS.

SHEET NOTES:

[1] WET TAP NEW 2" WATER SERVICE TO EXISTING 6" WATER MAIN

[2] NEW WATER METER

[3] NEW 2" TYPE K COPPER PIPE

[4] DRAINAGE FEATURE, SEE CG SHEETS

[5] ELECTRICAL UTILITY, SEE ELECTRICAL SHEETS

LEGEND:

W — WATER METER

W — WATER LINE

E — ELECTRICAL LINE

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REGISTERED PROFESSIONAL ENGINEER
JEROME DE VERBER
No. C60334
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

60th CIVIL ENGINEER SQUADRON
UNITED STATES AIR FORCE
TRAVIS AFB CALIFORNIA

TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
UTILITY PLAN

DESIGNED BY: JDV
DWN BY: SYY
CKD BY:
REVIEWED BY: JDV
SUBMITTED BY: JDV

DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 8 OF 21

CU-101

NOTE:
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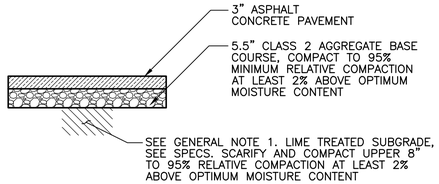
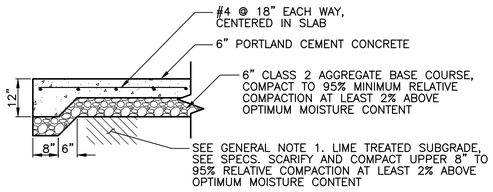
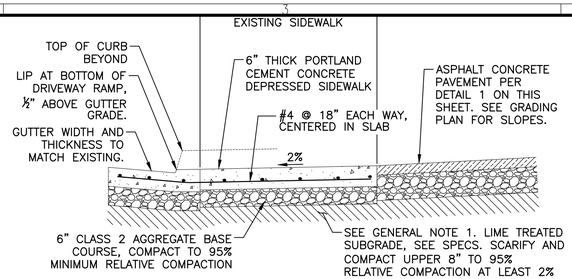


1 CS-501 **ASPHALT PAVEMENT**
SCALE: 1"=2'-0"

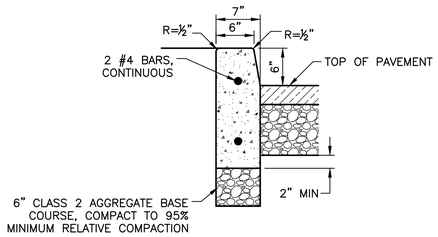


NOTE: INSTALL VAPOR BARRIER MEMBRANE, CONSISTING OF MINIMUM 10-MIL EXTRUDED POLYOLEFIN PLASTIC THAT COMPLIES WITH ASTM E1745 CLASS A, ON SUBGRADE UNDER EQUIPMENT SHED PAD.

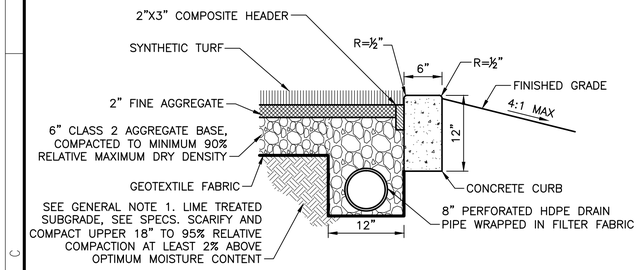
2 CS-501 **CONCRETE WALKWAY/ BLEACHER AND EQUIPMENT SHED PADS**
SCALE: 1"=2'-0"



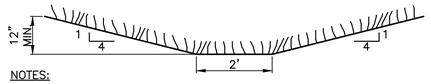
3 CS-501 **DRIVEWAY SECTION**
SCALE: 1"=2'-0"



4 CS-501 **CONCRETE CURB**
SCALE: 1"=1'-0"

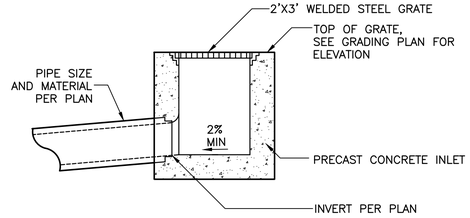


5 CS-501 **FIELD PERIMETER SECTION**
SCALE: 1"=1'-0"

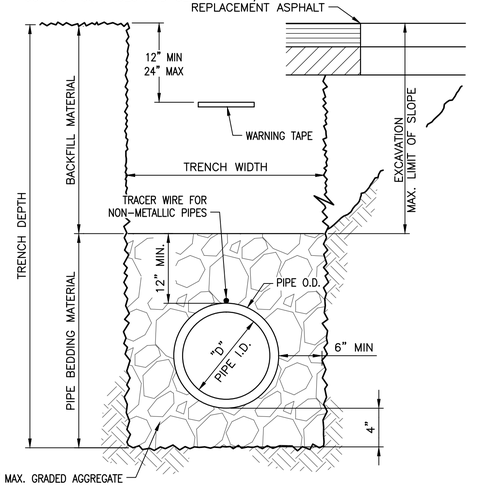


NOTES:
1. REFER TO LANDSCAPE PLANS FOR PLANTING.
2. SIDE SLOPE IS TYPICAL, UNLESS OTHERWISE NOTED.

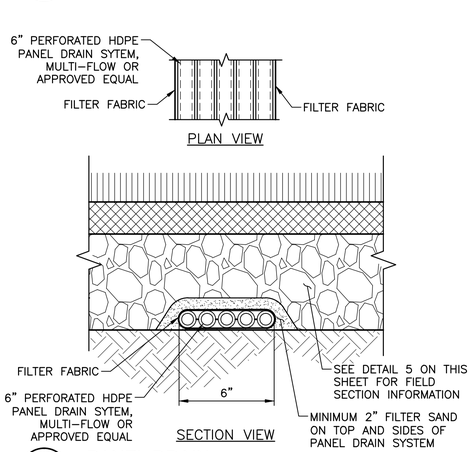
6 CS-501 **BIOSWALE SECTION**
SCALE: 1/2"=1'-0"



7 CS-501 **CATCH BASIN**
SCALE: 1"=1'-0"



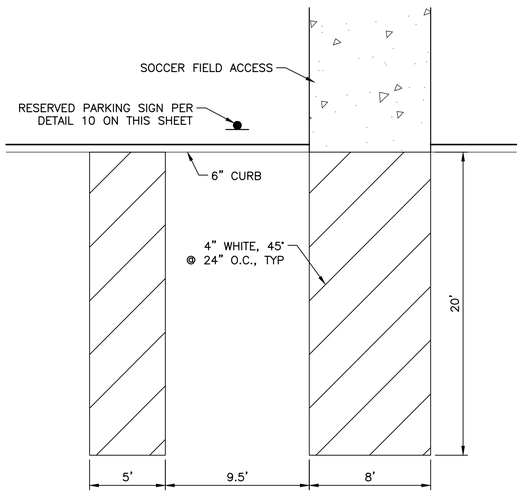
8 CS-501 **TRENCH DETAIL**
SCALE: N.T.S.



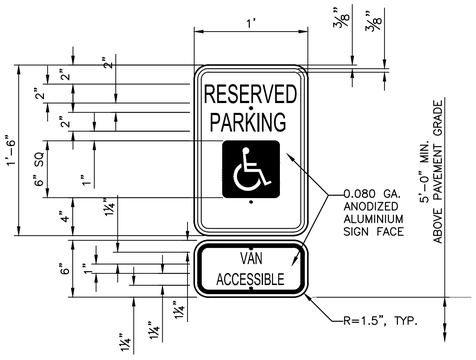
11 CS-501 **PANEL DRAIN**
SCALE: N.T.S.

GENERAL NOTES:

1. THE UPPER 3' OF EXISTING GRADES SHALL BE OVEREXCAVATED AND/OR PROCESSED WHERE NOT REMOVED BY PLANNED CUTS UNDER THE FIELD AND PAVED AREAS. EXTEND 5' BEYOND FIELD/PAVING LIMITS. REMOVE ALL UTILITIES AND FORMER CONSTRUCTION/DEMOLITION DEBRIS AND PROCESS THE SOIL MATERIALS AS ENGINEERED FILL PRIOR TO PLACEMENT OF PLANNED FILL.



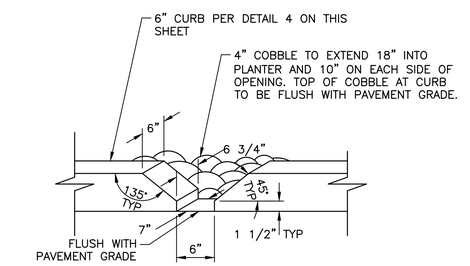
9 CS-501 **VAN ACCESSIBLE PARKING STALL**
SCALE: 1"=5'-0"



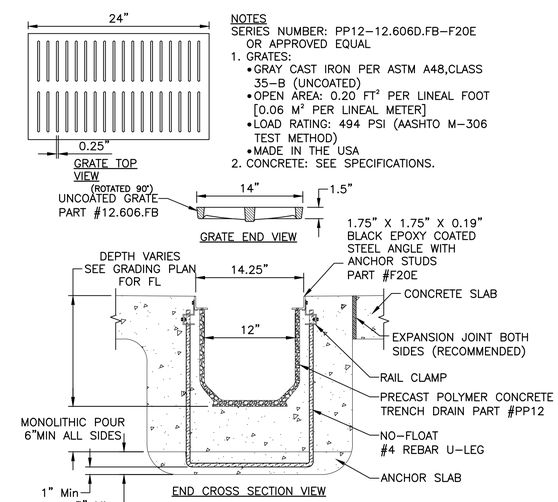
COLORS:
LEGEND AND BORDER: PANTONE 340C
SYMBOL: WHITE ON PANTONE 286 BACKGROUND
BACKGROUND: WHITE

NOTES:
1. SIGN SHALL CONFORM TO US DEPARTMENT OF TRANSPORTATION STANDARD.
2. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH BACKGROUND.
3. THE CHARACTERS AND BACKGROUND SHALL BE EGGSHELL, MATTE OR OTHER NON-GLARE FINISH.
4. CHARACTERS SHALL HAVE A WIDTH-HEIGHT RATIO BETWEEN 3:1 AND 1:1 BASED ON UPPER CASE "X", STROKE WIDTH-HEIGHT RATIO BETWEEN 1:5 AND 1:10.

10 CS-501 **RESERVED PARKING SIGN**
SCALE: 1 1/2"=1'-0"



12 CS-501 **CURB CUT**
SCALE: 1"=1'-0"



13 CS-501 **TRENCH DRAIN**
SCALE: N.T.S.

NOTE:
IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY.

APPR.	DESCRIPTION	REV	DATE
	100% DESIGN SUBMITTAL		17 AUG 13
	95% DESIGN SUBMITTAL		8 APR 13
	65% DESIGN SUBMITTAL		31 JUL 12
	35% DESIGN SUBMITTAL		27 OCT 11

REGISTERED PROFESSIONAL ENGINEER
JEROME DE VERBER
No. C60334
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

DESIGNED BY: JDV
DRWN BY: SYY
REVIEWED BY: JDV
SUBMITTED BY:
DATE: 17 AUG 2013
CKD BY:
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

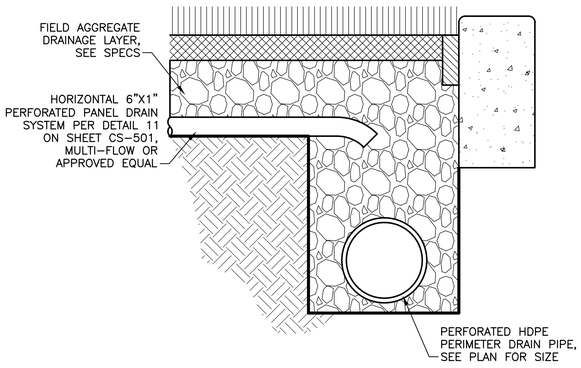
60th CIVIL ENGINEER SQUADRON
UNITED STATES AIR FORCE
TRAVIS AIR FORCE BASE
CALIFORNIA
TRAVIS AFB

WEST OF TWIN PEAKS SOCCER FIELD

CIVIL DETAILS

CODE ID. NO. -
SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. -
CONSTR. CONTR. NO. -
NAVFAC DRAWING NO.
SHEET 9 OF 21

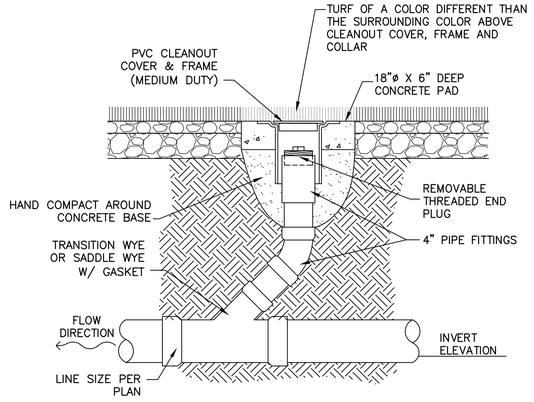
CS-501



NOTE: SEE GRADING AND DRAINAGE PLAN FOR PANEL DRAIN SYSTEM ORIENTATION AND SPACING.

1 CS-502 FIELD DRAINAGE FLOW TO PERIMETER DRAIN

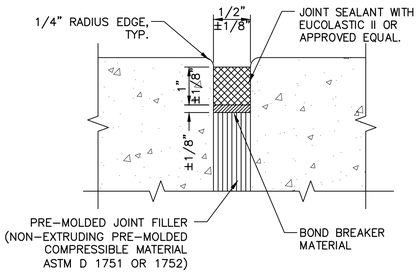
SCALE: 2"=1'-0"



NOTES:
1. COVERS SHALL BE CAST WITH THE LETTER "D" FOR STORM DRAINS

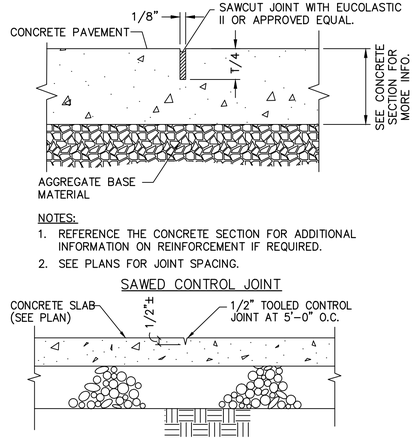
2 CS-502 STORM DRAIN CLEANOUT

SCALE: N.T.S.



NOTE: EXPANSION JOINTS ARE REQUIRED AGAINST STRUCTURES @ 40'-0" O.C. (MAX) IN SIDEWALKS.

EXPANSION JOINT DETAIL

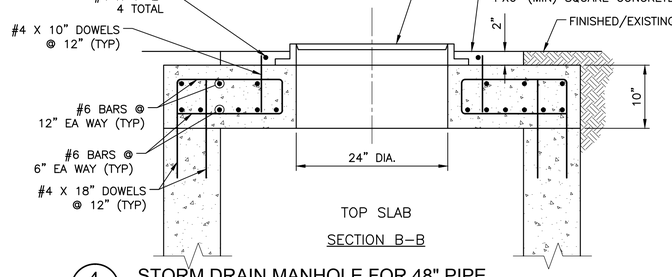


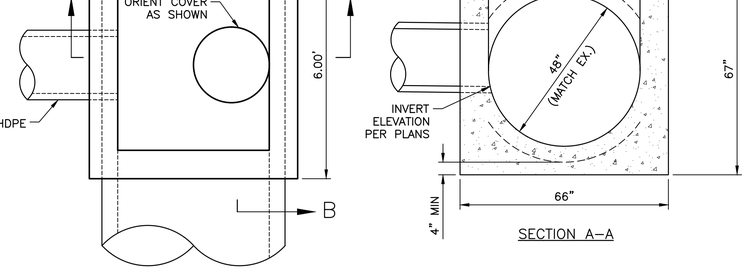
NOTES:
1. REFERENCE THE CONCRETE SECTION FOR ADDITIONAL INFORMATION ON REINFORCEMENT IF REQUIRED.
2. SEE PLANS FOR JOINT SPACING.

SIDEWALK CONTROL JOINT

3 CS-502 CONCRETE JOINTS

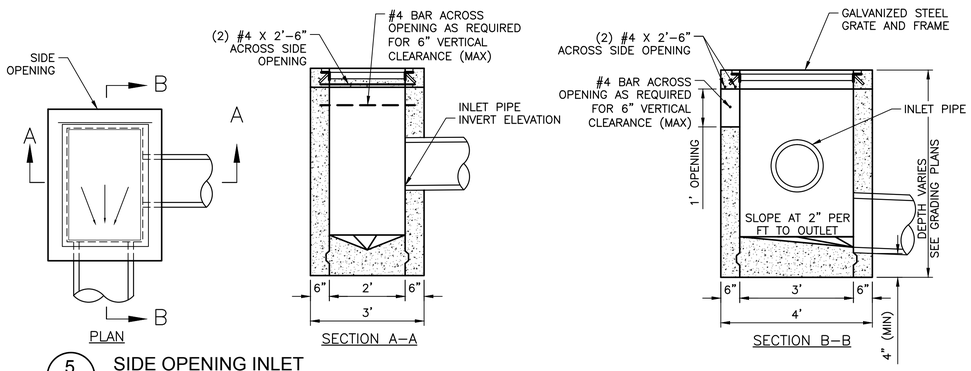
SCALE: N.T.S.





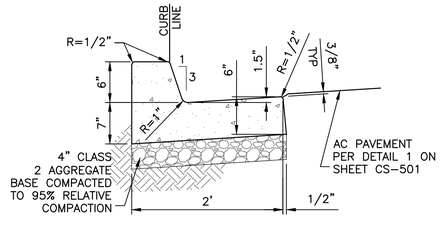
4 CS-502 STORM DRAIN MANHOLE FOR 48" PIPE

SCALE: 1/4"=1'-0"



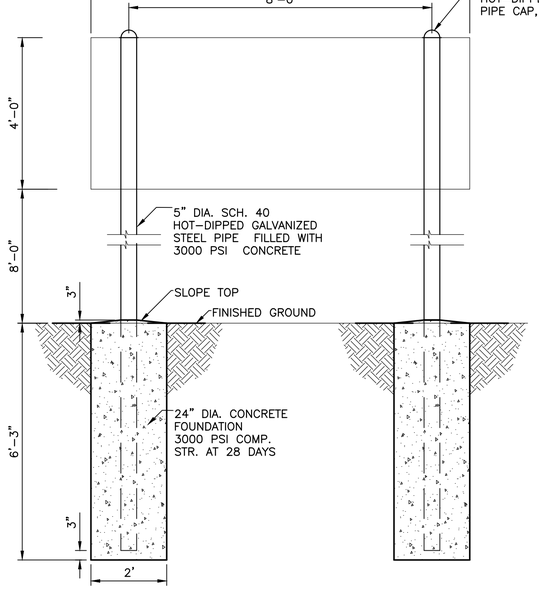
5 CS-502 SIDE OPENING INLET

SCALE: N.T.S.



6 CS-502 CONCRETE CURB AND GUTTER

SCALE: N.T.S.



NOTES:
1. POWER CONDUIT AND GROUND ROD NOT SHOWN.
2. ANGLE IRON BRACES AND MOUNTING HARDWARE INCLUDED WITH SCOREBOARD NOT SHOWN.

7 CS-502 LED SOCCER SCOREBOARD

SCALE: N.T.S.

NOTE: IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY.

REV	DATE	DESCRIPTION	APPR.
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REGISTERED PROFESSIONAL ENGINEER — JEROME DE VERRIER — No. C60334 — Exp. 6/30/14 — CIVIL — STATE OF CALIFORNIA

DATE: 17 AUG 2013
DESIGNED BY: JDV
DRAWN BY: SYY
CKD BY:
REVIEWED BY: JDV
SUBMITTED BY: JDV
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

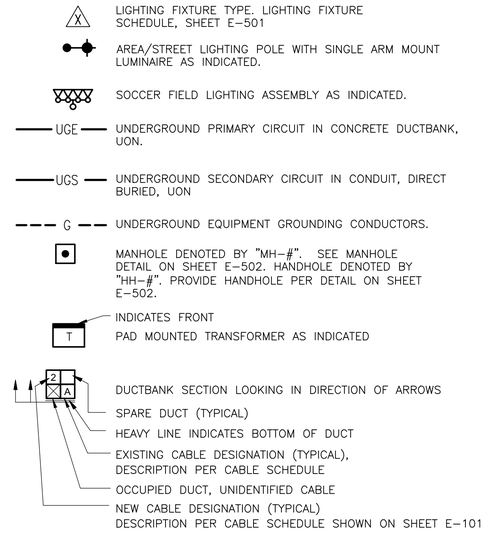
60th CIVIL ENGINEER SQUADRON
UNITED STATES AIR FORCE
TRAVIS AIR FORCE BASE
CALIFORNIA
TRAVIS AFB
WEST OF TWIN PEAKS SOCCER FIELD
CIVIL DETAILS

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 10 OF 21
CS-502

ABBREVIATIONS

A	AMPERE
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
CPT	CONTROL POWER TRANSFORMER
DDC	DIRECT DIGITAL CONTROL PANEL
EC	EMPTY CONDUIT
ECMH	EXISTING COMMUNICATIONS MANHOLE
EHH	ELECTRICAL HANDHOLE
EMH	ELECTRICAL MANHOLE
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HPS	HIGH PRESSURE SODIUM
KVA	KILO–VOLT–AMPERES
LCP	LIGHTING CONTROL PANEL
LGTS	LIGHTS
MCB	MAIN CIRCUIT BREAKER
MH	METAL HALIDE
NEC	NATIONAL ELECTRICAL CODE
N	NEUTRAL
NF	NON–FUSED
NTS	NOT TO SCALE
Ø	PHASE
P	POLE
PH	PHOTOCELL
UON	UNLESS OTHERWISE NOTED
V	VOLT(S)

ELECTRICAL LEGEND



LIGHTING FIXTURE TYPE. LIGHTING FIXTURE SCHEDULE, SHEET E–501

AREA/STREET LIGHTING POLE WITH SINGLE ARM MOUNT LUMINAIRE AS INDICATED.

SOCCER FIELD LIGHTING ASSEMBLY AS INDICATED.

UNDERGROUND PRIMARY CIRCUIT IN CONCRETE DUCTBANK, UON.

UNDERGROUND SECONDARY CIRCUIT IN CONDUIT, DIRECT BURIED, UON

UNDERGROUND EQUIPMENT GROUNDING CONDUCTORS.

MANHOLE DENOTED BY "MH–#". SEE MANHOLE DETAIL ON SHEET E–502. HANDHOLE DENOTED BY "HH–#". PROVIDE HANDHOLE PER DETAIL ON SHEET E–502.

INDICATES FRONT

PAD MOUNTED TRANSFORMER AS INDICATED

DUCTBANK SECTION LOOKING IN DIRECTION OF ARROWS

SPARE DUCT (TYPICAL)

HEAVY LINE INDICATES BOTTOM OF DUCT

EXISTING CABLE DESIGNATION (TYPICAL), DESCRIPTION PER CABLE SCHEDULE

OCCUPIED DUCT, UNIDENTIFIED CABLE

NEW CABLE DESIGNATION (TYPICAL) DESCRIPTION PER CABLE SCHEDULE SHOWN ON SHEET E–101

NOTE:
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COMMONWEALTH OF VIRGINIA
JUSTIN MARK ROBINSON
Lic. No. 043109
Expires: 12/31/13
PROFESSIONAL ENGINEER

DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

DESIGNED BY: JR
DWN BY: JR
CKD BY: KMW
REVIEWED BY: KMW
SUBMITTED BY: KMW

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
TRAVIS AIR FORCE BASE
CALIFORNIA

WEST OF TWIN PEAKS SOCCER FIELD

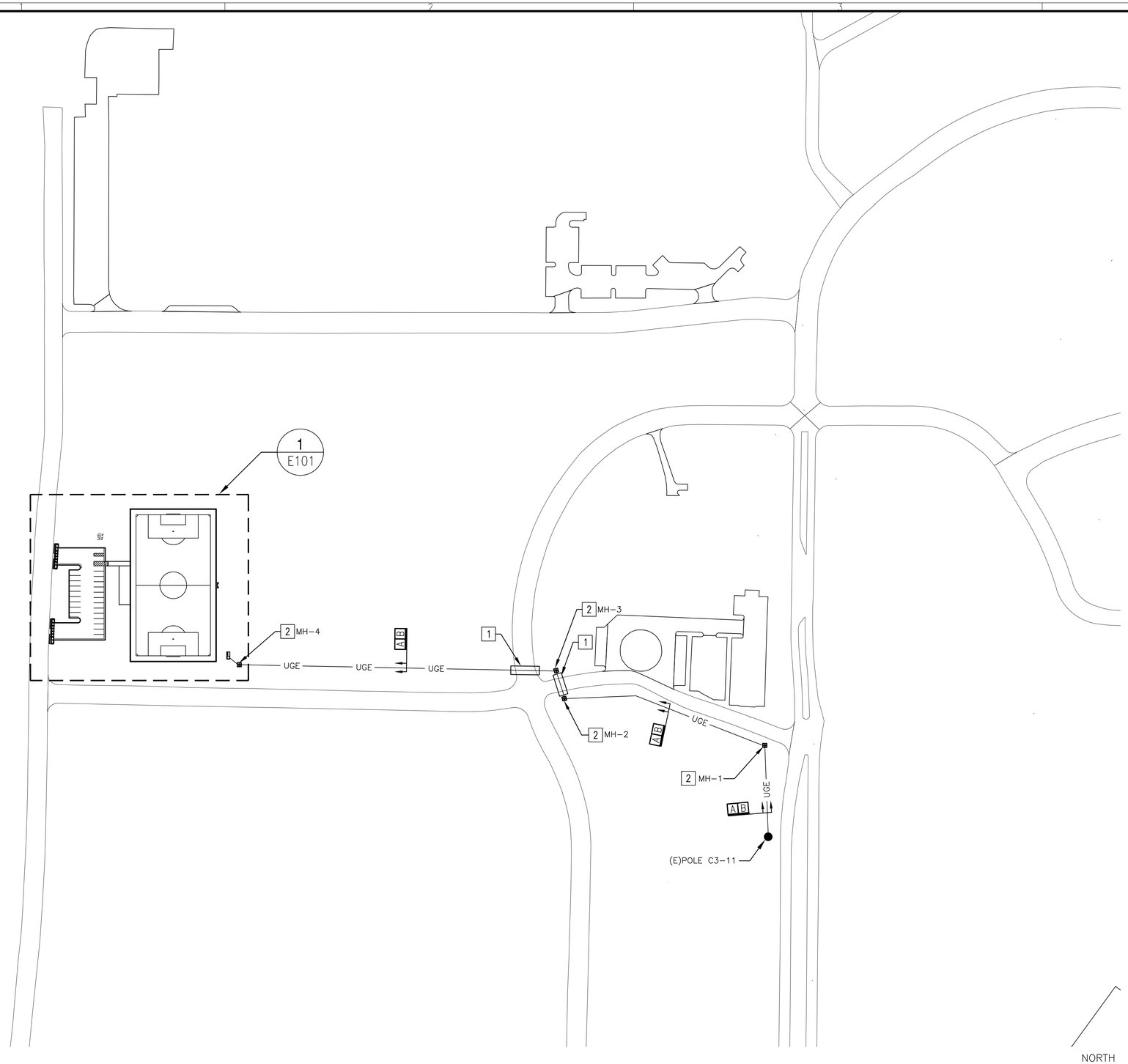
SYMBOLS AND ABBREVIATIONS

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 11 OF 21

E–001

X NOTES THIS SHEET

1. SAW CUT ROADWAY FOR PRIMARY DUCTBANK INSTALLATION. VERIFY LOCATION OF SURROUNDING UTILITIES PRIOR TO PERFORMING WORK. COORDINATE ROAD CLOSURE PLAN WITH THE CONTRACTING OFFICER.
2. REFER TO THE MANHOLE AND CABLE RACK DETAILS ON SHEET E–502.



SITE PLAN - ELECTRICAL

SCALE: 1" = 100'–0"

NORTH

GRAPHIC SCALE

1" = 100'

100 0 100 200

NOTE:
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DATE: 17 AUG 2013
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UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
TRAVIS AIR FORCE BASE
CALIFORNIA

WEST OF TWIN PEAKS SOCCER FIELD

SITE PLAN – ELECTRICAL

CODE ID. NO. – SIZE: 22X34
SCALE: ES–101
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 12 OF 21

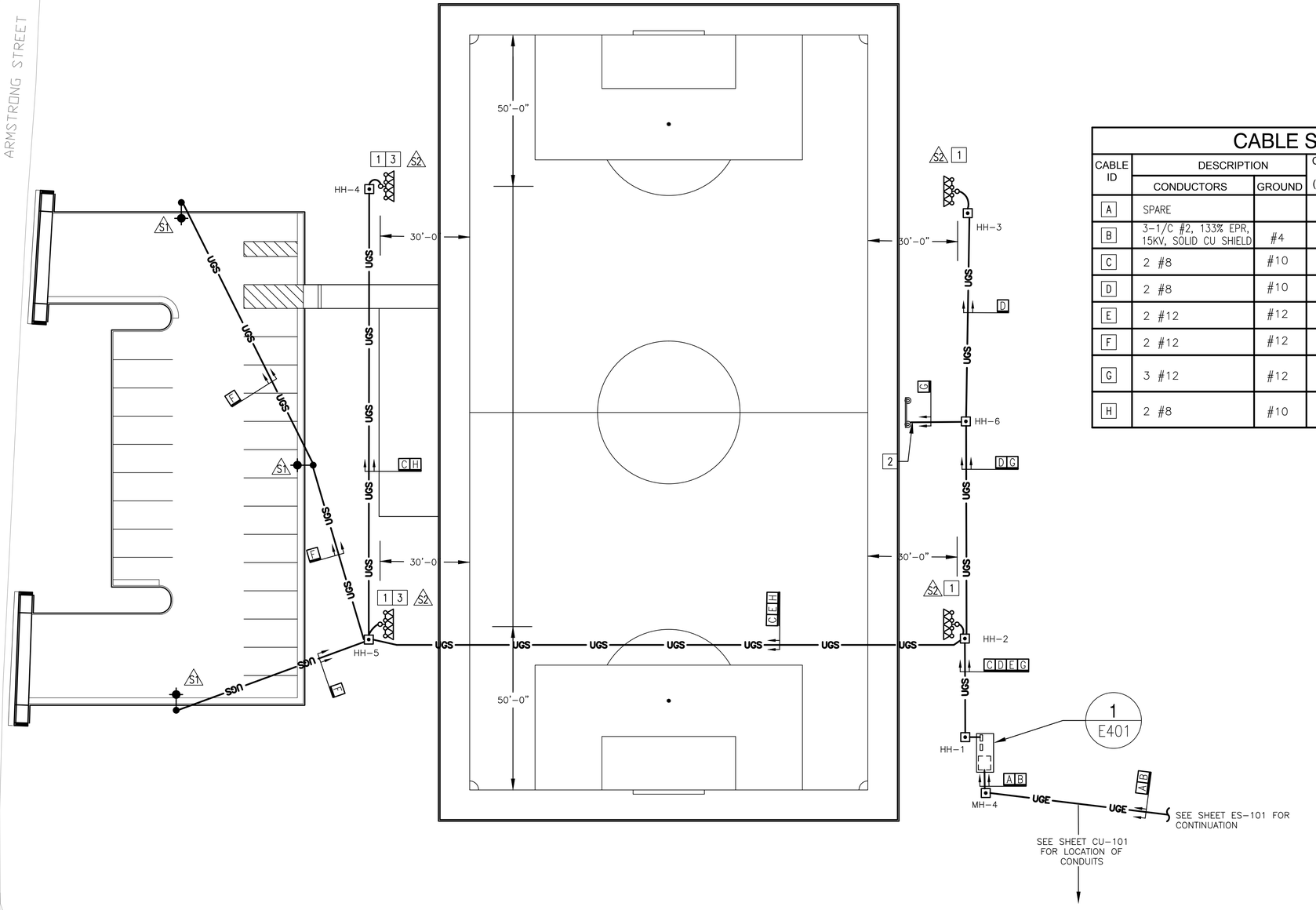
ES–101

X NOTES THIS SHEET

1. INSTALL POLES 30'–0" FROM SIDELINE, TYPICAL.
2. TURN CONDUIT UP AT SCOREBOARD MANUFACTURER'S PREFERRED LOCATION. PROVIDE WEATHERPROOF JUNCTION BOX 18" ABOVE GRADE. PROVIDE WEATHERPROOF RECEPTACLE MOUNTED TO SCOREBOARD, NEMA–3R.
3. PROVIDE WEATHERPROOF RECEPTACLE AND MOUNT TO LIGHT POLE.

CABLE SCHEDULE

CABLE ID	DESCRIPTION		CONDUIT SIZE (INCHES)	REMARKS
	CONDUCTORS	GROUND		
A	SPARE		4"	PROVIDE PULLWIRE IN EMPTY CONDUIT (ELECTRICAL)
B	3–1/C #2, 133% EPR, 15KV, SOLID CU SHIELD	#4	4"	(E)POLE C3–11 TO SOCCER FIELD TRANSFORMER
C	2 #8	#10	1"	LCP–2 TO WEST FIELD LIGHTS
D	2 #8	#10	1"	LCP–3 TO EAST FIELD LIGHTS
E	2 #12	#12	1"	LC–1 (15A, 480V, 1ø CONTACTOR) TO PARKING LOT LIGHTS
F	2 #12	#12	1"	HANDHOLE H–5 TO PARKING LOT LIGHTING
G	3 #12	#12	1"	120V LOAD CENTER TO SCOREBOARD AND RECPEPTACLE, (2) CIRCUITS.
H	2 #8	#10	1"	WEST RECEPTACLES



SITE PLAN - ELECTRICAL

SCALE: 1" = 20'–0"

NORTH

GRAPHIC SCALE

1" = 20'

20 0 20 40
SCALE FEET

NOTE:
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COMMONWEALTH OF VIRGINIA
JUSTIN MARK ROBINSON
Lic. No. 048109
Expires: 12/31/13
PROFESSIONAL ENGINEER

DATE: 17 AUG 2013
BY: PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

DESIGNED BY: JR
DWN BY: JR
CKD BY: KMW
REVIEWED BY: KMW
SUBMITTED BY: KMW

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
TRAVIS AIR FORCE BASE
CALIFORNIA

WEST OF TWIN PEAKS SOCCER FIELD

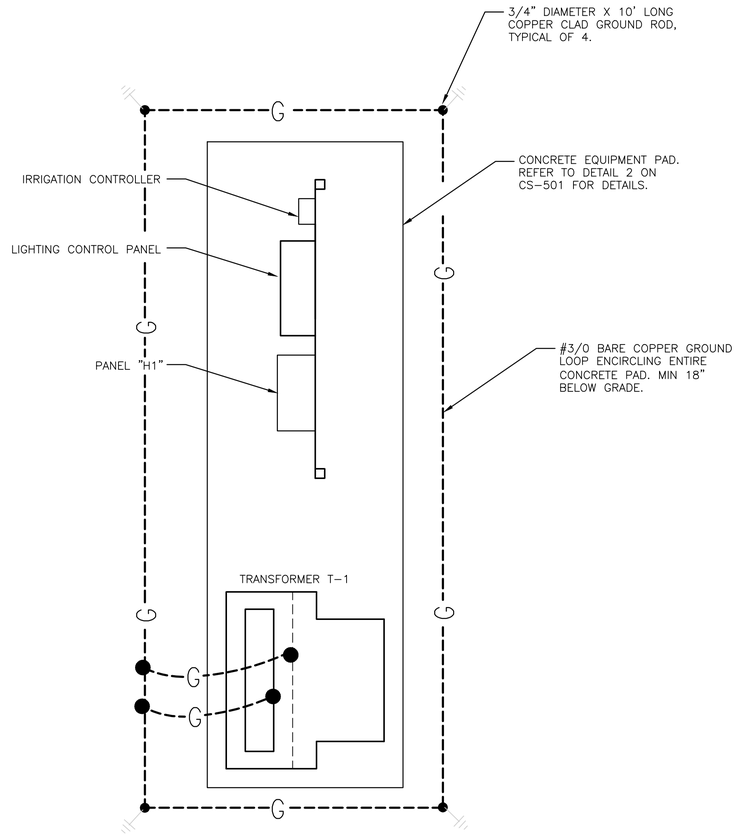
FIELD PLAN – ELECTRICAL

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 13 OF 21

E–101

[X] NOTES THIS SHEET

1. MAINTAIN 3'-0" CLEARANCE BETWEEN THE TRANSFORMER AND EQUIPMENT RACK, AND 8" MINIMUM BETWEEN DEVICES ON THE EQUIPMENT RACK.



[1] EQUIPMENT PAD DETAIL

SCALE: 1/2" = 1'-0"

NORTH

GRAPHIC SCALE

1/2" = 1'-0"

1 0 1 2 3
SCALE FEET

NOTE:
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FILE NAME:

DESIGNED BY: JR
DWN BY: JR
CKD BY: KP
REVIEWED BY: KP
SUBMITTED BY: KMW

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
CALIFORNIA

TRAVIS AIR FORCE BASE

WEST OF TWIN PEAKS SOCCER FIELD

DETAILS - ELECTRICAL

CODE ID. NO. - SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. -
CONSTR. CONTR. NO. -
NAVFAC DRAWING NO.
SHEET 14 OF 21

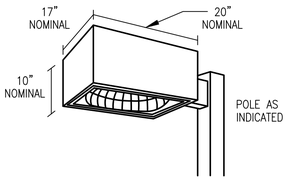
E-401

LIGHTING FIXTURE SCHEDULE

FIXTURE SYMBOL	SKETCH NO. OR BASIS OF DESIGN	NUMBER AND TYPE OF LAMPS	VOLTAGE	MOUNTING	NOTES
S1	XL-1	1 - 250W HPS	480	POLE	1,2,4,5,9
S2	RLLD15323TEC MANUFACTURED BY RLDD-TL	(5)1500W - MH	480	POLE	3,4,6,7,8,9,10

SCHEDULE NOTES

1. PROVIDE WITH POLE XL-19, TYPE C. PROVIDE SQUARE ALUMINUM POLE WITH DARK BRONZE FINISH.
2. PROVIDE SINGLE ARM MOUNTING. SEE DETAIL XL-25 "A".
3. PROVIDE THE INDICATED LIGHTING FIXTURE AND ACCESSORIES OR APPROVED EQUAL.
4. PROVIDE BOLT-DOWN POLE FOUNDATION DETAIL XL-26.
5. PROVIDE WITH PHOTOMETRIC DISTRIBUTION TYPE R4.
6. PROVIDE EACH FIXTURE WITH RLLD VISOR SHIELD, CATALOG NO. S144.
7. PROVIDE WITH POLE XL-19, TYPE H.
8. REFER TO THE POLE WIRING AND FUSE DETAIL ON THIS SHEET FOR CONNECTION DETAILS.
9. PROVIDE ALL NECESSARY MOUNTING HARDWARE.
10. PROVIDE WITH DUAL CROSS-ARM CONFIGURATION, SEE "CROSS ARM MOUNTING DETAIL", THIS SHEET.



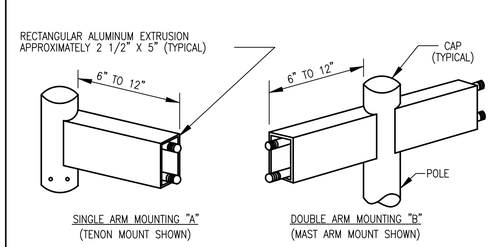
LUMINAIRE REQUIREMENTS:

1. HOUSING - ONE-PIECE EXTRUDED ALUMINUM, FABRICATED SHEET ALUMINUM, OR A COMBINATION OF BOTH AS INDICATED. ALL SEAMS SHALL BE SEALED AND WELDED.
2. FINISH - MULTI-STAGE PRE-TREATMENT, FINISHED WITH BAKED-ON POLYESTER POWDER COAT. OPTIONAL ARCHITECTURAL CLASS 1 ANODIZE FINISH AVAILABLE AS INDICATED. FIXTURE SHALL PASS 2500 HOUR SALT SPRAY TEST FOR CORROSION RESISTANCE. DARK BRONZE OR BLACK STANDARD FINISH. OTHER FINISHES AVAILABLE AS INDICATED.
3. REFLECTOR - ONE-PIECE, HYDROFORMED OR SEGMENTED, ANODIZED, SPECULAR ALUMINUM; INTERCHANGABLE AND ROTATABLE IN HOUSING AND SHALL PRODUCE IES BEAM PATTERN AS INDICATED. OPTIONAL PATTERNS INCLUDE IES TYPES II, III, IV, AND V. OPTICS SHALL PRODUCE FULL CUTOFF OR CUTOFF CONTROL AS INDICATED.
4. LAMP SOCKET - INTEGRAL, PRE-WIRED PORCELAIN LAMP SOCKET WITH NICKEL-PLATED SCREW AND CENTER CONTACT.
5. LENS AND FRAME - EXTRUDED, ANODIZED ALUMINUM FRAME WITH ONE-PIECE MOLDED HIGH TEMPERATURE GASKET. LENS SHALL BE TEMPERED GLASS, FULLY GASKETED, WITH OPTION FOR FLAT OR CONVEX SHAPE AS INDICATED. FRAME SHALL BE HINGED AT ONE END AND BE PROVIDED WITH LATCHES FOR SECURING WITHOUT THE NEED FOR TOOLS.
6. LAMPS - METAL HALIDE OR HIGH PRESSURE SODIUM WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
7. BALLAST - PREWIRED TO SEPARATE MOUNTING ASSEMBLY WITH QUICK DISCONNECT PLUGS. BALLAST SHALL BE HIGH POWER FACTOR (≥.90), ENCASED AND POTTED (ENCAPSULATED), CONSTANT-WATTAGE AUTOTRANSFORMER, CORE AND COIL TYPE WITH MINIMUM STARTING TEMPERATURE OF -20 DEGREE F. PROVIDE PULSE-START TYPE FOR USE WITH MH LAMPS.
8. CERTIFICATION - UL LISTED AND CERTIFIED FOR WET LOCATIONS.
9. OPTIONS - HOUSE-SIDE SHIELD, PHOTOCELL AND RECEPTACLE, ROUND HOUSING, CUSTOM COLOR AS INDICATED, AND FUSING.

S1

AREA LUMINAIRE - HORIZONTAL LAMP

REVISED:	AUGUST 2004	LIGHTING PLATE:	XL-1

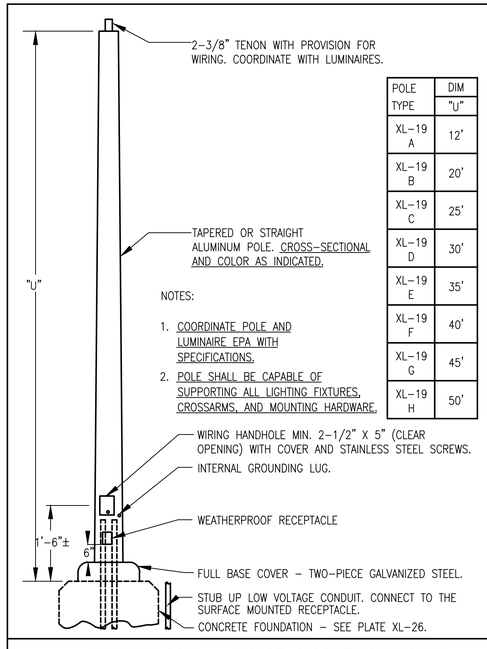


NOTES:
1. ALL FASTENERS SHALL BE CONCEALED.
2. ALL ARMS ARE AVAILABLE IN TENON OR MAST ARM MOUNT, SPECIFY TYPE DESIRED.

S1

LUMINAIRE MOUNTING ARMS

SKETCH DATE	AUGUST 2004	STYLE	XL-25



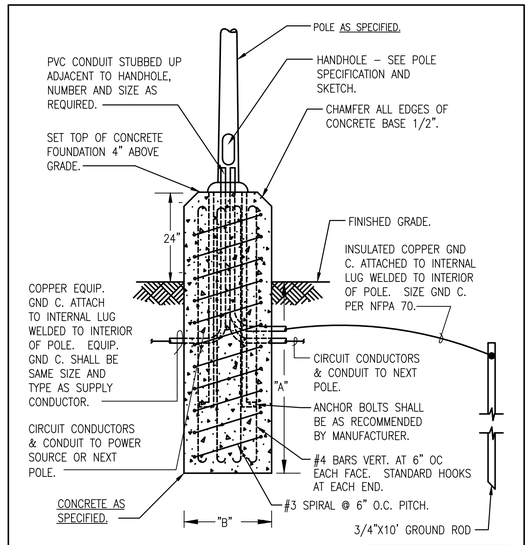
POLE TYPE	DIM "U"
XL-19 A	12'
XL-19 B	20'
XL-19 C	25'
XL-19 D	30'
XL-19 E	35'
XL-19 F	40'
XL-19 G	45'
XL-19 H	50'

NOTES:

1. COORDINATE POLE AND LUMINAIRE EPA WITH SPECIFICATIONS.
2. POLE SHALL BE CAPABLE OF SUPPORTING ALL LIGHTING FIXTURES, CROSSARMS, AND MOUNTING HARDWARE.

ALUMINUM POLE - ANCHOR-BASE, TENON MOUNT

SKETCH DATE	AUGUST 2004	STYLE	XL-19



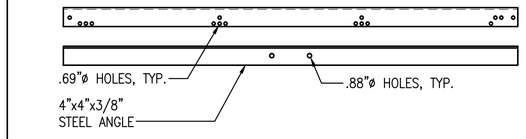
POLE HT.	A	B
50'	11'-9"	36"

LEGEND

GND C. - GROUNDING CONDUCTOR

BOLT-DOWN POLE FOUNDATIONS

SKETCH DATE	AUGUST 2004	STYLE	XL-26



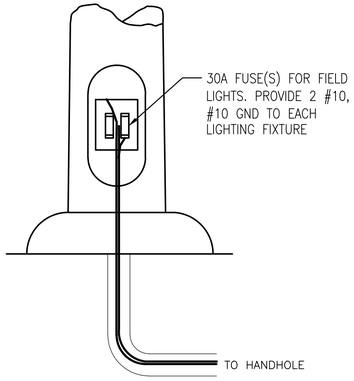
4 FIXTURE CONFIGURATION

GENERAL REQUIREMENTS:

1. PROVIDE WITH DARK BRONZE FINISH.
2. EACH POLE TO RECEIVE (1) 3-FIXTURE MOUNTING ARM AND (1) 2-FIXTURE MOUNTING ARM.

S2

CROSS ARM MOUNTING DETAL



POLE FUSE AND WIRING DETAIL

NO SCALE

NOTE:
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COMMONWEALTH OF VIRGINIA
JUSTIN MARK ROBINSON
Lic. No. 048109
Expires: 12/31/13
PROFESSIONAL ENGINEER

DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

DESIGNED BY: JR
DWN BY: JR
CKD BY: KMW
REVIEWED BY: KMW
SUBMITTED BY: KMW

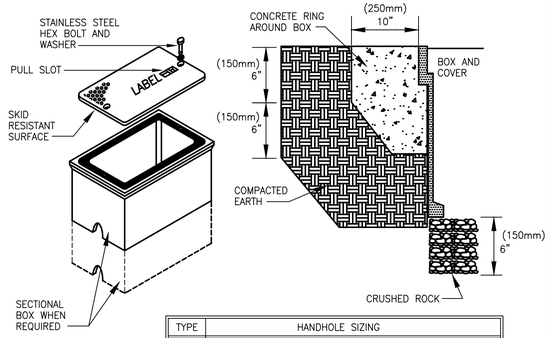
UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
TRAVIS AIR FORCE BASE
CALIFORNIA

WEST OF TWIN PEAKS SOCCER FIELD

DETAILS - ELECTRICAL

CODE ID. NO. - SIZE: 22X34
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. -
CONSTR. CONTR. NO. -
NAVFAC DRAWING NO.
SHEET 15 OF 21

E-501



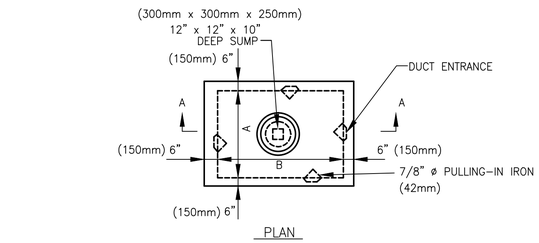
TYPE	HANDHOLE SIZING
6	12" X 18" X 24" DEEP (300mm x 300mm x 600mm)

HANDHOLE REQUIREMENTS

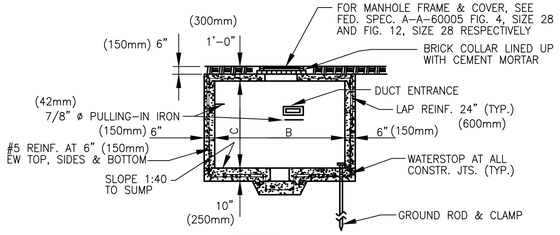
1. HOUSING SHALL BE A POLYMER CONCRETE REINFORCED WITH A HEAVY WEAVE FIBERGLASS REINFORCING WITH COMPRESSIVE STRENGTH OF NO LESS THAN 10,000 PSI.
2. COVER AND BOX SHALL WITHSTAND A SERVICE LOAD OF NO LESS THAN 15,000 LBS OVER A 10" x 10" AREA.
3. PROVIDE STAINLESS STEEL BOLTS AND INSERTS.
4. PROVIDE WITH (2) 2 1/2" MOUSEHOLES.
5. PROVIDE LABEL "ELECTRICAL" FOR POWER HANDHOLES OR "TELEPHONE" FOR TELEPHONE HANDHOLES, OR AS INDICATED.

STANDARD ELECTRICAL HANDHOLE (NONTRAFFIC)
(COMPOSITE/FIBERGLASS)

SKETCH DATE	JUNE 2002	STYLE	UG-6



PLAN



SECTION A-A

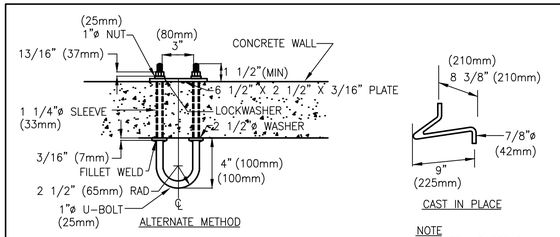
MANHOLE DIMENSIONS			
TYPE	A	B	C (AT HIGH PT.)
1	6'-0" (1.8m)	6'-0" (1.8m)	6'-6" (1.95mm)

NOTES:

1. FOR DETAILS OF CABLE RACKS, DUCT ENTRANCE AND PULLING-IN IRONS, SEE PLATE UG-7.
2. MINIMUM CONCRETE COMPRESSIVE STRENGTH SHALL BE 3000 PSI.

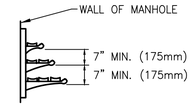
STANDARD ELECTRICAL MANHOLE (NONTRAFFIC)

SKETCH DATE	JUNE 2002	STYLE	UG-1

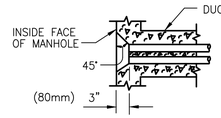


NOTE
ALL METAL PARTS SHALL BE HOT DIP GALVANIZED

DETAIL OF PULLING-IN IRON



TYPICAL CABLE RACK



TYPICAL DUCT ENTRANCE

DETAILS
(PULLING-IN IRONS, CABLE RACK AND DUCT ENTRANCE)

SKETCH DATE	JUNE 2002	STYLE	UG-7

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COMMONWEALTH OF VIRGINIA
JUSTIN MARK ROBINSON
Lic. No. 043109
Expires: 12/31/13
PROFESSIONAL ENGINEER

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UNITED STATES AIR FORCE
TRAVIS AFB
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WEST OF TWIN PEAKS SOCCER FIELD

DETAILS - ELECTRICAL

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E-502

LOAD CENTER [8]

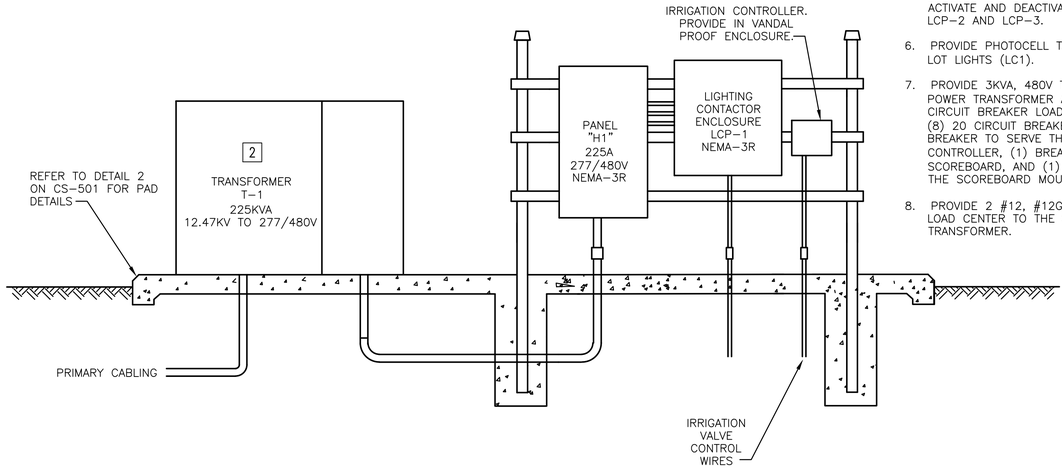
20A MCB: 120V VOLT, 1 PHASE, 2 WIRE, 10KAIC, SURFACE MOUNT

LOAD SERVED	LOAD AMPS A	B	C	BKR TRIP	WIRE SIZE	CKT NO.	PHASE ABC	CKT NO.	WIRE SIZE	BKR TRIP	LOAD AMPS A	B	C	LOAD SERVED
SCOREBOARD	5.0			20		1		2			0.0			SPARE
SCOREBOARD REC		1.5		20	SEE			4	SEE			0.0		SPARE
IRRIGATION CONTROLLER			.5	20	E-101	5		6	E-101	20			3.0	WEST FIELD RECS
WEST FIELD RECS				20				8			0.0			SPARE
TOTALS	5.0	1.5	.5								0.0	0.0	3.0	SPARE TOTALS
TOTAL CONNECTED AMPS	A: 5.0 B: 1.5 C: 3.0													

PANELBOARD "H1" SCHEDULE

150A MCB: 480Y/277 VOLT, 3 PHASE, 4 WIRE, 18KAIC, SURFACE MOUNT, NEMA-3R

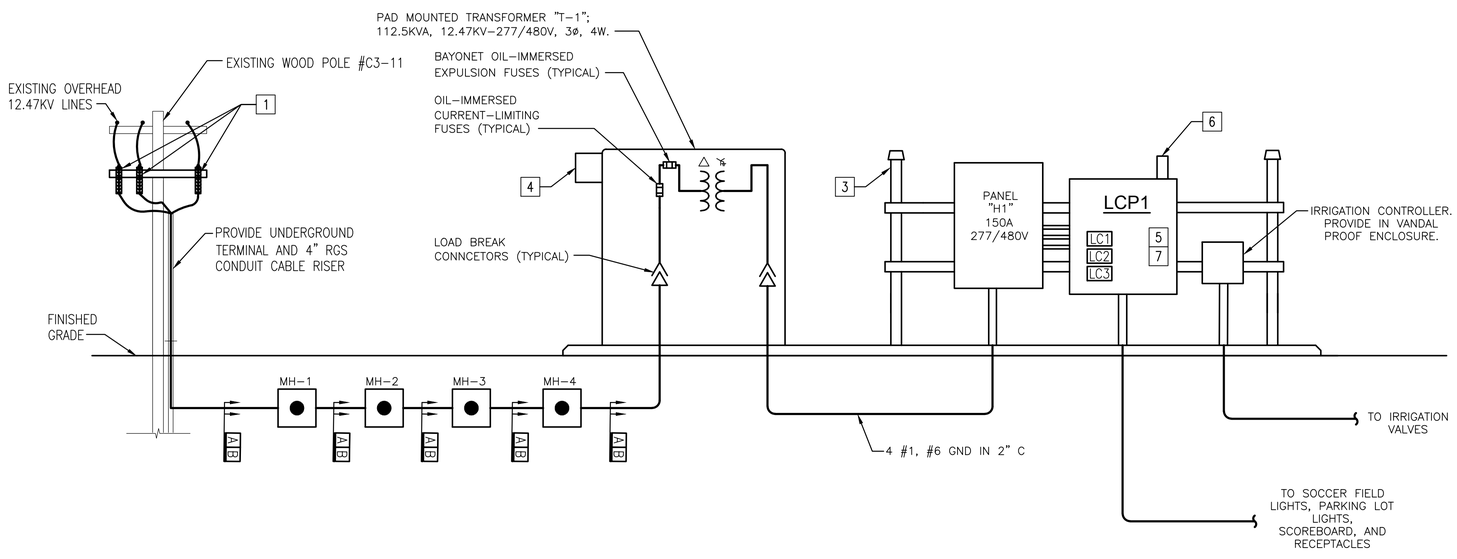
LOAD SERVED	LOAD AMPS A	B	C	BKR TRIP	WIRE SIZE	CKT NO.	PHASE ABC	CKT NO.	WIRE SIZE	BKR TRIP	LOAD AMPS A	B	C	LOAD SERVED
PARKING LOT LIGHTS	1.8			15	SEE	1		2	10	30	13.0			10KVA CONTROL POWER
(VIA LC1)		1.8			E-101							13.0		TRANSFORMER
WEST FIELD LIGHTS			33.5	60	SEE	5		6					0.0	
(VIA LC2)	33.5				E-101			8			0.0			
EAST FIELD LIGHTS		33.5		60	SEE	9		10				0.0		
(VIA LC2)			33.5		E-101			12					0.0	
	0.0					13		14			0.0			
		0.0				15		16				0.0		
			0.0			17		18					0.0	
TOTALS	35.3	35.3	67.0								13.0	13.0	0.0	TOTALS
TOTAL CONNECTED AMPS	A: 48.3 B: 48.3 C: 67.0													



EQUIPMENT RACK DETAIL

NO SCALE

1



CONTACTOR SCHEDULE

CONTACTOR IDENTIFICATION	VOLTAGE	AMPERAGE	LOAD
LC-1	480V, 1ø	15A	PARKING LOT LIGHTS
LC-2	480V, 1ø	60A	WEST FIELD LIGHTS
LC-3	480V, 1ø	60A	EAST FIELD LIGHTS

1. THE PARKING LOT LIGHTS SHALL BE CONTROLLED BY THE PHOTOCELL MOUNTED TO THE CABINET.

2. PROVIDE A 2-HOUR DIAL TIMER CONNECTED TO BOTH SOCCER FIELD LIGHTING CONTACTORS. MOUNT INSIDE THE PANEL SO THAT ONLY AUTHORIZED PERSONNEL CAN OPERATE THE LIGHTING FIXTURES.

[X] NOTES THIS SHEET

1. PROVIDE WOOD CROSSARM AND 100A FRAME FUSED CUTOUTS, WITH 15E FUSES.
2. PROVIDE 175A ENCLOSED CIRCUIT BREAKER INSIDE TRANSFORMER'S SECONDARY SECTION TO SERVE PANEL 'H1'.
3. EQUIPMENT RACK WITH GALVANIZED FRAMING AND SUPPORTS WITH STAINLESS STEEL MOUNTING HARDWARE. MAINTAIN 3'-0" CLEARANCE BETWEEN THE TRANSFORMER AND EQUIPMENT RACK, AND 8" MINIMUM BETWEEN DEVICES ON THE EQUIPMENT RACK.
4. PROVIDE EMON DMON 3000SERIES METER COMPATIBLE WITH BASE STANDARD, NEMA-3R.
5. PROVIDE NEMA-3R ENCLOSURE TO HOUSE LIGHTING CONTACTORS, CONTROL POWER TRANSFORMER, LOAD CENTER, AND DIAL TIMER. PROVIDE KEY LOCK CONTROL SWITCH ON ENCLOSURE'S EXTERIOR. THE SWITCH SHALL ACTIVATE AND DEACTIVATE LIGHTING CONTACTORS LCP-2 AND LCP-3.
6. PROVIDE PHOTOCELL TO CONTROL THE PARKING LOT LIGHTS (LC1).
7. PROVIDE 3KVA, 480V TO 120V, 1ø CONTROL POWER TRANSFORMER AND (6) CIRCUIT, MAIN CIRCUIT BREAKER LOAD CENTER COMPLETE WITH (8) 20 CIRCUIT BREAKERS. CONNECT (1) BREAKER TO SERVE THE IRRIGATION CONTROLLER, (1) BREAKER TO SERVE THE SCOREBOARD, AND (1) BREAKER TO THE SERVE THE SCOREBOARD MOUNTED RECEPTACLE.
8. PROVIDE 2 #12, #12G IN 1/2" C TO CONNECT LOAD CENTER TO THE CONTROL POWER TRANSFORMER.

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UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
TRAVIS AIR FORCE BASE
CALIFORNIA

WEST OF TWIN PEAKS SOCCER FIELD

RISER DIAGRAM

CODE ID. NO. – SIZE: 22X34
SCALE: AS NOTED
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STA. PROJ. NO. XDAT 10-1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 17 OF 21

E-601

NOTE:
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PLANTING NOTES

VERIFICATION:
THE CONTRACTOR SHALL CONFIRM AVAILABILITY OF PLANT MATERIALS IMMEDIATELY AFTER THE SIGNING OF THE CONTRACT WITH THE GOVERNMENT. SUBSTITUTIONS WITHOUT PRIOR WRITTEN AUTHORIZATION BY THE CONTRACTING OFFICER ARE NOT ALLOWED.

SCHEMATIC:
THE FEATURES ARE SHOWN SCHEMATICALLY FOR GRAPHIC CLARITY. NO UTILITY SURVEY HAS BEEN CONDUCTED. PRIOR TO PLANTING, VERIFY EXACT LOCATIONS WITH THE CONTRACTING OFFICER. TREES LOCATIONS SHALL RESPECT THE FOLLOWING OFFSETS FROM UTILITIES:

- 30' FROM STREET CORNERS FOR VISIBILITY & 15' FROM DRIVEWAY, STOP SIGNS, ALLEYS, LIGHT POLES AND POWERS POLES
- 10' FROM FIRE HYDRANTS & 8' FROM SEWER LINES
- 5' FROM BUILDINGS OVERHANGS AND 2' FROM ADJACENT CONCRETE AND ADJOINING PROPERTY LINES
- 3' FROM GAS, ELECTRICAL, AND WATER LINES, AND ROOF DRAINS

IF CONFLICTS ARISE BETWEEN PLANS AND FIELD CONDITIONS NOTIFY CONTRACTING OFFICER.

CODES:
ALL PLANTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL CODES AND NURSERY AND MANUFACTURER'S SPECIFICATIONS, RECOMMENDATIONS AND REQUIREMENTS. NOTIFY THE CONTRACTING OFFICER IMMEDIATELY IN WRITING PRIOR TO SIGNING OF A CONTRACT WITH THE GOVERNMENT OF ANY CONFLICTS. CONFLICTS NOTED AFTER CONTRACT SIGNING OR AFTER THE COMMENCEMENT OF WORK SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

FINISH GRADE:
LANDSCAPE CONTRACTOR SHALL NOT FINE GRADE, AMEND SOIL OR DO ANY PLANTING OR IRRIGATION WORK UNTIL FINAL GRADES ARE ESTABLISHED WITHIN 0.1' BY GENERAL CONTRACTOR.

FINISH GRADES IN PLANTING AREAS:
FINISH GRADES SHALL CONFORM TO GRADING PLAN. FINISH GRADES SHALL BE 2" BELOW ADJACENT HARDSCAPE IN SHRUB AREAS. POSITIVE DRAINAGE AWAY FROM BUILDINGS AND WALKWAYS SHALL BE MAINTAINED.

PLANT ALLOWANCE:
THE CONTRACTOR IS REQUIRED TO PROVIDE THE GOVERNMENT WITH A COMPLETE PROJECT. HE/SHE SHALL INSTALL ANY AND ALL PLANT MATERIAL AS SHOWN ON THE DRAWINGS AND LEGENDS. SHOULD A DISCREPANCY OCCUR BETWEEN THE PLANS, NOTES OR LEGENDS THE PLAN SHALL PREVAIL. THE CONTRACTOR SHALL MAKE ALL NEEDED CHANGES AS DIRECTED BY THE LANDSCAPE ARCHITECT AND PROVIDE THE GOVERNMENT WITH A COMPLETE PROJECT AT NO ADDITIONAL COST TO THE GOVERNMENT.

TREE PLANTING:
THE CONTRACTOR SHALL BE RESPONSIBLE TO ADEQUATELY PLAN FOR TREE PLANTING WHILE INSTALLING THE IRRIGATION SYSTEM. NO TREES OR SHRUBS SHALL BE PLANTED DIRECTLY ON TOP OF IRRIGATION LINES OR ANY OTHER UTILITY LINE.

ROOT BARRIERS:
ROOT BARRIERS ARE SHOWN ON THE PLAN. ADDITIONAL ROOT BARRIERS MAY BE REQUIRED – SEE DETAILS REGARDING SIZE AND REQUIREMENTS.

PLANTING DEPTH:
THE CONTRACTOR SHALL PLANT ALL PLANTS AS SHOWN ON THE DETAILS. SHOULD THE CONTRACTOR OVERDIG PLANTING HOLES, AND THE PLANT OR PLANTS SETTLE, THE CONTRACTOR SHALL BE RESPONSIBLE TO REPLANT THESE PLANTS CORRECTLY. SHOULD REPLANTING WEAKEN THE PLANT, THE CONTRACTOR SHALL REPLACE THE PLANT IMMEDIATELY. SHOULD ANY PLANTS SETTLE DURING THE ONE YEAR WARRANTY PERIOD, THEY SHALL BE REPLACED BY THE CONTRACTOR. ALL REPLANTING AND REPLACEMENT SHALL BE DONE BY THE CONTRACTOR WITHIN TWO WEEKS OF NOTIFICATION AT NO ADDITIONAL COST TO THE GOVERNMENT. ALL REPLACEMENT PLANTING SHALL BE PROVIDED BY THE CONTRACTOR TO MATCH THE SAME SIZE OF THE SURROUNDING PLANTING (I.E. REPLACEMENT PLANTS FOR 1 GAL SIZE MAY REQUIRE REPLACEMENT BY 5 GAL, 5 GAL BY 15 GAL, 15 GAL BY 24" BOX ETC.). THE CONTRACTING OFFICER SHALL HAVE THE FINAL DETERMINATION AS TO WHICH PLANTS ARE PLANTED TOO DEEP AND IF ANY PLANTS HAVE BEEN WEAKENED BY REPLANTING AND REQUIRE REPLACEMENT.

BACKFILL:
BACKFILL FOR PLANTING WITH 75% CLEAN NATIVE SOIL AND 25% FOREST HUMUS OR SAWDUST. PLANT TREES AND SHRUBS WITH TOP OF ROOTBALL SLIGHTLY ABOVE GROUND LEVEL PER THE DETAILS. SET PLANT ON NATIVE GRADE. IF HOLE IS OVERDUG, BACKFILL WITH 3/4" GRAVEL TO POINT WHERE PLANT CROWN IS ABOVE GROUND LEVEL. SET PLANT, BACKFILL HALFWAY, TAMP SOIL, ADD FERTILIZER TABLETS THEN COMPLETE BACKFILL PER THE DETAIL. SLOW RELEASE FERTILIZER PACKS SHALL BE ADDED WHEN PLANTING AS FOLLOWS: 1 PER 1 GALLON, 3 PER 5 GALLON, 6 PER 15 OR 7 GALLON, 12 PER 24" BOX. PROVIDE WATERING BASIN AROUND EACH PLANT PER THE DETAIL. WATER IMMEDIATELY.

SOIL PREPARATION:
OVER-EXCAVATE AND RECOMPACT ALL PLANTING AREAS TO A MINIMUM OF 36" OR UNTIL PIT DRAINS FREELY. SEE DRAINAGE TEST REQUIREMENTS ON SPECS. REMOVE STONES, ROOTS AND OTHER DEBRIS FROM THE PLANTING AREA. COMPACTED SOIL SHALL BE RETURNED TO A FRIABLE CONDITION. APPLY WATER AS NEEDED TO OBTAIN OPTIMUM MOISTURE CONTENT FOR SOIL PREPARATION AND PLANTING.

HERBICIDES:
CONTRACTOR WILL APPLY RONSTAR OR APPROVED EQUAL PER MANUFACTURER'S REQUIREMENTS AFTER PLANTING. CONFORM TO ALL NATIONAL, STATE AND LOCAL REPORTING REQUIREMENTS. CONTRACTOR WILL MAINTAIN THE PROJECT IN A WEED-FREE CONDITION UNTIL END OF MAINTENANCE PERIOD.

TREES:
ALL TREES SHALL MEET THE REQUIREMENTS OF THE AMERICAN ASSN. OF NURSERYMEN 'AMERICAN STANDARD FOR NURSERY STOCK'. TREES SHALL BE OF EXCELLENT HEALTH WITHOUT DAMAGED OR CIRCLING ROOTS OR FOLIAR DAMAGE FROM FUNGUS, INSECT, SUN OR WIND EXPOSURE OR OTHER BIOLOGICAL OR CLIMATIC CAUSE. THE CONTRACTING OFFICER RESERVES THE RIGHT TO REJECT UNSUITABLE TREES EVEN AFTER PLANTING. CONTRACTOR SHALL REQUEST EVALUATION FROM LANDSCAPE ARCHITECT PRIOR TO PLANTING IF HE/SHE HAS QUESTIONS REGARDING SUITABILITY. IF EVALUATION REQUIRES A SITE VISIT NOT PREVIOUSLY SCHEDULED, THE COST OF THE EVALUATION SHALL BE BORNE BY THE CONTRACTOR. TREES SHALL BE STAKED PER DETAIL.

TREE CALIPER:
TREES WILL HAVE THE FOLLOWING CALIPER AT 6" ABOVE GRADE:

5 GAL.	.5"–.75"
15 GAL.	.75"–1.5"
24" BOX	1.5"–2.5"

WARRANTY PERIOD, MAINTENANCE PERIOD:
CONTRACTOR SHALL WARRANT PLANTING AND ALL OF ITS COMPONENTS FOR 12 MONTHS AFTER FINAL ACCEPTANCE OF PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIALS AND LABOR ASSOCIATED WITH THE GUARANTEE, INCLUDING BUT NOT LIMITED TO THE LOSS OF PLANT MATERIAL OR DAMAGE TO STRUCTURES. CONTRACTOR SHALL PROVIDE MAINTENANCE OF THE PROJECT FOR 90 DAYS BEGINNING AT SUBSTANTIAL COMPLETION OF THE PROJECT. IF SUBSTANTIAL COMPLETION PUNCH LIST ITEMS HAVE NOT BEEN CORRECTED WITHIN 10 WORKING DAYS OF THE SUBSTANTIAL COMPLETION REVIEW, THE BEGINNING OF THE MAINTENANCE PERIOD SHALL BE EXTENDED TO BEGIN AT THE COMPLETION OF THOSE PUNCH LIST ITEMS.

MULCH:
THE CONTRACTOR SHALL INSTALL 3" OF WOOD CHIPS OR BARK ON ALL NON-TURF PLANTING AREAS. SEE SPECS REGARDING HYDROSEEDED AREAS.

IRRIGATION NOTES:

VERIFICATION:
THE SYSTEM IS BASED ON 44 P.S.I. AND 10 G.P.M. AVAILABLE AT CONNECTION TO THE BASE WATER SYSTEM (APPROXIMATELY 700' FROM THE STUB DRAWN ON THE PLANS – SEE CIVIL UTILITIES PLAN). THE CONTRACTOR SHALL VERIFY THE SAME AT THE AWARD OF THE CONTRACT. THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER IMMEDIATELY IF THE DATA IS SIGNIFICANTLY DIFFERENT AND WOULD ADVERSELY AFFECT THE OPERATION OF THE SYSTEM. SUCH NOTICE SHALL BE IN WRITING AND SHALL OCCUR NO LATER THAN 72 HOURS PRIOR TO COMMENCEMENT FOR PROJECTS. SYSTEM DESIGNED FOR 30 PSI AT LAST HEAD.

SCHEMATIC:
THE SYSTEM FEATURES ARE SHOWN SCHEMATICALLY FOR GRAPHIC CLARITY. INSTALL ALL PIPING AND VALVES IN COMMON TRENCHES WHERE FEASIBLE AND INSIDE PLANTING AREAS. VALVES AND MAINLINES SHALL BE LOCATED IN PLANTER AREAS.

UTILITIES:
CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING UNDERGROUND SERVICE ALERT TWO (2) DAYS PRIOR TO THE START OF WORK.

CODES:
THE IRRIGATION SYSTEM AND ALL OTHER MECHANICAL, ELECTRICAL AND STRUCTURAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL CODES AND MANUFACTURER'S SPECIFICATIONS, RECOMMENDATIONS AND REQUIREMENTS. ALL ELECTRICAL EQUIPMENT SHALL BE U.L. LISTED. NOTIFY THE GOVERNMENT IMMEDIATELY IN WRITING PRIOR TO SIGNING A CONTRACT GOVERNMENT OF ANY CONFLICTS. CONFLICTS NOTED AFTER SIGNING OR AFTER THE COMMENCEMENT OF WORK SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

MATERIALS:
ALL MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. NOTIFY GOVERNMENT PRIOR TO BIDDING IN THE EVENT OF CONFLICTS BETWEEN MANUFACTURER'S RECOMMENDATIONS, PLANS, DETAILS, NOTES, OR SITE FEATURES.

INSTALLATION:
THE LANDSCAPE ARCHITECT SHALL NEITHER HAVE CONTROL OVER OR CHARGE OF, NOR BE RESPONSIBLE FOR, THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, SINCE THESE ARE SOLELY THE CONTRACTOR'S RIGHTS AND RESPONSIBILITIES UNDER THE CONTRACT DOCUMENTS.

EXAMINE AREAS AND CONDITIONS UNDER WHICH IRRIGATION WORK IS TO BE PERFORMED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

NO PART OF THIS SYSTEM SHALL BE INSTALLED IN ANY LOCATION OR MANNER WHICH MAY ENDANGER THE HEALTH, SAFETY, OR WELFARE OF THE PUBLIC. OPEN EXCAVATIONS SHALL BE BARRICADED OR COVERED. PROVIDE AND MAINTAIN ALL LIGHTS, WARNING SIGNS, BARRICADES, ETC. AS MAY BE REQUIRED OR NECESSARY TO PROTECT THE PUBLIC. ALL ABOVE GROUND EQUIPMENT SHALL BE INSTALLED ADJACENT TO STRUCTURES, FENCES, OR WALLS, OR IT SHALL BE PERMANENTLY BARRICADED IN SUCH A WAY AS TO PREVENT TRIPPING OVER IT OR RUNNING INTO IT INADVERTENTLY.

PROTECT WALKS AND OTHER PROPERTY FROM DAMAGE. DAMAGE CAUSED TO ASPHALT, CONCRETE, OR OTHER BUILDING MATERIAL SURFACES SHALL BE REPAIRED OR REPLACED AT NO COST TO THE GOVERNMENT. RESTORE DISTURBED AREAS TO ORIGINAL CONDITIONS. EXPENSES DUE TO VANDALISM BEFORE FINAL ACCEPTANCE SHALL BE BORNE BY THE CONTRACTOR.

INSTALL ANY SLEEVING UNDER ASPHALT OR CONCRETE PAVING WIDER THAN 5' PRIOR TO PAVING OPERATIONS TO ACCOMMODATE PIPING. COMPACT BACKFILL AROUND SLEEVES TO 95% MODIFIED PROCTOR DENSITY WITHIN 2% OF OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D1557 OR AS DIRECTED BY CIVIL ENGINEER. ANY SETTLING OF BACKFILLED TRENCHES WHICH A OCCUR DOING GUARANTEE PERIOD SHALL BE REPAIRED AT NO EXPENSE TO THE GOVERNMENT, INCLUDING COMPLETE RESTORATION OF DAMAGED PROPERTY.

TRENCH EXCAVATION SHALL FOLLOW, AS MUCH AS POSSIBLE, LAYOUT SHOWN ON DRAWING. DIG TRENCHES STRAIGHT AND SUPPORT PIPE CONTINUOUSLY ON BOTTOM OF TRENCH. TRENCH BOTTOM SHALL BE CLEAN AND SMOOTH WITH ALL ROCK AND DEBRIS REMOVED. TRENCHES FOR PIPING SMALLER THAN 3 INCHES SHALL HAVE A MINIMUM WIDTH OF 7 INCHES.

PROVIDE NOT LESS THAN 6 INCHES OF CLEARANCE BETWEEN EACH LINE, AND NOT LESS THAN 12 INCHES OF CLEARANCE BETWEEN LINES OF OTHER TRADES. ALL IRRIGATION LINES SHOULD BE A MINIMUM OF 18" BELOW BOTTOM OF BASE COURSE UNDER PAVING. SNAKE PIPE IN TRENCH AS MUCH AS POSSIBLE TO ALLOW FOR EXPANSION AND CONTRACTION. DO NOT INSTALL PIPE WHEN AIR TEMPERATURE IS BELOW 40°F. WHEN PIPE LAYING IS NOT IN PROGRESS, OR AT END OF EACH DAY, CLOSE PIPE ENDS WITH TIGHT PLUG OR CAP. FLUSH EACH LINE COMPLETELY BEFORE INSERTING NOZZLES. PERFORM WORK IN ACCORDANCE WITH GOOD PRACTICE PREVAILING IN PIPING TRADES.

HEAD ALLOWANCE:
THE CONTRACTOR IS REQUIRED TO PROVIDE THE GOVERNMENT WITH A COMPLETE PROJECT. HE/SHE SHALL INSTALL ANY ADDITIONAL HEADS, NOZZLE CHANGES, VALVES, IRRIGATION LINES, WIRE, ETC. AS NECESSARY TO ACCOMMODATE ANY NECESSARY FIELD CHANGES. THE CONTRACTOR SHALL MAKE ALL NEEDED CHANGES AS DIRECTED BY THE CONTRACTING OFFICER AND PROVIDE THE GOVERNMENT WITH A COMPLETE PROJECT AT NO ADDITIONAL COST TO THE GOVERNMENT.

CHECK VALVES:
INSTALL CHECK VALVES AT THE BASE OF ANY HEADS THAT DISPLAY LOW END DRAINAGE. THESE SHALL BE INCLUDED IN THE CONTRACTORS PRICE AND SHALL BE ADDED AS DIRECTED BY THE CONTRACTING OFFICER AND PROVIDE THE GOVERNMENT WITH A COMPLETE PROJECT WITH NO ADDITIONAL COST TO THE GOVERNMENT.

SLEEVING:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATELY SIZED SLEEVING FOR ALL IRRIGATION, LIGHTING AND OTHER LANDSCAPE COMPONENTS. THE DRAWINGS ARE INTENDED TO BE A GUIDE ONLY. SLEEVES SHALL BE CLEARLY MARKED DURING CONSTRUCTION AND SHALL OCCUR UNDER ALL PAVED AREAS WIDER THAN 5' AND SHALL EXTEND 1' MINIMUM BEYOND ALL PAVING.

ELECTRICAL SERVICE:
ALL EXPOSED 110V WIRES SHALL BE PLACED IN RIGID METAL CONDUIT AND HARD WIRED DIRECTLY TO 110V SERVICE. ALL EXPOSED LOW VOLTAGE WIRE FOR IRRIGATION SHALL ALSO BE PLACED IN RIGID METAL CONDUIT.

TEST:
WHILE TRENCHES ARE OPEN, PLACE ALL LINES UNDER WORKING PRESSURE FOR 2 HOURS UNDER OBSERVATION OF GOVERNMENT'S REPRESENTATIVE. REPAIR OR REPLACE ANY DEFECTIVE ELEMENTS AND REPEAT TEST UNTIL ALL VISIBLE LEAKS STOP.

FINAL ACCEPTANCE:
OPERATE EACH IRRIGATION ZONE FOR THE GOVERNMENT. ITEMS DEEMED NOT ACCEPTABLE SHALL BE REPAIRED OR REPLACED TO SATISFACTION.

MAINTENANCE:
SEE PLANTING NOTES. IRRIGATION MAINTENANCE SAME AS PLANTING MAINTENANCE.

WARRANTY/GUARANTEE:
MANUFACTURERS SHALL WARRANTY MATERIALS AGAINST DEFECTS FOR A MINIMUM PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. INSTALLER SHALL GUARANTEE WORKMANSHIP FOR THE SAME PERIOD.

NOTE:
IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY.

APPR.	DESCRIPTION	REV	DATE
	100% DESIGN SUBMITTAL		17 AUG 13
	95% DESIGN SUBMITTAL		8 APR 13
	65% DESIGN SUBMITTAL		31 JUL 12
	35% DESIGN SUBMITTAL		27 OCT 11

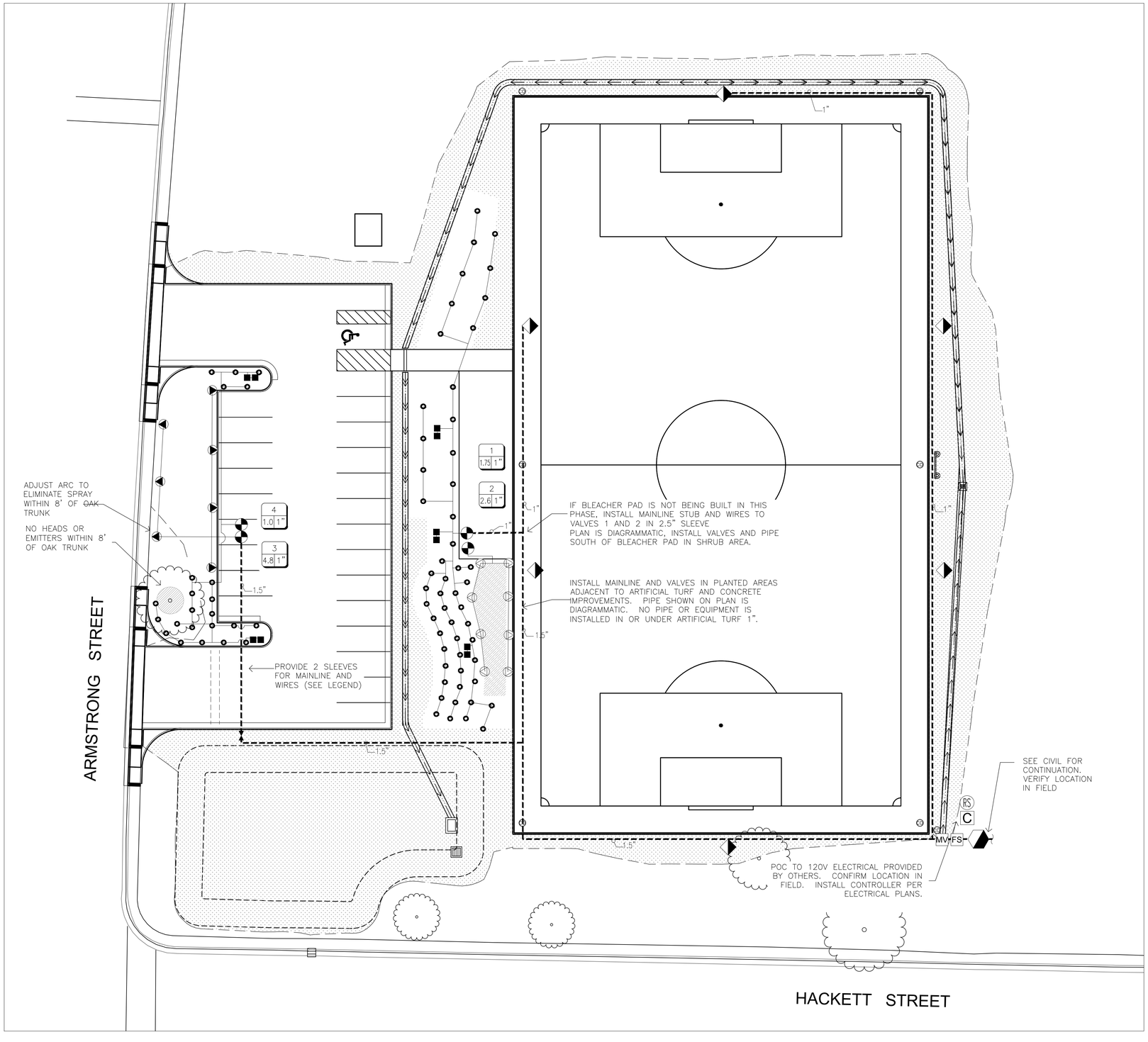
REGISTERED LANDSCAPE ARCHITECT — K. HUTMACHER — DATE: 8-17-13 — EXP. 5-2014 — STATE OF CALIFORNIA

DESIGNED BY: KH
DRWN BY: KH
CKD BY: DV
REVIEWED BY: KH
SUBMITTED BY: KMW
DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
CALIFORNIA

TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
LANDSCAPE NOTES

CODE ID. NO. – SIZE: 22X34
SCALE:
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 18 OF 21
L-001



IRRIGATION LEGEND:

KEY	MFR.	DESCRIPTION	MODEL
C	IRRITROL*	IRRIGATION CONTROLLER	MC-6E (BLUE) OUTDOOR PED MOUNT. VERIFY LOCATION
RS	TORO*	WIRELESS CLIMATE-LOGIC	MODEL CL-100 MOUNT PER MFR. INSTRUCTIONS IN LOCATION SHOWN
	FEBCO*	REDUCED PRESSURE BACKFLOW DEVICE	1.5" 765 WITH POLAR BLANKET
MV	SUPERIOR	NORMALLY OPEN MASTER VALVE	3300 LOW FLOW
FS	IRRITROL	FLOW SENSOR	FS B-100
	KBI*	LO-TORQUE BALL VALVE	PVC TYPE 2 SCH. 80 BALL VALVE
	IRRITROL*	ELECTRIC CONTROL VALVE W/ PRESSURE REGULATOR	700 SERIES WITH OMNI-REG SIZE PER PLAN
	RAINBIRD*	1" QUICK COUPLER	44-RC FURNISH MATCHING KEY AND HOSE SWIVEL TO GOV'T PRIOR TO SUBSTANTIAL COMPLETION
	HUNTER*	1000 SERIES MP ROTATOR 6" POP-UP SPRAY HEAD	MP1000-Q, H, F MPR40-06CV BODY
	HUNTER*	2000 SERIES MP ROTATOR 6" POP-UP SPRAY HEAD	MP2000-Q, H MPR40-06CV BODY
	RAINBIRD*	TREE SPRAY	SQ HLF, SET TO 4' RADIUS 1806 PRS BODY
	BOWSMITH*	POINT EMITTER	SL-220 SEE DETAIL G/L-501. ONE PER PLANT
	APPROVED	MAINLINE	SCH 40 PVC, BURY 18", 24" UNDER DRIVING SURFACE. MIN. SIZE SHOWN 2" UNLESS OTHERWISE NOTED ON PLAN.
	APPROVED	LATERAL LINES	SCH 40 PVC, BURY 12", 24" UNDER DRIVING SURFACE. MIN. SIZE SHOWN 1" UNLESS OTHERWISE NOTED ON PLAN. IN NO CASE MAY VELOCITY EXCEED 5 FPS.
	APPROVED	SLEEVING	SCH. 40 PVC, 2 TIMES LARGER THAN IRRIGATION LINE. WIRE SLEEVE MIN 3/4", SEPARATE FROM MAINLINE SLEEVE. BURY 24" UNDER DRIVING SURFACE.

2 ← VALVE NUMBER
2.6 1" ← VALVE SIZE
APPROXIMATE GALLONS PER MINUTE

LATERAL PIPE SIZING
0 – 7 GPM: 1"
8 – 28 GPM: 1.5"
28 – 50 GPM: 2"
50 – 70 GPM: 2.5"

* SPACING AND HYDRAULICS BASED ON EQUIPMENT IN LEGEND. APPROVED EQUAL EQUIPMENT IS ACCEPTABLE – CONTRACTOR WILL BE RESPONSIBLE FOR FURNISHING REVISED PLAN AND CALCULATIONS PRIOR TO APPROVAL AND CONSTRUCTION

HYDROZONE TABLE
VALVE # HYDROZONE

1 POINT EMITTERS ON LOW WATER USE PLANTS
2 LOW VOLUME ROTATORS ON BUFFALO GRASS
3 LOW VOLUME ROTATORS ON LOW WATER USE GROUND COVER AND SHRUBS
4 POINT EMITTERS ON LOW WATER USE PLANTS

NORTH

0 20 40 60
SCALE FEET
1" = 20'

NOTE:
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REV	DESCRIPTION	DATE
35%	DESIGN SUBMITTAL	27 OCT 11
65%	DESIGN SUBMITTAL	31 JUL 12
95%	DESIGN SUBMITTAL	8 APR 13
100%	DESIGN SUBMITTAL	17 AUG 13

APPR.

REGISTERED LANDSCAPE ARCHITECT K. HUTMACHER
DATE: 8-17-13
EXP. 5-2014
STATE OF CALIFORNIA

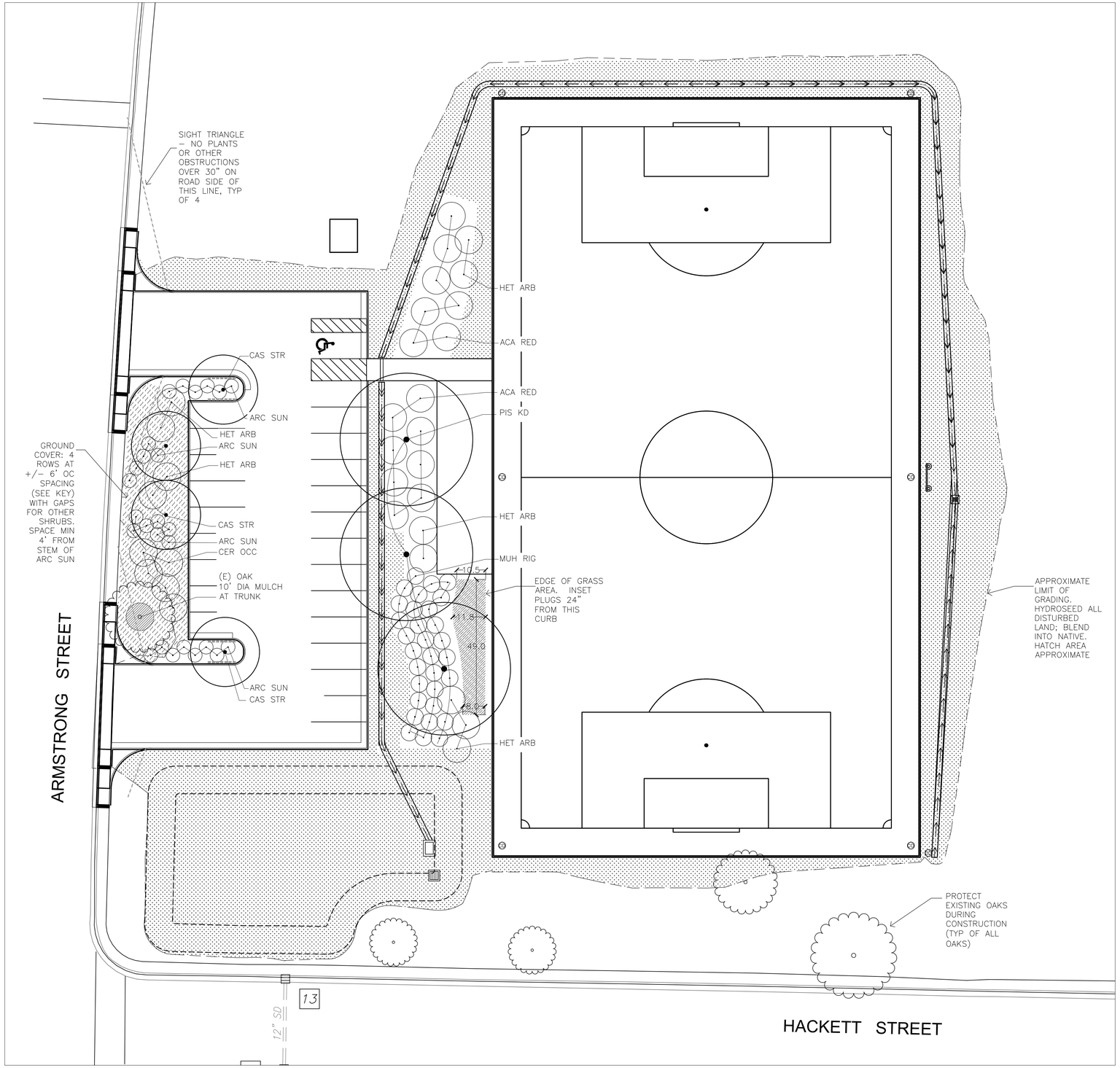
DESIGNED BY: KH
DWN BY: KH
CKD BY: DV
REVIEWED BY: KH
SUBMITTED BY: KMW

DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
CALIFORNIA

TRAVIS AIR FORCE BASE
WEST OF TWIN PEAKS SOCCER FIELD
IRRIGATION PLAN

CODE ID. NO. – SIZE: 22X34
SCALE:
EFD NO.
STA. PROJ. NO. XDAT 10-1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 19 OF 21
L-101



GENERAL NOTES:

1. FOR GRADING AND DRAINAGE SEE CG SHEETS.
2. FOR ELECTRICAL, SEE E SHEETS.
3. FOR CIVIL, SEE C SHEETS.

PLANTING LEGEND:

SYM	BOTANICAL NAME	COMMON NAME	SIZE	WUCCOLS	QUAN**	
TREES						
CAS SYR	CASUARINA STRICTA	COAST BEEFWOOD	15 G.	L	4	
PIS KD	PISTACIA C. 'KEITH DAVIES'	KEITH DAVIES PISTACHE	15 G.	L	3	
SHRUBS						
ACA RED	ACACIA R. 'DESERT CARPET'	PROSTRATE ACACIA	5 G.	L	15	SPACE 12' OC
ARC SUN	ARCTOSTAPHYLOS 'SUNSET'	SUNSET MAZANITA	5 G.	L	26	
CER OCC	CERCIS OCCIDENTALIS	WESTERN REDBUD	5 G.	L	5	NATURAL MULTI
HET ARB	HETEROMELES ARBUTIFOLIA	TOYON	5 G.	L	11	
MUH RIG	MUHLENBERGIA RIGENS	DEER GRASS	5 G.	L	31	SPACE 6' OC

GROUND COVERS

NATIVE ORNAMENTAL BIOSWALE MIX BY PACIFIC COAST SEED (925.373.4417) OR OTHER APPROVED VENDOR
FESTUCA RUBRA MOLATE 30#/AC
FESTUCA OCCIDENTALIS 20#/AC
FESTUCA IDAHOENSIS 20#/AC
DESCHAMPSIA CAESPITOSA HOLCIFORMIS 8#/AC
CAREX PRAEGRACILIS 2#/AC
TOTAL: 145#/AC
SEE SPECS FOR HYDROSEED SPEC AND OTHER MATERIALS
** APPROXIMATELY 21,700 SF

ARCTOSTAPHYLOS 'EMERALD CARPET' 72" OC. FROM 1 GAL (TRIANGULATED)
** APPROXIMATELY 53 PLANTS

BUCHLOE DACTYLOIDES U.C. VERDE BUFFALO GRASS, FROM PLUGS 24" OC (TRIANGULATED). AVAILABLE FROM TAKAO NURSERY 559.275.3844 WWW.UCVERDEBUFFALOGRASS.COM OR OTHER APPROVED VENDOR
NOTE: FIRST ROW TO BE 24" INSIDE EDGE OF CONCRETE CURB
** APPROXIMATELY 135 PLUGS

REQUIRED ROOT BARRIERS. ADDITIONAL ROOT BARRIERS MAY BE REQUIRED – SEE DETAIL FOR REQUIREMENTS.

EXISTING OAK TREES TO REMAIN

** QUANTITIES FURNISHED FOR CONVENIENCE ONLY, CONTRACTOR IS RESPONSIBLE FOR ALL PLANTS SHOWN ON PLAN.

NORTH

0 20 40 60
SCALE FEET
1" = 20'

NOTE:
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REV	DATE	DESCRIPTION	APPR.
D	17 AUG 13	100% DESIGN SUBMITTAL	
C	8 APR 13	95% DESIGN SUBMITTAL	
B	31 JUL 12	65% DESIGN SUBMITTAL	
A	27 OCT 11	35% DESIGN SUBMITTAL	

LICENSED LANDSCAPE ARCHITECT
K. HUTMACHER
DATE: 8-17-13
EXP. 5-2014
STATE OF CALIFORNIA

DESIGNED BY: KH
DWN BY: KH
CKD BY: DV
REVIEWED BY: KH
SUBMITTED BY: KMW

DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
CALIFORNIA

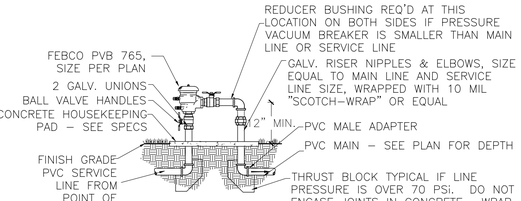
TRAVIS AIR FORCE BASE

WEST OF TWIN PEAKS SOCCER FIELD

PLANTING PLAN

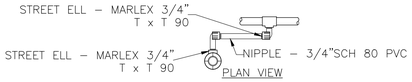
CODE ID. NO. – SIZE: 22X34
SCALE:
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 20 OF 21

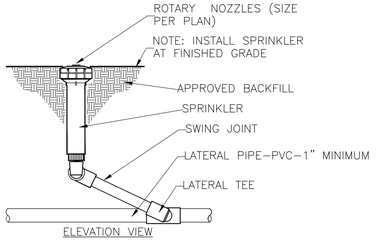
L–102



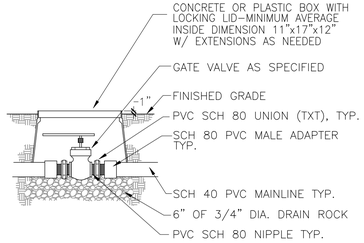
NOTE:
1. ALL THREADED JOINTS TO BE WRAPPED WITH TEFLON TAPE
2. CONTRACTOR TO PROVIDE POLAR BARRIER BLANKET WITH GROMMETS TO FIT.
3. BOTTOM OF BACKFLOW MIN 12" ABOVE HIGHEST HEAD

A BACKFLOW DEVICE
NTS

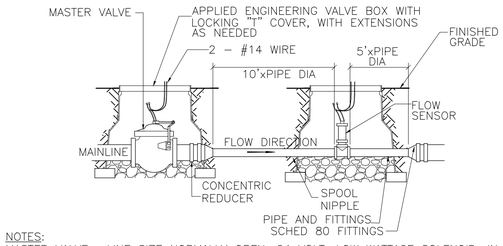




B ROTARY DRIVE POP-UPS
NTS



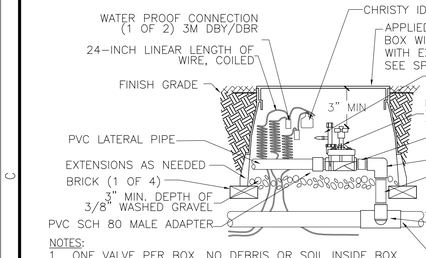
C BALL VALVE
NTS



NOTES:
MASTER VALVE: LINE SIZE NORMALLY OPEN, 24 VOLT, LOW WATTAGE SOLENOID. IN VALVE BOX. SUPERIOR OR EQUAL. WIRE TO CONTROLLER FROM MASTER VALVE TO BE UF DIRECT BURIAL 14 AWG IN CONDUIT, SEE SPEC AND NOTES.

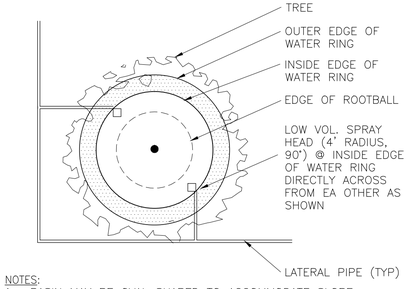
FLOW SENSOR: IRRITROL MODEL # FS–B100 IN VALVE BOX. THE WIRE BETWEEN THE CONTROLLER AND FLOW METER SHALL BE UF DIRECT–BURIAL SHIELDED TYPE 14 AWG AND SHALL BE CONTINUOUS WITHOUT ANY SPLICES BETWEEN THESE TWO POINTS. WIRE CONNECTIONS SHALL BE MADE WITH 3M 'SCOTCH–LOC' OR DBY CONNECTORS THAT PROVIDE A WATERPROOF CONNECTION EVEN DURING PROLONGED PERIODS OF IMMERSION.

D MASTER VALVE AND FLOW SENSOR
NTS



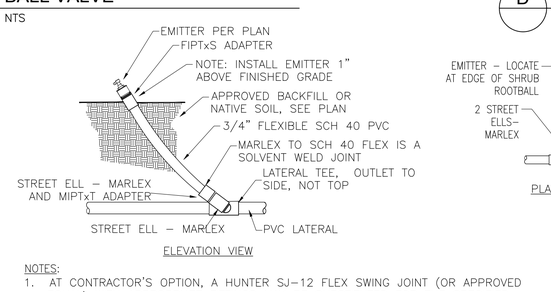
NOTES:
1. ONE VALVE PER BOX, NO DEBRIS OR SOIL INSIDE BOX
2. FINISH GRADE INSIDE & OUTSIDE BOX AS SHOWN
3. BOX SHALL NOT REST UPON OR TOUCH VALVE OR PVC LINES AT ANY POINT
4. TEFLON TAPE REQUIRED ON ALL THREADED JOINTS, METAL OR PLASTIC
5. ALL THREADED FITTINGS SHALL BE PVC SCH. 80

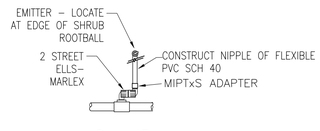
E REMOTE CONTROL VALVE DETAIL
NTS



NOTES:
1. BASIN MAY BE OVAL SHAPED TO ACCOMMODATE SLOPE
2. BUILD BASIN MIN 4" DEEP ON DOWNHILL SIDE AND SOLID ENOUGH TO RETAIN 2" OF WATER.

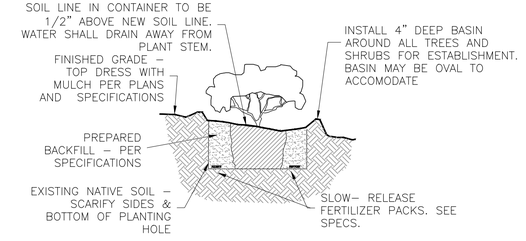
F TYP LAYOUT OF TREE SPRAY HEADS
NTS





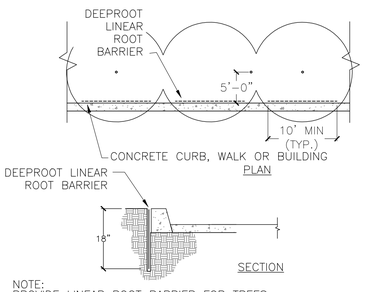
NOTES:
1. AT CONTRACTOR'S OPTION, A HUNTER SJ–12 FLEX SWING JOINT (OR APPROVED EQUAL) WITH APPROPRIATE FITTINGS MAY BE SUBSTITUTED FOR THE SPECIFIED ASSEMBLY.
2. BUILD BASIN AROUND EACH PLANT TO RETAIN WATER. BASIN MAY BE OVAL SHAPED TO ACCOMMODATE SLOPE
3. BUILD BASIN MIN 4" DEEP ON DOWNHILL SIDE AND SOLID ENOUGH TO RETAIN 2" OF WATER.

G BOWSMITH POINT EMITTER
NTS



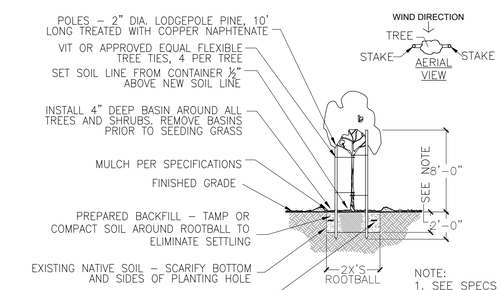
NOTE:
1. EXCAVATE SOIL THROUGH CONSTRUCTION COMPACTION LAYER.
2. COMPACT BOTTOM OF PIT TO ELIMINATE SETTLING
3. SEE SPECS REGARDING PIT DRAINAGE

K SHRUB PLANTING
NTS



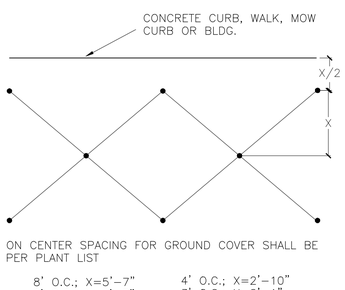
NOTE:
PROVIDE LINEAR ROOT BARRIER FOR TREES PLANTED WITHIN 5' OF CURB

H ROOT BARRIERS
NTS



NOTE:
1. SEE SPECS REGARDING DEPTH OF PIT, OVEREXCAVATION AND DRAINAGE OF PIT

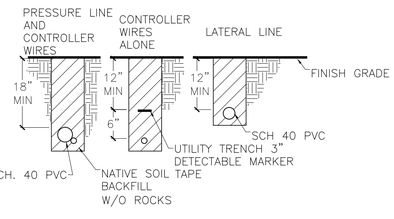
I TREE PLANTING & STAKING
NTS



ON CENTER SPACING FOR GROUND COVER SHALL BE PER PLANT LIST

8' O.C.; X=5'–7"	4' O.C.; X=2'–10"
6' O.C.; X=4'–3"	3' O.C.; X=2'–1"
5' O.C.; X=3'–6"	2' O.C.; X=1'–5"

J GROUNDCOVER SPACING
NTS



NOTE:
SEE NOTES AND IRRIGATION KEY FOR PIPE INSTALLATION UNDER PAVING
TAPE CONTROLLER WIRES TO PRESSURE LINE 10' O.C.

L TRENCHING
NTS

NOTE:
IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT – SCALE REDUCED ACCORDINGLY.

APPR.	DESCRIPTION	REV	DATE
	100% DESIGN SUBMITTAL		17 AUG 13
	95% DESIGN SUBMITTAL		8 APR 13
	65% DESIGN SUBMITTAL		31 JUL 12
	35% DESIGN SUBMITTAL		27 OCT 11

REGISTERED LANDSCAPE ARCHITECT — S. HUTMACHER — DATE: 8-17-13 — EXP. 5-2014 — STATE OF CALIFORNIA

DESIGNED BY: KH
DRAWN BY: KH
REVIEWED BY: KH
SUBMITTED BY: KMW
CKD BY: DV
DATE: 17 AUG 2013
PROJECT NUMBER: P501110044
DRAWING CODE:
FILE NAME:

UNITED STATES AIR FORCE
TRAVIS AFB
60th CIVIL ENGINEER SQUADRON
TRAVIS AIR FORCE BASE
CALIFORNIA
WEST OF TWIN PEAKS SOCCER FIELD
LANDSCAPE DETAILS

CODE ID. NO. – SIZE: 22X34
SCALE:
EFD NO.
STA. PROJ. NO. XDAT 10–1677
SPEC. NO. –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO.
SHEET 21 OF 21
L–501

Appendix C

Air Quality

Soccer Fields - Alternative 1

Solano-Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	0.30	Acre	0.30	13,068.00	0
City Park	1.00	Acre	1.00	43,560.00	0
City Park	0.50	Acre	0.50	21,780.00	0
User Defined Recreational	0.30	User Defined Unit	0.30	0.00	0
User Defined Recreational	0.20	User Defined Unit	0.20	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	56
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 0.3 acres for bleacher and concrete pad; concrete pathway; and equipment shed and concrete pad.
0.2 acres for detention basin

Construction Phase - No demolition activities required.
Building construction is for small equipment shed.
Architectural coating is for small equipment shed only.
Site prep is for excavation of 713 CY of material for detention pond.
Grading is for 3.9 acres.

Off-road Equipment - Manually applied.

Off-road Equipment - No cranes or forklifts needed for small equipment shed.

Off-road Equipment - No demo.

Off-road Equipment -

Off-road Equipment - No mixers needed, material brought onsite by truck.

Off-road Equipment -

Trips and VMT - 3 workers assigned per task, assume no commuting together.
125 dump truck loads (12 Yds) for field area clearing and detention pond excavation
33 vendor trips to bring gravel and asphalt.

On-road Fugitive Dust - No demo.
Grader wt = 14 tons
Dump truck wt = 12 tons (empty)

Demolition - No demolition.

Grading - Total area of excavation is 7700 sf or 0.17 acre. No bulldozing required.
Total area graded is 3.9 acres, no bulldozing required.

Architectural Coating - Assume equipment shed measures 10X10.

Vehicle Trips - All users are assumed to be from residential

Road Dust - Unpaved area is soccer field area.

Consumer Products - No products in use

Area Coating - Small shed.

Landscape Equipment - artificial turf

Water And Wastewater - Artificial turf

Land Use Change -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	32,866.00	400.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	98,598.00	400.00
tblAreaCoating	Area_Nonresidential_Interior	98598	400
tblConstructionPhase	NumDays	10.00	2.00
tblConstructionPhase	NumDays	220.00	4.00
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	NumDays	6.00	5.00
tblConstructionPhase	NumDays	10.00	3.00
tblConstructionPhase	NumDays	3.00	5.00
tblConstructionPhase	PhaseEndDate	6/30/2017	6/27/2017
tblConstructionPhase	PhaseEndDate	6/14/2017	6/16/2017
tblConstructionPhase	PhaseEndDate	6/27/2017	6/28/2017
tblConstructionPhase	PhaseEndDate	1/16/2017	6/7/2017
tblConstructionPhase	PhaseStartDate	6/29/2017	6/26/2017
tblConstructionPhase	PhaseStartDate	6/17/2017	6/19/2017
tblConstructionPhase	PhaseStartDate	6/8/2017	6/12/2017
tblConstructionPhase	PhaseStartDate	6/23/2017	6/26/2017
tblConstructionPhase	PhaseStartDate	1/10/2017	6/1/2017
tblGrading	AcresOfGrading	2.50	3.90
tblGrading	AcresOfGrading	7.50	3.90
tblGrading	MaterialExported	0.00	731.00
tblLandUse	LotAcreage	0.00	0.20
tblLandUse	LotAcreage	0.00	0.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOnRoadDust	AverageVehicleWeight	2.40	6.00
tblOnRoadDust	AverageVehicleWeight	2.40	14.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblOnRoadDust	MeanVehicleSpeed	40.00	5.00
tblOnRoadDust	MeanVehicleSpeed	40.00	5.00
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2018
tblRoadDust	MeanVehicleSpeed	40	3
tblRoadDust	RoadPercentPave	94	99
tblTripsAndVMT	HaulingTripNumber	91.00	160.00
tblTripsAndVMT	HaulingTripNumber	0.00	33.00
tblTripsAndVMT	VendorTripNumber	13.00	1.00
tblTripsAndVMT	WorkerTripNumber	8.00	3.00
tblTripsAndVMT	WorkerTripNumber	10.00	3.00
tblTripsAndVMT	WorkerTripNumber	33.00	3.00
tblTripsAndVMT	WorkerTripNumber	10.00	3.00

tblTripsAndVMT	WorkerTripNumber	7.00	1.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	HO_TTP	0.00	100.00
tblVehicleTrips	ST_TR	1.59	50.00
tblVehicleTrips	SU_TR	1.59	20.00
tblVehicleTrips	WD_TR	1.59	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.0245	0.2222	0.1572	2.4000e-004	0.0587	0.0112	0.0699	0.0132	0.0104	0.0236	0.0000	22.3142	22.3142	4.5300e-003	0.0000	22.4093
Total	**0.0245**	**0.2222**	**0.1572**	**2.4000e-004**	**0.0587**	**0.0112**	**0.0699**	**0.0132**	**0.0104**	**0.0236**	**0.0000**	**22.3142**	**22.3142**	**4.5300e-003**	**0.0000**	**22.4093**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.0245	0.2222	0.1572	2.4000e-004	0.0230	0.0112	0.0342	9.7000e-003	0.0104	0.0201	0.0000	22.3142	22.3142	4.5300e-003	0.0000	22.4092
Total	**0.0245**	**0.2222**	**0.1572**	**2.4000e-004**	**0.0230**	**0.0112**	**0.0342**	**9.7000e-003**	**0.0104**	**0.0201**	**0.0000**	**22.3142**	**22.3142**	**4.5300e-003**	**0.0000**	**22.4092**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**60.79**	**0.00**	**51.03**	**26.74**	**0.00**	**14.99**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3178	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.3454	3.3454	1.5000e-004	3.0000e-005	3.3583
Mobile	0.0188	0.0185	0.1818	2.0000e-005	1.1000e-004	6.0000e-005	1.8000e-004	2.0000e-005	6.0000e-005	8.0000e-005	0.0000	1.5935	1.5935	2.1000e-004	0.0000	1.5979
Waste						0.0000	0.0000		0.0000	0.0000	0.0264	0.0000	0.0264	1.5600e-003	0.0000	0.0591
Water						0.0000	0.0000		0.0000	0.0000	0.0000	1.8197	1.8197	8.0000e-005	2.0000e-005	1.8267
Total	**0.3366**	**0.0185**	**0.1818**	**2.0000e-005**	**1.1000e-004**	**6.0000e-005**	**1.8000e-004**	**2.0000e-005**	**6.0000e-005**	**8.0000e-005**	**0.0264**	**6.7587**	**6.7851**	**2.0000e-003**	**5.0000e-005**	**6.8422**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3178	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.3454	3.3454	1.5000e-004	3.0000e-005	3.3583
Mobile	0.0188	0.0185	0.1818	2.0000e-005	1.1000e-004	6.0000e-005	1.8000e-004	2.0000e-005	6.0000e-005	8.0000e-005	0.0000	1.5935	1.5935	2.1000e-004	0.0000	1.5979
Waste						0.0000	0.0000		0.0000	0.0000	0.0264	0.0000	0.0264	1.5600e-003	0.0000	0.0591
Water						0.0000	0.0000		0.0000	0.0000	0.0000	1.8197	1.8197	8.0000e-005	2.0000e-005	1.8267
Total	**0.3366**	**0.0185**	**0.1818**	**2.0000e-005**	**1.1000e-004**	**6.0000e-005**	**1.8000e-004**	**2.0000e-005**	**6.0000e-005**	**8.0000e-005**	**0.0264**	**6.7587**	**6.7851**	**2.0000e-003**	**5.0000e-005**	**6.8422**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-9.9130
Total	**-9.9130**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/9/2017	1/9/2017	5	1	
2	Site Preparation	Site Preparation	6/1/2017	6/7/2017	5	5	
3	Grading	Grading	6/12/2017	6/16/2017	5	5	
4	Building Construction	Building Construction	6/19/2017	6/22/2017	5	4	
5	Paving	Paving	6/26/2017	6/28/2017	5	3	
6	Architectural Coating	Architectural Coating	6/26/2017	6/27/2017	5	2	

Acres of Grading (Site Preparation Phase): 3.9

Acres of Grading (Grading Phase): 3.9

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 400; Non-Residential Outdoor: 400 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	3.00	0.00	160.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	3.00	0.00	33.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.2500e-003	0.0000	2.2500e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3200e-003	0.0716	0.0428	6.0000e-005		3.4900e-003	3.4900e-003		3.2100e-003	3.2100e-003	0.0000	5.5326	5.5326	1.7000e-003	0.0000	5.5682
Total	**6.3200e-003**	**0.0716**	**0.0428**	**6.0000e-005**	**2.2500e-003**	**3.4900e-003**	**5.7400e-003**	**2.5000e-004**	**3.2100e-003**	**3.4600e-003**	**0.0000**	**5.5326**	**5.5326**	**1.7000e-003**	**0.0000**	**5.5682**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8900e-003	0.0190	0.0235	6.0000e-005	2.9300e-003	2.8000e-004	3.2100e-003	7.6000e-004	2.5000e-004	1.0100e-003	0.0000	5.3791	5.3791	4.0000e-005	0.0000	5.3798
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	4.0000e-005	3.9000e-004	0.0000	0.0357	0.0000	0.0357	3.5500e-003	0.0000	3.5500e-003	0.0000	0.0562	0.0562	0.0000	0.0000	0.0563
Total	**1.9100e-003**	**0.0190**	**0.0239**	**6.0000e-005**	**0.0386**	**2.8000e-004**	**0.0389**	**4.3100e-003**	**2.5000e-004**	**4.5600e-003**	**0.0000**	**5.4352**	**5.4352**	**4.0000e-005**	**0.0000**	**5.4361**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.2500e-003	0.0000	2.2500e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3200e-003	0.0716	0.0428	6.0000e-005		3.4900e-003	3.4900e-003		3.2100e-003	3.2100e-003	0.0000	5.5325	5.5325	1.7000e-003	0.0000	5.5681
Total	**6.3200e-003**	**0.0716**	**0.0428**	**6.0000e-005**	**2.2500e-003**	**3.4900e-003**	**5.7400e-003**	**2.5000e-004**	**3.2100e-003**	**3.4600e-003**	**0.0000**	**5.5325**	**5.5325**	**1.7000e-003**	**0.0000**	**5.5681**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8900e-003	0.0190	0.0235	6.0000e-005	2.9300e-003	2.8000e-004	3.2100e-003	7.6000e-004	2.5000e-004	1.0100e-003	0.0000	5.3791	5.3791	4.0000e-005	0.0000	5.3798
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	4.0000e-005	3.9000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0562	0.0562	0.0000	0.0000	0.0563
Total	**1.9100e-003**	**0.0190**	**0.0239**	**6.0000e-005**	**2.9400e-003**	**2.8000e-004**	**3.2200e-003**	**7.6000e-004**	**2.5000e-004**	**1.0100e-003**	**0.0000**	**5.4352**	**5.4352**	**4.0000e-005**	**0.0000**	**5.4361**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0171	0.0000	0.0171	8.5000e-003	0.0000	8.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7400e-003	0.0704	0.0474	5.0000e-005		3.8900e-003	3.8900e-003		3.5800e-003	3.5800e-003	0.0000	4.7731	4.7731	1.4600e-003	0.0000	4.8038
Total	**6.7400e-003**	**0.0704**	**0.0474**	**5.0000e-005**	**0.0171**	**3.8900e-003**	**0.0210**	**8.5000e-003**	**3.5800e-003**	**0.0121**	**0.0000**	**4.7731**	**4.7731**	**1.4600e-003**	**0.0000**	**4.8038**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	4.0000e-005	3.9000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0562	0.0562	0.0000	0.0000	0.0563
Total	**2.0000e-005**	**4.0000e-005**	**3.9000e-004**	**0.0000**	**3.2000e-004**	**0.0000**	**3.2000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.0562**	**0.0562**	**0.0000**	**0.0000**	**0.0563**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0171	0.0000	0.0171	8.5000e-003	0.0000	8.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7400e-003	0.0704	0.0474	5.0000e-005		3.8900e-003	3.8900e-003		3.5800e-003	3.5800e-003	0.0000	4.7731	4.7731	1.4600e-003	0.0000	4.8038
Total	**6.7400e-003**	**0.0704**	**0.0474**	**5.0000e-005**	**0.0171**	**3.8900e-003**	**0.0210**	**8.5000e-003**	**3.5800e-003**	**0.0121**	**0.0000**	**4.7731**	**4.7731**	**1.4600e-003**	**0.0000**	**4.8038**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	4.0000e-005	3.9000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0562	0.0562	0.0000	0.0000	0.0563
Total	**2.0000e-005**	**4.0000e-005**	**3.9000e-004**	**0.0000**	**3.2000e-004**	**0.0000**	**3.2000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.0562**	**0.0562**	**0.0000**	**0.0000**	**0.0563**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6500e-003	0.0353	0.0210	3.0000e-005		2.1600e-003	2.1600e-003		2.0300e-003	2.0300e-003	0.0000	3.1070	3.1070	7.0000e-004	0.0000	3.1216
Total	**3.6500e-003**	**0.0353**	**0.0210**	**3.0000e-005**		**2.1600e-003**	**2.1600e-003**		**2.0300e-003**	**2.0300e-003**	**0.0000**	**3.1070**	**3.1070**	**7.0000e-004**	**0.0000**	**3.1216**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.8000e-004	3.5000e-004	0.0000	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0423	0.0423	0.0000	0.0000	0.0423
Worker	2.0000e-005	3.0000e-005	3.2000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0450	0.0450	0.0000	0.0000	0.0450
Total	**5.0000e-005**	**2.1000e-004**	**6.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0873**	**0.0873**	**0.0000**	**0.0000**	**0.0874**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6500e-003	0.0353	0.0210	3.0000e-005		2.1600e-003	2.1600e-003		2.0300e-003	2.0300e-003	0.0000	3.1070	3.1070	7.0000e-004	0.0000	3.1216
Total	**3.6500e-003**	**0.0353**	**0.0210**	**3.0000e-005**		**2.1600e-003**	**2.1600e-003**		**2.0300e-003**	**2.0300e-003**	**0.0000**	**3.1070**	**3.1070**	**7.0000e-004**	**0.0000**	**3.1216**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.8000e-004	3.5000e-004	0.0000	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0423	0.0423	0.0000	0.0000	0.0423
Worker	2.0000e-005	3.0000e-005	3.2000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0450	0.0450	0.0000	0.0000	0.0450
Total	**5.0000e-005**	**2.1000e-004**	**6.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0873**	**0.0873**	**0.0000**	**0.0000**	**0.0874**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9000e-003	0.0196	0.0140	2.0000e-005		1.1700e-003	1.1700e-003		1.0800e-003	1.0800e-003	0.0000	1.9169	1.9169	5.9000e-004	0.0000	1.9293
Paving	3.9000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2900e-003**	**0.0196**	**0.0140**	**2.0000e-005**		**1.1700e-003**	**1.1700e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**1.9169**	**1.9169**	**5.9000e-004**	**0.0000**	**1.9293**

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.9000e-004	3.9200e-003	4.8400e-003	1.0000e-005	2.8000e-004	6.0000e-005	3.4000e-004	8.0000e-005	5.0000e-005	1.3000e-004	0.0000	1.1094	1.1094	1.0000e-005	0.0000	1.1096
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	3.0000e-005	2.4000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0337	0.0337	0.0000	0.0000	0.0338
Total	**4.0000e-004**	**3.9500e-003**	**5.0800e-003**	**1.0000e-005**	**3.2000e-004**	**6.0000e-005**	**3.8000e-004**	**9.0000e-005**	**5.0000e-005**	**1.4000e-004**	**0.0000**	**1.1432**	**1.1432**	**1.0000e-005**	**0.0000**	**1.1434**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9000e-003	0.0196	0.0140	2.0000e-005		1.1700e-003	1.1700e-003		1.0800e-003	1.0800e-003	0.0000	1.9169	1.9169	5.9000e-004	0.0000	1.9293
Paving	3.9000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2900e-003**	**0.0196**	**0.0140**	**2.0000e-005**		**1.1700e-003**	**1.1700e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**1.9169**	**1.9169**	**5.9000e-004**	**0.0000**	**1.9293**

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.9000e-004	3.9200e-003	4.8400e-003	1.0000e-005	2.8000e-004	6.0000e-005	3.4000e-004	8.0000e-005	5.0000e-005	1.3000e-004	0.0000	1.1094	1.1094	1.0000e-005	0.0000	1.1096
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	3.0000e-005	2.4000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0337	0.0337	0.0000	0.0000	0.0338
Total	**4.0000e-004**	**3.9500e-003**	**5.0800e-003**	**1.0000e-005**	**3.2000e-004**	**6.0000e-005**	**3.8000e-004**	**9.0000e-005**	**5.0000e-005**	**1.4000e-004**	**0.0000**	**1.1432**	**1.1432**	**1.0000e-005**	**0.0000**	**1.1434**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	2.1900e-003	1.8700e-003	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	0.2553	0.2553	3.0000e-005	0.0000	0.2559
Total	**3.1100e-003**	**2.1900e-003**	**1.8700e-003**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.2553**	**0.2553**	**3.0000e-005**	**0.0000**	**0.2559**

3.7 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	1.0000e-005	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	7.4900e-003	7.4900e-003	0.0000	0.0000	7.5000e-003
Total	**0.0000**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**7.4900e-003**	**7.4900e-003**	**0.0000**	**0.0000**	**7.5000e-003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	2.1900e-003	1.8700e-003	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	0.2553	0.2553	3.0000e-005	0.0000	0.2559
Total	**3.1100e-003**	**2.1900e-003**	**1.8700e-003**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.2553**	**0.2553**	**3.0000e-005**	**0.0000**	**0.2559**

3.7 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	1.0000e-005	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	7.4900e-003	7.4900e-003	0.0000	0.0000	7.5000e-003
Total	**0.0000**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**7.4900e-003**	**7.4900e-003**	**0.0000**	**0.0000**	**7.5000e-003**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0188	0.0185	0.1818	2.0000e-005	1.1000e-004	6.0000e-005	1.8000e-004	2.0000e-005	6.0000e-005	8.0000e-005	0.0000	1.5935	1.5935	2.1000e-004	0.0000	1.5979
Unmitigated	0.0188	0.0185	0.1818	2.0000e-005	1.1000e-004	6.0000e-005	1.8000e-004	2.0000e-005	6.0000e-005	8.0000e-005	0.0000	1.5935	1.5935	2.1000e-004	0.0000	1.5979

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	20.00	50.00	20.00	53	53
City Park	10.00	25.00	10.00	27	27
Parking Lot	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	30.00	75.00	30.00	80	80

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	0.00	0.00	0.00	66	28	6
City Park	9.50	7.30	7.30	0.00	0.00	0.00	66	28	6
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.461521	0.065953	0.153608	0.156091	0.053850	0.006915	0.008245	0.078522	0.001097	0.000786	0.009223	0.000328	0.003860

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3.3454	3.3454	1.5000e-004	3.0000e-005	3.3583
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3.3454	3.3454	1.5000e-004	3.0000e-005	3.3583
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	11499.8	3.3454	1.5000e-004	3.0000e-005	3.3583
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**3.3454**	**1.5000e-004**	**3.0000e-005**	**3.3583**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	11499.8	3.3454	1.5000e-004	3.0000e-005	3.3583
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**3.3454**	**1.5000e-004**	**3.0000e-005**	**3.3583**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3178	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005
Unmitigated	0.3178	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0116					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3062					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005
Total	**0.3178**	**0.0000**	**2.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0000**	**4.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0116					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3062					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005
Total	**0.3178**	**0.0000**	**2.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0000**	**4.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

Turf Reduction

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.8197	8.0000e-005	2.0000e-005	1.8267
Unmitigated	1.8197	8.0000e-005	2.0000e-005	1.8267

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.78722	1.8197	8.0000e-005	2.0000e-005	1.8267
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1.8197**	**8.0000e-005**	**2.0000e-005**	**1.8267**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.78722	1.8197	8.0000e-005	2.0000e-005	1.8267
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1.8197**	**8.0000e-005**	**2.0000e-005**	**1.8267**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0264	1.5600e-003	0.0000	0.0591
Unmitigated	0.0264	1.5600e-003	0.0000	0.0591

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.13	0.0264	1.5600e-003	0.0000	0.0591
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0264**	**1.5600e-003**	**0.0000**	**0.0591**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.13	0.0264	1.5600e-003	0.0000	0.0591
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0264**	**1.5600e-003**	**0.0000**	**0.0591**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-9.9130	0.0000	0.0000	-9.9130

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	3.9 / 1.6	-9.9130	0.0000	0.0000	-9.9130
Total		**-9.9130**	**0.0000**	**0.0000**	**-9.9130**