Draft Environmental Assessment -

Phase IV Expansion and Construction
at
Dallas Fort Worth National Cemetery
Dallas, Texas

United States Department of Veterans Affairs
2000 Mountain Creek Parkway
Dallas, Texas 75211

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Table of Contents

Tables

Figures

Appendices

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The Department of Veterans Affairs (VA) proposes to construct and operate additional burial sites at the existing Dallas Fort Worth (DFW) National Cemetery in Dallas, Dallas County, Texas. This Environmental Assessment (EA) has been prepared to identify, analyze, and document the potential physical, environmental, cultural, and socioeconomic effects associated with this Proposed Action.

National Environmental Policy Act (NEPA) of 1969, as amended, requires federal agencies to consider environmental consequences in their decision-making process. The President's Council on Environmental Quality (CEQ) has issued regulations to implement NEPA that include provisions for both the content and procedural aspects of the required environmental impact analysis. The intent of NEPA is to protect, restore, or enhance the environment through a well-informed decision making process. The CEQ was established under NEPA to implement and oversee federal policy in this process. To this end, the CEQ issued the Regulations for Implementing the Procedural Provisions of NEPA. The CEQ regulations declare that an EA serves to accomplish the following objectives:

- Briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI);
- Aid in an agency's compliance with NEPA when an EIS is not necessary; and
- Facilitate preparation of an EIS when necessary.

The VA accomplishes adherence to this act through 38 Code of Federal Regulations (CFR) Part 26 (Environmental Effects of the Department of Veterans Affairs Actions) and VA's *NEPA Interim Guidance for Projects* (2010), and *VA NEPA Implementation, Directive 0067* (2013). These federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action. This EA has been prepared in accordance with the regulations and guidance documents.

This section of the EA provides introductory and background information for the Proposed Action and its associated NEPA analysis, including a statement of purpose and need; the federal decision to be made; regulatory agency and tribal coordination, consultation, and input; and applicable federal, state, and local regulations. **Section 2** includes a description of the Proposed Action and alternatives considered, including those alternatives eliminated from further analysis.

1.1 Background

The United States (US) Department of Veterans Affairs is responsible for providing programs that benefit veterans and their families. The VA provides health care (including rehabilitation and counseling); burials; and a variety of benefits including education, home loans, and pensions. The Veterans Bureau was established in 1921, the bureau consolidated the Veterans Bureau, the Bureau of Pensions of the Interior Department, and the National Home for Disabled Volunteer Soldiers. The Veterans Bureau provided insurance for service personnel, disability compensation,

and medical care. In 1930, Executive Order (EO) 5398 was signed and the Veterans Bureau was designated as the Veterans Administration, at which time the National Homes and Pension Bureau was transferred to the Veterans Administration. In 1988, the Veterans Administration was raised to a cabinet-level executive department and the Veterans Administration was renamed the Department of Veterans Affairs, the VA.

On 17 July 1862, the US government purchased cemetery grounds to be used as national cemeteries "for soldiers who shall have died in the service of their country"; creating the National Cemetery System. The US government established 14 cemeteries. By 1870, 73 national cemeteries had been established. In 1930 new national cemeteries were established to service those who were living in major metropolitan areas, and not near a battle field. In 1973, 82 national cemeteries were transferred from the Department of the Army to the Veterans Administration; creating a total of 103 cemeteries under the National Cemetery System. In 1998, the National Cemetery System was renamed the National Cemetery Administration (NCA). As of today, there are 150 national cemeteries and the VA administers 136 cemeteries, two of these cemeteries are maintained by the Department of the Army (Arlington and US Soldiers the Airman's Home National Cemetery), and 14 are maintained by the Department of the Interior (cemeteries that are located within National Parks). To date, more than 21,400 acres of land have been designated for use as national cemeteries (US Department of Veterans Affairs. 2018).

The Dallas Fort Worth National Cemetery opened on 12 May 2000. The cemetery is 638.5 acres and includes areas for cremated remains and casketed burial sites. The development of the cemetery grounds has been conducted in phases, to date three phases have been completed. The first phase, was completed when the cemetery opened in 12 May 2000. Phase I included the development of 110 acres including traditional 12,000 gravesites and 2,220 columbariums/garden niches (for cremated remains). Phase II was completed by 2014 and included developing 53 acres and constructed 20,500 casketed burial sites and 4,000 columbarium niches. Phase III began in May 2016 and was completed in 2018. To date, the cemetery as 85,778 casketed burial sites and 31,918 columbarium niches. Phase III was anticipated to provide an additional five years capacity at the cemetery (National Cemetery Administration 2018). The location of the Dallas Fort Wirth National Cemetery is depicted in Figure 1.

1.2 Purpose and Need

The mission of the NCA is to honor and Veterans and their eligible family members "with final resting places in national shrines and with lasting tributes that commemorate their service and sacrifice to our Nation." The mission is accomplished by providing burial space for Veterans and their eligible family members, maintaining the cemeteries as national shrines in honor and memory of those entombed or memorialized at the cemetery, mark Veterans graves with a government furnished markers and to provide Presidential Memorial Certificates, and administer grants for establishing or expanding state and tribal government veteran cemeteries.

The purpose of the Proposed Action is to support burial requests for eligible individuals and provide sufficient onsite parking to support the needs of Veterans, family members, and staff at the Dallas Fort Worth National Cemetery.

The Proposed Action is needed to provide accessible interment services to Veterans and their families. The existing infrastructure, crypts, and columbariums cannot support burial requests for eligible individuals as well as provide sufficient onsite parking to support the needs of Veterans, family members, and staff. As of today, projections anticipate that crypts will be unavailable by 2023 and columbariums will be at capacity by 2030.

1.3 Federal Decision To Be Made

The VA is the federal decision-maker concerning this Proposed Action and controls the federal funds that would be used for its implementation, this is a federal Proposed Action. The purpose of this EA is to inform decision-makers of the potential environmental effects of the Proposed Action and alternatives prior to making a federal decision to move forward with any action. In this manner, federal decision-makers can make a fully informed decision, aware of the potential environmental effects of their Proposed Action. Overall, the purpose of this EA is to:

- Document the NEPA process;
- Inform decision-makers of the possible environmental effects of the Proposed Action and its considered alternatives, as well as methods to reduce these effects;
- Allow for regulatory agency and tribal input into the decision-making process; and
- Allow for informed decision-making by the federal government.

This decision-making includes identifying the actions that the federal government will commit to undertake to minimize environmental effects, as required under the NEPA, CEQ Regulations, 38 CFR Part 26, and *VA NEPA Implementation, Directive 0067*.

The decision to be made is whether, having taken potential physical, environmental, cultural, and socioeconomic effects into account, VA should implement the Proposed Action and, as appropriate, carry out mitigation measures to reduce effects on resources. Based upon the analysis, no potentially significant adverse impacts have been identified. VA will ultimately decide if the action is funded and constructed.

VA, as the federal proponent of the Proposed Action, will document their decision in a Finding of No Significant Impact (FONSI), if appropriate. The VA will carefully consider comments received from regulatory agencies and tribes in this decision-making process.

1.4 Agency and Native American Tribal Coordination

Federal, state, and local agencies with jurisdiction that could be affected by the proposed or alternative actions have been notified and consulted. A complete listing of the agencies consulted may be found in Chapter 4. The scoping letters and associated responses, as well as the Draft EA Coordination letters and responses are presented in Appendix A. This coordination fulfills EO 12372, *Intergovernmental Review of Federal Programs* (superseded by EO 12416 and subsequently supplemented by EO 13132), which require federal agencies to cooperate with and consider federal, state, and local views in implementing a proposal.

Federal agencies are required to consult with federally recognized Native American tribes in accordance with the NEPA, the National Historic Preservation Act (NHPA), the Native American Graves Protection and Repatriation Act (NAGPRA), and EO 13175, *Consultation and Coordination*

with Indian Tribal Governments, 6 November 2000. As part of this NEPA process, VA consulted with five federally recognized tribes (Apache Tribe of Oklahoma, Comanche Nation of Oklahoma, Coushatta Tribe of Louisiana, Tonkawa Tribe of Indians of Oklahoma, and Wichita and Affiliated Tribes) that are associated with lands within Dallas County, Texas, in accordance with applicable regulations.

1.5 Resources Eliminated From Further Analysis

Per 40 CFR 1501.7(a)(3) subject matter experts can "identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (40 CFR Part 1506.3), narrowing the discussion of these issues in the statement [EA] to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere." These resources that are anticipated to not have a significant impact and have been eliminated from further study in this document and the rationale for eliminating them are discussed below.

Aesthetics: Buildings, roads, columbariums, and burial areas associated with Phase IV will be designed, constructed, and operated in accordance with NCA Facility Design Guide Criteria, VA Program Guide PG 18-15, H-18-8 Seismic Design Requirements, and VA Signage Design Guide Chapter 12 National Cemetery Signs, and will mirror the existing design of the DFW National Cemetery; therefore no impact to aesthetics is anticipated.

Noise: The nearest noise receptor, Dallas Baptist University, is approximately 0.87 miles (4,600 feet_ from the edge of Phase IV. Noise associated with the construction of the existing infrastructure, crypts, and columbariums would be short term, intermittent, and temporary. Construction activities would be limited to daytime hours eliminating potential nighttime noise effects. Noise associated with construction activities are anticipated to be less than 60 decibels (dB) at the University based upon on the Inverse Square Law of Noise Propagation (Harris 1996). Noise levels are reduced by 6 dB as the source distance is doubled (e.g., at 50 feet -6 dBA, 100 feet -12 dBA, at 200 feet -18 dBA, at 400 feet -24 dBA, and at 800 feet -30 dBA). Based upon noise levels documented by the Federal Highway Administration, average construction site equipment dB levels range from 91-86; therefore, within 800 feet, the noise levels associated with construction would be 61-56, below the acceptable range under the U.S Department of Housing and Urban Development (HUD 2011) for residential areas. As such, adverse effects from construction noise would be negligible. Over the long term, internment activities such as burial ceremonies and ceremonial rifle discharged would temporarily increase noise generation; however, the maximum decibels associated with the M-16 rifle blank round is anticipated to be 41 decibels at 0.5 miles, based upon US Army estimates, and as noted with short-term impacts, construction associated noise would be less than 60 decibels. Due to the distance from the site and the noise receptors, the Proposed Action would not result in any short or long term impacts to increase in noise.

Land Use*:* The site, including the entire property is owned and operated by the VA and is designated for use as cemetery. The site, including the areas currently developed are zoned as Planned Development (PD) District, specifically PD 186. A Planned Development District is designated as property in which office centers, combination apartment and retail centers, shopping

centers, medical centers with office and housing elements, special industrial districts, housing developments and other similar developments can be constructed/housed (City of Dallas 2018). The site was designated as PD 186 in 1984 with the permitted of a cemetery or mausoleum. Because the site is zoned and permitted use is that of a cemetery, the land use will not require modification; therefore, the Proposed Action would not result in any substantial changes to land use.

Socioeconomics: The Proposed Action is anticipated to have a minor, short-term, temporary positive impact on the local economy as a result of construction activities within the area. The temporary positive impact should be caused by incidental spending by construction workers and the purchase of construction materials. No adverse impacts to socioeconomic resources would be expected.

Community Services: Additional community services, including police, fire, and medical, are not anticipated to be needed during the construction and upon completion of the Proposed Action. The area is currently serviced by these agencies. No adverse impacts to these services or to the site from these services are anticipated.

Transportation and Parking: The Proposed Action does not include activities associated with Spur 408 and Mountain Creek Parkway. Additional access (ingress or egress) to the site will not be constructed under this Proposed Action. Short-term impacts on these roadways are anticipated during construction, additional traffic associated with the mobilization/demobilization of equipment and labor and delivering of materials. These impacts are anticipated to be short-term, only occurring during the construction of the additional facilities. With the increase in additional interment space, the potential for an increase in visitors is present; however, it is anticipated that the additional visitors would not congregate at one time; therefore, an increase in traffic to the point to where it is noticeable is not anticipated. No adverse impacts to transportation and parking associated with the Phase IV expansion and operation is anticipated.

Utilities: The DFW National Cemetery will continue operating with to utilize existing utilities currently under contract with the DFW National Cemetery. The Proposed Action will require new groundwater well distribution lines; however, the new line(s), would utilize existing systems within the DFW National Cemetery; therefore, no impact to utilities is anticipated. In addition, the new areas that require irrigation will be done so utilizing an on-site groundwater well which is discussed under Hydrology and Water Quality. No impact to utilizes are anticipated.

Environmental Justice: There are no low-income or minority communities located within or adjacent to the boundaries of the DFW National Cemetery; the surrounding area does not include residential areas. Since the Proposed Action would occur within the boundaries of the cemetery no adverse impacts to minorities, or low-income populations are anticipated.

2.0 Description of Proposed Action and Alternatives

2.1 Introduction

This section of the EA provides a brief history of the formulation of alternatives, identification of alternatives eliminated from further consideration, a description of the Proposed Action, and a description of the No Action Alternative. The screening criteria and process developed and applied by VA to hone the number of reasonable alternatives for the Proposed Action are described, providing the reader with an understanding of VA's rationale in ultimately analyzing one Action Alternative, the Proposed Action.

2.2 Development of Alternatives

The NEPA, CEQ Regulations, and 38 CFR Part 26 require a range of reasonable alternatives to be explored rigorously and evaluated objectively. Alternatives that are eliminated from detailed analysis must be identified, along with a brief discussion of the reasons for eliminating them. For the purposes of analysis, an alternative was considered "reasonable" only if it would enable VA to accomplish the primary mission "To care for him who shall have borne the battle, and for his widow, and his orphan" that meets the purpose of and need for the Proposed Action. "Unreasonable" alternatives would not enable VA to meet the purpose or need for the Proposed Action. Based upon the mission, three alternatives were identified.

- No Action Alternative – Utilize existing developed areas within the Dallas Fort Worth and continue using the existing administrative facilities within their current configuration and functions.
- Proposed Action - Construct additional burial sites, associated roadways, administrative buildings (including maintenance and general administration), and infrastructure on existing NCA property
- Alternative - Purchase undeveloped property beyond the boundaries of the NCA property and construct additional burial sites, associated roadways, administrative buildings (including maintenance and general administration), and infrastructure.

2.2.1 Alternatives Eliminated From Further Consideration

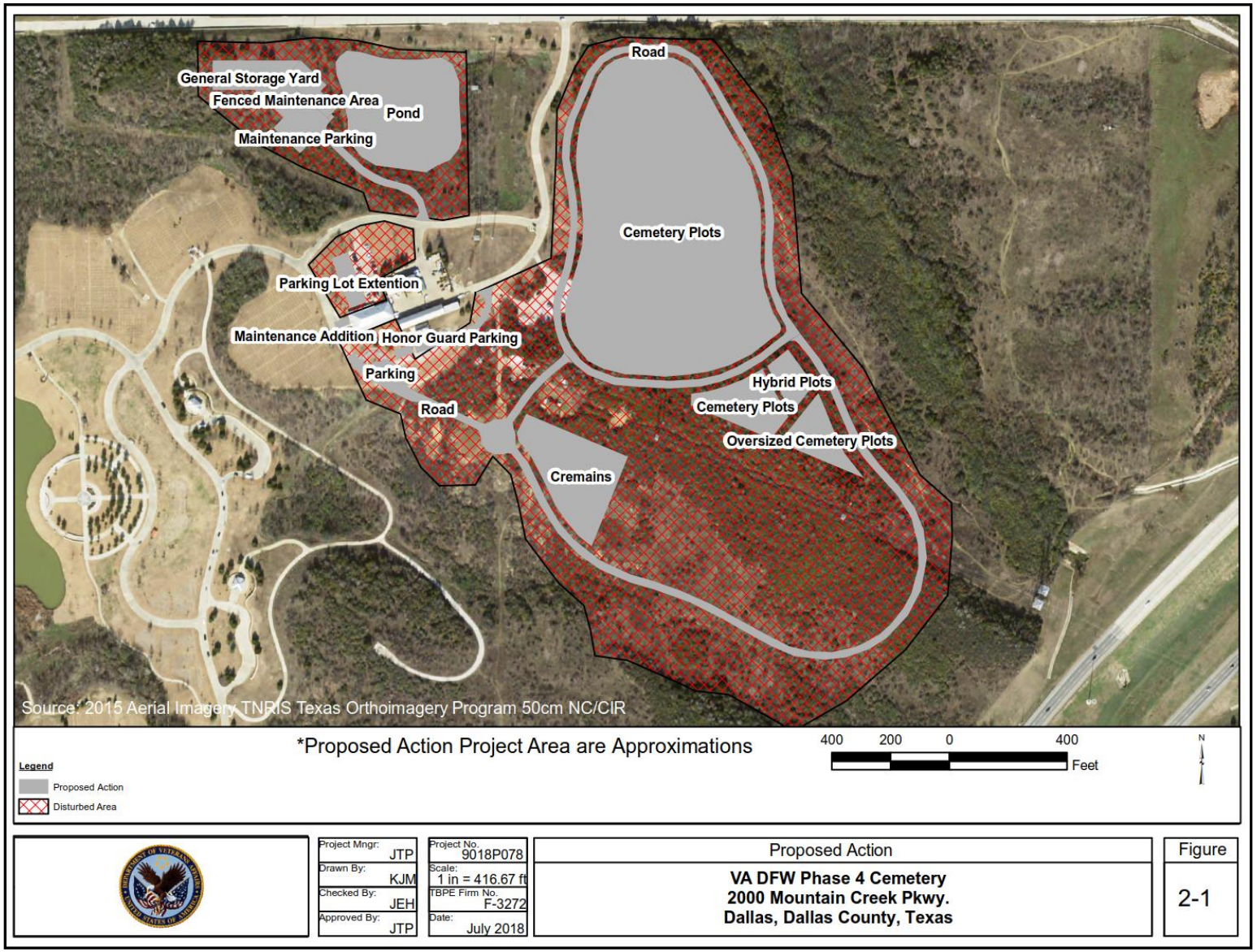
Undeveloped property is available for purchase and development beyond the boundaries of the DFW National Cemetery; however, to date, approximately 486 acres on the DFW National Cemetery property are undeveloped, therefore the potential purchase and development of additional properties alternative was eliminated.

2.3 Alternatives Retained for Detailed Analysis

2.3.1 Proposed Action

Under the Proposed Action (Phase IV), the VA would construct additional burial sites and associated roadways, expand and construct maintenance and administrative structures, construct a storage yard and soil storage building, install a chain-link fence around the perimeter of the DFW National Cemetery, install groundwater well(s), and construct an irrigation pond, see Figure 2-1. It is estimated that the total acreage of temporary and permanent impacts is *67 acres.*

Figure 2-1 Proposed Action



The construction of the burial sites would occur southeast of the administration building on Rio Grande Drive. The construction should include up to 19,000 burial sites including both burial and areas for cremated remains. Burial areas could include approximately 12,500 cemetery sites that include three-foot by eight-foot pre-placed crypts; 600 burial sites that include four-foot by eight-foot oversized crypts; and 600 five-foot by ten-foot traditional gravesites. Areas for cremated remains should include 4,000 four-foot by four-foot in-ground cremains sites for granite headstones (with no grade beams); 300 five-foot by ten-foot hybrid/green natural burial sites; and 4,352 columbarium niches.

Three columbaria will be constructed, housing the 4,352 columbarium niches; two would hold approximately 1,568 niches each and one will have a capacity of 1,216. The columbaria will have a similar configuration as those currently at the facility. The walls will act as retaining walls built into the slopes and be constructed of cast-in-place concrete on drilled concrete piers. The exposed faces of the walls should be covered in stone masonry similar if not identical to the existing columbariums.

The various types of burial sites to be constructed are anticipated to provide a 10-year inventory. The burial site will fit the topography of the expansion area and no crypt sections will have to be stepped up to achieve walkable and operational slopes of four percent or less.

The total acreage for these resting areas would be approximately 18 acres. The crypts/gravesites and columbarium niches will have a similar appearance to those that are already existing, see Figures 2-2 and 2-3. Design and general guidance for this proposed action will follow original master plan concepts, RFP guidelines, NCA Facility Design Guide Criteria, VA Program Guide PG 18-15, H-18-8 Seismic Design Requirements, and VA Signage Design Guide Chapter 12 National Cemetery Signs.

Figure 2-2 Present Columbarium Niches

Figure 2-3 Present Gravesites

Four roadways would be constructed, see Figure 2-4. The longest roadway, Road 1, would link the additional burial sites to the existing road to the west of the Administration Building, Rio Grande Drive. The roadway would travel east and north, circling both the new cremains area and the burial sites. A second roadway would include a road leading from the current administrative building to the soil storage area, this will include a gated entrance. The third roadway would be an access road leading to the newly constructed soil storage building at the northern portion of the cemetery from the Administration Building. Each roadway would include two lanes, allowing for two-way traffic, and would be approximately 28 foot in width, an additional ten foot (five feet on each side) would be constructed to allow for street parking for the roadway that circles the burial and cremains area. A minimum of ten feet of turf grasses should be planted adjacent to roadways.
Structures to be constructed include a new administration building adjacent to or near the existing administration building, within an area that has previously been disturbed, and a soils storage area. The administration building would be approximately 3,150 square feet and would include a reception area, offices (directors, administrative, and budget), shared workspaces/workstations, conference room, operations center, break room, uniform storage, janitorial storage, restrooms, and mechanical areas.

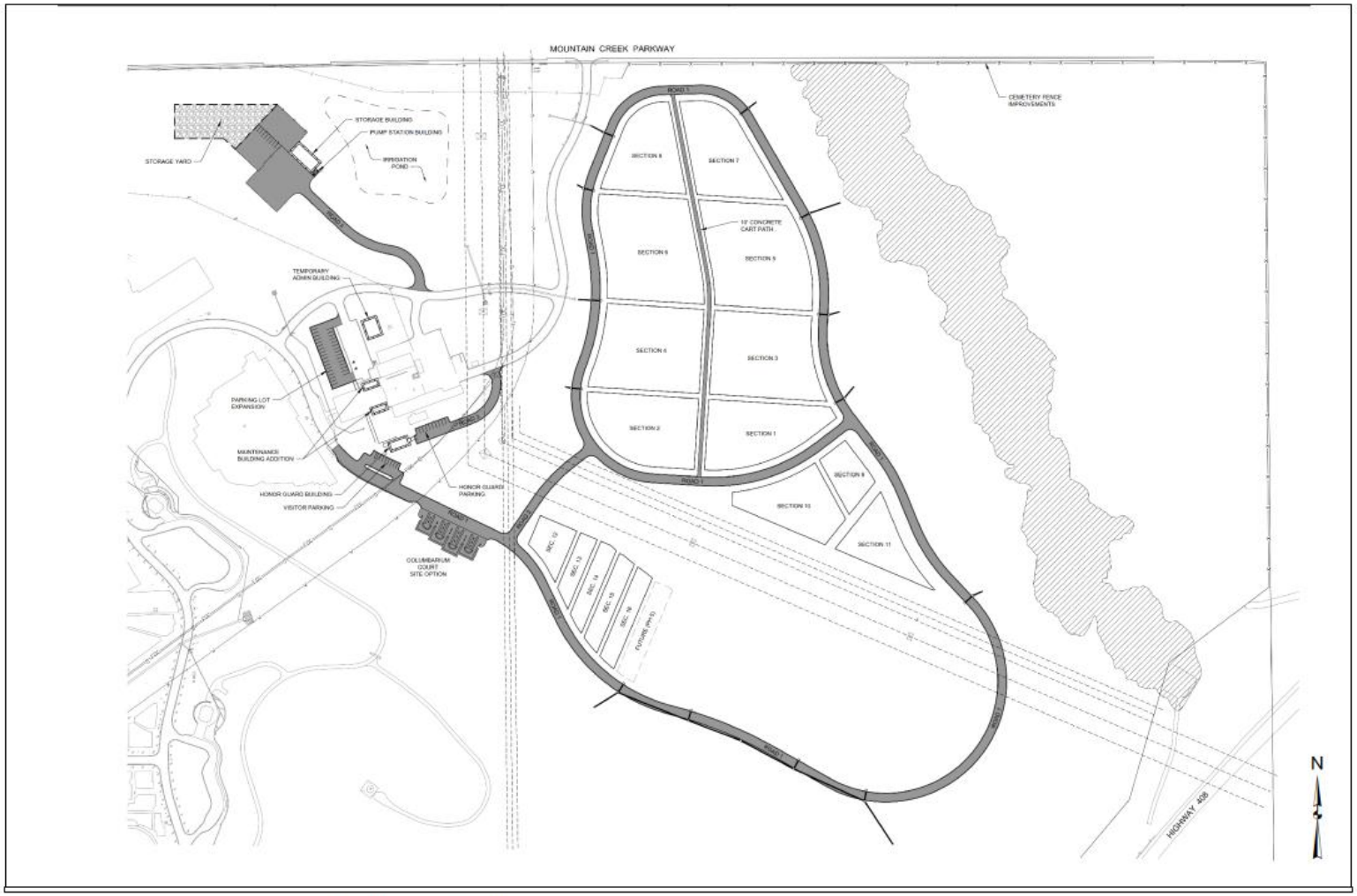
The soils storage area is anticipated to be constructed to the south of Mountain Creek Parkway. The area would include a soil storage building as well as a pump station building, storage yard/bins, and maintenance yard. The approximate area associated with the soils storage area is 60,000 square feet. The soil storage building would be approximately 4,000 gross square feet pre-manufactured building with a cast-in-place concrete wall and foundation, with drilled concrete piers. It is anticipated the building will be approximately 20 feet high and include at least two overhead panel doors. The building would be surrounded by concrete storage bins, grave boxes, soil shredder pad, headstone cutter area, fenced in area for maintenance contractor, and a pump station.

The Administration Building is anticipated to undergo an interior re-configuration and designation. The current Administration Building would be converted to house maintenance offices and an honor guard area which would include additional restrooms and storage. The parking lot associated with the Administration Building would also be expanded to include an additional 14,100 square feet.

An irrigation pond is anticipated to be constructed approximately 255 feet north of the Administration Building. The pond will either be supplied by existing water sources, including stormwater runoff, or by groundwater wells that are to be installed under the Proposed Action. The pond should be at least two acres in size; however at least three acres will be disturbed and graded to construct the pond with a 4:1 side slope and at a 10-foot depth. If required, up to three groundwater wells will be constructed near the soil storage area, northwest of the location of the proposed cemetery sections (Sections 63 and 64). It is anticipated that at least 3,500 to 4,000 gallons per minute will be pumped from the aquifer to irrigate the entire cemetery at buildout. This sizing will allow for some operational inefficiencies that can occur with a site this large. To reach the proposed burial sites with the additional required water, the existing mainline pipes do not have the capacity. It is anticipated that either parallel mainlines and/or new upsized mainline pipe will be installed. Length of new or upsized piping is anticipated to be approximately 3,000 feet. This length of pipe does not include new piping or the branching off of the mainlines that will be required to irrigate the new areas. In addition, rotor sprinklers, bubblers, and spray sprinklers or other watering devices will be installed throughout the proposed burial sites and adjacent to existing roadways.

During construction of the Proposed Action, temporary traffic barriers, maintenance trailers, staging areas, and stockpiles will be mobilized and later removed upon completion of the construction activities. These areas are noted on Figure 2-1. Additionally, areas immediately to the south of the proposed burial sites could be cleared of vegetation and regraded to add in the construction of the roadway and the burial sites. Soils removed from the cemetery will either remain on site to be used at a later date or removed from the site. It is assumed that approximately 40 acres of the site will be disturbed either by temporary impacts or by clearing activities associated with the construction activities for Phase IV.

Figure 2-4 Roadways to Be Constructed



	Project Mngr: JTP Drawn By: KJM Checked By: JEH Approved By: JTP	Project No. 9018P078 Scale: Not to Scale TBPE Firm No. F-3272 Date: July 2018	Roadway to be Constructed **VA DFW Phase 4 Cemetery** **2000 Mountain Creek Pkwy.** **Dallas, Dallas County, Texas**	Figure 2-4

2.3.2 No-Action Alternative

Under the No-Action Alternative, the VA would not construct additional burial sites, columbariums, roadways leading to the burial areas, parking areas, expand the existing administration building, construct an irrigation pond, and construct soil storage area. The DFW National Cemetery would only have the capacity that was provided under Phase III to provide burial sites to Veterans. Under the No-Action Alternative, the VA could not meet its mission as well as satisfy the purpose and need for the Proposed Action; however this alternative was retained to provide a comparative baseline, against which to analyze the effects of the Proposed Action, as required under CEQ Regulations (40 CFR Part 1502.14).

2.4 Comparison of the Potential Effects of the Analysis

The existing condition of the environmental resources at the DFW National Cemetery and its vicinity that are potentially impacted are presented in **Section 3**. **Section 3** also presents an analysis of each alternative's potential effects on the Resource Areas that were analyzed fully. The resource areas that were eliminated from further analysis in Section 1.5 are not discussed within Section 3.

In accordance with CEQ Regulations at 40 CFR Part 1502.14 and VA Directive 0067 of 21 June 2013 *VA NEPA Implementation*, Table 2-1 presents "the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision-maker and the public."

Table 2- 1 Comparison of the Potential Effects of the Analyzed Alternatives

Resource	Proposed Action	No Alternative
Air Quality	Short-term, adverse, direct, and minimal impacts - Due to the increase emissions from heavy equipment used during the construction of Phase IV facilities; however, no-long term impact is anticipated. These impacts are less than significant.	No change - therefore, no impact
Cultural Resources	No cultural materials were identified; therefore, it is assumed that no archaeological sites considered eligible for NRHP inclusion or designation of a state landmark were identified present within the project area. No impact is anticipated.	No change; therefore, no impact
Geology, Topography, and Soils	Short-term, adverse, direct, and minimal impacts - During the construction of the facilities, roads, and pond the designated areas would be cleared, graded, and stabilized, where necessary, with compacted fill to provide foundations for construction of the structures and roads as needed. These impacts are less than significant.	No change; therefore, no impact
Hydrology and Water Quality	Long-term adverse, direct, and moderate impacts and short-term, adverse, direct, and minimal impacts – Impacts is associated with the withdrawal from the Trinity aquifer for the operation of Phase IV. The North-Central Texas Trinity and Woodbine Aquifers Priority Groundwater Management Area will monitor the quantity of groundwater withdrawn from the aquifer. Long-term impacts associated with surface water is anticipated due	No change; therefore, no impact

	to the increase in impervious surface, generating additional surface water runoff during rain events. The increase in surface water will be maintained and managed by the implementation of a drainage system. Short and long -term adverse, direct, and minimal impacts are associated with the potential increase in sediment loading, decreasing water quality. To reduce impacts, BMPs associated with the implementation of the Stormwater Pollution Prevention Plan will be implemented. These impacts are less than significant.	
Wildlife and Habitat	Long-term, adverse, direct, and minor impact - Remove the existing vegetation would displace the existing wildlife within the area as well as those species that use the project intermittently or seasonally for nesting. Threatened or endangered species or their critical habitat were not identified within the project area; therefore, a significant impact is anticipated. However, migratory birds and state listed species may be present and BMPs should be implemented to reduce impacts to those species. These impacts are less than significant.	No change; therefore, no impact
Floodplains and Wetlands	Long-term, adverse, direct, and minimal impact - Construction and operation activities would not occur in a floodplain or in areas containing wetlands; therefore, no significant impacts are anticipated. Additional impervious cover will generate additional surface waters; however, engineering design has incorporated this and designed the flow to discharge into the adjacent floodplain. Prior to construction a Developing Permit shall be obtained ensuring authorization to discharge to the floodplain, which is included with the City of Dallas's Municipal Separate Storm Sewer System. These impacts are less than significant.	No change; therefore, no impact
Solid and Hazardous Materials	Short-term, adverse, direct, and minimal impact - Construction would generate minimal quantities of solid wastes, creating a short-term adverse direct minimal impact. Cemetery operations would generate similar amounts of solid waste as current operations. Current and future solid waste generation would be a minor contributor to overall solid waste generation in the area and the landfills within the area have capacity. These impacts are less than significant.	No change; therefore, no impact

Notes:
No Change or None – There are no impacts expected

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the baseline, existing conditions of environmental resources (Technical Resource Areas) at and near the DFW National Cemetery potentially subject to effects from implementation of the Proposed Action. Collectively, this is the Proposed Action's Region of Influence (ROI). The baseline conditions presented in this section are described to the level of detail necessary to support analysis of potential impacts associated with the Proposed Action.

3.1 Criteria of Analysis of Impacts

After each description of the relevant baseline conditions of each considered Technical Resource Area, the potential direct and indirect effects of the Preferred Action and No Action Alternative are analyzed. The significance of an action is also measured in terms of its context and intensity. For the purposes of this analysis, the potential environmental impacts are described in terms of duration, whether they are direct or indirect, the magnitude of the impact, and whether they are adverse or beneficial, as summarized in the following paragraphs:

Short-term or long-term. In general, short-term impacts are those that would occur only with respect to a particular time-lined activity, for a finite period, or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.

Direct or indirect. A direct impact is caused by an action and occurs around the same time at or near the location of the action. An indirect impact is caused by an action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.

Adverse or beneficial. An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment.

3.2 Significance Criteria

Significance is based on the twin criteria of context and intensity (40CFR 1508.27). Context means the affected environment in which a proposed action would occur; it can be local, regional, national, or all three, depending upon the circumstances. Context means that the significance of an action must be analyzed in several contexts such as society as a whole (human/national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant. Intensity refers to the severity of impact, ranging from negligible, minor, or moderate.

Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor impact is slight, but detectable. A moderate impact is readily apparent. Significant impacts are those that, in their context and due to their magnitude (severity), have the potential to meet the thresholds for significance set forth in the CEQ regulations (40 CFR 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation to fulfill the policies set forth in NEPA. Significance criteria by resource area are presented below.

Air Quality. The potential for emissions to result in a considerable net increase of any criteria pollutant within the Dallas Air Quality Control Region that is not incompliance with the State Implementation Plan

Cultural Resources. The potential to result in ground disturbing activities that may adversely affect known or unidentified cultural resources within the project area.

Geology, Topography, and Soils. The potential to alter the geologic or soil composition, structure, or function within the project area.

Hydrology and Water Quality. The potential to result in a violation of applicable water quality and quantity objectives within the North-Central Texas Trinity and Woodbine Aquifers Priority Groundwater Management Area and/or the state of Texas.

Wildlife and Habitat. The potential to result in a reduction of a wildlife species to a level that meets the definition of threatened, endangered, or candidate species within project area per the ESA or Texas Parks and Wildlife regulations. This includes long-term or permanent disturbance or displacement of substantial portions of local populations of listed, proposed, or candidate plant or animal species, or species of special concern. Disturbance can include interference with the movement or migration of any resident or migratory wildlife species within the project area.

Floodplains and Wetlands. The potential to result in major disturbances in the natural flow, discharge, and recharge of water resources within the project or adjacent areas. This includes the potential for a substantial loss, degradation, or fragmentation of wetland habitat.

Solid and Hazardous Materials. The potential for non-hazardous, regulated, or hazardous substances to be collected, stored and/or disposed of improperly.

3.3 Air Quality

The United States Environmental Protection Agency (USEPA) established primary and secondary National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA), 42 United States Code § 7401 et seq. The CAA also set emission limits for certain air pollutants from specific sources, set new source performance standards based on best demonstrated technologies, and established national emission standards for hazardous air pollutants.

The CAA specifies two sets of standards – primary and secondary – for each regulated air pollutant. Primary standards define levels of air quality necessary to protect public health, including the health of sensitive populations such as people with asthma, children, and the elderly. Secondary standards define levels of air quality necessary to protect against decreased visibility and damage to animals, crops, vegetation, and buildings. Federal air quality standards are currently established for six pollutants (known as criteria pollutants), including carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur oxides (SO_x), commonly measured as sulfur dioxide [SO_2]), lead, particulate matter equal to or less than 10 micrometers in aerodynamic diameter (PM_{10}) and particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter ($PM_{2.5}$). Although O_3 is considered a criteria pollutant and is measurable in the atmosphere, it is often not considered as a pollutant when reporting emissions from specific sources, because O_3 is not typically emitted directly from most emissions sources. Ozone is

formed in the atmosphere from its precursors – nitrogen oxides (NO_x) and volatile organic compounds (VOCs) – that are directly emitted from various sources. Thus, emissions of NO_x and VOCs are commonly reported instead of O_3. The NAAQS for the six criteria pollutants are shown in Table 3-1.

Table 3- 2 National Ambient Air Quality Standards

Pollutant	Primary/Secondary	Value	Form
Carbon Monoxide 1-hr average 8-hr average	Primary	35 ppm 9 ppm	No to be exceeded more than once per year
Nitrogen Dioxide 1-hr average Annual average	Primary Primary and Secondary	100 ppb 53 ppb	Hourly - 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years Annual Average – Annual Mean
Ozone 8-hr average[(b)]	Primary and Secondary	0.070 ppm	Annual fourth highest maximum 8-hour concentration, averaged over 3 years
Lead	Primary and Secondary	0.15 µg/m^3	Rolling average
Particle Matter $_{10}$ 24-hr average	Primary and Secondary	150 µg/m^3	Not to be exceeded more than one per year on average over 3 years
Particle Matter$_{2.5}$ 24-hr average Annual average Annual average	Primary and Secondary Primary Secondary	35 µg/m^3 12.0 µg/m^3 15.0 µg/m^3	98th Percentile, averaged over 3 years Annual mean, averaged over 3 years Annual mean, averaged over 3 years
Sulfur Dioxide 1-hr average 3-hr average	Primary Secondary	75 ppb 0.5 ppm	99th Percentile of 1-hr daily maximum concentrations, averaged over 3 years Not to be exceeded more than one per year

Source: USEPA 2019

The USEPA classifies the air quality within an Air Quality Control Region (AQCR) according to whether the region meets federal primary and secondary air quality standards. An AQCR or portion of an AQCR may be classified as attainment, non-attainment, or unclassified with regard to the air quality standards for each of the criteria pollutants. "Attainment" describes a condition in which standards for one or more of the six pollutants are met in an area. The area is considered an attainment area for only those criteria pollutants for which the NAAQS are met. "Nonattainment" describes a condition in which standards for one or more of the six pollutants are not met in an area. "Unclassified" indicates that air quality in the area cannot be classified and the area is treated as attainment. An area may have all three classifications for different criteria pollutants.

The CAA requires federal actions to conform to any applicable state implementation plan (SIP). USEPA has promulgated regulations implementing this requirement under *40 CFR Part 93*. A SIP must be developed to achieve the NAAQS in non-attainment areas (i.e., areas not currently

attaining the NAAQS for any pollutant) or to maintain attainment of the NAAQS in maintenance areas (i.e., areas that were non-attainment areas but are currently attaining that NAAQS). General conformity refers to federal actions other than those conducted according to specified transportation plans (which are subject to the Transportation Conformity Rule). Therefore, the General Conformity rule applies to non-transportation actions in non-attainment or maintenance areas. Such actions must perform a determination of conformity with the SIP if the emissions resulting from the action exceed applicability thresholds specified for each pollutant and classification of nonattainment. Both direct emissions from the action itself and indirect emissions that may occur at a different time or place but are an anticipated consequence of the action must be considered.

Dallas County is located within an area designated as non-attainment for 8-hour ozone for both 2008 and 2015 standards (EPA 2020) and as such, the VA must demonstrate that a proposed action would not cause or contribute to any new violations of the NAAQS, would not interfere with provisions in the SIP, would not increase the frequency or severity of existing violations, or would not delay timely attainment of any standard. The federal agency must provide documentation that the total of direct and indirect emissions from such future actions would be below the conformity determination emission rates that are established in 40 CFR 93.153.

3.3.1 Effects of the Proposed Action

Under the Proposed Action, construction activities would generate minor amounts of fugitive dust (PM_{10}) and gaseous emissions of CO, VOC, NO_x, SO_2, and and $PM_{2.5}$ from the combustion of fuel by construction equipment and vehicles. These quantities would be below the Applicability for Conformity as noted in Table 3-1.

The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land worked on and the level of construction activity. The USEPA estimates that uncontrolled fugitive dust emissions from ground-disturbing activities is emitted at a rate of 80 pounds (lbs) of total suspended particulate (TSP) per acre day of disturbance. In a USEPA study of air sampling data at a distance of 164 feet downwind from construction activities, PM10 emissions from various open dust sources were determined based on the ratio of PM10 to TSP sampling data. The average PM10 to TSP ratios for topsoil removal, aggregate hauling, and cut and fill operation are reported as 0.27, 0.23, and 0.22, respectively. Using 0.24 as the average ratio for purposes of this analysis, the emission factor for PM10 dust emissions becomes 19.2 lb per acre per day of disturbance. During construction fugitive dust emissions would increase due to the nature of ground disturbance/c; however, the closest receptors are those attending and working at Dallas Baptist University, would be the residential areas are located approximately 0.87 miles to the southwest feet from the edge of the Project. Therefore, the emissions would decrease prior to reaching the receptors. Additionally, the USEPA estimates that the effects of fugitive dust from construction activities are reduced significantly with an effective watering program. Watering the disturbed area of the construction site twice per day with approximately 3,500 gallons per acre per day reduces TSP emissions as much as 50 percent (USEPA 2009). The effects from fugitive dust last only as long as the duration of construction activity, fall off rapidly with distance from the construction site, and do not result in long-term impacts.

Combustive emissions, which include CO, VOCs, NOx and SO2, from construction equipment exhaust were estimated by using USEPA-approved emissions factors for heavy-duty diesel-powered construction along with the emission factors for the estimated types and numbers of equipment expected to be used during construction. The emission estimates are shown in *Table 3-2*. As with fugitive dust emissions, construction equipment would produce slightly elevated air pollutant concentrations on an annual basis. However, the estimated emissions would not exceed the applicable conformity level.

Table 3- 2 Build Alternative Estimated Construction Emissions - Annually

	CO	VOC	NO_x	SO_x	PM_{10}
Proposed Action	37.59	6.27	85.56	9.13	5.61
Applicability for Conformity	100	100	100	100	100

Notes:
CO = carbon monoxide
NO_x = nitrogen oxides
PM_{10} = particulate matter equal or less than 10 micrometers in diameter
SO_x = sulfur oxides
tpy = tons per year
VOC = volatile organic compound

There would be a short-term ,adverse, direct, and minimal impact in air quality due to the increase emissions from heavy equipment used during the construction of Phase IV facilities as well as those used during the operation of the facility. It is assumed that the heavy equipment used at the DFW National Cemetery would remain unchanged to operate the activities within Phase IV; therefore, no impact to air quality during the operation is anticipated. Based upon the estimated construction emissions and the assumption that the level of emissions associated with operating the facility will remain consistent, the Proposed Action would not have negative significant long-term operational impacts on local air quality; therefore, no mitigative actions would be required. However, to mitigate short-term impacts, best management practices (BMPs) should be implemented to reduce emissions during the construction. These BMPs could include:

- The construction contractor will implement the following air quality Best Management Practices (BMPs), to reduce the combustion/engine emissions (CO, VOC, NOx, SO2) and PM10 emissions during construction.
- Use appropriate dust suppression methods during on-site construction activities. Available methods include application of water, dust palliative, or soil stabilizers; use of enclosures, covers, silt fences, or wheel washers; and suspension of earth-moving activities during high wind conditions.
- Define and post appropriate speed to minimize dust generated by vehicles and equipment on unpaved surfaces.
- Shut off equipment when it is not in use.
- Stabilize previously disturbed areas with vegetation or mulching if such area will be inactive for 14 calendar days or more (unlikely) as required under TXR150000.Plan for soil disturbance of areas that will be actively worked on and not clear all land at once.

- Visually monitor all construction activities regularly and particularly during extended periods of dry weather and implement dust control measures in additional to scheduled period when needed.

3.3.2 Effects of the No-Action Alternative

Under the No-Action Alternative, the area proposed for the expansion would not be impacted and no construction activities would take place; therefore, no air quality impacts are anticipated.

3.4 Cultural Resources

Cultural resources are prehistoric and historic sites, districts, structures, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. A historic district is an area that "possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (NPS 1997).

The nature and potential significance of cultural resources are identified by considering the following definition: historic properties, under 36 CFR Part 800, are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP)." For the purpose of these regulations this term includes artifacts, records, and remains that are related to and located within such properties. The term "eligible for inclusion in the National Register" includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet NRHP-listing criteria.

A cultural resources survey was conducted on the approximately 67 acre area associated with the Proposed Action, including the area in which the pond is to be constructed. Three archaeological surveys (ca. 1994, 2002, and 2015) have taken place at and around the proposed project area. Three historic-age archaeological sites were recorded within the immediate vicinity and within one kilometer of the proposed project area. Historic windmill sites, 41DL364 and 41DL365, were recorded in 1995 (Skinner et.al. 1995) and were not relocated during attempts to revisit the sites in 2015 (Lindemuth). Site 41DL421, an early to mid-twentieth century artifact scatter recorded in 2002, was revisited circa 2006 and could not be re-located. Early consultation with the Texas Historical Commission (THC) during a 2015 expansion phase of the cemetery concluded that archaeological survey should be conducted due to the time span between the previous surveys (i.e., greater than 10 years). Accordingly, pedestrian survey supplemented with shovel test pits investigated the general area north of the current project for previously recorded, as well as unrecorded, archaeological resources. The previously identified sites could not be re-located and were likely destroyed since their initial documentation (Lindemuth 2015: 3-3). None of these sites are/were documented within the present area of potential effect for the proposed expansion and improvements activities.

To investigate the area associated with the Proposed Action, archaeologists conducted pedestrian survey in 30-meter transects following a one square acre grid overlaid onto the project area, including excavation of a total of 45 shovel tests at 57 potential shovel test locations (i.e., 12 shovel test locations were not excavated due to clear disturbances). Shovel tests were placed at regularly spaced intervals in all but the westernmost part of the project area where buried medical waste was a safety concern and sign of extensive previous disturbance. This area was partly subjected

to survey via surface observation. (i.e., few or no buried utilities, absence of grading, or level culverts).

No cultural materials were identified at the surface across the property, and no cultural materials were identified in the 45 excavated shovel tests. Shovel test excavations yielded observations of relatively shallow bedrock in more upland environments, as well as shallow and ferrous subsoils in low-lying portions of the Proposed Action. Shovel test excavations were typically terminated by 30 to 50 centimeters below surface. Non-cultural gravels were encountered in many shovel tests.

3.4.1 Effects of the Proposed Action

Based upon the findings of the cultural resources survey, no cultural materials were identified; therefore, it is assumed that no archaeological sites considered eligible for NRHP inclusion or designation of a state landmark were identified present within the project area; therefore, no impact is anticipated. However, if artifacts are identified during ground disturbing activities, work should cease, and the THC contacted. No impacts are anticipated.

3.4.2 Effects of the No-Action Alternative

Under the No-Action Alternative, no ground disturbance would occur and potential to excavate an artifact is not present. No impacts are anticipated.

3.5 Geology, Topography, and Soils

The site is situated on the Eagle Ford Formation of Cretaceous age. Residual clays of high plasticity are weathered from the Eagle Ford Formation. These soils are noted for their ability to experience large volume changes with fluctuations in their moisture content. The Eagle Ford is dark gray to gray shale with occasional seams and thin layers of limestone. Calcareous concretions, often exceeding 12 inches in diameter, are found throughout the Eagle Ford Formation, as well as occasional thin layers and nodules of pyrite and chert. The Eagle Ford is anticipated to be over 200 feet thick at this site (Terracon 2018).

The highly expansive soils present at this site can subject shallow foundations bearing in them to differential movements due to moisture fluctuations in the soils and uplift forces on drilled shafts. The potential magnitude of post construction movements at this site is dependent on several factors including the thickness of active clay soils and moisture levels of in-situ soils. Due to the wide variations of the thickness of the active clay soils across the site, the potential magnitude of moisture induced potential vertical movement at this site are estimated to vary from 1½ to 7 inches at or near existing grades when the soils are in a dry moisture condition.

The 7.5-minute U.S. Geological Survey Duncanville Quadrangle shows the study area as rolling to undulating low hills with elevations ranging across the area from 500 to 550 feet above sea level. Bedrock geology is mapped as the Cretaceous-age Eagle Ford Group, which are selenitic shales with calcareous concretions over platy, burrowed sandstone that rests on a hard limestone base (USGS: GDT 2007). Three soils are mapped in the area: Houston Black Series, Ferris-Heiden Complex, and Vertel Clay (NRCS 2020). Houston Black Series consists of very deep and very slowly permeable clay soils that formed in clayey residuum from calcareous mudstone; the Ferris-Heiden Complex are both very deep soils, slowly permeable clay soils that formed from clayey residuum of calcareous mudstone; Vertel Clays are moderately deep, very slowly permeable soils

that are gently to strongly sloping soils on uplands that form in shaly materials (NRCS 2020). Table 3-3 contains a summary of the mapped soil units within the study area and relevant physical characteristics.

Table 3- 3: Mapped Soil Units with Phase IV

Map Unit Name	Landform	Natural Drainage Class	Frequency of Ponding	Frequency of Flooding
Ferris-Heiden complex, 5 to 12 percent slopes	Ridges	Well Drained	None	None
Heiden clay, 2 to 5 percent slopes, eroded	Ridges	Well Drained	None	None
Houston Black clay, 1 to 3 percent slopes	Ridges	Moderately Well Drained	None	None
Lewisville silty clay, 3 to 5 percent slopes, eroded	Stream terraces	Well Drained	None	None
Vertel clay, 5 to 12 percent slopes	Ridges	Well Drained	None	None
Ferris-Heiden complex, 5 to 12 percent slopes	Ridges	Well Drained	None	None
Heiden clay, 2 to 5 percent slopes, eroded	Ridges	Well Drained	None	None

3.5.1 Effects of the Proposed Action

The Proposed Action would have short-term, adverse, direct, and minimal impacts effects on geology and soils at the DFW National Cemetery. During the construction of the facilities, roads, and pond the designated areas would be cleared, graded, and stabilized, where necessary, with compacted fill to provide foundations for construction of the structures and roads as needed. To mitigate for the clay soils the buildings and columbariums should be supported on structural slabs to avoid problems with uneven floors, floor and wall cracking, and sticking doors to name some of the problems that can develop in expansive soils. The void space below the floor slab is recommended to be at least 12 inches.

The proposed buildings and columbarium courts are recommended to be supported on straight drilled shafts bearing in the gray shale encountered at depths of 3 to 29 feet. Grade beams should be supported by the drilled shafts, and at least a 12-inch void space should be provided between the grade beams and the underlying clay soils. Cut and fill slopes are expected to be stable with respect to deep seated shearing movements.

3.5.2 Effects of the No-Action Alternative

Under the No-Action Alternative, the area proposed for the expansion would not be impacted and no construction activities would take place; therefore, the soils and grade would remain undisturbed, no impacts are anticipated.

3.6 Hydrology and Water Quality

The Cemetery is located above the Trinity Aquifer. The Trinity Aquifer is one of nine major aquifers within Texas and extends across much of the central and northeastern portion of Texas. The

aquifer is composed of several small contained aquifers which consist of limestones, sands, clays, gravels, and conglomerates. Water available for drinking is available between 600 to 1,600 feet below ground surface. The water is considered to be "hard" due to the high levels of dissolved solids. This aquifer is one of the most extensively used in Texas, with its primary uses including drinking water, irrigation, and livestock (TWDB 2011). The municipalities in the area no longer use the aquifer for drinking water.

A surface water feature is located to the east of the project area, and within a defined floodplain. The feature drains to Mountain Creek Lake and commences 0.35 miles to the southeast of the DFW National Cemetery, in an undisturbed area. The feature receives surface water from the automotive commercial facilities located to the east of the DFW National Cemetery as well as Highway 408.

3.6.1 Effects of the Proposed Action

Both short and long-term adverse, direct, and moderate impacts are anticipated to hydrology and water quality; however, none are significant, and those impacts that are present can be reduced by the implementation of BMPs.

Under the proposed action, groundwater wells would be installed for use to irrigate the maintained areas. The groundwater would be withdrawn and stored within a pond located at the northern portion of the project area; allowing for a long-term impact. Based upon two years of irrigation data, it is assumed that at least, an average of 43 million gallons of water, annually, would be required to irrigate the existing grounds. It is assumed that the additional maintained areas, under the proposed action, would require the same quality of water used for an area of an identical size within the cemetery.

Dallas County is located within the North-Central Texas Trinity and Woodbine Aquifers Priority Groundwater Management Area (PGMA) (TCEQ 2020). A PGMA is an area designated and delineated by TCEQ that is experiencing, or is expected to experience, within 50 years, critical groundwater problems including shortages of surface water or groundwater, land subsidence resulting from groundwater withdrawal, or contamination of groundwater supplies. A Groundwater Management Plan for the aquifer was adopted in May 2010 and then readopted in May 2015. As part of this plan, prior to constructing the wells, the wells must be registered with the Northern Trinity Groundwater Conservation District, and the wells could be subject to a fee, a meter, and reporting requirements. To decrease the quantity required to irrigate the maintained areas associated with new burials and columbariums, irrigation systems should be programmed to water during times that have the lowest evaporation rates as well as include drip and/or include a low irrigation system. The district will monitor the quantity of groundwater withdrawn from the aquifer; therefore, no significant long-term adverse impact to the existing quantity of groundwater is anticipated.

Short-term and long-term adverse, minimal, and direct impacts are anticipated on surface water resources, in association with the construction and operation of the cemetery. During construction over 40 acres of soils will be disturbed, potentially increasing the opportunity for sediment to leave the construction site and enter surface waters, increasing sediment loading and decreasing water quality. Due to the quantity of soil disturbed, over five areas, the proposed action would require

authorization under the Texas Construction General Permit, TXR150000. To obtain authorization under the permit, prior to any ground disturbance, a Notice of Intent (NOI) must be filed with the Texas Commission on Environmental Quality (TCEQ) and a Stormwater Pollution Prevention Plan (SWPPP) prepared and implemented; minimizing the impact. The BMPs that could be implemented to decrease sedimentation associated with erosion include:

- Limit stockpiling of materials on-site;
- Manage stockpiled materials to minimize the time between delivery and use;
- Cover stockpiled materials with tarps;
- Install silt fences around material stockpiles, storm water drainage routes, culverts, and drains; and
- Install hay or fabric filters, netting, and mulching around material stockpiles, storm water drainage routes, culverts, and drains.

Implementation of the SWPPP and BMPs documented within the SWPPP are anticipated to reduce the impacts to less than significant. Additionally, upon completion, all disturbed areas will be covered either with impervious surface or native grasses, removing the potential impact associated with sediment loading.

Upon completion of the construction, there will be an increase in impervious cover in connection with the new roads, additional structure at the administrative area, and the columbariums which should impact the surface water runoff generated during a rain event. The impacts are minimized with the construction of existing drainage system as well as new systems which will be connected with the existing one. In addition, the additional flow would be discharged to surface water and floodplain located immediately to the east of the project area.

3.6.2 Effects of the No-Action Alternative

Under the No-Action Alternative, groundwater wells would not be constructed, and the quantity of pervious cover would remain; therefore, there would be no impact to the groundwater or surface water resources.

3.7 Wildlife and Habitat

The U.S. Endangered Species Act (ESA) of 1973, as amended, provides protections for those species that are listed as threated or endangered, along with their critical habitat. The act grants the U.S. Fish and Wildlife Service (USFWS) primary responsibility in administering the species and habitat designations and protections granted under the ESA. “Endangered” means that a species is in danger of extinction throughout all or a significant portion of its range. “Threatened” means that a species is likely endangered in the foreseeable future. “Critical habitat” is the specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery. The Texas Parks and Wildlife Department (TPWD) provides management for wildlife at the state level.

The USFWS Information, Planning, and Consultation System (IPaC) provides a species lists that identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of a proposed project or may be affected by a proposed project. The list also includes designated critical habitat if present within the study area. The IPAC report is contained within the Protected Species Habitat Assessment provided in Appendix B.

The list of threatened and endangered species compiled by the USFWS on the IPaC for Dallas County, Texas includes five species identified by the USFWS and 34 species identified by TPWD. The species potentially present within the project are presented in the table below.

Table 3- 5: USFWS and TPWD Species Listed for Dallas County, Texas

Species	Status	Habitat Description	Habitat Present
Birds			
Dendroica chyrsoparia (Golden-cheeked Warbler)	USFWS – Endangered TPWD – Endangered	Juniper-oak woodlands; dependent on Ashe juniper for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer	No; absence of suitable habitat within or near the study area (adequate juniper shrub habitat was not observed from aerial review or site reconnaissance)
Sterna antillarum (Least Tern)	USFWS – Endangered TPWD – Endangered	Nests along sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.)	No; absence of suitable habitat within or near the study area.
Charadrius melodus (Piping Plover)	USFWS – Threatened TPWD - Threatened	Wintering migrant along the Texas Gulf Coast; beaches and bayside mud flats	No; absence of suitable habitat within or near the study area.
Calidris canatus rufa (Red Knot)	USFWS - Threatened	Migrate long distances in flocks northward through the U.S. mainly April to June, southward July to October. Prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters; Primarily inhabits seacoasts on tidal flats and beaches, herbaceous wetlands, and tidal flat/shore	No; absence of suitable habitat within or near the study area.
Grus americana (Whooping Crane)	USFWS - Endangered TPWD - Endangered	Potential migrant via plains throughout most of Texas to the coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties. Breeds, migrates, winters, and forages in a variety of wetland and other habitats;	No; absence of suitable habitat within or near the study area

Species	Status	Habitat Description	Habitat Present
		During migration, a variety of habitats are used; however, wetland mosaics appear to be the most suitable	
Falco peregrinus anatum (American Peregrine Falcon)	TPWD - Endangered --	Year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No; absence of suitable habitat within or near the study area
Falco peregrinus tundrius (Arctic Peregrine Falcon)	--	Migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No; absence of suitable habitat within or near the study area
Haliaeetus leucocephalus (Bald Eagle)	TPWD - Threatened	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	Based on prior field experience on adjoining properties east of Nursery Road and the confluence of Delaware Creek and the West Fork Trinity River some bald eagles have been observed. Bald eagle nest has not been observed in the project vicinity. If Bald Eagles presence is observed in the study area it would be considered incidental.
Vireo atricapilla (Black-capped Vireo)	TPWD - Endangered	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-	No; absence of suitable habitat within or near the study area

Species	Status	Habitat Description	Habitat Present
		leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer	
Ammodramus henslowii (Henslow's Sparrow)	--	Wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking	No; absence of suitable habitat within or near the study area
Sterna antillarum athalassos (Interior Least Tern)	TPWD - Endangered	Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	No; absence of suitable habitat within or near the study area
Falco peregrinus (Peregrine Falcon)	TPWD - Threatened	Both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.	No; absence of suitable habitat within or near the study area
Anthus spragueii (Sprague's Pipit)	--	Only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	No; absence of suitable habitat within or near the study area

Species	Status	Habitat Description	Habitat Present
Athene cunicularia hypugaea (Western Burrowing Owl	--	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows	No; absence of suitable habitat within or near the study area
Plegadis chihi (White-faced Ibis)	TPWD - Threatened	Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats	No; absence of suitable habitat within or near the study area
Mycteria americana (Wood Stork)	TPWD - Threatened	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960	No; absence of suitable habitat within or near the study area
Insects			
Lordithon niger (Black Lordithon rove beetle)	--	Historically known from Texas	No; absence of suitable habitat within or near the study area
Mammals			
Myotis velifer (Cave myotis bat)	--	Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore	No; absence of suitable habitat within or near the study area
Spilogale putorius interrupta (Plains spotted skunk)	--	Catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie	Habitat present; woodlands observed.
Mollusks			
Pleurobema riddellii (Louisiana pigtoe)	TPWD - Threatened	Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and	No; suitable intermittent and/or perennial streams

Species	Status	Habitat Description	Habitat Present
		gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins	were not observed in the study area.
Lampsilis satura (Sandbank pocketbook)	TPWD - Threatened	Small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River	No; suitable intermittent and/or perennial streams were not observed in the study area.
Potamilus amphichaenus (Texas heelsplitter)	TPWD - Threatened	quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins	No; suitable intermittent and/or perennial streams were not observed in the study area.
Fusconaia askewi (Texas pigtoe)	TPWD - Threatened	Rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sulphur River, Cypress Creek, Sabine through Trinity rivers as well as San Jacinto River	No; suitable intermittent and/or perennial streams were not observed in the study area.
Reptiles			
Macrochelys temminckii (Alligator snapping turtle)	TPWD - Threatened	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October	No; absence of suitable habitat within or near the study area
Thamnophis sirtalis annectens (Texas garter snake)	--	Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August	No; absence of suitable habitat within or near the study area
Phrynosoma cornutum (Texas horned lizard)	TPWD - Threatened	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September	No; absence of suitable habitat within or near the study area
Crotalus horridus (Timber rattlesnake	TPWD - Threatened	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense	No; absence of suitable habitat within or near the study area

Species	Status	Habitat Description	Habitat Present
		ground cover, i.e. grapevines or palmetto	
Plants			
Hexalectris nitida (Glass Mountains coral-root)	--	Apparently rare in mixed woodlands in canyons in the mountains of the Brewster County, but encountered with regularity, albeit in small numbers, under *Juniperus ashei* in woodlands over limestone on the Edwards Plateau, Callahan Divide and Lampasas Cutplain; Perennial; Flowering June-Sept; Fruiting July-Sept	No; absence of suitable habitat within or near the study area
Yucca necopina (Glen Rose yucca)	--	Texas endemic; grasslands on sandy soils and limestone outcrops; flowering April-June	No; absence of suitable habitat within or near the study area
Dalea hallii (Hall's prairie clover)	--	In grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides; Perennial; Flowering May-Sept; Fruiting June-Sept	No; absence of suitable habitat within or near the study area
Agalinis densiflora (Osage Plains false foxglove)	--	Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct	No; absence of suitable habitat within or near the study area
Matelea edwardsensis (Plateau milkvine)	--	Occurs in various types of juniper-oak and oak-juniper woodlands; Perennial; Flowering March-Oct; Fruiting May-June	Potential habitat; juniper woodlands observed in portions of the study area.
Astragalus reflexus (Texas milk vetch)	--	Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June	Potential habitat; clay substrates observed in portions of the study area
Cuscuta exaltata (Tree dodder)	--	Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct	Potential habitat; woody communities dominated by *Ulmus crassifolia, Ulmus americana*, and *Celtis laevigata* observed.
Hexalectris warnockii (Warnock's coral-root)	--	In leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creekbeds in canyons; in the Trans Pecos in oak-pinyon-juniper woodlands in higher mesic canyons (to 2000 m [6550 ft]), primarily on igneous substrates; in Terrell County under Quercus fusiformis mottes on terrraces of spring-fed perennial streams, draining an otherwise rather xeric limestone landscape; on the	No; absence of suitable habitat within or near the study area

Species	Status	Habitat Description	Habitat Present
		Callahan Divide (Taylor County), the White Rock Escarpment (Dallas County), and the Edwards Plateau in oak-juniper woodlands on limestone slopes; in Gillespie County on igneous substrates of the Llano Uplift; flowering June-September; individual plants do not usually bloom in successive years	

-- Listed according to the state of Texas; however, no designation in regards to Threatened or Endangered

According to TPWD, the site is located in the Texas Blackland Prairies Ecological Region, characterized by flat to gently rolling plains dissected by drainages with the most significant ridges associated with harder chalk formations. Soils are typically Vertisols occurring on calcareous clays but may also occur on loams, clay loams, or even sandy clay loams. Rainfall can be moderate, but somewhat erratic, therefore, moisture is often limited during part of the growing season. Drought, grazing, and fire are the primary natural processes that affect this system. Overgrazing and conversion to agriculture, along with fire suppression, have led to the invasion of some areas by problematic brush species. Three ecological categories were identified within the Phase IV and are:

Native Invasive: Deciduous Woodland - This broadly-defined type may have sugarberry *(Celtis laevigata*), water oak (*Quercus nigra*), cedar elm (*Ulmus crassifolia*), sweetgum *(Liquidambar styraciflua*), yaupon (*Ilex vomitoria*), ashes (*Fraxinus spp.*), and honey mesquite (*Prosopis glandulosa*) among the dominants. Post oak, (*Quercus stellata*), coastal live oak (*Quercus virginiana*), and plateau live oak (*Quercus fusiformis*) may be important. Eastern redcedar (*Juniperus virginiana*), Texas persimmon (*Diospyros texana*), and loblolly pine (*Pinus taeda*) may also be present

Edwards Plateau: Oak/ Hardwood Slope Forest - Forest or woodland on slopes generally greater than 20 percent on steep rocky sites with significant deciduous canopy cover. These sites tend to be somewhat more mesic than similar sites dominated by evergreen canopy. The overstory may be diverse, with species such as Texas oak (*Quercus buckleyi*), Lacey oak (*Quercus laceyi*), white shin oak (*Quercus sinuata var. breviloba*), chinkapin oak (*Quercus muehlenbergii*), cedar elm (*Ulmus crassifolia*), netleaf hackberry (*Celtis laevigata var. reticulate*), Texas ash (*Fraxinus texensis*), escarpment black cherry (*Prunus serotina var. eximia*), Arizona walnut (*Juglans major*), and others. This system may occupy slopes on cretaceous limestone or chalk occurring north and east of the Edwards Plateau. In these situations, Shumard oak (*Quercus shumardii*), chinkapin oak (*Quercus muehlenbergii*), Slippery elm (*Ulmus rubra*), and/or black walnut (*Juglans nigra*) may be present in the canopy, and may represent significant components of it. Plateau live oak (*Quercus fusiformis*), and Ashe juniper (*Juniperus ashei*) may be present, often reaching large size under these conditions. Species such as red buckeye (*Aesculus pavia var. flavescens*), Texas redbud (Cercis canadensis var. texensis), rough-leaf dogwood (*Cornus drummondii*), elbowbush

(*Forestiera pubescens*), Mexican buckeye (*Ungnadia speciosa*), Carolina buckthorn (*Frangula caroliniana*), rusty blackhaw (*Viburnum rufidulum*), and grapes (*Vitis spp*.), tend to occur in the shrub layer more frequently in this vegetation type than in the evergreen vegetation types of this system. Though dense canopy, rocky substrate, and significant litter accumulation results in a sparse herbaceous layer, forbs such as widowstears (*Tinantia anomala*), silver-puff (*Chaptalia texana*), baby blue-eyes *(Nemophila phacelioides*), cedar sage (*Salvia roemeriana*), and various ferns may be present, if patchy.

Urban Low intensity - This type includes areas that are built-up but not entirely covered by impervious cover and includes most of the non-industrial areas within cities and towns.

3.7.1 Effects of the Proposed Action

Implementation of the Proposed Action would remove the existing vegetation and displace the existing wildlife within the area as well as those species that use the project intermittently or seasonally for nesting creating a long-term, adverse, direct, and minor impact. During the site visit associated with the Protected Species Habitat Assessment none of the threatened or endangered species, both federal and state, identified in the table above were observed, additionally, no critical habitat was observed. However, habitat for state listed species was observed. These species include the Plains Spotted Skunk, Plateau milkvine, Texas milk vetch, Tree dodder; however, none were observed. TPWD suggests, as a BMP, that text within construction specifications notification to include language to avoid harming the species if encountered and to avoid unnecessary impacts to dens. Since these are state listed species and these species were not identified, no significant adverse impacts are anticipated.

In addition, due to the vegetation present, trees and bushes, migratory birds may be present. To minimize impact to migratory birds that could be nesting in the trees and bushes, USFWS recommends activities requiring vegetation removal or disturbance to be conducted during times outside the nesting period of March through August. Undergoing this recommendation would reduce the impacts to migratory to less than significant.

The typical terrestrial wildlife species that could be impacted are widely distributed; thus, loss of some individuals and habitat would not measurably impact population abundance or distribution throughout their range. Areas to the south and northeast of the DFW National Cemetery remain undeveloped and could provide areas for those species that are disturbed, to relocate. Noise from construction activities, increased traffic, and earth moving would temporarily disturb wildlife near the construction areas. This disturbance is expected to be short-term and minor. The areas to the northeast and south of the site are undeveloped and would provide an area for the displaced wildlife. Since no critical habitat or listed species were observed; undeveloped areas adjacent to the site, which allows areas for species to relocate to, and work should be conducted during non-nesting season; a less than significant adverse impact to wildlife and vegetation is anticipated.

3.7.2 Effects of the No-Action Alternative

Under the No-Action Alternative the project area would not be disturbed and vegetation would not be removed; therefore, no impacts are anticipated.

3.8 Floodplains and Wetlands

A Preliminary Waters of the United States Delineation was performed for the project area. The delineation was performed in accordance with the 1987 U.S. Army Corps of Engineers (USACE) Manual and 2010 Great Plains Regional Supplement. The delineation included a desktop review of U.S. Geologic Survey 7.5-minute topographic maps (USGS maps), USFWS Wetlands Inventory data, U.S. Department of Agriculture (USDA) soil survey data, Federal Emergency Management Agency (FEMA) floodplain maps, aerial photographs, and local climatic data to assist in identifying potential WOUS and wetland areas in the study area walking the project area and documenting changes in vegetation, soil, and hydrologic conditions utilizing USACE data forms for the Great Plains Region.

The delineation did not identify or delineate aquatic features within the study area. Other streams or open water features were not observed. Although hydrophytic vegetation was observed and recorded throughout the study area, hydric soils and wetland hydrology were not observed and no areas meeting all three wetland criteria were identified or delineated. Features identified during the delineation are noted within Figure 3-1, below. The delineation is provided within Appendix B.

Based upon the FEMA National Flood Hazard Layer 48113C-NFHL for Dallas County, Texas, updated May 29, 2018. According to the FEMA documents, the entirety of the site is located outside the limits of the FEMA mapped 100-year floodplain and 500-year floodplains and it lies within Zone X, unshaded. A 100-year floodplain (Zone A) corridor is depicted offsite parallel to the east study area boundary. The floodplain is noted within Figure 3-2.

3.8.1 Effects of the Proposed Action

Under the Proposed Action, construction and operation activities would not occur in a floodplain or in areas containing wetlands; therefore, no significant adverse direct impacts are anticipated. Due to the increase of impervious cover associated with the additional roadways and the modifications to the topography, additional surface water flow is anticipated to enter the floodplain located to the east of the project area; creating a long-term, direct, adverse, and minimal impact. As part of the design process the additional runoff has been incorporated into the design of Phase IV. The surface water system in which this floodplain is located, is within the City of Dallas Municipal Separate Storm Sewer System (MS4). The City of Dallas allows discharged to the MS4 by authorization under Texas Pollutant Discharge Elimination System Permit, WQ0004396000. To discharge to the system a Developing Permit should be completed to ensure compliance within the permit. To apply for the permit, the engineering drawings will be submitted detailing how the additional surface water flow will be managed. The required drainage conveyance systems and outfalls have been designed and will be constructed as part of Phase IV; ensuring that the floodplain and associated MS4 can manage the additional runoff. Due to the engineering designs, no significant impact is anticipated.

3.8.1 Effects of the No-Action Alternative

Under the No-Action Alternative, activities would not occur within the project area and there would be no change in the existing condition of known wetlands and mapped floodplains; therefore no impact is anticipated.

Figure 3-1 Wetland Delineations and Associated Communities

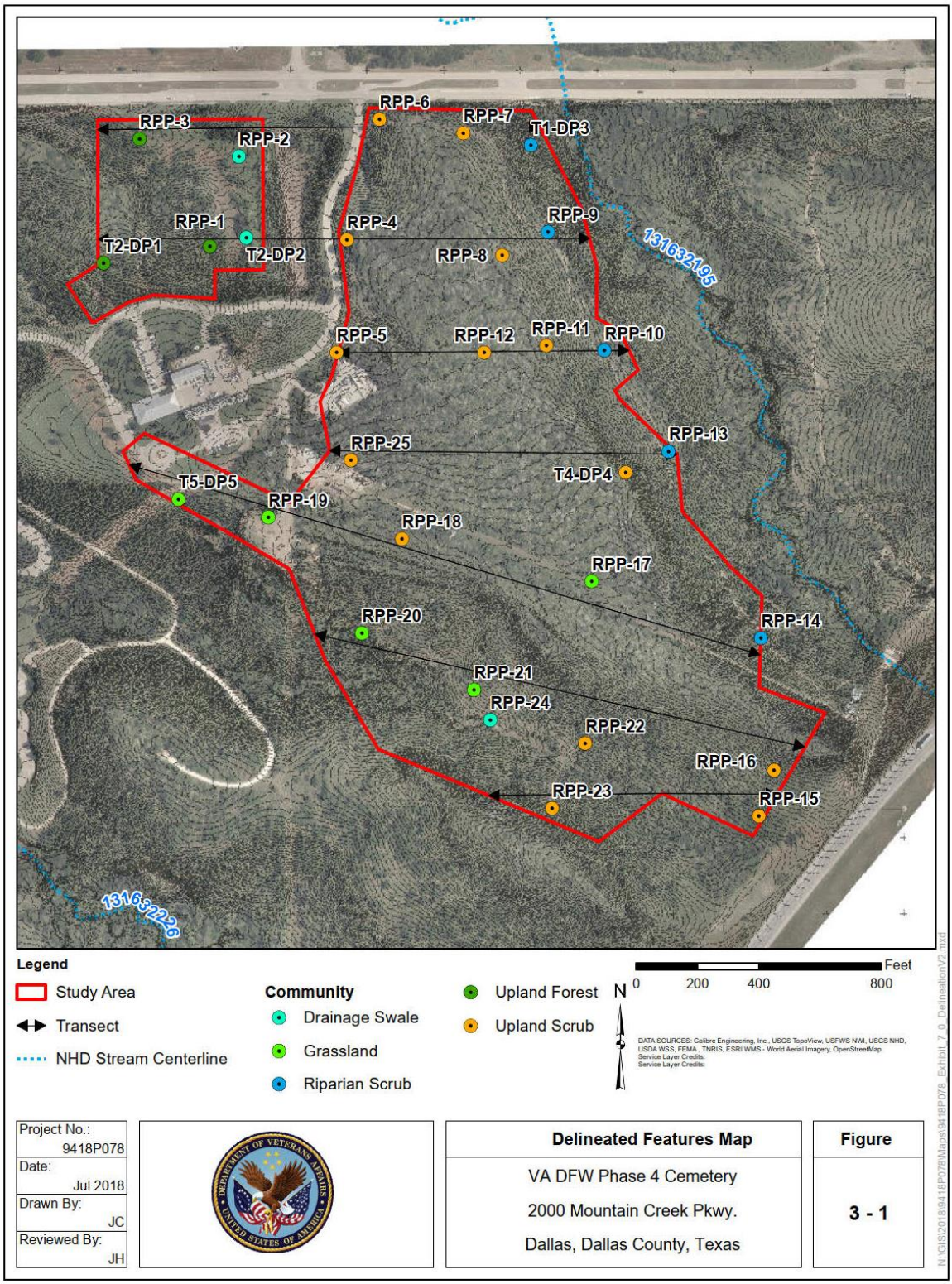
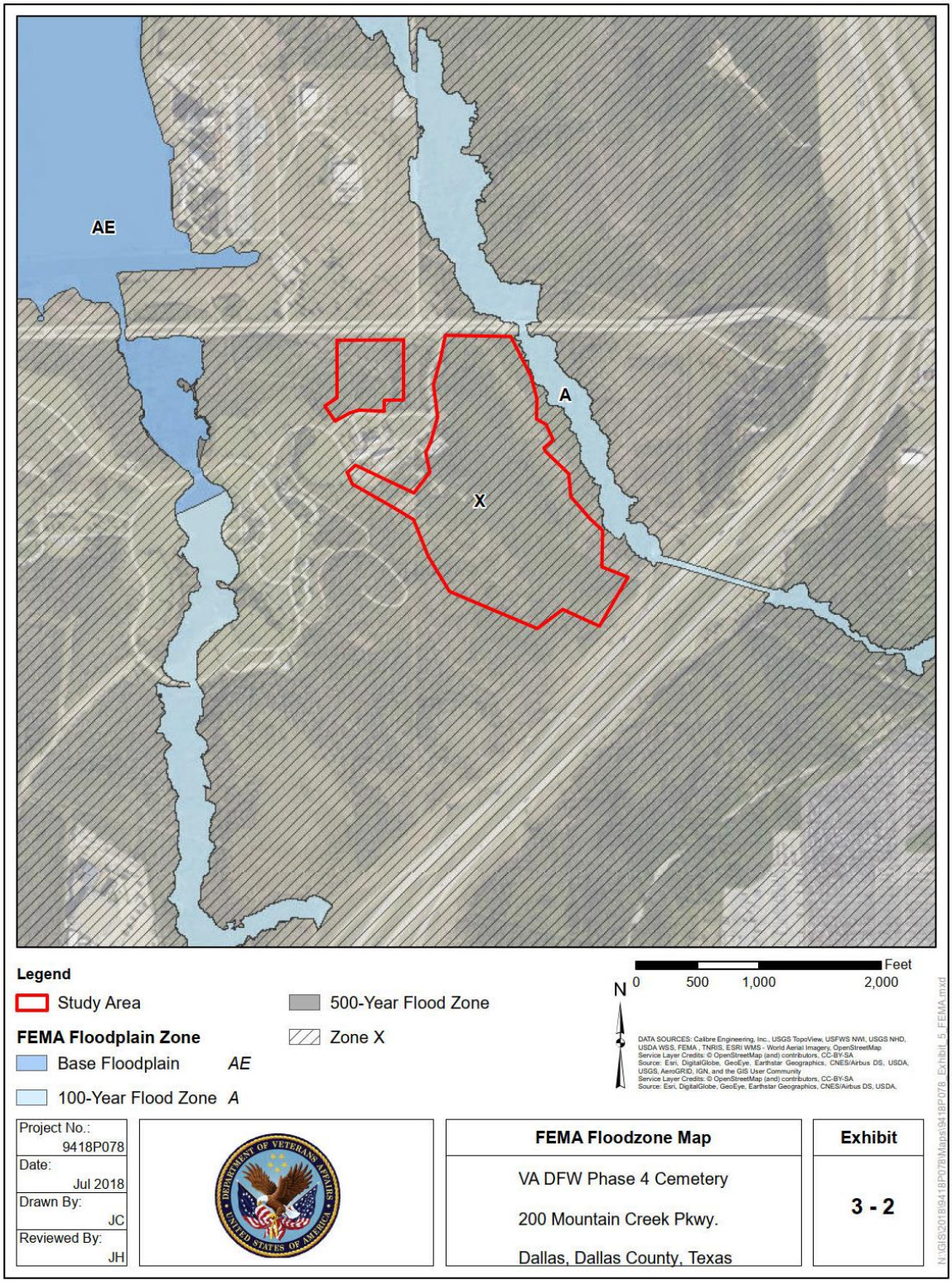


Figure 3-2 FEMA Mapped Floodplain



3.9 Solid and Hazardous Materials

All solid and hazardous wastes are disposed of by a private contractor. Solid wastes include those associated with the operation of the administrative facility as well as ground maintenance. These wastes including paper products, human hygiene related products, as well as pesticides and herbicides. All chemicals are stored and disposed of in accordance with the NCA Facilities Design Guide and the Integrated Pest Management Procedures for NCA National Cemeteries.

3.9.1 Effects of the Proposed Action

Construction of Phase IV would generate minimal quantities of solid wastes, creating a short-term, adverse, direct, and minimal impact. The construction activities include ground disturbance associated with the pond, gravesites, new administration facilities, and fencing. Solid wastes that would be generated may include concrete, scrap wire, and packing materials. Excavated soils would be reutilized onsite in accordance with site design specifications as well as stored within the new soil storage areas for use with in cemetery operations. Contractors would be directed to recycle materials to the maximum extent possible, thereby reducing the amount of debris disposed of in landfills. Materials not suitable for recycling would be taken to a landfill permitted to handle construction debris wastes. The proper management and recycling or disposal of construction debris would be the responsibility of construction contractors. Additionally, within the region, landfills have a capacity to store 375,476,359 tons of waste and have a reserve capacity of 36 years (TCEQ 2019).

Cemetery operations associated with the Proposed Action would generate similar amounts of solid waste as current operations. Current and future solid waste generation would be a minor contributor to overall solid waste generation in the area. Due to the available capacity of landfills within the area, the promotion of recycling wastes; even with a short-term increase in waste generation, there would be an adverse, direct, and minimal impact to the operating life of the landfill.

Pesticide application and road maintenance would be expanded to the new operational areas, but would continue to be serviced by contractors in accordance with material specifications and would not result in adverse impacts.

3.9.2 Effects of the No-Action Alternative

Under No Action, cemetery expansion would not occur, therefore, no construction-related solid waste and hazardous material generation will take place. As cemetery interments are reduced and eventually ended once the cemetery has reached capacity, solid waste generation would decrease.

3.10 Cumulative Effects

The consideration of cumulative impacts consists of an assessment of the total effect on a resource, ecosystem, or community from past, present and future actions that have altered the quantity, quality, or context of those resources within a broad geographic scope. The CEQ regulations define cumulative effects as "…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other

actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7) The cumulative effects analysis considers the aggregate effects of direct and indirect impacts from federal, nonfederal, public, and private actions on the quality or quantity of a resource.

The intent of the cumulative-effects analysis is to determine the magnitude and significance of cumulative effects, both beneficial and adverse, and to determine the contribution of the proposed action to those aggregate effects.

At the time in which this EA has been prepared, future projects located adjacent to the DFW National Cemetery have yet to be identified. Additionally, the area to the west and northeast of the DFW National Cemetery is not available for future projects since it is a waterbody and/or drainage. Additional expansion projects could occur to meet the future needs of the VA community, as noted within the 1992 EIS; however, these impacts would be similar to those identified within the EIS as well as those within this document.

Overall, the Proposed Action or the No-Action Alternative would not have a long-term, negative cumulative effect on the resources at the DFW National Cemetery or on resources in the Dallas area.

3.11 Potential for Generating Substantial Controversy

The VA has solicited input from various federal, state, and local government agencies concerning to the Proposed Action. None of these agencies has expressed any concerns with the Proposed Action. Given the nature and location (approximately 0.87 miles from receptors and within existing VA property) of the Proposed Action and it is anticipated that the Proposed Action would not generate substantial controversy.

4.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

As stated in Section 1.5, per 38 CFR Part 26 and the VA's NEPA Interim Guidance for Projects, VA has consulted with federal, state, and local agencies and Native American tribes concerning this Proposed Action. Comments received from all parties have been considered and incorporated within this EA. Communications received during this process are located in **Appendix A.**

Public participation opportunities with respect to the EA, as well as decision making on the Proposed Action, are guided by 38 CFR Part 26. Letters of Intent and Consultation letters were sent to various stakeholders including, but not limited to, the following:

- United States Fish and Wildlife Service
- United States Environmental Protection Agency, Region 6
- Texas Commission on Environmental Quality, Region 4
- Texas Historical Commission
- Texas Parks and Wildlife
- Comanche Nation of Oklahoma
- Tonkawa Tribe of Indians of Oklahoma
- Apache Tribe of Oklahoma
- Coushatta Tribe of Louisiana
- Wichita and Affiliated Tribes (Wichita, Keechi, Waco & Tawakonie), Oklahoma
- Wichita and Affiliated Tribes (Wichita, Keechi, Waco & Tawakonie), Oklahoma
- Alabama-Coushatta Tribe of Texas
- City of Dallas, Chief Planning Officer and Director
- City of Dallas, Mayor
- City of Dallas, District 3 City Council

A response was received from the THC and requested a cultural resources survey, including both pedestrian and subsurface testing. Based upon the request, a cultural resources survey was conducted, and an associated report was provided the THC for review and concurrence. At the time in which this document was prepared, the response has not yet been received; however, once received, this Draft EA will be updated to include comments from the THC as well as the response provided.

A Public Notice is required. The purpose of the first notice is to announce the availability of the draft EA for public review. The Draft EA was released to the public for review on XXXX, which is the date the Notice of Availability (NOA) was published in the Dallas Morning News and Fort Worth Star Telegram; the draft EA was also available at the following website:

The public notice records are included within Appendix A.

5.0 MITIGATION

Mitigation measures include those actions intended to reduce, avoid, or compensate for potential adverse effects to the human or natural environment. Based on the findings of this Draft EA, the Proposed Action would result in temporary, minor impacts to air quality and hydrology and water quality, and a long-term, hydrology and water quality. None of the environmental consequences documented in **Section 3** above would result in "significant" adverse impacts to the human environment. However, the VA would implement routine BMPs as necessary, to minimize or avoid adverse environmental impacts from the implementation of the Proposed Action. Mitigation measures for each resource discussed in **Section 3** are noted below.

Air Quality: - BMPs should be implemented to reduce impacts. These BMPS could include:

- The construction contractor will implement the following air quality Best Management Practices (BMPs), to minimize the combustion/engine emissions (CO, VOC, NOx, SO2) and PM10 emissions during construction:
- Use appropriate dust suppression methods during on-site construction activities. Available methods include application of water, dust palliative, or soil stabilizers; use of enclosures, covers, silt fences, and wheel washers; and suspension of earth-moving activities during times in which dust is visible from moist and dry surfaces due to the wind.
- Maintain an appropriate speed, less than 15 mph, to minimize dust generated by vehicles and equipment on unpaved surfaces (EPA 2009).
- Shut off equipment when it is not in use.
- Cover haul trucks with tarps.
- Stabilize previously disturbed areas with vegetation or mulching if such area will be inactive for 14 calendar days or more (unlikely) as required under TXR150000.

Geology, Topography and Soils: Support the buildings and columbariums on structural slabs to avoid problems with uneven floors, floor and wall cracking, and sticking doors to name some of the problems that can develop in expansive soils. The void space below the floor slab is recommended to be at least 12 inches.

Hydrology and Water Quality: To decrease the quantity required to irrigate the maintained areas associated with new burials and columbariums, irrigation systems should be programmed to water during times that have the lowest evaporation rates as well as include drip and/or include a low irrigation system.

Due to the quantity of soil disturbed, over five areas, the proposed action would authorization under the Texas Construction General Permit, TXR150000. To obtain authorization under the permit, prior to any ground disturbance, a NOI must be filed with the TCEQ and a SWPPP prepared and implemented.

Construction BMPs would also be implemented to decrease sedimentation by erosion. Common BMPs for construction activities would be followed to minimize erosion. Preventive BMPs include the following:

- Limit stockpiling of materials on-site;
- Manage stockpiled materials to minimize the time between delivery and use;
- Cover stockpiled materials with tarps;
- Install silt fences around material stockpiles, storm water drainage routes, culverts, and drains; and
- Install hay or fabric filters, netting, and mulching around material stockpiles, storm water drainage routes, culverts, and drains.

Wildlife and Habitat: USFWS recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals, nests, or eggs. If project activities must be conducted during this time, we recommend surveying for nests prior to conducting work. If a nest is found, and if possible, the USFWS recommends a buffer of vegetation remain around the nest until the young have fledged or the nest is abandoned. For nesting sites discovered within active or imminent construction areas, nest protection practices would be developed in consultation with VA Office of Construction & Facilities Management environmental staff, on a case-by-case basis in consideration of nest location, bird species and habitat requirements, expected duration of nesting activity, and the location, type, and duration of construction activities.

Wetlands and Floodplains: Prior to construction a Developing Permit should be completed and submitted to Dallas County to ensure compliance within the MS4 permit.

6.0 CONCLUSIONS

This Draft EA evaluates VA's Proposed Action to expand burial sites, install and construct associated infrastructure within the DFW National Cemetery property, in Dallas, Texas. This EA analyzes the Proposed Action and the No Action Alternative of the Proposed Action. The Proposed Action includes construct additional burial sites and associated roadways, expand and construct maintenance and administrative structures, construct a storage yard and soil storage building, install a chain-link fence around the perimeter of the DFW National Cemetery, install groundwater well(s), and construct an irrigation pond within the existing DFW National Cemetery property. The activities associated with the Proposed Action would require approximately 67 acres of disturbance. The No Action Alternative would include not the expansion of the existing burial sites, columbariums, roadways leading to the burial areas, parking areas, expand the existing administration building, construct an irrigation pond, and construct soil storage area. The DFW National Cemetery would remain unchanged. Evaluation of the alternatives includes analyzing the following resources: air quality; cultural resources; geology, topography, soils; hydrology and water.

This EA concludes there would be no significant impact or cumulative adverse impact to the human health and the environment associated with either the Proposed Action or No-Action Alternative as long as the VA implements the routine management measures, regulatory compliance measures, BMPs and mitigation measures specified in this EA. Therefore, this EA concludes that a FONSI is appropriate and that an Environmental Impact Statement (EIS) is not required.

7.0 LIST OF PREPARERS

Name	Agency/Organization	Resource Area
Fernando L. Fernandez, REM	US Department of Veterans Affairs	Environmental Planning
Jennifer Trombley Peters	Terracon	Project Manager and Resource Lead
Jeremey Hanzlik, P.E	Terracon	Approved Project Reviewer
Jarred Cobb	Terracon	Resource Lead
Tim G. Abrams, P.E.	Terracon	Resource Lead
David Yelacic, RPA	Terracon	Resource Lead
Kevin Moczygemba, AWB, CESSWI	Terracon	GIS Support
Juan Morlock	Terracon	Resource Lead

8.0 REFERENCES

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9.0 LIST OF ACROYMNS AND ABBREVIATIONS

AQCR	Air Quality Control Region
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
DFW	Dallas Forth Worth
EA	Environmental Assessment
EPA	Environmental Protection Agency
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
MS4	Municipal Separate Storm Sewer System
IPAC	Information, Planning, and Consultation System
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCA	National Cemetery Administration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NOI	Notice of Intent
O_3	ozone
PGMA	Priority Groundwater Management Area
SO_x	sulfur oxides
SWPPP	Stormwater Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
TSP	total suspended particulate
US	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

VA	Veterans Affairs
VOCs	volatile organic compounds

Appendix A
Public Involvement

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Apache Tribe of Oklahoma
Bobby Komardley, Chairman
511 E Colorado
Anadarko, OK 73005

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Dear Chairman Komardley:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

As this Proposed Action is federally funded, we are preparing an Environmental Assessment that will evaluate the environmental, cultural, and socioeconomic effects associated with the Proposed Action, pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code (USC) §4321 *et seq*.); the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); 38 CFR Part 26 (*Environmental Analysis of VA Actions*); and the VA Interim Guidance for Projects (September 2010).

The existing infrastructure, crypts, and columbariums, the DFW National Cemetery cannot support burial requests for eligible individuals and provide sufficient onsite parking to support the needs of Veterans, family members, and staff. The construction and maintenance of the new burial areas and associated infrastructure is needed to accommodate these burial requests.

The proposed burial areas would consist of approximately 22,500 crypts, 5,000 flat markers for cremains, columbariums, roadways leading to/from the new burial areas, public restrooms and honor guard, and maintenance contractor building; add additional square footage to the existing maintenance building; construct an irrigation pond; and a temporary laydown and staging area. It is assumed that approximately 80 acres will be disturbed, of which 67 acres is undeveloped (please see **Attachment 2**). The Proposed Action will be fully described and analyzed in the pending EA.

As part of the NEPA process, the VA would like to invite you to participate as a stakeholder in this process.

We request your participation early in the process, and ask that you provide any concerns or recommendations you may have in any area of this project including those regarding resources that may be of special interest to you. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects.

To meet project timeframes, if you would have an interest, please contact Mr. Fernando Fernandez at fernando.fernandez@va.gov or at (202) 632-5529 within 30 days. In your communication please make reference to “DFW NC Phase 4”. If you have initial concerns with impacts of the project, please note them in your response.

Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 15:57:05 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachments
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Comanche Nation of Oklahoma
Martina Callahan, Tribal Historic Preservation Officer
PO Box 908
Lawton, OK 73502

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Dear Tribal Historic Preservation Officer Callahan:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

As this Proposed Action is federally funded, we are preparing an Environmental Assessment that will evaluate the environmental, cultural, and socioeconomic effects associated with the Proposed Action, pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code (USC) §4321 *et seq*.); the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); 38 CFR Part 26 (*Environmental Analysis of VA Actions*); and the VA Interim Guidance for Projects (September 2010).

The existing infrastructure, crypts, and columbariums, the DFW National Cemetery cannot support burial requests for eligible individuals and provide sufficient onsite parking to support the needs of Veterans, family members, and staff. The construction and maintenance of the new burial areas and associated infrastructure is needed to accommodate these burial requests.

The proposed burial areas would consist of approximately 22,500 crypts, 5,000 flat markers for cremains, columbariums, roadways leading to/from the new burial areas, public restrooms and honor guard, and maintenance contractor building; add additional square footage to the existing maintenance building; construct an irrigation pond; and a temporary laydown and staging area. It is assumed that approximately 80 acres will be disturbed, of which 67 acres is undeveloped (please see **Attachment 2**). The Proposed Action will be fully described and analyzed in the pending EA.

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Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 15:58:08 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachment
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Coushatta Tribe of Louisiana
Linda Langley, Tribal Historic Preservation Officer
PO Box 818
Elton, LA 70532

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Dear Tribal Historic Preservation Officer Langley:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

As this Proposed Action is federally funded, we are preparing an Environmental Assessment that will evaluate the environmental, cultural, and socioeconomic effects associated with the Proposed Action, pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code (USC) §4321 *et seq*.); the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); 38 CFR Part 26 (*Environmental Analysis of VA Actions*); and the VA Interim Guidance for Projects (September 2010).

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As part of the NEPA process, the VA would like to invite you to participate as a stakeholder in this process.

We request your participation early in the process, and ask that you provide any concerns or recommendations you may have in any area of this project including those regarding resources that may be of special interest to you. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects.

To meet project timeframes, if you would have an interest, please contact Mr. Fernando Fernandez at fernando.fernandez@va.gov or at (202) 632-5529 within 30 days. In your communication please make reference to “DFW NC Phase 4”. If you have initial concerns with impacts of the project, please note them in your response.

Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 15:58:54 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachment
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Coushatta Tribe of Louisiana
Kassie Darsey, Section 106 Coordinator
PO Box 818
Elton, LA 70532

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Dear Section 106 Coordinator Darsey:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

As this Proposed Action is federally funded, we are preparing an Environmental Assessment that will evaluate the environmental, cultural, and socioeconomic effects associated with the Proposed Action, pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code (USC) §4321 *et seq*.); the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); 38 CFR Part 26 (*Environmental Analysis of VA Actions*); and the VA Interim Guidance for Projects (September 2010).

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The proposed burial areas would consist of approximately 22,500 crypts, 5,000 flat markers for cremains, columbariums, roadways leading to/from the new burial areas, public restrooms and honor guard, and maintenance contractor building; add additional square footage to the existing maintenance building; construct an irrigation pond; and a temporary laydown and staging area. It is assumed that approximately 80 acres will be disturbed, of which 67 acres is undeveloped (please see **Attachment 2**). The Proposed Action will be fully described and analyzed in the pending EA.

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We request your participation early in the process, and ask that you provide any concerns or recommendations you may have in any area of this project including those regarding resources that may be of special interest to you. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects.

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Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 15:59:38 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachment
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Kickapoo Traditional Tribe of Texas
Estavio Elizando, Chairperson
2212 Rosita Valley Road
Eagle Pass, TX 78852

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Dear Chairperson Elizando:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

As this Proposed Action is federally funded, we are preparing an Environmental Assessment that will evaluate the environmental, cultural, and socioeconomic effects associated with the Proposed Action, pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code (USC) §4321 *et seq*.); the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); 38 CFR Part 26 (*Environmental Analysis of VA Actions*); and the VA Interim Guidance for Projects (September 2010).

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As part of the NEPA process, the VA would like to invite you to participate as a stakeholder in this process.

We request your participation early in the process, and ask that you provide any concerns or recommendations you may have in any area of this project including those regarding resources that may be of special interest to you. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects.

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Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 16:03:21 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachment
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Casey Thomas, II, Mayor Pro Tem
City Council, District 3
City of Dallas
1500 Marilla Street
Dallas, TX 75201

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Dear Mr. Thomas:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

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As part of the NEPA process, the VA would like to invite you to participate as a stakeholder in this process.

We request your participation early in the process, and ask that you provide any concerns or recommendations you may have in any area of this project including those regarding resources that may be of special interest to you. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects.

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Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 16:00:25 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachment
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Honorable Eric Johnson
Mayor
City of Dallas
1500 Marilla Street
Dallas, TX 75201

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Honorable Johnson:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

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Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 16:01:08 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachment
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Richard Stewart, Chairman
Dallas County Historical Commission
411 Elm Street, 4th Floor
Dallas, Texas 75202-3301

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Dear Mr. Stewart:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

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Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 16:01:54 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachment
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
WASHINGTON DC 20420

August 27, 2019

Cheryl Seager
Compliance Assurance and Enforcement Division
United States Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Mail Code: 6RA
Dallas, TX 75202

RE: Request for Stakeholder Participation
Dallas-Fort Worth National Cemetery, Phase IV Proposed Construction and Operation Project

Dear Ms. Seager:

I am writing to notify your organization that the Department of Veterans Affairs (VA) intends to construct and maintain additional interment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation at the a Dallas-Fort Worth (DFW) National Cemetery on approximately 67-acres of undeveloped area within the DFW National Cemetery property, in Dallas County, Texas (please see **Attachment 1**).

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Sincerely,

FERNANDO L. FERNANDEZ 336237

Digitally signed by FERNANDO L. FERNANDEZ 336237
Date: 2019.08.27 16:02:42 -04'00'

Fernando Fernandez
Environmental Engineer, VA Office of Construction and Facilities Management

Attachment
Site Location Map
Proposed Action Map

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Apache Tribe of Oklahoma
Bobby Komardley, Chairman
511 E Colorado
Anadarko, OK 73005

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear Chairman Komardley,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

Background

The DFWNC is located in Dallas, Dallas County, Texas, adjacent to Mountain Creek Lake. The cemetery is bound by the lake to the west, Texas Highway 408 to the east, and Mountain Creek Highway to the north. Undeveloped land is beyond the roadways and to the south of the cemetery. The only access to the cemetery is from Mountain Creek Parkway, an arterial road to Texas Highways 408 and 12.

The DFWNC opened on 12 May 2000. The cemetery is 638.5 acres and includes areas for cremated remains and casketed burial sites. The development of the cemetery grounds has been conducted in phases, to date three phases have been completed. Phase I, was completed when the cemetery opened in 12 May 2000 and included the development of 110 acres including traditional 12,000 gravesites and 2,220 columbariums/garden niches (for cremated remains). Phase II was completed by 2014 and included developing 53 acres and constructed 20,500 casketed burial sites and 4,000 columbarium niches. Phase III began in May 2016 and was completed in 2018. To date, the cemetery as 85,778 casketed burial sites and 31,918 columbarium niches.

Undertaking

The NCA has defined the undertaking as clearing and grading activities associated with the development of approximately 67 acres of land within DFWNC; no new property would be acquired. This project is identified as Phase IV. The undertaking would modify undeveloped, vegetated areas into burial sections, storage areas, irrigation pond, and associated roadways. Approximately 80 acres of previously undisturbed and developed areas will be disturbed as part of this proposed action. The expansion would

also include landscaping, site furnishings, drainage, and irrigation system as well as a constructing and potentially expanding existing facilities near the administration building. The expansion will be designed and constructed in accordance with NCA cemetery design standards and overall character of the surrounding area serve as guiding considerations in the ultimate expansion design.

The NCA's mission is to honor Veterans and their eligible family members with final resting places in national shrines and with lasting tributes that commemorate their service and sacrifice to our Nation. It is projected that by 2023, the DFWNC will not be able support burial requests and provide sufficient onsite parking to support the needs of Veterans, family members, and staff. Phase IV is needed to fulfil this mission.

Area of Potential Effect

The Area of Potential Effect (APE) is defined as the undisturbed areas within the DFWNC, approximately 67 acres as Figure 2 on page 3.

Identification of Historic Properties

Previous archaeological investigations have been conducted at the DFWNC and within approximately one mile of the cemetery. Three historic-age archaeological sites were recorded within the immediate vicinity and within one kilometer of the proposed project area. Historic windmill sites were recorded in 1995 and were not relocated during attempts to revisit the sites in 2015 and an early to mid-twentieth century artifact scatter recorded in 2002, was revisited circa 2006 and could not be relocated. Early consultation with the Texas Historical Commission during a 2015 expansion phase of the cemetery concluded that archaeological survey should be conducted due to the time span between the previous surveys (i.e., greater than 10 years). Accordingly, pedestrian survey supplemented with shovel test pits investigated the general area north of the current project for previously recorded, as well as unrecorded, archaeological resources. The previously identified sites could not be located and were likely destroyed either during previous development of the cemetery or other activities/individuals since their initial documentation. A Cultural Resources Assessment Report has been prepared documenting previous surveys and by conducting research. The report is attached for your review, please see Attachment 1.

Determination of Findings

Therefore, pursuant to 36 CFR 800.4(d)(1), the VAMC VA has determined that no historic properties will be affected by the undertaking and requests the tribe's concurrence on the agency's finding per 36 CFR Part 800 and Executive Order 13175.

Figure 1: Regional Location Map

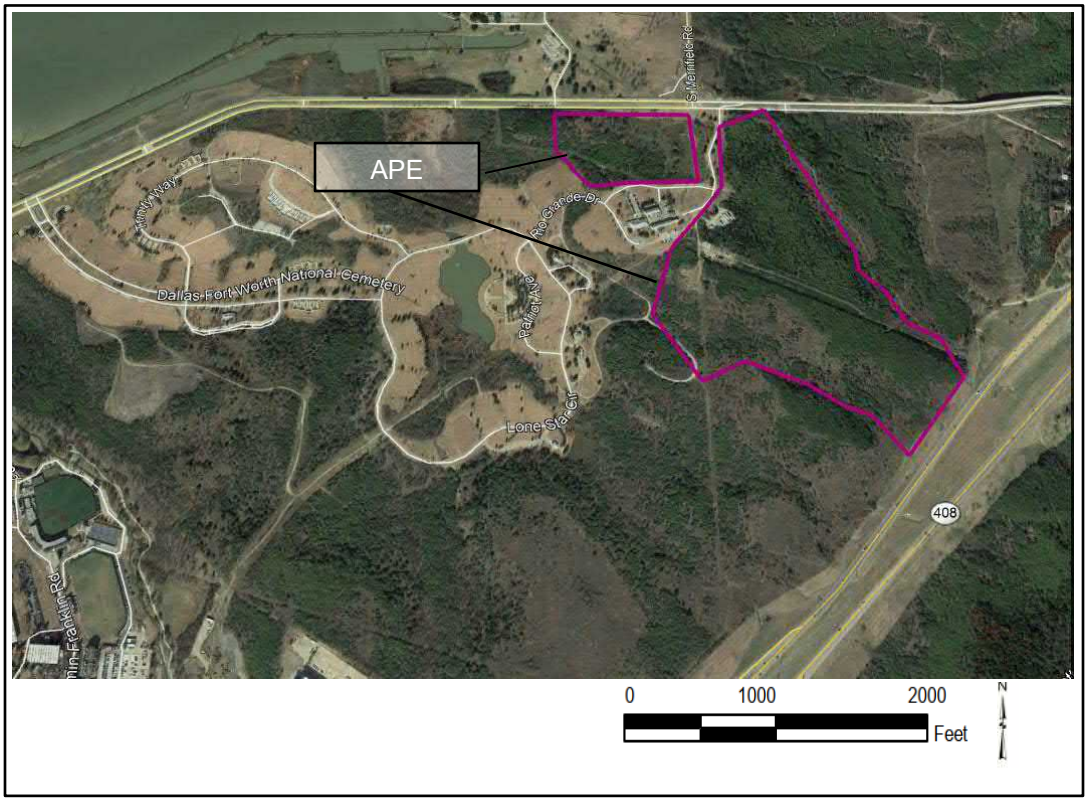

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

If you have any questions in the meantime, please do not hesitate to contact Fernando Fernandez for additional information at Fernando.Fernandez@va.gov.

Please let me know if any of the provided materials are insufficient or if you have any questions.

Sincerely

W. Edward Hooker, III
Historic Architect/ Cultural Resources Manager
U.S. Department of Veterans Affairs
National Cemetery Administration
Design and Construction Service

Attachment
Cultural Resources Assessment Report

CC: Fernando Fernandez, Environmental Engineer, Department of Veterans Affairs, OCFM
Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Comanche Nation of Oklahoma
Martina Callahan, Tribal Historic Preservation Officer
PO Box 908
Lawton, OK 73502

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear THPO Callahan,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

Background

The DFWNC is located in Dallas, Dallas County, Texas, adjacent to Mountain Creek Lake. The cemetery is bound by the lake to the west, Texas Highway 408 to the east, and Mountain Creek Highway to the north. Undeveloped land is beyond the roadways and to the south of the cemetery. The only access to the cemetery is from Mountain Creek Parkway, an arterial road to Texas Highways 408 and 12.

The DFWNC opened on 12 May 2000. The cemetery is 638.5 acres and includes areas for cremated remains and casketed burial sites. The development of the cemetery grounds has been conducted in phases, to date three phases have been completed. Phase I, was completed when the cemetery opened in 12 May 2000 and included the development of 110 acres including traditional 12,000 gravesites and 2,220 columbariums/garden niches (for cremated remains). Phase II was completed by 2014 and included developing 53 acres and constructed 20,500 casketed burial sites and 4,000 columbarium niches. Phase III began in May 2016 and was completed in 2018. To date, the cemetery as 85,778 casketed burial sites and 31,918 columbarium niches.

Undertaking

The NCA has defined the undertaking as clearing and grading activities associated with the development of approximately 67 acres of land within DFWNC; no new property would be acquired. This project is identified as Phase IV. The undertaking would modify undeveloped, vegetated areas into burial sections, storage areas, irrigation pond, and associated roadways. Approximately 80 acres of previously undisturbed and developed areas will be disturbed as part of this proposed action. The expansion would

also include landscaping, site furnishings, drainage, and irrigation system as well as a constructing and potentially expanding existing facilities near the administration building. The expansion will be designed and constructed in accordance with NCA cemetery design standards and overall character of the surrounding area serve as guiding considerations in the ultimate expansion design.

The NCA's mission is to honor Veterans and their eligible family members with final resting places in national shrines and with lasting tributes that commemorate their service and sacrifice to our Nation. It is projected that by 2023, the DFWNC will not be able support burial requests and provide sufficient onsite parking to support the needs of Veterans, family members, and staff. Phase IV is needed to fulfil this mission.

Area of Potential Effect

The Area of Potential Effect (APE) is defined as the undisturbed areas within the DFWNC, approximately 67 acres as Figure 2 on page 3.

Identification of Historic Properties

Previous archaeological investigations have been conducted at the DFWNC and within approximately one mile of the cemetery. Three historic-age archaeological sites were recorded within the immediate vicinity and within one kilometer of the proposed project area. Historic windmill sites were recorded in 1995 and were not relocated during attempts to revisit the sites in 2015 and an early to mid-twentieth century artifact scatter recorded in 2002, was revisited circa 2006 and could not be relocated. Early consultation with the Texas Historical Commission during a 2015 expansion phase of the cemetery concluded that archaeological survey should be conducted due to the time span between the previous surveys (i.e., greater than 10 years). Accordingly, pedestrian survey supplemented with shovel test pits investigated the general area north of the current project for previously recorded, as well as unrecorded, archaeological resources. The previously identified sites could not be located and were likely destroyed either during previous development of the cemetery or other activities/individuals since their initial documentation. A Cultural Resources Assessment Report has been prepared documenting previous surveys and by conducting research. The report is attached for your review, please see Attachment 1.

Determination of Findings

Therefore, pursuant to 36 CFR 800.4(d)(1), the VAMC VA has determined that no historic properties will be affected by the undertaking and requests the tribe's concurrence on the agency's finding per 36 CFR Part 800 and Executive Order 13175.

Figure 1: Regional Location Map

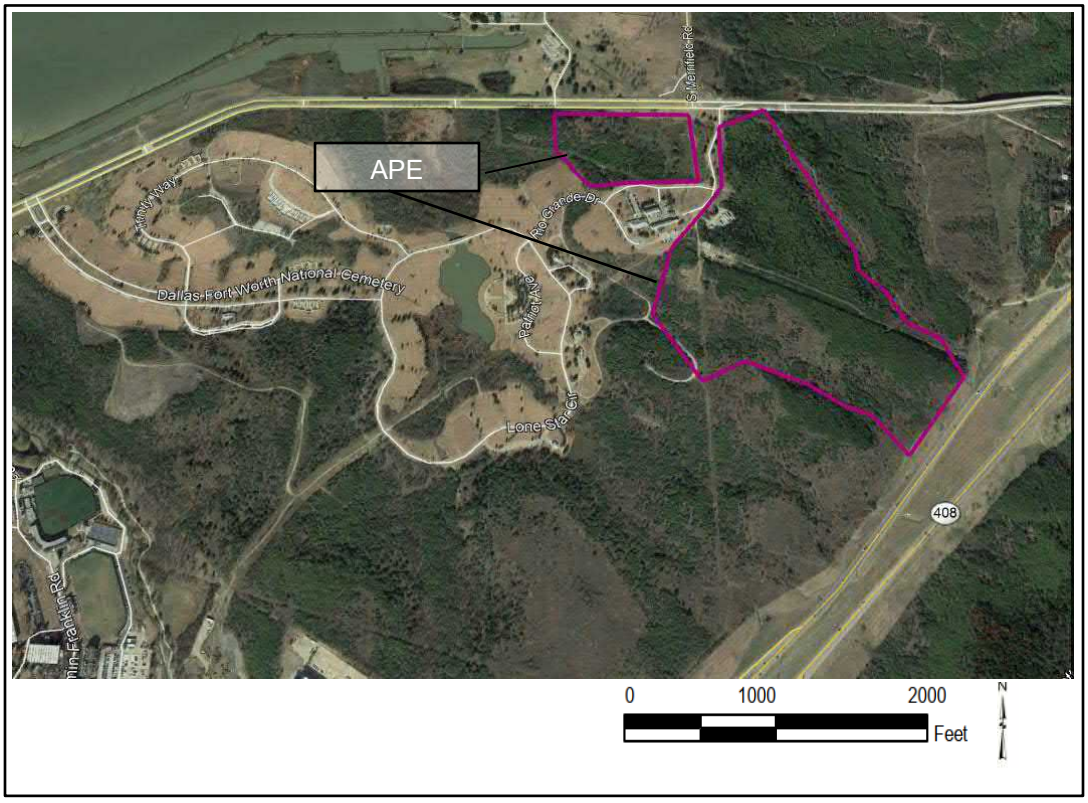

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

If you have any questions in the meantime, please do not hesitate to contact Fernando Fernandez for additional information at Fernando.Fernandez@va.gov.

Please let me know if any of the provided materials are insufficient or if you have any questions.

Sincerely

W. Edward Hooker, III
Historic Architect/ Cultural Resources Manager
U.S. Department of Veterans Affairs
National Cemetery Administration
Design and Construction Service

Attachment
Cultural Resources Assessment Report

CC: Fernando Fernandez, Environmental Engineer, Department of Veterans Affairs, OCFM
Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Coushatta Tribe of Louisiana
Kassie Darsey, Section 106 Coordinator
PO Box 818
Elton, LA 70532

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear Section 106 Coordinator Darsey,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

Background

The DFWNC is located in Dallas, Dallas County, Texas, adjacent to Mountain Creek Lake. The cemetery is bound by the lake to the west, Texas Highway 408 to the east, and Mountain Creek Highway to the north. Undeveloped land is beyond the roadways and to the south of the cemetery. The only access to the cemetery is from Mountain Creek Parkway, an arterial road to Texas Highways 408 and 12.

The DFWNC opened on 12 May 2000. The cemetery is 638.5 acres and includes areas for cremated remains and casketed burial sites. The development of the cemetery grounds has been conducted in phases, to date three phases have been completed. Phase I, was completed when the cemetery opened in 12 May 2000 and included the development of 110 acres including traditional 12,000 gravesites and 2,220 columbariums/garden niches (for cremated remains). Phase II was completed by 2014 and included developing 53 acres and constructed 20,500 casketed burial sites and 4,000 columbarium niches. Phase III began in May 2016 and was completed in 2018. To date, the cemetery as 85,778 casketed burial sites and 31,918 columbarium niches.

Undertaking

The NCA has defined the undertaking as clearing and grading activities associated with the development of approximately 67 acres of land within DFWNC; no new property would be acquired. This project is identified as Phase IV. The undertaking would modify undeveloped, vegetated areas into burial sections, storage areas, irrigation pond, and associated roadways. Approximately 80 acres of previously undisturbed and developed areas will be disturbed as part of this proposed action. The expansion would

also include landscaping, site furnishings, drainage, and irrigation system as well as a constructing and potentially expanding existing facilities near the administration building. The expansion will be designed and constructed in accordance with NCA cemetery design standards and overall character of the surrounding area serve as guiding considerations in the ultimate expansion design.

The NCA's mission is to honor Veterans and their eligible family members with final resting places in national shrines and with lasting tributes that commemorate their service and sacrifice to our Nation. It is projected that by 2023, the DFWNC will not be able support burial requests and provide sufficient onsite parking to support the needs of Veterans, family members, and staff. Phase IV is needed to fulfil this mission.

Area of Potential Effect

The Area of Potential Effect (APE) is defined as the undisturbed areas within the DFWNC, approximately 67 acres as Figure 2 on page 3.

Identification of Historic Properties

Previous archaeological investigations have been conducted at the DFWNC and within approximately one mile of the cemetery. Three historic-age archaeological sites were recorded within the immediate vicinity and within one kilometer of the proposed project area. Historic windmill sites were recorded in 1995 and were not relocated during attempts to revisit the sites in 2015 and an early to mid-twentieth century artifact scatter recorded in 2002, was revisited circa 2006 and could not be relocated. Early consultation with the Texas Historical Commission during a 2015 expansion phase of the cemetery concluded that archaeological survey should be conducted due to the time span between the previous surveys (i.e., greater than 10 years). Accordingly, pedestrian survey supplemented with shovel test pits investigated the general area north of the current project for previously recorded, as well as unrecorded, archaeological resources. The previously identified sites could not be located and were likely destroyed either during previous development of the cemetery or other activities/individuals since their initial documentation. A Cultural Resources Assessment Report has been prepared documenting previous surveys and by conducting research. The report is attached for your review, please see Attachment 1.

Determination of Findings

Therefore, pursuant to 36 CFR 800.4(d)(1), the VAMC VA has determined that no historic properties will be affected by the undertaking and requests the tribe's concurrence on the agency's finding per 36 CFR Part 800 and Executive Order 13175.

Figure 1: Regional Location Map

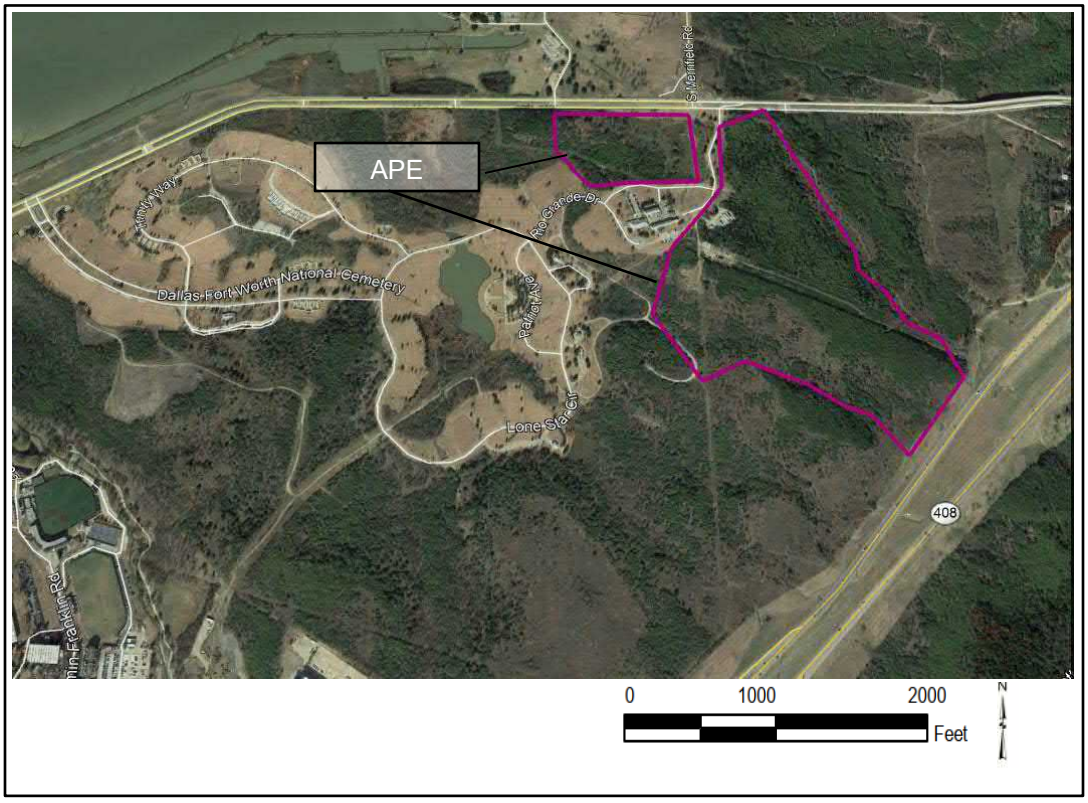

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

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Please let me know if any of the provided materials are insufficient or if you have any questions.

Sincerely

W. Edward Hooker, III
Historic Architect/ Cultural Resources Manager
U.S. Department of Veterans Affairs
National Cemetery Administration
Design and Construction Service

Attachment
Cultural Resources Assessment Report

CC: Fernando Fernandez, Environmental Engineer, Department of Veterans Affairs, OCFM
Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Coushatta Tribe of Louisiana
Linda Langley, Tribal Historic Preservation Officer
PO Box 818
Elton, LA 70532

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear Tribal Historic Preservation Officer Langley,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

Background

The DFWNC is located in Dallas, Dallas County, Texas, adjacent to Mountain Creek Lake. The cemetery is bound by the lake to the west, Texas Highway 408 to the east, and Mountain Creek Highway to the north. Undeveloped land is beyond the roadways and to the south of the cemetery. The only access to the cemetery is from Mountain Creek Parkway, an arterial road to Texas Highways 408 and 12.

The DFWNC opened on 12 May 2000. The cemetery is 638.5 acres and includes areas for cremated remains and casketed burial sites. The development of the cemetery grounds has been conducted in phases, to date three phases have been completed. Phase I, was completed when the cemetery opened in 12 May 2000 and included the development of 110 acres including traditional 12,000 gravesites and 2,220 columbariums/garden niches (for cremated remains). Phase II was completed by 2014 and included developing 53 acres and constructed 20,500 casketed burial sites and 4,000 columbarium niches. Phase III began in May 2016 and was completed in 2018. To date, the cemetery as 85,778 casketed burial sites and 31,918 columbarium niches.

Undertaking

The NCA has defined the undertaking as clearing and grading activities associated with the development of approximately 67 acres of land within DFWNC; no new property would be acquired. This project is identified as Phase IV. The undertaking would modify undeveloped, vegetated areas into burial sections, storage areas, irrigation pond, and associated roadways. Approximately 80 acres of previously undisturbed and developed areas will be disturbed as part of this proposed action. The expansion would

also include landscaping, site furnishings, drainage, and irrigation system as well as a constructing and potentially expanding existing facilities near the administration building. The expansion will be designed and constructed in accordance with NCA cemetery design standards and overall character of the surrounding area serve as guiding considerations in the ultimate expansion design.

The NCA's mission is to honor Veterans and their eligible family members with final resting places in national shrines and with lasting tributes that commemorate their service and sacrifice to our Nation. It is projected that by 2023, the DFWNC will not be able support burial requests and provide sufficient onsite parking to support the needs of Veterans, family members, and staff. Phase IV is needed to fulfil this mission.

Area of Potential Effect

The Area of Potential Effect (APE) is defined as the undisturbed areas within the DFWNC, approximately 67 acres as Figure 2 on page 3.

Identification of Historic Properties

Previous archaeological investigations have been conducted at the DFWNC and within approximately one mile of the cemetery. Three historic-age archaeological sites were recorded within the immediate vicinity and within one kilometer of the proposed project area. Historic windmill sites were recorded in 1995 and were not relocated during attempts to revisit the sites in 2015 and an early to mid-twentieth century artifact scatter recorded in 2002, was revisited circa 2006 and could not be relocated. Early consultation with the Texas Historical Commission during a 2015 expansion phase of the cemetery concluded that archaeological survey should be conducted due to the time span between the previous surveys (i.e., greater than 10 years). Accordingly, pedestrian survey supplemented with shovel test pits investigated the general area north of the current project for previously recorded, as well as unrecorded, archaeological resources. The previously identified sites could not be located and were likely destroyed either during previous development of the cemetery or other activities/individuals since their initial documentation. A Cultural Resources Assessment Report has been prepared documenting previous surveys and by conducting research. The report is attached for your review, please see Attachment 1.

Determination of Findings

Therefore, pursuant to 36 CFR 800.4(d)(1), the VAMC VA has determined that no historic properties will be affected by the undertaking and requests the tribe's concurrence on the agency's finding per 36 CFR Part 800 and Executive Order 13175.

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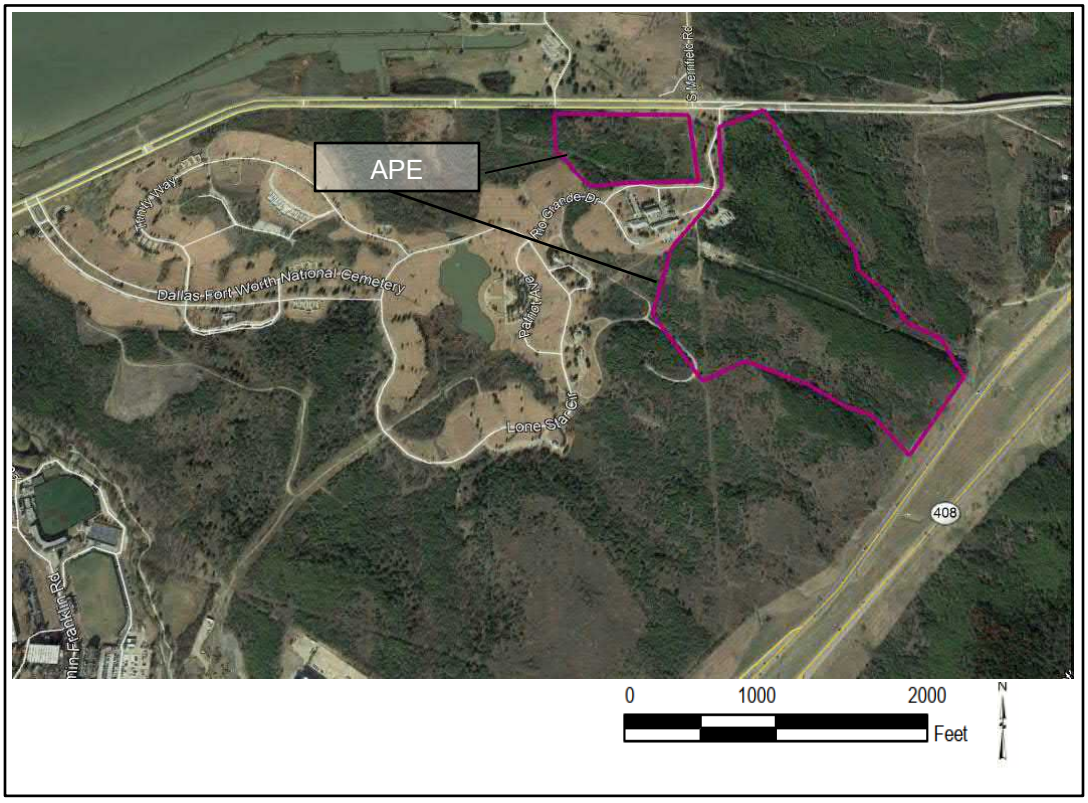

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

If you have any questions in the meantime, please do not hesitate to contact Fernando Fernandez for additional information at Fernando.Fernandez@va.gov.

Please let me know if any of the provided materials are insufficient or if you have any questions.

Sincerely

W. Edward Hooker, III
Historic Architect/ Cultural Resources Manager
U.S. Department of Veterans Affairs
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Design and Construction Service

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Cultural Resources Assessment Report

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Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Kickapoo Traditional Tribe of Texas
Estavio Elizando, Chairperson
2212 Rosita Valley Road
Eagle Pass, TX 78852

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear Chairperson Elizando,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

Background

The DFWNC is located in Dallas, Dallas County, Texas, adjacent to Mountain Creek Lake. The cemetery is bound by the lake to the west, Texas Highway 408 to the east, and Mountain Creek Highway to the north. Undeveloped land is beyond the roadways and to the south of the cemetery. The only access to the cemetery is from Mountain Creek Parkway, an arterial road to Texas Highways 408 and 12.

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Undertaking

The NCA has defined the undertaking as clearing and grading activities associated with the development of approximately 67 acres of land within DFWNC; no new property would be acquired. This project is identified as Phase IV. The undertaking would modify undeveloped, vegetated areas into burial sections, storage areas, irrigation pond, and associated roadways. Approximately 80 acres of previously undisturbed and developed areas will be disturbed as part of this proposed action. The expansion would

also include landscaping, site furnishings, drainage, and irrigation system as well as a constructing and potentially expanding existing facilities near the administration building. The expansion will be designed and constructed in accordance with NCA cemetery design standards and overall character of the surrounding area serve as guiding considerations in the ultimate expansion design.

The NCA's mission is to honor Veterans and their eligible family members with final resting places in national shrines and with lasting tributes that commemorate their service and sacrifice to our Nation. It is projected that by 2023, the DFWNC will not be able support burial requests and provide sufficient onsite parking to support the needs of Veterans, family members, and staff. Phase IV is needed to fulfil this mission.

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Determination of Findings

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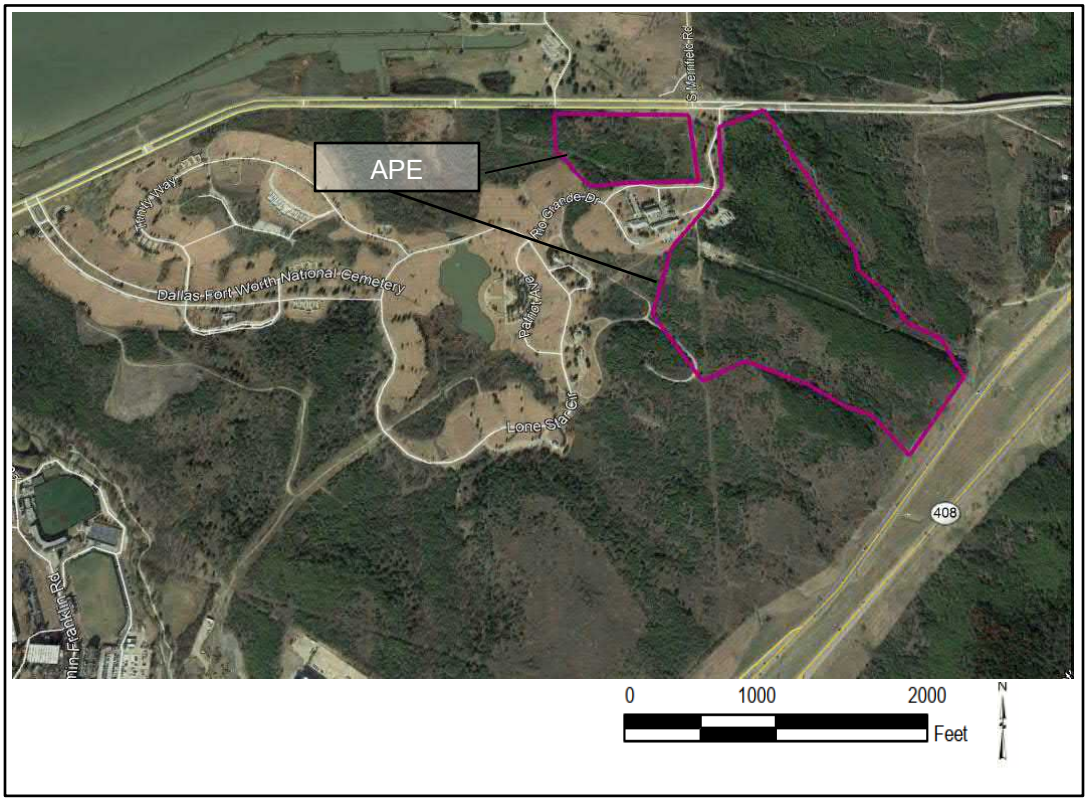

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

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Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Tonkawa Tribe of Indians of Oklahoma
Lauren Brown, Tribal Historic Preservation Officer
1 Rush Buffalo Road
Tonkawa, OK 74653

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear Tribal Historic Preservation Officer Brown,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

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Undertaking

The NCA has defined the undertaking as clearing and grading activities associated with the development of approximately 67 acres of land within DFWNC; no new property would be acquired. This project is identified as Phase IV. The undertaking would modify undeveloped, vegetated areas into burial sections, storage areas, irrigation pond, and associated roadways. Approximately 80 acres of previously undisturbed and developed areas will be disturbed as part of this proposed action. The expansion would

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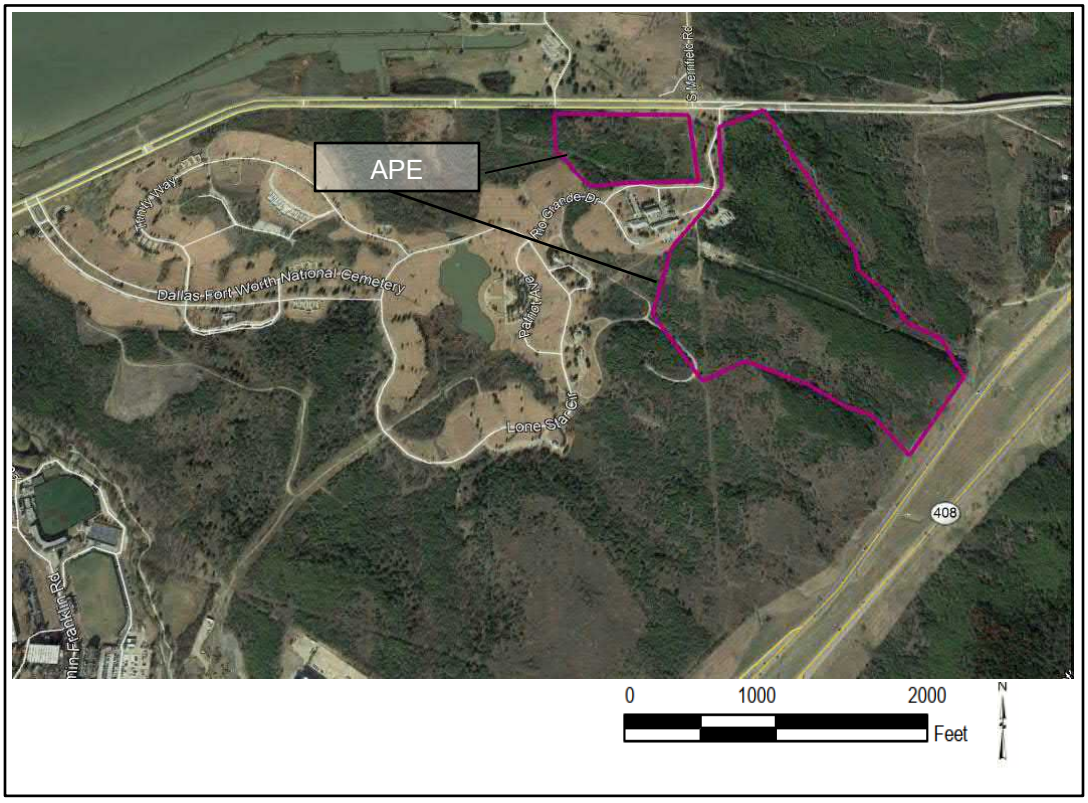

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

If you have any questions in the meantime, please do not hesitate to contact Fernando Fernandez for additional information at Fernando.Fernandez@va.gov.

To meet project timeframes, if you would like to be a consulting party on this project, please let me know of your interest within 30 days. If you have initial concerns with impacts of the project, please note them in your response. Please let me know if any of the provided materials are insufficient or if you have any questions.

Sincerely

W. Edward Hooker, III
Historic Architect/ Cultural Resources Manager
U.S. Department of Veterans Affairs
National Cemetery Administration
Design and Construction Service

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Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Ysleta del Sur Pueblo
Carlos Hisa, Tribal Governor
PO Box 17579
Ysleta Station
El Paso, TX 79917

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear Tribal Governor Hisa,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

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Therefore, pursuant to 36 CFR 800.4(d)(1), the VAMC VA has determined that no historic properties will be affected by the undertaking and requests the tribe's concurrence on the agency's finding per 36 CFR Part 800 and Executive Order 13175.

Figure 1: Regional Location Map

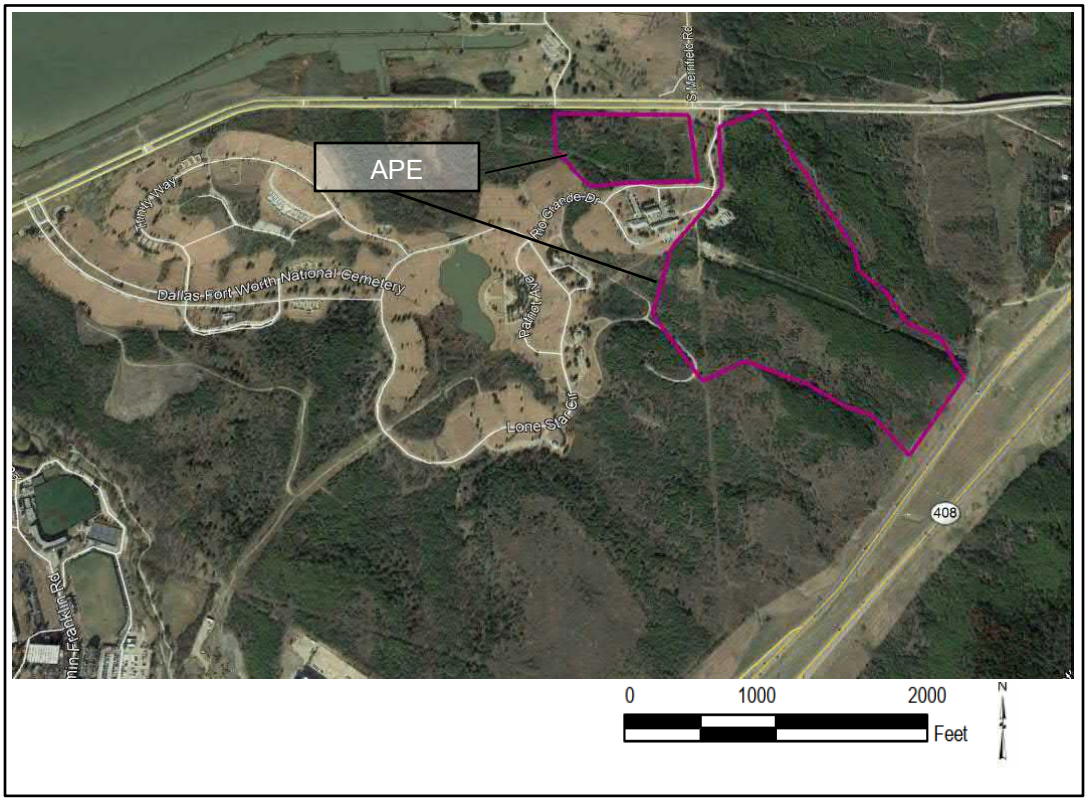

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

If you have any questions in the meantime, please do not hesitate to contact Fernando Fernandez for additional information at Fernando.Fernandez@va.gov.

Please let me know if any of the provided materials are insufficient or if you have any questions.

Sincerely

W. Edward Hooker, III
Historic Architect/ Cultural Resources Manager
U.S. Department of Veterans Affairs
National Cemetery Administration
Design and Construction Service

Attachment
Cultural Resources Assessment Report

CC: Fernando Fernandez, Environmental Engineer, Department of Veterans Affairs, OCFM
Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Wichita and Affiliated Tribes (Wichita, Keechi, Waco & Tawakonie), Oklahoma
Terri Parton, President
PO Box 729
Anadarko, OK 73005

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear President Parton,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

Background

The DFWNC is located in Dallas, Dallas County, Texas, adjacent to Mountain Creek Lake. The cemetery is bound by the lake to the west, Texas Highway 408 to the east, and Mountain Creek Highway to the north. Undeveloped land is beyond the roadways and to the south of the cemetery. The only access to the cemetery is from Mountain Creek Parkway, an arterial road to Texas Highways 408 and 12.

The DFWNC opened on 12 May 2000. The cemetery is 638.5 acres and includes areas for cremated remains and casketed burial sites. The development of the cemetery grounds has been conducted in phases, to date three phases have been completed. Phase I, was completed when the cemetery opened in 12 May 2000 and included the development of 110 acres including traditional 12,000 gravesites and 2,220 columbariums/garden niches (for cremated remains). Phase II was completed by 2014 and included developing 53 acres and constructed 20,500 casketed burial sites and 4,000 columbarium niches. Phase III began in May 2016 and was completed in 2018. To date, the cemetery as 85,778 casketed burial sites and 31,918 columbarium niches.

Undertaking

The NCA has defined the undertaking as clearing and grading activities associated with the development of approximately 67 acres of land within DFWNC; no new property would be acquired. This project is identified as Phase IV. The undertaking would modify undeveloped, vegetated areas into burial sections, storage areas, irrigation pond, and associated roadways. Approximately 80 acres of previously undisturbed and developed areas will be disturbed as part of this proposed action. The expansion would

also include landscaping, site furnishings, drainage, and irrigation system as well as a constructing and potentially expanding existing facilities near the administration building. The expansion will be designed and constructed in accordance with NCA cemetery design standards and overall character of the surrounding area serve as guiding considerations in the ultimate expansion design.

The NCA's mission is to honor Veterans and their eligible family members with final resting places in national shrines and with lasting tributes that commemorate their service and sacrifice to our Nation. It is projected that by 2023, the DFWNC will not be able support burial requests and provide sufficient onsite parking to support the needs of Veterans, family members, and staff. Phase IV is needed to fulfil this mission.

Area of Potential Effect

The Area of Potential Effect (APE) is defined as the undisturbed areas within the DFWNC, approximately 67 acres as Figure 2 on page 3.

Identification of Historic Properties

Previous archaeological investigations have been conducted at the DFWNC and within approximately one mile of the cemetery. Three historic-age archaeological sites were recorded within the immediate vicinity and within one kilometer of the proposed project area. Historic windmill sites were recorded in 1995 and were not relocated during attempts to revisit the sites in 2015 and an early to mid-twentieth century artifact scatter recorded in 2002, was revisited circa 2006 and could not be relocated. Early consultation with the Texas Historical Commission during a 2015 expansion phase of the cemetery concluded that archaeological survey should be conducted due to the time span between the previous surveys (i.e., greater than 10 years). Accordingly, pedestrian survey supplemented with shovel test pits investigated the general area north of the current project for previously recorded, as well as unrecorded, archaeological resources. The previously identified sites could not be located and were likely destroyed either during previous development of the cemetery or other activities/individuals since their initial documentation. A Cultural Resources Assessment Report has been prepared documenting previous surveys and by conducting research. The report is attached for your review, please see Attachment 1.

Determination of Findings

Therefore, pursuant to 36 CFR 800.4(d)(1), the VAMC VA has determined that no historic properties will be affected by the undertaking and requests the tribe's concurrence on the agency's finding per 36 CFR Part 800 and Executive Order 13175.

Figure 1: Regional Location Map

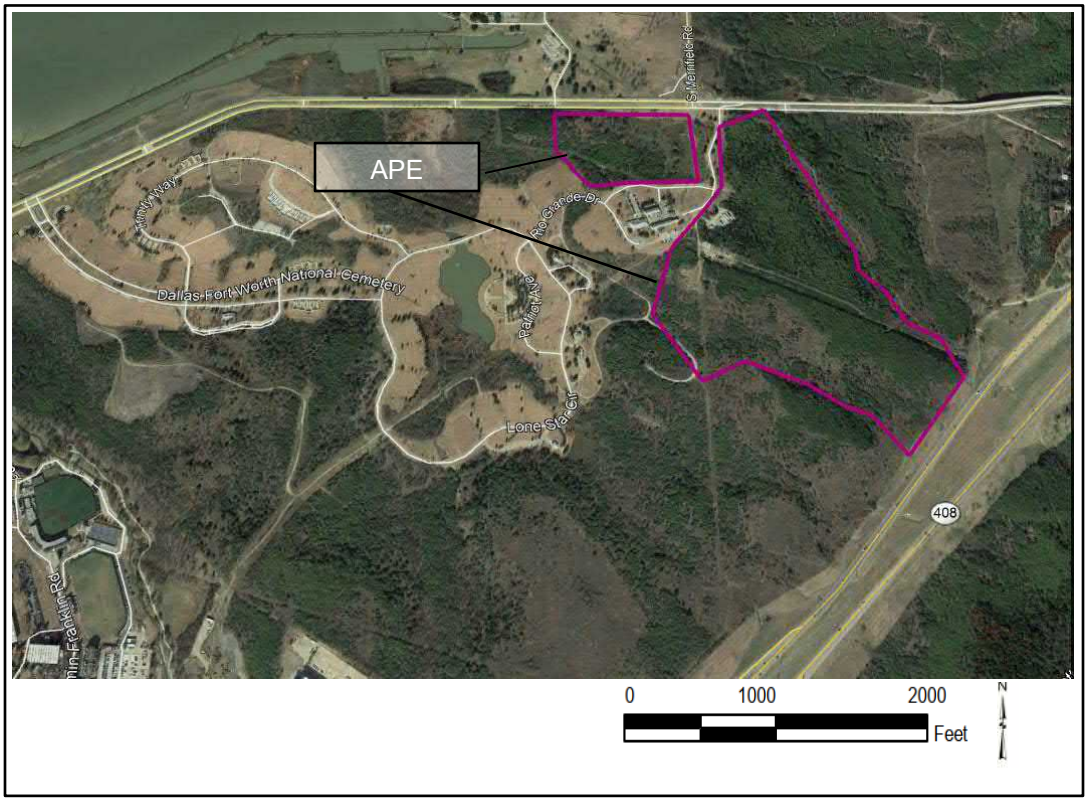

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

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Please let me know if any of the provided materials are insufficient or if you have any questions.

Sincerely

W. Edward Hooker, III
Historic Architect/ Cultural Resources Manager
U.S. Department of Veterans Affairs
National Cemetery Administration
Design and Construction Service

Attachment
Cultural Resources Assessment Report

CC: Fernando Fernandez, Environmental Engineer, Department of Veterans Affairs, OCFM
Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION
Design and Construction Service
Washington DC 20420

23 September 2019

Mark Wolfe, Executive Director
Texas Historical Commission
1511 Colorado Street
Austin, Texas 78701

Subject: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery

Dear Mr. Wolfe,

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the U.S. Department of Veterans Affairs (VA) is proposing to complete the planned Phase IV expansion, including construction and operation, at the Dallas-Fort Worth National Cemetery (DFWNC) in Dallas, Texas, detailed in Figures 1 and 2 on page 3. The National Cemetery Administration (NCA) is conducting this cemetery expansion project to increase burial capacity at the DFWNC which serves veterans in North Texas and Southern Oklahoma.

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The NCA has defined the undertaking as clearing and grading activities associated with the development of approximately 67 acres of land within DFWNC; no new property would be acquired. This project is identified as Phase IV. The undertaking would modify undeveloped, vegetated areas into burial sections, storage areas, irrigation pond, and associated roadways. Approximately 80 acres of previously

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Determination of Findings

Therefore, pursuant to 36 CFR 800.4(d)(1), the VAMC VA has determined that no historic properties will be affected by the undertaking and requests concurrence on the agency's finding per 36 CFR Part 800.

Figure 1: Regional Location Map

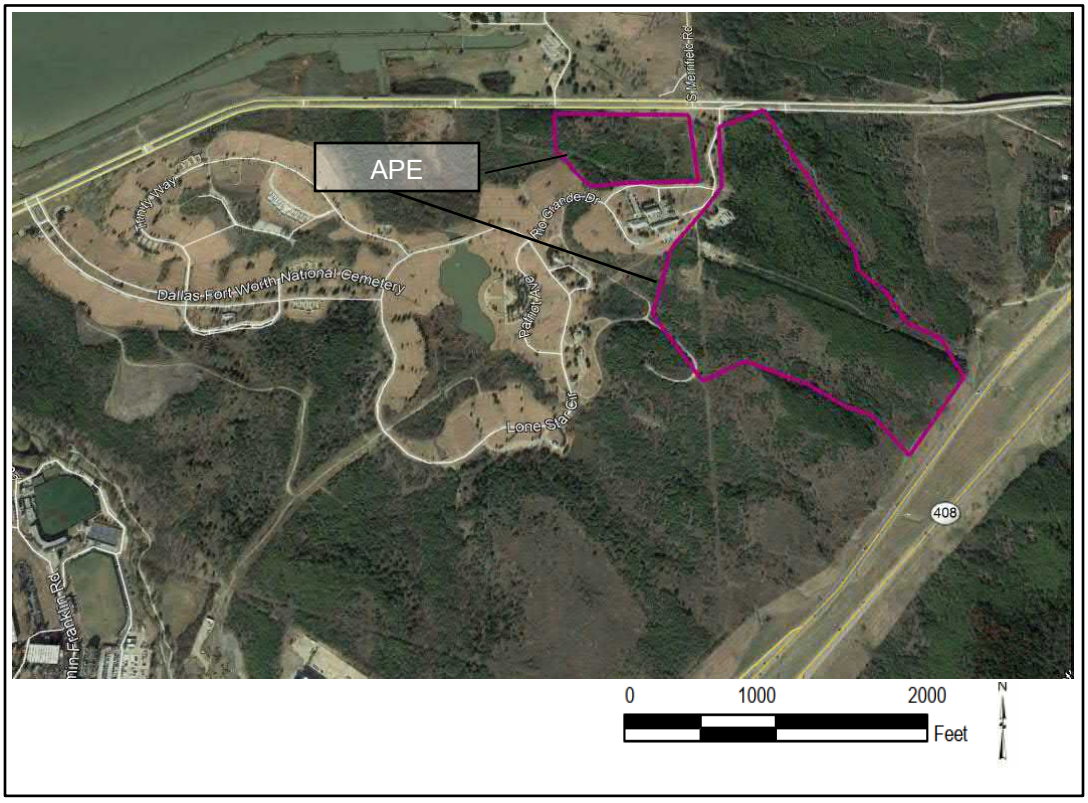

Figure 2: *Dallas Fort Worth National Cemetery Phase IV APE*

If you have any questions in the meantime, please do not hesitate to contact Fernando Fernandez for additional information at Fernando.Fernandez@va.gov.

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Sincerely

W. Edward Hooker, III
Historic Architect/ Cultural Resources Manager
U.S. Department of Veterans Affairs
National Cemetery Administration
Design and Construction Service

Attachment
Cultural Resources Assessment Report

CC: Fernando Fernandez, Environmental Engineer, Department of Veterans Affairs, OCFM
Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

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1. Article Addressed to:

Ysleta del Sur Pueblo
Carlos Hisa, Tribal Governor
PO Box 17579
Ysleta Station
El Paso, TX 79917

9590 9402 5107 9092 0295 12

2. Article Number *(Transfer from service label)*

7019 0700 0001 2511 3883

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X Crystal Avalos ☐ Agent ☐ Addressee

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1. Article Addressed to:

Tonkawa Tribe of Indians of Oklahoma
Lauren Brown, Tribal Historic Preservation Officer
1 Rush Buffalo Road
Tonkawa, OK 74653

9590 9402 5107 9092 0299 63

2. Article Number *(Transfer from service label)*

7019 0700 0001 2511 3777

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1. Article Addressed to:

Comanche Nation of Oklahoma
Martina Callahan, Tribal Historic Preservation Officer
PO Box 908
Lawton, OK 73502

9590 9402 5107 9092 0295 05

2. Article Number *(Transfer from service label)*

7019 0700 0001 2511 3876

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If YES, enter delivery address below: ☐ No

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☐ Signature Confirmation™
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1. Article Addressed to:

Coushatta Tribe of Louisiana
Kassie Darsey, Section 106 Coordinator
PO Box 818
Elton, LA 70532

9590 9402 5107 9092 0295 43

2. Article Number *(Transfer from service label)*

7019 0700 0001 2511 1506

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☐ Collect on Delivery Restricted Delivery
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☐ Insured Mail Restricted Delivery (over $500)
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☐ Registered Mail Restricted Delivery
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1. Article Addressed to:

Honorable Eric Johnson
Mayor
City of Dallas
1500 Marilla Street
Dallas, TX 75201

9590 9402 5107 9092 0299 87

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 3784

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A. Signature
X L. London ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* L LONDON
C. Date of Delivery 9-23-19

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If YES, enter delivery address below: ☐ No

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☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

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1. Article Addressed to:

Peer Chacko
Chief Planning Officer and Director
City of Dallas
1500 Marilla Street, 1 FN
Dallas, TX 75201

9590 9402 5107 9092 0295 74

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 3388

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A. Signature
X L. London ☐ Agent ☐ Addressee

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C. Date of Delivery 9-23-19

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If YES, enter delivery address below: ☐ No

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☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
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- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Casey Thomas, II, Mayor Pro Tem
City Council, District 3
City of Dallas
1500 Marilla Street
Dallas, TX 75201

9590 9402 5107 9092 0294 99

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 3821

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A. Signature
X L. London ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* L LONDON
C. Date of Delivery 9-23-19

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

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☐ Certified Mail Restricted Delivery
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☐ Collect on Delivery Restricted Delivery
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- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Cheryl Seager
Compliance Assurance and Enforcement Division
USEPA, Region 6
1445 Ross Ave, Suite 1200 Mail Code: 6RA
Dallas, TX 75202

9590 9402 5107 9092 0295 50

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 3814

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1. Article Addressed to:

Debra Bills
Field Supervisor
United States Fish and Wildlife Service
Southwest Region, Ecological Services
2005 NE Green Oaks Blvd Suite 140
Arlington, TX 76006-6247

9590 9402 5107 9092 0299 94

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 3760

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A. Signature
X [signature] ☒ Agent ☐ Addressee

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9-20-19

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☐ Collect on Delivery Restricted Delivery
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☐ Insured Mail Restricted Delivery (over $500)
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1. Article Addressed to:

Tony Walker
Regional Director
TCEQ, Region 4
2309 Gravel Drive
Fort Worth, TX 76118-6951

9590 9402 5107 9092 0294 75

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 3838

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A. Signature
X Eldon Bowie ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery
Eldon Bowie

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

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☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery ($500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
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DER: COMPLETE THIS SECTION

omplete items 1, 2, and 3.
rint your name and address on the reverse
o that we can return the card to you.
ttach this card to the back of the mailpiece,
on the front if space permits.

ticle Addressed to:

ıren Hardin
xas Parks and Wildlife
00 Smith School Road
ıstin, TX 78744

9590 9402 5107 9092 0294 82

ticle Number *(Transfer from service label)*
19 0700 0001 2511 3371

orm 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery
Greg Cannon 9-20-19

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery over $500)
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1. Article Addressed to:

Mark Wolfe, Executive Director
Texas Historical Commission
1511 Colorado Street
Austin, Texas 78701

9590 9402 5107 9092 0300 06

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 3807

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COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery

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TX Comptroller Mail
SEP 23 2019

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☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
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☐ Insured Mail Restricted Delivery ($500)
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SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Richard Stewart, Chairman
Dallas County Historical Commission
411 Elm Street, 4th Floor
Dallas, TX 75202-3301

9590 9402 5107 9092 0294 68

2. Article Number *(Transfer from service label)*

7019 0700 0001 2511 3845

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A. Signature

X

☐ Agent
☐ Addressee

B. Received by *(Printed Name)* HIDWELL

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1. Article Addressed to:

Comanche Nation of Oklahoma
Martin Callahan, Tribal Historic Preservation Officer
PO Box 908
Lawton, OK 73502

9590 9402 5107 9092 0299 49

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7019 0700 0001 2511 3661

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1. Article Addressed to:

Mark Wolfe, Executive Director
Texas Historical Commission
1511 Colorado Street
Austin, Texas 78701

9590 9402 5107 9092 0299 18

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 36[illegible]

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1. Article Addressed to:

Apache Tribe of Oklahoma
Bobby K[illegible]ardley, Chairman
511 E Colorado
Anadarko, OK 73005

9590 9402 5107 9092 0299 56

2. Article Number *(Transfer from service label)*
]19 0700 0001 2511 3654

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A. Signature
X Lisa Keahbone ☐ Agent ☐ Addressee

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1. Article Addressed to:

C[illegible]shatta Tribe of Louisiana
Kassie D[illegible]sey, Section 106 Coordinator
PO Box 818
Elton, LA 70532

9590 9402 5107 9092 0299 32

2. Article Number *(Transfer from service label)*
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Article Addressed to:

onkawa Tribe of Indians of Oklahoma
auren Brown, Tribal Historic Preservation fficer
Rush Buffalo Road
onkawa, OK 74653

9590 9402 5107 9092 0299 01

Article Number *(Transfer from service label)*
019 0700 0001 2511 3708

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X Michelle Fixico ☐ Agent ☐ Addressee

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1. Article Addressed to:

Kickapoo Traditional Tribe of Texas
Estavio Elizando, Chairperson
2212 Rosita Valley Road
Eagle Pass, TX 78852

9590 9402 5107 9092 0299 25

2. Article Number *(Transfer from service label)*
7019 0700 0001 2511 3685

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B. Received by *(Printed Name)* Liz Sanchez
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rticle Addressed to:

leta del Sur Pueblo
dos Hisa, Tribal Governor
Box 17579
leta Station
Paso, TX 79917

9590 9402 5107 9092 0298 95

rticle Number *(Transfer from service label)*
119 0700 0001 2511 3647

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A. Signature
X K Sanchez ☐ Agent ☐ Addressee

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1. Article Addressed to:

Wichita and Affiliated Tribes (Wichita, Keechi, Waco & Tawakonie), Oklahoma
Terri P[illegible], President
PO Bo[illegible]29
Anadarko, OK 73005

9590 9402 5107 9092 0295 98

2. Article Number *(Transfer from service label)*
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Peters, Jennifer T

From: Fernandez, Fernando L. (CFM) <Fernando.Fernandez@va.gov>
Sent: Wednesday, December 18, 2019 10:06 AM
To: Peters, Jennifer T; John Strandberg
Cc: Bodner, Bryan (CFM); Fernandez, Fernando L. (CFM)
Subject: FW: Section 106 Review: Phase 3 Expansion and Improvement of Fort Sam Houston National Cemetery

FYI – and Record.

Fernando L. Fernández REM
Office: 202.632.5529
Cell: 202.876.7608

From: Raynella D. Fontenot <RDFontenot@coushatta.org>
Sent: Monday, December 16, 2019 4:35 PM
To: Fernandez, Fernando L. (CFM) <Fernando.Fernandez@va.gov>
Subject: [EXTERNAL] Section 106 Review: Phase 3 Expansion and Improvement of Fort Sam Houston National Cemetery

Dear Mr. Fernandez,

Thank you for requesting our 106/EA determination. Based on the information provided, I do not believe that this project will have a negative impact on any archaeological, historic or cultural resources of the Coushatta people. Accordingly, we do not wish to consult further on this project. If any inadvertent discoveries are made in the course of this project, we expect to be contacted immediately and reserve the right to consult with you at that time.

Aliilamo (thank you),

Raynella Fontenot

Coushatta Revitalization Coordinator

Acting Section 106 Coordinator

Coushatta Tribe of Louisiana

P.O. Box 10

Elton, LA 70532

337-584-1585

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Fort Worth

T. Dan Friedkin
Chairman-Emeritus
Houston

Carter P. Smith
Executive Director

October 11, 2019

Mr. Fernando L. Fernandez
Environmental Engineer
VA Office of Construction and Facilities Management
Washington D.C. 20420

RE: Scoping for Dallas – Fort Worth National Cemetery Expansion Phase IV

Dear Mr. Fernando L. Fernandez:

The Texas Parks and Wildlife Department (TPWD) has received and reviewed the August 27, 2019, scoping request regarding the above-referenced project.

Project Description

The U.S. Department of Veterans Affairs (VA) is preparing an environmental assessment (EA) concerning the proposed expansion of the Dallas-Fort Worth (DFW) National Cemetery in Dallas County, Texas, in fulfillment of National Environmental Policy Act (NEPA) requirements. The VA intends to construct and maintain additional internment areas (including crypts and columbariums), expand the existing administration building, construct public restrooms and honor guard building, and construct a pond to be used for irrigation within the DFW National Cemetery Property. Temporary laydown and staging areas area also proposed. The disturbance footprint of the proposed action is approximately 80 acres, of which 67 acres is undeveloped.

As the state agency with primary responsibility for protecting the state's fish and wildlife resources, in accordance with the authority granted by Parks and Wildlife Code §12.0011 and per coordination under the NEPA, TPWD hereby provides the following comments and recommendations to minimize potential adverse impacts to the state's fish and wildlife resources, including rare, threatened and endangered species, in the construction and maintenance of the proposed project. Please address the following recommendations in the EA.

Federal Regulations

Federal Regulations: Migratory Bird Treaty Act (MBTA)

The MBTA prohibits direct and affirmative purposeful actions that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The U.S. Fish and Wildlife Service (USFWS) Migratory Bird Office can be contacted at (505) 248-7882 for more information on potential impacts to migratory birds.

The project area contains primarily undeveloped woodlands that consist of a patchwork of native invasive deciduous woodlands invading native grassland habitats and oak/hardwood slope forest adjacent to a wooded riparian stream corridor. Within the

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AUSTIN, TEXAS 78744-3291
512.389.4800
www.tpwd.texas.gov

project area, potential impacts to migratory birds may occur during site preparation and grading activities through the disturbance of existing vegetation and bare ground that may harbor active bird nests, including nests that may occur in grass, shrubs and trees and on bare ground including gravel pads and roads.

> **Recommendation:** TPWD recommends excluding vegetation clearing activities during the general bird nesting season, March 15 through September 15, to avoid adverse impacts to breeding birds. If clearing vegetation during the nesting season is unavoidable, TPWD recommends surveying the area proposed for disturbance to ensure that no nests with eggs or young will be disturbed by operations. If nests are observed during surveys, TPWD recommends retaining a 150-foot buffer of vegetation around active nests until eggs have hatched and the young have fledged.

The project area is located within the Central Flyway, a major bird migration corridor that leads to the Texas coast and Central/South America. Artificial nighttime lighting can attract and disorient night-migrating birds. Birds circling the lights' glare can cause exhaustion mortality.

> **Recommendation:** As bird protection measures, TPWD recommends utilizing the minimum amount of night-time lighting needed for safety and security and to use dark-sky friendly lighting that is on only when needed, down-shielded, as bright as needed, and minimizes blue light emissions. Appropriate lighting technologies and best management practices (BMPs) can be found at the International Dark-Sky Association website.

State Regulations

State Regulations – Chapter 64, Birds

TPW Code Section 64.002, regarding protection of nongame birds, provides that no person may catch, kill, injure, pursue, or possess a bird that is not a game bird. TPW Code Section 64.003, regarding destroying nests or eggs, provides that, no person may destroy or take the nests, eggs, or young and any wild game bird, wild bird, or wild fowl. TPW Code Chapter 64 does not allow for incidental take and therefore is more restrictive than the MBTA.

> **Recommendation:** Please review the *Migratory Bird Treaty Act* section above for recommendations as they are also applicable for compliance with TPW Code.

State Regulations: State-listed Species

TPW Code Section 68.015 regulates state-listed species. Please note that there is no provision for the capture, trap, take, or kill (incidental or otherwise) of state-listed species. The TPWD online application identifying rare, threatened, and endangered species by county (RTEST) provides information regarding state-listed species that have potential to occur within each county in Texas. TPWD also maintains records of occurrence for these species within the Texas Natural Diversity Database (TXNDD),

and these data are publicly available by request. State-listed species could potentially be impacted if suitable habitat is present at or near the project site.

Recommendation: TPWD recommends the EA identify the state-listed species with potential to occur within the project area using the RTEST list for Dallas County. TPWD recommends conducting site surveys of the project disturbance areas to identify suitable habitat for state-listed species, to assess potential impacts to state-listed species, and to adjust the disturbance footprint to avoid or minimize adverse impacts to state-listed species.

Recommendation: TPWD recommends the EA identify impact avoidance and minimization measures that the VA will employ to protect state-listed species and other sensitive resources that may occur within the study area.

Terrestrial State-listed Species: Of the terrestrial species listed as potentially occurring in Dallas County, the state-threatened black-capped vireo (*Vireo atricapilla*), Texas horned lizard (*Phrynosoma cornutum*) and timber rattlesnake (*Crotalus horridus*) are more at risk for being impacted by construction activities than other state-listed terrestrial species due to potential habitat occurring within the project area and limited mobility. Where suitable habitat is present, vegetation disturbance during nesting could impact nesting black-capped vireos. The Texas horned lizard would be susceptible to earth moving equipment and compaction. The timber rattlesnake is a slow-moving, cryptic species that is less able to readily escape from heavy machinery than other wildlife and would be susceptible to loss during clearing in or near upland and riparian woodlands. Additionally, various small vertebrates including snakes, lizards, toads, and mice fall into trenches, become trapped, and are susceptible to loss from backfilling activities, starvation, dehydration, predation, and exposure to elements.

Recommendation: TPWD recommends the VA and its contractors to be informed of the federal- and state-listed species and species of greatest conservation need (SGCN) with potential to occur in the project area and to take precautions avoid impacts to rare species if encountered in the project area. Wildlife observed during construction should be allowed to safely leave the site. Additionally, the timber rattlesnake is a rather docile species, and injury to humans usually occurs when the snake becomes agitated following harassment or when someone attempts to handle a recently dead snake that still contains its bite reflex. Therefore, contractors should avoid contact with the species if encountered.

Recommendation: If the project is found to contain unavoidable habitat of a state-listed species, then TPWD recommends a biological monitor be present during clearing and construction activities to assist in detecting state-listed species. State-listed threatened species observed during construction that will not readily leave the project site may be translocated by a permitted individual to a nearby area with similar habitat that would not be disturbed during construction. TPWD recommends that any translocations of reptiles be the minimum distance possible no greater than one mile, preferably within 100-200 yards from the initial encounter location. For purposes of relocation, surveys, monitoring, and research, terrestrial state-listed species may only be handled by persons authorized through the TPWD Wildlife Permits Office.

Recommendation: Where trenching for utilities and footings is involved, TPWD recommends minimizing the length of trenches left open at any given time during construction. Trenches left open for more than two daylight hours should be inspected for the presence of trapped wildlife prior to backfilling. If trenches cannot be backfilled the day of initial trenching, then escape ramps, in the form of short lateral trenches or wooden planks sloping to the surface at an angle of less than 45 degrees, should be installed at least every 90 meters.

Recommendation: For soil stabilization and revegetation of disturbed areas within the proposed project area, TPWD recommends erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. Because the mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, TPWD recommends the use of no-till drilling, hydromulching and/or hydroseeding rather than erosion control blankets or mats due to a reduced risk to wildlife. If erosion control blankets or mats will be used, the product should contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic mesh matting should be avoided.

State Fish and Wildlife Resources

The Texas Conservation Action Plan (TCAP) contains handbooks for each ecoregion of the state for use by all entities for guidance regarding species of greatest conservation need (SGCN) and important habitats. The TCAP identifies threats affecting native species and habitats such as loss of habitat due to development. In addition to state- and federally-listed species, TPWD tracks SGCN and natural plant communities and actively promotes their conservation. TPWD considers it important to evaluate and, if feasible, minimize impacts to SGCN and their habitat to reduce the likelihood of endangerment and preclude the need to list as threatened or endangered in the future. SGCN are included in the above-referenced RTEST application.

After reviewing the RTEST list for Dallas County and based on potentially suitable habitat, SGCN flora and fauna with potential to occur in the project area and with greater potential to be impacted by project activities include the following:

Taxon	SName	CName	GRank	SRank
Amphibians	Desmognathus conanti	southern dusky salamander	G5	S1
Amphibians	Anaxyrus woodhousii*	Woodhouse's toad	G5	SU
Amphibians	Pseudacris streckeri	Strecker's chorus frog	G5	S3
Birds	Athene cunicularia hypugaea	western burrowing owl	G4T4	S2
Mammals	Blarina carolinensis	southern short-tailed shrew	G5	S4
Mammals	Myotis austroriparius	southeastern myotis bat	G4	S3
Mammals	Myotis velifer	cave myotis bat	G4G5	S4
Mammals	Perimyotis subflavus	tricolored bat	G2G3	S3S4
Mammals	Eptesicus fuscus	big brown bat	G5	S5

Mammals	Lasiurus borealis	eastern red bat	G3G4	S4
Mammals	Lasiurus cinereus	hoary bat	G3G4	S4
Mammals	Tadarida brasiliensis	Mexican free-tailed bat	G5	S5
Mammals	Ictidomys tridecemlineatus	thirteen-lined ground squirrel	G5	S5
Mammals	Microtus pinetorum	woodland vole	G5	S3
Mammals	Mustela frenata	long-tailed weasel	G5	S5
Mammals	Spilogale putorius*	eastern spotted skunk	G4	S1S3
Mammals	Spilogale putorius interrupta	plains spotted skunk	G4T4	S1S3
Mammals	Conepatus leuconotus	western hog-nosed skunk	G4	S4
Reptiles	Terrapene Carolina*	eastern box turtle	G5	S3
Reptiles	Terrapene ornata	western box turtle	G5	S3
Reptiles	Ophisaurus attenuatus	slender glass lizard	G5	S3
Reptiles	Thamnophis sirtalis*	common garter snake	G5	S2
Reptiles	Thamnophis sirtalis annectens*	Texas garter snake	G5T4	S1
Reptiles	Sistrurus tergeminus	massasauga	G3G4	S3S4
Insects	Bombus pensylvanicus*	American bumblebee	G3G4	SNR
Insects	Pogonomyrmex comanche	Comanche harvester ant	G2G3	S2
Insects	Arethaea ambulator	No accepted common name	GNR	SNR
Plants	Matelea edwardsensis*	plateau milkvine	G3	S3
Plants	Liatris glandulosa*	glandular gay-feather	G3	S3
Plants	Physaria engelmannii*	Engelmann's bladderpod	G4	S3
Plants	Cuscuta exaltata	tree dodder	G3	S3
Plants	Astragalus reflexus	Texas milk vetch	G3	S3
Plants	Dalea hallii*	Hall's prairie clover	G3	S3
Plants	Phlox oklahomensis	Oklahoma phlox	G3	SH
Plants	Agalinis densiflora	Osage Plains false foxglove	G3	S2
Plants	Yucca necopina*	Glen Rose yucca	G1G2	S1S2
Plants	Hexalectris nitida*	Glass Mountains coral-root	G3	S3
Plants	Hexalectris warnockii*	Warnock's coral-root	G2G3	S2

*Known occurrences from the TXNDD or iNaturalist near the project area.

(Note: The TXNDD is intended to assist users in avoiding harm to known locations of rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Please note that absence of information in the database does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within your project area.

These data are not inclusive, **cannot be used as presence/absence data,** and cannot be substituted for on-the-ground surveys.)

The Project study area is located within the EPA Level IV Northern Blackland Prairie Ecoregion. Within the Texas Blackland Prairies ecoregion, priority habitats identified in the TCAP for conservation of SGCN for the study area include tallgrass prairie communities, riparian woodlands, freshwater wetlands, and oak savannahs and woodlands. TPWD encourages landowners and land agents to conserve priority habitats of the ecoregion and discourages fragmentation and loss to such habitats.

The TPWD Landscape Ecology Program's Ecological Mapping Systems (EMS) data are available for download or available for use in the TPWD online interactive mapping tool, Texas Ecosystem Analytical Mapper. The EMS provides systems, mapping subsystems, and vegetative types for Texas and can assist in planning projects to avoid impacts to important habitats in an ecoregion. For example, in the study area, the EMS identifies oak/hardwood slope forests which is potentially suitable habitat for SGCN coral-root orchids, riparian hardwood forest which is suitable habitat for the state-listed timber rattlesnake, and invasive deciduous woodlands which is suitable habitat for the eastern spotted skunk. The TCAP and EMS vegetation data can assist in identifying and avoiding areas of potential priority habitats; however, the EMS should be used in conjunction site-specific soils data and on-the-ground surveys of the vegetation when assessing potential project impacts on listed species, SGCN, and priority habitats.

Riparian corridors provide valuable wildlife habitat and help to protect water quality. Review of the project site layout indicates that ground disturbances are proposed in upland areas void of aquatic habitats. The northeast disturbance boundary, however, does occur very close to a wooded riparian stream corridor.

> **Recommendation:** TPWD recommends allowing wide natural buffers contiguous to wetlands or stream systems to remain undisturbed to preserve wildlife cover, food sources, and travel corridors. TPWD recommends adjusting the northeast disturbance area to create a wider buffer to the stream and to retain the oak/hardwood slope forest in this area.

Within the Texas prairie regions, native grasslands have become lost due to agricultural practices, development, and woody encroachment. With the loss of native grasslands, wildlife associated with grassland habitats have declined including the loss of pollinators due to declining floral resources. TPWD encourages landowners and land agents to conserve pockets of remaining native grassland habitats. A review of the TXNDD revealed some small pockets of Vertisol Blackland Prairies (*Schizachyrium scoparium – Sorghastrum nutans – Andropogon gerardii - Bifora Americana* Vertisol Grassland) Series G1G2SNR Communities within Dallas County. These occurrences indicate that prairie remnants have been found near the project area and that other areas not currently assessed may also exhibit native prairie remnants.

Although the DFW National Cemetery is set among an urban setting, it does contain undeveloped areas that may serve as suitable habitat for rare resources including remnants of native grasslands (either exposed or invaded by woody species) and oak-juniper woodlands on limestone slopes of the White Rock Escarpment. Rare plants

associated with native grasslands or oak-juniper woodlands are known to occur near the project area, as noted on the SGCN list above. The red-hatched disturbance area provided in the scoping materials is rather large and occurs within both woodlands and open grasslands that may include native grassland (either exposed or invaded by woody species) or oak-juniper slope woodlands. Without details regarding the species occurring at the project site, it is difficult to interpret the quality of the habitats using only publicly-available desktop datasets.

Recommendation: TPWD recommends delineating the vegetative species occurring within the proposed disturbance areas to identify the types of habitats being impacted.

Recommendation: TPWD recommends minimizing habitat removal and avoiding disturbance to native grasslands and oak/juniper slope forests. TPWD recommends only clearing portions of the red-hatched disturbance area that are necessary for the project. If portions of the red-hatched disturbance area include invasive deciduous woodlands that have invaded native grasslands, then those areas would be appropriate for tree removal, temporary construction staging, followed by restoration to native grassland. In areas exhibiting native grassland characteristics, scraping and grading of the herbaceous vegetation should be kept to a minimum to preserve existing native herbaceous vegetation.

Recommendation: If project disturbances must occur within remnants of native grasslands (either exposed or invaded by woody species) or oak-juniper slope woodlands, TPWD recommends surveying for SGCN plants during the season of highest detection and avoiding disturbance of rare plants to the extent feasible. TPWD encourages clearly marking individual rare plants or areas found to contain rare plants as work zone avoidance areas prior to construction, maintenance and operation activities.

Recommendation: If native prairie remnants or rare plants cannot be avoided by the proposed project activities, please make a detailed record of the occurrence and contact TPWD to determine if additional conservation practices for the resources are available.

Recommendation: To aid in the scientific knowledge of a species' status and current range, TPWD encourages reporting encounters of SGCN, threatened, and endangered species to the TXNDD according to the data submittal instructions found on the TXNDD website.

Significant declines in the population of migrating monarch butterflies (*Danaus plexippus*) have led to widespread concern about this species and other native insect pollinator species due to reductions in native floral resources. To support pollinators and migrating monarchs, TPWD encourages the establishment of native wildflower habitats on private and public lands across the state. Please refer to recent publications that can be found on TPWD's Native Pollinator website and TPWD's Monarch Butterfly website.

Recommendation: To accrue benefits for grassland wildlife and pollinators and to mitigate for unavoidable loss of native vegetation, TPWD recommends the VA revegetate areas disturbed by project activities with site-specific native species, with attention to providing habitat for pollinator species. TPWD recommends incorporating native grass and floral species into the permanent landscaping plan as funding and seed/plant availability allow and utilizing maintenance practices to promote the availability of flowering species throughout the growing season.

Thank you for considering project impacts to the fish and wildlife resources of Texas. For questions, please contact me at Karen.Hardin@tpwd.texas.gov or (903) 322-5001.

Sincerely,

Karen B. Hardin
Wildlife Habitat Assessment Program
Wildlife Division

kbh/42582

COMANCHE NATION

Department of Veteran Affairs-National Cemetery Administration
Attn: Mr. Fernando L. Fernandez
Dallas, Dallas County, Texas

December 17, 2019

Re: Initiation of Section 106 consultation for the Proposed Construction and Operation of Phase IV at Dallas-Fort Worth National Cemetery

Dear Mr. Fernandez:

In response to your request, the above reference project has been reviewed by staff of this office to identify areas that may potentially contain prehistoric or historic archeological materials. The location of your project has been cross referenced with the Comanche Nation site files, where an indication of ***"No Properties"*** have been identified. (IAW 36 CFR 800.4(d)(1)).

Please contact this office at (580) 595-9960/9618) if you require additional information on this project.

This review is performed in order to identify and preserve the Comanche Nation and State cultural heritage, in conjunction with the State Historic Preservation Office.

Regards

Comanche Nation Historic Preservation Office
Theodore E. Villicana , Technician
#6 SW "D" Avenue, Suite C
Lawton, OK. 73502

November 5, 2019

W. Edward Hooker, III
Historic Architect/Cultural Resources Manager
U.S. Department of Veterans Affairs
National Cemetery Administration
Design and Construction Service
Washington DC 20420

Re: Project review under Section 106 of the National Historic Preservation Act of 1966 – *Proposed Construction and Operation of Phase IV at the Dallas-Fort Worth National Cemetery, Dallas County* (VA/ Track #202002003)

Dear Mr. Hooker:

Thank you for submitting the request for consultation. This letter serves as comment on the proposed federal undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC).

The Archeology Division staff, led by Rebecca Shelton, has completed its initial review of the above referenced project. However, we require additional information before we can complete our review. The Dallas-Fort Worth National Cemetery was determined **eligible** for listing on the National Register of Historic Places in 2015. Since the newly proposed Phase IV work on the east side of the National Cemetery has not been intensively surveyed, nor has an above ground review been conducted for potential indirect affects, we agree with the recommendations in the recent Cultural Resource Assessment (Terracon 2019) that "further field based archeological investigations may be deemed necessary in compliance with Section 106 of the NHPRA through regulatory review".

Based on our records, there has only been reconnaissance level investigations on the east side of the cemetery (Skinner et al 1994). Recent investigations on the west side of the National Cemetery (Lindemuth and Fullen 2015) were not submitted to the THC until November 2019, therefore our agency has not had an opportunity to comment on these investigations.

In order for the THC to clarify which areas have been surveyed in the last 10 years, and which areas still require archeological and above ground investigations, please provide detailed maps of the proposed Phase IV Construction and Operation Plans in relation to areas that have been recently surveyed.

The Division of Architecture staff, led by Christopher Meyers, has completed their initial review and they require detailed maps that show the memorial wall, ossuary, columbaria, and crypt which are new elements not discussed in the May 5, 2019 submission to the THC. At that time, we also requested additional information and field investigations. Finally, please provide drawings for these built items and view shed photos of the proposed locations.

Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. If you have any questions concerning our review or if we can be of further assistance, please contact **Rebecca Shelton at Rebecca.Shelton@thc.texas.gov or at 512/463-6043.**

Sincerely,

for
Mark Wolfe
State Historic Preservation Officer
MW/rls

Cc: Fernando Fernandez, Environmental Engineer, Department of Veterans Affairs, OCFM
Douglas Pulak, Federal Preservation Officer, U.S. Department of Veterans Affairs

Appendix B
Previous Studies

Protected Species Habitat Assessment

Dallas – Fort Worth National Cemetery
2000 Mountain Creek Parkway
Dallas, Dallas County, Texas

August 1, 2018
Terracon Project No. 9418P078

Prepared for:
U.S. Department of Veterans Affairs National Cemetery Administration
Dallas-Fort Worth National Cemetery
Dallas County, Texas

Prepared by:
Terracon Consultants, Inc.
Dallas, Texas

TABLE OF CONTENTS

TABLES

APPENDICES

Protected Species Habitat Assessment
Dallas-Fort Worth National Cemetery
2000 Mountain Creek Parkway
Dallas, Dallas County, Texas
Terracon Project No. 9418P078
August 1, 2018

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by U.S. Department of Veterans Affairs National Cemetery Administration - Dallas-Fort Worth National Cemetery (client) to perform a Protected Species Habitat Assessment on two tracts of land (approximately 67.2 acres) located at 2000 Mountain Creek Parkway, in Dallas, Dallas County, Texas, hereafter referred to as the study area. The study area is depicted on *Exhibit 1.0* in *Appendix A*. This report has been prepared in accordance with the Master Subconsultant Agreement, VA CFM Nat. Cemetery IDIQ #VA101F-17-D-2827 executed on May 23, 2018. The purpose of performing the Protected Species Habitat Assessment was to characterize the existing landcover conditions within the study area, observe the study area for protected species and/or their suitable habitats, provide an opinion regarding whether or not proposed development within the study area may affect species/habitat listed under the Endangered Species Act (ESA), and provide an opinion as to whether or not proposed development within the study area is likely to impact species protected under the Texas Parks and Wildlife Code (TPWD Code), Bald and Golden Eagle Protection Act (BGEPA), and/or Migratory Bird Treaty Act (MBTA).

2.0 REGULATORY REVIEW

Relevant laws for this assessment are summarized below.

2.1 Endangered Species Act (ESA)

The U.S. Fish and Wildlife Service (USFWS) has the authority under the ESA to list and monitor the status of species whose populations are considered imperiled. USFWS regulations that implement the ESA are codified and regularly updated in 50 CFR Part 17. The federal process identifies potential candidates based on biological vulnerability. The vulnerability assessment considers several factors affecting a species within its range and is linked to the best scientific data available to the USFWS. Species listed as endangered or threatened by the USFWS are afforded full protection under the ESA, including the prohibition of indirect take such as the destruction of designated critical habitat.

2.2 Texas Parks and Wildlife Code (TPWD Code)

Texas enacted state-level endangered species legislation in 1973, and subsequent amendments to this legislation have established a regulatory program for the management and protection of endangered species (i.e. species in danger of extinction) and threatened species (i.e. species likely to become endangered in the foreseeable future). Chapters 67 and 68 of the TPWD Code

authorize TPWD to formulate lists of threatened and endangered fish and wildlife and regulate take and possession of listed species. Under this statutory authority, TPWD regulates the taking, possession, transport, export, processing, selling or offering for sale, or shipping of threatened or endangered species.

2.3 Bald and Golden Eagle Protection Act

Bald and golden eagles, having been delisted under the ESA, are still afforded federal protections under the BGEPA (16 U.S.C. 668-668c), enacted in 1940. Under the BGEPA it is unlawful to take, possess, sell, purchase, barter, offer to sell, possess, transport, export or import, and bald or golden eagle, alive or dead, including any part (including feathers), nest (including inactive nests), or egg, unless allowed by permit. A "take" under the BGEPA is defined as to "pursue, shoot, shoot at, poison, wound, capture, trap, collect, molest or disturb." The term "disturb", as defined in a final rule published in the Federal Register on June 5, 2007 (Volume 72, page 31332) means to "agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the 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."

2.4 Migratory Bird Treaty Act (MBTA)

ESA and State-listed avian species, as well as any other migratory birds, are protected under the MBTA. The 1918 MBTA establishes a Federal prohibition "to pursue, hunt, capture, kill, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg, without a permit" issued in accordance with the policies and regulations of the MBTA. Take is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect migratory birds". The MBTA does not prohibit the destruction of the bird nest alone (without birds or eggs) provided that no possession of the nest occurs during destruction. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. The USFWS is the lead agency determining permitting requirements for nest removal or destruction.

In December 2017, Memorandum M-37050 (the "M-Opinion") 26 was issued by the Department of Interior (DOI) Office of the Solicitor. The M-Opinion reversed the previous prohibition of incidental take under the MBTA. The USFWS is subject to the M-Opinion and issued a Guidance Memorandum which concurs with the M-Opinion and describes how it applies to its enforcement of the MBTA moving forward. The USFWS guidance reiterates that the MBTA does not prohibit the incidental take of migratory birds when the ultimate purpose of an action is something other than the purposeful take of migratory birds, their eggs or their nests. However, the same guidance letter states that impacts to migratory birds must still be considered under NEPA. Therefore, for

projects that have a federal nexus, impacts to migratory birds (including incidental take) must still be documented and evaluated.

3.0 DATABASE REVIEW

Literature and agency file searches were conducted to identify the potential occurrence of federally listed T&E species, and their designated critical habitats, in the vicinity of the proposed project. In the past, informal consultation with the U.S. Fish and Wildlife Service (USFWS) was often conducted (via a letter request) for projects determined to be unlikely to affect T&E species or their critical habitats. Following their review, the USFWS (if they agreed with Terracon's assessment) would then provide its concurrence that a proposed project would not be likely to jeopardize the continued existence of federally-listed T&E species or result in the destruction or adverse modification of their critical habitats. However, some the USFWS' Texas field offices have discontinued providing concurrences with "no effect" determinations for proposed projects. Their current policy makes it incumbent on the developer to ascertain the potential for effects to T&E species for each project and then notify the USFWS for formal consultation if a proposed project "may affect" a listed species or its critical habitat. The USFWS notes that "a qualified biologist should use the USFWS website and other current information to make this determination." For non-federally funded projects that "may affect" or are likely to adversely affect T&E species or their habitat, a Section 10(a)(1)(B) permit would be required. The USFWS also notes that for those projects with a federal (government) nexus, it is the responsibility of the federal action agency [under Section (7)(a)] to determine if a proposed project "may affect" T&E species or their habitat. Terracon reviewed available information to determine whether the project "may affect" T&E species or their habitat and is discussed below.

3.1 Topographic Maps & Aerial Photography

The 1959, 1973, and 1995 U.S. Geological Survey (USGS) 7.5-Minute Topographic Maps (Duncanville, Texas Quadrangle) of the study area were reviewed to characterize historic land use/landcover and terrain within the study area. The USGS topographic maps depict study area elevations between 500-550 feet above mean sea level sloping generally southwest. The majority of the study area is depicted as unimproved land with significant canopy coverage in the southern half, as evidenced by green shading. A utility line and Right of Way easement transects the southern central portion of the study area. The perimeter of the Dallas/Fort Worth National Cemetery is depicted on the topographic map beginning in 1995. The topographic maps are provided as *Exhibits 2.0 – 2.2* in *Appendix A*.

Terracon reviewed aerial photographs to characterize historic and recent land use/landcover within the study area, which could assist in preliminarily identifying potential suitable habitat for T&E species. The study area appears to have remained relatively unchanged from 1996 to 2016. The majority of the study area appears to be undeveloped with new development progressing adjacent to the western boundary. The majority of the study area appears to dominated by a

shrub/sapling woody community, with smaller areas of apparent herbaceous vegetation interspersed. The 2004 and 2016 photographs depict an apparent utility line easement transecting the south-central portion of the study area. For reference, the aerial photographs can be seen as *Exhibits 6.0 – 6.2* in *Appendix A.*

3.2 Vegetation

According to TPWD, the site is located in the Texas Blackland Prairies Ecological Region, characterized by flat to gently rolling plains dissected by drainages with the most significant ridges associated with harder chalk formations. Soils are typically Vertisols occurring on calcareous clays but may also occur on loams, clay loams, or even sandy clay loams. Rainfall can be moderate, but somewhat erratic, therefore, moisture is often limited during part of the growing season. Drought, grazing, and fire are the primary natural processes that affect this system. Overgrazing and conversion to agriculture, along with fire suppression, have led to the invasion of some areas by problematic brush species. By evaluating the Ecological Mapping System of Texas, three categories were identified within the study area and are described below and can be seen in *Exhibit 4.0* in *Appendix A*.

- *Native Invasive: Deciduous Woodland*

This broadly-defined type may have sugarberry *(Celtis laevigata),* water oak *(Quercus nigra),* cedar elm *(Ulmus crassifolia),* sweetgum *(Liquidambar styraciflua)*, yaupon *(Ilex vomitoria),* ashes (*Fraxinus* spp.), and honey mesquite (*Prosopis glandulosa*) among the dominants. Post oak, (*Quercus stellata*), coastal live oak (*Quercus virginiana*), and plateau live oak (*Quercus fusiformis*) may be important. Eastern redcedar (*Juniperus virginiana*), Texas persimmon (*Diospyros texana*), and loblolly pine (*Pinus taeda*) may also be present

- *Edwards Plateau: Oak/ Hardwood Slope Forest*

Forest or woodland on slopes generally greater than 20 percent on steep rocky sites with significant deciduous canopy cover. These sites tend to be somewhat more mesic than similar sites dominated by evergreen canopy. The overstory may be diverse, with species such as Texas oak (*Quercus buckleyi*), Lacey oak (*Quercus laceyi*), white shin oak (*Quercus sinuata* var. *breviloba*), chinkapin oak (*Quercus muehlenbergii*), cedar elm (*Ulmus crassifolia*), netleaf hackberry (*Celtis laevigata* var. *reticulate*), Texas ash (*Fraxinus texensis*), escarpment black cherry (*Prunus serotina* var. *eximia*), Arizona walnut (*Juglans major*), and others. This system may occupy slopes on cretaceous limestone or chalk occurring north and east of the Edwards Plateau. In these situations, Shumard oak (*Quercus shumardii*), chinkapin oak (*Quercus muehlenbergii*), Slippery elm (*Ulmus rubra*), and/or black walnut (*Juglans nigra*) may be present in the canopy, and may represent significant components of it. Plateau live oak (*Quercus fusiformis*), and Ashe juniper (*Juniperus ashei*) may be present, often reaching large size under these conditions. Species such as red buckeye (Aesculus pavia var. flavescens), Texas redbud (*Cercis canadensis* var. *texensis*), rough-leaf dogwood (*Cornus drummondii*), elbowbush

(*Forestiera pubescens*), Mexican buckeye (*Ungnadia speciosa*), Carolina buckthorn (*Frangula caroliniana*), rusty blackhaw (*Viburnum rufidulum*), and grapes (*Vitis* spp.), tend to occur in the shrub layer more frequently in this vegetation type than in the evergreen vegetation types of this system. Though dense canopy, rocky substrate, and significant litter accumulation results in a sparse herbaceous layer, forbs such as widowstears (*Tinantia anomala*), silver-puff (*Chaptalia texana*), baby blue-eyes (*Nemophila phacelioides*), cedar sage (*Salvia roemeriana*), and various ferns may be present, if patchy.

- *Urban Low intensity*

This type includes areas that are built-up but not entirely covered by impervious cover, and includes most of the non-industrial areas within cities and towns.

3.3 IPaC Report

T&E species are listed on the USFWS Information, Planning, and Conservation System (IPaC) (accessed July 2018, Consultation Code: 02ETAR00-2018-SLI-1403). The USFWS has record of an official species request made through the USFWS' IPaC by Terracon on July 6, 2018. An official species list document, dated July 6, 2018 was generated by IPaC and transmitted to Terracon on behalf of the Arlington Ecological Services Field Office. The response letter states "a 'no effect' determination does not require Section 7 (ESA) consultation and no coordination or contact with the Service is necessary." The list of T&E species compiled by the USFWS on the IPaC for Dallas County, Texas includes five species that should be considered in an effects analysis; however, two of the five species should be considered only under certain conditions (reference *USFWS IPaC Official Species List* in *Appendix B*). *Table 1* (below) includes the species listed by the USFWS in Dallas County, Texas, their federal status, habitat descriptions, habitat present, special conditions, and findings.

Table 1: USFWS Species Listed for Dallas County, Texas

Species	USFWS Status	Habitat Description	Habitat Present	Condition(s)	Findings
Dendroica chyrsoparia (Golden-cheeked Warbler)	Endangered	Juniper-oak woodlands; dependent on Ashe juniper for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer	No; absence of suitable habitat within or near the study area (adequate juniper shrub habitat was not observed from aerial review or site reconnaissance)	-	No effect
Sterna antillarum (Least Tern)	Endangered	Nests along sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.)	No; absence of suitable habitat within or near the study area.	-	No effect

Table 1: USFWS Species Listed for Dallas County, Texas					
Species	**USFWS Status**	**Habitat Description**	**Habitat Present**	**Condition(s)**	**Findings**
Charadrius melodus (Piping Plover)	Threatened	Wintering migrant along the Texas Gulf Coast; beaches and bayside mud flats	No; absence of suitable habitat within or near the study area.	Species need only be considered for potential effects in this region for Wind Energy Projects	No effect
Calidris canatus rufa (Red Knot)	Threatened	Migrate long distances in flocks northward through the U.S. mainly April to June, southward July to October. Prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters; Primarily inhabits seacoasts on tidal flats and beaches, herbaceous wetlands, and tidal flat/shore	No; absence of suitable habitat within or near the study area.	Species need only be considered for potential effects in this region for Wind Energy Projects	No effect
Grus americana (Whooping Crane)	Endangered	Potential migrant via plains throughout most of Texas to the coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties. Breeds, migrates, winters, and forages in a variety of wetland and other habitats; During migration, a variety of habitats are used; however, wetland mosaics appear to be the most suitable	No; absence of suitable habitat within or near the study area	-	No effect

Source: USFWS IPaC Official Species List requested and received July 2018.
Site visit/survey of study area.

3.4 TPWD Species List

The list of Rare, Threatened, and Endangered Species compiled by the TPWD for Dallas County, Texas includes 34 species (see TPWD Annotated County List of Rare Species in *Appendix B*). Terracon did not observe the state listed species onsite. State regulations do not require habitat protection for state listed T&E species; therefore, state listed T&E species are typically only a development constraint if individual species are identified onsite. Individual species of the state listed T&E species were not observed during the site reconnaissance." *Table 2* (below) includes the species listed by the TPWD in Dallas County, Texas, their state status, habitat descriptions, habitat present, and findings.

Table 2: TPWD Species Listed for Dallas County, Texas				
Species	**TPWD Status**	**Habitat Description**	**Habitat Present**	**Findings**
Birds				
Dendroica chyrsoparia (Golden-cheeked Warbler)	Endangered	Juniper-oak woodlands; dependent on Ashe juniper for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary	See Table 1, above	See Table 1, above

Table 2: TPWD Species Listed for Dallas County, Texas				
Species	**TPWD Status**	**Habitat Description**	**Habitat Present**	**Findings**
		nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer		
Sterna antillarum (Least Tern)	Endangered	Nests along sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.)	See Table 1, above	See Table 1, above
Charadrius melodus (Piping Plover)	Threatened	Wintering migrant along the Texas Gulf Coast; beaches and bayside mud flats	See Table 1, above	See Table 1, above
Grus americana (Whooping Crane)	Endangered	Potential migrant via plains throughout most of Texas to the coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties. Breeds, migrates, winters, and forages in a variety of wetland and other habitats; During migration, a variety of habitats are used; however, wetland mosaics appear to be the most suitable	See Table 1, above	See Table 1, above
Falco peregrinus anatum (American Peregrine Falcon)	Threatened	year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No; absence of suitable habitat within or near the study area	No impact
Falco peregrinus tundrius (Arctic Peregrine Falcon)	-	migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No; absence of suitable habitat within or near the study area	No effect
Haliaeetus leucocephalus (Bald Eagle)	Threatened	found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	Based on prior field experience on adjoining properties east of Nursery Road and the confluence of Delaware Creek and the West Fork Trinity River some bald eagles have been observed. Bald eagle nest has not been observed in the project vicinity. If Bald Eagles presence is observed in the study area it would be considered incidental.	No impact

Table 2: TPWD Species Listed for Dallas County, Texas				
Species	**TPWD Status**	**Habitat Description**	**Habitat Present**	**Findings**
Vireo atricapilla (Black-capped Vireo)	Endangered	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer	No; absence of suitable habitat within or near the study area	No impact
Ammodramus henslowii (Henslow's Sparrow)	-	wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking	No; absence of suitable habitat within or near the study area	No impact
Sterna antillarum athalassos (Interior Least Tern)	Endangered	subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	No; absence of suitable habitat within or near the study area	No impact
Falco peregrinus (Peregrine Falcon)	Threatened	both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.	No; absence of suitable habitat within or near the study area	No impact
Anthus spragueii (Sprague's Pipit)	-	only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	No; absence of suitable habitat within or near the study area	No impact
Athene cunicularia hypugaea (Western Burrowing Owl)	-	open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows	No; absence of suitable habitat within or near the study area	No impact

Table 2: TPWD Species Listed for Dallas County, Texas				
Species	**TPWD Status**	**Habitat Description**	**Habitat Present**	**Findings**
Plegadis chihi (White-faced Ibis)	Threatened	prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats	No; absence of suitable habitat within or near the study area	No impact
Mycteria americana (Wood Stork)	Threatened	forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960	No; absence of suitable habitat within or near the study area	No impact
Insects				
Lordithon niger (Black Lordithon rove beetle)	-	historically known from Texas	No; absence of suitable habitat within or near the study area	No impact
Mammals				
Myotis velifer (Cave myotis bat)	-	colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore	No; absence of suitable habitat within or near the study area	No impact
Spilogale putorius interrupta (Plains spotted skunk)	-	catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie	Habitat present; woodlands observed.	May impact
Mollusks				
Pleurobema riddellii (Louisiana pigtoe)	Threatened	streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins	No; suitable intermittent and/or perennial streams were not observed in the study area.	No impact
Lampsilis satura (Sandbank pocketbook)	Threatened	small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River	No; suitable intermittent and/or perennial streams were not observed in the study area.	No impact

Table 2: TPWD Species Listed for Dallas County, Texas				
Species	**TPWD Status**	**Habitat Description**	**Habitat Present**	**Findings**
Potamilus amphichaenus (Texas heelsplitter)	Threatened	quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins	No; suitable intermittent and/or perennial streams were not observed in the study area.	No impact
Fusconaia askewi (Texas pigtoe)	Threatened	rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sulphur River, Cypress Creek, Sabine through Trinity rivers as well as San Jacinto River	No; suitable intermittent and/or perennial streams were not observed in the study area.	No impact
Reptiles				
Macrochelys temminckii (Alligator snapping turtle)	Threatened	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October	No; absence of suitable habitat within or near the study area	No impact
Thamnophis sirtalis annectens (Texas garter snake)	-	Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August	No; absence of suitable habitat within or near the study area	No impact
Phrynosoma cornutum (Texas horned lizard)	Threatened	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September	No; absence of suitable habitat within or near the study area	No impact
Crotalus horridus (Timber rattlesnake)	Threatened	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto	No; absence of suitable habitat within or near the study area	No impact
Plants				
Hexalectris nitida (Glass Mountains coral-root)	-	Apparently rare in mixed woodlands in canyons in the mountains of the Brewster County, but encountered with regularity, albeit in small numbers, under Juniperus ashei in woodlands over limestone on the Edwards Plateau, Callahan Divide and Lampasas Cutplain; Perennial; Flowering June-Sept; Fruiting July-Sept	No; absence of suitable habitat within or near the study area	No impact
Yucca necopina (Glen Rose yucca)	-	Texas endemic; grasslands on sandy soils and limestone outcrops; flowering April-June	No; absence of suitable habitat within or near the study area	No impact

Table 2: TPWD Species Listed for Dallas County, Texas				
Species	**TPWD Status**	**Habitat Description**	**Habitat Present**	**Findings**
Dalea hallii (Hall's prairie clover)	-	In grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides; Perennial; Flowering May-Sept; Fruiting June-Sept	No; absence of suitable habitat within or near the study area	No impact
Agalinis densiflora (Osage Plains false foxglove)	-	Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct	No; absence of suitable habitat within or near the study area	No impact
Matelea edwardsensis (Plateau milkvine)	-	Occurs in various types of juniper-oak and oak-juniper woodlands; Perennial; Flowering March-Oct; Fruiting May-June	Potential habitat; juniper woodlands observed in portions of the study area.	May impact
Astragalus reflexus (Texas milk vetch)	-	Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June	Potential habitat; clay substrates observed in portions of the study area.	May impact
Cuscuta exaltata (Tree dodder)	-	Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct	Potential habitat; woody communities dominated by Ulmus crassifolia, Ulmus americana, and Celtis laevigata observed.	May impact
Hexalectris warnockii (Warnock's coral-root)	-	in leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creekbeds in canyons; in the Trans Pecos in oak-pinyon-juniper woodlands in higher mesic canyons (to 2000 m [6550 ft]), primarily on igneous substrates; in Terrell County under Quercus fusiformis mottes on terrraces of spring-fed perennial streams, draining an otherwise rather xeric limestone landscape; on the Callahan Divide (Taylor County), the White Rock Escarpment (Dallas County), and the Edwards Plateau in oak-juniper woodlands on limestone slopes; in Gillespie County on igneous substrates of the Llano Uplift; flowering June-September; individual plants do not usually bloom in successive years	No; absence of suitable habitat within or near the study area	No impact

Source: TPWD downloaded July 2018.
Site visit/survey of study area.

3.5 TPWD NDD Review

A review of the Texas Natural Diversity Database (NDD) within the study area was requested from TPWD. The NDD maintains information on over 700 natural resource “Elements” including threatened or endangered species, native plant communities, and/or animal aggregations (e.g. rookeries). A database record for an element is known as an Element Occurrence Record (EOR),

and the NDD contains spatial data representing the geographic locations of an element observation. The NDD is not considered comprehensive and presence or absence of EORs for a listed species should not be considered a definitive statement of presence or absence for a listed species within the study area. Terracon requested a review of the NDD for the Duncanville, Texas United States Geologic Survey (USGS) topographic quadrangle for known occurrences of listed species by TPWD. TPWD indicated "The TXNDD includes federal and state listed and tracked Threatened, Endangered, and Rare species. Please note that areas where Element Occurrence (EO) data are absent should not be interpreted as an absence of Threatened, Endangered, and Rare species. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Data from the TXNDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within your study area. These data cannot substitute for an on-site evaluation by qualified biologists." TXNDD search did not indicate records within the study area.

4.0 FIELD OBSERVATION FINDINGS AND CONCLUSIONS

Terracon performed a T&E species assessment which included a preliminary resource review and a site visit, conducted on July 10, 2018. Site photographs, included in *Appendix B*, provide an indication of the physical characteristics observed during the site investigation.

During the site visit, Terracon personnel did not identify aquatic features within the study area. Other streams or open water features were not observed. *Table 5* summarizes the relevant information from the Reference Photo Points (RPPs) collected during the field reconnaissance.

Table 5 – RPP Summary

RPPs	Community	Dominant Vegetation	Soil Characteristics	Hydrologic Characteristics	Classification
1 and 3	Upland Forest	*Ligustrum sinense* (UPL), *Ulmus crassifolia* (FAC), *Juniperus virginiana* (UPL)	Dark loam with roots and no redoximorphic features	Hydrology Indicators not observed	Upland
2 and 24	Drainage Swale	*Salix nigra* (FACW), *Ligustrum sinense* (UPL), *Solidago altissima* (FACU), *Iva annua* (FAC), *Carex crus-corvi* (OBL), *Helianthus annuus* (FACU)	Dark clay, no redoximorphic features	Surface soil cracks (B6)	Upland
9, 10, 13, and 14	Riparian Scrub	*Ligustrum sinense* (UPL), *Juniperus virginiana* (UPL), *Gleditisia triacanthos* (FACU), *Asclepias virdis* (UPL) *Fraxinus pennsylvanica* (FAC), *Smilax bona-nox* (FAC), *Eragrotis intermedia* (UPL)	Dark, clay loam with no redoximorphic features.	Hydrology Indicators not observed	Upland

RPPs	Community	Dominant Vegetation	Soil Characteristics	Hydrologic Characteristics	Classification
4, 5, 6, 7, 8, 11, 12, 15, 16, 18, 22, 23, and 25	Upland Scrub	*Ligustrum sinense* (UPL), *Sorgun halepense* (FACU)	Light clay ,root layer no redoximorphic features	Hydrology Indicators not observed	Upland
17, 19, 20, and 21	Grassland	*Prosopis glandulosa* (FACU), *Artemesia ludoviciana* (UPL), *Eragrostis intermedia* (UPL)	Shallow dark clay over rock layer, no redoximorphic features	Hydrology Indicators not observed	Upland

4.1 ESA Listed Species

An official species list document, dated July 6, 2018, was generated by IPaC and transmitted to Terracon on behalf of the Arlington Ecological Services Field Office. The list of T&E species compiled by the USFWS on the IPaC for Dallas County, Texas includes five species that should be considered in an effects analysis; however, The IPaC states that two of the five species (Piping Plover and Red Knot) need only be considered in an effects analysis for wind energy projects. The species listed by the USFWS and their typical/suitable habitats are listed on *Table 1* above and the *USFWS IPaC Official Species List* in *Appendix B*. The proposed development within the study area is not a wind energy project; therefore, it is Terracon's opinion that the Piping Plover and Red Knot should not be considered in the effects analysis.

Based on the IPaC report, no critical habitat is listed for the Golden-cheeked Warbler. Golden-cheeked warblers nest only in central Texas mixed Ashe-juniper and oak woodlands in ravines and canyons. They typically forage for insects and spiders found on the leaves and bark of oaks and other trees. Tall/mature junipers are obligatory in the nesting habitat of Golden-cheeked warblers, providing the only source of long, fine bark strips needed for nesting material.

During the site visit, wooded communities were observed with dominant species including cedar elm, honey mesquite, Chinese privet (*Ligustrum sinense*), and sparse eastern red cedar. The wooded habitat observed within, and within 300 feet of, the proposed construction limits does not meet the requisite habitat criteria for the Golden-cheeked Warbler. Furthermore, eBird (a dynamic internet mapping tool that allows users to share information regarding bird observation) shows the nearest Golden-cheeked Warbler observation approximately seven miles to the southwest of the study area, near Cedar Hill State Park. Based on the available data, Golden-cheeked Warbler habitat is absent in the study area and vicinity, and development activities within the study area would have no effect on the Golden-cheeked Warbler.

Based on the IPaC report, no critical habitat is listed for the Least Tern within, or in the immediate vicinity of, the proposed project limits. Least Terns nest along sand and gravel bars within braided

streams, rivers, and (less commonly) man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.). During the field investigation, suitable nesting habitat for the Least Tern was not observed, nests were not observed, and individual Least Terns were not observed. The study area generally lacks aquatic features that would typically be associated with Least Tern nesting/foraging habitat. The lack of suitable foraging habitat makes it unlikely that the Least Tern would utilize the study area, even as a stopover during migration. Furthermore, eBird (a dynamic internet mapping tool that allows users to share information regarding bird observation) shows the nearest Least Tern observation approximately four miles to the northwest of the study area, near the Lone Star Park and the Trinity River (Where suitable nesting and foraging habitat is relatively abundant). Based on the available data, Least Tern habitat is absent in in the study area and study area vicinity, and effects to Least Tern or Least Tern habitat are not anticipated from the proposed project. It is Terracon's opinion that development within the study area would have no effect on the Least Tern.

Based on the IPaC report, whooping crane critical habitat is absent within the study area. The nearest critical whooping crane habitat is located in the Salt Plains National Wildlife Refuge approximately 275 miles to the northwest, in Alfalfa County, Oklahoma. Whooping cranes use a variety of stopover habitats during their long migrations; feeding in croplands and large wetlands. They are known to roost in large wetlands and occasionally in riverine habitat such as large submerged sandbars, in wide unobstructed channels, isolated from human disturbance. This type of habitat was not observed within the study area. Furthermore, eBird (a dynamic internet mapping tool that allows users to share information regarding bird observation) shows the nearest whooping crane observation approximately 10 miles to the northwest of the study area, near the Arlington, Texas. Based on the available data, whooping crane habitat is absent in the study area and study area vicinity, and effects to whooping cranes or whooping crane habitat are not anticipated. It is Terracon's opinion that development within the study area would have no effect on the whooping crane.

Based on the results of the resource review and the preliminary site visit, it is Terracon's opinion that the study area does not provide suitable habitat for federally-listed species and that proposed development within the study area would have **no effect** on federally-listed T&E species.

4.2 Migratory Bird Treaty Act (MBTA)

Aerial photos and site reconnaissance observations revealed wooded and shrub/sapling communities that likely provide suitable nesting and/or foraging habitat for migratory birds. Migratory birds have the potential to be present within the study area from time-to-time. USFWS recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals, nests, or eggs. If project activities must be conducted during this time, we recommend surveying for nests prior to conducting work. If a nest is found, and if possible, the USFWS recommends a buffer of vegetation remain around the nest until the young have fledged or the nest is abandoned.

4.3 Bald and Golden Eagle Protection Act (BGEPA)

Aerial photos and site reconnaissance revealed wooded and shrub/sapling communities throughout the study area. Bald and golden eagle's typical habitat requirements include broad swaths of undeveloped land, large trees and/or cliffs for nesting habitat, and large waterbodies (navigable rivers, lakes, reservoirs, large ponds, etc.) for foraging/hunting activities. This requisite habitat is absent within the study area. While there is a potential, albeit small, for bald and/or golden eagles to migrate within the vicinity of the study area, the absence of suitable foraging, hunting, and perching habitat reduces the potential for occurrence. Therefore, it is Terracon's opinion that development within the study area would

4.4 State Listed Species

The Texas legislature enacted a state Endangered Species Act; subsequently the TPWD was authorized to generate a list of species threatened or endangered with state-wide extinction. Unlike the Federal Act, state laws make no provision for habitat protection or regulation of indirect "takes", but do outlaw killing or maiming individuals of listed species and regulates other aspects such as trade and transportation. Therefore, these species are typically only a development constraint if they are identified onsite and will be directly impacted.

The TPWD construction BMPs for the Plains Spotted Skunk are as follows: Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.

TPWD has no approved species BMPs for SGCN plant species.

5.0 GENERAL COMMENTS

The T&E Species Assessment was performed in accordance with generally accepted practices of this profession undertaken in similar studies at the same time and in the same geographical area. A T&E Species Assessment, such as the one performed at this site, is of limited scope and is noninvasive. This report has been prepared in accordance with generally accepted scientific and engineering evaluation practices. No warranties, either express or implied, are intended or made.

APPENDIX A
Exhibits

Legend

Study Area

Feet

0 1,000 2,000 4,000

N

Project No.:	9418P078
Date:	Jul 2018
Drawn By:	JC
Reviewed By:	JH

Terracon
8901 John W. Carpenter Freeway, Suite 100
Dallas, Texas 75247
PH. (214) 630-1010 terracon.com

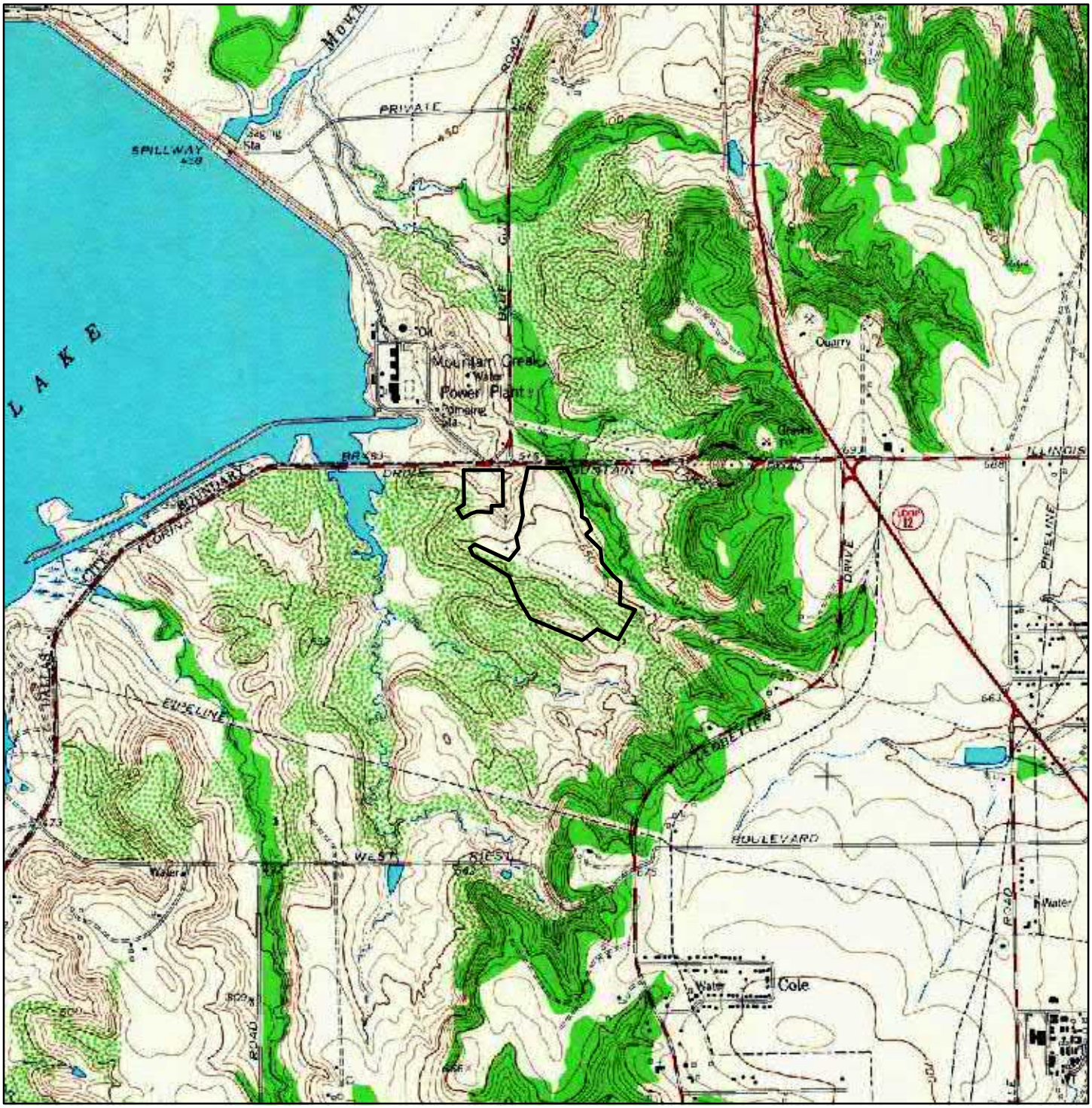
Vicinity Map

Dallas-Fort Worth National Cemetery
VA DFW Phase 4 Cemetery
32.718369°, -96.927954° (GCS NAD83)
Dallas, Dallas County, Texas

Exhibit

1.0

N:\GIS\2018\9418P078\Maps\9418P078_Exhibit_1_vicinity.mxd



Legend

Study Area

Feet

0 1,000 2,000 4,000

N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, Duncanville Quadrangle, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

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Project No.:	9418P078
Date:	Aug 2018
Drawn By:	JC
Reviewed By:	JH

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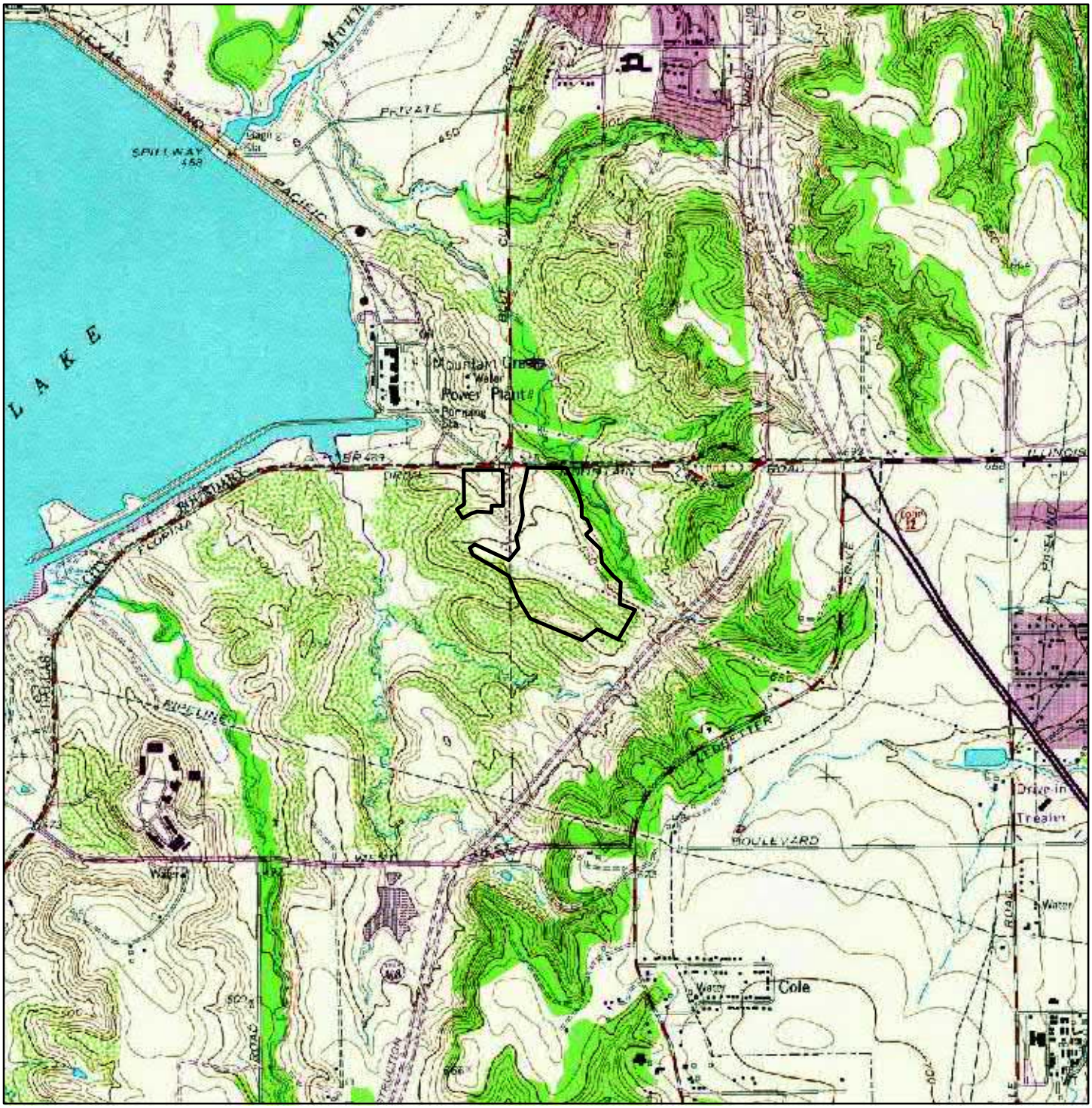
USGS Topographic Map: 1959

Dallas-Fort Worth National Cemetery
VA DFW Phase 4 Cemetery
32.718369°, -96.927954° (GCS NAD83)
Dallas, Dallas County, Texas

Exhibit

2.0



Legend

Study

N

0 1,000 2,000 4,000 Feet

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView Duncanville Quadrangle, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
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USGS Topographic Map: 1973

Dallas-Fort Worth National Cemetery
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Dallas, Dallas County, Texas

Exhibit

2.1

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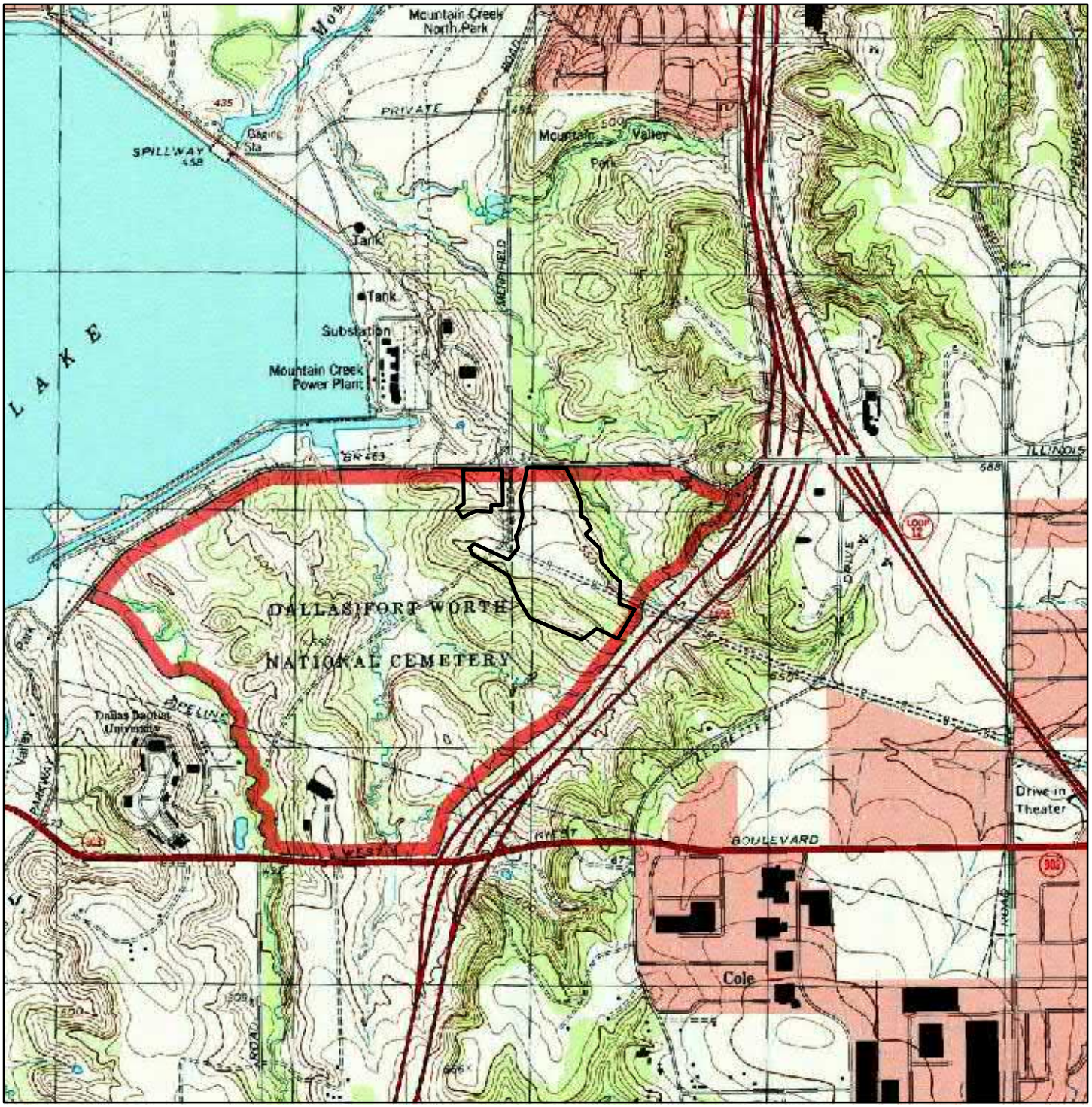

Legend

Study

Feet
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N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView Duncanville Quadrangle, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
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USGS Topographic Map: 1995

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Dallas, Dallas County, Texas

Exhibit

2.2

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Legend

Study Area

Feet
0 500 1,000 2,000

N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
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Drawn By:	JC
Reviewed By:	JH

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1996 Aerial Imagery

Dallas-Fort Worth National Cemetery
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Dallas, Dallas County, Texas

Exhibit

3.0

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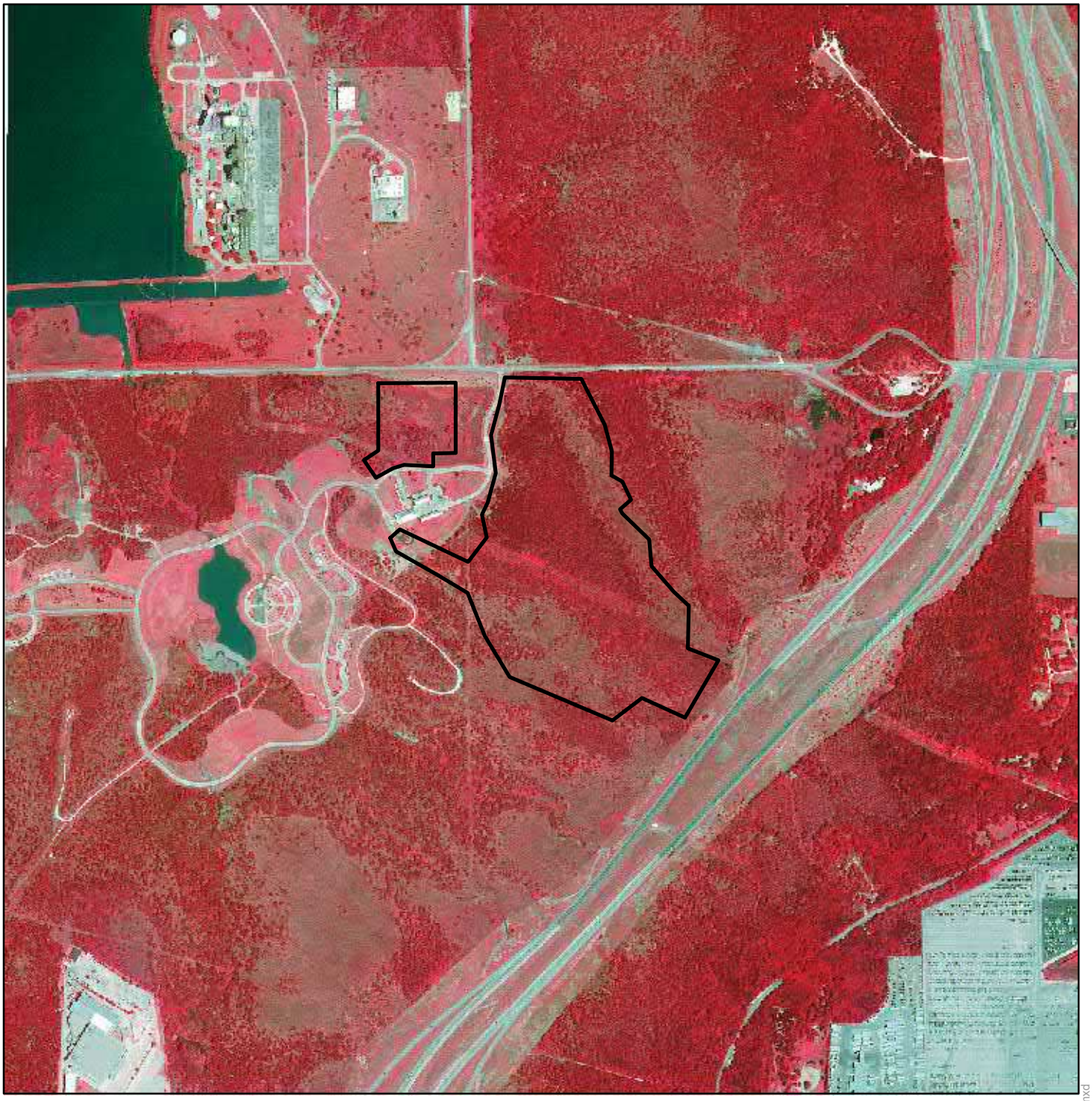

Legend

Study Area

N

0 500 1,000 2,000 Feet

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
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Reviewed By:	JH

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2004 Aerial Imagery

Dallas-Fort Worth National Cemetery
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32.718369°, -96.927954° (GCS NAD83)
Dallas, Dallas County, Texas

Exhibit

3.1

N:\GIS\2018\9418P078\Maps\T9418P078_Exhibit_3_1_2004Aerial.mxd

Legend

Study

Feet
0 500 1,000 2,000

N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
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Reviewed By:	JH

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2016 Aerial Imagery

Dallas-Fort Worth National Cemetery
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Dallas, Dallas County, Texas

Exhibit

3.2

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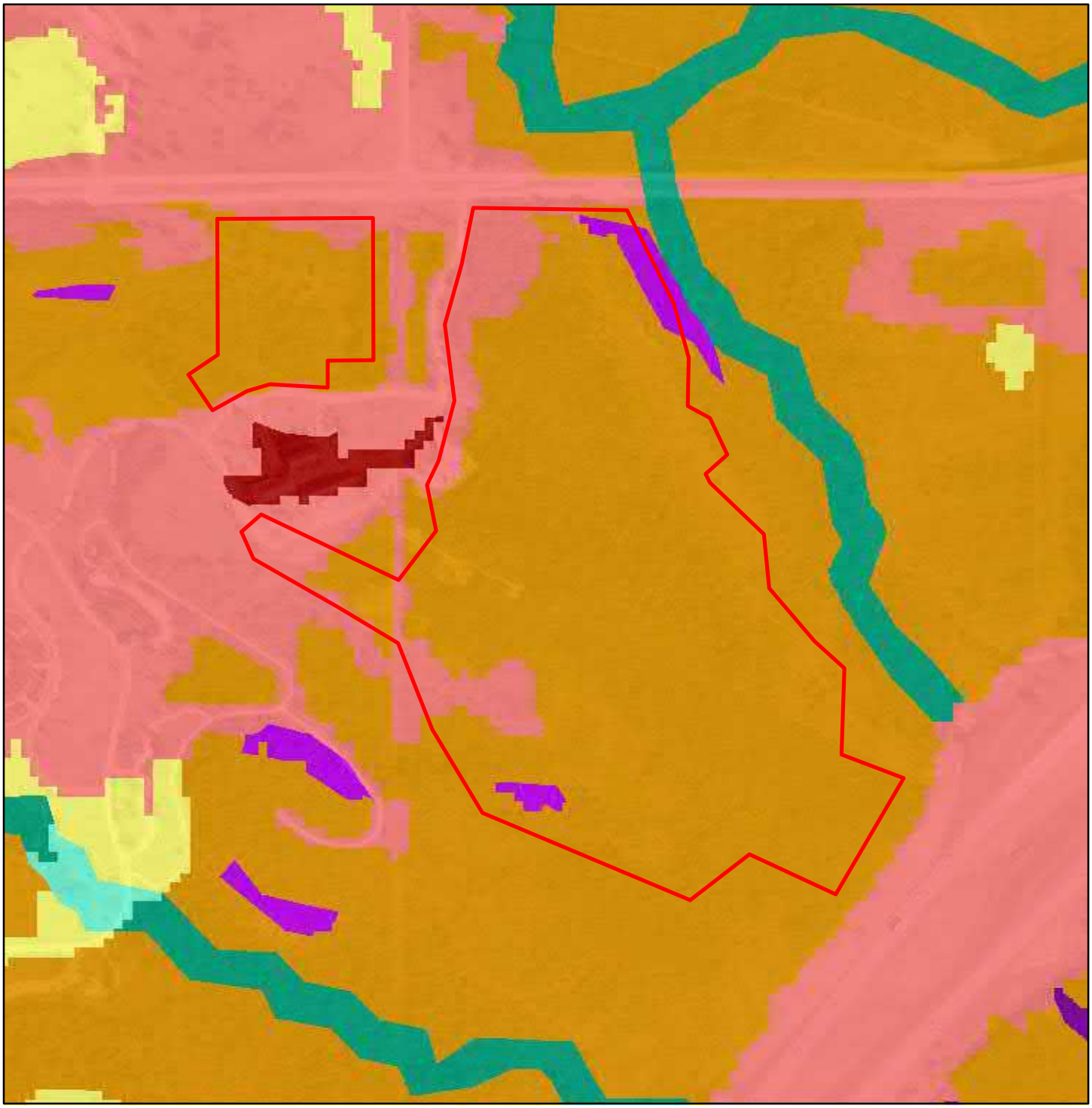

Legend

- Study Area
- **Texas Blackland Prairie Ecoregion (TBPR) EMST Map**
- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Hardwood Forest
- Central Texas: Riparian Herbaceous Vegetation
- Edwards Plateau: Oak / Ashe Juniper Slope Forest
- Edwards Plateau: Oak / Hardwood Slope Forest
- Native Invasive: Deciduous Woodland
- Urban High Intensity
- Urban Low Intensity

N

0 250 500 1,000 Feet

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TPWD, TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

Project No.:	9418P078
Date:	Jul 2018
Drawn By:	JC
Reviewed By:	JH

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EMST Map

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VA DFW Phase 4 Cemetery
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Dallas, Dallas County, Texas

Exhibit

4.0

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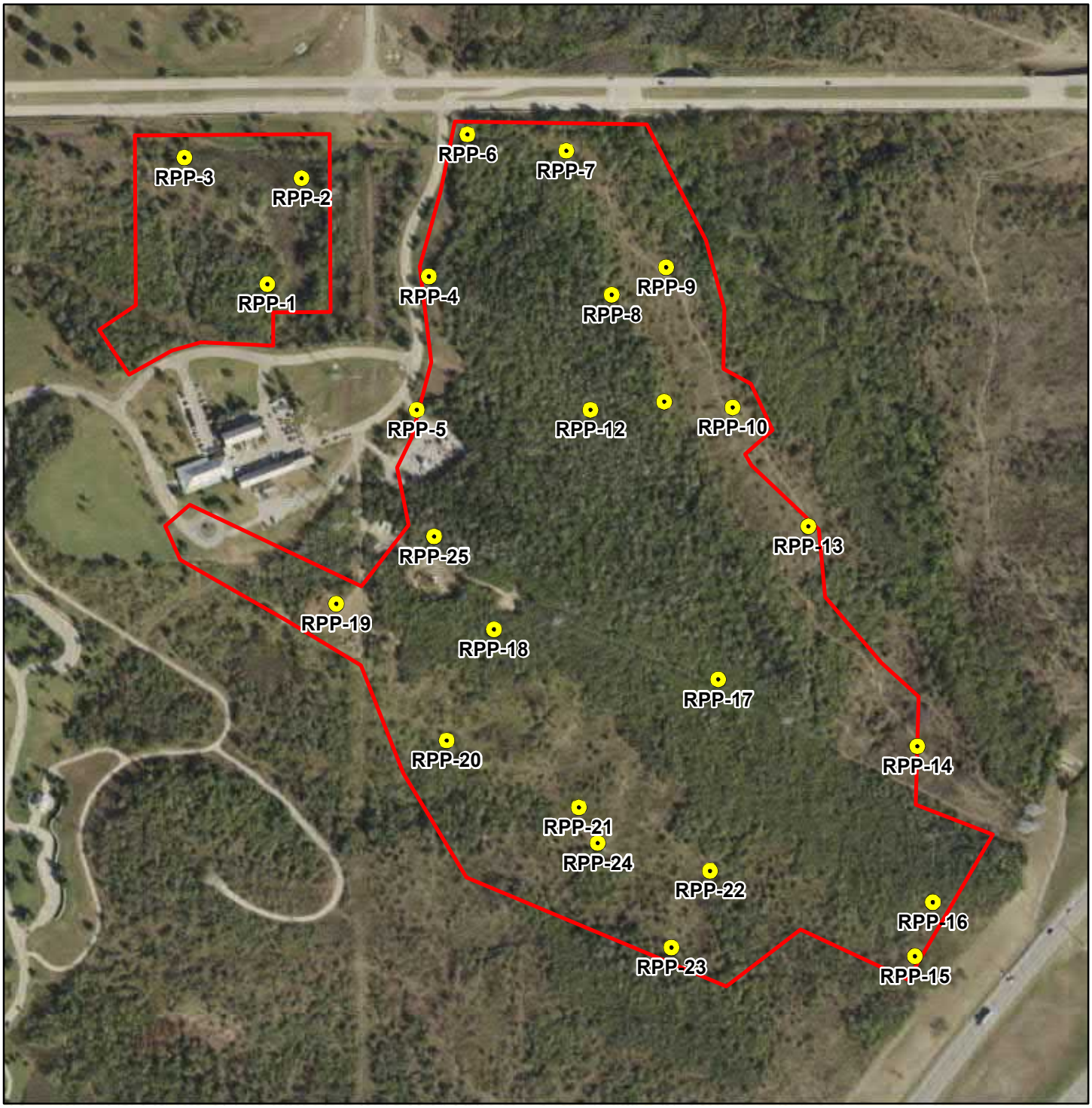

Legend

Study Area

Reference Photo Point

Feet

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N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project No.:	9418P078
Date:	Jul 2018
Drawn By:	JC
Reviewed By:	JH

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Reference Photo Point

Dallas-Fort Worth National Cemetery
VA DFW Phase 4 Cemetery
32.718369°, -96.927954° (GCS NAD83)
Dallas, Dallas County, Texas

Exhibit

5.0

N:\GIS\2018\9418P078\Maps\T9418P078_Exhibit_5_0_RPP.mxd

APPENDIX B
Supporting Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arlington Ecological Services Field Office
2005 Ne Green Oaks Blvd
Suite 140
Arlington, TX 76006-6247
Phone: (817) 277-1100 Fax: (817) 277-1129
http://www.fws.gov/southwest/es/arlingtontexas/
http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

In Reply Refer To: July 06, 2018
Consultation Code: 02ETAR00-2018-SLI-1403
Event Code: 02ETAR00-2018-E-03063
Project Name: 9418P078

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, which may occur within the boundary of your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under section 7(a)(1) of the Act, Federal agencies are directed to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Under and 7(a)(2) and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether their actions may affect threatened and endangered species and/or designated critical habitat. A Federal action is an activity or program authorized, funded, or carried out, in whole or in part, by a Federal agency (50 CFR 402.02).

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For Federal actions other than major construction activities, the Service suggests that a biological evaluation (similar to a Biological Assessment) be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

After evaluating the potential effects of a proposed action on federally listed species, one of the following determinations should be made by the Federal agency:

1. *No effect* - the appropriate determination when a project, as proposed, is anticipated to have no effects to listed species or critical habitat. A "no effect" determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, the action agency should maintain a complete record of their evaluation, including the steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information.
2. *May affect, but is not likely to adversely affect* - the appropriate determination when a proposed action's anticipated effects are insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and should never reach the scale where "take" of a listed species occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not be able to meaningfully measure, detect, or evaluate insignificant effects, or expect discountable effects to occur. This determination requires written concurrence from the Service. A biological evaluation or other supporting information justifying this determination should be submitted with a request for written concurrence.
3. *May affect, is likely to adversely affect* - the appropriate determination if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action, and the effect is not discountable or insignificant. This determination requires formal section 7 consultation.

The Service recommends that candidate species, proposed species, and proposed critical habitat be addressed should consultation be necessary. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/

eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

For additional information concerning migratory birds and eagle conservation plans, please contact the Service's Migratory Bird Office at 505-248-7882.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arlington Ecological Services Field Office
2005 Ne Green Oaks Blvd
Suite 140
Arlington, TX 76006-6247
(817) 277-1100

Project Summary

Consultation Code: 02ETAR00-2018-SLI-1403

Event Code: 02ETAR00-2018-E-03063

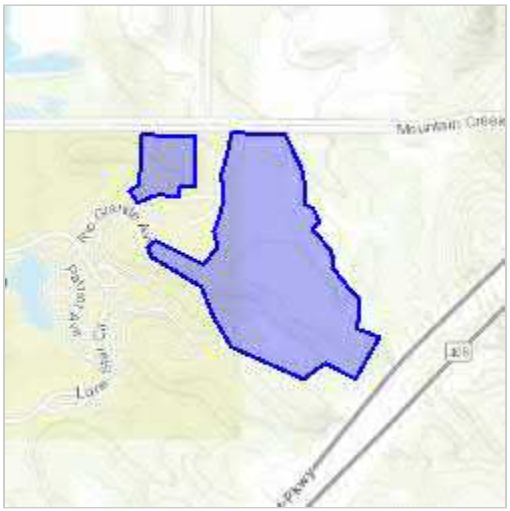
Project Name: 9418P078

Project Type: LAND - CLEARING

Project Description: DFW VA Cemetery

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.717069613582694N96.92890256806277W



Counties: Dallas, TX

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Golden-cheeked Warbler (=wood) *Dendroica chrysoparia*	Endangered
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/33	
Least Tern *Sterna antillarum*	Endangered
Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505	
Piping Plover *Charadrius melodus*	Threatened
Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/6039	
Red Knot *Calidris canutus rufa*	Threatened
No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/1864	
Whooping Crane *Grus americana*	Endangered
Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Last Revision: 12/30/2016 10:08:00 AM

DALLAS COUNTY

BIRDS

		Federal Status	State Status
American Peregrine Falcon	*Falco peregrinus anatum*	DL	T

year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Arctic Peregrine Falcon	*Falco peregrinus tundrius*	DL	

migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Bald Eagle	*Haliaeetus leucocephalus*	DL	T

found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Black-capped Vireo	*Vireo atricapilla*	LE	E

oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer

Golden-cheeked Warbler	*Setophaga chrysoparia*	LE	E

juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer

Henslow's Sparrow	*Ammodramus henslowii*		

wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking

Interior Least Tern	*Sterna antillarum athalassos*	LE	E

subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony

Peregrine Falcon	*Falco peregrinus*	DL	T

both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.

DALLAS COUNTY

BIRDS

		Federal Status	State Status
Piping Plover	*Charadrius melodus*	LT	T

wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats

Red Knot	*Calidris canutus rufa*	T

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Sprague's Pipit	*Anthus spragueii*

only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.

Western Burrowing Owl	*Athene cunicularia hypugaea*

open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

White-faced Ibis	*Plegadis chihi*	T

prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats

Whooping Crane	*Grus americana*	LE	E

potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties

Wood Stork	*Mycteria americana*	T

forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

INSECTS

		Federal Status	State Status
Black Lordithon rove beetle	*Lordithon niger*		

historically known from Texas

DALLAS COUNTY

MAMMALS

		Federal Status	State Status
Cave myotis bat	*Myotis velifer*		

colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore

Plains spotted skunk	*Spilogale putorius interrupta*		

catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

MOLLUSKS

		Federal Status	State Status
Louisiana pigtoe	*Pleurobema riddellii*		T

streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins

Sandbank pocketbook	*Lampsilis satura*		T

small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River

Texas heelsplitter	*Potamilus amphichaenus*		T

quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins

Texas pigtoe	*Fusconaia askewi*		T

rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sulphur River, Cypress Creek, Sabine through Trinity rivers as well as San Jacinto River

REPTILES

		Federal Status	State Status
Alligator snapping turtle	*Macrochelys temminckii*		T

perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October

Texas garter snake	*Thamnophis sirtalis annectens*		

wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August

Texas horned lizard	*Phrynosoma cornutum*		T

open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September

DALLAS COUNTY

REPTILES

		Federal Status	State Status
Timber rattlesnake	*Crotalus horridus*		T

swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto

PLANTS

		Federal Status	State Status

Glass Mountains coral-root *Hexalectris nitida*

GLOBAL RANK: G3; Apparently rare in mixed woodlands in canyons in the mountains of the Brewster County, but encountered with regularity, albeit in small numbers, under Juniperus ashei in woodlands over limestone on the Edwards Plateau, Callahan Divide and Lampasas Cutplain; Perennial; Flowering June-Sept; Fruiting July-Sept

Glen Rose yucca *Yucca necopina*

Texas endemic; grasslands on sandy soils and limestone outcrops; flowering April-June

Hall's prairie clover *Dalea hallii*

GLOBAL RANK: G3; In grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides; Perennial; Flowering May-Sept; Fruiting June-Sept

Osage Plains false foxglove *Agalinis densiflora*

GLOBAL RANK: G3; Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct

Plateau milkvine *Matelea edwardsensis*

GLOBAL RANK: G3 ; Occurs in various types of juniper-oak and oak-juniper woodlands; Perennial; Flowering March-Oct; Fruiting May-June

Texas milk vetch *Astragalus reflexus*

GLOBAL RANK: G3; Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June

Tree dodder *Cuscuta exaltata*

GLOBAL RANK: G3; Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct

Warnock's coral-root *Hexalectris warnockii*

in leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creekbeds in canyons; in the Trans Pecos in oak-pinyon-juniper woodlands in higher mesic canyons (to 2000 m [6550 ft]), primarily on igneous substrates; in Terrell County under Quercus fusiformis mottes on terrraces of spring-fed perennial streams, draining an otherwise rather xeric limestone landscape; on the Callahan Divide (Taylor County), the White Rock Escarpment (Dallas County), and the Edwards Plateau in oak-juniper woodlands on limestone slopes; in Gillespie County on igneous substrates of the Llano Uplift; flowering June-September; individual plants do not usually bloom in successive years

Photo 1 RPP1

Photo 2 RPP2

Photo 3 RPP3

Photo 4 RPP4

Photo 5 RPP5

Photo 6 RPP6

Photo 7 RPP7

Photo 8 RPP8

Photo 9 RPP9

Photo 10 RPP10

Photo 11 RPP11

Photo 12 RPP12

Photo 13 RPP13

Photo 14 RPP14

Photo 15 RPP15

Photo 16 RPP16

Photo 17 RPP17

Photo 18 RPP18

Photo 19 RPP19

Photo 20 RPP20

Photo 21 RPP21

Photo 22 RPP22

Photo 23 RPP23

Photo 24 RPP24

Photo 25 RPP25

Preliminary Waters of the U.S. Delineation

DFW National Cemetery

2000 Mountain Creek Parkway

Dallas, Dallas County, Texas

July 27, 2018
Terracon Project No. 9418P078

Prepared for:
U.S. Department of Veterans Affairs National Cemetery Administration
Dallas-Fort Worth National Cemetery
Dallas County, Texas

Prepared by:
Terracon Consultants, Inc.
Dallas, Texas

TABLE OF CONTENTS

List of Tables

APPENDICES

Preliminary Waters of the U.S. Delineation
DFW National Cemetery
2000 Mountain Creek Parkway
Dallas, Dallas County, Texas
Terracon Project No. 9418P078
July 27, 2018

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by U.S. Department of Veterans Affairs National Cemetery Administration - Dallas-Fort Worth National Cemetery (client) to perform a preliminary Waters of the U.S. (WOUS) delineation on two tracts of land (approximately 67.2 acres) located at 2000 Mountain Creek Parkway, in Dallas, Dallas County, Texas, hereafter referred to as the study area. The study area is depicted on *Exhibit 1.0* in *Appendix A*. The preliminary WOUS delineation was performed as outlined Master Subconsultant Agreement, VA CFM Nat. Cemetery IDIQ #VA101F-17-D-2827 executed on May 23, 2018.

The preliminary WOUS delineation was generally performed in accordance with the 1987 U.S. Army Corps of Engineers (USACE) Manual and 2010 Great Plains Regional Supplement. Terracon walked the study area and documented changes in vegetation, soil, and hydrologic conditions utilizing USACE data forms for the Great Plains Region. In some instances, where one or more of these characteristics remained consistent with adjacent data point locations, reference photo points were utilized to document reoccurrence. Data was collected in the field utilizing a Trimble GeoXH Global Positioning System (GPS) unit, capable of sub-meter accuracy. GPS data was post-processed utilizing the regional reference system and exported to ArcGIS shapefiles for analysis. Data point coordinates are reported in latitude and longitude, Global Coordinate System (GCS), North American Datum (NAD), 1983.

The purpose of performing the preliminary WOUS delineation was to characterize the existing site conditions and document the presence of aquatic features with the potential to be regulated as WOUS under Section 404 of the Clean Water Act (Section 404).

2.0 SCOPE OF SERVICES

Terracon performed the following scope of work:

- Reviewed U.S. Geologic Survey 7.5-minute topographic maps (USGS maps), U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) data, U.S. Department of Agriculture USDA soil survey data, Federal Emergency Management Agency (FEMA) floodplain maps, aerial photographs, and local climatic data to assist in identifying potential WOUS and wetland areas in the study area.
- Mobilized to the study area to conduct the preliminary site visit.

- Prepared a map showing approximate locations of potential WOUS, including wetland areas observed during the site visit, if any.
- Prepared a Preliminary WOUS Delineation Report that included site characterization information, and a discussion of applicable data.

3.0 PRELIMINARY DATA GATHERING AND ANALYSIS

Prior to performing the site visit, several sources of mapping and other relevant background data were reviewed to assist with identifying potential aquatic features within the study area. Each source of data is described in detail below.

3.1 Topographic Map

The 1959, 1973, and 1995 U.S. Geological Survey (USGS) 7.5-Minute Topographic Maps (Duncanville, Texas Quadrangle) of the study area were reviewed to identify drainages and other potential aquatic features within the study area. The USGS topographic maps depict study area elevations between 500-550 feet above mean sea level, sloping generally southwest. The majority of the study area is depicted as unimproved land with canopy coverage in the southern half, as evidenced by green shading. A utility line easement transects the south-central portion of the study area. The perimeter of the Dallas/Fort Worth National Cemetery is depicted on the topographic map beginning in 1995. The USGS map does not depict streams, contours suggesting channelized drainage, or other potential aquatic features within the study area. The topographic maps are provided as *Exhibits 2.0 – 2.2* in *Appendix A*.

3.2 National Wetlands Inventory Map

National Wetlands Inventory (NWI) data was reviewed to identify potential aquatic features within the study area. The data was published by the U.S. Department of the Interior's Fish and Wildlife Service (USFWS) and depicts potential wetland areas and other waterbodies based on stereoscopic analysis of high altitude aerial photographs. It is Terracon's understanding that the published data is not regularly updated and has not been validated in the field. Presence of mapped NWI features is not indicative of the presence of jurisdictional waterbodies. The NWI data reviewed does not depict potential aquatic features within the study area. Digital NWI data is depicted atop 2016 aerial imagery on *Exhibit 3.0* in *Appendix A*.

3.3 Soil Survey

Data from the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey (WSS) and the State Soil Data Access (SDA) Hydric Soils List were reviewed to characterize soils within the study area, accessed July 5, 2018. A soil survey map is included as *Exhibit 4.0* in *Appendix A*. *Table 1* contains a summary of the mapped soil units within the study area and relevant physical characteristics.

Table 1 - Study Area Mapped Soil Types

Map Unit Symbol	Map Unit Name	Landform	Natural Drainage Class	Frequency of Ponding	Frequency of Flooding	Depth to Water Table	Hydric Soil Rating
34	Ferris-Heiden complex, 5 to 12 percent slopes	Ridges	Well Drained	None	None	> 80 inches	No
42	Heiden clay, 2 to 5 percent slopes, eroded	Ridges	Well Drained	None	None	> 80 inches	No
44	Houston Black clay, 1 to 3 percent slopes	Ridges	Moderately Well Drained	None	None	> 80 inches	No
47	Lewisville silty clay, 3 to 5 percent slopes, eroded	Stream terraces	Well Drained	None	None	> 80 inches	No
77	Vertel clay, 5 to 12 percent slopes	Ridges	Well Drained	None	None	> 80 inches	No

3.4 Federal Emergency Management Agency Flood Insurance Rate Map

Terracon reviewed the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer 48113C-NFHL for Dallas County, Texas, updated May 29, 2018. According to the FEMA documents, the entirety of the site is located outside the limits of the FEMA mapped 100-year floodplain and 500-year floodplains and is in Zone X, unshaded. A 100-year floodplain (Zone A) corridor is depicted offsite parallel to the east study area boundary. A FEMA Floodplain Map is included as *Exhibit 5.0* in *Appendix A*.

3.5 Aerial Photographs

Aerial photographs for the years 1996, 2004, and 2016 were reviewed to characterize land use and land cover within the study area. The study area appears to have remained relatively unchanged from 1996 to 2016, with land cover dominated by woody vegetation. The majority of the study area appears to be undeveloped with new development progressing adjacent to the western portion. The 2004 and 2016 photographs depict an apparent utility line easement transecting the south-central portion of the study area, coincident with the utility line depicted on the USGS topographic map. For reference, the aerial photographs can be seen as *Exhibits 6.0 – 6.2* in *Appendix A.*

3.6 Wetland Hydrologic Index

Terracon downloaded and reviewed local climate data to identify current site hydrologic conditions. Data from the NRCS Agriculture Applied Climate Information System (AgACIS) was downloaded and reviewed using the Direct Antecedent Rainfall Evaluation Method (DAREM),

accessed July 9, 2018. The DAREM provides an index of climatic conditions, as they pertain to wetland hydrology, for the time period in which field data was collected. Rainfall data was obtained from the Dallas Redbird AP, Texas weather station; the nearest weather station to the study area with the range of historic data available to calculate the DAREM. *Table 2* and *Table 3* summarize the DAREM index data for the study area at the time of the site visit on July 10, 2018. According to the DAREM, the study area was experiencing drier than normal hydrologic conditions at the time of the site visit.

Table 2 - Project Area Wetland Hydrologic Condition for July 2018

Prior Month	Month	WETS Percentile (in)		Measured Rainfall[1]	Condition[2]	Weight[3]	Score
		30th	70th				
1st	**June**	1.79	4.70	0.28	1	3	3
2nd	**May**	2.18	4.44	2.29	2	2	4
3rd	**April**	1.66	3.48	0.42	1	1	1
						Total:	**8**

[1]Measured rainfall recorded at Dallas Redbird AP, Texas weather station

[2]Condition: 1 = monthly rainfall totals less than the 30-year Extreme Rainfall Distribution 30th percentile, 2 = monthly rainfall totals between the 30th and 70th percentile for the 30-year Extreme Rainfall Distribution, 3 = monthly rainfalls totals greater than the 70th percentile for the 30-year Extreme Rainfall Distribution

[3]Monthly weights equal 3 for the prior month, 2 for the second prior month, and 1 for the third prior month.

Table 3 - DAREM Score Summary

DAREM Score (Observed Score)	6	7	**8**	9	10	11	12	13	14	15	16	17	18
DAREM Wetland Hydrologic Condition	**Drier than normal**				Normal					Wetter than normal			

4.0 FIELD TECHNIQUES

Terracon personnel conducted a reconnaissance of the site on July 10, 2018 to characterize the existing site conditions and identify the presence of aquatic features with the potential to be regulated as WOUS under Section 404, if any. A total of five data points were collected to characterize the vegetation, soil, and hydrology within the study area.

Aquatic features were identified based on the presence of an ordinary high water mark (OHWM) and bed/bank features, or the presence of wetland indicators where applicable. For portions of the surface tributary system (i.e. streams and impoundments of streams), the OHWM is the limit of USACE jurisdiction under Section 404. The OHWM can generally be described as the line on the shore established by the fluctuation of the surface water, and is indicated by the following characteristics:

- clear line impressed on the bank,

- shelving,
- changes in soil character,
- destruction of terrestrial vegetation,
- the presence of litter and debris,
- or other features influenced by the surrounding area.

The USACE and EPA define wetlands as "*those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil condition. Wetlands generally include swamps, marshes, bogs, and similar areas*" (33 CFR 328.3b). In order to make a positive wetland determination, indicators of hydrophytic vegetation, hydric soil, and wetland hydrology need to be observed and recorded. In order to provide data with which to evaluate hydrophytic vegetation, the USACE publishes wetland indicator statuses for many plant species in the National Wetlands Plant List (NWPL). If a species is not listed on the NWPL, it is assumed to be an upland species. Generally, hydrophytic vegetation is indicated if there is a dominance or prevalence of FAC, FACW, or OBL vegetation[1]. *Table 4* describes the NWPL indicator categories.

Table 4 - Wetland Plant Indicator Status Descriptions

Indicator Status (Abbreviation)	Occurrence in Wetlands (%)
Obligate (OBL). Normally occur under natural conditions in wetlands	99%
Facultative Wetland (FACW). Usually occur in wetlands, but occasionally found in uplands.	67%-99%
Facultative (FAC). Equally to occur in wetlands and uplands.	34%-66%
Facultative Upland (FACU). Usually occur in uplands but occasionally found in wetlands.	1%-33%
Upland (UPL) may occur in wetlands in another region, but normally occur in uplands under natural conditions in the region specified.	1% or less

To evaluate hydric soil, profiles (between 4 and 20 inches) were excavated and characterized utilizing Munsell Soil Color Charts (Munsell, 2009) to record soil color. Visual and tactile observations related to composition, texture, and disturbance were also recorded. This information was compared to criteria in the *Field Indicators of Hydric Soils in the United States* manual (USDA, NRCS, 2017) to make a positive or negative determination of hydric soil. Generally, hydric soils exhibit physical characteristics (aroma, composition, color, texture) indicative of biogeochemical processes associated with anoxic conditions; including the presence

[1] If a community is dominated by FAC vegetation, hydric soil and wetland hydrology need to be present for the community to be considered hydrophytic.

of decaying organic material, hydrogen sulfide odor, and redoximorphic characteristics (i.e. iron or manganese depletions and/or concentrations).

Wetland hydrology is generally indicated by visual observations of saturated or inundated conditions. For the Great Plains Region, the USACE data form includes 18 primary indicators of wetland hydrology, and nine secondary indicators of wetland hydrology. To make a positive determination of wetland hydrology, one primary or two secondary indicators need to be present. In the absence of these indicators, a positive wetland hydrology determination can be made if hydric soil and hydrophytic vegetation are present, and morphological adaptations associated with prolonged inundation (e.g. adventitious roots, aerenchyma tissue, etc.) are present on dominant vegetation species. Additionally, stream gauge data, aerial photos, and previous wetland delineation data can be utilized in the absence of visual indicators in certain circumstances.

5.0 SUMMARY OF FIELD OBSERVATIONS AND RESULTS

On July 10, 2018, Terracon performed a field reconnaissance of the study area and did not identify aquatic features. Reference photo point, transect, and data point locations are illustrated on *Exhibit 7.0* in *Appendix A* and the *Wetland Determination Data Forms* are provided in *Appendix B*. Site photographs, included in *Appendix C* and illustrated on *Exhibit 7.0* in *Appendix A,* provide an indication of the physical characteristics observed during the site visit. Descriptions of the site conditions are provided in the following sections.

5.1 Stream, Wetland and Open Water Features

During the site visit, Terracon personnel did not identify or delineate aquatic features within the study area. Other streams or open water features were not observed. Although hydrophytic vegetation was observed and recorded throughout the study area, hydric soils and wetland hydrology were not observed and no areas meeting all three wetland criteria were identified or delineated.

Table 5 summarizes the relevant information from the five data points collected during the field reconnaissance. For further descriptions of Hydric Soil and Wetland Hydrology Indicators please refer to the *Wetland Determination Data Forms* in *Appendix B*.

Table 5 - Data Point Summary

Data Point No.	Community	Dominant Vegetation	Soil Characteristics	Hydrologic Characteristics	Classification
1	Upland Forest	*Ligustrum sinense* (UPL), *Ulmus crassifolia* (FAC), *Juniperus virginiana* (UPL)	Dark loam with roots and no redoximorphic features	Hydrology Indicators not observed	Upland

Data Point No.	Community	Dominant Vegetation	Soil Characteristics	Hydrologic Characteristics	Classification
2	Drainage Swale	*Salix nigra* (FACW), *Ligustrum sinense* (UPL), *Solidago altissima* (FACU), *Iva annua* (FAC), *Carex crus-corvi* (OBL), *Helianthus annuus* (FACU)	Dark clay, no redoximorphic features	Surface soil cracks (B6)	Upland
3	Riparian Scrub	*Ligustrum sinense* (UPL), *Juniperus virginiana* (UPL), *Gleditisia triacanthos* (FACU), *Asclepias virdis* (UPL) *Fraxinus pennsylvanica* (FAC), *Smilax bona-nox* (FAC), *Eragrotis intermedia* (UPL)	Dark, clay loam with no redoximorphic features.	Hydrology Indicators not observed	Upland
4	Upland Scrub	*Ligustrum sinense* (UPL), *Sorgun halepense* (FACU)	Light clay ,root layer no redoximorphic features	Hydrology Indicators not observed	Upland
5	Grassland	*Prosopis glandulosa* (FACU), *Artemesia ludoviciana* (UPL), *Eragrostis intermedia* (UPL)	Shallow dark clay over rock layer, no redoximorphic features	Hydrology Indicators not observed	Upland

6.0 CONCLUSIONS

According to the Federal Register [*33CFR §328.3(a)*], WOUS may include intrastate rivers and streams, including impoundments and other waters. Since the 2006 Supreme Court decision (*Rapanos v. U.S., 547 S. Ct. 715*), the USACE and EPA have continued to assert jurisdiction over traditionally navigable waters; non-navigable tributaries of traditionally navigable waters where the tributaries are relatively permanent waters (i.e. streams with perennial or intermittent flow); and wetlands directly abutting such tributaries.

Tributaries, open water, wetlands, or other aquatic features were not observed during the site reconnaissance, therefore it is not anticipated that development within the study area would result in activities subject to USACE jurisdiction under Section 404.

The USACE has the ultimate authority for wetland and WOUS determinations. The Environmental Protection Agency (EPA) has the ultimate authority for official jurisdictional determinations; however, authority has been delegated to the USACE to verify wetland delineations and give an Approved Jurisdictional Determination (AJD) on potential WOUS.

To confirm the conclusions reached in this assessment regarding impacts to jurisdictional waters and/or verification of the delineation performed by Terracon, an AJD can be requested from the USACE. Certain activities which involve the discharge of dredged or fill material into jurisdictional waters, including jurisdictional wetlands, require authorization from the USACE and it is

incumbent upon the client to consult with the USACE to determine if USACE authorization is required. AJDs are made by the USACE, in conjunction with the EPA, on a case-by-case basis in accordance with internal policies and procedures in place at the time and using information at its disposal that may not be readily available to the public.

7.0 GENERAL COMMENTS

The preliminary WOUS delineation was performed in accordance with generally accepted scientific and engineering evaluation practices of this profession undertaken in similar studies at the same time and in the same geographical area. In conducting the limited scope of services described herein, certain sources of information and public records were not reviewed. No biological assessment can remove uncertainty regarding the potential for concerns in connection with a project.

APPENDIX A
Exhibits

Legend

Study Area

Feet

0 1,000 2,000 4,000

N

Project No.:	9418P078
Date:	Jul 2018
Drawn By:	JC
Reviewed By:	JH

Terracon
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Dallas, Texas 75247
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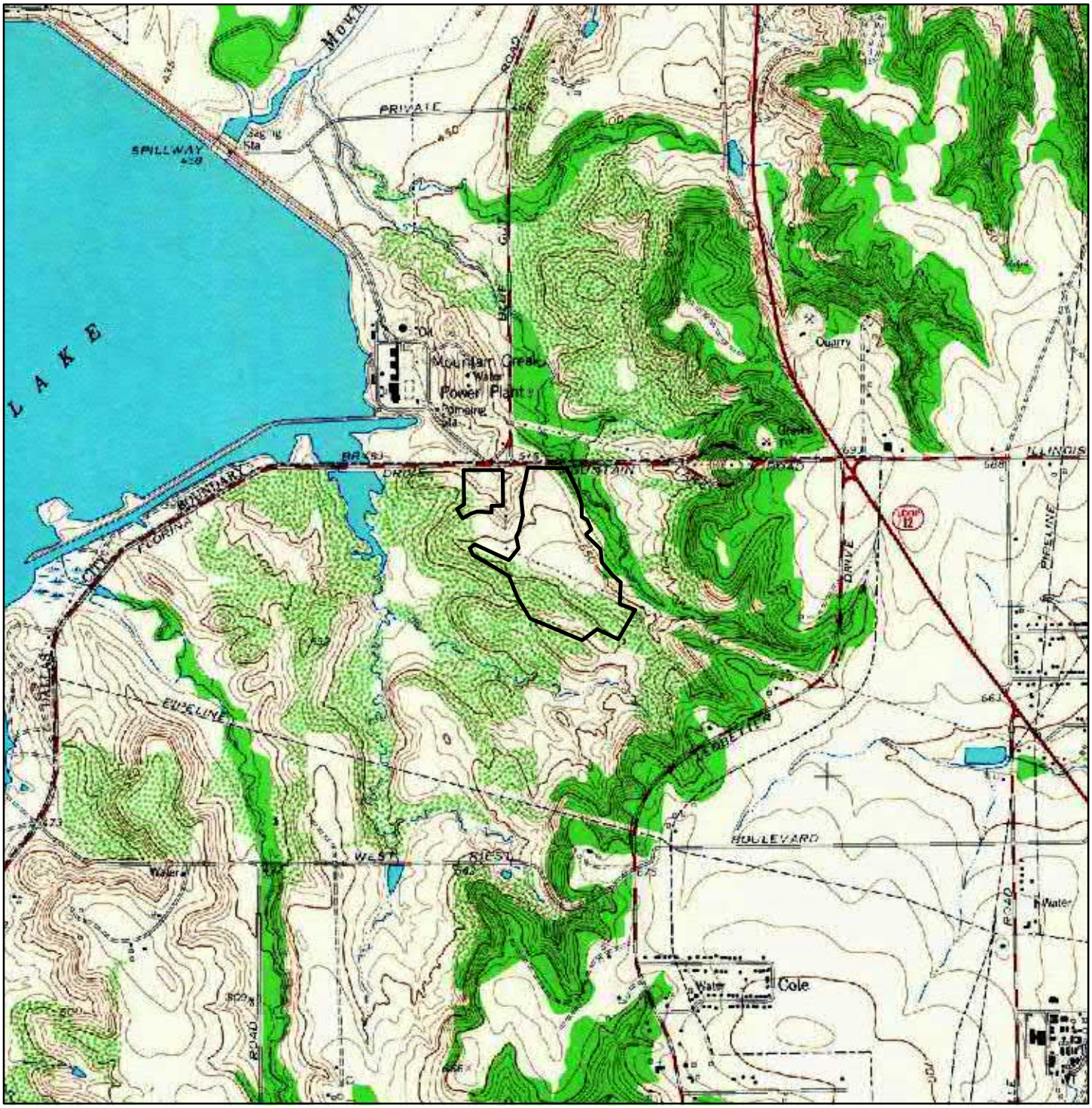
Vicinity Map

Dallas-Fort Worth National Cemetery
VA DFW Phase 4 Cemetery
32.718369°, -96.927954° (GCS NAD83)
Dallas, Dallas County, Texas

Exhibit

1.0

N:\GIS\2018\9418P078\Maps\9418P078_Exhibit_1_vicinity.mxd



Legend

Study Area

Feet
0 1,000 2,000 4,000

N

DATA SOURCES: USGS TopoView, Duncanville Quadrangle, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

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Date:	Jul 2018
Drawn By:	JC
Reviewed By:	JH

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USGS Topographic Map: 1959

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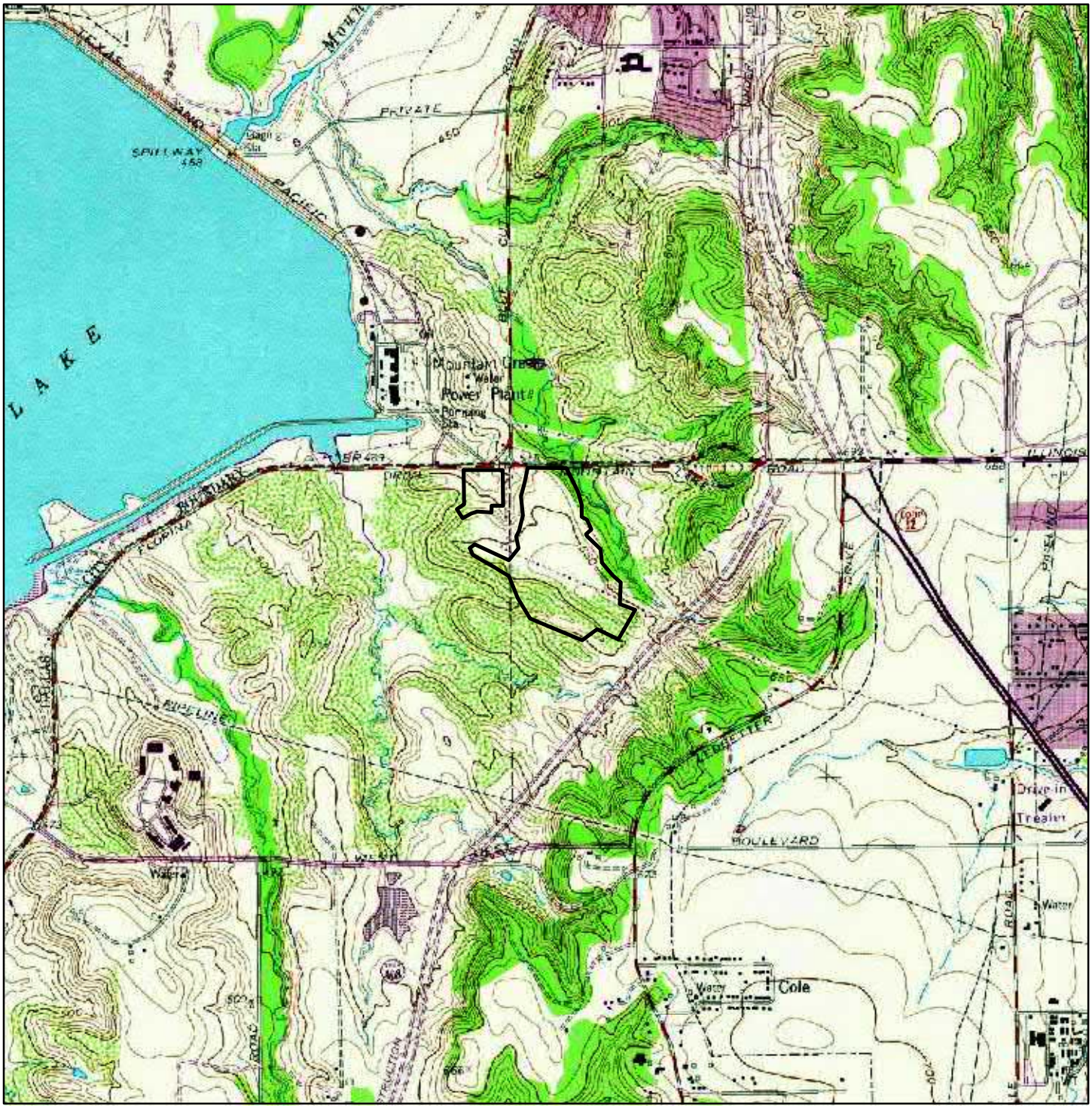
Dallas, Dallas County, Texas

Exhibit

2.0

N:\GIS\2018\9418P078\Maps\9418P078_Exhibit_2_0_topo1959.mxd



Legend

Study Area

Feet
0 1,000 2,000 4,000

N

DATA SOURCES: Kasberg, Patrick and Associates, LP, USGS TopoView Duncanville Quadrangle, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
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USGS Topographic Map: 1973

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Exhibit

2.1

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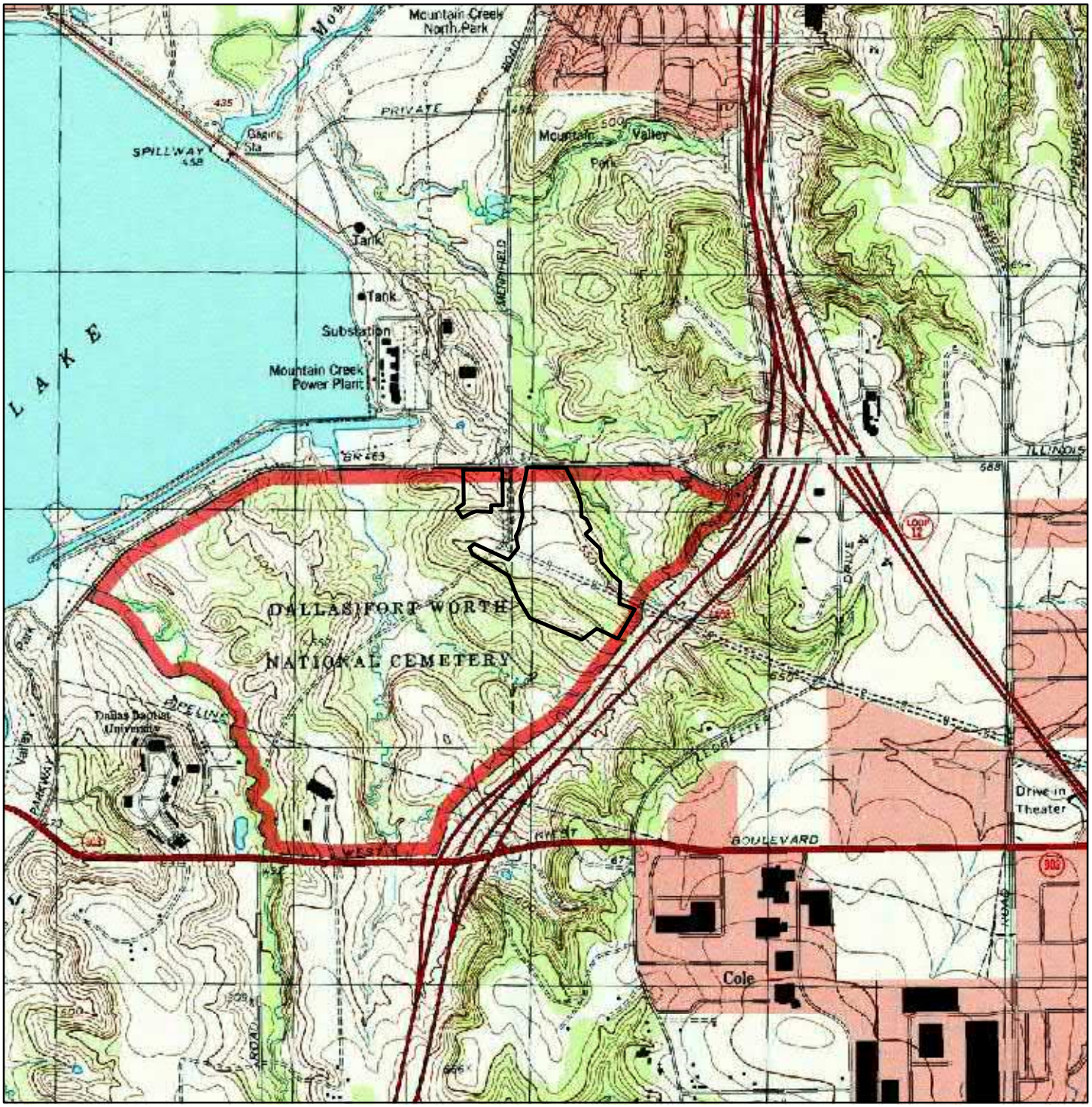

Legend

Study Area

0 1,000 2,000 4,000 Feet

N

DATA SOURCES: Kasberg, Patrick and Associates, LP, USGS TopoView Duncanville Quadrangle, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
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USGS Topographic Map: 1995

Dallas-Fort Worth National Cemetery
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Dallas, Dallas County, Texas

Exhibit

2.2

N:\GIS\2018\9418P078\Maps\9418P078_Exhibit_2_2_topo1995.mxd

Legend

- Study

NWI Feature Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

Feet
0 500 1,000 2,000

N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

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National Wetland Inventory Map

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VA DFW Phase 4 Cemetery
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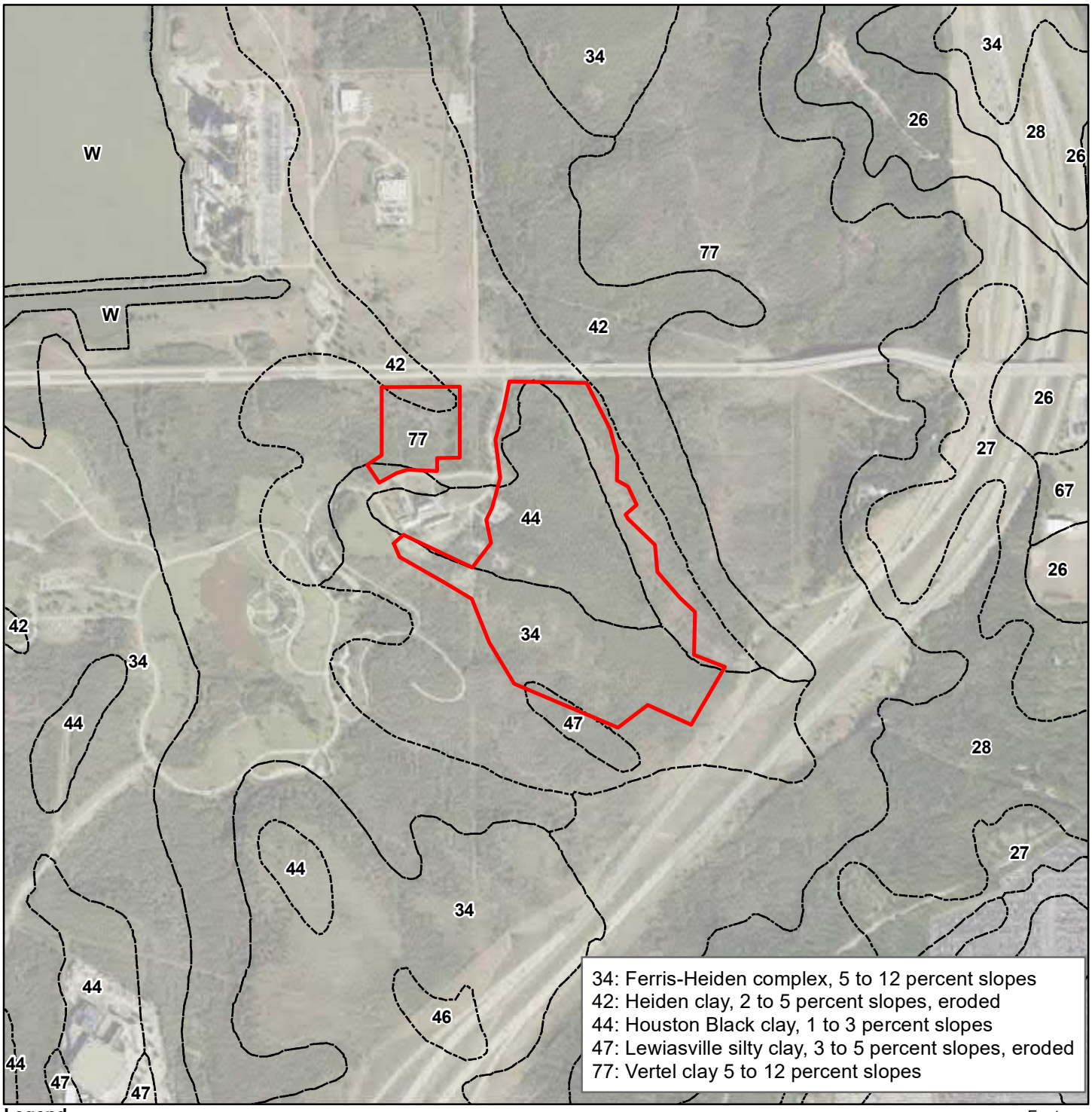
Dallas, Dallas County, Texas

Exhibit

3.0

N:\GIS\2018\9418P078\Maps\9418P078_Exhibit_3_NWI.mxd



Legend

Study Area

USDA WSS Map Unit

Feet

0 500 1,000 2,000

N

DATA SOURCES: Calibre Engineering, Inc., LP, USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS , ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

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USDA Web Soil Survey Map

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Dallas, Dallas County, Texas

Exhibit

4.0

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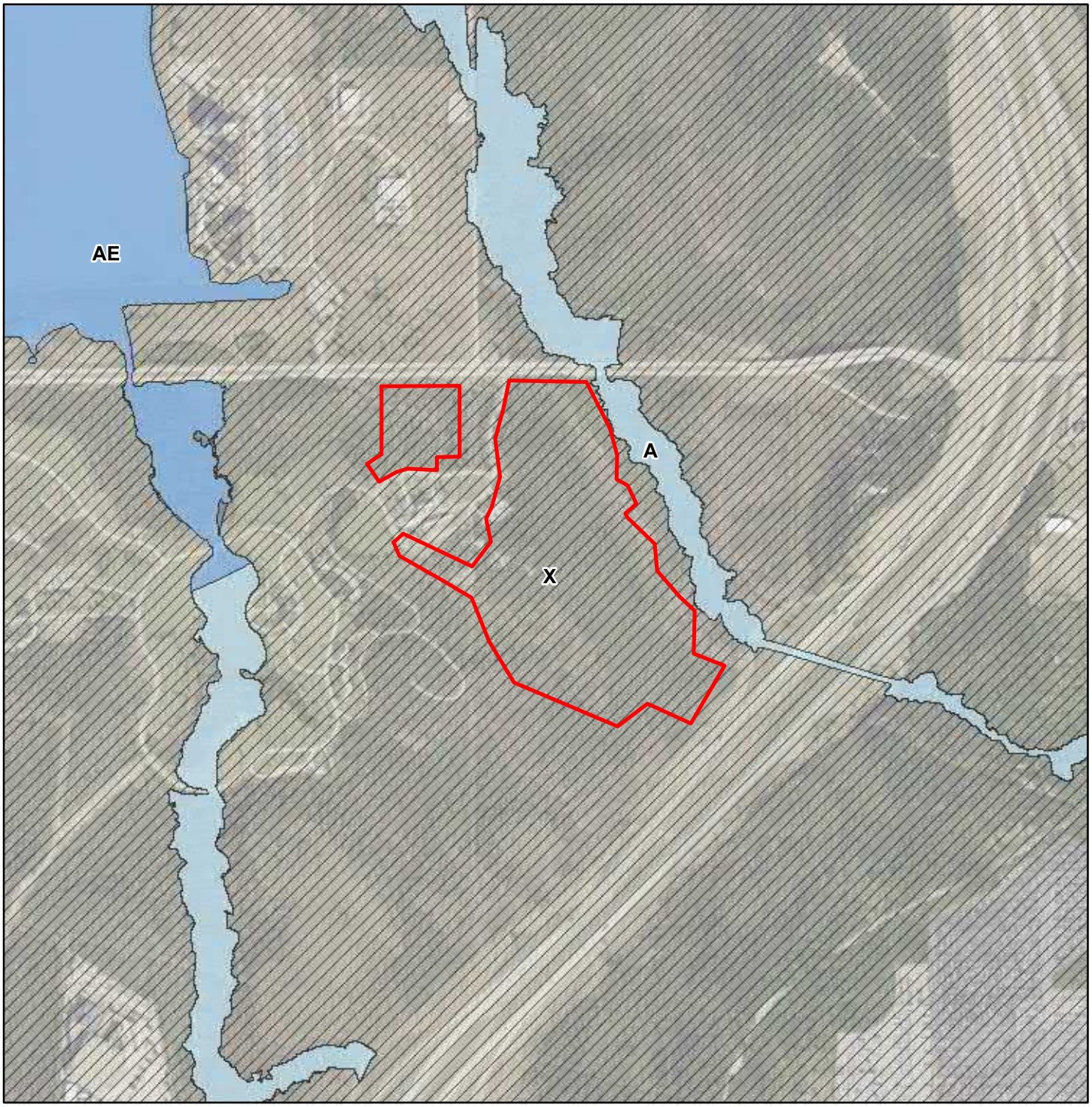

Legend

- Study Area
- **FEMA Floodplain Zone**
  - Base Floodplain *AE*
  - 100-Year Flood Zone *A*
- 500-Year Flood Zone
- Zone X

Feet
0 500 1,000 2,000

N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

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FEMA Floodzone Map

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Dallas, Dallas County, Texas

Exhibit

5.0

N:\GIS\2018\9418P078\Maps\9418P078_Exhibit_5_FEMA.mxd

Legend

Study Area

Feet
0 250 500 1,000

N

DATA SOURCES: Kasberg, Patrick and Associates, LP, USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
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1996 Aerial Imagery

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VA DFW Phase 4 Cemetery
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Dallas, Dallas County, Texas

Exhibit

6.0

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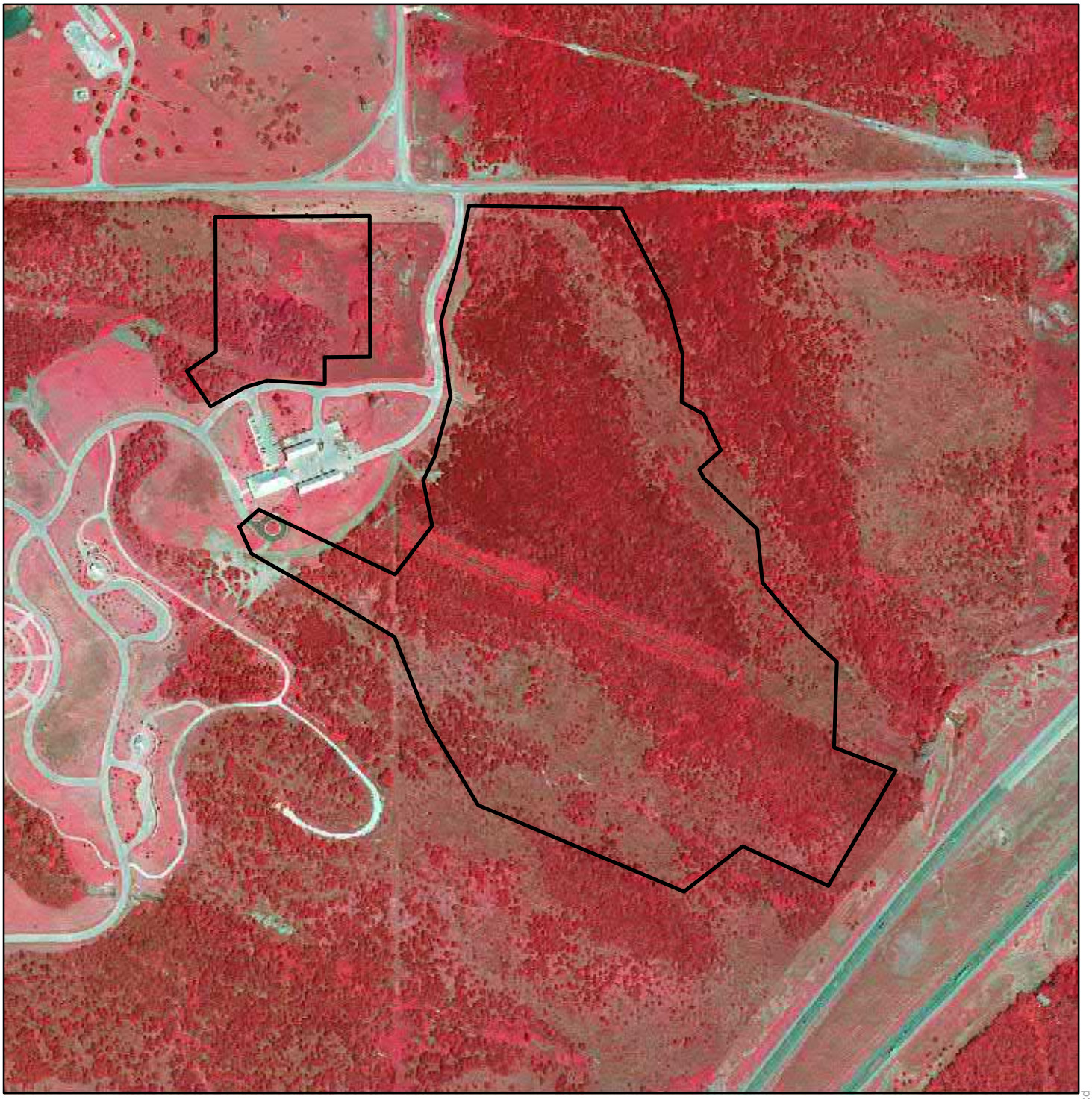

Legend

Study Area

N

0 250 500 1,000 Feet

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits:
Service Layer Credits:

Project No.:	9418P078
Date:	Jul 2018
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Reviewed By:	JH

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2004 Aerial Imagery

Dallas-Fort Worth National Cemetery
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Dallas, Dallas County, Texas

Exhibit

6.1

N:\GIS\2018\9418P078\Maps\9418P078_Exhibit_6_1_2004Aerial.mxd

Legend

Study

Feet
0 250 500 1,000

N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
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Date:	Jul 2018
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Reviewed By:	JH

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2016 Aerial Imagery

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Dallas, Dallas County, Texas

Exhibit

6.2

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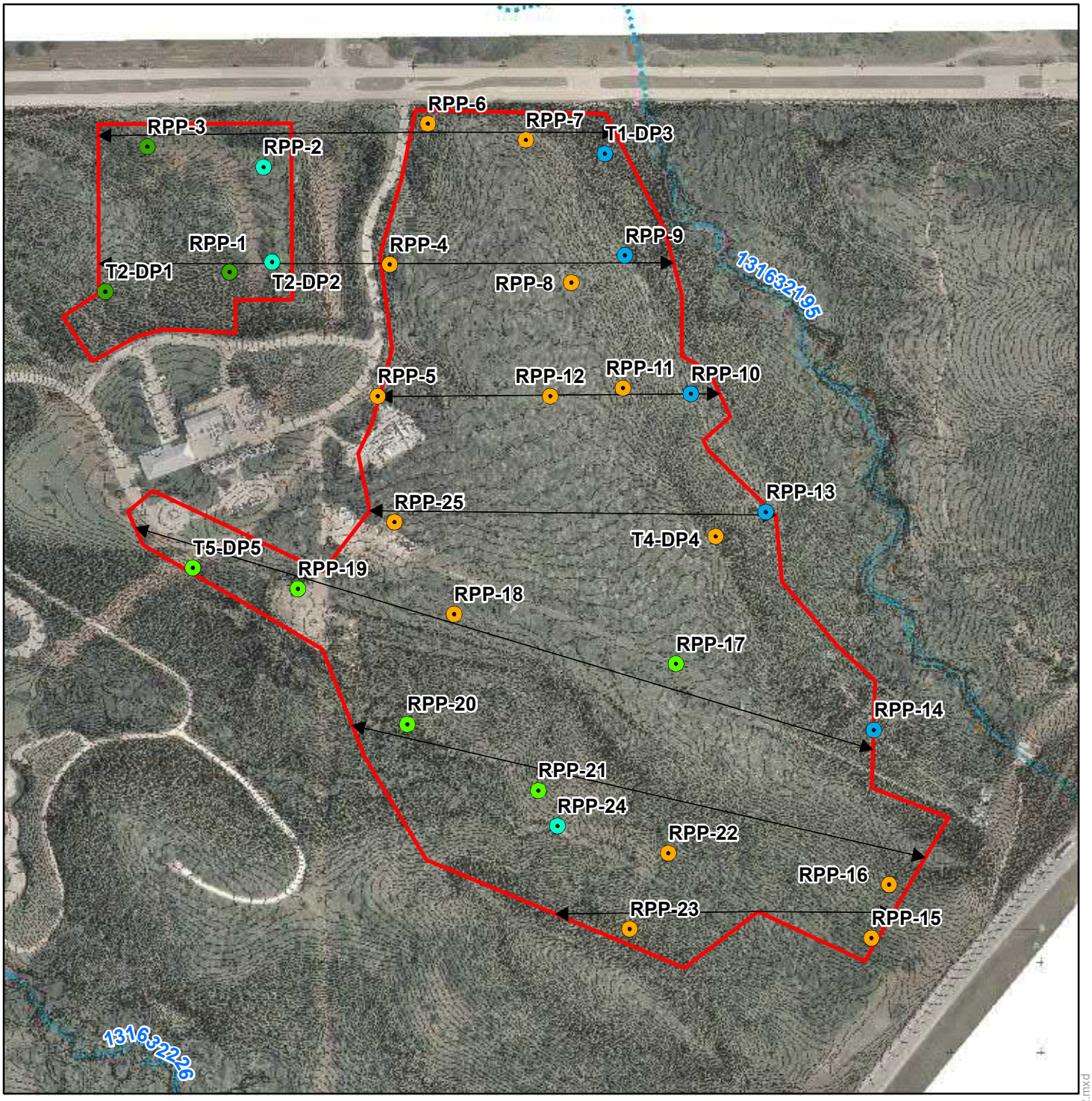

Legend

- Study Area
- Transect
- NHD Stream Centerline

Community

- Drainage Swale
- Grassland
- Riparian Scrub
- Upland Forest
- Upland Scrub

Feet
0 200 400 800

N

DATA SOURCES: Calibre Engineering, Inc., USGS TopoView, USFWS NWI, USGS NHD, USDA WSS, FEMA , TNRIS, ESRI WMS - World Aerial Imagery, OpenStreetMap
Service Layer Credits:
Service Layer Credits:

Project No.:	9418P078
Date:	Jul 2018
Drawn By:	JC
Reviewed By:	JH

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Delineated Features Map

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VA DFW Phase 4 Cemetery
32.718369°, -96.927954° (GCS NAD83)
Dallas, Dallas County, Texas

Exhibit

7.0

N:\GIS\2018\9418P078\Maps\9418P078_Exhibit_7_0_DelineationV2.mxd

APPENDIX B
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: 9418P078 DFW VA Cemetery City/County: Dallas/Dallas Sampling Date: 7/10/2018

Applicant/Owner: Dallas-Fort Worth National Cemetery State: TX Sampling Point: T2-DP1

Investigator(s): Cobb, Marshall Section, Township, Range: NA

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 30

Subregion (LRR): J Lat: 32.719022 Long: -96.93301 Datum: NAD83

Soil Map Unit Name: 77: Vertel clay, 5 to 12 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

DAREM= 8; drier than normal
Community: Upland Forest

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus crassifolia*	20	Y	FAC
2. *Juniperus virginiana*	15	Y	UPL
3. *Ligustrum sinense*	35	Y	UPL
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ulmus crassifolia*	15	N	FAC
2. *Ligustrum sinense*	80	Y	UPL
3.			
4.			
5.			
	95	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Ligustrum sinense*	80	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	0	x 4 =	0
UPL species	210	x 5 =	1050
Column Totals:	245 (A)		1155 (B)

Prevalence Index = B/A = **4.7**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

SOIL

Sampling Point: T2-DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0"-6"	10YR 3/1	100					loam	roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: rock

Depth (inches): 6"

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 1 T2-DP1 Facing North

Photo 2 T2-DP1 Facing East

Photo 3 T2-DP1 Facing South

Photo 4 T2-DP1 Facing West

Photo 5 T2-DP1 Soil Profile

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: 9418P078 DFW VA Cemetery City/County: Dallas/Dallas Sampling Date: 7/10/2018

Applicant/Owner: Dallas-Fort Worth National Cemetery State: TX Sampling Point: T2-DP2

Investigator(s): Cobb, Marshall Section, Township, Range: NA

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): J Lat: 32.720023 Long: -96.928454 Datum: NAD83

Soil Map Unit Name: 77: Vertel clay, 5 to 12 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:
DAREM= 8; drier than normal
Community: Riparian Scrub

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	35	Y	FACW
2.			
3.			
4.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ligustrum sinense*	35	Y	UPL
2. *Salix nigra*	10	Y	FACW
3.			
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Solidago altissima*	20	Y	FACU
2. *Iva annua*	35	Y	FAC
3. *Smilax bona-nox*	5	N	FAC
4. *Carex crus-corvi*	15	Y	OBL
5. *Helianthus annuus*	10	Y	FACU
6. *Eleocharis englemannii*	5	N	FACW
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	50	x 2 =	100
FAC species	40	x 3 =	120
FACU species	30	x 4 =	120
UPL species	35	x 5 =	175
Column Totals:	170 (A)		530 (B)

Prevalence Index = B/A = **3.11**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

SOIL

Sampling Point: T2-DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0"-16"	10YR 3/3	100					clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✔ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 6 T2-DP2 Facing North

Photo 7 T2-DP2 Facing East

Photo 8 T2-DP2 Facing South

Photo 9 T2-DP2 Facing West

Photo 10 T2-DP2 Soil Profile

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: 9418P078 DFW VA Cemetery City/County: Dallas/Dallas Sampling Date: 7/10/2018

Applicant/Owner: Dallas-Fort Worth National Cemetery State: TX Sampling Point: T1-DP3

Investigator(s): Cobb, Marshall Section, Township, Range: NA

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): ____

Subregion (LRR): J Lat: 32.719213 Long: -96.931489 Datum: NAD83

Soil Map Unit Name: 77: Vertel clay, 5 to 12 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:
DAREM= 8; drier than normal
Community: Drainage Swale

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Gleditisia triacanthos*	15	Y	FACU
2. *Ligustrum sinense*	35	Y	UPL
3. *Celtis laevigata*	10	N	FAC
4. *Juniperus virginiana*	15	Y	UPL
5.			
	75 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Ligustrum sinense*	10	Y	UPL
2. *Asclepias viridis*	10	Y	NI/UPL
3. *Centaurea americana*	5	N	NI/UPL
4. *Amphiachyris dracunculoides*	5	N	NI/UPL
5. *Fraxinus pennsylvanica*	10	Y	FAC
6. *Smilax bona-nox*	15	Y	FAC
7. *Gleditisia triacanthos*	10	Y	FACU
8. *Vitis vulpina*	5	N	FAC
9. *Eragrostis intermedia*	10	Y	NI/UPL
10.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 11% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	25	x 4 =	100
UPL species	90	x 5 =	450
Column Totals:	155 (A)		620 (B)

Prevalence Index = B/A = **4.0**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks:

SOIL

Sampling Point: T1-DP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0"-17"	10YR 4/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 11 T1-DP3 Facing North

Photo 12 T1-DP3 Facing East

Photo 13 T1-DP3 Facing South

Photo 14 T1-DP3 Facing West

Photo 15 T1-DP3 Soil Profile

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: 9418P078 DFW VA Cemetery City/County: Dallas/Dallas Sampling Date: 7/10/2018

Applicant/Owner: Dallas-Fort Worth National Cemetery State: TX Sampling Point: T4-DP4

Investigator(s): Cobb, Marshall Section, Township, Range: NA

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 20

Subregion (LRR): J Lat: 32.717077 Long: -96.927499 Datum: NAD83

Soil Map Unit Name: 77: Vertel clay, 5 to 12 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

DAREM= 8; drier than normal
Community: Upland Scrub

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ligustrum sinense*	90	Y	UPL
2. *Prosopis glandulosa*	5	N	FACU
3.			
4.			
5.			
	95	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Ligustrum sinense*	30	Y	UPL
2. *Sorgum halepense*	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 50

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	25	x 4 =	100
UPL species	120	x 5 =	600
Column Totals:	145 (A)		700 (B)

Prevalence Index = B/A = **4.8**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

leaf litter

SOIL

Sampling Point: T4-DP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0"-6"	10YR 2/2	100					clay	
6"	root layer							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: root layer

Depth (inches): 6"

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 16 T4-DP4 Facing North

Photo 17 T4-DP4 Facing East

Photo 18 T4-DP4 Facing South

Photo 19 T4-DP4 Facing West

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: 9418P078 DFW VA Cemetery City/County: Dallas/Dallas Sampling Date: 7/10/2018

Applicant/Owner: Dallas-Fort Worth National Cemetery State: TX Sampling Point: T5-DP5

Investigator(s): Cobb, Marshall Section, Township, Range: NA

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): J Lat: 32.716895 Long: -96.932251 Datum: NAD83

Soil Map Unit Name: 34: Ferris-Heiden complex, 5 to 12 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

DAREM= 8; drier than normal
Community: Grassland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Prosopis glandulosa*	20	Y	FACU
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Centaurea americana*	15	N	NI/UPL
2. *Prosopis glandulosa*	10	N	FACU
3. *Sorgum halepense*	15	N	FACU
4. *Artemisia ludoviciana*	35	Y	UPL
5. *Eragrostis intermedia*	20	Y	NI/UPL
6.			
7.			
8.			
9.			
10.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	45	x 4 =	180
UPL species	70	x 5 =	350
Column Totals:	115 (A)		530 (B)

Prevalence Index = B/A = **4.6**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

SOIL

Sampling Point: T5-DP5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0"-3"	10YR 3/4	100					Clay	
3"	rock layer							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: rock layer

Depth (inches): 3"

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Photo 20 T5-DP5 Facing North

Photo 21 T5-DP5 Facing East

Photo 22 T5-DP5 Facing South

Photo 23 T5-DP5 Facing West

APPENDIX C
Site Photographs

Photo 1 RPP1

Photo 2 RPP2

Photo 3 RPP3

Photo 4 RPP4

Photo 5 RPP5

Photo 6 RPP6

Photo 7 RPP7

Photo 8 RPP8

Photo 9 RPP9

Photo 10 RPP10

Photo 11 RPP11

Photo 12 RPP12

Photo 13 RPP13

Photo 14 RPP14

Photo 15 RPP15

Photo 16 RPP16

Photo 17 RPP17

Photo 18 RPP18

Photo 19 RPP19

Photo 20 RPP20

Photo 21 RPP21

Photo 22 RPP22

Photo 23 RPP23

Photo 24 RPP24

Photo 25 RPP25

APPENDIX E
Common Acronyms

COMMON ACRONYMS

AJD	Approved Jurisdictional Determination
CWA	Clean Water Act
EPA	Environmental Protection Agency
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GPS	Global Positioning Systems
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate Wetland
OHWM	Ordinary High Water Mark
PJD	Preliminary Jurisdictional Determination
UPL	Obligate Upland
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
WOUS	Waters of the U.S.

Cultural Resources Survey Report

Archaeological Survey of 79 Acres at Dallas Fort Worth National Cemetery
Dallas, Dallas County, Texas

July 15, 2020

Terracon Project No. 90187P078

David Yelacic, RPA, Principal Investigator

Prepared for:
U.S. Department of Veterans Affairs National Cemetery Administration
Dallas Fort Worth National Cemetery
Dallas, Dallas County, Texas

Prepared by:
Terracon Consultants, Inc.
San Antonio, Texas

July 15, 2020

Mark Wolfe, Executive Director
Texas Historical Commission
1511 Colorado Street
Austin, Texas 78701

RE: **Cultural Resources Survey**
Dallas Fort Worth National Cemetery Expansion
Appx. 79 Acres
2000 Mountain Creek Parkway,
Dallas, Dallas County, Texas
Terracon Project No. 90187P078

Dear Mr. Wolfe:

Terracon is pleased to submit this report of findings from a cultural resources survey for Dallas Fort Worth National Cemetery Expansion Project in Dallas, Dallas County, Texas. The archaeological investigation consisted of a systematic and intensive pedestrian survey of approximately 79-acres of currently undeveloped land adjacent to the existing cemetery. The undertaking is under purview of the Section 106 of the National Historic Preservation Act (NHPA).

Overall, pedestrian survey and 57 shovel test excavations failed to identify cultural resources within the APE for direct effects. Terracon therefore recommends that the project should proceed as planned given that no archaeological sites considered eligible for NRHP inclusion or designation of a SAL were identified present within the project area—pending review and concurrence by the appropriate regulating agencies (e.g., THC).

Sincerely,
Terracon Consultants, Inc.

Morlock, Juan D
Digitally signed by Morlock, Juan D
DN: cn=Morlock, Juan D, ou=General Users, email=Juan.Morlock@terracon.com
Date: 2020.07.15 14:48:39 -05'00'

Juan D Morlock,
Staff Archaeologist

Yelacic, David M
Digitally signed by Yelacic, David M
DN: cn=Yelacic, David M, ou=General Users, email=David.Yelacic@terracon.com
Date: 2020.07.15 15:12:26 -05'00'

David M. Yelacic, RPA
PI Archaeologist

Jennifer Peters
Environmental Planning Group Manager

Attachments

TABLE OF CONTENTS

ABSTRACT

Terracon archaeologists conducted a systematic and intensive pedestrian survey of a proposed cemetery expansion project at Dallas Fort Worth National Cemetery at 2000 Mountain Creek Parkway in Dallas, TX on behalf of the Department for Veteran Affairs. Survey took place over approximately 79 acres of land that is currently undeveloped with the exception of utility easements. The undertaking is under purview of Section 106 of the National Historic Preservation Act (NHPA).

Fieldwork was conducted from May 20-22 of 2020 by Terracon archaeologists Juan “Kiko” Morlock and Edgar Vasquez under supervision of David Yelacic, Principal Investigator. Overall, pedestrian survey and 57 shovel test excavations failed to identify cultural resources within the APE for direct effects. Terracon therefore recommends that the project should proceed as planned given that no archaeological sites considered eligible for NRHP inclusion or designation of a SAL were identified present within the project area—pending review and concurrence by the appropriate regulating agencies (e.g., THC).

Cultural Resources Survey Report:
Dallas Fort Worth National Cemetery Expansion Project
Dallas, Dallas County, Texas

Terracon Project No. 9018P078

July 15, 2020

1.0 INTRODUCTION

On behalf of the Department of Veteran Affairs (VA), Terracon Consultants Inc. performed intensive archaeological survey in support of phased expansion of Dallas Fort Worth National Cemetery (approximately 79-acres) in the City of Dallas, Dallas County, Texas. As the proposed cemetery expansion is sponsored by and includes land controlled by the VA, the proposed undertaking is subject to provisions of Section 106 of the National Historic Preservation Act (NHPA). The proposed expansion does not trigger the Antiquities Code of Texas

Fieldwork was carried out by Terracon archaeologists on May 20-22 of 2020. David Yelacic, RPA served as Principal Investigator, and archaeological fieldwork was carried out by Juan "Kiko" Morlock and Edgar Vasquez. Following reporting guidelines promulgated by the Council for Texas Archaeologists and the Texas Historical Commission (THC), the area of potential effect is defined and contextualized, methods are described, results are presented, and recommendations are provided in the concluding section.

2.0 AREA OF POTENTIAL EFFECT

The overall area of potential effects (APE) includes a 64.7-acre tract located west and south of the Cemetery Administration Building, as well as a smaller 14.3-acre tract to the north, totaling approximately 79-acres. The larger tract is bounded by the cemetery Administration and Maintenance complex to the west, Mountain Creek Parkway to the north, an unnamed drainage to the west, and Highway 408 to the south. The smaller tract is bound by the Administration and Maintenance complex to the south, Mountain Creek Parkway to the north, Rio Grande Drive to the west, and undeveloped cemetery property to the east. The vertical APE is unknown at this time.

3.0 ENVIRONMENTAL SETTING

Environments are composed of such interconnected elements as underlying bedrock geology, soil, biology (i.e., plants and animals), and climate. Environmental conditions are coupled with initial patterning and subsequent preservation of materials left behind by humans, the culmination of which is referred to as site formation processes. Understanding and evaluating potential site formation processes aids in assessing the presence and preservation of cultural resources. It is therefore important to consider environmental conditions of the past and present when assessing

cultural resources of all ages. The 7.5-minute U.S. Geological Survey Duncanville Quadrangle shows the study area as rolling to undulating low hills with elevations ranging across the area from 500 to 550 feet above sea level.

In general terms, the project area is located within the Blackland Prairie (Griffith et al. 2004). This ecoregion is distinguished by a unique combination of physical and biological properties. The Blackland Prairie is characterized topographically by nearly flat to rolling plains. The Blackland Prairie was at one point a diverse, productive grassland with wooded stream bottoms, but most of it has been converted to agricultural purposes or urban sprawl.

3.1 Geology and Soils

Bedrock geology is mapped as the Cretaceous-age Eagle Ford Group (Kef), which are selenitic shales with calcareous concretions over platy, burrowed sandstone that rests on a hard limestone base (USGS: GDT 2007). Three soils are mapped in the area: Houston Black Series, Ferris-Heiden Complex, and Vertel Clay (Web Soil Survey 2019). Houston Black Series consists of very deep and very slowly permeable clay soils that formed in clayey residuum from calcareous mudstone; the Ferris-Heiden Complex are both very deep soils, slowly permeable clay soils that formed from clayey residuum of calcareous mudstone; Vertel Clays are moderately deep, very slowly permeable soils that are gently to strongly sloping soils on uplands that form in shaly materials (NRCS Web Soil Survey 2019).

4.0 CULTURAL HISTORY

Generally, the cultural chronology of the Texas can be divided between Prehistoric and Historic time periods. The boundary between the two is marked by the introduction of Europeans into the western hemisphere. Through the last 75-plus years of archaeological research in the region, identifiable and repeated patterns in artifact assemblages have indicated major shifts in subsistence strategies and technology through time. As a result, Prehistoric Period has three subdivisions: Paleoindian, Archaic, and Late Prehistoric.

The Paleoindian period (ca. 12,500-8800 years ago) includes the earliest human occupation of North America, which extends back into the late Pleistocene. During this period of time, people hunted large game, but they generally had a broad diet and consumed much of what they could. This included small game and aquatic creatures all the way up to mega fauna that went extinct with the close of the Pleistocene (i.e., mammoth, mastodon, bison, horse, camel, etc.). Technological traditions further subdivide the Paleoindian period into Early and Late. The Archaic period (ca. 8800-1250 years ago) was the longest period in prehistory, and it is generally marked by the introduction of hot-rock cooking in addition to the proliferation of a wide variety of diagnostic projectile points. Cooking with fire-heated rocks developed with increased reliance on plant foods, which may have been a response to diminishing game resources and ultimately climatic change/variation. This is not to say that human agency, and ultimately culture, did not play an important role in the shift of economic and subsistence strategies. The Archaic period is

subdivided into Early-, Middle-, and Late-Archaic periods, each with a slight variation in response to cultural shifts and ambient conditions. The Late Prehistoric (ca. 1250-250 years ago) was a relatively brief period, but it was marked by a shift in weapon technology: the introduction of the bow-and-arrow. Like the Archaic, the Late Prehistoric people utilized hot rock cooking to process plants to edible forms. There also appeared to be increasing contact among groups, which resulted in increased trade of materials and evident competition over resources.

4.1 Historic Period

Sometimes referred to as the Protohistoric period, the Spanish Entradas, or expeditions, mark the onset of western influence in the New World. These explorations effectively scouted the new land and resulted in the settlement and establishment of missions spread throughout what has become northern Mexico and Texas. Through the Historic period, European populations and influence steadily increased as native populations were diminished.

Aerial photographs available for the years 1952-2014 were reviewed to characterize land use and land cover within the study area. The study area appears to have remained relatively unchanged from 1952 to 2001, with land cover dominated by woody vegetation. Most of the study area appears to be undeveloped; however, considering the continuous development of the cemetery complex to the west, it is possible some artificial impacts to the area have taken place. Photographs indicate the cemetery began development some time between 2000, with little development occurring in the immediate surrounding area.

5.0 PREVIOUS INVESTIGATIONS

The Texas Archaeological Sites Atlas database (Atlas) and the NRHP geographic information system informed this records review. This review indicates that the project area would be in an area that has been previously evaluated for historic and archaeological cultural resources.

The Atlas indicates that three archaeological surveys (ca. 1994, 2002, and 2015) have taken place at and around the proposed project area. Three historic-age archaeological sites were recorded within the immediate vicinity and within one kilometer of the proposed project area. Historic windmill sites, 41DL364 and 41DL365, were recorded in 1995 (Skinner et.al. 1995) and were not relocated during attempts to revisit the sites in 2015 (Lindemuth 2015: 3-1). Site 41DL421, an early to mid-twentieth century artifact scatter recorded in 2002, was revisited circa 2006 and could not be relocated. Early consultation with the Texas Historical Commission during a 2015 expansion phase of the cemetery concluded that archaeological survey should be conducted due to the time span between the previous surveys (i.e., greater than 10 years). Accordingly, pedestrian survey supplemented with shovel test pits investigated the general area north of the current project for previously recorded, as well as unrecorded, archaeological resources. The previously identified sites could not be relocated and were likely destroyed since their initial documentation (Lindemuth 2015: 3-3). None of these sites are/were documented within the present area of potential effect for the proposed expansion and improvements activities.

6.0 METHODS

6.1 Pedestrian Survey

To investigate the proposed project area, archaeologists conducted pedestrian survey in 30-meter transects following a one square acre grid overlaid onto the project area. While this project was begun prior to updated survey standards, Terracon archaeologists implemented the new standards, which included excavation of a total of 45 shovel tests at 57 potential shovel test locations (i.e., 12 shovel test locations were not excavated due to clear disturbances). Shovel tests were placed at regularly spaced intervals

Shovel tests were excavated in arbitrary 20-centimeter levels, and sediment excavated during shovel testing was passed through ¼-inch hardware mesh and/or troweled through. Shovel test results were recorded on paper field forms as well as through photographs and GPS. Additionally, areas along the line that were surveyed only by visual pedestrian survey were recorded with a GPS and photographs.

7.0 RESULTS

Despite generally abundant surface visibility, inspection of the surface along transects was difficult through the very brushy and thorny interior of the larger tract, but sinuous survey lines were walked or crawled. No cultural materials were identified at the surface across the property, and no cultural materials were identified in the 45 excavated shovel tests.

Shovel test excavations yielded observations of relatively shallow bedrock in more upland environments, as well as shallow and ferrous subsoils in low-lying portions of the APE. Shovel test excavations were typically terminated by 30 to 50 centimeters below surface. Non-cultural gravels were encountered in many shovel tests.

Both the larger and smaller tracts appear to have been subject to some degree of ground disturbance. The larger tract by the construction of a large power line right of way and the dumping and storage of various items utilized by the cemetery and its upkeep. The smaller tract had both gas and sewer utility easements running through it.

8.0 CONCLUSIONS AND RECOMMENDATIONS

On behalf of the VA, Terracon archaeologists carried out intensive archaeological survey of the proposed Dallas Fort Worth National Cemetery Expansion Project (approximately 79 acres) in the City of Dallas, Dallas County, Texas. The undertaking is under purview of Section 106 of the

National Historic Preservation Act as the proposed project is sponsored and impacts land controlled by the VA.

Overall, pedestrian survey and 57 shovel test excavations failed to identify cultural resources within the APE for direct effects. Terracon therefore recommends that the project should proceed as planned given that no archaeological sites considered eligible for NRHP inclusion or designation of a SAL were identified present within the project area—pending review and concurrence by the appropriate regulating agencies (e.g., THC).

9.0 REFERENCES CITED

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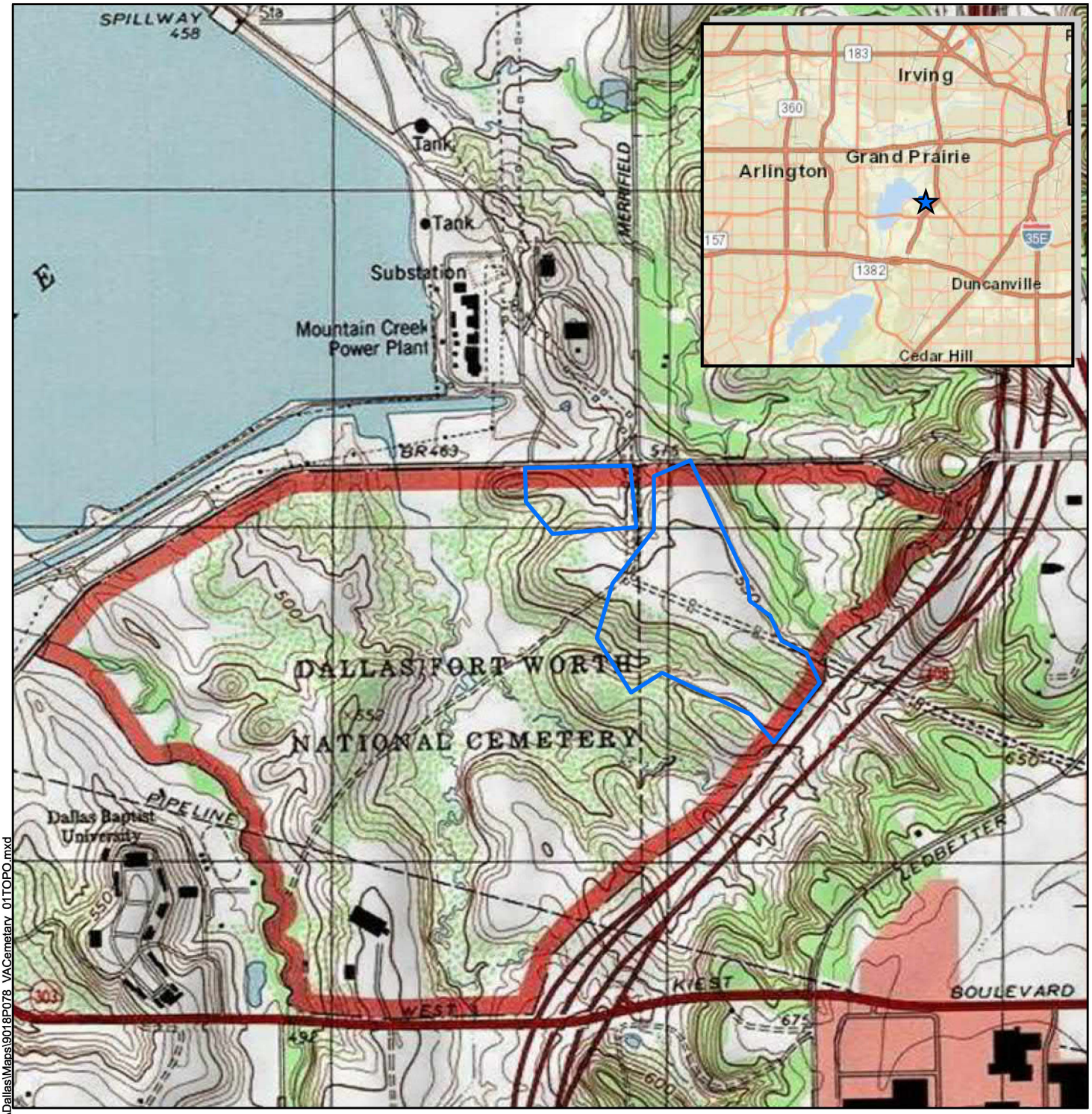
APPENDIX A
Maps



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Project Area

N
W E
S

0 350 700 1,400
Feet

0 150 300 600
Meters

Path: N:\GIS\Projects\9018P078_VADallasMaps\9018P078_VACemetary_01TOPO.mxd

Project Mngr:	JTP
Drawn By:	VCP
Checked By:	DMY
Approved By:	DMY

Project No.	9018P078
Scale:	1 in = 1,400 ft
TBPE Firm No.	F-3272
Date:	June 2020

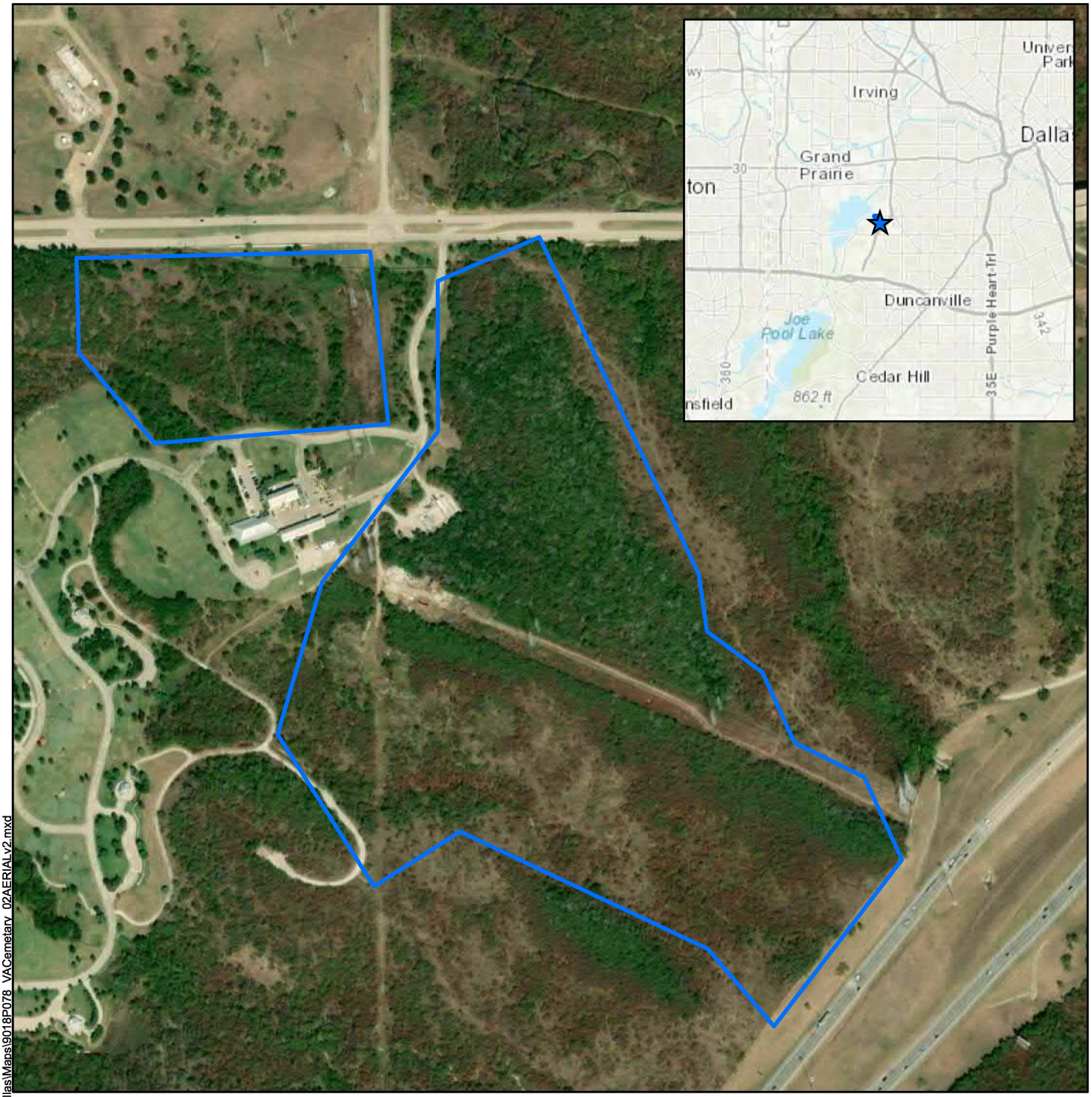
Terracon
Consulting Engineers & Scientists
6911 Blanco Road San Antonio, TX 78216
PH (210) 641-2112 Fax (210) 641-2124

Topographic Map

Dallas VA Cemetery Expansion Project
2000 Mountain Creek Parkway
Dallas County, Texas

Figure

1



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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project Area

N
W E
S

0 150 300 600
Feet

0 50 100 200
Meters

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Project Mngr:	JTP
Drawn By:	VCP
Checked By:	DMY
Approved By:	DMY

Project No.	9018P078
Scale:	1 in = 500 ft
TBPE Firm No.	F-3272
Date:	June 2020

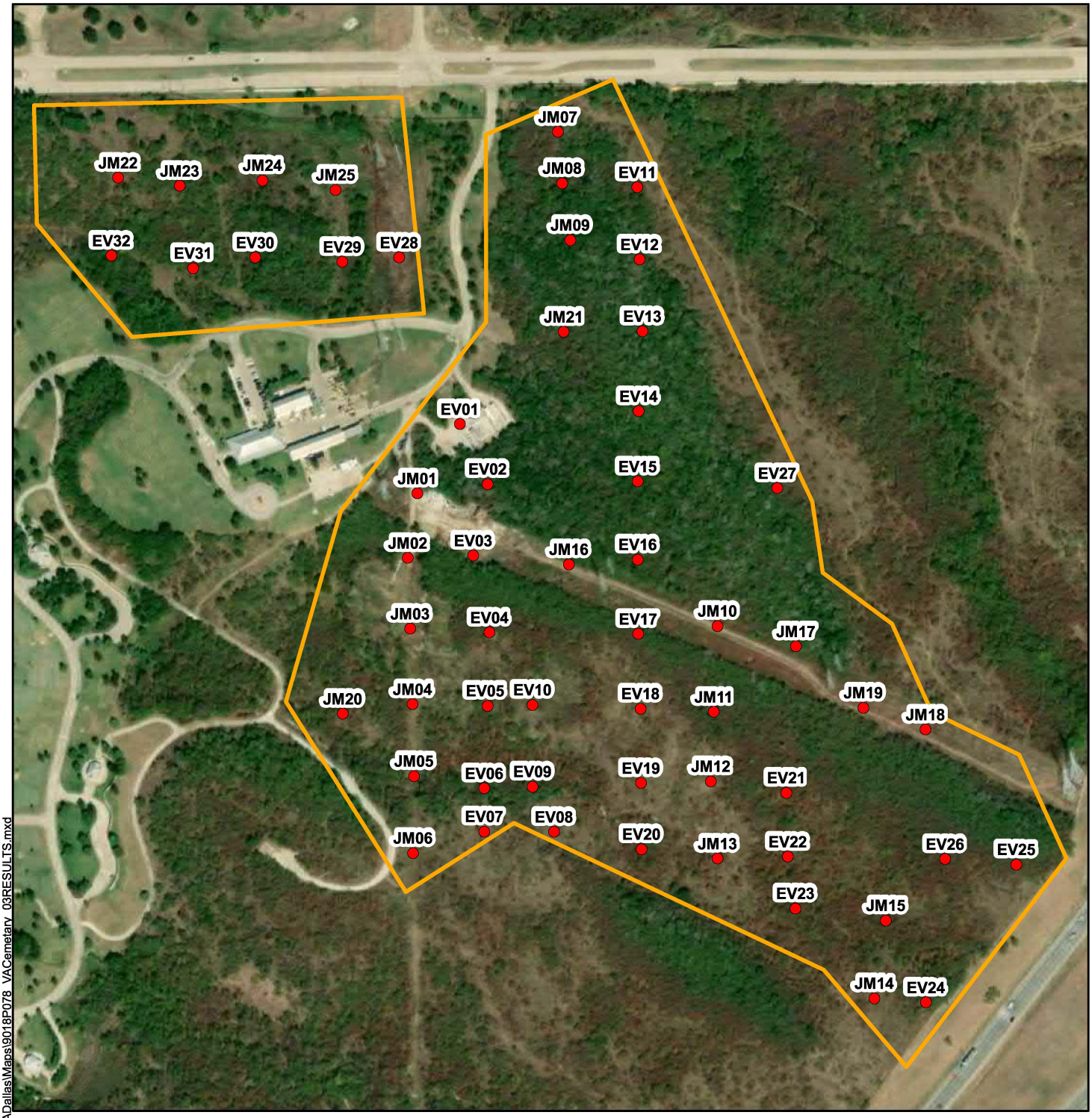
Terracon
Consulting Engineers & Scientists
6911 Blanco Road San Antonio, TX 78216
PH (210) 641-2112 Fax (210) 641-2124

Aerial Map

Dallas VA Cemetary Expansion Project
2000 Mountain Creek Parkway
Dallas County, Texas

Figure

2



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Shovel Test
ProjectArea

N
W E
S

0 125 250 500
Feet
0 50 100 200
Meters

Project Mngr:	JTP
Drawn By:	VCP
Checked By:	DMY
Approved By:	DMY

Project No.	9018P078
Scale:	1 in = 400 ft
TBPE Firm No.	F-3272
Date:	June 2020

Terracon
Consulting Engineers & Scientists
6911 Blanco Road San Antonio, TX 78216
PH (210) 641-2112 Fax (210) 641-2124

Results Overview

Dallas VA Cemetery Expansion Project
2000 Mountain Creek Parkway
Dallas County, Texas

Figure
3

APPENDIX B
Photographs

Photo 1 Powerline ROW and Cemetery Storage Area

Photo 2 View of road/disturbance to area used for dumping brush.

Photo 3 Shovel Test JM03

Photo 4 Shovel Test JM04

Photo 5 Low Drainage Area at JM05

Photo 6 Standing water on slope near garbage dumping area.

Photo 7 Metal Drainage pipe embedded in ground.

Photo 8 PVC Drainage pipe embedded in the ground.

Photo 9 Dumped concrete cemetery debris on slope near JM02 and JM03.

Photo 10 Shovel test JM07

Photo 11 Shovel Test JM09

Photo 12 Shovel Test JM12

Photo 13 Shovel Test JM14

Photo 14 Power Line ROW near east side of larger project area facing SE

Photo 15 Gas utility infrastructure that goes into the smaller project area.

Photo 16 Sewer line infrastructure in smaller project area.

Photo 17 Shovel Test JM23 in smaller project area.

Photo 18 Manhole cover in smaller project area.

Photo 19 Shovel Test JM24

Photo 20 Shovel Test JM25

Photo #1 View of EV01 ND, facing East.

Photo #2 View of EV02, facing Northeast.

Photo #3 View of EV03, facing east

Photo #4 View of EV04 shovel test, plan

Photo #5 View of EV4, facing south

Photo #6 View of EV5, facing south

Photo #7 View of EV6, facing south

Photo #8 View of EV7, facing northwest

Photo #9 View of EV7 shovel test, plan

Photo #10 View of EV8, facing west

Photo #11 View of EV9, facing west

Photo #12 View of EV10, facing east

Photo #13 View of EV11, facing northwest

Photo #14 View of EV12, facing southwest

Photo #15 View of EV13, facing west

Photo #16 View of EV15, facing northeast

Photo #17 View of EV16, facing south

Photo #18 View of EV16 shovel test, plan

Photo #19 View of EV17, facing southwest

Photo #20 View of EV18, facing SW

Photo #21 View of EV19, facing east

Photo #22 View of EV 20, facing east

Photo #23 View of EV21, facing northwest

Photo #24 View of EV22, facing southwest

Photo #25 View of EV23, facing south

Photo #26 View of EV24, facing southeast

Photo #27 View of EV25, facing south

Photo #28 View of EV26, facing southwest

Photo #29 View of EV27, facing north

Photo #30 View of EV27 Shovel test, plan

Photo #31 View of EV28 ND on ROW, facing N

Photo #32 View of EV29, facing south

Photo #33 View of EV30, facing East

Photo #34 View of Dump Pile, facing NW

Photo #35 View of Dump Pile, facing SE

Photo #36 View of EV31, facing SW

Photo #37 View of Sewer cap, plan

Photo #38 View EV32, facing NW

APPENDIX C
Shovel Test Log

ST #	Depth (cmbs)	+/-	Ground Cover (%)	Munsell Color	Texture	Gravels (%)	Comments
EV01	0	-	N/A	N/A	N/A	N/A	Disturbed; construction area with shipping containers
EV02	0-40	-	90+	2.5YR 2.5/1	Clay to Clay Loam	<2	Lots of roots; densely vegetated area. Terminated due to clay loam to clay transition. Compact. NCM.
EV03	0-30	-	90+	2.5YR 2.5/1	Clay	2-20	Edge of row and dense shrubs. Few roots. Compact, firm, NCM.
EV04	0-40	-	90+	10YR 4/2 – 0-30cmbs 10YR 6/2 – 30-40cmbs	Clay Loam to Clay	>50	Several roots; moist; slight $CaCO_3$; sudden transition @ ~30cmbs. Soil change to wet, $CaCO_3$. Hit water table. NCM, subsoil.
EV05	0-30	-	90+	2.5Y 5/3	Clay	>20	On slight mound; dense vegetation; several roots; iron oxide and $CaCO_3$ mottling. NCM. Subsoil.
EV06	0-32	-	90+	2.5Y 5/2	Clay	2-20	Moist; lots of roots; on slope; iron oxide and $CaCO_3$; NCM; Term @ Subsoil.
EV07	0-40	-	80-90	2.5Y 5/2	Clay	<2	Compact, semi-moist, firm; few roots; Iron oxide; NCM; Term @ subsoil.
EV08	0-30	-	90+	2.5Y 5/2	Clay		Moist; compact; several roots; iron oxide; NCM. Term @ Subsoil.
EV09	0	-	N/A	N/A	N/A	N/A	No dig. On bank of creek; lots of exposed sandstone @ surface.
EV10	0-37	-	90+	2.5Y 4/1	Clay	<2	Compact clay; few dense roots; slight open area. Term @ compaction.
EV11	0-40	-	90+	10YR 3/1	Clay	<2	Semi-moist; compact; sticky; several roots; densely vegetated area w/yaupon; NCM. Term @ compaction.
EV12	0-30	-	90+	10YR 3/1	Clay	<2	Semi-moist; compact; sticky; several roots; densely vegetated area w/yaupon; NCM. Term @ compaction.
EV13	0-36	-	90+	10YR 2/1	Clay	<2	Sticky; compact; plastic line soil; several roots; heavily vegetated; briar and yaupon. Term @ compaction.
EV14	0-33	-	90+	10YR 2/1	Clay	<2	Sticky; compact; plastic line soil; several roots; heavily

							vegetated; briar and yaupon. Term @ compaction.
EV15	0-30	-	90+	10YR 2/1	Clay	<2	Sticky; compact; plastic line soil; several roots; heavily vegetated; briar and yaupon. Term @ compaction.
EV16	0-40	-	90+	10YR 2/1	Clay	<2	Sticky; compact; plastic line soil; several roots; heavily vegetated; briar and yaupon. Term @ compaction.
EV17	0-30	-	90+	10YR 2/1	Clay	<2	Sticky; compact; plastic like soil; several roots; heavily vegetated; briar and yaupon. Term @ compaction. Near edge of right of way.
EV18	0-35	-	90+	10YR 5/2	Clay	2-20	On slight slope to south. Tall grasses; compact; firm; several roots; iron oxide; Term @ subsoil.
EV19	0-37	-	90+	2.5Y 5/3	Clay	2-20	On slight slope to south. Tall grasses; compact; firm; several roots; iron oxide; mesquite shrubs; Term @ subsoil.
EV20	0-30	-	90+		Clay	2-20	Bigger gravels <5cm; several roots; slight down slope to SW; densely vegetated; $CaCO_3$ and iron oxide. Term @ subsoil.
EV21	0-57	-	90+	2.5YR 4/1 – 0-44cmbs 2.5Y 2.5/1 – 44-57cmbs	Clay	2-20	Lots of roots; compact/firm; several gravels <5cm. Sudden soil change @ appx 44cmbs. After 44cmbs few rootlets; blocky; compact/firm; plastic like. Term @ compaction.
EV22	0-47	-	90+	10YR 4/1	Clay	2-20	Several rootlets; dry; firm; compact; blocky; plastic like. Term @ compaction.
EV23	0-38	-	90+	10YR 4/1	Clay	<2	Moist; very sticky; several roots; cobbles <3cm; compact; hard to screen. Dense Veg. Term @ compaction.
EV24	0-49	-	90+	10YR 4/1	Clay	<2	Few roots; blocky; compact/firm; plastic like; near highway. Term @ compaction.
EV25	0-48	-	90+	2.5Y 6/2	Clay	2-20	Dense veg area north of highway. Moist; firm; compact soil. Iron oxide and $CaCO_3$. Term @ compaction.

EV26	0-30	-	90+	2.5Y 6/2	Clay	<2	Very dense veg. Yaupon. Moist; firm; compact; plastic like soils. Several roots. Term @ compaction.
EV27	0-46	-	90+	2.5Y 6/2	Clay	<2	Open area near edge of dense vegetation. Tall grasses. Dry, plastic like; compact/firm; slight iron oxide. Term @ compaction.
EV28	0	-	N/A	N/A	N/A	N/A	In wide disturbed Right of Way.
EV29	0-43	-	80-90	2.5Y 4/1 – 0-39cmbs 2.5Y 6/4 – 39-43cmbs	Clay	>20	On slope going N. Possible bank of ROW. Large cobbles <5cm. Firm/compact. Sudden soil change to lighter color; frim; sticky; dry; compact. Light iron oxide. Term @ compaction.
EV30	0-27	-	60-80	2.5Y 4/1	Clay	>50	Lots of cobbles and sandstone @ surface. Clay, firm/compact; lots of roots. Gravels <5cm. Impassible. Term @ gravels.
EV31	0-59	-	80-90	2.5Y 5/2	Clay	2-20	About 20m NE of dump area. Dense veg. Yaupon and Mesquite. Dry, compact/firm. Several roots. Term @ compaction.
EV32	0-46	-	80-90	2.5Y 4/2 w/mottles of 2.5Y 6/4	Clay	2-20	On edge of semi-cleared path. Tall grasses. Dry; firm; compact; plastic like clay. Several roots. Slight iron oxide. Term @ compaction.
JM01	0	-	5-20	N/A	N/A	N/A	No Dig; Area disturbed by transmission line, as well as service road and construction staging area.
JM02	0	-	5-20	N/A	N/A	N/A	No Dig; Area disturbed by construction of gravel service road and brush push piles.
JM03	0-40	-	40-60	10YR 3/4 w/mottles of 10YR 5/1 & 10YR 6/3	Clay Loam	>20	Highly turbated soil, very mixed/mottled, gravels and $CaCO_3$ nodules throughout. Roots near surface. Term @ $CaCO_3$.
JM04	0-40	-	80-90	10YR 4/2 – 0-5cmbs 2.5Y 5/3 – 5-30cmbs 2.5Y 4/2 – 30-40cmbs	Clay	>50	Clay loam in top ~5cm. Followed by layer of very dense clay & tabular rock pieces. After the rock, very dense, moist darker color clay. $CaCO_3$ throughout. Term @ $CaCO_3$.

JM05	0	-	60-80	N/A	N/A	N/A	No Dig; streambed w/slopes on either side. Tabular rock seen in last st visible scattered in the stream and nearby ground surface.
JM06	0-45	-	80-90	2.5Y 4/1	Clay	2-20	Uniform gray clay w/$CaCO_3$ and tabular rock frags below ~35cmbs. Infrequent gravels and roots @ surface. Term @ rock.
JM07	0-50	-	20-40	2.5Y 3/2	Clay Loam	2-20	Uniform clay loam w/abundant roots and rootlets throughout. Infrequent gravels. $CaCO_3$ starting @ 45cmbs. Increases in frequency with depth. Term @ $CaCO_3$.
JM08	0-45	-	20-40	2.5Y 3/1 – 0-35cmbs 2.5Y 4/2 – 35-45cmbs	Clay Loam	<2	Abundant roots/rootlets. Infrequent tabular rocks and gravels. $CaCO_3$ in last 10cm. Term @ $CaCO_3$.
JM09	0-40	-	20-40	10YR 2/1	Clay Loam	<2	Abundant roots/rootlets. Infrequent tabular rocks and gravels. $CaCO_3$ in last 10cm. Term @ $CaCO_3$.
JM10	0	-	60-80	N/A	N/A	N/A	No Dig; disturbed, in powerline Right of Way w/cleared brush etc.
JM11	0	-	60-80	N/A	N/A	N/A	No dig; steep slope.
JM12	0-55	-	90+	2.5Y 5/2 w/mottles of 10YR 6/6	Clay	>50	Abundant poorly sorted gravels and small flat rock fragments. Mottled dense clay. On terrace between slopes. $CaCO_3$ in approx. the last 10cm.
JM13	0-50	-	90+	10YR 3/2 – 0-5cmbs 2.5Y 4/2 – 5-50cmbs	Clay	2-20	Clay less dense than last ST. Roots abundant. $CaCO_3$ from appx 40cmbs down. Term @ $CaCO_3$.
JM14	0-45	-	90+	2.5Y 4/2	Clay	2-20	Dense clay, roots frequent at/near surface. Infrequent poorly sorted gravels. $CaCO_3$ in last 10cm. Term @ $CaCO_3$.
JM15	0-40	-	5-20	10YR 4/1 – 0-5cmbs 2.5Y 5/2 – 5-40cmbs	Clay	2-20	Dense clay, roots frequent at/near surface. Infrequent poorly sorted gravels. $CaCO_3$ in last 10cm. Term @ $CaCO_3$.
JM16	0	-	N/A	N/A	N/A	N/A	No Dig; Disturbed ROW

JM17	0	-	N/A	N/A	N/A	N/A	No Dig; Disturbed ROW
JM18	0	-	N/A	N/A	N/A	N/A	No Dig; Disturbed ROW and steep slope.
JM19	0	-	N/A	N/A	N/A	N/A	No Dig; Disturbed ROW
JM20	0-45	-	40-80	2.5Y 3/2 – 0-5cmbs 2.5Y 5/2 – 5-45cmbs	Clay	>20	On small terrace between heavy brush and drainage. Moist clay w/roots near surface. Poorly sorted tabular rock frags and gravels decreasing slightly w/depth.
JM21	0-45	-	<5	2.5Y 4/1 – 0-40cmbs 2.5Y 4/2 – 40-45cmbs	Clay Loam	2-20	In tiny clearing. Moist clay loam. Roots and poorly sorted gravels throughout. $CaCO_3$ in last ~5cm. Term @ $CaCO_3$.
JM22	0-45	-	80-90	10YR 5/1 w/mottles of 10YR 6/8	Clay	>50	Dense mottled clay. Poorly sorted gravels to cobbles. Generally subrounded. $CaCO_3$ in last 10cm. Term @ $CaCO_3$.
JM23	0-45	-	<5	10YR 3/2 – 0-15cmbs 10YR 5/2 – 15-45cmbs	Clay Loam	2-20	Dense loamy clay. Roots and gravels abundant in top 20cm. Term @ $CaCO_3$.
JM24	0-25	-	40-60	2.5Y 4/1	Clay Loam	>20	Loamy clay, roots and gravels abundant, insect bioturbation, iron nodules. Term @ bedrock.
JM25	0-45	-	90+	10YR 3/1 – 0-30cmbs 2.5Y 5/2 – 30-45cmbs	Clay Loam	2-20	Loamy clay; roots, gravels, tabular rocks. Color change @ 30cmbs. $CaCO_3$ from 30 down. Term @ $CaCO_3$.