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DETERMINATION OF ADVERSE EFFECT FOR THE TENASKA BROWNSVILLE PARTNERS LLC EPA GHG PSD PERMIT APPLICATION

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DETERMINATION OF ADVERSE EFFECT FOR THE TENASKA BROWNSVILLE PARTNERS LLC EPA GHG PSD PERMIT APPLICATION

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INTRODUCTION

Tenaska applied to the United States Environmental Protection Agency (EPA) for a Greenhouse Gas (GHG) permit under the Prevention of Significant Deterioration (PSD) program of the Clean Air Act (CAA).[1] Tenaska is planning to build and operate a natural gas-fueled, combined cycle electric generating station with a capacity of approximately 800 megawatts, in Cameron County, Texas, known as the Tenaska Brownsville Generating Station (the Project). Along with this power plant, Tenaska and Brownsville Public Utility Board will construct seven different interconnect lines to support the project.

EPA's issuance of this permit constitutes an undertaking as defined by the National Historic Preservation Act (NHPA) of 1966 and in the Advisory Council on Historic Preservation's (ACHP) regulations.[2] Therefore, prior to issuance of the permit, EPA must consider the effects of the undertaking on resources listed in and/or eligible for listing in the National Register of Historic Places (NHRP) in accordance with Section 106 of NHPA. In addition, there are special provisions in the NHPA which apply to National Historic Landmark (NHL) sites.[3]

Tenaska Brownsville Partners, LLC (herein Tenaska) conducted[4] cultural resources investigations and voluntarily submitted a cultural resources assessment report to EPA titled: "*Cultural Resources Assessment: Tenaska Brownsville Generating Station*" (December 13, 2013) (hereinafter Cultural Report) in support of its GHG PSD Permit Application and to aid with EPA's Section 106 responsibilities. EPA hereby adopts only the data presented in the report as EPA has relied only on the field studies and research conducted by ERM, a contractor for Tenaska. EPA does not accept the recommendations therein of no adverse effect to historic properties. The EPA has relied on the information presented in the Cultural Report to determine that the proposed undertaking will result in adverse effects to historic properties.[5]

EPA identified six (6) historic properties listed or potentially eligible for listing on the NRHP within the Area of Potential Effect (APE). Of these properties, five (5) will be potentially affected by the Project. The potentially effected properties include Palo Alto Battlefield National

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[1] http://www.epa.gov/nsr/ghgpermitting.html

[2] 16 U.S.C. 470s; 36 C.F.R. § 800.16(y).

[3] Special consideration should be given to NHL sites, see NHPA Section 110(f) (16 USC 470h-2(f)); 36 C.F.R. § 800.10.

[4] The survey was conducted by Tenaska's consultant, Environmental Resources Management (ERM).

[5] ACHP's regulations regarding adverse effect are at 36 C.F.R. § 800.5. A collective view of the regulations and guidance regarding adverse effect shows that an "adverse effect" can mean one or more effects, single or collectively, that can be either discrete, interrelated, reasonably foreseeable, and/or cumulative.

Historical Park and the Palo Alto National Historic Landmark ("Palo Alto site"), Cameron County Irrigation District No. 6, Cameron County Drainage District No. 1, Cameron County Irrigation District No. 2, and Port of Brownsville Historic District.[6]

The most significant impacts would be from the generating station and transmission line to the Palo Alto site. EPA understands based on the information provided in the Cultural Resources Assessment (CRA) and from NPS staff that the permitted construction of the Project will cause the following effects:

- impacts to the visual sightlines of the historic property and its cultural landscape;
- light and sound effects that will affect the visitor's experience;
- light effects to the night sky; and
- continuous and constant noise as a result of the relative proximity of the power plant to the Palo Alto site.

These impacts will be continuous (24 hours a day, 365 days of the year) during lifetime operation of the plant (with exceptions of some impacts during those times when the plant is non-operational for repairs and other modifications). According to Tenaska, the lifetime operation of the proposed Project is expected to be approximately 30 years.

The purpose of this document is to:

- Identify historic properties located within the Project's Area of Potential Effects; and
- Describe the adverse effects of the Project on identified historic properties, specifically the Palo Alto National Historical Park, including the Palo Alto National Historic Landmark site.[7]

EPA has consulted with National Parks Service (NPS), Texas's State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP). Consulting NPS staff included: Palo Alto Battlefield Park Superintendent and park staff; Intermountain Region staff from National Historic Landmarks, Natural Resources, and Environmental Quality; Washington D.C. staff from Section 106 Compliance Office and American Battlefield Protection Program.

EPA recognizes NPS's expertise in managing our national cultural patrimony and accepts its recommendations regarding an adverse effects determination of proposed Project. Following consideration of the information provided during consultation by all parties, including Tenaska, **EPA makes the following determinations:**

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[6] Per Communication from Texas State Historic Preservation Officer (SHPO) to EPA dated September 30, 2014, the Delta Lake Irrigation District is within the APE; however, it was determined to be *not eligible* for listing on the National Register by Texas Department of Transportation in January 2014, and therefore not discussed in this report.

[7] Cultural resources not included in this report because they were determined to not be affected by the Project included Cemetario de las Burras, La Feria de las Flores Cemetery and two archeological sites (41CF218 and 41CF196), as discussed in the Cultural Report.

- The Area of Potential Effect (APE) includes properties that comprise the Palo Alto National Battlefield including the Palo Alto National Historical Park and National Historic Landmark which forms an historic viewshed adjacent to the Project site. The APE also contains four districts that are potentially eligible for listing on the National Register.
- Construction and operation of the Project will cause both direct and indirect adverse effects to historic properties that are of considerable consequence.[8]
- Construction and operation of the Project will result in indirect adverse effects to the viewshed, as well as impacts to the visitor experience of this important cultural landscape. Specifically, lighting from the facility will result in changes to the night sky and the transmission line will create constant and noticeable audible impacts to the site.
- Operation of the Project will result in noticeable atmospheric impacts in the form of steam plumes and air emissions which will be seen from many parts of the Palo Alto site.
- Associated construction and development of the Water Discharge Pipeline, Transmission Interconnect Line, Natural Gas Transmission Pipeline, Water Reuse Pipeline, and the potable water and sewer interconnection lines in support of the project will affect the irrigation and drainage districts and the Port of Brownsville Historic District.[9]
- Associated construction and operation of the Project and the natural gas pipeline associated with the Project will result in reasonably foreseeable development of business and industries adjacent to the Palo Alto NHL.[10]

SUMMARY OF HISTORIC PROPERTIES WITHIN THE PROJECT AREA OF POTENTIAL EFFECTS

The following table of historic properties was submitted by Tenaska and is incorporated into this adverse effects assessment with changes to "Project Effect":

Name	Location	NRHP Eligibility	Project Effect
Palo Alto Battlefield National Historical Park	Paredes Line Road, Cameron Co.	Listed (NHL, NRHP)	Direct and Indirect: Adverse
Cameron County Irrigation District No. 6	Highway 77, Cameron Co.	Eligible	Direct: Adverse
Cameron County Drainage District No. 1	Northeast of Brownsville, Cameron Co.	Potentially Eligible	Direct: Adverse
Port of Brownsville	Captain Donald L. Foust Road, Cameron Co.	Potentially Eligible	Direct: Adverse
Cameron County Irrigation District No. 2	San Benito, Cameron Co.	Potentially Eligible	Direct: Adverse

[8] See Footnote #2, supra: adverse effect is explained at 36 C.F.R. § 800.5.

[9] Information derived from summary table in the Attachment from Tenaska to EPA dated February 21, 2014. EPA has determined that because of the committed minimization of impacts on these properties by these various lines and based on the SHPO's concurrence of the mitigation measures, the construction of the lines within these districts will not result in an adverse effect. See discussions concerning minimizations measures in various sections of the Cultural Report for further information.

[10] See letter from Brownsville Public Utility Board (BPUB) and Tenaska to EPA for the Cross-Valley Pipeline Project dated April 26, 2013

In addition, the NPS, through the local Park Superintendent's Office and the NPS Intermountain Regional Office, identified areas adjacent to the Project area and not under NPS ownership or control that most likely hold a plethora of archaeological artifacts associated with the Mexican Army during the 1846 battle with the U.S. Army. This area is within the 3.0 mile radius APE, but the proposed Project and associated linear facilities will not impact this area and therefore the property was not surveyed. Based on NPS information this property may in the future become a part of the NHP and NHL sites should the NPS be able to acquire it.

NHPA Requirements

Section 106 Undertaking

Section 106 defines undertaking, as applicable here, as a project that requires a federal permit. 36 CFR § 800.16(y). Tenaska has applied for a GHG permit under the PSD program of the CAA. Therefore, EPA's issuance of the GHG PSD permit for the construction of the Project constitutes an undertaking as defined by the NHPA and the ACHP regulations.

Tenaska is planning to build and operate a natural gas-fueled, combined cycle electric generating station with a capacity of approximately 800 megawatts.[11] The Project proposal includes two 95-foot natural-gas fired combustion turbine generators with heat recovery steam generators (CTG/HRSGs), one steam generator, one 55-foot cooling tower with visible steam plumes under certain atmospheric conditions, two 160-foot stacks, auxiliary equipment, storm water retention structure(s), storm water outfall(s), one transmission interconnect line, access roads, and construction laydown area natural gas line interconnect. These activities will occur within the 275-acre Project site.

Area of Potential Effect (APE)

The APE is the geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. 36 C.F.R. § 800.16(d). The APE is determined by the lead agency in consultation with the SHPO and consulting parties.

EPA defined the one APE in two components: (1) the 275-acre site of the proposed construction site of the Project, and (2) all linear facilities associated with the Project. The APE for the Project site includes an approximately 14-square mile area around the 275-acre site of the proposed Project that extends up to 3 miles to include the western half of the Palo Alto NHP/NHL. The second portion of the APE is the area extending 0.5 miles in either direction from the center line from each of the following linear facilities: a 11.05-mile water discharge pipeline, a 11.7-mile transmission interconnect line, a 7.75-mile water reuse pipeline, a 49.62-mile natural gas

[11] Tenaska proposes an alternative version with a nominal capacity of 400 MW. Tenaska states that, "The determination regarding adverse effect will not be affected by either option exercised by Tenaska." Tenaska's application to EPA is for the larger 800 MW project, therefore, EPA has considered the effects of the larger project. Nevertheless, the question of capacity does not affect EPA's determination of adverse effect to historic properties.

transmission pipeline, a 250-foot supplemental water supply line, a 250-foot potable water line, and a 800-foot sanitary sewer line.

EPA, in consultation with the Advisory Council on Historic Preservation, determined the linear facilities associated with the Project, some of which are being constructed by the Brownsville Public Utilities Board ("BPUB"), should be included in the APE.[12] EPA has determined that Section 106 review requires that all the linear facilities associated with the Project be included within the APE because the sole purpose of these lines is to support the mission of the Project which is to produce electric power. NHPA practice prohibits segmentation of projects to achieve a more favorable outcome. The transmission lines and other supporting infrastructure are an important facet of the entire project and cannot be removed from consideration given the standard of reasonableness in assessing how the Project and supporting utility lines and transmission towers will impact the Palo Alto site and the other potentially eligible historic properties. BPUB will also own and operate the Natural Gas Transmission Pipeline and Water Reuse Pipeline for its broader economic development purposes regionally. These BPUB regional projects are intended to serve multiple customers, not merely the Project.

NATIONAL REGISTER OF HISTORIC PLACES

As previously stated, cultural resources investigations were conducted to determine if historic properties, defined as those listed in or eligible for listing in the NRHP, are present in the APE for the proposed Project. For a property to be eligible for listing in the NRHP, it must possess historical significance under at least one of the NRHP Criteria (A, B, C, or D), and retain integrity, often described as the physical characteristics of the property that convey the historical significance.

The NRHP Criteria as defined in 36 C.F.R. § 60.4 include properties:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
B. That are associated with the lives of persons significant in our past; or
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That have yielded or may be likely to yield information important in prehistory or history.

Integrity may be defined as the authenticity of a property's historic identity, demonstrated by the survival of physical characteristics that existed during the historic property's period of significance. The seven aspects of integrity include:

[12] See letter from EPA to the SHPO dated April 4, 2014 and letter from EPA to the ACHP dated May 10, 2014, regarding the APE.

- *Location*: the place where the historic property was constructed or the place where the historic event occurred;
- *Design*: the combination of elements that create the form, plan, space, structure, and style of a property;
- *Setting*: the physical environment of a historic property;
- *Materials*: the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property;
- *Workmanship*: the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
- *Feeling*: a property's expression of the aesthetic or historic sense of a particular period of time; and
- *Association*: the direct link between an important historic event or person and a historic property.[13]

Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields offers some specifics as to how to evaluate the integrity of a battlefield:[14]

> Generally, the most important aspects of integrity for battlefields are location, setting, feeling, and association.
>
> For a battlefield, location is the place where the historic military event occurred. This aspect of integrity is present if the area defined as the battlefield is the place where the battle occurred. The location should be documented using primary and secondary sources and onsite inspection. The location of a property, complemented by its setting, is particularly important in recapturing the sense of historic events.
>
> Setting is the physical environment of a historic property. Whereas location refers to the specific place where the battle occurred, setting refers to the character of the place in which the property played its historic role. It involves how, not just where, the property is situated and its relationship to surrounding features and open space. The physical features of a battlefield that make up its setting can be natural and manmade. They include topographic features (the physical geography of the battlefield), vegetation (the pattern of fields and woodlands), manmade features (stonewalls, or fences), and the relationship between buildings and open space.
>
> Feeling is a battlefield's expression of the historic sense of a particular period of time. It results from the presence of physical features that, taken together, convey the property's historic character. If a battle occurred in a rural district, then the presence of farm roads, agricultural buildings, and field systems combine to convey the feeling of the area at the time of the battle.
>
> Association is the direct link between the important historic event or person and a historic property. A property retains association if it *is* the place where the event occurred.

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[13] See, NPS *National Register Bulletin 15: How to Apply the National Register Criteria.*

[14] NPS, National Register Bulletin No. 40.

Clearly, Palo Alto Battlefield meets the NPS definition of integrity because of its location, setting, feeling, and association.[15] There has been little development near the battlefield as has been noted in several cultural resources studies listed in the Cultural Report. The proposed Project will adversely impact the very aspects of the Palo Alto site that make it so unique. Moreover, it is reasonably foreseeable that the Project will be the basis of adjacent commercial development that will further impact the integrity of the Palo Alto site with a subsequent degradation of its location, setting, feeling, and association as the only National Park dedicated to the Mexican-American War in the United States.

CONSIDERATIONS FOR ADVERSE EFFECT DETERMINATIONS

NATIONAL HISTORIC PRESERVATION ACT

This is a federal undertaking as defined in Section 106 of the NHPA and EPA is the lead Federal agency. EPA has authority in consultation with the SHPO to determine whether or not the proposed Project will result in an adverse effect to historic properties. The NHPA regulations at 36 C.F.R. § 800.5 outline the process for determining whether or not an undertaking will have an adverse effect on a historic property. An undertaking will have an adverse effect if it will alter the characteristics of a historic property which qualify it for inclusion in the National Register of Historic Places. See 36 C.F.R. § 800.16(i). Adverse effects may include direct, indirect, or cumulative effects. A direct effect to a historic property would include demolition of a historic building, major disturbance of an archaeological site, or any other actions that occur to the property itself. Indirect effects may change the character of the property's use or physical features within the property's setting that contribute to its historic significance; are often audible, atmospheric, and visual effects; and may relate to viewshed [sic] issues.

Adverse effects, whether direct or indirect, should be avoided, minimized, or mitigated. The NHPA implementing regulations do not differentiate between direct and indirect effects. Rather, the question then is whether or not there are ANY adverse effects (direct and/or indirect); if the answer to this is in the affirmative, then it is incumbent upon the agency to work with the project proponent to mitigate any adverse effects--direct and/or indirect.

NATIONAL HISTORIC LANDMARKS

As previously stated, the Project will result in adverse effects and EPA avers that the special provisions for NHLs at NHPA Section 110(f) and 36 C.F.R. § 800.10 apply to this undertaking. Therefore, EPA has completed the following in accordance with the regulations:

- The Agency notified the Secretary of the Interior (SOI) through her representative in the Intermountain Region National Historic Landmarks Office by letter dated February 21, 2014 to inform her of the possible adverse effect and to invite representatives to participate in the Section 106 consultation. Section 100(f), 36 C.F.R. § 800.10(c).

[15] See discussion of the American Battlefield Protection Program, *infra*.

- On May 19, 2014, the Agency informed the ACHP of the Agency's preliminary adverse effect determination on a National Historic Landmark and to invite ACHP to participate in the Section 106 consultation. 36 C.F.R. §§ 800.6(a)(1)(i)(B) and 800.10(a) and (b).
- In a letter dated September 29, 2014, the ACHP notified Gina McCarthy, EPA Administrator, that it will participate as a consulting party to the Tenaska project and, therefore, will be a signatory to the final memorandum of agreement.

To EPA's knowledge, the ACHP has not requested a report from the SOI presenting the significance of the NHL, the effects of the undertaking, and recommendations of ways to avoid, minimize, and mitigate adverse effects. 36 C.F.R. § 800.10(c) and 16 U.S.C. § 470. The ACHP has chosen to participate in the Section 106 consultation, and must report the outcome of the Section 106 process to the SOI and the head of EPA, Administrator McCarthy.

American Battlefields

The American Battlefield Protection Program (ABPP) within the NPS promotes the preservation of significant historic battlefields associated with wars on American soil.[16] The goals of the program include:

- to protect battlefields and sites associated with armed conflicts that influenced the course of our history;
- to encourage and assist all Americans in planning for the preservation, management, and interpretation of these sites; and
- to raise awareness of the importance of preserving battlefields and related sites for future generations.

The ABPP focuses primarily on land use, cultural resources and site management planning, and public education. While the ABPP has no defined regulatory role in the Section 106 process, ABPP has consulted with Tenaska and EPA regarding this Project.

ABPP provided an explanation of its interest in participating in Section 106 consultation, stating that the ABPP may participate in the Section 106 process when a Federal undertaking:

- Has substantial impacts on battlefields of national significance;
- Clearly contributes to substantial future (cumulative) impacts on a battlefield;
- Has substantial impacts on battlefields that have received ABPP grants; and
- Presents important questions of policy, such as cases where the outcome will set a precedent affecting ABPP policies or program goals, or when there is the development of a programmatic agreement that alters the way the Section 106 process is applied to a group or type of undertakings that routinely have adverse effects on battlefields.

ABPP informed EPA that the Tenaska Project does, in fact, trigger the criteria for ABPP participation and ABPP has provided technical expertise to the consulting parties. During onsite

[16] 16 U.S.C § 469k–1.

meetings, ABPP staff informed ERM and EPA that the proposed Project, in their opinion, would adversely affect Palo Alto Battlefield National Historical Park and National Historic Landmark.

DISCUSSION OF EFFECT

PALO ALTO BATTLEFIELD NATIONAL HISTORICAL PARK (NHP) AND PALO ALTO BATTLEFIELD NATIONAL HISTORIC LANDMARK (NHL)

Overview and Significance of the NHP and NHL

The Palo Alto Battlefield is historically significant as the site of the first battle of the U.S.-Mexican War on May 8, 1846. The American side was led by future president, General Zachery Taylor ("Tippecanoe and Taylor, Too!") and was a significant milestone in the western expansion of the nation in fulfillment of "Manifest Destiny." This national battlefield is extraordinarily unique--so much so that it is recognized as both a National Register of Historic Places historic property and a National Historic Landmark.

There are two overlapping management units for the Battlefield:

- Palo Alto Battlefield National Historic Site National Historic Landmark; and
- Palo Alto Battlefield National Historical Park.[17]

The Palo Alto Battlefield National Historical Park consists of 3,434 acres and includes the west half of the 6,600-acre Palo Alto Battlefield National Historic Site NHL. The Palo Alto Battlefield National Historic Site, originally consisting of 50 acres, was designated an NHL on December 19, 1960[18] which enabled the Secretary of the Interior to "make a survey of historic and archaeological [sic] sites, buildings, and objects for the purpose of determining which possess exceptional value as commemorating or illustrating the history of the United States" (16 U.S.C. 462[b]). This list was the beginning of the NHL Program, which was formalized and expanded by the NHPA in 1966. NHLs were automatically included in the NRHP when it was established in 1966, so the Palo Alto Battlefield NHL also became a NRHP-listed property at that time.

In 1975, the NPS formally documented the NHL through survey and completion of a NRHP Inventory-Nomination Form. In addition to a history and physical description, the nomination form attempted to better define a boundary that encompassed the core of the conflict as well as the movements and associated landscape features. The initial recommended boundary was 8,176 acres. However, this boundary was refined over the next few years to the 6,600-acre tract that is the current NHL/NRHP boundary.

In 1991, the Palo Alto National Historic Site Act was signed into law, formally establishing the Palo Alto National Historical Park (16 U.S.C. 461). This law enabled the NPS to use Federal

[17] The National Historic Site was established in 1992 and the designation changed to National Historical Park in 2009 due to a boundary adjustment that added the Resaca de la Palma battlefield as a unit of the park.
[18] Historic Sites Act of 1935.

funds to acquire land for the purposes of establishing and operating a national park. The Act designated 3,400 acres for the park. That was expanded in 2008 to 3,434 acres, the current legislated boundaries. Prior to 1998, all of the land within the National Historical Park was privately owned. In 1998 the NPS acquired the first parcel along Paredes Line Road. By 2000 approximately 1,400 acres were in NPS ownership. Although NPS has a goal of acquiring additional parcels, Congress has not authorized additional land purchases.

The distinction between the Palo Alto Battlefield National Historic Site NHL and the Palo Alto Battlefield National Historical Park is relevant within the Section 106 context, as the NHPA requires the consideration of historic properties, defined as those that are listed in or eligible for listing in the NRHP. Therefore, the project's effects on the 6,600-acre NHL (rather than the 3,434-acre park) must be assessed.

As previously stated, the Palo Alto Battlefield NHL and National Historical Park are located within the APE. The project as defined will have direct effects on the property, and the special provisions for NHLs in the NHPA, which state that "Prior to the approval of any Federal undertaking which may directly and adversely affect any National Historic Landmark, the head of the responsible Federal agency shall, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark," apply to this undertaking.[19]

Moreover, the NPS Section 110 Guidelines specifically address Federal undertakings for NHL properties:

- STANDARD 4. An agency gives historic properties full consideration when planning or considering approval of any action that might affect such properties.
- In those cases when an agency's undertaking directly and adversely affects an NHL, or when Federal permits, licenses, grants, and other programs and projects under its jurisdiction...pursuant to a Federal delegation or approval so affect an NHL, the agency should consider all prudent and feasible alternatives to **avoid an adverse effect** [emphasis added] on the NHL. Sec. 110(a)(2)(B) and Sec. 110(f).[20]

The Section 106 implementing regulations state that "an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." Thus, construction and operation of the generating station "may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register..."[21]

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[19] Again, the ACHP's regulations do not distinguish between adverse effects that are direct and/or indirect. See previous discussion on adverse effects, *supra*.

[20] The Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act, 63 FR 20495-2058, April 24, 1998.

[21] 36 C.F.R. Part § 800

Application of Criteria of Adverse Effect

The westernmost boundary of Palo Alto Battlefield NHP/NHL is approximately 0.6 miles from east boundary of the Project Site and the distance of the plant location to the park is approximately 1.3 miles.

Again, as discussed previously, adverse effects can be either direct or indirect. Indirect effects from the project have the potential to fall into two categories of the Adverse Effect Criteria outlined in the Section 106 implementing regulations:

- Section 800.5(a)(2)(iv) (Adverse Effect Criterion iv) - Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance, and
- Section 800.5(a)(2)(v) (Adverse Effect Criterion v) - Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.

Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance

For a property to be eligible for listing in the NRHP, it must possess historical significance under at least one of the NRHP Criteria and retain integrity, often described as the physical characteristics of the property that convey the historical significance.[22] Palo Alto Battlefield in part meets this NPS definition of integrity because of its location, setting, feeling, and association.

As of today, the NHP is relatively isolated and has managed to maintain its original setting and landscape. The NPS's American Battlefield Protection Program (ABPP) noted that:

> The largely featureless landscape has been altered only *slightly* [emphasis added] since the battle. Two factors have helped spare the battlefield from development. The Matamoros Road was moved in the early 1850s approximately three miles to the east, diverting traffic and development away from the site. In addition, the highly saline character of the prairie has curbed intensive agriculture on the land and has inhibited developers from subdividing and developing the Palo Alto site with the intention of developing the area. Today, Palo Alto Battlefield National Historic Site's 3,400 acres are divided among eleven different owners.[23]

The Cultural Report cites several other cultural resources studies that indicate there has been little development near the battlefield. Following consultation with the various divisions of the NPS that have participated in the Consultation, EPA believes that the proposed Project and transmission line in such close proximity to the NHP and NHL will adversely impact the very aspects of the Palo Alto site that make it so unique and that give rise to its historical integrity. The construction of two 95-foot natural gas-fired CTG/HRSGs, two 160-foot stacks and a 55-

[22] See, NPS *National Register Bulletin 15: How to Apply the National Register Criteria.*
[23] ABPP, Battlefield Survey Form, 2004.

foot cooling tower with visible steam plume that will be visible from the NHP Visitors Center and from most areas of the NHP property and the transmission line towers that will range from 140 to 170 feet in height will diminish the ability for visitors to experience the battlefield as it was in 1846. Moreover, it is reasonably foreseeable that the generating station and associated linear facilities will encourage adjacent commercial development that will further impact the integrity of the Palo Alto site with a subsequent degradation of its location, setting, feeling, and association as the only National Park dedicated to the Mexican-American War in the United States.

Therefore, EPA believes that the proposed Project has the potential to change the character of the property's use within its setting.

Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features

The construction and operation of the Project and Transmission Interconnect Line will result in the introduction of visual, atmospheric, and audible elements that will adversely affect the NHP and NHL. These three categories of effects relate to two primary aspects of integrity: setting and feeling. Given the proximity of the NHL to the Project, the adverse effects are expected to be significant.

Visual Effects of the Plant

As mentioned above, the area around the battlefield has seen minimal development since the battle took place in 1846. Thus, any addition of structures in the vicinity of the park will necessarily change the viewshed of the Park and NHL.

To enable an understanding of the potential for visual effects of the project on the NHL, Tenaska prepared graphic renderings of the facility. As determined through these digital renderings, the project will be visible from the key areas of public interpretation of the Palo Alto Battlefield National Historical Park (e.g., the overlook and pedestrian pathways accessing it). Project features that will have the most significant visual impact are the two 95-foot natural gas-fired CTG/HRSGs, two 160-foot emissions stacks, and the 55-foot cooling tower.

According to the Cultural Report, during operation, the electric generating station cooling tower will produce a visible steam plume during certain atmospheric conditions (i.e., cooler temperatures), subject to opacity limits. To determine how often conditions would produce a visible steam plume, Tenaska prepared an analysis which shows the probability in percentage of the presence of a visible steam plume during specific hours of the day by month during a single year. The information clearly shows that a visible plume will be seen in the best-case scenario, six months of the year. Thus, visitors to the NHP would experience a clearly noticeable plume during normal plant operation.

The NPS staff indicated that based on NPS's technical analysis, the generating station would be immediately visible from the park and attract the attention of visitors. It will dominate the view

from some locations, thus diminishing the visitor experience of the historic setting. Because of this, the NPS considers these visual effects to be major adverse effects on the NHP and NHL.

Atmospheric Effects of the Plant

Atmospheric effects from the proposed project include the intrusion of operational lighting at night and paint schemes which may reflect daylight. These conditions would fluctuate during seasonal changes; based on NHPA guidance and supporting data from NPS, the Project would have a moderately adverse atmospheric effect on the NHP and NHL. Visitors experiencing the park at night would be visually attracted to the lights from the plant on the horizon. The lights would dominate the view from locations within the park and would diminish the visitor experience of the historic setting from the same locations. In addition, this light intrusion could diminish the visitor experience during night time programming by effecting the night sky as seen from the battlefield, should such event be offered at some future point.

Audible Effects of the Plant

The Cultural Report states that the projected worst-case sound pressure levels at the three points during steady state operation of the facility range from 43.0 decibels (dBA) to 48.2 dBA. The three points show increases in sound levels from 1.6 dBA to 7.8 dBA based on location and time of day. All three points remain below the strictest Brownsville noise limit of 50 dBA for dwelling zones. The point at Paredes Line Road shows a noticeable increase in sound during the mid-day time period, however, it is located close to the road where traffic would normally dominate sound. The Battlefield overlook would see an increase of 3.3 dBA during the mid-day time period which would be considered barely noticeable to the average listener.

Because of the relatively isolated location of the Battlefield, any increase in sound that is constant will be noticeable. Tenaska has acknowledged that its operations will result in an increase in decibels of the ambient sound by roughly 20% leading to a constant and noticeable electric "humming" sound. In addition to the sounds resulting from normal operation, peak sound levels from the generating station would be the result of short-duration events such as startup, shutdown, emergency, or steam-blow operations; during the times when electricity is not being generated, some equipment on site may still be operating. The equipment may produce small amounts of noise, but will be quieter compared to normal operation. Because of the constant perceptible and clearly noticeable increase in sound, NPS believes, and EPA agrees that the increase in noise from the Project will be a major adverse effect on the visitor experience and integrity of the NHP and NHL.

Visual and Audible Effects of the Transmission Line

The generating station will require the construction of an electric transmission line to transmit electricity from the plant to the larger electric grid. Tenaska/BPUB has provided the exact location of the transmission line, and it is expected to be located north of the Palo Alto Battlefield NHP/NHL. Based on the Cultural Report, the transmission line is intended to connect the Tenaska electric generation station to the Loma Alta Substation approximately 11.7 miles away. The transmission line right-of-way (ROW) is expected to skirt around the Palo Alto

Battlefield NHP/NHL with the closest part of the ROW running east-west along the north boundary of the battlefield area, while the battlefield itself is approximately 0.5 miles away. The transmission towers are expected to be in the 230 kV (kilovolts) range, much larger than transmission lines commonly seen in any neighborhood (typically 7 to 13 kV). The transmission towers will range from 140 to 170 feet in height, placed 500 to 700 feet apart. There will be approximately 78 transmission towers along the entire length of the transmission line.

NPS has also provided photographs of examples of the types of transmission line towers that may be used in the project.

Visually, the transmission line will result in, at a minimum, a moderate adverse effect. The adverse effects may significantly increase depending on the on the final location of the line, which is unknown at the time of this writing. Regardless of final location, the projected proximity of the transmission line and height of the transmission towers will be highly noticeable as there are no resources, man-made or natural, of the size and length along the northern boundary of the park.

As the transmission lines will carry high voltage electricity, the continual transmission of electricity will result in a constant "humming" sound (approximately 51 dBA) that will be audible in most parts of the park on a 24-hour basis, seven days per week (ambient sound levels from rainfall is approximately 37 dBA). An NPS analysis indicates that the noise from the transmission line is clearly noticeable up to 500 feet away, which is of concern since the new transmission line will be run along the northern border of the park. This increase in the constant ambient noise will result in an adverse effect to the NHP and NHL.

IRRIGATION AND DRAINAGE DISTRICTS

Overview and Significance of the Districts

In discussions with SHPO, agency staff observed that irrigation systems in south Texas were resources of interest because of their significant role in the agricultural history of the area, and that some irrigation systems had been found eligible for listing in the NRHP. Irrigation systems were essential in converting the open, dry, sparsely settled landscape of south Texas into viable land for intensive agricultural and residential development in the late 19th and early 20th centuries.[24]

CCID No. 6 (Los Fresnos Irrigation District)

CCID6, one of the earliest such districts in south Texas, goes back to 1902 when the privately-owned Rio Grande Canal Company was established, then one of only four private irrigation companies in the county on record at the time. In 1922 the Rio Grande Canal Company was purchased through public bond and reestablished as the Cameron County Water Improvement District No. 6, now the CCID6. Information provided in Knight's report suggests that the CCID6 possesses historical significance on a local level sufficient for listing in the NRHP under

[24] Knight (2009) from the Cultural Report.

Criterion A for Agriculture as one of the earliest irrigation systems in the region and instrumental in the agricultural development of the area. In consultation between the Texas Department of Transportation and SHPO in 2009, the SHPO provided its opinion that CCID6 was eligible for listing in the NRHP. Documentation of SHPO's decision was provided to ERM in the form of a summary spreadsheet, and no additional details of the consultation were included.

CCDD1 (Harlingen Irrigation District)

CCDD1 is potentially eligible for listing in the NRHP. Given the age of the extant ditches, their proximity to and interconnection with ditches of the NRHP-eligible CCID6, and the functional interrelationship between irrigation and drainage ditches, it is possible that what is now the CCDD1 would be found to be partially or wholly within the NRHP boundaries of the CCID6. For these reasons, as a conservation measure, it is recommended that all ditches in the APE be treated as eligible for listing in the NRHP.

CCID No. 2 (San Benito Irrigation District)

Initiation of what was known as the San Benito Irrigation System began as early as 1904 and completed construction to deliver water to approximately 44,000 acres of land in 1908. The amount of acreage irrigated by the irrigation system increased to 78,000 acres by 1913. In 1916, it was became known as the Cameron County Irrigation District No. 2, but its name was changed to Cameron County Water Improvement District that same year. The Cameron County Irrigation District No. 2 represents one of the most unique engineering designs for irrigation systems in the Lower Rio Grande Valley. It is the only attempt at an entirely gravity canal system although it was soon supplemented by a pumping plant. By the 1950s, the boundaries of the Cameron County Water Improvement District increased to 94,167 acres. In 1981, the name of the district reverted back to Cameron County Irrigation District No. 2. As early as 1996, Cameron County Irrigation District #2 was determined eligible for listing in the National Register by the SHPO under Criterion A for agriculture and Criterion C for architecture/engineering.

Application of Adverse Effect Criteria

Physical alteration of a historic property may fall under the following Criteria:

- Section 800.5(a)(2)(i) (Adverse Effect Criterion i)- Physical destruction of or damage to all or part of the property; and
- Section 800.5(a)(2)(ii) (Adverse Effect Criterion ii)- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines;

The following information from Tenaska provides a summary of the impacts to the irrigation districts by the various linear facilities that will cross these districts within the APE:

Property	Within the APE ✓ Indicates the resource IS located within the APE × Indicates the resources IS NOT located within the APE.							NRHP Eligibility
	Generating Station	Water Discharge Pipeline	Transmission Interconnect Line	Potable Water Lines	Sewer Lines	Water Reuse Pipeline	Natural Gas Transmission Pipeline	
Cameron County Irrigation District No. 6 (1922)	✓	×	×	×	×	×	✓	Eligible (THC, 2009)
Cameron County Drainage District No. 1 (1905)	✓	✓	✓	✓	✓	✓	✓	Potentially Eligible
Cameron County Irrigation District No. 2 (1916)	×	×	×	×	×	×	✓	Potentially Eligible

The linear facilities in the table will cross through these districts that have been deemed potentially eligible for listing. All of the proposed linear facilities with the exception of the transmission line will be located underground. Thus, installation of these pipelines will necessarily result in the "physical destruction of," "damage to" and "alteration of" sections of the drainage and irrigation canals they will cross within the various districts.

In the Cultural Report, Tenaska agreed to avoid any construction that will impact the CCID resources, however, construction of the lines will necessarily be unavoidable. If the parties agree to avoid and restore the irrigation districts through a Memorandum of Agreement (MOA) and the proposed avoidance measures are adequate, then EPA and SHPO would support the proposed routing of the linear facilities that would affect these historic properties. Based on the proposed minimization and restoration measures for the crossings or restorations activities proposed by Tenaska for construction and the SHPO's concurrence with the proposed measures, EPA has determined that the Project, as planned, will resolve any potential adverse effect to the above mentioned districts. However, failure to implement the avoidance or minimization measures agreed to, will likely result in an adverse effect.

PORT OF BROWNSVILLE

Overview and Significance of the Port of Brownsville[25]

The Port of Brownsville was constructed between 1934 and 1936 as an inland deep-water port linking Brownsville with the Gulf of Mexico. Oil companies were among the first to establish permanent facilities at the Port, including the Texas Company (Texaco) and the

[25] Chilton (1997) from the Cultural Report

Magnolia Petroleum Company (later acquired by Mobil Oil). The extension of the Gulf Intracoastal Waterway to southern Texas in 1949 enabled use of the ship channel by barge traffic, a major boost for the Port. By 1956, the Port of Brownsville was the largest cotton port in the United States. In the 1970s, the Marathon Manufacturing Company built a facility at the Port of Brownsville for the construction of off-shore oil drilling rigs.

The Port of Brownsville possesses historical significance on a local and State level under NRHP Criterion A for Commerce for its role in developing and expanding the economy of the Lower Rio Grande Valley from the time of its construction in 1936 through the 1980s and possibly to the present day. A Texas Historical Marker (No. 4080) was erected for the port in 1986.

Application of Adverse Effect Criteria

The proposed water discharge pipeline originating from the Project will terminate at the Port of Brownsville at an outfall on the south side of the turning basin of the Brownsville Bay Ship Channel. The underground line is proposed to follow existing roads and railroads in the Port of Brownsville Historic District before it reaches the Port of Brownsville. Physical alteration of a historic property may fall under the following Criteria:

- Section 800.5(a)(2)(i) (Adverse Effect Criterion i)- Physical destruction of or damage to all or part of the property; and
- Section 800.5(a)(2)(ii) (Adverse Effect Criterion ii)- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines;

The proposed pipeline spans 7.57 miles from the Project site to the Port. The pipeline will traverse approximately 1.0 mile through the Port of Brownsville Historic District. Because Tenaska/BPUB intends to follow existing roads and railroad right-of-ways on previously disturbed soil and the SHPO's concurrence with the proposed measures, EPA has determined that the Project, as planned, will resolve any adverse effect to the Port of Brownsville Historic District. However, failure to adhere to the proposed segment within the Port of Brownsville Historic District, will likely result in an adverse effect.

CONCLUSIONS

Tenaska completed a Cultural Resources Assessment to support the Environmental Protection Agency Region 6 GHG Permit Application approval process for the proposed Tenaska generating station. For the purposes of these cultural resources investigations, the Section 106 federal undertaking was determined to be the issuance of a GHG Permit for the construction and operation of an electric generation station. The Tenaska Generation Station plan of necessity includes in addition to the natural gas generation unit(s), a cooling tower, storm water pond(s),

storm water outfall structure(s), access road(s), and construction laydown area(s), discharge pipeline, water reuse, water supply (potable), supplemental water (potable), sewer line, and, finally, transmission interconnect lines.

EPA has determined that the proposed Project (Tenaska generating station) will result in an adverse effect to historic properties: the Palo Alto Battlefield National Historical Park and National Historic Landmark. In addition the linear facilities within the APE that will be constructed to support the Project, will also affect the Cameron County Irrigation Districts, Cameron County Drainage District, Delta Lakes Drainage District, and the Port of Brownsville Historic District, all of which are potentially eligible for the National Register. To resolve the adverse effects on Palo Alto Battlefield NHP and NHL, Tenaska and consulting parties met, discussed, and agreed upon avoidance, minimization and mitigation measures that are believed to be commensurate of the adverse effects that the Generating Station will have on the NHP and NHL. The agreed upon avoidance, minimization, and mitigation measures are being memorialized in an MOA that will be finalized before issuance of Tenaska's GHG permit. This will satisfy EPA's obligation to Section 106 of NHPA. Because of the proposed minimization and restoration efforts during and following construction that will be memorialized in the MOA, EPA has determined that the effects will not likely be adverse from the linear facilities that are constructed to support the project.