BIOLOGICAL ASSESSMENT
IN SUPPORT OF GREENHOUSE GAS PERMITTING FOR A CONDENSATE SPLITTER PROCESS FACILITY LOCATED IN CORPUS CHRISTI NUECES COUNTY, TEXAS

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA), REGION 6
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On Behalf of

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LIST OF ACRONYMS

AA	Action Area
BA	Biological Assessment
BGEPA	Bald and Gold Eagle Protection Act
BMPs	best management practices
bpd	barrels per day
CAAA	Clean Air Act Amendments
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FR	Federal Regulations
GHG	greenhouse gas
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MSFCA	Magnuson-Stevens Fishery Conservation Act
MSS	maintenance, startup, and shutdown
NAAQS	National Ambient Air Quality Standards
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
N_2O	nitrous oxide
O_3	ozone
PM2.5	particular matter equal or less than 2.5 micrometers in diameter
PM10	particulate matter equal or less than 10 micrometers is diameter
PSD	Prevention of Significant Deterioration
SIP	State Implementation Plan
SOx	sulfur oxides
SO_2	sulfur dioxides
tpd	tons per day
TPWD	Texas Parks and Wildlife Department

USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

SUMMARY

CCI Corpus Christi LLC (CCI) submitted a greenhouse gas (GHG) permit application to the U.S. Environmental Protection Agency Region 6 (USEPA) on 4 November 2013 to obtain a Prevention of Significant Deterioration (PSD) permit authorizing the construction of a Condensate Splitter Process Facility (facility) at the CCI facility in Corpus Christi, Texas.

USEPA issuance of a GHG PSD permit to CCI is an action subject to the consultation requirements of Section 7 of the Endangered Species Act (ESA). As a requirement under the ESA, this Biological Assessment (BA) was performed to assess the potential effects of this project on federally listed endangered or threatened species and designated critical habitat.

The BA provides an analysis of available information regarding the construction and operation of the facility and the existing biological resources surrounding the CCI facility, including Federally listed species, other Federally protected species, and critically endangered habitat. This BA is based on a review of the proposed project and relevant data, as well as field investigations to evaluate the project site and surrounding area to determine whether suitable habitat exists for protected species within the Action Area (AA). An AA boundary was established based on the direct impacts from construction and operation of the facility and the indirect effects of project air emissions. Air dispersion modeling was performed to assess the increase of air emissions from the project. The modeled project air emissions did not exceed any Federal Significant Impact Levels (SILs) under specific criteria for any receptor locations. Accordingly, the AA associated with the project was established to include the construction and operation area of the proposed facility and an 8- mile pipeline corridor.

Federally protected species considered in this BA include Piping Plover, Northern Aplomado Falcon, Whooping Crane, gulf coast jaguarondi, ocelot, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, and West Indian manatee. Based on the findings of this analysis, the construction and operation of the Condensate Splitter Facility may affect but is not likely to adversely affect federally listed threatened or endangered species or designated habitat for purposes of Section 7 of the ESA.

1 INTRODUCTION

CCI Corpus Christi LLC (CCI) submitted a greenhouse gas (GHG) permit application to the U.S. Environmental Protection Agency Region 6 (USEPA) on 4 November 2013 to obtain a Prevention of Significant Deterioration (PSD) permit authorizing the construction of a Condensate Splitter Process Facility (facility) at the proposed CCI facility in Corpus Christi, Texas.

USEPA issuance of a GHG PSD permit to CCI is an action subject to the consultation requirements of Section 7 of the Endangered Species Act (ESA). As a requirement under the ESA, this Biological Assessment (BA) was performed to assess the potential effects of this project on federally listed endangered or threatened species and designated critical habitat.

1.1 PURPOSE

Section 7(a)(2) of the ESA, 16 United States Code (USC) §1536(a)(2), and its implementing regulations at 50 Code of Federal Regulations (CFR) Part 402, requires USEPA to consult with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS), or both under certain circumstances, to ensure that USEPA issuance of a GHG PSD permit is not likely to jeopardize the continued existence of any federally listed endangered or threatened species or result in the destruction or adverse modification of such species' designated critical habitat. The overall purpose for creating and submitting this BA is to support USEPA obligations under ESA Section 7. This BA first evaluates and identifies the Action Area (AA), then determines whether USEPA action is likely to: (1) adversely affect listed species or designated critical habitat; (2) jeopardize the continued existence of species that are proposed for listing; or (3) adversely modify proposed critical habitat.

1.2 SCOPE OF PROJECT/ACTION

CCI proposes to construct a new Condensate Splitter Process facility in Corpus Christi, Texas that uses hydrocarbon condensate material for processing. The proposed new facility would encompass approximately 82 acres and would include 2 fractionation trains, storage tanks, and

marine loading docks. The new facility would comprise a new stationary source for purposes of PSD permitting; an additional application has been filed with TCEQ.

1.3 SCOPE OF BIOLOGICAL ASSESSMENT

This BA will examine the direct and indirect impacts of the proposed project on the wildlife and habitat within and surrounding the proposed project area. Additionally, this BA will provide a determination regarding if the proposed project would not affect, is not likely to adversely affect, or is likely to adversely affect federally protected species.

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2 AGENCY REGULATIONS

2.1 REGULATIONS AND STANDARDS

State and local air pollution control agencies are required to adopt federally approved control strategies to minimize concentrations of criteria air pollutants by Section 110 of the Clean Air Act (42 USC §7410). These federally approved plans are referred to as State Implementation Plans (SIPs) and establish best management practices (BMPs) to minimize emissions of criteria air pollutants. Federal air quality standards are currently established for six criteria pollutants of concern, which include carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), lead (Pb), particulate matter (PM), and ozone (O_3).

Additionally, the USEPA has established primary and secondary National Ambient Air Quality Standards (NAAQS) for each criteria air pollutant under the Clean Air Act Amendments (CAAA) of 1990. 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. Any area of the United States that violates these NAAQS between one and four times per year over a three-year span of time is classified as a "nonattainment area."

The USEPA is required to establish regulations preventing significant deterioration of air quality in attainment areas. PSD increments are measurements of the maximum allowable increase in ambient air concentrations of a criteria pollutant from a baseline concentration after the date the baseline concentration was recorded. A significant impact level (SIL) is a measurable limit above which a source may cause or contribute to a violation of the PSD increment for a criteria pollutant. Before a PSD permit can be issued by the USEPA, the permit applicant must be able to demonstrate that the emissions from the proposed project will not cause a violation of a NAAQS or cause an increase above the PSD increment for the pollutants that would be emitted from the proposed project.

Computer models simulating the dispersion of emitted pollutants from the proposed project into the atmosphere are used to demonstrate compliance with NAAQS and PSD increments and to

estimate maximum ground level concentrations at specified receptor locations in the Action Area (AA) of the proposed project. The project is determined to have no significant impact on ambient air quality if the modeled concentrations for pollutants and their averaging periods are less than the USEPA-specified SIL. If a determination of no significant impact is made, then no further modeling analysis is required for that pollutant for that averaging period. If a pollutant is predicted to exceed the SIL, then further modeling of the proposed project emissions combined with the existing emissions in the area will be used to calculate estimated total ambient concentrations. The estimated total ambient air concentrations from the model must show that the pollutant does not exceed the applicable NAAQS and PSD increments.

2.2 ENDANGERED SPECIES ACT

The ESA of 1973 (16 USC §1531) was instituted to "protect and recover imperiled species and the ecosystems on which they depend." The USFWS and the National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NOAA-NMFS) regulate the ESA. Imperiled species are considered to be those species that are either threatened or endangered. Species that have been proposed for protection under the ESA by USFWS are considered to be candidate species, which are defined as those species that "warrant proposing [...] for listing but [are] precluded from doing so by higher listing priorities." Though candidate species do not yet fall under the protection of the ESA, they will be included in analyses for the purposes of this BA.

The ESA prohibits the take or harm of protected species under Section 9 of the act. "Take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." "Harm" is defined as "an act which actually kills or injures wildlife." Harm also includes any modifications to a species' habitat that would result in mortality or injury to wildlife or anything that significantly impairs wildlife behavior patterns, including breeding, feeding, or sheltering.

3 PROJECT DESCRIPTION

3.1 PROJECT FACILITY AND LOCATION

The project consists of the construction of the splitter facility, loading docks, and product pipelines. The construction of the facility in the Corpus Christi is proposed with two primary phases described below:

- Phase I includes two identical fractionation trains, each capable of processing 50,000 barrels per day (BPD) of hydrocarbon condensate material, for a total processing capacity of 100,000 BPD; and
- Phase II includes process equipment for the loading of 500,000 BPD of condensate/crude at two planned marine loading docks and a barge marine dock. Additional process equipment associated with Phase II includes six storage tanks.

The product slate would consist of mixed light hydrocarbons (Y-grade), combined naphtha (consisting of heavy stripped naphtha and light naphtha), jet fuel, marine diesel, and heavy gas oil/bottoms. Process equipment associated with Phase I includes heaters/boilers combustions sources, flare, cooling tower, storage tanks, wastewater treatment system, and marine loading with associated piping and other fugitive equipment.

The proposed facility would be constructed at the location shown in **Figure 3-1**. The proposed layout of the facility is shown in **Figure 3-2**. The construction lay down area, and all other temporary storage or workspaces associated with the construction would be within the proposed facility property boundary. CCI would use existing roadways for access. No temporary roadways are anticipated for the proposed project.

3.1.1 Linear Facilities

Two pipelines for the transport of condensate and product are anticipated to be constructed in an existing approximately 50 foot wide pipeline right-of-way from the facility along approximately 8 miles of the Joe Fulton International Corridor, connecting to existing distribution pipeline(s). The proposed pipeline locations are shown on Figure 3-3. The pipelines will be constructed in compliance with applicable permits and approvals, and construction methods will be consistent with industry-recognized practices.

No other linear facilities will be constructed as a direct result of the proposed CCI project. Water lines, transmission lines and other infrastructure will be developed along the Joe Fulton International Trade Corridor to support all existing and new development along the corridor. If CCI does not construct the proposed facility, the Port of Corpus Christi would make the property available for lease to another developer and would proceed with infrastructure development.

3.1.2 Outfall/Intake Structures

Four outfall structures are proposed for the facility. The structures would be constructed along the ship channel and would discharge treated wastewater and stormwater to the Tule Lake Channel consistent with a Texas Pollutant Discharge Elimination System (TPDES) Permit to be issued by TCEQ. One intake structure is proposed to provide backup fire water. The intake structure will be included in the TPDES permit.

3.2 CONSTRUCTION INFORMATION

3.2.1 Construction Activities and Schedule

Construction of the facility is scheduled to begin in November 2014. A finalized schedule of construction will depend on the USEPA's schedule for issuing the GHG permit. Once started, construction is estimated to take approximately 16 months to complete.

A finalized list of equipment necessary for the construction of the facility was not available as of the date of this report. However, it is expected that the construction equipment required will be equivalent to the industry standards for a project of this scope and may include heavy earth-moving equipment such as cranes, bulldozers, backhoes, and/or excavators.

3.2.2 Environmental Controls

BMPs will be incorporated during the construction of the facility to minimize emissions from construction equipment.

CCI Corpus Christi (CCI) will file a Notice of Intent and obtain the required construction stormwater permit from the Texas Commission on Environmental Quality (TCEQ). The project will include the required implementation of a Storm Water Pollution Prevention Plan (SWPPP)

with specific BMPs identified for sediment and erosion control. Prior to and during construction, CCI will install environmental controls and BMPs where necessary and in accordance with an approved construction stormwater permit. These controls may include installing barriers (e.g., silt fencing, hay bale structures) or diversion structures (e.g., temporary slope breakers, retention ponds) to prevent erosion of sediment or water from migrating off the construction area. Environmental controls will remain in place throughout the construction phase or until permanent controls are in place as required by the permit.

3.3 OPERATION AND MAINTENANCE INFORMATION

3.3.1 Operations

Phase I would be comprised of two identical parallel fractionation trains. Each train would be capable of processing 50,000 BPD of hydrocarbon condensate feedstock for a total processing capability of 100,000 BPD. Condensate/Crude feedstock would be received by pipeline, truck, or barge and would be stored in various storage tanks. The fractionation column would split the treated feedstock into the commercially acceptable product slate.

Other support processes will be required for proper and safe operation of the Condensate Splitter Process. A circulating cooling water system with a cooling water tower (EPN: CTW) would provide cooling for process operations. An elevated flare would be used for emergency or upset conditions and certain planned maintenance startup, and shutdown (MSS) activities. A Selective Catalytic Reduction (SCR) would be installed on the charge heaters (EPNs: H-1 and H-2). The SCR would utilize aqueous ammonia injection and catalyst reactions to control NO_x emissions. Additionally, there are two ship loading docks and a barge loading dock for product exported off-site. The marine loading docks would be serviced with a marine vapor combustion system.

Phase II would receive unrefined condensate/crude by pipeline and barge. The unrefined condensate/crude would be stored in one of several storage tanks (EPNs: TK-116 through TK-121) and would be shipped off-site by ships. The marine loading docks would be supported with a common marine vapor combustion unit (MVCU) to control captured loading vapors.

3.3.2 Water Quality

Process wastewater and utility waste streams would be generated from various operations within the Phase I fractionation trains. The wastewater that would be in contact with process materials (i.e., process wastewater) will contain some of the petroleum hydrocarbon compounds that are present in the condensate feedstock. Non-process wastewater would also be generated from utility operations, including cooling tower and boiler blowdown waste streams.

The process wastewater streams and some process area stormwater would be collected and combined in an enclosed wastewater gathering system or process sewer. The wastewater gathering system would include typical sewer components such as drains, pipes, and junction boxes. The combined wastewater from the gathering system would be processed in an onsite wastewater treatment system. The treatment system would include oil-water separation, pH neutralization, other physical/chemical pretreatment operations, aerobic biological treatment, and secondary clarification. The treated wastewater would be discharged to the Tule Lake Channel consistent with a Texas Pollutant Discharge Elimination System Permit (TPDES) to be issued by TCEQ.

The proposed Project is a new facility; therefore, no wastewater monitoring or analytical data are available. The treated and discharged wastewater will meet all monitoring requirements and concentration limits for individual regulated constituents and other water quality parameters as specified in the TPDES permit to be issued by the TCEQ. Consistent with the TPDES permit limits, the treated and discharged wastewater will contain low concentrations of various compounds that are associated with contacting the petroleum condensate feedstock. The following water quality constituent categories are expected to be present:

1. Organic Compounds: The treated wastewater is expected to include organic compounds that are typically regulated in a TPDES permit as oil and grease, total petroleum hydrocarbons, chemical/biochemical oxygen demand (i.e., COD and 5-day BOD or BOD5), or as specific compounds. Most such compounds are from the petroleum condensate feedstock for the plant and are transferred to process water within the process operating units.
2. Inorganic Compounds: The petroleum condensate will also contain inorganic compounds such as iron, copper, inorganic sulfur compounds, ammonia, and salts (i.e., total

dissolved solids or TDS) that will also be present at low concentrations in the treated wastewater. Many of these inorganic compounds are common in natural surface waters and municipal drinking water supplies, and are known to exist at detectible levels in the Tule Lake Channel that will receive the treated wastewaters from the CCI plant.

3. General Indicators: General water quality indicators such as total suspended solids (TSS), temperature, and pH are expected to be regulated in the TPDES permit for CCI and are also regulated for most other industrial wastewater discharges.

The wastewater discharge will be subject to federal effluent limitations, monitoring requirements, and other conditions that will be included as requirements in the TPDES permit. The CCI condensate splitter must meet the federal wastewater limits for the petroleum refining Standard Industrial Classification (SIC) code 2911. Federal discharge limits based on this code include limits for BOD, TSS, COD, oil and grease (O&G), phenolic compounds, ammonia, sulfide, and certain metals.

The TPDES permit, when issued, will ensure that the treated and discharged wastewater characteristics will be protective of aquatic life. This will be ensured not only for the specific constituents that the TPDES permit requires to be monitored (as discussed above) but also through required routine Whole Effluent Toxicity (WET) testing per the requirements of 40 CFR §122.44(d)(1)(i), which employs the use of sensitive test species such as the mysid shrimp (*Mysidopsis bahia*) and inland silverside (*Menidia beryllina*).

The TPDES permit is expected to have a provision typical for new facilities that will require CCI to complete a temporary wastewater monitoring program that includes the collection of four sets of samples within 90 days after the facility first begins to discharge wastewater. This temporary monitoring program will characterize the actual concentrations of an extensive list of constituents in the wastewater as specified by the TCEQ based on the site-specific process operations and discharged wastewater types. Based on the temporary monitoring program results, the TCEQ may revise the TPDES permit to include any additional constituent monitoring requirements and/or numerical discharge limits as appropriate based on TCEQ's Texas Toxicity (TEXTOX) evaluation criteria for TPDES permits. The TCEQ conducts the TEXTOX evaluation process based on the water quality, aquatic life, and other local considerations specific to the area of CCI's proposed discharge. The TCEQ's TEXTOX evaluation ensures that the

discharge monitoring requirements and numerical constituent limits in CCI's TPDES permit will be protective of local water quality.

The estimated TPDES discharge limits, concentrations of pollutants and characteristics of the effluent at the outfall are shown in Table 3-1. These values are only provided as an indication of the potential TPDES permit limits and wastewater discharge characteristics. These values were estimated using the Federal Effluent Guidelines, published TCEQ guidance related to the TPDES program, available wastewater discharge information from more complex petroleum refineries, and best professional judgment. Actual concentrations, mass rates, and other parameters will be established by monitoring as specified in the TPDES permit to be issued by the TCEQ.

Table 3-1
Estimated Wastewater Characteristics for Process Wastewater Outfall

Constituent	Estimated TPDES Permit Limits		Estimated Typical Value		Units
	Avg	Max	Avg	Max	
Organic Compounds					
BOD5 Mass	750	1,400	400	1,000	lb/day
BOD5 Concentration	n/a	n/a	100	350	mg/liter
COD Mass	3,800	7,300	1,500	5,000	lb/day
COD Concentration	n/a	n/a	250	600	mg/liter
Oil and Grease Mass	240	440	150	350	lb/day
Phenolic Compounds	5	10	3	8	lb/day
Inorganic Compounds					
Ammonia (as Nitrogen)	150	350	100	250	lb/day
Sulfide	4	10	3	8	lb/day
General Indicators					
Flow	260,000	500,000	240,000	400,000	gal/day
TSS Mass	640	1,000	400	800	lb/day
TSS Concentration	n/a	n/a	100	250	mg/liter
pH	6.5 min	9.0 max	7.0	6.5-8.0	S.U.
Temperature	n/a	95	90	95	°F

Note – TPDES permit is not expected to include concentration limits for items specified as "n/a."

Other TPDES permits and similar wastewater discharge permits for complex petroleum refineries often include limits and monitoring requirements for various metals such as copper,

chromium, zinc, nickel, selenium, and mercury. For the reasons discussed below, CCI has no information to indicate that the treated and discharged wastewater from the CCI condensate splitter will contain significant concentrations of metals or to consider metals during the design of the wastewater treatment system.

- Chromium is rarely present in modern refinery wastewater at concentrations that would be of concern for water quality, but chromium remains a commonly regulated refinery wastewater pollutant due primarily to the historical industry practice of using chromium-based chemical for water treatment. The practice of using chromium-based chemicals for water treatment was discontinued decades ago, and the CCI plant will not use any chromium-based water treatment compounds.

- Many other metals found in modern refinery wastewaters are generally understood to be present because some crude oils contain the metals in the form of various organic and inorganic compounds. The metals in the crude oil tend to be associated with the "heavier" (i.e., higher boiling point) fractions of the crude oil. More complex refineries typically include petroleum conversion processes that crack or otherwise process the "heavier" oil fractions under severe temperature and pressure conditions. Under such severe conditions, the metals in the "heavy" oil fractions tend to convert into soluble forms, and the soluble metals then transfer into process water that is eventually managed and discharged as wastewater. Furthermore, most complex refineries include process catalysts with high concentrations of metals, and some of these catalyst metals may also transfer to process water and eventually into the wastewater effluent.

- In contrast with the typical complex refinery discussed above, the CCI condensate splitter will be a comparatively simple petroleum fractionation process that will not include any metal-rich process catalysts or "heavy" oil conversion processes with severe temperatures and pressures. The CCI plant will also process a condensate feedstock that is expected to contain lower total metal content as compared to most conventional crude oil. Furthermore, many of these same metals are also present at detectible levels in seawater, river water, and public drinking water in the local Corpus Christi area. These considerations indicate that treated wastewater discharged from the CCI condensate splitter is not likely to contain metals at concentrations that would be of concern for water quality or aquatic life.

CCI will comply with the conditions of the TPDES permit for effluent limitations and self-monitoring requirements. The facility will have an Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure (SPCC) Plan for operations and a Construction Storm Water Pollution Prevention Plan in place during construction. Employees implementing the plans will

receive training as required by the plans. Best Management Practices will be utilized in accordance with Section 401 of the Clean Water Act and Chapter 279 of the Texas Water Code.

3.3.3 Shipping

The vessel traffic associated with the project includes barges ranging from 300 to 400 feet in length, and ships ranging from 600 to 850 feet in length with a maximum draft of 45 feet. Up to four barges could dock per day and up to four ships are estimated to dock per week resulting in a maximum of 208 ships per year and a maximum of 1,456 barges per year. The barges and ship would typically travel at speeds of less than 10 knots depending on factors including the weather, tide and winds and would only travel within deep water ship channels.

SITE LOCATION

LEGEND

Property Boundary

N

0 2

Miles

SOURCE:(c) 2010 Microsoft Corporation and its data suppliers

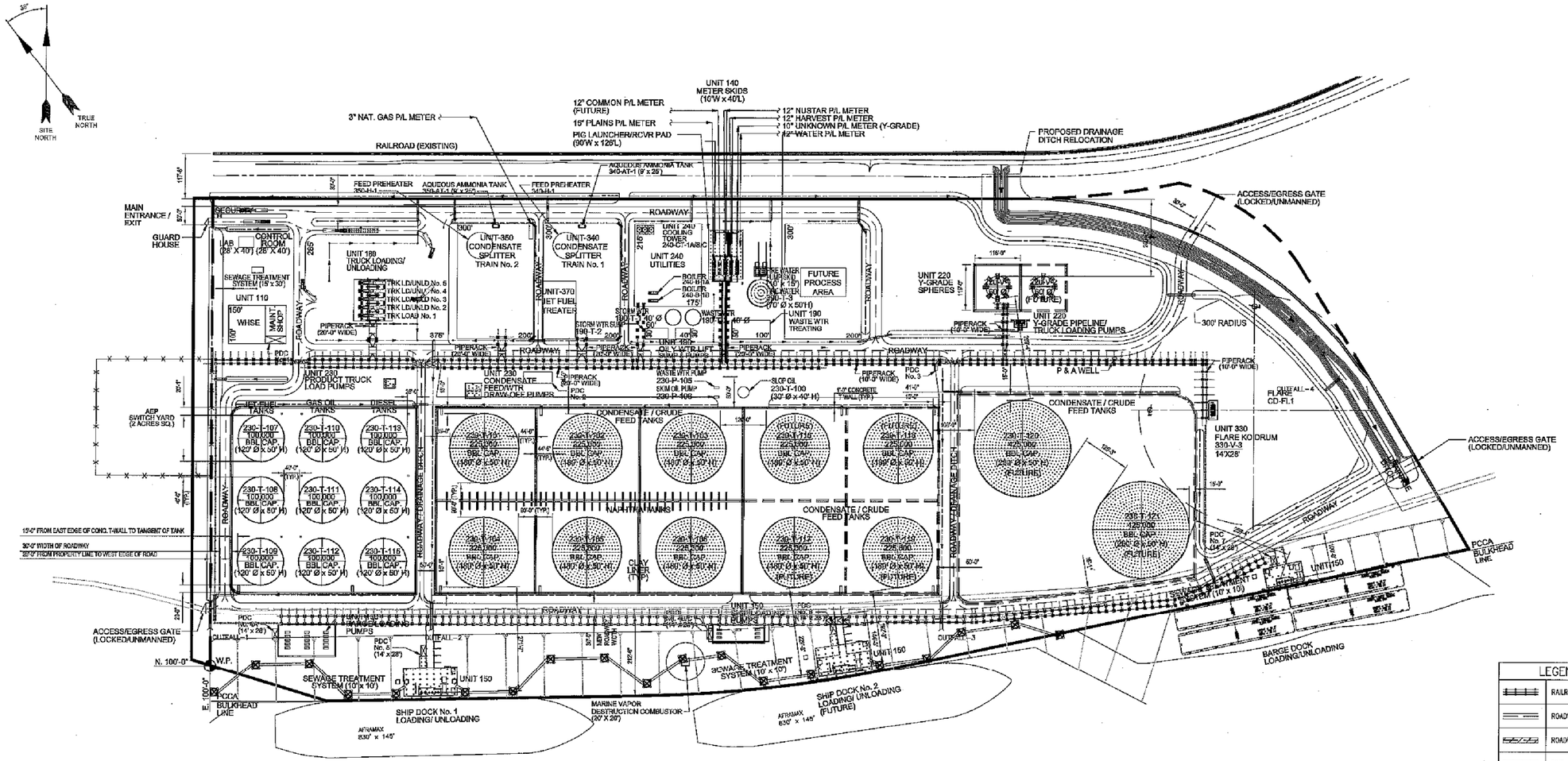
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community

WESTON SOLUTIONS

FIGURE 3-1
SITE LOCATION MAP
CCI CORPUS CHRISTI
BIOLOGICAL ASSESSMENT
CORPUS CHRISTI, TEXAS

DATE	PROJECT NO	SCALE
FEB 2014	13844.058.001.0007	AS SHOWN

FILE: I:\GIS Project Files\13844_CCI-LDH\CorpusEnviro\mxd\Figure 2-1 Site-Location.mxd 2:47:49 PM 2/20/2014 perrint



FEL 3

PRELIMINARY
2-17-14

SOURCE: Conceptual Site Plan, Willbros Engineers, LLC

FIGURE 3-2
PROPOSED PROJECT LAYOUT
CCI CORPUS CHRISTI
BIOLOGICAL ASSESSMENT
CORPUS CHRISTI, TEXAS

DATE	PROJECT NO	SCALE
FEB 2014	13844.058.001.0007	AS SHOWN

FILE: I:\GIS Project Files\13844_CCI-LDH\CorpusEnviro\mxd\Figure Proposed Play Layout.mxd 11:49:55 AM 2/27/2014 perrint

16" WESTERN ROUTE
OD: 16"
WT: 0.375" CARBON STEEL
(ANSI 600, 1480 PSIG MAOP)
LINE DEPTH: 4' TO TOP OF PIPE
TOTAL DEPTH: 5'
LENGTH: 3.16 MILES

12" EASTERN ROUTE
OD: 12.75"
WT: 0.500" CARBON STEEL
(ANSI 600, 1480 PSIG MAOP)
LINE DEPTH: 4' TO TOP OF PIPE
TOTAL DEPTH: 5',4"
LENGTH: 5.16 MILES

LEGEND
- WESTERN PIPELINE
- EASTERN PIPELINE
- PROPERTY BOUNDARY

N

0 3,500 7,000
Feet

SOURCE: (c) Esri World Imagery Service, 2014

WESTON SOLUTIONS

FIGURE 3-3
PROJECT ACTION AREA
PROJECT BOUNDARY AND
PROPOSED PIPELINE
CCI CORPUS CHRISTI
BIOLOGICAL ASSESSMENT
CORPUS CHRISTI, TEXAS

DATE	PROJECT NO	SCALE
MAY, 2014	13844.064.001.0002	AS SHOWN

FILE: L:\13844_ CCI Midstream\Corpus Christi, TX\GIS\Figure 3-3 Proposed Pipelines Biological Assessment.mxd 1:35:50 PM 5/8/2014 wilderj

4 EVALUATION AND IDENTIFICATION OF THE ACTION AREA

As defined by 50 CFR §402.02, an AA is defined as "all areas to be affected directly or indirectly by the Federal action and not only the immediate areas involved in the action." The evaluation of biological resources potentially affected by USEPA action is focused on impacts within the project AA. For both direct and indirect effects analyses, the AA should include not only the limits of physical disturbance for construction and operation of the project, but also any natural resources impacted by air pollutant emissions associated with the project. For projects like this that involve air pollutant emissions, the geographic limits of the AA are dependent on the projected emissions concentrations as most practicably demonstrated by air dispersion modeling.

The evaluation of the project effects on biological resources compares the existing or environmental baseline conditions within the AA with the conditions after the implementation of the proposed project. Baseline conditions include the following:

> *[…] the past and present impacts of all Federal, State, or private actions and other human activities in an Action Area, the anticipated impacts of all proposed Federal projects in an Action Area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process.* (50 CFR §402.02)

By comparing the baseline with the proposed future conditions, the effects of the proposed project on species, suitable habitat, or their designated critical habitat are measured independently of other effects, and the incremental effects of the proposed action on designated species or habitat are isolated.

4.1 ACTION AREA DELINEATION METHOD

The geographic boundaries of the AA were established using an evaluation of the direct impacts due to construction and operation of the project and the evaluation of air emissions dispersion modeling results for indirect effects. Descriptions of the effects due to the direct and indirect factors are provided in the following sections.

4.1.1 Construction and Operating Area Analysis

This project includes the construction of a splitter facility and associated supporting operations on approximately 82 acres of previously disturbed dredge spoils area adjacent to the Tule Lake Channel of the Corpus Christi Ship Channel. The construction operations are anticipated to align with industry standards for the construction of an industrial plant of this size. There would be excavation and ground disturbance associated with the construction of this facility, but BMPs will be employed to reduce emissions, fugitive dust, and habitat disturbance. There would be an increase in localized truck and vessel traffic related to the construction of the facility. The increase in traffic is expected to last approximately 16 months. A minor increase in local traffic is expected to result from the project operations. The noise volume and light levels generated through the project construction and operation would increase due to the construction equipment and typical daily facility activities. The construction lay down area, and all other temporary storage or workspaces associated with the construction would be within the proposed facility property boundary. CCI would use existing roadways for access. No temporary roadways are anticipated for the proposed project.

The total project area is expected to cover approximately 82 acres along the ship channel, and approximately 8 miles of pipeline within an existing 50-foot pipeline corridor. This facility area would include two fractionators, storage tanks, three vessel docks, water treatment, and parking areas. As shown on **Figure 3-2**, the proposed locations for the process areas and the supporting operations are located in previous disturbed areas, including past dredge spoil areas.

4.1.2 Air Emissions Analysis

The following sections describe GHG emission calculation methods applied to each source type associated with the proposed project.

4.1.2.1 Combustion Sources

CCI proposes to construct four new external combustion sources as part of the facility: two auxiliary boilers, and two charge heaters. GHG emissions from these combustion units were calculated using the proposed hourly and annual firing rates and GHG emission factors for fuel gas combustion from 40 CFR Part 98 Subpart C, Table C-1 and Table C-2.

4.1.2.2 Process Flare Emissions

A process flare (EPN FL-1) would be utilized to safely manage combustible gases generated during planned MSS activities or upset events. Upset events are not being proposed for permit authorization. During normal operations, only natural gas as pilot fuel would be burned in the plant flare. GHG emissions from the flare during normal operations would include unburned CH_4 and small amounts of CO_2 and N_2O from the combustion process of pilot fuel. GHG emissions for normal flare operations were calculated using the estimated maximum hourly and average annual pilot gas flow rates and the appropriate emission factors. The CO_2 emissions were based on the factor from USEPA's AP-42 Table 1.4-2 (July 1998). The CH_4 and N_2O emission factors were based on 40 CFR Part 98 Subpart C, Table C-2.

4.2 MARINE VAPOR CONTROL UNITS

A Marine Vapor Control Unit (EPN MVCU) would control vapors associated with marine loading activities. During product loading, natural gas would be used as fuel for the pilot and for enrichment gas. GHG emissions generated from the combustion of collected loading vapors were calculated using the loading vapor loss equations described in USEPA's AP-42, Section 5.2 (June 2008), CO_2 emission factors derived from USEPA's AP-42 Table 1.4-2 (September 1998) and CH_4/N_2O emission factors from 40 CFR, Part 98, Subpart C, Table C-1 and C-2.

4.3 FUGITIVE COMPONENTS

Fugitive emissions of methane were calculated based on the calculated fugitive emission rate and a conservative estimate of methane content. The calculated fugitive emission rate was calculated using the number of fugitive components by service and Synthetic Organic Chemical Manufacturing Industry (SOCMI) "without ethylene" emission factors from TCEQ's *Technical Guidance Package for Equipment Leak Fugitives* (November, 2000). The monitoring credits were applied based on TCEQ's VHP leak detection and repair (LDAR) program. In the absence of detailed stream speciation, the CH_4 concentration is conservatively assumed to be 20%.

4.4 PLANNED MAINTENANCE, STARTUP, AND SHUTDOWN EMISSIONS

The following MSS activities may result in GHG emissions:

- Start-up and shutdown of heaters;
- MSS Vapor Control;
- Clearing of process vessels and equipment;
- Storage tanks degassing; and
- Vacuum trucks.

4.5 AIR EMISSIONS MODEL

The AA was evaluated by the extent of significant air quality impacts as demonstrated by atmospheric dispersion modeling using the USEPA guideline model, AERMOD Version 13350. Based on the air dispersion modeling, the SIL was not exceeded outside the fence line / property boundary for any criteria air pollutants. **Table 4-1** below shows the maximum ground level concentration for each criteria pollutant and compares the results to the SIL.

Table 4-1
SIL Analysis Results

Pollutant	Averaging Period	SIL (µg/m3)	Modeling Results (µg/m3)	Exceedance of SIL?
CO	1-hour	2000	450	No
	8-hour	500	265	No
NO_2	1-hour	7.5	6.9	No
	Annual	1	0.49	No
SO_2	1-hour	7.8	0.50	No
	3-hour	25	0.44	No
	24-hour	5	0.16	No
	Annual	1	0.039	No
PM_{10}	24-hour	5	1.2	No
	Annual	1	0.21	No
$PM_{2.5}$	24-hour	1.2	0.79	No
	Annual	0.3	0.12	No

4.6 DETERMINATION OF ACTION AREA

The potential for effects related to the proposed project includes the area in which construction and operation would take place, and the area where air emissions modeling indicates the potential for air emissions to exceed a SIL. Direct effects may result from increases in noise, dust, traffic, and light expected during the construction or operations associated with the project. Because the modeled air emissions associated with this project are less than the respective SIL's, the AA includes the project construction area which includes the laydown area and is limited to the 82 acres within the facility property boundary and the proposed 8-mile, 50-foot wide pipeline corridor (Figure 3-3).

5 BACKGROUND BIOLOGICAL INFORMATION

5.1 GENERAL REGIONAL ECOLOGY

The project area is located in the Gulf Coast Prairies and Marshes ecoregion of Texas (TPWD, 2013. Historically, this region was dominated by tall grass prairies and live oak woodlands, but much of the habitat has been lost due to agricultural and urban developments. This region of Texas typically consists of a slowly drained, level plain less than 150 feet above mean sea level in elevation and barrier islands off the coast. Several streams and rivers cross the region as they flow from inland areas to the Gulf of Mexico. Common vegetation communities in this ecoregion include salt grass marshes along bays and estuaries, remnant tall grass prairies, and oak mottes. Old growth woodlands can still be found in some river bottoms throughout the region (TPWD, 2012). Though much of the native habitat of this ecoregion has been lost, it still serves as important habitat for numerous species of migratory birds. The bays, estuaries, and rivers also serve as vital spawning areas for species of fish and shrimp (TPWD, 2012).

5.1.1 Land Use

The majority of Nueces County has been developed for agricultural, ranching, industrial, or urban facilities, leaving only small, fractured areas of native habitat. Pastureland for cattle and crops make a large part of agricultural developments in the county (TSHA, 2012). The Nueces River leading into Nueces Bay and Corpus Christi Bay make Nueces County a prime location for deepwater transport of goods. Industrial developments within the county include petrochemical facilities, oil and gas field services, meat packing, and ship building (TSHA, 2012).

The land immediately surrounding the proposed project has been heavily developed with industrial facilities and actively used as dredge disposal areas. There are some undeveloped properties also intermixed in the area.

5.1.2 Climate

Climate in the Gulf Coast Prairies and Marshes ecoregion varies widely over the large area covered by the region. Southwestern-most portions of the area receive an average of 23 inches of rain per year, whereas northeastern-most portions receive an average of 56 inches of rain per

year (TAMU, 2012). The growing season typically lasts for more than 300 days out of the year (TPWD, 2012). Temperatures in the region are hot during the summer and mild during the winter with high humidity prevalent throughout the year.

The Corpus Christi, TX area receives an average of 31.76 inches a year (NOAA, 2013). The month with the highest average precipitation is September, while January has the lowest average precipitation. Average monthly temperatures throughout the year range from a low of 47 degrees Fahrenheit (°F) in January to a high of 94 °F in August (NOAA, 2012).

5.1.3 Topography

The topography of the Gulf Coast Prairies and Marshes ecoregion is considered flat to less prominent as elevations increase inland (TAMU, 2012). The project area itself is also flat with little to no change in elevation throughout the property, ranging from slightly below sea level to 3 ft above sea level.

5.1.4 Geology and Soils

Soils in the Gulf Coast Prairies and Marshes tend to be sandy. Soils in the area are acidic, while sand tends to have a high loam component. Clays within the region occur primarily in river bottoms (TWPD, 2012).

The U.S. Department of Agriculture (USDA) soil survey for the proposed site location was reviewed. The entire site, including the pipeline corridor, is mapped as Ijam Clay Loam. This soil is comprised of sandy or loamy dredge spoils and is listed on the hydric soil list for Texas. It is poorly drained and has a depth to water table of 0 to 36 inches. During the site survey, the soil was confirmed to be either sandy or silty clay, with low matrix chroma consistent with hydric soils. Additionally, shells and rocks, believed to be from dredged materials deposited on site, were observed throughout the soil on the property.

5.1.5 Water Resources

5.1.5.1 Surface Water

The proposed facility and the pipeline corridor, is located between the Tule Lake Channel and the Nueces Bay. The Tule Lake Channel is a tidally influenced water and is approximately 3

miles from the Corpus Christi Bay. The proposed facility is separated from the Nueces Bay by a bermed railroad right of way, and the Joe Fulton International Trade Corridor. The pipeline corridor where the proposed pipeline would be constructed is adjacent to the Joe Fulton International Trade Corridor. As shown in the historical aerial photos, the land within the proposed site area was once within the historical footprint of the Nueces Bay and the topography of the site has been altered due to the placement of dredged materials and other sedimentation within the area since the 1950s (Appendix A).

The site is poorly drained and holds water in areas after rain events. Approximately 35 acres of low quality palustrine wetlands have been identified within the AA. Approximately 0.17 acres of black mangroves (*Avicennia germinans*) are present in small clusters along the ship channel shoreline. Surface water and wetlands within and adjacent to the AA are shown in **Figure 5-1**.

5.1.5.2 Groundwater

The Gulf Coast Aquifer underlies the subject property. It stretches along the Gulf of Mexico Coast from Florida through Texas and into Mexico, and is 100 miles wide in many sections (Schulmeiser, 2012). The Gulf Coast Aquifer is a system of four major component aquifers. The uppermost and easternmost component is the Chicot Aquifer, from which water for municipal and agricultural purposes is pumped. The three other components of the aquifer in descending order are the Evangeline Aquifer, the Jasper Aquifer, and the Catahoula-restricted Aquifer (Schulmeiser, 2012). Major cities over the Texas section of the Gulf Coast Aquifer include Beaumont, Brownsville, Corpus Christi, Galveston, and Houston. Over-pumping of the aquifer has resulted in saltwater intrusion of the aquifer and an increased rate of land subsidence. Contamination of the aquifer related to spills and leaks from petrochemical operations also threaten the aquifer (Schulmeiser, 2012).

5.1.6 Vegetation

Dominant vegetation within the AA includes sea oxeye daisy (*Borrichia frutescens*), pickleweed (*Salicornia* L.), Kings Ranch bluestem (*Bothriochloa ischaemum*), honey mesquite (*Prosopis glandulosa*), huisache (*Acacia farnesiana),* and prickly pear cactuses (*Opuntia* Mill.). The vegetation within the proposed project area and the proposed pipeline corridor are similar. The pipeline corridor is regularly maintained by mowing, and therefore does not contain trees or

large shrubs, but does contain similar grasses and herbaceous species to the proposed project area. Photographs of the proposed project area are provided in Appendix B.

5.2 PROTECTED SPECIES

Descriptions of the federally listed species found in Nueces County are discussed in the following sections.

5.2.1.1 Piping Plover

Piping plover (*Charadrius melodus*) is listed as endangered by the USFWS and TPWD in Nueces County (USFWS, 2013; TPWD, 2012b). The plover is a wintering migrant along Gulf coastal areas of the U.S. They inhabit sandy beaches and bayside mud or salt flats. The species feed primarily on marine worms, beetles, spiders, crustaceans, mollusks, and other small marine animals (TPWD, 2012). Piping plovers reach sexual maturity at one year of age. Mating season lasts from late March through April with males building nests and performing courtship dances to attract a female. Females lay 4 eggs that take 25 days to incubate and hatch. There are only 5,000 known breeding pairs of piping plovers, with Texas serving as the wintering home for 35% of the known population (TPWD, 2013a).

5.2.1.2 Northern Aplomado Falcon

The northern aplomado falcon (*Falco femoralis septentrionalis*) is a non-migratory raptor with a rust colored underside and distinctive black and white facial patterns and is found throughout Texas. This species is Federal and State-listed as endangered for the AA (USFWS, 2013; TPWD, 2012b). The northern aplomado falcon prefers open habitat with scattered trees, relatively little ground cover, and availability of nest sites. This species uses abandoned stick nests of other species, and the mating pair remains near the nest site throughout the year for hunting, roosting, and display (TPWD, 2014a). The falcon was extirpated in Texas, but has been reintroduced in areas. It formerly inhabited desert grasslands and coastal prairie of Texas.

5.2.1.3 Whooping Crane

The whooping crane (*Grus americana*) is a large, predominantly white bird with a long neck, long legs, and red facial skin. It stands approximately 5 feet tall and has a wing span of

approximately 7 feet. The crane has black wing tips that are noticeable when it is in flight (TPWD, 2012b). Their diet consists of large insects, crustaceans, mollusks, frogs, fish, small mammals, other birds, and berries. Typically, whooping cranes prefer isolated areas away from human activities. The whooping crane migrates between their summer breeding grounds of extensive wetland-pothole complexes within Wood Buffalo National Park in northern Canada to their wintering grounds in the coastal marshes within and around Aransas National Wildlife Refuge and Matagorda and St. Joseph's Islands in Aransas, Calhoun, and Matagorda counties, Texas.

5.2.1.4 Gulf Coast Jaguarundi

The Gulf Coast jaguarundi (*Herpailurus yaguarondi cacomitli*) prefer dense, thorny shrub-land habitats and are known to exist in Mexico, the Lower Rio Grande Valley, and South Texas Brush Country (Nature Works, 2012), although they are very versatile in their ability to live in a variety of habitats. They are Federal and State-listed as endangered for Nueces County (USFWS, 2013; TPWD, 2012b). However, the Gulf Coast jaguarundi is rare in the state of Texas due to extensive habitat loss (TPWD, 2014b). Minimal suitable habitat was found within the AA, and the Gulf Coast jaguarundi is unlikely to occur in the project area.

5.2.1.5 Ocelot

The ocelot (*Leopardus pardalis*) prefers dense chaparral thickets, mesquite-thorn scrub, and live oak mottes and is known to avoid open areas (TPWD, 2014c). The ocelot is federal and state-listed as endangered for the project area (USFWS, 2013; TPWD, 2012b). While minimal suitable habitat was found within the AA, it is only known to occur over 100 miles away within Acosta National Wildlife Refuge and private lands in Cameron and Kenedy Counties. It is unlikely that the ocelot would be found within the AA for a significant period of time due to lack of substantial suitable habitat.

5.2.1.6 West Indian Manatee

The only marine mammal that may be located in Nueces Bay is the West Indian Manatee (*Trichechus manatus*) and the last documented sightings in the ship channel was in 2007 (documented rescue

The West Indian Manatee (*Trichechus manatus*) is federally and state-listed as endangered in Nueces County. Manatees have large, seal-shaped bodies with paired flippers and a round, paddle-shaped tail. They are typically grey in color (color can range from black to light brown) and occasionally spotted with barnacles or colored by patches of green or red algae. The muzzle is heavily whiskered and coarse, single hairs are sparsely distributed throughout the body. Adult manatees, on average, are approximately 9 feet long (3 meters) and weigh approximately 1,000 pounds (200 kilograms). At birth, calves are between 3 and 4 feet long (1 meter) and weigh between 40 and 60 pounds (30 kilograms). Manatees are found in rivers, estuaries, and coastal areas of the tropical and subtropical Americas from the southeastern United States coast along Central America and the West Indies. Manatees are extremely rare in Texas. The TXNDD has four records of manatee in Corpus Christi Bay, in 2001, 2006, 2007 and 2011 (TPWD 2013a and TMMSN 2012).

5.2.1.7 Green Sea Turtle

The green sea turtle (*Chelonia mydas*) is listed as endangered by the USFWS and TPWD in Nueces County (USFWS, 2012; TPWD, 2012). It is a small-to-medium sized marine turtle that is generally found in shallow waters inside reefs, bays, and inlets (USFWS, 2012). Though they are the largest of the hard-shelled sea turtles, they have a comparatively small head to other species (NOAA, 2012b). They are the only fully herbivorous sea turtle, feeding primarily on seagrass and algae. The greenish-colored fat from which their name is derived is thought to be a result of their unique diet. Green sea turtle females nest on sandy beaches between the months of June and September, with peak nesting occurring in June and July. On average, a single female has five clutches per season, with a two-week interval between nesting cycles (NOAA, 2012b). Eggs take approximately two months to incubate. Hatchlings of the species spend the first several years of their lives in coastal waters. Juveniles of the species are the only members that have an omnivorous diet, feeding on pelagic animals as well as plants until they reach a certain age and leave the coastal waters for benthic foraging grounds, where they become almost exclusively herbivorous (NOAA, 2012b).

5.2.1.8 Hawksbill Sea Turtle

The hawksbill sea turtle (Eretmochelys imbricata) is listed as endangered by the USFWS and TPWD in Nueces County (USFWS, 2013; TPWD, 2012). It is a small-to-medium-sized marine turtle that frequents rocky areas, coral reefs, shallow coastal areas, lagoons or ocean islands, and narrow creeks and passes (USFWS, 2012). The species is seldom seen in water deeper than 65 feet. The turtle's primary source of food is sponges found in holes and crevices in coral reefs (NOAA, 2012b). Female hawksbill sea turtles return to their natal beaches every two to three years to lay between three and five clutches per season. They commonly nest on pocket beaches with little or no sand or higher up on the beach in dune vegetation. Hatchlings and juveniles are known to take shelter in floating algal mats (NOAA, 2012b).

5.2.1.9 Kemp's Ridley Sea Turtle

The Kemp's Ridley sea turtle (*Lepidochelys kempii*) is listed as endangered by the USFWS and TPWD in Nueces County (USFWS, 2012; TPWD, 2012). It is one of the smallest sea turtles, with adults only reaching up to 2 feet in length and weighing up to 100 pounds (USFWS 2012). Suitable habitat for the species includes near-shore and inshore waters of the northern Gulf of Mexico. Adults of the species occupy primarily neritic habitats with muddy or sandy bottoms (NOAA, 2012b). The species feeds primarily on swimming crabs, but is also known to prey upon fish, jellyfish, and mollusks. Female Kemp's Ridley seat turtles lay two to three clutches of eggs on sandy beaches per season, which take 50 to 60 days to incubate. Hatchlings enter the ocean and head for open water where they are caught up in ocean currents. Juveniles of the species take refuge and feed in floating sargassum seaweed until about the age of two years, where they join the more mature members of the species in the neritic zone (NOAA, 2012b).

5.2.1.10 Leatherback Sea Turtle

The leatherback sea turtle (*Dermochelys coriacea*) is listed as endangered by the USFWS and TPWD in Nueces County (USFWS, 2012; TPWD, 2012). It is the largest living sea turtle in the world (NOAA 2012). Adults can measure up to 6.5 feet in length and weight up to 2,000 pounds. They are also the only sea turtle to lack a hard, boney shell, instead having an approximately 1.5-inch-thick carapace consisting of leathery, oil-saturated connective tissue overlaying loosely interlocking dermal bones (NOAA 2012b). They are commonly thought of as

a pelagic species, but they have also been known to forage in coastal waters. Their primary prey species are jellyfish and salps. Females lay several clutches of eggs throughout a nesting season at 8- to 12-day intervals (NOAA, 2012b). Eggs take approximately 60 to 65 days to incubate and hatch.

5.2.1.11 Loggerhead Sea Turtle

The loggerhead sea turtle (*Caretta caretta*) is listed as threatened by the USFWS and TPWD in Nueces County (USFWS, 2012; TPWD, 2012). It is a large sea turtle that can grow up to 3 feet in length and weigh up to 200 pounds (USFWS, 2012). It is widely distributed within its range, having been observed hundreds of miles out to sea as well as in inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers. The species is named for their large heads and powerful jaws which allow them to feed on hard-shelled prey such as whelks and conch (NOAA, 2012b). Female loggerheads nest on high energy beaches with coarse sand. The nesting season is between April and September, with females laying three to five clutches per season. Eggs take approximately two months to incubate and hatch. Hatchlings enter the ocean and are known to spend days swimming away from land until they reach areas where surface water converge to form a downwelling and where floating material such as seaweed has accumulated. Once juveniles reach 7 to 12 years of age, they return to the neritic zone until maturing into adulthood (NOAA, 2012b).

5.2.2 Texas Natural Diversity Database Results

Data obtained from the Texas Natural Diversity Database (TXNDD) indicates that there is are rookeries within approximately two miles of the project area. However, the rookeries have been classified as "not sensitive" by the database.

Wetland ID	Acres
WP01	9.80
WP02	15.80
WP03	1.42
WP04	0.25
WP05	0.10
WP06	0.10
WP07	0.19
WP08	0.30
WP09	0.50
WP10	1.50
WP11	0.40
WP12	2.07
WP13	3.00

LEGEND

- Property Boundary
- Wetland - Palustrine
- Black Mangroves
- Spartina Alterniflora

WP01 - Feature Label
9.8 ac - Acres

Total Wetlands = 35.37 acres
Total Black Mangroves = 0.17 acres
Total Spartina Alterniflora = 0.18 acres

DRAFT

N

0 250 500

Feet

SOURCE: Texas Orthoimagery Program 2008/2009
0.5 Meter DOQQ, 01-13-2009

WESTON SOLUTIONS

FIGURE 5-1
WETLAND DELINEATION MAP
BIOLOGICAL ASSESSMENT
CCI CORPUS CHRISTI
CORPUS CHRISTI, TEXAS

DATE	PROJECT NO	SCALE
FEBRUARY, 2014	13844.063.001.0001	AS SHOWN

FILE: I:\GIS Project Files\13844_CCI-LDH\CorpusEnviro\mxd\Figure 5-1 Wetland.mxd 3:27:40 PM 2/27/2014 perrint

6 PROTECTED SPECIES HABITAT EVALUATION

6.1 PLANT COMMUNITIES OBSERVED

Plant communities observed during the 2013 site visit are typical of the area surrounding the proposed facility. The most prevalent habitat type within the AA is characterized by low quality high marsh wetlands mixed with uplands dominated by invasive species, resulting from the previous use of the property for the placement of dredged material. The proposed project area includes approximately 82 acres of dredge spoil area and an 8-mile long existing pipeline corridor within similar dredge spoils along the Joe Fulton International Trade Corridor.

6.2 PROTECTED SPECIES HABITAT ANALYSIS

Few of the federally protected species identified as occurring in the vicinity of the source have suitable habitat that was identified within the AA. The habitat found within the AA is typical of disturbed palustrine wetlands and disturbed uplands in the region. There are industrial developments to the south, east, and west of the AA. The area immediately to the north of the property outside includes a road and the Nueces Bay. The pipeline corridor is adjacent to the roadway and includes habitat typical of maintained right-of-ways including a mix of mowed native and non-native grasses mixed with bare soil areas.

No critical habitat was identified within the AA boundaries (USFWS, 2012). Federally listed T&E species and the evaluation of the presence of their preferred habitat within the AA are listed in **Table 6-1** on the following page.

Table 6-1
Habitat Presence of Federally Listed Threatened and Endangered Species of Nueces County, TX within the Action Area

Common Name	Scientific Name	Federal Status	State Status	Habitat Presence	Species Presence Within the Action Area
Piping Plover	*Charadrius melodus*	LE	E	**No** – Wintering migrant along the Texas Gulf Coast. Found in beaches and bayside mud or salt flats.	Possible Migrant Over Area
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	LE EXPN	E	**No** – savannah and open woodland; grassy plains and valleys with mesquite, yucca, and cactus.	Possible Migrant Over Area
Whooping Crane	*Grus americana*	LE, EXPN	E	**Yes –** wetlands, marshes, mudflats, wet prairies, and fields. Within USFWS migratory corridor.	Unlikely Migrant Over Area
Red Knot	*Calidris canutus rufa*	C		**No** – Winter migrant. Found on beaches and sand and mud flats**.**	Possible Migrant Over Area
Sprague's Pipit	*Anthus spragueii*	C		**No** – Winter migrant, found in well drained grasslands.	Unlikely Migrant Over Area
Gulf Coast Jaguarundi	*Herpailurus yaguarondi cacomitli*	LE	--	**No** – low quality, but typically dense, thorny shrublands near water.	Unlikely Transient, Unlikely to Den in Available Habitat
West Indian Manatee	*Trichechus manatus*	LE	E	**No** – Gulf and bays in south America and Florida, very rare in Texas.	Unlikely Transient adjacent to project area
Ocelot	*Leopardus pardalis*	LE	E	**No** – optimal habitat has at least 95% canopy cover of shrubs, whereas marginal habitat has 75-95% canopy cover; dense chaparral thickets; mesquite-thorn scrub, and live oak mottes.	Not Likely
Green Sea Turtle	*Chelonia mydas*	LE	--	**No** – Found in gulf and bay system in shallow water seagrass beds, open water between feeding and nesting areas, and on barrier island beaches	Not Likely
Hawksbill sea turtle	*Eretmochelys imbricata*	LE		**No** – Found in gulf and bay system in warm shallow waters, especially in rocky marine environments such as coral reefs and jetties.	Not Likely
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	LE		**No** – Found in gulf and bay system with adults staying within shallow waters in the Gulf of Mexico	Not Likely
Leatherback Sea Turtle	*Dermochelys coriacea*	LE		**No** – Found in gulf and bay system. Has the widest range of any open water reptile.	Not Likely
Loggerhead Sea Turtle	*Caretta caretta*	T		**No** – Juveniles are found in the gulf and bay system whereas adults are the most pelagic of the sea turtles	Not Likely

Source: USFWS Southwest Region, 2013; TPWD, 2012

E = Endangered
T = Threatened
LE = Federally Listed Endangered
EXPN = Experimental
C = Candidate Species for Listing as Threatened or Endangered.

7 EFFECTS OF THE PROPOSED ACTION

7.1 AIR QUALITY EFFECTS

7.1.1 Emissions

The total emissions for CO_2 equivalents from the Facility are estimated to be 226,971 tons/year.

7.1.2 Fugitive Dust

There is expected to be minimal fugitive dust from the facility construction. BMPs such as water trucks to wet roads and construction areas to control for dust stirred up by heavy vehicles are suggest. The operation of the facility itself is not anticipated to produce significant levels of fugitive dust.

7.1.3 Impacts of Air Pollution Sources on Flora and Fauna

Air pollution is not expected to have a significant effect on flora and fauna within the AA. The vast majority of pollutants released from the facility would disperse into the atmosphere and would not affect terrestrial or aquatic species. Most species of avifauna are unlikely to be impacted by atmospheric pollutants, as they would quickly disperse into the atmosphere and would not remain present in the area in significant concentrations.

7.2 WATER QUALITY EFFECTS

Waste water from the facility would be passed through a permitted waste water treatment system associated with the source before being discharged into the Tule Lake Channel of the Corpus Christi Ship Channel as described in Section 3.3.2. The levels of contaminant discharged from the project outfalls will not exceed the levels authorized by the permit. The authorized levels are considered to be protective of marine organisms in accordance with Texas Surface Water Quality Standards for Marine Aquatic Life (30 TAC 307). The water discharged resulting from the project are expected to have no effect on wildlife within or adjacent to the AA.

7.3 NOISE EFFECTS

Noise related to the construction and operation of the facility is not expected to have a significant impact on biological resources within the AA. The project area is located within a developed chemical-industrial area with pre-existing impacts from noise. Construction and operations of the Condensate Splitter Process facility is unlikely to significantly elevate noise levels in the area from the baseline levels. Noise related to in-water construction of the docks will be in an area with existing industrial noise sources. The project specific noise generated will be temporary and mitigated through the use of pile sleeves designed to protect marine life from noise generated during pile driving.

7.4 FEDERALLY PROTECTED SPECIES EFFECTS

The three possible determinations for the impact of the proposed project for listed species are as follows:

- **No effect** – Project activities would have no adverse or beneficial effect on the listed species;
- **May affect, not likely to adversely affect** – Project activities may directly or indirectly affect the listed species or its habitat. However, the effects are likely to be discountable, insignificant, or beneficial; and
- **Likely to adversely affect** – Project activities are anticipated to have significant adverse effects (direct or indirect) on the listed species or its habitat.

7.4.1 Piping Plover

The project **may affect but is not likely to adversely affect** the piping plover. The banks adjacent to the ship channel in the project area are vegetated with no area of open, sandy soil observed. There is suitable habitat for the piping plover along the gulf coast on Mustang and Padre islands approximately 15 miles from the project area. According to the Cornell Lab of Ornithology Ebird program, piping plover areas of high activity are all located along the coast of the Gulf of Mexico. There are no reported sightings of this species within two miles of the project area (TPWD, 2013). While it is possible that a member of the species might transition across the project area, there is little to no suitable habitat within or immediately adjacent to the project action area.

7.4.2 Northern Aplomado Falcon

The project **may affect but is not likely to adversely affect** the northern aplomado falcon. Although the falcon has been reintroduced to Mustang Island, the habitat available within the AA is not suitable for forage or nesting for the falcon. No tall trees of structures are present to serve as nesting habitat. Suitable nesting and hunting habitat was not identified within the project area, and no nests were observed. Although unlikely, the northern aplomado falcon could be present on nearby properties, or could travel near or stopover on the proposed project site.

7.4.3 Whooping Crane

The project **may affect but is not likely to adversely affect** the Whooping Crane. No suitable nesting habitat or nests were identified within the project area. Additionally the project area is slightly outside of the cranes' current migratory pathway, and south of known wintering grounds around Aransas National Wildlife Refuge. Types of migratory habitat used by whooping cranes include coastal marshes, estuaries, freshwater marshes, lakes, ponds, wet meadows, rivers, and agricultural fields. Based on field survey results, potential migratory whooping crane stopover and foraging habitat is not present or minimally present in the Project Action Area. New structures on the site would be well lighted or flagged so that they are visible during low-light conditions to avoid potential bird strikes.

7.4.4 Gulf Coast Jaguarundi

The project **may affect but is not likely to adversely affect** the Gulf Coast jaguarondi. Minimal suitable habitat was found within the AA, and there is limited terrestrial access to the area, and extensive disturbance and development in the vicinity. The proposed project site is isolated and not part of a riverine corridor, and there is not expected to be used by the jaguarundi.

7.4.5 Ocelot

The project **may affect but is not likely to adversely affect** the Ocelot. Although the proposed facility is within the ocelot's historical range, it is only known to occur over 100 miles away within Acosta National Wildlife Refuge and private lands in Cameron and Kenedy Counties. The ocelot's preferred habitat includes dense shrubland with some oak trees. Minimal suitable

habitat was found within the AA, and the habitat is isolated. Therefore it is unlikely to occur in the project area.

7.4.6 West Indian Manatee

The project **may affect but is not likely to adversely affect** the West Indian Manatee. The manatees are extremely rare in Texas. The likelihood of a manatee using the near shore waters of the proposed facility is very low based.

CCI would provide pre-construction training of personnel performing in-water construction activities. Construction personnel would be informed of the potential presence and receive training on the identification of West Indian manatee. If a manatee is observed within 50 feet of in water construction work would cease. Project related ship and barge traffic would be operated at a speed which affords manatees adequate time to swim away from ship traffic.

7.4.7 Sea Turtle Species

As discussed in **Section 5.2** of this report, there is little suitable habitat for marine species adjacent to the project area, including sea turtles. The AA does not include the Nueces Bay.

Leatherback sea turtles are limited to deep water habitats and, although the turtles could be within in the Nueces Bay system, they are not expected to be within the shipping channel. Likewise, hawksbill sea turtles prefer rocky habitats and coral reefs and may be found within in the Nueces Bay system, however, they are not expected to be within the shipping channel. Loggerhead, green, and Kemp's Ridley sea turtles utilize coastal bodies of water that are tidally influenced and have been observed in the Nueces Bay system, but it is unlikely that they would enter the ship channel.

The proposed docks for the facility are adjacent to a regularly dredged area which serves as poor turtle habitat. Additionally, NOAA does not typically include the segment of the ship channel as sea turtle habitat. To insure protection of sea turtles, CCI will comply with NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions (Appendix C) Turtles are typically not present within the ship channel, but because of nearby suitable habitat and the highly mobile habits of sea turtles, the turtles may be affected due to project-related ship and barge operations in the

Corpus Christi Bay. The project would result in a maximum of 208 ships, and 1,450 barges per year. All vessels would only travel within the existing ship channels. The ships would travel at a speed which is considered safe for turtles, less than 10 knots, allowing them to swim away from ship traffic. The maximum draft of the vessels (38 feet) in comparison to the total depth of the channel would allow for clearance between the bottom of the vessels and the bottom of the shipping channels.

7.4.7.1 Green Sea Turtle

The project **may affect but is not likely to adversely affect** green sea turtles. There is little suitable habitat for all marine turtles adjacent to the project area. Although the turtles could be within in the Nueces Bay system, they are expected to be rare within the shipping channel.

7.4.7.2 Hawksbill Sea Turtle

The project **may affect but is not likely to adversely affect** hawksbill sea turtles. There is little suitable habitat for all marine turtles adjacent to the project area. Although the turtles could be within in the Nueces Bay system, they are expected to be rare within the shipping channel.

7.4.7.3 Kemp's Ridley Sea Turtle

The project **may affect but is not likely to adversely affect** Kemp's Ridley sea turtles. There is little suitable habitat for all marine turtles adjacent to the project area. Although the turtles could be within in the Nueces Bay system, they are expected to be rare within the shipping channel.

7.4.7.4 Leatherback Sea Turtle

The project **may affect but is not likely to adversely affect** leatherback sea turtles. There is little suitable habitat for all marine turtles adjacent to the project area. Although the turtles could be within in the Nueces Bay system, they are expected to rare be within the shipping channel.

7.4.7.5 Loggerhead Sea Turtle

The project **may affect but is not likely to adversely affect** loggerhead sea turtles. There is little suitable habitat for all marine turtles adjacent to the project area. Although the turtles could be within in the Nueces Bay system, they are expected to be rare within the shipping channel.

7.5 EFFECTS MITIGATION

CCI Corpus Christi will implement mitigation measures and best management practices to prevent and/or minimize potential adverse effects to threaten and endangered, or otherwise protected species to all extents practicable. Specific measures for the project will include the following:

- Wildlife will be avoided.
- Personnel will be trained on a no-approach and no-kill policy toward all wildlife.
- An environmental monitor/wildlife control specialist will be utilized to aid personnel in implementation of mitigation measures and provide professional advice on staging and timing of activities. Additionally, an environmental monitor/wildlife control specialist should provide guidance on identifying factors that may indicate the presence of protected wildlife for all stages of project activities.
- CCI will comply with NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions to insure protection of sea turtles.
- New structures on the site would be well lighted or flagged so that they are visible to avoid potential bird strikes.
- Pile sleeves with interior bubble curtains designed to protect marine life in the area from the noise generated during pile driving will be used during installation. Noise related impacts in water during construction of the docks will be in an area with existing industrial noise sources. The project specific noise generated will be temporary.
- Turbidity curtains will be used during dock construction
- The project will involve compensatory mitigation including the creation or enhancement of wetlands within the Nueces Bay system. Mitigation planning for compensation of affected wetlands is currently ongoing with the U.S. Army Corps of Engineers (USACE), Galveston District, Corpus Christi Regulatory Office.
- CCI will utilize BACT to control the project emissions and thus minimize impacts to the surrounding environment to the maximum extent practicable.

8 CONCLUSIONS

The issuance of a PSD permit to CCI, LLC for the construction of a Condensate Splitter Process Facility in Corpus Christi, Texas may affect but is not likely to adversely affect any federally listed threatened or endangered species or designated critical habitat for the purposes of Section 7 of the Endangered Species Act. No federally listed threatened or endangered species, suitable habitat, or designated critical habitats are within the AA of the proposed project. The recommended determinations of effects are summarized below:

Common Name	Scientific Name	Preliminary Determination
Piping Plover	*Charadrius melodus*	May affect, not likely to adversely affect
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	May affect, not likely to adversely affect
Whooping Crane	*Grus americana*	May affect, not likely to adversely affect
Gulf Coast Jaguarundi	*Herpailurus yaguarondi cacomitli*	May affect, not likely to adversely affect
West Indian Manatee	*Trichechus manatus*	May affect, not likely to adversely affect
Ocelot	*Leopardus pardalis*	May affect, not likely to adversely affect
Green Sea Turtle	*Chelonia mydas*	May affect, not likely to adversely affect
Hawksbill sea turtle	*Eretmochelys imbricata*	May affect, not likely to adversely affect
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	May affect, not likely to adversely affect
Leatherback Sea Turtle	*Dermochelys coriacea*	May affect, not likely to adversely affect
Loggerhead Sea Turtle	*Caretta caretta*	May affect, not likely to adversely affect

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10 LIST OF PREPARERS

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APPENDIX A
AERIAL PHOTOGRAPHS

CCI - Corpus Christi
4820 Navigation Boulevard
Corpus Christi, TX 78409

Inquiry Number: 3692039.5
August 14, 2013

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:

Aerial Photography August 14, 2013

Target Property:

4820 Navigation Boulevard

Corpus Christi, TX 78409

Year	***Scale***	***Details***	***Source***
1951	Aerial Photograph. Scale: 1"=500'	Flight Year: 1951 Best Copy Available from original source	USGS
1961	Aerial Photograph. Scale: 1"=500'	Flight Year: 1961	ASCS
1967	Aerial Photograph. Scale: 1"=500'	Flight Year: 1967	USGS
1979	Aerial Photograph. Scale: 1"=500'	Flight Year: 1979	TXDOT
1985	Aerial Photograph. Scale: 1"=500'	Flight Year: 1985	TXDOT
2002	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 2002	EDR
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	EDR
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	EDR
2008	Aerial Photograph. Scale: 1"=500'	Flight Year: 2008	EDR
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	EDR
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	EDR

INQUIRY #: 3692039.5

YEAR: 1951

N

= 500'


INQUIRY #: 3692039.5
YEAR: 1961
= 500'
N


INQUIRY #: 3692039.5
YEAR: 1967
= 500'
N


INQUIRY #: 3692039.5
YEAR: 1979
= 500'
N

INQUIRY #: 3692039.5

YEAR: 1985

= 500'

N


INQUIRY #: 3692039.5
YEAR: 2002
= 500'
N


INQUIRY #: 3692039.5
YEAR: 2005
= 500'
N


INQUIRY #: 3692039.5
YEAR: 2006
= 500'
N


INQUIRY #: 3692039.5
YEAR: 2008
= 500'
N


INQUIRY #: 3692039.5
YEAR: 2010
= 500'
N


INQUIRY #: 3692039.5
YEAR: 2012
= 500'
N

APPENDIX B
PHOTOLOG

PHOTOGRAPH NO. 1

Date: 08/26/13
Direction: W

Description:

Shoreline habitat, approximately 0.2 acres.

PHOTOGRAPH NO. 2

Date: 08/26/13
Direction: NW

Description:

Shoreline habitat.

PHOTOGRAPH NO. 3

Date: 08/26/13
Direction: NW

Description:

Typical upland habitat.

PHOTOGRAPH NO. 4

Date: 08/26/13
Direction: NW

Description:

Typical Upland Habitat.

PHOTOGRAPH NO. 5

Date: 08/26/13
Direction: E

Description:

Typical Habitat on proposed project site.

PHOTOGRAPH NO. 6

Date: 08/26/13
Direction: N

Description:

Typical Wetland Habitat.