# Biological Assessment

# Magellan Corpus Christi Terminal Condensate Splitter Project
# Nueces County, Texas

**Prepared for**

**Magellan Processing, LP**

**Prepared by**

**Whitenton Group, Inc.**

**June 2014**

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# Magellan Corpus Christi Terminal Condensate Splitter Project
# Nueces County, Texas

Prepared for

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WGI Project No. 1417

June 2014

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AOI | Area of Impact |
| AST | Aboveground Storage Tank |
| BA | Biological Assessment |
| BACT | Best Available Control Technology |
| bpd | Barrels Per Day |
| CO | Carbon Monoxide |
| $CO_{2e}$ | Carbon Dioxide Equivalent |
| DiSorbo | DiSorbo Consulting, LLC |
| EO | Element of Occurrence |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| ESL | Effects Screening Levels |
| FAA | Federal Aviation Administration |
| FEMA | Federal Emergency Management Agency |
| GHG | Greenhouse Gas |
| GLCmax | Maximum Ground Level Concentration |
| gpm | Gallons per Minute |
| IH | Interstate Highway |
| ISA | Integrated Science Assessment |
| Magellan | Magellan Processing, L.P. |
| mAOI | Maximum Area of Impact |
| NAAQS | National Ambient Air Quality Standards |
| NMFS | National Marine Fisheries Service |
| $NO_2$ | Nitrogen Dioxide |
| NOAA | National Oceanic and Atmospheric Administration |
| NSR | New Source Review |
| OSHA | Occupational Safety and Health Administration |
| OWS | Oil/Water Separator |
| PM | Particulate Matter |
| $PM_{2.5}$ | Particulate Matter less than 2.5 microns in diameter |
| $PM_{10}$ | Particulate Matter less than 10 microns in diameter |
| PSD | Prevention of Significant Deterioration |
| SIL | Significant Impact Level |
| $SO_2$ | Sulfur Dioxide |
| TCEQ | Texas Commission on Environmental Quality |
| TPDES | Texas Pollution Discharge Elimination System |
| TPWD | Texas Parks and Wildlife Department |
| tpy | Tons Per Year |
| US | United States |
| USFWS | US Fish and Wildlife Service |
| USGS | US Geological Survey |
| VOC | Volatile Organic Compound |

| | |
|---|---|
| WGI | Whitenton Group, Inc. |
| WWTP | Wastewater Treatment Plant |

# 1.0 EXECUTIVE SUMMARY

Magellan Processing, L.P. (Magellan) intends to construct and operate a condensate splitter located in Corpus Christi, Nueces County, Texas. The facility will be located in the Magellan Terminals Holdings, L.P. Corpus Christi Terminal. The condensate splitter will be constructed in 2 phases. Each phase will consist of an identical splitter train that will each process 50,000 barrels per day (bpd) of hydrocarbon material to obtain products suitable for commercial use. Construction of the second 50,000 bbd train is expected to commence within 18 months of completion of the first 50,000 bbd train. The process will utilize conventional distillation technology. Products may be transferred in and out of the terminal via pipeline, tank trucks, and/or marine vessels.

The proposed Project Area is located at the junction of Interstate Highway (IH) 37 and Poth Lane and adjacent to the Corpus Christi Ship Channel (Inner Harbor) in Corpus Christi, Nueces County, Texas (Figures 1-8 – Appendix A).

Nueces County is currently classified as in attainment for all National Ambient Air Quality Standards (NAAQS). The Corpus Christi Terminal is subject to Prevention of Significant Deterioration (PSD) for volatile organic compounds (VOC). The net emissions increase from the proposed condensate splitter project will exceed 75,000 tons per year (tpy) of carbon dioxide equivalent ($CO_{2e}$), a contributing greenhouse gas (GHG). Since the project is a major modification for GHG, a PSD GHG permit is required. The United States (US) Environmental Protection Agency (EPA) is responsible for issuing GHG PSD permits in Texas.

This Biological Assessment (BA) is a complete evaluation of the potential environmental impacts the proposed project may have on federally-listed species and/or their potential habitat. Listed species evaluated in this document include federal threatened, endangered, and candidate species. This BA includes a pedestrian listed-species habitat evaluation of the proposed construction area, a windshield assessment of all publicly-accessible habitats in the surrounding area, and an evaluation of potential environmental impacts based on air quality modeling results and construction and operations information provided by Magellan and DiSorbo Consulting, LLC (DiSorbo), Magellan's air quality permitting consultant for the project.

Construction of the proposed condensate splitter project will take place within approximately 104 acres of the existing Corpus Christi Terminal property boundary. An additional 29 acres of

an adjacent property will be used as a laydown area during construction. One existing outfall structure will be utilized and up to 3 new outfall structures will be constructed in association with the proposed project. These outfalls will be built adjacent to an existing drainage ditch. Linear facilities associated with the proposed project include new utility lines (firewater, water, telecommunications, electric, and natural gas) located within the boundaries of the existing Corpus Christi Terminal. The proposed linear facilities also include 3 pipelines that will be added to an existing aboveground pipe rack that connects the MTH Corpus Christi Terminal to the Port of Corpus Christi dock facility immediately adjacent to the Inner Harbor. The 3 pipelines will tie into existing connections immediately inland from the existing docks. Minor excavation will be required for pipe supports for the pipe rack to the existing docks and the pipe manifolds at the dock facilities. Earth disturbance for the proposed pipelines and pipe manifolds would be located inland from the shoreline with a maximum area of approximately 6.57 acres (5,730 feet by 50 feet). No work will be required within the Inner Harbor. The limits of the earth disturbance footprint, a total acreage of 139.5, will be referred to as the "Project Area."

Federally-listed species considered in this BA include the green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, smalltooth sawfish, Gulf coast jaguarundi, ocelot, red wolf, West Indian manatee, blue whale, finback whale, humpback whale, sei whale, and sperm whale, Eskimo curlew, northern aplomado falcon, piping plover, red knot, yellow-billed cuckoo, whooping crane, slender rush-pea, South Texas ambrosia, and Sprague's pipit. Three field surveys were completed: a pedestrian protected-species habitat evaluation of the proposed Project Area and the immediate surrounding area; a windshield habitat evaluation of all publicly-accessible habitats within the Action Area; and an aerial habitat evaluation of all areas within the Action Area. Data were collected to describe resident vegetation communities and assess the potential for habitat and occurrence of federally-listed species.

In support of this BA, DiSorbo performed dispersion modeling of air pollutants that will be emitted by the proposed project in accordance with PSD permit requirements. The project maximum ground level concentration (GLCmax) values are less than the significant impact levels (SIL) for 30-minute sulfur dioxide ($SO_2$), 1-hour $SO_2$, 3-Hour $SO_2$, 24-hour $SO_2$, annual $SO_2$, 1-Hour carbon monoxide (CO), 8-Hour CO, annual particulate matter ($PM/PM_{2.5}$), annual nitrogen dioxide ($NO_2$), 24-hr $PM_{2.5}$, and 24-hour $PM_{10}$. Accordingly, these predicted criteria

pollutant emissions are considered insignificant for these averaging periods based on EPA's SIL analysis method with screening levels set to protect sensitive populations.

Projected GLCmax values are above the SILs for 1-hour $NO_2$. The significant areas of impact (AOI) located the farthest distance from the source in all directions were plotted to determine a maximum AOI (mAOI) to help define the Action Area.

Based on the modeling results, the maximum predicted concentrations of 3 of the 9 modeled non-criteria pollutants from project emissions are below the respective Effects Screening Level (ESL). Two of the 9 modeled pollutants are well below the first screening level of 10% of the ESL. TCEQ requires additional evaluation for projects whose non-criteria pollutant impacts exceed 10% of the ESL. Accordingly, no adverse welfare impacts are expected to occur within the Action Area as the result of the additional emissions of these pollutants.

The Action Area was defined by combining the boundaries of the Project Area, wastewater and storm water outfalls, the proposed pipeline projects, and the mAOI boundary. The Action Area has a maximum radius of approximately 0.9 mile. Three habitat types were observed in the Action Area of the proposed condensate splitter project: maintained grassland, drainage ditches, wetland, and estuarine open water. The habitats within the Action Area have historically been impacted by industrial and residential development.

Based on the information gathered for this BA and presented in Section 9.0, Whitenton Group, Inc. (WGI) biologists recommend a finding of no effect for 20 out of 21 federally-listed species. A determination of may affect, but not likely to adversely affect is recommended for the whooping crane. The red knot and the yellow-billed cuckoo are currently listed as proposed threatened. These 2 species may potentially be listed as threatened within the year 2014. Since these 2 species are not yet federally listed, no determination of effect is recommended at this time. No determination of effect is recommended for the federally-listed candidate species, Sprague's pipit.

## 2.0 INTRODUCTION

Magellan intends to construct and operate a condensate splitter located in Corpus Christi, Nueces County, Texas. The facility will be located in the Magellan Terminals Holdings, L.P.

Corpus Christi Terminal. The condensate splitter will be constructed in 2 phases. Each phase will consist of an identical splitter train that will each process 50,000 barrels per day (bpd) of hydrocarbon material to obtain products suitable for commercial use. Construction of the second 50,000 bbd train is expected to commence within 18 months of completion of the first 50,000 bbd train. The process will utilize conventional distillation technology. Products may be transferred in and out of the terminal via pipeline, tank trucks, and/or marine vessels.

The proposed Project Area is located at the junction of IH 37 and Poth Lane and adjacent to the Inner Harbor in Corpus Christi, Nueces County, Texas (Figures 1-5 – Appendix A).

Nueces County is currently classified as in attainment (unclassified) for all NAAQS. The Corpus Christi Terminal is subject to PSD review for VOCs. The net emissions increase from the proposed condensate splitter project will exceed 75,000 tpy of $CO_2$, thus triggering PSD review for GHG. The EPA is responsible for issuing GHG PSD permits in Texas.

BAs in support of the PSD GHG permit application are recommended by the EPA to evaluate the potential for impacts to federally-listed species from a project for which federal authorization must be obtained. This BA documents the complete evaluation of the potential effects of the proposed project on federally-listed species and/or their potential habitat. Federally-listed species evaluated in this document include threatened, endangered, proposed threatened, and candidate species. Federal agency regulations for listed species evaluated in this BA are described in Section 4.0.

The purpose of this BA is to research, evaluate, analyze, and document the potential for direct and indirect effects, interdependent and interrelated actions, and cumulative effects on federally-listed species as a result of the proposed project. This BA includes a pedestrian species habitat evaluation of the Project Area, a windshield and aerial habitat evaluation of the Action Area, and an evaluation of potential environmental impacts based on air quality modeling results, construction information, operation information, and wastewater and storm water information provided by Magellan and DiSorbo.

The conclusion of this BA will include a recommended determination of effect on federally-listed endangered and threatened species and their habitat: “no effect,” “may affect, not likely to adversely affect,” or “may affect, likely to adversely affect.” These 3 possible determinations, in accordance with guidance offered by the US Fish and Wildlife Service (USFWS) for the

purpose of Biological Assessments and Evaluations, are described in Section 4.1. A recommended determination of effect will not be included for species listed as candidate.

## 3.0 ACTION AREA

The BA process requires identification of the proposed project's "Action Area" within which the potential for effects on federally-listed species and their habitats are to be evaluated. "Action Area" is defined in 50 CFR Section 402.02 as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The limits of the project's Action Area were determined based on the dispersion modeling results, the earth disturbance footprint, all associated linear facilities, and any wastewater and storm water discharge locations, which is consistent with prior EPA precedent.

EPA has established SILs for each NAAQS. SILs are concentrations significantly below their corresponding NAAQS and constitute a *de minimis* threshold at or below which a potential impact is considered to be insignificant[1]. From the dispersion modeling, the coordinates of each receptor with modeled concentrations greater than the SIL for each pollutant were plotted to delineate the significant AOI. The significant AOIs located the farthest distance from the source in all directions were plotted to create a mAOI (theoretical) boundary. Based on the results of modelling described below in Section 8.1, the furthest distance from the project where concentrations of emissions were above the SIL was approximately 0.9 mile.

The Action Area was defined by combining the boundaries of the Project Area, wastewater and storm water outfalls, the proposed pipeline projects, and the mAOI boundary (Figures 2-5 - Appendix A).

This Action Area was used to analyze the potential impacts to listed species and/or their habitat by the proposed project and is demonstrated in Figures 2-5 (Appendix A). The results of the analysis of potential impacts to federally-listed species are presented in Section 9.0 below.

# 4.0 AGENCY REGULATIONS

## 4.1 ENDANGERED SPECIES ACT

The USFWS and the National Oceanic and Atmospheric Administration - National Marine Fisheries Service (NOAA-NMFS) implement the Endangered Species Act (ESA) of 1973. "The purpose of the ESA is to protect and recover imperiled species and the ecosystems on which they depend." Imperiled species specifically includes those listed by the USFWS as threatened or endangered[2]. Candidate species are those "the USFWS has enough information to warrant proposing them for listing but is precluded from doing so by higher listing priorities[3]." Candidate species are not specifically protected by the ESA, but were evaluated in this BA.

Section 9 of the ESA prohibits the "take" of threatened and endangered species. "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. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering[4]."

BAs include one of 3 recommended determinations of effect on federally-listed endangered and threatened species and their habitat: "no effect," "may affect, not likely to adversely affect," or "may affect, likely to adversely affect." These 3 possible determinations, in accordance with guidance offered by the USFWS for the purpose of Biological Assessments and Evaluations, are summarized below[5]. A recommended determination of effects is not provided for candidate species.

1. No effect – A "no effect" determination means that there are absolutely no effects from the proposed action, positive or negative, to listed species. A "no effect" determination does not include effects that are insignificant (small in size), discountable (extremely unlikely to occur), or beneficial. "No effect" determinations do not require written concurrence from the Service unless the National Environmental Policy Act analysis is an Environmental Impact Statement.

2. May affect, not likely to adversely affect – A "may affect, not likely to adversely affect" determination may be reached for a proposed action where all effects are

beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat (i.e., there cannot be a "balancing," where the benefits of the proposed action would be expected to outweigh the adverse effects – see below). Insignificant effects relate to the size of the effects and should not reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur. This conclusion is usually reached through the informal consultation process, and written concurrence from the USFWS exempts the proposed action from formal consultation.

3. May affect, likely to adversely affect - A "may affect, likely to adversely affect" determination means that all adverse effects cannot be avoided. A combination of beneficial and adverse effects is still "likely to adversely affect" even if the net effect is neutral or positive. Section 7 of the ESA requires that the federal action agency request initiation of formal consultation with the USFWS when a "may affect, likely to adversely affect" determination is made.

## 4.2 CLEAN AIR ACT REGULATIONS AND STANDARDS

The Clean Air Act requires air quality standards be maintained to protect public health and the environment. These standards are the NAAQS and are regulated by the EPA. Ambient air is the air to which the general public has access, as opposed to air within the boundaries of an industrial facility. The NAAQS are concentration limits of pollutants in ambient air within a specific averaging time. The averaging time is the time period over which the air pollutant concentrations must be met to comply with the NAAQS. The NAAQS are classified into 2 categories: primary and secondary standards. Primary standards are set to protect public health, including "sensitive" populations. Secondary standards are set to protect public welfare, including the environment[6].

The EPA has established NAAQS for 6 air pollutants, which are commonly referred to as "criteria pollutants". These 6 criteria pollutants are $NO_2$, ozone, $SO_2$, PM, CO, and lead[6]. A geographic area whose ambient air concentration for a criteria pollutant is equal to or less than the primary standard is an attainment area. A geographic area with an ambient air concentration greater than the primary standard is a nonattainment area. A geographic area will have a separate designation for each criteria pollutant[6].

The Clean Air Act also requires the EPA to establish regulations to prevent significant deterioration of air quality in attainment areas. A SIL is a concentration that represents a *de minimis*, or insignificant, concentration resulting from the emissions from a proposed project below which the project is not considered to cause or contribute to a violation of NAAQS for a criteria pollutant[1]. If the proposed project involves an increase in emissions that results in predicted ambient impacts greater than the established SIL, the permit applicant is required to perform additional analyses to demonstrate that the project emissions will not cause or contribute to a violation of a NAAQS for that pollutant[7].

The air quality analysis to demonstrate compliance with NAAQS is performed using computer models to simulate the dispersion of the emitted pollutants into the atmosphere and predict ground level concentrations at specified receptor locations in the area around the source of emissions. If the modeled concentration for a given pollutant and averaging period is less than the EPA-specified SIL, the project is determined to have no significant impact on ambient air quality and no further analysis is required for that pollutant and averaging period. If the SIL is predicted by the model to be exceeded for a given pollutant, further modeling of the project emissions combined with existing emission sources in the area is required to estimate total ambient concentrations. The modeling must demonstrate that the total concentration, including an appropriate background, does not exceed the applicable NAAQS.

# 5.0 PROJECT DESCRIPTION

## 5.1 PROJECT PURPOSE AND LOCATION

Magellan intends to construct and operate a condensate splitter located in Corpus Christi, Nueces County, Texas. The facility will be located in the Magellan Terminals Holdings, L.P. Corpus Christi Terminal. The condensate splitter will be constructed in 2 phases. Each phase will consist of an identical splitter train that will each process 50,000 bpd of hydrocarbon material to obtain products suitable for commercial use. Construction of the second 50,000 bbd train is expected to commence within 18 months of completion of the first 50,000 bbd train. The process will utilize conventional distillation technology. Products may be transferred in and out of the terminal via pipeline, tank trucks, and/or marine vessels. A process flow diagram for the proposed condensate splitter project is provided as Figure 4-1 (Appendix B). A more detailed

list of proposed project construction information is provided in the preliminary plot plan in Appendix C. This project information is preliminary and is subject to change.

Generally, the proposed project will include:

- Four natural gas-fired heaters
- One process flare
- Aboveground storage tanks (AST)
- Two process units
- Two desalter units
- Eight fractionator towers
- Underground utility lines
- Three pipelines, pumps, and pipe manifolds

The proposed Project Area is located at the junction of IH 37 and Poth Lane and adjacent to the Inner Harbor in Corpus Christi, Nueces County, Texas (Figures 1-5 – Appendix A).

Project location information:

| USGS Quad | **Latitude/Longitude** |
|---|---|
| Corpus Christi | 27.808753, -97.436686 |

## 5.2 CONSTRUCTION INFORMATION

### 5.2.1 CONSTRUCTION DESCRIPTION

Construction of the proposed condensate splitter project will take place within approximately 104 acres of the existing Corpus Christi Terminal property boundary. An additional 29 acres of an adjacent property will be used as a laydown area during construction. One existing outfall structure will be utilized and up to 3 new outfall structures will be constructed in association with the proposed project. These outfalls will be built adjacent to an existing drainage ditch. Linear facilities associated with the proposed project include new utility lines (firewater, water, telecommunications, electric, and natural gas) located within the boundaries of the existing MTH Corpus Christi Terminal. The proposed linear facilities also include 3 pipelines that will be added to an existing aboveground pipe rack that connects the MTH Corpus Christi Terminal

to the Port of Corpus Christi dock facility immediately adjacent to the Inner Harbor. The 3 pipelines will tie into existing connections immediately inland from the existing docks. Minor excavation will be required for pipe supports for the pipe rack to the existing docks and the pipe manifolds at the dock facilities. Earth disturbance for the proposed pipelines and pipe manifolds would be located inland from the shoreline with a maximum area of approximately 6.57 acres (5,730 feet by 50 feet). No work will be required within the Inner Harbor. The limits of the earth disturbance footprint total approximately 139.50 acres and will be referred to as the "Project Area." The Project Area is shown on Figure 2 (Appendix A). A more detailed list of proposed project construction information is provided in the preliminary plot plan in Appendix C. This project information is preliminary and subject to change.

The approximate heights of proposed infrastructure include:

- Four heaters (125 feet tall)
- One process flare (150-200 feet tall)
- Eight fractionator towers (100-150 feet tall)
- Additional infrastructure (less than 50 feet tall)

The estimated construction start date for Phase I is anticipated for January 2015. Construction of the second phase will commence within 18 months of the completion of the first phase. The estimated operation start date for Phase I is September 2016.

### 5.2.2 CONSTRUCTION ACTIVITIES AND SCHEDULE

The construction schedule will be 12-hour work days (6am to 6pm), 6 days per week until completion. This schedule is subject to change. Approximately 300 personnel will be needed for construction. The total time estimated to complete each phase of the project is approximately 56-64 weeks and includes the following list of general construction activities:

- Site dirt work
- Upgrade existing storm water lines and existing oil/water separator (OWS)
- Construct new storm water lines and a second OWS
- Construct up to 3 new outfall structures
- Construct 2 desalter units
- Construct buildings and foundations for aboveground storage tanks (AST)
- Construct earthen dikes

- Erect buildings and ASTs
- Construct shallow and deep foundations for equipment
- Install process equipment (splitter and flare)
- Installation of utilities, pipelines, pumps, and manifolds
- Extend utilities to process area and buildings (electric, water, natural gas, and telecommunications)

### 5.2.3 CONSTRUCTION EQUIPMENT REQUIRED

Equipment required for completing the construction of each phase for the condensate splitter project and their estimated schedule is listed below. The total equipment may not be used simultaneously throughout the given time period. The maximum height for construction equipment will be 250 feet.

- 2 - Excavators for 16 weeks
- 2 - Dozers for 16 weeks
- 12 - Skid loaders for 15 months
- 2 - Dump trucks for 16 weeks
- 1 - Backhoe for 16 weeks
- 1 - Grader for 16 weeks
- 1 - Asphalt machine for 2 weeks
- 1 - Tractor loader/sweeper/breaking plow for 16 weeks
- 2 - Front end loader for 15 months
- 1 - Roller for 16 weeks
- 1 - Compactor for 16 weeks
- 1 - Water truck for 16 weeks
- 3 - Extension boom forklifts for 15 months
- 1 - 18 ton crane for 4 weeks
- 6 - Generators for 12 months
- 6 - Air compressors for 15 months
- 2 - Extension boom forklifts for 6 months
- 6 - 30 ton crane for 15 months
- 6 -18 ton crane for 15 months
- 100 - 500 amp welding machines for 15 months
- 1 - Air compressors for 12 months

- 8 - 80 foot manlifts for 15 months
- 2 - Dehumidifiers for 12 months
- 2 - Concrete truck for 15 months
- 1 - 100 ton crane for 4 weeks

#### 5.2.4 STORM WATER

Erosion and sedimentation controls will be utilized to protect water quality during the construction and operation of the proposed project, in accordance with Section 401 of the Clean Water Act and 30 Texas Administrative Code Chapter 279, and as prescribed in the Storm Water Pollution Prevention Plan that will be utilized during construction.

#### 5.2.5 CONSTRUCTION NOISE LEVELS

Project engineers estimate that fence line noise levels during construction should be comparable to noise levels from activities that currently take place during maintenance activities performed at the Corpus Christi Terminal. Noise protection will utilized as required to be in compliance with the US Occupational Safety & Health Administration (OSHA) noise regulations.

### 5.3 OPERATION AND MAINTENANCE INFORMATION

#### 5.3.1 OPERATION DESCRIPTION

Magellan proposes to expand the existing Corpus Christi Terminal by constructing and operating a new 100,000 bpd condensate splitter in order to increase production of hydrocarbon condensate material for commercial use. The facility will consist of 2 trains, each processing 50,000 bpd of condensate. The process utilizes conventional distillation technology. Stored hydrocarbon condensate will be distilled and separated into propane, butane, light naphtha, heavy naphtha, kerosene/jet fuel, diesel, and resid (gas oil). These products will be stored in tanks on site until ready for transport. In addition to the main process equipment, an elevated flare is provided for use in emergency overpressure situations to dispose of excess process vapors and for non-emergency use. Products may be transferred in and out of the terminal via pipeline, tank trucks, and/or marine vessels. Existing dock facilities owned by the Port of Corpus Christi and shared by additional facilities will be utilized to transfer products. The propane and butane will be transferred under pressure to tank trucks. All products may be

transferred to local refineries and terminals via existing pipelines. A process flow diagram for the proposed condensate splitter project is provided as Figure 4-1 (Appendix B).

The maximum operating schedule is 24 hours a day, 7 days a week, and 52 weeks a year. The condensate splitter is expected to be in operation greater than 25 years. Fifty new, full-time personnel will be required for operation.

Maintenance, startup, and shutdown activities are projected to occur once every 3 years, which will include a 6-week maintenance shutdown.

### 5.3.2 WATER USE

The water source for project construction and normal operations will be provided by the City of Corpus Christi, Texas. Water consumption is dependent on the final construction design. With the proposed desalter installed and operational, water use for the proposed project is estimated at 300 gallons per minute (gpm).

### 5.3.3 WASTEWATER AND STORM WATER

The proposed project will be located within the existing property boundaries of the Corpus Christi Terminal. The proposed project would operate under Magellan's existing Texas Pollution Discharge Elimination System (TPDES) permit (Permit No. WQ0002070000). All non-contact storm water would be discharged under the existing TPDES permit through specific non-contact storm water outfalls. The Corpus Christi Terminal does not currently discharge wastewater under the existing TPDES permit. Only storm water is currently discharged via Outfall 001.

The maximum daily wastewater effluent that would be discharged from the proposed project would be 300 gpm (maximum), if the desalter unit is installed and wash water is generated. A wastewater permit is not yet in place to discharge this effluent. Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by a skidded wastewater treatment plant (WWTP) or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch (Figures 2-5 – Appendix A).

The first flush (0.5-1 inch) of storm water within the process area will be diverted to storage, sampled, and tested. If the first flush storm water is considered clean by TPDES standards, it will be pumped to the OWS and discharged via the proposed new outfall. Storm water that does not meet TPDES standards for discharge will be transported via truck to a disposal facility.

Storm water discharge is currently authorized under TPDES permit WQ0002070000. Storm water is directed via sheet flow or piping to an OWS structure. When water leaves the OWS, it is discharged via an existing outfall (Outfall 001) into a vegetated drainage ditch. The existing drainage ditch is a combination of open ditch and pipeline. Discharge from the proposed project would flow three quarters of a mile in this vegetated drainage ditch system before connecting to the Inner Harbor. The proposed condensate splitter project will utilize the existing drainage system. The project will utilize 1 existing outfall structure and will include the installation of an additional OWS and up to 3 new outfall structures (Figures 2-5 – Appendix A). The new outfalls will discharge into the same ditch as the existing outfall structure.

### 5.3.4 OPERATION NOISE LEVELS

Noise levels are expected to be comparable or higher than current noise levels produced at the Corpus Christi Terminal. Noise protection will utilized as required to be in compliance with the OSHA noise regulations for higher noise levels.

### 5.3.5 MARINE VESSEL TRAFFIC

The Inner Harbor is a part of the Corpus Christi Ship Channel that connects to the Intracoastal Waterway and to the Gulf of Mexico. Ships and barges declare arrival with the Port of Corpus Christi. The Corpus Christi Ship Channel was designed and is maintained to accommodate heavy marine vessel traffic. The Port of Corpus Christi received a total of 6,780 marine vessels last year, equaling nearly 350K short tons[8]. Vessels within the Inner Harbor are required to travel safe navigation speed. Vessel speed may vary between 5-12 knots, depending on site conditions[9].

The proposed condensate splitter project will be serviced by ships, ocean-going barges, tandem barges, and non-tandem barges of varying sizes and carrying capacity. Refer to Table 1 for expected increase in marine vessel traffic as a result of the proposed condensate splitter project. Product from the proposed condensate splitter project (i.e., gas oil (resid), jet, diesel, light naphtha, and heavy naphtha) will be loaded onto marine vessels for dissemination to clients.

The vessels associated with the proposed project will dock at Port of Corpus Christi Oil Docks 3, 4, 7, and 11 (Figure 2 – Appendix A).

**Table 1. Expected Increase in Marine Vessel Traffic as a Result of the Proposed Condensate Splitter Project**

| Vessel | Increase in Visits Per Year | Length of Vessel (feet) | Width of Vessel (feet) | Capacity (bbl) |
|---|---|---|---|---|
| Ship | 89 | 600 | 55 | 300k |
| Ocean-Going Barge | 8 | 700 | 65 | 300k |
| Tandem Barge | 364 | 300 | 50-54 | 10-25k |
| Non-Tandem Barge | 49 | 300 | 50-54 | 10-25k |

# 6.0 BACKGROUND INFORMATION

## 6.1 GENERAL ENVIRONMENTAL INFORMATION

This section provides applicable environmental characteristics for the general region in which the project is located.

### 6.1.1 GENERAL REGION INFORMATION

The proposed construction site is within the Mid-Coast Barrier Islands and Coastal Marshes of the Western Gulf Coastal Plain ecoregion of Texas[10]. The area in which the project is located is typical for this ecoregion.

This region borders a portion of the Gulf Coast in the state of Texas. The Gulf of Mexico influence creates multiple dynamic ecosystems within this ecoregion including bays, estuaries, salt marshes, and tidal flats. Inland ecosystems are composed of mixed brush and grassland communities. These ecosystems are home to a variety of nongame wildlife including several endangered species[11]. This region is prime wintering grounds for migratory birds[12]. The bays and estuaries are invaluable breeding grounds and fish hatcheries[13].

The majority of river basins in Texas drain towards the Gulf of Mexico, however the limited amount of rainfall in west Texas reduces the amount of fresh water inflow experienced along the southern Gulf Coast of Texas[14]. This ecoregion also experiences more drought than other coastal areas to the north. Nonetheless, this region is ecologically diverse, particularly in areas adjacent to the coastline. Freshwater wetlands, marshes, swamps, inland prairies, and scrub/shrub habitat are typical in the area[10].

Because of the abundant water resources, the rich soils, and the proximity to the coast, this area is commonly converted to cropland, ranchland, and industrial development[10]. These land uses have reduced and fragmented the natural habitats throughout the region.

### 6.1.2 LAND USE

Nueces County is located within the Western Gulf Coastal Plain with almost 70% of the county considered prime farmland. Much of the natural areas have been converted to produce sorghum, cotton, hay, wheat, corn, watermelons, peaches, and pecans. Cattle are also raised for beef and dairy. Urban and industrial developments have increased in recent years, partly in response to the growth of oil and gas in the region[15]. Land use types within the survey area consist of agriculture, urban development, potential wetlands, and scrub-shrub habitats (Figure 2 – Appendix A).

### 6.1.3 CLIMATE

The climate in Nueces County is sub-humid tropical with an average annual rainfall of 30 inches. The mean temperature in July is 93°F and 47°F in January. The growing season lasts roughly 309 days per year[15].

As of 20 March 2014 the US Drought Monitor indicated the survey area was in D1 – Moderate Drought[16]. According to the National Weather Service/Advanced Hydrologic Prediction Service, the area has received approximately 2-4 inches of rain within the 30 days prior to the field survey conducted on 4 April 2014. This amount is 0-1 inch above the average rainfall for this area[17].

The NOAA – National Climatic Data Center's Hydrological Drought Index indicates that Nueces County has been impacted by drought four of the past 6 years (in March). The watersheds that contribute to the project region have been impacted by significant drought

conditions for five out of the past 6 years. Long-term drought conditions have weakened many ecosystems across Texas[18]. While the coastline has not experienced as severe a deficiency in direct precipitation as have other areas of Texas, it is affected by the limited influx of freshwater from Texas' river basins[19].

### 6.1.4 TOPOGRAPHY

Nueces County is comprised of generally flat terrain, with elevations ranging from sea level to approximately 180 feet above sea level[15]. The Project Area is flat with an elevation of approximately 25 feet above sea level (Figure 3 – Appendix A).

According to the Federal Emergency Management Agency (FEMA) floodplain data, portions of the Project Area are located within a designated 100-year floodplain. FEMA floodplain designation is demonstrated in Figure 4 (Appendix A)[20].

### 6.1.5 GEOLOGY

The geologic units found within and surrounding the proposed Project Area are listed and described below in Table 2[21].

**Table 2. Geologic Units Summary**

| Map Unit | Unit Name and Description | Rock Types |
|---|---|---|
| Hfs | Fill and spoil | Fill and spoil |
| Qbs | Beaumont formation, areas predominantly sand | Sand, silt, clay or mud, gravel |
| Qd | Deweyville formation | Sand, silt, clay, and gravel |

### 6.1.6 SOILS

Dominant soils found in Nueces County are comprised of hypothermic, very dark loams to gray or cracking clayey soils[15]. The majority of soils have moderate to high shrink-swell potential and the soil types are poorly drained to well drained[22]. The Natural Resources Conservation Service (NRCS) soil units mapped within and surrounding the proposed Project Area is listed and described in Table 3.

**Table 3. NRCS Soils Data and Potential Habitat for Threatened and Endangered Species in Nueces County, Texas.**

| NRCS Map Unit Symbol | NRCS Map Unit Name and Characteristics | USDA Classification | | | | NRCS Hydric Soil | TES Potential Habitat? |
|---|---|---|---|---|---|---|---|
| | | Depth | Drainage | Permeability | Landform | | |
| Ma | Ijam clay loam | Very deep | Poorly drained | Very slow | Dredged material | Yes | No |
| Ua | Urban land | - | - | - | - | - | - |

### 6.1.7 WATER RESOURCES

Nueces County has abundant water resources, with its southern border on the Gulf of Mexico and extensive coastal lakes, marshes, estuaries and rivers. The Project Area is a part of the Corpus Christi/Nueces River Basin, which includes prominent water features such as the Nueces Bay and Corpus Christi Bay/Ship Channel. The low, flat topography is prone to flooding. Surface waters in the general area include Nueces River, Oso Creek, and Rincon Bayou[23].

The USFWS National Wetlands Inventory data within and immediately adjacent to the proposed Project Area is demonstrated in Figure 4 (Appendix A)[24].

### 6.1.8 VEGETATION

The Mid-coast Barrier Islands and Coastal Marshes ecoregion is influenced by tidal waters and its associated saline conditions. Vegetation found in higher saline zones include *Spartina alterniflora* (smooth cordgrass), *Spartina patens* (marshhay cordgrass), and *Distichlis spicata* (gulf saltgrass). Other grassland species that may occur in this ecoregion include *Andropogon littoralis* (seacoast bluestem), *Uniola paniculata* (sea-oats), *Phragmites australis* (common reed), *Paspalum monostachyum* (gulfdune paspalum), and *Ipomoea pes-caprae* (soilbind morning-glory). *Magnolia virginiana* (sweetbay), *Persea borbonia* (redbay), and *Quercus virginiana* (southern live oak) trees may also occur[10].

## 6.2 FEDERALLY-LISTED SPECIES

### 6.2.1 THREATENED OR ENDANGERED SPECIES LIST

The USFWS, NOAA-NMFS, and the Texas Parks and Wildlife Department (TPWD) maintain lists of federally-listed species by county in Texas. Table 4 is a list of federal threatened, endangered, proposed threatened and candidate species identified by these agencies as having the potential to occur in Nueces counties [25, 26, 27, 28]. For the purposes of this BA, federally-listed species mentioned by these 3 agencies will be discussed. State-listed species are not included in this report.

**Table 4. List of Federal Threatened, Endangered, and Candidate Species for Nueces County, Texas**[25262728]

| Common Name | Scientific Name | Species Group | USFWS List Status | NOAA List Status | TPWD List Status |
|---|---|---|---|---|---|
| Green sea turtle | *Chelonia mydas* | reptiles | T | T | LT |
| Hawksbill sea turtle | *Eretmochelys imbricata* | reptiles | E | E | LE |
| Kemp's ridley sea turtle | *Lepidochelys kempii* | reptiles | E | E | LE |
| Leatherback sea turtle | *Dermochelys coriacea* | reptiles | E | E | LE |
| Loggerhead sea turtle | *Caretta caretta* | reptiles | T | T | LT |
| Smalltooth sawfish | *Pristis pectinata* | fishes | - | E | LE |
| Gulf Coast jaguarundi | *Herpailurus yagouaroundi cacomitli* | mammals | E | - | - |
| Ocelot | *Leopardus pardalis* | mammals | E | - | LE |
| Red wolf | *Canis rufus* | mammals | - | - | LE |
| West Indian manatee | *Trichechus manatus* | mammals | E | E | LE |
| Blue whale | *Balaenoptera musculus* | mammals | - | E | - |
| Finback whale | *Balaenoptera physalus* | mammals | - | E | - |
| Humpback whale | *Megaptera novaeangliae* | mammals | - | E | - |
| Sei whale | *Balaenoptera borealis* | mammals | - | E | - |
| Sperm whale | *Physeter macrocephalus* | mammals | - | E | - |

| Common Name | Scientific Name | Species Group | USFWS List Status | NOAA List Status | TPWD List Status |
|---|---|---|---|---|---|
| Eskimo curlew | *Numenius borealis* | birds | - | - | LE |
| Northern aplomado falcon | *Falco femoralis septentrionalis* | birds | E | - | LE |
| Piping plover | *Charadrius melodus* | birds | T | - | LT |
| Red knot | *Calidris canutus rufa* | birds | PT | - | - |
| Yellow-billed cuckoo | *Coccyzus americanus* | birds | PT | - | - |
| Whooping crane | *Grus americana* | birds | E | - | LE |
| Slender rush-pea | *Hoffmannseggia tenella* | plants | E | - | LE |
| South Texas ambrosia | *Ambrosia cheiranthifolia* | plants | E | - | LE |
| Golden orb | *Quadrula aurea* | mussels | - | - | C |
| Sprague's pipit | *Anthus spragueii* | birds | C | - | C |

Note: USFWS and NOAA List Status symbols: E - Endangered, T - Threatened, PT – Proposed Threatened, C – Candidate
TPWD List Status Symbols: LE - Listed Endangered, LT - Listed Threatened, C - Candidate

### 6.2.2 PROPOSED, THREATENED, OR ENDANGERED SPECIES DESCRIPTIONS

According to the USFWS, there is no designated critical habitat for any of the federally-listed threatened and endangered species within 15 miles of the Project Area[29].

A brief description of these species and their habitat requirements are included below.

**Green Sea Turtle**

The green sea turtle can grow to 4 feet in length and reported weights vary from 350-450 pounds. The carapace is smooth and keelless, and the color varies with shades of black, gray, green, brown, and yellow. Adults are herbivorous. Hatchlings are omnivorous[30,31].

Green sea turtles occupy 3 ecosystems according to their life stage: high-energy oceanic beaches, convergence zones in the pelagic habitat, and benthic feeding grounds in relatively shallow, protected waters. Females briefly occupy high-energy oceanic beaches during nesting and hatching activities. Hatchlings move out to the convergence zone until their carapace reaches approximately 7.8-9.8 inches in length. Juveniles and

adults primarily occupy benthic feeding grounds in shallow, protected waters. Feeding grounds include pastures of seagrasses and/or algae. They are also found over coral reefs, worm reefs, and rocky bottoms[31].

The nesting season in the southeastern US is June through September. Nesting is nocturnal and occurs in 2, 3, or 4-year intervals. Females may lay up to 9 clutches per season at 13-day intervals. Hatchlings typically emerge at night. Nesting occurs on high energy oceanic beaches with a sloping platform and minimal disturbance. Green sea turtles return to the same nesting site and are known to travel long distances between foraging areas and nesting beaches. Green sea turtles have a worldwide distribution in tropical and subtropical waters[3031].

**Hawksbill Sea Turtle**

The hawksbill sea turtle is a small to medium-sized marine turtle with a reddish-brown carapace. The head is relatively small with a distinctive hawk-like beak. The adult hawksbill is commonly 2.5 feet in length and weighs between 95 to 165 pounds[32,33].

Hawksbill hatchlings live in a pelagic environment, specifically in the weedlines that accumulate at convergence zones. Juveniles will return to a coastal environment when their carapace reaches approximately 7.8-9.8 inches in length. Juveniles, subadults, and adults will spend most of their time in their primary foraging habitat, coral reefs. Hawksbills primarily feed on a variety of invertebrates including sponges, molluscs, and crustaceans. Hawkbills are typically associated with rocky areas and coral reefs in water less than 65 feet[3233].

Hawksbill turtle nesting occurs between April and November yielding 140-200 eggs per clutch. Nesting is nocturnal and occurs 4-5 times per season every 2-3 years. During the nesting season, mating occurs approximately every 14 days. Nesting habitat includes low and high energy beaches in tropical oceans with close proximity to coral reefs. Nesting habitat is often shared with green sea turtles. Hawksbill sea turtles have a tolerance for a variety of nesting substrates and often build their nests under vegetation. Southeast Mexico and Cuba are now considered the most important productive sites for hawksbill nesting in the Caribbean[3233].

The hawksbill is found in tropical and subtropical waters of the Atlantic, Pacific, and Indian Oceans. The hawksbill sea turtle is an occasional visitor to the Texas coast[3233].

**Kemp's Ridley Sea Turtle**

The Kemp's ridley sea turtle is considered the smallest sea turtle with an olive-gray carapace, a triangular shaped head, and a hooked beak. Adults can grow to 2 feet in length and weigh between 70-108 pounds. This turtle is a shallow water benthic feeder with a diet consisting primarily of crustaceans (i.e., shrimp and swimming crabs), jellyfish, snails, and sea stars[34,35].

Kemp's ridleys occupy 3 ecosystems according to life stage: terrestrial beaches, nearshore marine environment, and the pelagic habitat of the open sea. Terrestrial beaches are occupied briefly during nesting and hatching activities. Hatchlings move out to the open sea for an average of 2 years. Juveniles and adults primarily occupy the nearshore marine environment[3435].

Most nesting occurs on the eastern coast of Mexico, however a small number consistently nest at Padre Island National Seashore in Texas and various other locations along the Gulf and lower Atlantic coasts. Nesting occurs from April to July during daylight hours. Large numbers of females emerge for a synchronized nesting event referred to as "arribada". Arribadas are thought to be caused by female pheromone release, strong offshore winds, lunar cycles, and changes in barometric pressure. On average, females nest 2.5 times per season at intervals of 10-28 days. Nesting beaches tend to be adjacent to extensive swamps or large bodies of open water[3435].

The Kemp's ridley turtles range includes the Gulf of Mexico and the Atlantic coast of North America as far north as Nova Scotia and Newfoundland[3435].

**Leatherback Sea Turtle**

The leatherback sea turtle is the largest sea turtle. The adult leatherback can get up to 8 feet in length and up to 2,000 pounds. The turtle lacks scales and is covered by firm, rubbery skin several inches thick. Coloration is predominantly black with varying degrees of pale spotting; including a notable pink spot on the dorsal surface of the head

in adults. Diet is primarily jellyfish and tunicates, but it is also known to feed on sea urchins, squid, crustaceans, fish, blue-green algae, and floating seaweed[36,37].

In the US, nesting occurs from March to July. Females use sandy beaches lined with vegetation and sloped sufficiently, minimizing the distance to dry sand. Nesting beaches have deep, unobstructed oceanic access on continental shorelines. Females nest, on average 6 times per season at 10 day intervals. Most leatherbacks return to their nesting beaches at 2 to 3-year intervals[36].

Leatherbacks are highly migratory and the most pelagic of all sea turtles. Distribution is worldwide in tropical and temperate waters of the Atlantic, Pacific, and Indian Oceans. The leatherback is also found in small numbers as far north as British Columbia, Newfoundland, and the British Isles and as far south as Australia and Argentina. The leatherback has a small presence in the US with most nesting occurring on the Florida east coast, Sandy Point, US Virgin Islands, and Puerto Rico[3637].

**Loggerhead Sea Turtle**

The loggerhead sea turtle is a reddish-brown marine turtle characterized by a large head with blunt jaws. Adults can be up to 500 pounds and 4 feet in length. Adult loggerheads feed on jellyfish, floating egg clusters, flying fishes, mollusks, crustaceans, and other marine animals[38,39].

Loggerheads occupy 3 ecosystems according to life stage: terrestrial beaches, nearshore marine environment, and the pelagic habitat of the open sea. The terrestrial zone is occupied briefly during nesting and hatching activities. Hatchlings move out to the open zone until their carapace reaches approximately 15-24 inches in length. Juveniles and adults primarily occupy nearshore marine environments[3839].

The nesting season in the US is April through September. Nesting occurs every 2-3 years and is mostly nocturnal. Females can nest up to 5 times per season, yielding as many as 190 eggs per clutch, at intervals of approximately 14 days. Hatchling emergence is mostly nocturnal. Loggerheads nest on oceanic beaches between the high tide line and dune fronts and occasionally on estuarine shorelines with suitable sand. Females use narrow, steeply sloped, coarse-grained beaches[3839].

Distribution of the loggerhead includes the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans. Primary nesting sites in the US occur in south Florida and along the Gulf and Atlantic coastlines from Texas to Virginia. Loggerheads are considered an occasional visitor to Texas[3839].

**Smalltooth Sawfish**

Smalltooth sawfish are large elasmobranchs. They have a body similar to shark with ventral gill slits like a ray. Most notable is the long, flat snouts with pairs of teeth along the edges. The toothed snout is used to locate, stun, and kill fish and crustaceans. Smalltooth sawfish can grow up to 25 feet in length[40]. These sawfish are ovoviviparous, usually with litters of 15-20 pups[41].

Habitat used by smalltooth sawfish includes shallow coastal seas and estuaries with muddy and sandy bottoms. They are typically found close to shore, in sheltered bays and on shallow banks[4041].

The US population of smalltooth sawfish is found in the Gulf of Mexico and Atlantic Ocean. Historically, these sawfish could be found throughout the Gulf of Mexico. Today, their range has shrunk to peninsular Florida[41].

**Gulf Coast Jaguarundi**

Jaguarundis are diurnal small cats, weighing between 8-20 pounds. They have a slender build, long neck, short legs, a long tail, and a small, flattened head. Their fur may be either red or gray colored[42].

Gulf Coast jaguarundis are solitary, except during the mating season from November to December. They may have up to 2 litters per year, each with 1-4 young. Jaguarundis are predators with a diverse diet of birds, small mammals, and reptiles[42].

Gulf Coast jaguarundis inhabit dense, thorny brushlands/woodlands and adjacent bunchgrass pastures; they have been observed spending half their time in tall, dense grass habitats. Typical thorn-scrub habitat consists of the following species: *Condalia hookeri* (brasil), *Schaefferia cuneifolia* (desert yaupon), *Lycium berlandieri* (wolfberry), *Ziziphus obtusifolia* (lotebush), *Castela erecta* (amargosa), *Aloysia gratissima* (white-brush),

*Acacia greggii* (catclaw), *Acacia rigidula* (blackbrush), *Lantana achyranthifolia (*lantana), *Guajacum angustifolium* (guayacan), *Leucophyllum frutescens* (cenizo), *Forestiera angustifolia* (elbowbush), and *Diospyros texana* (Texas persimmon). Trees that may be interspersed within the thornscrub include mesquite, *Quercus virginiana* (live oak), *Ebenopsis ebano* (ebony), and *Celtis laevigata* (hackberry). River and creek riparian habitat may also be used[42].

Historically, the Gulf Coast jaguarundi was found from the Lower Rio Grande Valley in southern Texas to Veracruz, Mexico.

**Ocelot**

Ocelots are a medium-sized cat comparable in size to the bobcat. These cats weigh between 15–35 pounds and are up to 41 inches long. The short fur of the ocelot varies from pale gray to cinnamon. The undersides of the cat are white. Blotched spotting on the fur is bordered with black or solid black. Black stripes run from the eyes to the back of the head and across the cheeks. The tail is ringed or marked with dark bars[43].

Ocelots use dense, thorny thickets and rocky areas. Individuals have varying home ranges, estimated between 500-4,500 acres in size. Ocelots are carnivores that feed on small mammals, birds, and some reptiles. Females create their dens in caves, hollow trees, or dense brush and will give birth every other year to 1-2 kittens. Kittens will stay with the mother for up to 2 years. Ocelots hunt at night and spend the day with their young or resting[43].

Historically ocelots were found throughout south Texas, the southern Edwards Plateau, and the coastal plains. Currently, their distribution in the US is limited to the extreme southern tip of Texas and Arizona. The range of the ocelot is greatly reduced due to continued habitat loss. The estimated population of ocelots in Texas is approximately 50 individuals[44].

**Red Wolf**

The red wolf is one of the world's most endangered canids. Their fur is a reddish color and they are smaller in size than the gray wolf. The average adult red wolf grows up to 5 feet in length and weighs 45-80 pounds[45].

Red wolves feed on rabbits, deer, raccoon, and rodents (rats and mice). They live in packs of 5-8, which typically consist of 1 breeding pair and their offspring. Breeding season is once per year, January through March; up to 9 pups are born 63 days later in April or May. Pups remain with their parents until they find a mate of their own, usually at about 2 years of age. Red wolves are generally monogamous, and will remain with the same mate for many years[46,47].

Red wolves are thought to use warm, moist, and densely vegetated habitat. They also can be found in pine forests, bottomland hardwood forests, coastal prairies, and marshes. Little information is available about the red wolf's habitat characteristics[46].

Originally, the red wolves were found throughout the southeastern US. The USFWS declared the red wolf extinct in the wild in 1980. In 1987, captive individuals were released to the wild in North Carolina. This reintroduced population is estimated at 100-120 individuals[47].

**West Indian Manatee**

The West Indian manatee is a large, fusiform-shaped, marine mammal. The adult manatee may grow up to 10 feet in length and up to 2,200 pounds. The manatee has dark gray, rubber-like skin. Manatees have forelimbs shaped like a paddle, no hind limbs, and a horizontal, flat, spatulate tail. Manatees breathe surface air with nostrils located on the upper snout. Manatees also have very small eyes and minute ears. Manatees are herbivores and opportunistic. Their diet consists of a wide variety of submerged, floating, and emergent vegetation. Seagrasses appear to be a dominant food source in coastal areas[48].

Manatees are found in depths ranging from 3-7 feet, but can also be found in shallow areas down to 1.5 feet. Feeding grounds are shallow grassbeds adjacent to deep channels in both coastal and riverine habitats. Manatees will seek freshwater drinking sources, but are not dependent upon fresh drinking water[48].

West Indian manatees have both opportunistic and predictable migration patterns, which are dependent on water temperature. They are able to travel long distances, typically in a north-south direction, according to seasonal temperature changes. In autumn and winter when water temperatures drop below 68 °F, manatees congregate in

natural and artificial warm-water refuges. Most manatees return to the same warm water refuges each year. During mild winters, manatees will leave the warm-water refuge to feed on nearby grassbeds. As the water temperature rises in spring and summer, some manatees will remain near their wintering grounds and others will migrate up the coast or into river and canal systems[48].

Mating and calving are not seasonally or habitat dependent. One or more males are attracted to females in heat to form a mating herd for up to 4 weeks. Length of gestation is thought to be between 11-14 months. Typical litter size is one and calves remain with the mother for 1-2 years after birth. Manatees reach sexual maturity at approximately age 5 years and can live in excess of 50 years[49].

Distribution is limited to warm coastal waters in the Gulf of Mexico including the US and Mexico, Central America, the north and northeastern coast of South America, and islands throughout the Caribbean Sea[49]. Manatee protection is not as well-supported in areas outside of the US, which results in smaller populations. The Florida coast supports the largest known population of West Indian manatees of any location within the species range[49].

**Blue Whale**

Blue whales are considered baleen whales and are the largest of all whales. These whales may weigh up to 330,000 pounds and reach lengths up to 108 feet. Females tend to be larger than the males. Blue whales have a long, slender body mottled with a gray pattern that appears light blue when seen through the water. Key identifying characteristics of the blue whale include a broad, flat rostrum and a proportionately smaller dorsal fin than other baleen whales[50,51].

Blue whales use the keratinized transverse plates, their baleens, to filter water for food (i.e., zooplankton). Euphausiids (krill) comprise the largest component of their diet. Fish and other select crustaceans (copepods) are also consumed in small amounts[51].

Mating and parturition occur in temperate waters during winter months. Typically, 1 calf is born after a 10-12 month gestation period, and it is nursed for 6-7 months. It is reasoned that sexual maturity occurs between 5-15 years of age[52,53].

Little information is available concerning the life history of blue whales. Blue whales are thought to inhabit all oceans but occurrence is likely influenced by the presence of food. Blue whales may occur in coastal waters but are believed to more frequently use off-shore waters. Blue whales are migratory, moving to colder waters during the spring and summer and to more temperate waters in the fall and winter[5152].

Few records exist that demonstrate occurrence in the Gulf of Mexico. Sightings in the Gulf of Mexico consist of stranded whales with the most recent observation in 1940 along the coast of Texas[52].

**Finback Whale**

Finback whales are the second-largest species of whale, weighing between 80,000-160,000 pounds and have lengths between 75-85 feet. These baleen whales have sleek, streamlined bodies, a V-shaped head, and a tall, curved dorsal fin. They are large, fast swimmers. Finback whales are dark gray with a white underbelly. The lower jaw and the baleen plates are bi-colored with gray or black on the left side and cream white on the right side. The tongue is oppositely colored. Many individuals have several light-gray, V-shaped "chevrons" behind their head. Individuals can be identified by the size and shape of their dorsal fin and by the pattern of chevrons and streaks of lighter coloration on their back[53,54].

During the summer, finback whales will consume large amounts of prey at higher latitudes, and then fast or selectively feed when at lower latitudes in the winter. Their diet primarily consists of krill, squid, and small, schooling fish such as *Mallotus villosus* (capelin), *Clupea harengus* (herring), and *Ammodytes* spp. (sand lance). Finback whales' distribution along the eastern US is strongly correlated with the availability of sand lance. Fish are more often consumed during pre-spawning, spawning, and post-spawning adult stages on the continental shelf and in coastal waters[5456].

Although social and mating systems of finback whales are not well known, finback whales are known to form social groups of 2-7 whales. Reproduction maturity is believed to occur between 6-12 years and females give birth at 3-year intervals. Mating and calving occur from November to March. Females give birth to a single calf, after 11 months of gestation[54].

Finback whales are found in deep, offshore waters of all major oceans, most often in the temperate to polar latitudes. They are rarely found within the tropics. There are distinct populations in the North Atlantic Ocean, North Pacific Ocean, and Southern Hemisphere and these populations are thought to rarely, if ever, interact. These populations differ in the amount of travel that they exhibit, which may be directly related to local food abundance. Fin whales have a complex, not completely understood migratory pattern. The consensus is that these whales move into and out of high-latitude feeding areas. Movement may be affected by prey availability, climate, reproductive condition, or other factors[55].

Finback whales are not abundant in the Gulf of Mexico. One young individual was stranded on the beach in Gilchrist, Chambers County, Texas on 21 February 1951. This is the only recorded observation of finback whales in Texas[55].

**Humpback Whale**

Humpback whales are characterized by long pectoral fins, which can reach up to 15 feet in length, a thick body, and fewer throat grooves as compared to other baleen whales. Humpback whales may weigh between 50,000-80,000 pounds and have a length up to 60 feet. Adult females are typically larger than males. Their body and baleen plates are grayish-black; however white pigmentation may be present on their pectoral fins, belly, and tail flukes. The pigmentation on the undersides of their tail flukes can be used to identify individual whales. Humpback whales also have numerous knobby structures, called dermal tubercles, on the dorsal surface of the snout, chin, and mandible[56,57,58].

Humpback whales' diet consists of krill, herring, sand lance, and capelin. It also includes *Scomber sombrus* (mackerel), *Pollachius virens* (small pollock), and *Melanogrammus aeglefinus* (haddock). Humpback whales have unique means of foraging by using techniques such as "bubble netting" and synchronized feeding lunges. Bubble netting is when humpback whales expel columns of air bubbles to concentrate krill or fish for easier consumption. They may also opportunistically feed on prey around fishing boats[57].

Humpback whales congregate in groups of up to 200 individuals to mate, which usually occurs once every 2 years. Gestation lasts for about 11 months, and weaning occurs

between 6-10 months after birth. Calving grounds are commonly near offshore reef systems, islands, or continental shores[57].

Humpback whales inhabit all major oceans particularly over continental shelves. Humpback whales occur at higher latitudes during the summer and in temperate and tropical zones during winter. They may migrate long distances between winter and summer habitats or migrate throughout their summer range. Generally humpback whales stay near the surface of the ocean during migration. During the winter and reproductive periods, humpback whales tend to demonstrate site fidelity to mate and reproduce. Shallow waters are most often used while feeding and calving[5758].

Humpback whales are known to frequently breach the surface water. They commonly slap their tail flukes on the surface and are known to spyhop, a behavior where an individual lifts its head out of the water in order to look around. These displays of behavior may be a form of communication[58].

Humpback whales from the Atlantic population may infrequently stray into the Gulf of Mexico during the breeding season or on their return migration northward. The only known occurrence along the Texas Coast is of a young, immature individual observed at the inshore side of Bolivar Jetty near Galveston, Texas in 1992[57].

**Sei Whale**

Sei whales are members of the baleen whale family and can reach lengths of 40-60 feet and weigh up to 100,000 pounds. Sei whales have long, slender bodies that is dark bluish-gray dorsally and pale-colored ventrally. They often have mottling or white spots on the body that may be the result of pits or wounds. Sei whales have very fine bristles on the baleen, short ventral grooves, and prominent, curved-backward dorsal fins. Sei whales have 30-65 ventral pleats. Sei whales differ from other whales by rarely raising their flukes above water and never breaching[59,60].

Sei whales's diet consists primarily of zooplankton and micronekton, which includes calanoid copepods and krill. They may dive for up to 20 minutes looking for food and use gulping and skimming as foraging strategies. Feeding typically occurs at dawn[6061].

Sei whales reach sexual maturity at 6-12 years of age. Gestation lasts approximately 11-13 months, and parturition typically occurs in November-December. Females typically breed every 2-3 years and will give birth to a single calf. Calves are weaned in the summer/fall months, approximately 6-9 months after birth[6061].

Sei whales are widely distributed across the globe; however they are not known to stay in any particular area year-round. Sei whales tend to migrate to higher latitudes during the summer for feeding and to temperature or subtropical waters during the summer, although the polar latitudes are not as high as other baleen whales. Sei whales are highly mobile and their occurrences in an area are unpredictable. These whales may travel singly or in groups of 2-50 individuals. The North Atlantic population is usually observed in deeper waters over the continental slope and tends to avoid semi-enclosed waters, such as the Gulf of Mexico[6061].

**Sperm Whale**

Sperm whales are classified as odontocetes or toothed whales. Males are significantly larger than females and may weigh up to 125,000 pounds and reach lengths up to 52 feet. Sperm whales have a disproportionately large head, which can make up one third of the total body length. They are also distinguished by a blowhole on the left side of the head and a rod-shaped lower jaw with many teeth. No functional teeth are present on the upper jaw. The bodies of sperm whales are dark gray on their back and white on the underside. Their dorsal fin is short and thick. It is not pointed or curved and there are knuckles along the spine. They have the largest brain of any animal on Earth[61,62].

Sperm whales will dive deeply to forage for cephalopods (squids and octopus), bottom-dwelling fish, *Cyclopterus lumpus* (lumpsuckers), rays, sharks, and many other bony fishes[6162].

Breeding season occurs from March to June in the North Atlantic. Females sexually mature between 7-13 years of age and males do not mature until they reach their twenties. Females enter estrous synchronously which maximizes the reproductive success for traveling males. Gestation is approximately 15 months, resulting in the birth of a single calf. Birthing intervals are approximately every 4-6 years[6263].

Sperm whales have strong family bonds, particularly between the females. Typically, 12 females will form a pod while males are more likely to separate themselves from the family unit. Young males will leave the family unit between 4-21 years of age[63].

Sperm whales are cosmopolitan in all deep ice-free waters and are thought to inhabit the entire Atlantic basin, including the Gulf of Mexico. Occurrence in the Gulf of Mexico is strongly correlated with mesoscale physical features, such as Loop Current eddies and Mississippi Canyon. Female sperm whales and their young are more often found in lower latitudes while males can often be found at polar latitudes during parts of the year. Distribution is dependent on their food source and suitable conditions for breeding, and varies with the sex and age composition of the group[62]. Research suggests these whales move along the shelf break in the Gulf of Mexico and may be present year-round[63].

**Eskimo Curlew**

The Eskimo curlew is a migratory bird that is approximately 12-14 inches long with a slightly down-curved bill. These birds have brown feathers with streaking on the sides of the face and neck. The undersides of their wings have cinnamon-colored feathers[64].

Its breeding habitat consists of treeless dwarf shrub-graminoid tundra and grassy meadow habitat. Non-breeding birds utilize a variety of habitats, including grasslands, pastures, plowed fields, intertidal flats, and sand dunes[64].

Eskimo curlews migrate from nesting grounds in the Alaskan and Canadian Arctic across the North American prairies to South America. This species is known to migrate north through the mid-western US, including Texas during the spring. Their diet consists of *Empetrium nigrum* (crowberry), *Vaccinium* sp. (blueberries), Orthopterans (grasshoppers), Annelids (earthworms), and other insects[64].

**Northern Aplomado Falcon**

The northern aplomado falcon has a steel grey back, black "sash" on its belly, and striking black markings on the top of its head, around its eyes, and extending down its face. They have a long banded black and white tail, are smaller than *Falco peregrines* (peregrine falcon) and larger than *Falco sparverius* (American kestrel). They average 15-

18 inches in length and their wingspans average 36 inches. Northern aplomado falcons are most often seen in pairs. Sexes are similar in appearance. Its diet is mostly birds and insects, but also small mammals and reptiles. The birds are capable of long pursuits of prey, such as *Columba livia* (pigeons) and *Zenaida* spp. (doves). Mated pairs remain together year-round and hunt cooperatively[65,66].

Aplomado falcons nest in bromeliads or abandoned stick platforms of corvids and other raptors. Eggs are laid between March and June with both parents incubating the nest. The average clutch size is 3 eggs. Radio-tagged fledglings in south Texas suggest that most pairs use the vicinity of previous season's nesting platform as hunting, roosting, and display area throughout the year. Mated pairs remain together year-round and hunt cooperatively. The birds tend to perch on inner branches of trees and chase terrestrial prey on foot. The bird displays great speed in long aerial pursuits of doves and pigeons and hovers briefly over trapped prey[6667].

Open grassland terrain with scattered trees, relatively low ground cover, an abundance of small to medium-sized birds, and a supply or suitable nesting platforms, particularly yucca and mesquite, comprise the habitat of northern aplomado falcons. They use woody vegetation, fence posts, and telephone poles as perches. In Texas, northern aplomado falcons are found in the South Texas and Trans-Pecos [6667].

**Piping Plover**

Piping plovers are small, migratory shorebirds approximately 5-7 inches in length with a wingspan of approximately 15 inches. These birds have a short, black and orange bill that varies in color depending on the time of year, orange legs, pale gray back and dorsal wings, white undersurface, and black breastband[67].

Three main breeding populations of piping plovers have been distinguished by geographic region within the US: Great Lakes, Northern Great Plains, and Atlantic Coast. These 3 populations winter on beaches and barrier islands in the South Atlantic, Gulf of Mexico, and Caribbean coasts, including the Bahamas and West Indies. Piping plovers from these 3 regions primarily winter along coastal areas of the US from North Carolina to Texas[68]. Piping plovers generally begin arriving on the Texas coast in mid-July and begin leaving for the breeding grounds in late February. It is believed that the

migration to and from wintering grounds is a non-stop effort. Few birds remain on the Texas coast year round, but those that do are believed to be non-breeders[69].

Wintering habitat includes foraging and roosting habitat types. Foraging habitat includes wet sand in the wash zone, bare to sparsely vegetated, intertidal ocean beaches, wrack lines, shorelines of streams, ephemeral ponds, lagoons, salt marshes, emergent seagrass beds, wash-over passes, mudflats, sandflats, or algal flats. Most foraging habitats are dynamic systems that fluctuate with the tide and wind. These shorebirds forage on exposed beach substrates pecking for prey at or just below the surface. They feed on invertebrates such as marine worms, fly larvae, beetles, crustaceans, and mollusks as well as their eggs and larvae[68].

Piping plovers demonstrate high winter site fidelity[68]. Roosting habitat is adjacent to foraging habitat and includes sandy beaches, often with cover such as driftwood, seaweed clumps, small dunes, and debris that is used for shelter from wind and extreme temperatures[70]. Piping plovers are known to occupy similar habitats as other shorebirds such as *Tringa semipalmata* (willets), *Arenaria interpres* (ruddy turnstones), *Limnodromus scolopaceus* (dowitchers), *Calidris* spp. (sandpipers), *Haematopus palliatus* (American oystercatchers), and other plovers[70]. Critical habitat for wintering piping plovers has been designated in several areas along the Texas coast[71].

**Red Knot**

Red knots are medium-sized migratory shorebirds with a wingspan of 20 inches, short thick legs, and a tapered straight bill. Its plumage is gray during the non-breeding season, but its head and breast turn a reddish color during the breeding season[72,73].

During the breeding season, males and females simultaneously arrive at breeding areas. Males scrape multiple cup-shaped depressions for nesting. The female then chooses the most suitable nest site. Nest sites are typically found on dry, slightly elevated tundra locations, on wind-swept ridges or slopes with little vegetation, and near wetlands. The clutch size is usually 4 eggs. The breeding season occurs from May to July[73].

Red knots travel long-distances (i.e., several thousands of miles) bi-annually between their breeding areas in the central Canadian Arctic and wintering areas in southern South America. Red knots use a limited number of stopover sites during migration.

These stopover locations are essential to the survival of the species as they provide access to necessary food sources for sustained flight. High proportions of the entire population are known to congregate at a single migration stopover site. Stopover habitat includes intertidal, marine habitats that are near coastal inlets, estuaries, and bays. Red knots travel in large single-species flocks (>50 individuals) typically taking flight a few hours before twilight on sunny days. The diet of migrating red knots includes *Limulus polyphemus* (horseshoe crab) eggs, bivalves, polychaete worms, amphipods, and crustaceans[73].

Red knots may be found in Texas anytime of the year even during summer months. The greatest numbers of red knots are found in Texas during winter (January) and during spring passage (April to May). Between 1985 and 1996, approximately 3,000 individuals were recorded on the Bolivar flats. This population has declined significantly to about 300 individuals. Red knots inhabit sandy beaches, tidal mudflats, and salt marshes in Texas[73].

**Yellow-billed Cuckoo**

The yellow-billed cuckoo is an insectivorous, migratory, medium-sized songbird characterized by a zygodactyl foot (2 toes point forward and 2 toes point backwards), a blue-black bill with yellow on the base of the mandible, and a narrow yellow eye ring. It is 12 inches in length and weighs approximately 2 ounces[74].

East of the continental divide, yellow-billed cuckoos breed from the north-central US and south-central Canada to the southeastern US, Greater and Lesser Antilles, and northern Mexico. Yellow-billed cuckoos nest between June and August. Clutch size is typically 2-3 eggs per season and the young fledge approximately 17 days after hatching. Yellow-billed cuckoos usually raise their own young, but they are also known to be facultative brood parasites where they lay eggs in other cuckoos or bird species nests[74].

Nesting habitat includes large patches of riparian habitat that is comprised of *Populus* spp. (cottonwoods), *Salix* spp. (willows), and a dense understory. The eastern population is believed to use more habitat types, which include other broad-leaved

woodlands. The western population is restricted to narrow riparian zones. Yellow-billed cuckoos migrate to South America for the winter[74].

This species is thought to be declining in west Texas; however it is considered to be widespread and uncommon to common in central and east Texas[74].

**Whooping Crane**

The whooping crane is a large bird that stands approximately 5 feet tall with a wingspan of approximately 7 feet and weighs between 14-16 pounds. Adult birds have long necks and legs, a white body, a red crown, black primary feathers, and a long, pointed beak. Juveniles are reddish-cinnamon in color. Whooping cranes are omnivorous with a diet of crustaceans, mollusks, amphibians, fish, acorns, and berries[75,76].

Whooping cranes demonstrate high site fidelity during the breeding season using the same areas each year. Nests are typically constructed within tall rushes or sedges of marshes, sloughs, or along lake margins. Females usually lay 2 eggs per clutch and 1 clutch per year in April to May. Parents share rearing duties although the female takes the primary role in raising the young[7677].

The whooping cranes main population breeds in Wood Buffalo National Park in Alberta, Canada (April to October) and winters on the Texas coast (November to March). Migration occurs twice per year during daylight hours. The main population typically remains within a 200-mile migration pathway from Canada to Texas, and they regularly stop to feed and rest along the way. Whooping cranes use a variety of habitats during migration, including inland marshes, lakes, wetlands, ponds, wet meadows, rivers, and agricultural fields[7677].

The wintering population primarily occupies habitat in or near the Aransas National Wildlife Refuge near Rockport, Texas. However, the birds have been expanding their winter range possibly due to population increases and climate change[77]. Winter habitat includes brackish bays, marshes, and salt flats[7677].

**Slender Rush-pea**

The slender rush-pea is a perennial legume, 3-6 inches tall with spreading stems. It has 3-5 salmon to orange-colored flowers about 0.2 inches long on each flowering stalk. Flowers bloom from March to June. Legumes are straight, 0.4-0.6 inches long, and contain 2-4 seeds. Leaves are bipinnately compound; have tiny oblong leaflets 0.08-0.16 inches long and 0.04-0.08 inches wide; and are hairy on the underside[78,79].

Slender rush-pea is found in bare patches or among low native grasses in disturbed clayey soils of blackland prairies and creek banks of the Gulf Coastal Prairie[79]. It is also found along right-of-ways[80]. Commonly associated shrub and tree species include blackbrush, huisache, amargosa, *Celtis pallida* (spiny hackberry), brasil, *Parkinsonia aculeate* (retama), mesquite, desert yaupon, and *Yucca treculeana* (spanish dagger). Associated cacti include *Opuntia leptocaulis* (tasajillo), *Opuntia engelmannii* (prickly pear), and *Ferocactus setispinus* (twisted rib). Native grasses associated with the slender rush-pea include *Bouteloua rigidiseta* (Texas grama), buffalo grass, and *Stipa leucotricha* (Texas speargrass). It sometimes occurs in association with another endangered species, the South Texas ambrosia[7980].

The slender rush-pea is known only from Texas, specifically from 4 populations in Nueces and Kleberg counties. The slender rush-pea is negatively affected by encroachment of competing plant species, such as *Bothriochloa ischaemum var. songarica* (King Ranch bluestem), *Dichanthium annulatum* (Kleberg bluestem), and bermudagrass[80].

**South Texas Ambrosia**

The South Texas ambrosia is a perennial, herbaceous plant in the Asteraceae family. It stands 4-12 inches in height. The plant has silvery to grayish-green leaves about 3 inches long and 1.5 inches wide. Flowers bloom in late summer and flower heads are inconspicuous terminal racemes. South Texas ambrosia spreads via rhizomes that allow a single individual to be represented by hundreds of stems forming close-spaced colonies[81,82].

South Texas ambrosia occurs in open grasslands or savannahs on soils varying from clay loams to sandy loams. This plant can be associated with the federally-listed species, slender rush-pea. Associated native grasses include Texas grama, buffalograss, *Nassella*

*leucotricha* (Texas wintergrass), and *Pleuraphis mutica* (tobosa). Associated native woody species can include mesquite, huisache, *Acacia schaffneri* (huisachillo), brasil, spiny hackberry, and lotebush[81].

Mowing, with consideration to cut height and frequency, is believed to promote growth of South Texas ambrosia. Fire may also promote growth. Tall grasses and non-native vegetation negatively affects the growth of South Texas ambrosia. Currently, South Texas ambrosia is known from only 6 locations in Nueces and Kleberg counties[81].

### 6.2.3 CANDIDATE SPECIES DESCRIPTIONS

**Sprague's Pipit**

Sprague's pipits are small, migratory passerines with a slender shape and relatively narrow bill. The upper mandible is dark and contrasts with the pale lower mandible. Their underparts are buffy with broad black streaks. Legs are yellowish to pale brown[83].

Its habitat includes well drained, open grasslands with native midgrasses of intermediate thickness and with moderate litter depths. Grasslands tend to be undisturbed. Grazing, prescribed burning, or mowing can be tolerated after a 1-year recovery. In Texas, wintering habitat includes grass-forb prairies dominated by little bluestem and *Andropogon* spp. (bluestem) grasses that are about 8 inches in height. Sprague's pipit have also been observed using old rice fields that have been re-planted with bermudagrass on turf grass farms, golf courses, and recently burned pastures. Their diet primarily consists of arthropods and sometimes seeds [8384].

Cup-shaped nests are constructed of woven dried grasses on the ground. Average clutch size is 4.6 eggs and young are cared for by the female for approximately 25 days until fledging[84].

The only population of Sprague's pipit occurs within North America. Known breeding sites are located in Canada, Montana, North and South Dakota, and Minnesota. Wintering grounds are located in Arizona, New Mexico, Texas, Oklahoma, Arkansas, Louisiana, and Mexico. Migration occurs in April to May and September to November[8384].

### 6.2.4 TEXAS NATURAL DIVERSITY DATABASE RESULTS

A records review of the Texas Natural Diversity Database[85] was completed for the survey area by the TPWD on 3 March 2014. No Element of Occurrence (EO) records were noted within the Action Area. The nearest EO is for the West Indian manatee (EO ID 6570), which is located approximately 2.5 miles east of the Project Area.

## 7.0 FEDERALLY-LISTED SPECIES HABITAT EVALUATION

WGI completed a listed species habitat evaluation on 4 April 2014 to determine if habitat within the Project Area was likely to support any of the federally-listed species potentially occurring in Nueces County. The field surveys included a pedestrian survey of the proposed Project Area. The field surveys also included a windshield survey of all terrestrially accessible habitats visible from public areas within a 3-mile radius of the Action Area. The majority of the land within the 3-mile radius is privately-owned and is not visible or accessible from public areas. An aerial survey of the 3-mile radius was conducted to observe and assess the inaccessible areas for listed species habitat within the Action Area.

Data were collected to describe resident vegetation communities and assess the potential for occurrence of listed species. The dominant habitats observed are described below and demonstrated in Figure 5 (Appendix A). Photographs of the proposed Project Area and the Action Area are included as Appendix D. A summary of the field survey data is provided in Appendix E.

### 7.1 PLANT COMMUNITIES OBSERVED

The proposed Project Area is located within existing industrial facilities and an existing dock facility. The Project Area is mostly developed with small patches of maintained grassland and wetland. Industrial facilities and equipment comprise most of the Project Area. The substrate primarily consists of impervious material, such as roadbase, concrete, and pavement. The herbaceous vegetation is dominated by bermudagrass. The proposed laydown area is located immediately adjacent to the Corpus Christi Terminal. The substrate within the proposed laydown area has historically been by residential development and subsequent demolition. The vegetation currently includes bermudagrass and scattered trees.

The area to the north of the Project Area includes the Inner Harbor of the Corpus Christi Ship Channel (tidal), the Nueces Bay (tidal), and an industrial area. Industrial, commercial, and residential development is located east, west, and south of the project site. In addition, the Corpus Christi Bay (tidal) is located to the east; and agricultural fields are located further south.

The dominant habitats observed in the Action Area include: maintained grassland, drainage ditches, wetland, and estuarine open water. These habitats have historically been impacted by residential and industrial development.

**Maintained Grassland** – This habitat consisted of small areas of grass that appeared to be routinely disturbed or maintained. Dominant species observed included bermudagrass, *Trifolim campestre* (field clover), *Panicum coloratum* (Kleingrass), *Parthenium hysterophorus* (false ragweed), King Ranch bluestem, *Lepidium virginicum* (Virginia pepperweed), live oak, and mesquite.

**Drainage Ditches** – Two man-made drainage ditches were observed in the Action Area. One drainage ditch was vegetated with small amount of flowing water. This ditch eventually drains into the Inner Harbor, approximately 1 mile from the project's outfalls. The second drainage ditch was located on the Port of Corpus Christi property and was lined with concrete with a moderate flow of water. Water flowed into a reservoir. Observed vegetation along the banks included mesquite, Kleingrass, *Baccharis halimfolia* (eastern baccharis), *Albizia julibrissin* (mimosa), bermudagrass, and a palm tree (Arecaceae).

**Wetland** – Dominant vegetation included *Borrichia frutescens* (sea-ox-eye daisy), *Schoenoplectus americanus* (chairmaker's bulrush), Kleingrass, and *Rhus* sp. (sumac).

**Estuarine Open Water** – Open estuarine water was present between 2 docking facilities in the Action Area. The narrow waterway connected an existing reservoir to the Inner Harbor. Existing overhead pipe racks were noted and the shoreline was covered with riprap.

## 7.2 FEDERALLY-LISTED SPECIES HABITAT ANALYSIS

The proposed Project Area consists of existing industrial facilities and small patches of herbaceous habitat. Habitat types observed within the Action Area include maintained grassland, drainage ditches, wetland, and estuarine open water. The areas surrounding the project location have historically been impacted by industrial and residential activities.

Industrial development areas are typically comprised of mainly impervious cover with minimal vegetation on site. These areas are not likely to support any federally-listed species for Nueces County.

The maintained grassland habitat observed in the Action Area has historically been disturbed by industrial and residential development. The vegetation is routinely mowed and disturbed. Given the level of disturbance and the surrounding industrial environment, this habitat is not likely to support any federally-listed species for Nueces County.

The drainage ditches consist of both vegetated and concrete-lined drainages. The areas are highly disturbed and provide little value for wildlife. In addition, the area is surrounded by industrial development which further serves as a deterrent for wildlife use. Federally-listed species for Nueces County are not likely to utilize this habitat.

Wetland habitat has the potential to support red knots, migrating whooping cranes, and piping plovers. The wetland habitat observed in the Action Area was small in size and directly adjacent to an industrial road and an above-ground pipe rack. Given the high level of industrial disturbance near the wetland and the small size of the wetland, this habitat is not likely to support any federally-listed species for Nueces County.

The estuarine open water (Inner Harbor) is a small parcel located between 2 existing dock facilities. Overhead pipe racks were present above this waterway. This habitat is heavily influenced by surrounding industrial traffic. Given the small size of the waterway and the level of disturbance, federally-listed species for Nueces County are not likely to occur in this habitat.

## 8.0 AIR QUALITY ANALYSIS

DiSorbo completed detailed pollutant emission calculations for the proposed project in connection with its PSD review and GHG permit[86]. Table 1-1 (Appendix F) is the most current Project Emissions Summary that Magellan submitted to TCEQ.

DiSorbo performed dispersion modeling of the proposed emissions of air pollutants from the proposed project. This section provides the results and evaluation of the dispersion modeling.

## 8.1 AIR DISPERSION MODELING RESULTS

An AOI analysis was conducted as part of the required NSR review for the emissions of the criteria pollutants. A health effects evaluation was performed for emissions of non-criteria pollutants from the proposed new sources using TCEQ ESLs[87].

The predicted emissions were compared to the SILs for all criteria pollutants[88]. A SIL is a concentration, established by the EPA, below which the project emissions are considered to have no significant contribution to the total ambient air quality concentration. If the GLCmax predicted by the modeling of the project emissions is below the SIL, then the modeled source impacts are considered insignificant and no further analysis is required for the pollutant and averaging period. If the predicted project GLCmax is above the SIL, then further analysis is typically necessary to demonstrate that the project will not cause or contribute to the violation of an applicable standard. Air pollution standards are shown in Table 5[88].

### 8.1.1 CRITERIA POLLUTANT DISPERSION MODELING RESULTS AND EVALUATION

Table 5 shows the maximum predicted off-property GLCmax from the proposed project for each pollutant and averaging period.

**Table 5. Maximum Predicted Criteria Pollutant Concentrations**

| Pollutant | Averaging Period | Project GLCmax (µg/m3) | SIL (µg/m3) | Less Than SIL? |
|---|---|---|---|---|
| $NO_2$ | 1-hour | 21.16 | 7.5 | No |
| | Annual | 0.54 | 1 | Yes |
| CO | 1-hour | 163.64 | 2000 | Yes |
| | 8-hour | 69.39 | 500 | Yes |
| $PM_{10}$ | 24-hour | 1.00 | 5 | Yes |
| $PM_{2.5}$ | 24-hour | 0.90 | 1.2 | Yes |
| | Annual | 0.26 | 0.3 | Yes |
| $SO_2$ | 30-min[(1)] | 7.92 | 20.42 | Yes |
| | 1-hour | 6.08 | 7.8 | Yes |
| | 3-hour | 3.92 | 25 | Yes |
| | 24-hour | 3.15 | 5 | Yes |
| | Annual | 0.75 | 1 | Yes |

[(i)] The EPA AERMOD model calculates concentrations for a minimum time interval of 1-hour. According to TCEQ Air Quality Modeling Guidelines, the model-predicted 1-hour concentration is compared to the 30-minute standard.

Eleven of the predicted project GLCmax values are less than the SILs for the following: 30-minute $SO_2$, 1-hour $SO_2$, 3-Hour $SO_2$, 24-hour $SO_2$, annual $SO_2$, 1-Hour CO, 8-Hour CO, annual $NO_2$, 24-Hour $PM_{2.5}$, annual $PM_{2.5}$, and 24-hour $PM_{10}$. Accordingly, these predicted criteria pollutant emissions are considered insignificant based on EPA's SIL analysis method with screening levels set to protect sensitive populations. Therefore, GLCmax values less than the SILs are not expected to impact federally-listed species and will be excluded from further analysis.

Projected impacts for 1-hour $NO_2$ is greater than the designated SIL. For this pollutant and its averaging periods, full dispersion modeling analysis is required by the TCEQ to demonstrate that the project's emissions combined with existing emissions in the area do not result in an exceedance of the applicable NAAQS.

The dispersion model conducted by DiSorbo predicts concentrations at specific downwind receptor locations outside of the property boundary for each pollutant and averaging period. The coordinates of each receptor with modeled concentrations greater than the SIL for each pollutant were plotted to delineate the AOI. Note: The significant AOI does not infer that the maximum concentration predicted for each pollutant averaging period will reach each location for each emission. Accordingly, the AOI identifies locations where the SILs may be exceeded for one or more pollutants some of the time, but does not infer a frequency of occurrence.

The locations with impacts above the 1-hour NO2 SIL located the farthest distance from the source in all directions were plotted to create a mAOI boundary. The furthest distance in any direction from the project emissions sources to concentrations above the SIL was determined to be 0.9 mile. The Action Area was defined by combining the boundaries of the Project Area, wastewater and storm water outfalls, the proposed pipeline projects, and the mAOI boundary.

### 8.1.2 NON-CRITERIA POLLUTANTS MODELING RESULTS AND EVALUATION

In addition to the air quality analysis performed for criteria pollutants, DiSorbo performed dispersion modeling and evaluated the potential for impacts from the other (non-criteria) pollutants that will be emitted by the proposed project. This effects evaluation was performed in accordance with TCEQ air permitting guidelines for the assessing of non-criteria pollutants. The predicted concentrations were compared with TCEQ ESLs[87].

The objective of an effects evaluation is to establish off-property GLCs of constituents resulting from the proposed emissions and to evaluate these GLCs for the potential to cause adverse health or welfare effects. Air dispersion modeling is used to predict the GLCmax of a constituent that could occur during a 1-hour (short-term) period, and the annual (long-term) average GLCmax. The maximum possible level of emissions (worst-case scenario emissions) is modeled in order to evaluate maximum potential exposure levels.

ESLs are not standards or emission limits, but rather are guideline concentrations that TCEQ has developed to evaluate off-property ambient air concentrations of constituents. ESLs are very conservatively based on a constituent's potential to cause adverse health effects, odor nuisances, vegetation effects, or materials damage. Health-based ESLs are set at levels lower than levels reported to produce adverse health effects, and are set to protect the general public, including sensitive subgroups such as children, the elderly, or people with existing respiratory conditions.

In developing ESLs, TCEQ factors in a margin of safety to account for potential cumulative exposure (exposure to multiple airborne constituents) and aggregate exposure (exposure to a single airborne constituent multiple times or from multiple sources). If an air concentration of a constituent is below the ESL for a given constituent, adverse effects are not expected. If the concentration of a constituent is above the ESL, it is not indicative that an adverse effect will occur, but rather that further evaluation is warranted, as described in *Modeling and Effects Review Applicability: How to Determine the Scope of Modeling and Effects Review for Air Permits*[88].

A comparison of the modeled concentrations of the project's routine non-criteria pollutant emissions to TCEQ established ESLs is shown in Table 6. Based on these results, the maximum predicted concentrations of all modeled pollutants from project emissions are below the respective ESL for 3 out of the 9 modeled pollutants. Two out of the 9 modeled pollutants are well below the first screening level of 10% of the ESL. TCEQ requires additional evaluation for projects whose non-criteria pollutant impacts exceed 10% of the ESL. The final results of that evaluation will demonstrate that predicted concentrations are not expected to cause or contribute to adverse human health or welfare effects in order for the TCEQ air permit authorization to be issued. Accordingly, no adverse welfare impacts are expected to occur within the Action Area as the result of the additional emissions of these pollutants.

**Table 6. Non-Criteria Pollutant Modeling Results**

| Compound | CAS | Averaging Period | Model Results[i] | | |
|---|---|---|---|---|---|
| | | | Project GLCmax (µg/m³) | ESL (µg/m³) | ESL % |
| Ammonia | 7664-41-7 | 1-Hour | 1.2 | 170 | 1 |
| | | Annual | 0.1 | 17 | 1 |
| Distillates (Diesel) | 68334-30-5 | 1-Hour | 2652.7 | 1000 | 265 |
| | | Annual | 39.1 | 100 | 39 |
| Jet Fuel | - | 1-Hour | 3385.7 | 1000 | 339 |
| | | Annual | 49.9 | 100 | 50 |
| Light Naphtha | 64741-66-8 | 1-Hour | 5,405.4 | 3500 | 154 |
| | | Annual | 80.1 | 350 | 23 |
| Heavy Naphtha | 64741-65-7 | 1-Hour | 1,421.7 | 3000 | 47 |
| | | Annual | 19.9 | 300 | 7 |
| Resid | 64741-45-3 | 1-Hour | 2,444.5 | 1250 | 196 |
| | | Annual | 74.5 | 125 | 60 |

| Compound | CAS | Averaging Period | Model Results[i] | | |
|---|---|---|---|---|---|
| | | | Project GLCmax (µg/m³) | ESL (µg/m³) | ESL % |
| Condensate (Crude Oil) | 64741-47-5 | 1-Hour | 5,412.6 | 3500 | 155 |
| | | Annual | 80.4 | 350 | 23 |
| Benzene | 71-43-2 | 1-Hour | 126.1 | 170 | 74 |
| | | Annual | 1.8 | 4.5 | 40 |
| Butane | 106-97-8 | 1-Hour | 2.4 | 66,000 | 0.0037 |
| | | Annual | 0 | 7200 | 0 |

[i] Modeling results are based on anticipated routine emissions.

# 9.0 EFFECTS OF THE PROPOSED ACTION

This section presents the results of the analysis of potential effects on federally-listed species as a result of the proposed condensate splitter project. The following potential effects sources are included in the analysis: air quality, water quality, noise pollution, infrastructure-related disturbance, human-related disturbance, and federally-listed species effects. This analysis is based on total emissions and dispersion modeling data provided by DiSorbo, field survey and background review data collected by WGI, and literature review and research of potential effects of known pollutants on flora and fauna.

## 9.1 AIR EMISSIONS EFFECTS BACKGROUND RESEARCH

Resources were searched extensively for data, documentation, or research regarding the potential effects of $NO_2$, PM, and $SO_2$ (criteria pollutants with potential depositional impacts) on flora and fauna. WGI biologists also specifically searched for information regarding concentrations and length of time of exposure at which flora and/or fauna are impacted. Additional research included, but was not limited to, documentation of long-term and short-term exposure to airborne pollutants, accumulation of pollutants in surface water, accumulation of pollutants in various ecosystems and habitat types, the potential for pollutants to affect vegetation composition, and potential impacts to the food chain. Information regarding the general impacts airborne pollutants can have on a variety of ecosystems is included. However, very little information was located regarding specific concentrations at which potential effects occur on a long-term or short-term basis. A list of research resources is available upon request.

Air emissions effects vary greatly between regions due to differences in biota, climate, geochemistry, and hydrology. Therefore, the estimation of potential impacts on flora and fauna is highly variable and dependent upon site-specific conditions[89].

According to a publication focused on the effects of air emissions on biodiversity, in general, air emissions have a greater impact on lower life forms than higher life forms. Lower life forms that would likely be the first impacted would include lichens, bryophytes, fungi, and soft-bodied aquatic invertebrates. Impacts to adult higher life forms are typically the result of secondary impacts to the food chain and reproduction, with the exception of extreme exposure. Potential secondary impacts include acidification, changes in food or nutrient supply, or changes to biodiversity and competition. Plant communities are generally less adaptable to changes in air quality than animals. Animals typically have the ability to migrate away from unfavorable conditions. Lower order animals, such as amphibians and fish, are known to be impacted by acidification as a result of the subsequent release of metals into water[90].

**Nitrogen Dioxide and Sulfur Dioxide**

According to the EPA's Integrated Science Assessment (ISA) for Oxides of Nitrogen and Sulfur, sufficient evidence is present to demonstrate a causal relationship between deposition of nitrogen and sulfur, acidification, and effects on biogeochemistry related to terrestrial and aquatic ecosystems and to biota in these systems[91]. The Nature Conservancy and the Institute of Ecosystem Studies have published 2 documents that describe the known effects of airborne nitrogen, sulfur, and other airborne pollutants on various ecosystems in the eastern US. Airborne $NO_2$ and $SO_2$ are known to be converted into acid particles or acid precipitation. Both forms are deposited onto soils, vegetation, and surface waters[92,93].

The potential effects of airborne $SO_2$ on flora are acute. The $SO_2$ gas is absorbed into the leaves and causes reducing conditions, which is toxic when the gas concentration exceeds the capacity of the tissue. The toxic conditions kill the local plant cells. The limiting concentration is similar for many diverse species, including aquatics. Generally, significant concentrations of $SO_2$ gas can be added to plant systems before toxicity occurs. Depending of the extent of injury, uninjured tissue maintains or regains function and develops normally[94].

The potential effects of airborne $NO_2$ and $SO_2$ on terrestrial ecosystems are generally long-term effects as opposed to short-term effects. Many soils are buffered against acid inputs and

biodiversity changes are not immediately evident for vegetation species with a longer lifespan. The deposition of sulfur can result in sulfate leaching, which can cause acidification of soils and surface waters as well as the release of calcium, and magnesium. The deposition of nitrogen can result in nitrate leaching, which can cause acidification of soils and surface waters as well as the release of aluminum, calcium, and magnesium[93]. Soil inhabiting arthropods with high-calcium needs can be impacted by soil acidification. The release of aluminum into soil water can harm plant roots. The leaching of aluminum into surface waters can be toxic to aquatic plants, fish, and other aquatic organisms[92]. The accumulation of nitrogen can impact plant species competition, thereby impacting plant species composition. Nitrogen accumulation can also lead to nitrogen saturation, which impacts microorganisms, plant production, and nitrogen cycling[93,95]. Additional potential terrestrial ecosystem effects include reduced forest productivity and increased vulnerability to pests and pathogens[93].

The potential effects of airborne $NO_2$ and $SO_2$ on aquatic ecosystems include acidification and eutrophication. The effects of acidification on water quality, whether introduced by direct acid deposition or leaching from adjacent terrestrial ecosystems, include increased acidity, reduced acid neutralization capacity, hypoxia, and mobilization of aluminum[93]. Stream and lake acidification can be chronic or episodic and both can be damaging. In general, larger aquatic ecosystems have a greater buffering capacity than smaller systems. Increased acidity can reduce dissolved organic carbon and increase light penetration and visibility through the water column. Increased light penetration can result in increased macrophyte and algal growth. Increased visibility can alter the predator-prey balance. Low alkalinity waters are more susceptible to adverse effects from acidification. A pH value of 6.0 is often considered the level below which biota are at risk from acidification. Biological effects are primarily attributable to a combination of low pH and high inorganic aluminum concentration (between 2.0 and 7.5 micromoles per liter).

Eutrophication is the over enrichment of nutrients into an aquatic system, which can result in excess algal growth. Decomposition of excess algae by aerobic bacteria can result in a decrease of dissolved oxygen. Low desolved oxygen can be harmful to fish and other aquatic organisms. Wetlands, estuaries, bays, and salt marshes are generally less impaired by acid deposition than other aquatic ecosystems. However, in estuarine ecosystems, nitrogen from atmospheric and non-atmospheric sources contributes to increased phytoplankton and algal productivity, leading to eutrophication. Estuary eutrophication is an ecological problem indicated by water

quality deterioration, resulting in numerous adverse effects including hypoxic zones, species mortality, and harmful algal blooms. Increased sulfur concentrations can increase the production of specific bacteria, which can convert inorganic mercury to methyl-mercury, especially in wetlands. Methyl-mercury does not appear to impact flora, but is toxic to fauna[93]. Methyl-mercury is a powerful toxin that can bioaccumulate to toxic amounts in food webs at higher trophic levels (e.g., bass and perch, otters, or kingfishers).

**Particulate Matter**

PM is a mixture of airborne particles resulting from fossil fuel combustion or a breakdown of crustal matter, and residual water soluble materials after evaporation of water from aqueous aerosols. The atmosphere can also transform VOC, $NO_2$, and $SO_2$ into PM. PM is a broad term referring to an assortment of particles that vary in their formation, chemical properties, size, mass, toxicity, and atmospheric reactivity. The EPA characterizes PM by their size: $PM_{10}$ (particles equal to and less than 10 microns in aerodynamic diameter), $PM_{2.5}$ (fine particles that are 2.5 microns or less in diameter), $PM_{10\text{-}2.5}$ (coarse particles with a diameter between 2.5 and 10 microns), and ultrafine particles (diameter less than 0.1 microns).

Fine particles can remain in the atmosphere for days to weeks and travel through the atmosphere hundreds to thousands of kilometers, while most coarse particles typically deposit to the earth within minutes to hours and within tens of kilometers from the emission source. The potential effects of dispersed particles on aquatic ecosystems include acidification, eutrophication, and impacts to ecosystem diversity[96]. The potential effects of dispersed particles on terrestrial ecosystems include nutrient depletion in soils and damage to crops and sensitive plant species[96]. PM is also responsible for the creation of haze (i.e., reduced visibility) and has been linked to physiological effects, such as respiratory and cardiovascular dysfunctions[97,98]. Other documented adverse effects included the blinding and/or death of cattle by smoke (i.e., PM) and the occurrence of fluorosis, a teeth and bone disease, when exposed to atmospheric fluoride[99]. Mortality of birds and a decrease in nesting has been linked to $SO_2$, known to be capable of transforming into PM. In addition, a recent study has shown that exposure to PM can affect the genetics of an individual thus resulting in unknown long term effects[100]. Limited research is available about threshold limit values (e.g., the maximum amount of exposure without adverse effects) on sensitive wildlife populations[98,101].

## 9.2 AIR QUALITY EFFECTS

### 9.2.1 EMISSIONS

DiSorbo completed detailed emission calculations for the condensate splitter project in accordance with the Air Permit Application requirements[86]. A summary of the total proposed annual emissions of each constituent that would be emitted by the project are provided in Table 1-1 (Appendix F).

DiSorbo also performed dispersion modeling of the emissions of air pollutants from the proposed Magellan condensate splitter project. The results of the modeling are provided as a summary of the maximum predicted concentrations in Table 5 (Section 8.0).

Magellan will utilize best available control technology (BACT) as discussed in the TCEQ application to control emissions from the project and thus minimize impacts to the surrounding environment to the maximum extent practicable. The proposed emission limits of each constituent are consistent with both the TCEQ BACT guidance and are considered to be the top level of control available for the proposed project.

Emissions resulting from gasoline and diesel-fueled vehicles and equipment during construction and maintenance are considered negligible. The project will not require a significant increase in vehicle and equipment use compared to current daily emissions for the Corpus Christi Terminal.

### 9.2.2 FUGITIVE DUST

Dust will be emitted during the site work phase of the project. This emission will be minimal and temporary. Dust emissions are expected to be negligible after the site work activities are completed.

### 9.2.3 IMPACTS OF AIR POLLUTION SOURCES ON FLORA AND FAUNA

The current secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings[88]. Air pollution effects vary greatly between regions due to differences in biota, climate, geochemistry, and hydrology. Because of this variation, models were developed by the EPA and were based on ecosystems that are considered the most sensitive to nitrogen and/or sulfur deposition effects.

For more information regarding these case studies and analysis, refer to the EPA's Risk and Exposure Assessment for Review of the Secondary NAAQS for Oxides of Nitrogen and Oxides of Sulfur[102]. For the purposes of this BA, the most conservative and appropriate information was used to analyze potential impacts within the Project Area.

There is sufficient evidence to infer a causal link between nitrogen/sulfur deposition and the resulting acidification and its effects on biota[91]. The data presented in Table 7 below is taken directly from EPA's ISA for Oxides of Nitrogen and Sulfur detailing select exposure rates and related ecological effects. Nitrogen and sulfur deposition may adversely affect aquatic and terrestrial nutrient balances, acidification, availability of methyl mercury, and net primary production. This may result in declines in species fitness and richness, changes in species competition, increased susceptibility to stress/disease, habitat degradation, alterations to fire regimes, etc.

**Table 7. Relationships Between Deposition Levels and Ecological Effects**[100]

| Kilogram Nitrogen/Hectare/Year | Ecological Effect |
|---|---|
| ~1.5 | Altered diatom communities in high elevation freshwater lakes and elevated nitrogen in tree leaf tissue high elevation forests in the western US |
| 3.1 | Decline of some lichen species in the western US |
| 4 | Altered growth and coverage of alpine plant species in the western US |
| 5 | Onset of decline of species richness in grasslands of the US and United Kingdom |
| 5.5 - 10 | Onset of nitrate leaching in forests of the eastern US |
| 5-10 | Multiple effects in tundra, bogs, and freshwater lakes in Europe |
| 5-15 | Multiple effects in arctic, alpine, subalpine and scrub habitats in Europe |

The current secondary NAAQS were largely based on the data and models presented in the EPA's ISA and Risk publications seeking to minimize these impacts. Since SILs are concentrations that represent thresholds of insignificant modeled source impacts, the pollutant concentrations predicted to be less than or equal to the SILs are expected to have no significant impact on flora or fauna.

The Action Area is shown in Figures 2-5 (Appendix A). The Action Area has a maximum radius of approximately 0.9 mile and includes 3 observed habitat types: maintained grassland, man-made drainage ditches, wetland, and estuarine open water.

A detailed analysis of potential habitat, occurrence of each federally-listed species, and potential for effect is provided in Section 9.7. No potential habitat or likelihood of potential occurrence of federally-listed species was identified within the Action Area. Since the predicted concentrations above the SILs would be short-term and infrequent at any given habitat location, no impacts to federally-listed species are anticipated from project criteria pollutant air emissions. Since the predicted non-criteria pollutant routine emission concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the federally-listed species are anticipated from project non-criteria pollutant air emissions.

## 9.3 WATER QUALITY EFFECTS

Erosion and sedimentation controls will be utilized to protect water quality during the construction and operation of the proposed project in accordance with Section 401 of the Clean Water Act and 30 Administrative Code Chapter 279. Erosion and sedimentation controls filter sediment and some pollutants from storm water. They also minimize erosion and slow the flow of storm water, which allows additional time for water to reach ambient temperature and for sediment to settle out of the water column with the exception of extreme flood events. Appropriate erosion and sedimentation controls are designed to protect water quality. Therefore, no effects to federally-listed species are anticipated as a result of non-contact, non-point source storm water from the proposed project.

The proposed project will be located within the existing property boundaries of the Corpus Christi Terminal. The proposed project would operate under the Magellan's existing TPDES permit (TPDES Permit No. WQ0002070000). All non-contact storm water would be discharged under the existing TPDES permit through specific non-contact storm water outfalls. The Corpus Christi Terminal does not currently discharge wastewater under the existing TPDES permit. Only storm water is currently discharged via Outfall 001.

The maximum daily wastewater effluent that would be discharged from the proposed project would be 300 gpm (maximum), if the desalter unit is installed and wash water is generated. A

wastewater permit is not yet in place to discharge this effluent. Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by a WWTP or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch (Figures 2-5 – Appendix A).

If the discharge of wastewater effluent is approved by a future TPDES permit, any discharge would be treated and monitored in accordance with the TPDES permit. The effluent would be discharged into the existing drainage ditch more than a mile from the nearest potential protected habitat. Wastewater effluent would have sufficient time and distance to reach ambient conditions prior to reaching any potential protected habitat. Since wastewater is currently proposed to be treated by a WWTP or will be disposed of off-site at an authorized facility, no effects to federally-listed species are anticipated as a result of project wastewater effluent.

The first flush (0.5-1 inch) of storm water within the process area will be diverted to storage, sampled, and tested. If the first flush storm water is within permitted limits, it will be pumped to the OWS and discharged via the proposed new outfall. Storm water that does not meet TPDES standards for discharge will be transported via truck to a disposal facility. No effects to federally-listed species are anticipated as a result of non-contact storm water.

Storm water discharge is currently authorized under TPDES permit WQ0002070000. Storm water is directed via sheet flow or piping to ditches that are outfitted with an OWS. When water leaves the OWS, it is discharged via an existing outfall into a vegetated drainage ditch. The existing drainage ditch is a combination of open ditch and pipeline and receives wastewater and storm water from multiple permitted outfalls. The proposed project discharge would flow three quarters of a mile to eventually drain into the Inner Harbor.

No federally-listed species habitat was noted near the outfall structures. Although the Inner Harbor has the potential to support listed sea turtles and manatees, the discharged storm water will be monitored and treated prior to discharge and is expected to reach ambient conditions prior to entering the waterway. No impacts to federally-listed species are anticipated.

## 9.4 NOISE EFFECTS

Noise levels during construction should be comparable or higher than noise levels from activities that currently take place at the Corpus Christi Terminal and at surrounding industrial complexes.

No noise effects to federally-listed species are expected as a result of the construction and operation of the proposed condensate splitter project.

## 9.5 INFRASTRUCTURE-RELATED EFFECTS

The proposed Project Area is an existing industrial facility surrounded on all sides by additional industrial facilities. The substrate includes gravel, roadbase, asphalt, and concrete. Vegetated areas consist of forbs and nonnative grasses. Federally-listed species are not likely to occur in the Project Area (Refer to Section 9.7). Therefore, no adverse impacts to these species are anticipated from the proposed project.

The Project Area is located on the southeastern edge of the whooping crane migration corridor (Figure 8 – Appendix A). The potential for occurrence of whooping cranes within the Action Area is described in Section 9.7. The potential for whooping crane collision with new infrastructure was considered in the analysis. Whooping cranes are known to avoid existing, well-lit infrastructure and human disturbance[128].

The proposed project is designated for construction in an established industrial area. The Corpus Christi Terminal is currently an active industrial facility and is surrounded on all sides by additional active industrial facilities. The site has historically included infrastructure (storage tanks and other facilities), industrial lighting, noise, and human activity. The existing facilities to the north, east, and west have historically included infrastructure (towers, flares, process equipment, etc.) of the same height or higher than the proposed new infrastructure. The heights of the new infrastructure (flare, heaters, fractionator towers, and other facilities) will range from 50 to a maximum of 200 feet. No new aboveground power lines will be constructed.

Given the location of the site, pre-existing surrounding industrial development, and known whooping crane locations, it is unlikely new infrastructure poses a risk to migrating whooping cranes. No infrastructure-related effects to whooping cranes or other federally-listed species are anticipated as a result of the proposed project.

Although whooping cranes have not been observed at or near the facility, the following measures will be implemented to reduce the likelihood of any potential impacts in the event that a whooping crane should occur near the Project Area during construction.

- The new infrastructure will be fitted with safety lighting similar to the previous and existing infrastructure and in accordance with the FAA and USFWS guidelines[103].
- Large cranes (maximum 250 feet tall) with non-retractable booms will be required for construction. These booms will be flagged or marked. Booms greater than 200 feet will be fitted with FAA lighting[103].
- Construction equipment capable of retraction will be retracted to a height less than or equal to the height of existing infrastructure (60 feet) when feasible, in accordance with construction and safety requirements. Retractable crane booms will be flagged or marked. Retractable booms greater than 200 feet will be fitted with FAA lighting[103].

No infrastructure-related effects to whooping cranes or other federally-listed species are anticipated as a result of the proposed project.

## 9.6 HUMAN ACTIVITY EFFECTS

Construction and operation of the proposed condensate splitter project will not require significant additional human activity compared to typical activities that occur at the Corpus Christi Terminal on a regular basis.

No additional effects to federally-listed species are expected as a result of the increase in human activity associated with the proposed condensate splitter project.

## 9.7 MARINE VESSEL TRAFFIC EFFECTS

The Inner Harbor was constructed and is maintained to accommodate heavy marine vessel traffic. The Port of Corpus Christi received a total of 6,780 marine vessels last year[104]. Vessels within the Inner Harbor are required to travel safe navigation speed, varying between 5-12 knots, depending on site conditions[105].

The dock facilities that will be utilized for the proposed condensate splitter project are owned by the Port of Corpus Christi and are currently utilized by multiple existing facilities. The

proposed condensate splitter project will be serviced by ships, ocean-going barges, tandem barges, and non-tandem barges of varying sizes and carrying capacity. The proposed project would likely increase the marine vessel traffic within the Inner Harbor by 89 ships, 8 ocean-going barges, 364 tandem barges, and 49 non-tandem barges per year.

Green, Kemp's ridley, and loggerhead sea turtles have the potential to intermittently occur within the Inner Harbor. Leatherback and hawksbill sea turtles as well as West Indian manatees have the potential but are highly unlikely to occur within the Inner Harbor.

The NOAA Fisheries Service guidance on vessel strike avoidance measures indicates that vessels should maintain a speed of less than 10 knots to minimize potential collision with sea turtles[106]. Marine vessels that will be associated with the transport of materials for the condensate splitter project will not be owned, operated, or controlled by Magellan. Magellan has no control over the speed at which these marine vessels will travel within the Inner Harbor. However, safe travel speed within the Inner Harbor as designated by the Port of Corpus Christi is within and near the speed at which sea turtle collision is minimized.

The increase in marine vessel traffic within the Inner Harbor as a result of the condensate splitter project would be less than 1% per year. Since the increase in marine vessel traffic would be minimal and the vessels that travel within the Inner Harbor travel at a speed that would minimize sea turtle collision, no additional effects to federally-listed species are expected as a result of the proposed condensate splitter project.

## 9.7 FEDERALLY-LISTED SPECIES EFFECTS

### 9.7.1 FEDERALLY-LISTED THREATENED OR ENDANGERED SPECIES

#### 9.7.1.1 Green Sea Turtle

**Potential to Occur in the Action Area**

Nesting occurs on high energy oceanic beaches, primarily on islands with minimal disturbance. Juveniles and adults primarily occupy benthic feeding grounds in shallow, protected waters. Foraging areas typically include pastures of seagrasses and/or algae[30].

Habitats with the potential to support green sea turtles are not located within the terrestrial portion of the Action Area. The Project and Action Areas include 1 small inlet (approximately

95 feet by 145 feet) off of the Inner Harbor. The inlet is the only portion of the Inner Harbor included within the Action Area. This inlet is shallow and tidally influenced. The inlet is located between 2 existing docks.

Green sea turtles are known to occupy the coastal and bay waters surrounding Corpus Christi, Texas[107]. The Inner Harbor is industrially and commercially developed, has a maintained, dredged channel, and is considered a high traffic area for commercial and industrial shipping. It is also a tidally-influenced waterway, which has the potential to support foraging green sea turtles. No seagrass beds are mapped within the Inner Harbor[108]. Since algae is a component of their diet, the potential exists for green sea turtles to forage on algae in the Inner Harbor. Although the Inner Harbor does not possess optimal foraging areas for green sea turtles, the potential exists for transient green sea turtles to occur within this waterway. Since the inlet located within the Action Area is small, shallow, and disturbed by marine vessel traffic at the 2 adjacent dock facilities, it is highly unlikely green sea turtles would utilize this area.

No potential green sea turtle nesting habitat is located in or near the Action Area. The closest known green sea turtle nesting location is the Padre Island National Seashore, approximately 30 miles southeast of the Project Area[109]. Designated-USFWS critical habitat for the green sea turtle is Culebra Island, Puerto Rico and its surrounding waters[29].

Green sea turtles may incidentally occur in the small inlet within the Action Area, but the potential occurrence would be rare and temporary.

**Potential Effects to Green Sea Turtles**

Construction and noise associated with the condensate splitter project will occur within an existing industrial area greater than 0.75 mile from any potential green sea turtle occurrence. Installation of the proposed pipelines connecting the condensate splitter project to the existing dock facilities will be completed inland from the shoreline of the Inner Harbor. The 3 pipelines will be installed on an existing pipe rack over the inlet to the Inner Harbor within the Action Area. Since no construction activities will take place within potential sea turtle habitat and green sea turtles are unlikely to occur within the Action Area, no impacts to green sea turtles are anticipated from construction activities, noise, or human disturbance.

Since no potential green sea turtle habitat or occurrence has been identified within the air emissions mAOI, no impacts to these sea turtles are anticipated from the project's criteria

pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the green sea turtle are anticipated from the project's non-criteria pollutant air emissions.

Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by the WWTP or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch. Storm water will be treated by an OWS and discharged into the aforementioned drainage ditch. Water within the drainage ditch does not typically have a significant flow rate except during significant rainfall events. Discharged wastewater and storm water will reach ambient conditions prior to entering the Inner Harbor, which is three quarters of a 1 mile downstream of the outfall structures. Since the discharged water will reach ambient conditions prior to entering the Inner Harbor, green sea turtles will not be impacted from wastewater or storm water discharge.

Since the increase in marine vessel traffic would be minimal and the vessels that travel within the Inner Harbor travel at a speed that would minimize sea turtle collision, no additional effects to federally-listed species are expected as a result of the proposed condensate splitter project.

No direct or indirect effects to green sea turtles are anticipated.

**Determination of Effect**

The proposed action will have no effect on green sea turtles.

#### 9.7.1.2 Hawksbill Sea Turtle

**Potential to Occur in the Action Area**

Nesting habitat includes low and high energy, vegetated beaches in tropical oceans with a variety of substrates. Juveniles and adults generally occupy their primary foraging habitat, coral reefs[32].

Habitats with the potential to support hawksbill sea turtles are not located within the terrestrial portion of the Action Area. The Project and Action Areas include 1 small inlet (approximately

95 feet by 145 feet) off of the Inner Harbor. The inlet is the only portion of the Inner Harbor included within the Action Area. This inlet is shallow and tidally influenced. The inlet is located in between 2 existing docks.

The Inner Harbor is industrially and commercially developed, has a maintained, dredged channel, and is considered a high traffic area for commercial and industrial shipping. No coral reefs or other suitable foraging habitat for the hawksbill sea turtle is located within or near the Action Area. No habitat with the potential to support nesting hawksbill sea turtles was observed within or near the Action Area. The USFWS-designated critical habitat for the hawksbill sea turtle is the Mona and Monito Islands, Puerto Rico and their surrounding waters[29]. The most recent recorded observation of hawksbill sea turtles in Texas occurred in 1998 when a nest was noted at the Padre Island National Seashore[110]. No recent observations of hawksbill sea turtles occurring in Corpus Christi Bay/Ship Channel were found.

Although highly unlikely, the potential exists for the hawksbill sea turtle to occur within the Inner Harbor. Any incidental occurrence of hawksbill sea turtles within the Inner Harbor would be rare and temporary.

**Potential Effects to Hawksbill Sea Turtles**

Construction and noise associated with the condensate splitter project will occur within an existing industrial area greater than 0.75 mile from any potential hawksbill sea turtle occurrence. Installation of the proposed pipelines connecting the condensate splitter project to the existing dock facilities will be completed inland from the shoreline of the Inner Harbor. The 3 pipelines will be installed on an existing pipe rack over the inlet to the Inner Harbor within the Action Area. Since no construction activities will take place within potential sea turtle habitat and hawksbill sea turtles are unlikely to occur within the Action Area, no impacts to hawksbill sea turtles are anticipated from construction activities, noise, or human disturbance.

Since no potential hawksbill sea turtle habitat or occurrence has been identified within the air emissions mAOI, no impacts to these sea turtles are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the hawksbill sea turtle are anticipated from the project's non-criteria pollutant air emissions.

Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by the WWTP or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch. Storm water will be treated by an OWS and discharged into the aforementioned drainage ditch. Water within the drainage ditch does not typically have a significant flow rate except during significant rainfall events. Discharged wastewater and storm water will reach ambient conditions prior to entering the Inner Harbor, which is three quarters of a mile downstream of the outfall structures. Given that the discharged water will reach ambient conditions prior to entering the Inner Harbor, hawksbill sea turtles will not be impacted from wastewater or storm water discharge.

Since the increase in marine vessel traffic would be minimal and the vessels that travel within the Inner Harbor travel at a speed that would minimize sea turtle collision, no additional effects to federally-listed species are expected as a result of the proposed condensate splitter project.

No direct or indirect effects to hawksbill sea turtles are anticipated.

**Determination of Effect**

The proposed action will have no effect on hawksbill sea turtles.

#### 9.7.1.3 Kemp's Ridley Sea Turtle

**Potential to Occur in the Action Area**

Nesting occurs on high energy oceanic beaches, primarily adjacent to extensive swamps or large bodies of open water. This turtle is a shallow water benthic feeder with a diet consisting primarily of shrimp, jellyfish, snails, sea stars, and swimming crabs[35].

Habitats with the potential to support Kemp's ridley sea turtles are not located within the terrestrial portion of the Action Area. The Project and Action Areas include1 small inlet (approximately 95 feet by 145 feet) off of the Inner Harbor. The inlet is the only portion of the Inner Harbor included within the Action Area. This inlet is shallow and tidally influenced. The inlet is located in between 2 existing docks.

Kemp's ridley sea turtles are known to occupy the coastal and bay waters surrounding Corpus Christi, Texas[111]. The Inner Harbor is industrially and commercially developed, has a maintained, dredged channel, and is considered a high traffic area for commercial and industrial shipping. As a tidal aquatic feature, the Inner Harbor can host marine aquatic fauna, which may provide forage for Kemp's ridley sea turtles. Although the Inner Harbor does not possess optimal foraging areas for Kemp's ridley sea turtles, the potential exists for transient Kemp's ridley sea turtles to occur within this waterway. Since the inlet located within the Action Area is small, shallow, and disturbed by marine vessel traffic at the 2 adjacent dock facilities, it is highly unlikely Kemp's ridley sea turtles would utilize this area. No habitat with the potential to support nesting Kemp's ridley sea turtles is located within the Action Area. The closest known Kemp's ridley sea turtle nesting location is in Corpus Christi Bay near Burleson Beach Park, approximately 3.5 river miles from the Project Area[112]. USFWS-designated critical habitat is not yet designated for this species[29].

Kemp's ridley sea turtles may incidentally occur in the small inlet within the Action Area, but the potential occurrence would be rare and temporary.

**Potential Effects to Kemp's Ridley Sea Turtles**

Construction and noise associated with the condensate splitter project will occur within an existing industrial area greater than 0.75 mile from any potential Kemp's ridley sea turtle occurrence. Installation of the proposed pipelines connecting the condensate splitter project to the existing dock facilities will be completed inland from the shoreline of the Inner Harbor. The 3 pipelines will be installed on an existing pipe rack over the inlet to the Inner Harbor within the Action Area. Since no construction activities will take place within potential sea turtle habitat and Kemp's ridley sea turtles are unlikely to occur within the Action Area, no impacts to Kemp's ridley sea turtles are anticipated from construction activities, noise, or human disturbance.

Since no potential Kemp's ridley sea turtle habitat or occurrence has been identified within the air emissions mAOI, no impacts to these sea turtles are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the Kemp's ridley sea turtle are anticipated from the project's non-criteria pollutant air emissions.

Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by the WWTP or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch. Storm water will be treated by an OWS and discharged into the aforementioned drainage ditch. Water within the drainage ditch does not typically have a significant flow rate except during significant rainfall events. Discharged wastewater and storm water will reach ambient conditions prior to entering the Inner Harbor, which is three quarters of a mile downstream of the outfall structures. Given that the discharged water will reach ambient conditions prior to entering the Inner Harbor, Kemp's ridley sea turtles will not be impacted from wastewater or storm water discharge.

Since the increase in marine vessel traffic would be minimal and the vessels that travel within the Inner Harbor travel at a speed that would minimize sea turtle collision, no additional effects to federally-listed species are expected as a result of the proposed condensate splitter project.

No direct or indirect effects to Kemp's ridley sea turtles are anticipated.

**Determination of Effect**

The proposed action will have no effect on the Kemp's ridley sea turtle.

#### 9.7.1.4 Leatherback Sea Turtle

**Potential to Occur in the Action Area**

Nesting habitat includes high energy, sandy beaches with vegetation immediately upslope and a beach sloped sufficiently so the crawl to dry sand is minimal. Nesting beaches have deep, unobstructed oceanic access on continental shorelines. Juveniles and adults are pelagic and primarily occupy deep water habitat[37].

Habitats with the potential to support leatherback sea turtles are not located within the terrestrial portion of the Action Area. The Project and Action Areas include 1 small inlet (approximately 95 feet by 145 feet) off of the Inner Harbor. The inlet is the only portion of the Inner Harbor included within the Action Area. This inlet is shallow and tidally influenced. The inlet is located in between 2 existing docks.

The Inner Harbor is industrially and commercially developed, has a maintained, dredged channel, and is considered a high traffic area for commercial and industrial shipping. The pelagic foraging habitat used by the leatherback sea turtle is not located in or near the Action Area. Only 1 record was found of a leatherback sea turtle occurring in the general area, which was the documentation of 1 relocated leatherback, as a result of dredging the Aransas Pass Entrance Channel of the Corpus Christi Ship Channel in 2003[113]. The Aransas Pass Entrance Channel is greater than 20 miles east of the Action Area.

No habitat with the potential to support nesting leatherback sea turtles is located within the Action Area. The nearest known nesting site for leatherback sea turtles was identified in 2008 at Padre Island National Seashore, more than 67 miles south of the Project Area[37]. This is the only known nesting site for a leatherback sea turtle in Texas since the 1930s[114]. USFWS-designated critical habitat for the leatherback sea turtle includes the coastal waters adjacent to Sandy Point, St. Croix, the US Virgin Islands, and the US West Coast[29].

Although highly unlikely, the potential exists for leatherback sea turtles to incidentally occur in the Inner Harbor. Any incidental occurrence of leatherback sea turtles within the Inner Harbor would be rare and temporary.

**Potential Effects to Leatherback Sea Turtles**

Construction and noise associated with the condensate splitter project will occur within an existing industrial area greater than 0.75 mile from any potential leatherback sea turtle occurrence. Installation of the proposed pipelines connecting the condensate splitter project to the existing dock facilities will be completed inland from the shoreline of the Inner Harbor. The 3 pipelines will be installed on an existing pipe rack over the inlet to the Inner Harbor within the Action Area. Since no construction activities will take place within potential sea turtle habitat and leatherback sea turtles are unlikely to occur within the Action Area, no impacts to leatherback sea turtles are anticipated from construction activities, noise, or human disturbance.

Since no potential leatherback sea turtle habitat or occurrence has been identified within the air emissions mAOI, no impacts to these sea turtles are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no

impacts to the leatherback sea turtle are anticipated from the project's non-criteria pollutant air emissions.

Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by the WWTP or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch. Storm water will be treated by an OWS and discharged into the aforementioned drainage ditch. Water within the drainage ditch does not typically have a significant flow rate except during significant rainfall events. Discharged wastewater and storm water will reach ambient conditions prior to entering the Inner Harbor, which is three quarters of a mile downstream of the outfall structures. Given that the discharged water will reach ambient conditions prior to entering the Inner Harbor, leatherback sea turtles will not be impacted from wastewater or storm water discharge.

Since the increase in marine vessel traffic would be minimal and the vessels that travel within the Inner Harbor travel at a speed that would minimize sea turtle collision, no additional effects to federally-listed species are expected as a result of the proposed condensate splitter project.

No direct or indirect effects to leatherback sea turtles are anticipated.

**Determination of Effect**

The proposed action will have no effect on the leatherback sea turtle.

#### 9.7.1.5 Loggerhead Sea Turtle

**Potential to Occur in the Action Area**

Nesting occurs on oceanic beaches between the high tide line and dune fronts and occasionally on estuarine shorelines with suitable sand. Females use narrow, steeply sloped, coarse-grained beaches. This turtle is a shallow water benthic feeder with a diet consisting primarily of shrimp, jellyfish, snails, sea stars, and swimming crabs[39].

Habitats with the potential to support loggerhead sea turtles are not located within the terrestrial portion of the Action Area. The Project and Action Areas include 1 small inlet (approximately 95 feet by 145 feet) off of the Inner Harbor. The inlet is the only portion of the

Inner Harbor included within the Action Area. This inlet is shallow and tidally influenced. The inlet is located in between two existing docks.

Loggerhead sea turtles are known to occupy the coastal and bay waters surrounding Corpus Christi, Texas[115]. The Inner Harbor is industrially and commercially developed, has a maintained, dredged channel, and is considered a high traffic area for commercial and industrial shipping. As a tidal aquatic feature, the Inner Harbor can host marine aquatic fauna, which may provide forage for loggerhead sea turtles. Although the Inner Harbor does not possess optimal foraging areas for loggerhead sea turtles, the potential exists for transient loggerhead sea turtles to occur within this waterway. Since the inlet located within the Action Area is small, shallow, and disturbed by marine vessel traffic at the 2 adjacent dock facilities, it is highly unlikely loggerhead sea turtles would utilize this area. No habitat with the potential to support nesting loggerhead sea turtles is located within the Action Area. The closest known loggerhead sea turtle nesting location is on Mustang Island, approximately 20 miles east of the Project Area[109]. USFWS-designated critical habitat is not yet designated for this species[29].

Loggerhead sea turtles may incidentally occur in the small inlet within the Action Area, but the potential occurrence would be rare and temporary.

**Potential Effects to Loggerhead Sea Turtles**

Construction and noise associated with the condensate splitter project will occur within an existing industrial area greater than 0.75 mile from any potential loggerhead sea turtle occurrence. Installation of the proposed pipelines connecting the condensate splitter project to the existing dock facilities will be completed inland from the shoreline of the Inner Harbor. The 3 pipelines will be installed on an existing pipe rack over the inlet to the Inner Harbor within the Action Area. Since no construction activities will take place within potential sea turtle habitat and loggerhead sea turtles are unlikely to occur within the Action Area, no impacts to loggerhead sea turtles are anticipated from construction activities, noise, or human disturbance.

Since no potential loggerhead sea turtle habitat or occurrence has been identified within the air emissions mAOI, no impacts to these sea turtles are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no

impacts to the loggerhead sea turtle are anticipated from the project's non-criteria pollutant air emissions.

Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by the WWTP or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch. Storm water will be treated by an OWS and discharged into the aforementioned drainage ditch. Water within the drainage ditch does not typically have a significant flow rate except during significant rainfall events. Discharged wastewater and storm water will reach ambient conditions prior to entering the Inner Harbor, which is three quarters of a mile downstream of the outfall structures. Given that the discharged water will reach ambient conditions prior to entering the Inner Harbor, loggerhead sea turtles will not be impacted from wastewater or storm water discharge.

Since the increase in marine vessel traffic would be minimal and the vessels that travel within the Inner Harbor travel at a speed that would minimize sea turtle collision, no additional effects to federally-listed species are expected as a result of the proposed condensate splitter project.

No direct or indirect effects to loggerhead sea turtles are anticipated.

**Determination of Effect**

The proposed action will have no effect on the loggerhead sea turtle.

#### 9.7.1.6 Smalltooth Sawfish

**Potential to Occur in the Action Area**

Habitat for the smalltooth sawfish includes shallow coastal seas and estuaries with muddy and sandy bottoms. They are typically found close to shore, in sheltered bays and on shallow banks[40]. Known locations of smalltooth sawfish are restricted to portions of southern Florida[41].

Habitats with the potential to support smalltooth sawfish are not located within the terrestrial portion of the Action Area. The Project and Action Areas include 1 small inlet (approximately 95 feet by 145 feet) off of the Inner Harbor. The inlet is the only portion of the Inner Harbor

included within the Action Area. This inlet is shallow and tidally influenced. The inlet is located in between 2 existing docks.

The Inner Harbor is industrially and commercially developed, has a maintained, dredged channel, and is considered a high traffic area for commercial and industrial shipping. These characterstics would likely deter smalltooth sawfish from occupying the area. This species population is thought to be limited to the southern tip of Florida. No USFWS-designated critical habitat is located in Texas[29]. No known observations of smalltooth sawfish have been found in or near the Action Area.

Smalltooth sawfish are highly unlikely to occur within the Action Area.

**Potential Effects to Smalltooth Sawfish**

Construction and noise associated with the condensate splitter project will occur within an existing industrial area greater than 0.75 mile from any potential smalltooth sawfish occurrence. Installation of the proposed pipelines connecting the condensate splitter project to the existing dock facilities will be completed inland from the shoreline of the Inner Harbor. The 3 pipelines will be installed on an existing pipe rack over the inlet to the Inner Harbor within the Action Area. Since no construction activities will take place within potential sawfish habitat and smalltooth sawfish are unlikely to occur within the Action Area, no impacts to smalltooth sawfish are anticipated from construction activities, noise, or human disturbance.

Since no potential smalltooth sawfish habitat or occurrence has been identified within the air emissions mAOI, no impacts to these fish are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the smalltooth sawfish are anticipated from the project's non-criteria pollutant air emissions.

Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by the WWTP or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch. Storm water will be treated by an OWS and discharged into the aforementioned drainage ditch. Water within the drainage ditch does not typically have a significant flow rate except during significant rainfall events. Discharged wastewater and storm water will reach ambient

conditions prior to entering the Inner Harbor, which is three quarters of a mile downstream of the outfall structures. Given that the discharged water will reach ambient conditions prior to entering the Inner Harbor, smalltooth sawfish will not be impacted from wastewater or storm water discharge.

Since the increase in marine vessel traffic would be minimal and the vessels that travel within the Inner Harbor travel at a speed that would minimize sea turtle collision, no additional effects to federally-listed species are expected as a result of the proposed condensate splitter project.

No direct or indirect impacts to the smalltooth sawfish are anticipated.

**Determination of Effect**

The proposed action will have no effect on the smalltooth sawfish.

#### 9.7.1.7 Gulf Coast Jaguarundi

**Potential to Occur in the Action Area**

Gulf Coast jaguarundis inhabit dense, thorny brush and adjacent grasslands. They can be found in the South Texas Brush Country and Rio Grande Plains. Gulf Coast jaguarundis have a limited range within South Texas, primarily due to habitat loss and fragmentation[42].

No habitat with the potential to support Gulf Coast jaguarundis was observed in the Action Area. The Project Area is centrally located within an industrialized area. No shrubland habitat was observed within or near the Action Area. USFWS-designated critical habitat is not yet designated for this species[29].

Gulf Coast jaguarundis will not occur within the Action Area.

**Potential Effects to the Gulf Coast Jaguarundi**

Gulf Coast jaguarundis will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since no potential jaguarundi habitat has been identified within the air emissions mAOI, no impacts to jaguarundis are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no

emissions of mercury or other heavy metals are anticipated, no impacts to jaguarundis are anticipated from the project's non-criteria pollutant air emissions.

Since no potential jaguarundi habitat was identified within or adjacent to the outfall structures, no impacts to jaguarundi are anticipated from the project's storm water and wastewater discharges.

No direct or indirect impacts to jaguarundis are anticipated.

**Determination of Effect**

The proposed action will have no effect on the Gulf Coast jaguarundi.

#### 9.7.1.8 Ocelot

**Potential to Occur in the Action Area**

Ocelots typically occur in dense, thorny thickets and rocky areas. They feed on small mammals, birds, and some reptiles. Females create their dens in caves, hollow trees, or dense brush[43].

No habitat with the potential to support the ocelot was observed within or near the Action Area. The Project Area is centrally located within an industrialized area. No shrubland habitat was identified within or near the Action Area. USFWS-designated critical habitat is not yet designated for this species[29].

Ocelots will not occur within the Action Area.

**Potential Effects to Ocelot**

The ocelot will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since no potential ocelot habitat has been identified within the air emissions mAOI, no impacts to ocelots are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the ocelot are anticipated from the project's non-criteria pollutant air emissions.

Since no potential ocelot habitat was identified within or adjacent to the outfall structures, no impacts to ocelots are anticipated from the project's storm water or wastewater discharges.

No direct or indirect impacts to ocelots are anticipated.

**Determination of Effect**

The proposed action will have no effect on the ocelot.

#### 9.7.1.9 Red Wolf

**Potential to Occur in the Action Area**

Red wolves are a very rare species in the wild. Only 1 known population exists in the wild and is located in North Carolina. Red wolves are thought to utilize brushland, forests, swamps, and prairies[44].

No habitat with the potential to support the red wolf was observed within the Action Area. The Project Area is centrally located within an industrialized area. USFWS-designated critical habitat is not yet designated for this species[29]. Red wolves are known to be limited in the wild to select locations in North Carolina[45]. No known observations of the red wolf in or near the Project Area have been found.

Red wolves will not occur within the Action Area.

**Potential Effects to Red Wolves**

The red wolf will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since no potential red wolf habitat has been identified within the air emissions mAOI, no impacts to these wolves are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the red wolf are anticipated from the project's non-criteria pollutant air emissions.

Since no potential red wolf habitat was identified within or adjacent to the outfall structures, no impacts to these wolves are anticipated from the project's storm water or wastewater discharges.

No direct or indirect impacts to red wolves are anticipated.

**Determination of Effect**

The proposed action will have no effect on the red wolf.

#### 9.7.1.10 West Indian Manatee

**Potential to Occur in the Action Area**

West Indian manatees are found in shallow, slow-moving rivers, estuaries, saltwater bays, canals and coastal areas. Typically, they occur in Florida, but they may migrate during the summer months as far west as Alabama and as far north as Virginia, dependent on water temperature[116]. Manatees are typically found in depths ranging from 3-7 feet, but can also be found in shallow areas down to 1.5 feet. Feeding grounds are shallow grassbeds adjacent to deep channels in both coastal and riverine habitats. Manatees are herbivores feeding on over 60 different species of aquatic plants[117].

Habitats with the potential to support West Indian manatees are not located within the terrestrial portion of the Action Area. The Project and Action Areas include 1 small inlet (approximately 95 feet by 145 feet) off of the Inner Harbor. The inlet is the only portion of the Inner Harbor included within the Action Area. This inlet is shallow and tidally influenced. The inlet is located in between 2 existing docks.

The Inner Harbor is also industrially and commercially developed, has a maintained, dredged channel, and is considered a high traffic area for commercial and industrial shipping. No seagrass beds to provide potential forage are mapped within the Inner Harbor. The existing wastewater outfalls can be a potential attractant for the rare, transient West Indian manatee in Texas seeking warm water during the winter. Since the inlet located within the Action Area is small, shallow, and disturbed by marine vessel traffic at the 2 adjacent dock facilities, it is highly unlikely the manatee would utilize this area.

Manatees are primarily found along the Florida coast. Occasional transient individuals may disperse to the Texas coast. These incidents are typically rare and temporary. The most recent record from the Corpus Christi Bay/Ship Channel occurred in September 2012[118]. According to the Texas Marine Mammal Stranding Network, less than 10 manatees have been recovered in Texas since the 1980s[119].

Although unlikely, the potential exists for the West Indian manatee to occur within the Inner Harbor. Any occurrence of manatees is likely to be rare and temporary.

**Potential Effects to West Indian Manatee**

Construction and noise associated with the condensate splitter project will occur within an existing industrial area greater than 0.75 mile from any potential West Indian manatee occurrence. Installation of the proposed pipelines connecting the condensate splitter project to the existing dock facilities will be completed inland from the shoreline of the Inner Harbor. The 3 pipelines will be installed on an existing pipe rack over the inlet to the Inner Harbor within the Action Area. Since no construction activities will take place within potential manatee habitat and West Indian manatees are unlikely to occur within the Action Area, no impacts to West Indian manatees are anticipated from construction activities, noise, or human disturbance.

Since no potential West Indian manatee habitat or occurrence has been identified within the air emissions mAOI, no impacts to these mammals are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the West Indian manatee are anticipated from the project's non-criteria pollutant air emissions.

Based on the preliminary design, wastewater associated with operation of the condensate splitter project will be treated by the WWTP or collected and hauled to an authorized off-site disposal facility. All WWTP effluent will be discharged from an outfall designated specifically for wastewater discharge. The designated outfall will empty into a vegetated drainage ditch. Storm water will be treated by an OWS and discharged into the aforementioned drainage ditch. Water within the drainage ditch does not typically have a significant flow rate except during significant rainfall events. Discharged wastewater and storm water will reach ambient conditions prior to entering the Inner Harbor, which is three quarters of a mile downstream of

the outfall structures. Given the discharged water will reach ambient conditions prior to entering the Inner Harbor, West Indian manatees will not be impacted from wastewater or storm water discharge.

Since the increase in marine vessel traffic would be minimal and the vessels that travel within the Inner Harbor travel at a speed that would minimize sea turtle collision, no additional effects to federally-listed species are expected as a result of the proposed condensate splitter project.

No direct or indirect impacts to West Indian manatees are anticipated.

**Determination of Effect**

The proposed action will have no effect on the West Indian manatee.

#### 9.7.1.11 Whales

**Potential to Occur in the Action Area**

For this BA, the whales listed in this report have been combined into a single category for analysis (i.e., impacts were not distinguished between species). In general, whales are found in marine open water at varying depths and in different proximities to the coastal shelf. Depending on the specific species, their diets may include fish, plankton, cephalopods, sharks, skates, crustaceans, and krill. Whales associated with Texas are typically found in the Gulf of Mexico[5053576061].

The Project and Action Areas include 1 small inlet (approximately 95 feet by 145 feet) off of the Inner Harbor. The inlet is the only portion of the Inner Harbor included within the Action Area. This inlet is shallow and tidally influenced. The inlet is located in between 2 existing docks. The Inner Harbor is industrially and commercially developed, has a maintained, dredged channel, and is considered a high traffic marine vessel area. No habitat with the potential to support whales was observed within the Action Area. The nearest potential habitat for whales is more than 20 miles east of the Project Area in the Gulf of Mexico. No records of whales occurring in this portion of the ship channel were found.

Whales will not occur in the Action Area.

**Potential Effects to Whales**

Whales will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since no potential whale habitat has been identified within the air emissions mAOI, no impacts to whales are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the whales are anticipated from the project's non-criteria pollutant air emissions.

Since no potential whale habitat was identified within or adjacent to the outfall structures, no impacts to whales are anticipated from the project's storm water or wastewater discharge.

No direct or indirect impacts to whales are anticipated.

**Determination of Effect**

The proposed action will have no effect on whales.

#### 9.7.1.12 Eskimo Curlew

**Potential to Occur in the Action Area**

Eskimo curlews are migratory birds that breed in Canada and the northern US and winter in South America. Therefore, breeding and wintering habitat were excluded from this analysis. Non-breeding birds utilize a variety of habitats, including grasslands, pastures, plowed fields, and less frequently, marshes and mud flats[64].

No habitat with the potential to support the Eskimo curlew was observed within the Action Area. Eskimo curlews are extremely rare. It is estimated that the population is less than 50 individuals and may even be extinct[120]. There are no known extant populations of Eskimo curlews. The last confirmed record of an Eskimo curlew in Texas was in 1962 in Galveston County, Texas[121]. Another possible sighting was noted in 1981 of a flock of 23 birds in Galveston

Bay on Atkinson Island[122]. USFWS-designated critical habitat is not yet designated for this species[29].

Eskimo curlews will not occur within the Action Area.

**Potential Effects to Eskimo Curlew**

The Eskimo curlew will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since the Eskimo curlew is highly unlikely to occur within the air emissions mAOI and the concentration of emissions within the mAOI would be low and infrequent, no impacts to these birds are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the curlew are anticipated from the project's non-criteria pollutant air emissions.

Since no potential Eskimo curlew habitat was identified within or adjacent to the outfalls, no impacts to these curlews are anticipated from the project's storm water or wastewater discharges.

No direct or indirect impacts to Eskimo curlews are anticipated.

**Determination of Effect**

The proposed action will have no effect on the Eskimo curlew.

#### 9.7.1.13 Northern Aplomado Falcon

**Potential to Occur in the Action Area**

Northern aplomado falcons are found in desert grasslands, savannahs, and coastal prairies in Latin America and in Texas, New Mexico, and Arizona[123]. This falcon requires open grasslands with scattered trees or shrubs. They do not build their own nests but use stick nests constructed by other birds[65].

No habitat with the potential to support the northern aplomado falcon was observed within the Action Area. The Action Area is subject to frequent human disturbance, and northern aplomado

falcons can be sensitive to disturbance. Therefore, suitable habitat for northern aplomado falcons is not present within the Action Area.

The northern aplomado falcon has declined significantly along the Texas coast due mostly to the loss of native grassland prairies. Efforts have been made to reintroduce this species to King Ranch in Kleberg County (approximately 28 miles southwest of the Project Area), to Laguna Atascosa National Wildlife Refuge in Cameron County, and to Mustang Island State Park in Nueces County (approximately 20 miles east of the Project Area)[124]. The nearest record of a northern aplomado falcon is more than 15 miles southeast of the Project Area[125]. The probability of northern aplomado falcons occurring in the Action Area is extremely low. USFWS-designated critical habitat is not yet designated for this species[29].

Northern aplomado falcons are not likely to occur in the Action Area.

**Potential Effects to Northern Aplomado Falcon**

The northern aplomado falcon will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since these falcons are unlikely to occur within the air emissions mAOI and the concentration of emissions within the mAOI would be low and infrequent, no impacts to these birds are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the falcons are anticipated from the project's non-criteria pollutant air emissions.

Since no potential northern aplomado falcon habitat was identified within or adjacent to the outfalls, no impacts to these falcons are anticipated from the project's storm water or wastewater discharges.

No direct or indirect impacts to northern aplomado falcons are anticipated.

**Determination of Effect**

The proposed action will have no effect on the northern aplomado falcon.

#### 9.7.1.14 Piping Plover

**Potential to Occur in the Action Area**

Piping plovers are migratory birds and their breeding habitat is known to be the northern US and Canada. Therefore, the consideration of potential nesting habitat was excluded from this analysis. Potential habitat within the Action Area would be limited to wintering habitat (foraging and roosting). Foraging habitat includes bare to sparsely vegetated beaches, salt marshes, emergent seagrass beds, wash-over passes, mudflats, sandflats, or algal flats. Most foraging habitats are dynamic systems that fluctuate with the tide and wind. Roosting habitat includes sandy beaches, often with cover such as driftwood, seaweed clumps, small dunes, and debris[67].

No habitat with the potential to support the piping plover was observed within the Action Area. The Action Area is heavily impacted by industrial development and docking facilities. The closest USFWS-designated critical habitat for piping plover is approximately 5 miles northeast of the Action Area[29]. No records were found of piping plovers occurring within at least 5 miles of the Action Area.

Piping plovers are not likely to occur within the Action Area.

**Potential Effects to Piping Plovers**

The piping plover will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since no potential piping plover habitat has been identified within the air emissions mAOI, no impacts to these birds are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to these plovers are anticipated from the project's non-criteria pollutant air emissions.

Since no potential piping plover habitat was identified within or adjacent to the outfall structures, no impacts to piping plovers are anticipated from the project's storm water or wastewater discharges.

No direct or indirect impacts to piping plovers are anticipated.

**Determination of Effect**

The proposed action will have no effect on the piping plover.

### 9.7.1.15 Whooping Crane

**Potential to Occur in the Action Area**

Whooping cranes are migratory birds and their breeding habitat is known to be in the northern US and Canada[75]. Therefore, the consideration of potential nesting habitat was excluded from this analysis. In the winter, whooping cranes are found in estuarine marshes, shallow bays, and tidal flats[126]. Their wintering habitat is known to be limited to the Aransas National Wildlife Refuge near Rockport, Texas (approximately 36 miles northeast of the Project Area). Whooping cranes are reported to be broadening their winter range to include additional coastal habitats in part to increasing population numbers and in response to climate/habitat change[127]. During migration, whooping cranes opportunistically utilize stopover habitat. Migrating cranes feed and roost in wetlands, rivers, and upland grain fields with other bird species[76]. Migration flights generally occur between 1,000-6,000 feet during day-time hours, however they will fly at low altitudes during brief rest periods and at the start and end of a daily flight[128]. Potential habitat within the Action Area would be limited to temporary foraging and roosting habitat during migration.

Whooping cranes are a rare species in the wild. In 2014, the number of birds was estimated at 304 individuals at Aransas National Wildlife Refuge[129].

The Project Area is located approximately 36 miles southwest of the Aransas National Wildlife Refuge and is within the designated migration corridor (Figure 6 – Appendix A). Whooping cranes have not been recorded and are not known to occur within or near the Action Area[130]. The closest recorded observation of a whooping crane to the Action Area is approximately 34 miles to the northeast near Egery Island in Copano Bay[130]. No suitable habitat with the potential to support wintering or migrating whooping cranes was noted within or near the Action Area. However, the potential exists from whooping cranes to fly over the Action Area.

Whooping cranes are unlikely to occur within the Action Area. Any potential occurrence of whooping cranes near the Action Area would likely be limited to migration flights above the Action Area.

**Potential Effects to Whooping Cranes**

Whooping cranes have the potential to fly over the Action Area during migration, although any incidental occurrence would be rare and temporary. The Action Area is located at the south and west edge of the migration corridor. Therefore, the potential for whooping crane collision with new infrastructure was considered.

Low light conditions may increase the potential for whooping crane collisions with new fencelines, new powerlines, or new tall and narrow infrastructure such as communication towers and wind turbines. The majority of recorded collisions are associated with powerlines and fencelines[128]. No records of collisions with flare stacks or existing facilities have been found. Further, whooping cranes are known to avoid existing, well-lit infrastructure and human disturbance[128].

The project is being constructed in an established industrial area. The Corpus Christi Terminal is currently an active industrial facility and it is surrounded on all sides by additional active industrial facilities. The site has historically included infrastructure (storage tanks and other facilities), industrial lighting, noise, and human activity. The existing facilities to the north, east, and west have historically included infrastructure (towers, flares, process equipment, etc.) of the same height or higher than the proposed new infrastructure. The heights of the new infrastructure (flare, heaters, fractionator towers, and other facilities) will range from 50 to a maximum of 200 feet. No new aboveground power lines will be constructed.

Given the location of the site, pre-existing surrounding industrial development, and known whooping crane locations, it is unlikely new infrastructure poses a risk to migrating whooping cranes. No infrastructure-related effects to whooping cranes or other federally-listed species are anticipated as a result of the proposed project.

Although whooping cranes have not been observed at or near the facility, the following measures will be implemented to reduce the likelihood of any potential impacts in the event that a whooping crane should occur near the Project Area during construction.

- The new infrastructure will be fitted with safety lighting similar to the previous and existing infrastructure and in accordance with the FAA and USFWS guidelines[103].

- Large cranes (maximum 250 feet tall) with non-retractable booms will be required for construction. These booms will be flagged or marked. Booms greater than 200 feet will be fitted with FAA lighting[103].

- Construction equipment capable of retraction will be retracted to a height less than or equal to the height of existing infrastructure (60 feet) when feasible, in accordance with construction and safety requirements. Retractable crane booms will be flagged or marked. Retractable booms greater than 200 feet will be fitted with FAA lighting[103].

Since the whooping crane is highly unlikely to occur within the air emissions mAOI and the concentration of emissions within the mAOI would be low and infrequent, no impacts to these birds are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to whooping cranes are anticipated from the project's non-criteria pollutant air emissions.

Since no potential whooping crane habitat was identified within or adjacent to the outfall structures, no impacts to whooping cranes are anticipated from the project's wastewater or storm water effluent emissions.

No direct or indirect impacts to whooping cranes are anticipated.

**Determination of Effect**

The proposed action may affect, but is not likely to adversely affect the whooping crane.

#### 9.7.1.16 Slender Rush-pea

**Potential to Occur in the Action Area**

The slender rush-pea is an early successional perennial. It is typically found in barren openings or in areas with low native grasses on clayey soils of blackland prairies and creek banks of the Gulf Coastal Prairie[78]. It can be found in prairies, roadsides, or open areas with shrubs, cacti, and low growing grasses. Non-native species, such as King Ranch bluestem or bermudagrass, typically out-compete the slender rush-pea[79].

No habitat with the potential to support the slender rush-pea was identified within the Action Area. Herbaceous habitat identified during the survey was heavily impacted by surrounding industrial development and did not contain the necessary characteristics to support the slender rush-pea. Herbaceous habitat was in small, highly fragmented areas and was dominated with non-native plant species that would out-compete the slender rush-pea.

The nearest recorded occurrence of the slender rush-pea is located approximately 10 miles west of the Action Area[85]. This record was from a type specimen collected in 1931, and follow-up surveys in the 1980s failed to confirm an extant population in the area[79]. There are 2 known extant populations located in the southern portion of Nueces County, which is more than 20 miles south of the Action Area. USFWS-designated critical habitat is not yet designated for this species.

The slender rush-pea is not likely to occur in the Action Area.

**Potential Effects to Slender Rush-peas**

The slender rush-pea will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since the slender rush-pea is unlikely to occur within the air emissions mAOI and the concentration of emissions within the mAOI would be low and infrequent, no impacts to slender rush-peas are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to slender rush-peas are anticipated from the project's non-criteria pollutant air emissions.

Since no potential slender rush-pea habitat was identified within or adjacent to the outfall structures, no impacts to slender rush-peas are anticipated from the project's storm water or wastewater discharge.

No direct or indirect impacts to the slender rush-pea are anticipated.

**Determination of Effect**

The proposed action will have no effect on the slender rush-pea.

#### 9.7.1.17 South Texas Ambrosia

**Potential to Occur in the Action Area**

South Texas ambrosia occurs in open grasslands or savannahs on soils varying from clay loams to sandy loams. Its current distribution is known in only 6 locations within Nueces and Kleberg counties, Texas. South Texas ambrosia is thought to be intolerant to plowing, blading, or discing, but lesser disturbance activities, such as mowing and fire, may enhance growth[8182].

No habitat with the potential to support the South Texas ambrosia was identified within the Action Area. Herbaceous habitat identified during the survey was heavily impacted by surrounding industrial development and did not contain the necessary characteristics to support the South Texas ambrosia. Herbaceous habitat was in small, highly fragmented areas and was dominated with non-native plant species that would out-compete the South Texas ambrosia.

The nearest known occurrence of the South Texas ambrosia is located more than 10 miles southwest of the Action Area for the proposed project. This population was last observed in 2000 and beetle damage was noted. The population was not observed during surveys completed in and around this location in 2008 and 2009[85].

The South Texas ambrosia is not likely to occur within the Action Area.

**Potential Effects to South Texas Ambrosia**

The South Texas ambrosia will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since the concentration of emissions within the mAOI would be low and infrequent, no impacts to the South Texas ambrosia are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to these ambrosias are anticipated from the project's non-criteria pollutant air emissions.

Since no potential South Texas ambrosia habitat was identified within or adjacent to the outfall structures, no impacts to these ambrosias are anticipated from the project's storm water discharge.

No direct or indirect impacts to the South Texas ambrosia are anticipated.

**Determination of Effect**

The proposed action will have no effect on the South Texas ambrosia.

### 9.7.2 PROPOSED THREATENED AND CANDIDATE SPECIES

#### 9.7.2.1 Sprague's Pipit

**Potential to Occur in the Action Area**

Sprague's pipits are migratory birds and their breeding habitat is known to be the northern US and Canada. Therefore, the consideration of potential nesting habitat was excluded from this analysis. Potential habitat within the Action Area would be limited to wintering habitat (foraging and roosting). Sprague's pipithabitat includes grass-forb prairies dominated by bluestem grasses that are about 8 inches in height. They will also use old rice fields, turf grass farms, golf courses, and recently burned pastures[83].

No habitat with the potential to support the Sprague's pipit was observed within the Action Area. The observed herbaceous habitat was highly fragmented, mowed, and disturbed by adjacent industrial activity which would preclude the occurrence of Sprague's pipits.

Sprague's pipits are an uncommon to rare winter resident in the Corpus Christi area. The nearest record of a Sprague's pipit is located approximately 4 miles southwest of the Project Area[131].

Sprague's pipits are not likely to occur within the Action Area.

**Potential Effects to Sprague's Pipits**

The Sprague's pipit will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since no potential pipit habitat has been identified within the air emissions mAOI, no impacts to these birds are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no

emissions of mercury or other heavy metals are anticipated, no impacts to the Sprague's pipit are anticipated from the project's non-criteria pollutant air emissions.

Since no potential Sprague's pipit habitat was identified within or adjacent to the outfall structures, no impacts to these birds are anticipated from the project's storm water or wastewater discharge.

No direct or indirect impacts to Sprague's pipits are anticipated.

#### 9.7.2.2 Red Knot

**Potential to Occur in the Action Area**

Red knots are long-distance migrants between the arctic (breeding habitat) and South America (winter habitat). Since their breeding range is not within the Action Area, consideration of potential nesting habitat was not included in this analysis. Some red knots may remain in Texas during the winter; however most use the area only during migration. Red knots demonstrate strong site fidelity during migration, using the same sites each year, including the Bolivar peninsula in Texas. They typically occupy sandy beaches, tidal mudflats, and salt marshes[72].

No habitat with the potential to support red knots was observed in the Action Area. Land use surrounding the facility is primarily developed industrial land that is unsuitable for red knots.

Red knots are known to frequent Suter Wildlife Refuge and Mustang Island, approximately 10 and 20 miles from the Project Area, respectively[132]. USFWS-designated critical habitat is not yet designated for this species[29]. Red knots may incidentally occur in areas surrounding these known stopover sites during migration. However, the level of disturbance within the Action Area is likely to serve as deterrence for red knots. There are no records of red knots occurring within the Action Area. The nearest known record of a red knot is approximately 1.8 miles east of the Action Area[132].

Red knots may incidentally occur within the Action Area, but occurrences are likely to be rare and temporary.

**Potential Effects to Red Knots**

The red knot will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since no potential red knot habitat has been identified within the air emissions mAOI, no impacts to these birds are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the red knot are anticipated from the project's non-criteria pollutant air emissions.

Since no potential red knot habitat was identified within or adjacent to the outfalls, no impacts to these birds are anticipated from the project's storm water or wastewater discharges.

No direct or indirect impacts to red knots are anticipated.

#### 9.7.2.3 Yellow-billed Cuckoo

**Potential to Occur in the Action Area**

Yellow-billed cuckoos are migratory birds that breed in the US, Canada, and northern Mexico. These cuckoos migrate to South America for the winter; therefore, wintering habitat was not considered in this analysis. Nesting habitat includes large patches of riparian or broad-leaved woodland habitat. Woodland components include cottonwoods, willows, and a dense understory[74].

Habitat with the potential to support yellow-billed cuckoos was not observed in the Action Area. Land use surrounding the facility is primarily developed industrial land that is unsuitable for yellow-billed cuckoos. The nearest record of a yellow-billed cuckoo was approximately 1.8 miles east of the Project Area[133]. No records of nesting yellow-billed cuckoos have been found within the Action Area.

Yellow-billed cuckoos would not likely occur within the Action Area.

**Potential Effects to Yellow-billed Cuckoos**

The yellow-billed cuckoo will not be directly impacted by construction activities associated with the completion of the proposed project, noise pollution, or human disturbance.

Since no potential cuckoo habitat has been identified within the air emissions mAOI, no impacts to these birds are anticipated from the project's criteria pollutant air emissions. Since the predicted non-criteria pollutant concentrations will be below TCEQ guideline levels and no emissions of mercury or other heavy metals are anticipated, no impacts to the yellow-billed cuckoo are anticipated from the project's non-criteria pollutant air emissions.

Since no potential yellow-billed cuckoo habitat was identified within or adjacent to the outfall structures, no impacts to these birds are anticipated from the project's wastewater or storm water effluent emissions.

No direct or indirect impacts to yellow-billed cuckoos are anticipated.

# 10.0 CONCLUSIONS

This section is a summary of WGI's recommended determination of effect for all federally-listed species, a description of any interdependent and interrelated actions, and a description of any anticipated cumulative effects resulting from the proposed project.

## 10.1 DETERMINATION OF EFFECT

The recommended determinations of effect for all federally-listed species with the potential to occur within habitat located at or near the Action Area are summarized below in Table 8.

**Table 8. Determination of Effect Summary**

| Federally-Listed Species | Determination of Effect |
|---|---|
| Green sea turtle | No Effect |
| Hawksbill sea turtle | No Effect |
| Kemp's Ridley sea turtle | No Effect |
| Leatherback sea turtle | No Effect |
| Loggerhead sea turtle | No Effect |
| Smalltooth sawfish | No Effect |
| Gulf Coast jaguarundi | No Effect |
| Ocelot | No Effect |
| Red wolf | No Effect |
| West Indian manatee | No Effect |
| Blue whale | No Effect |
| Finback whale | No Effect |
| Humpback whale | No Effect |
| Sei whale | No Effect |
| Sperm whale | No Effect |
| Eskimo curlew | No Effect |
| Northern aplomado falcon | No Effect |
| Piping plover | No Effect |
| Whooping crane | May Affect, Not Likely to Adversely Affect |
| South Texas ambrosia | No Effect |
| Slender rush-pea | No Effect |

## 10.2 INTERDEPENDENT AND INTERRELATED ACTIONS

The proposed project includes the construction of the condensate splitter within the Corpus Christi Terminal and the 3 pipelines connecting the proposed splitter project to the existing

dock facility as outlined in Section 5.0. No additional interdependent or interrelated actions are anticipated at this time.

## 10.3 CUMULATIVE EFFECTS

The Project Area is located within an existing industrial area surrounded primarily by urban development.

The area surrounding the proposed Corpus Christi Terminal expansion project includes many existing industrial facilities. According to the EPA Region 6 air permits website, there are 2 additional proposed projects within 2 miles of the Magellan condensate splitter project that have applied for GHG permits. These include an electric generation facility and a combined heat and power plant project. Given the attainment status of the region, no significant cumulative air emission effects are anticipated.

As with the proposed condensate splitter project, any new proposed developments may have the potential to impact federally-listed species. However, WGI is not aware of any specific projects planned for this area at this time.

## 10.4 CONSERVATION MEASURES

Magellan plans to utilize the BACT as discussed in the TCEQ application to the project control emissions and thus minimize impacts to the surrounding environment to the maximum extent practicable.

Measures will be implemented to minimize potential whooping crane collisions as a result of the construction of the proposed project. These measures include additional use of lighting, flagged crane booms, and an incident reporting system.

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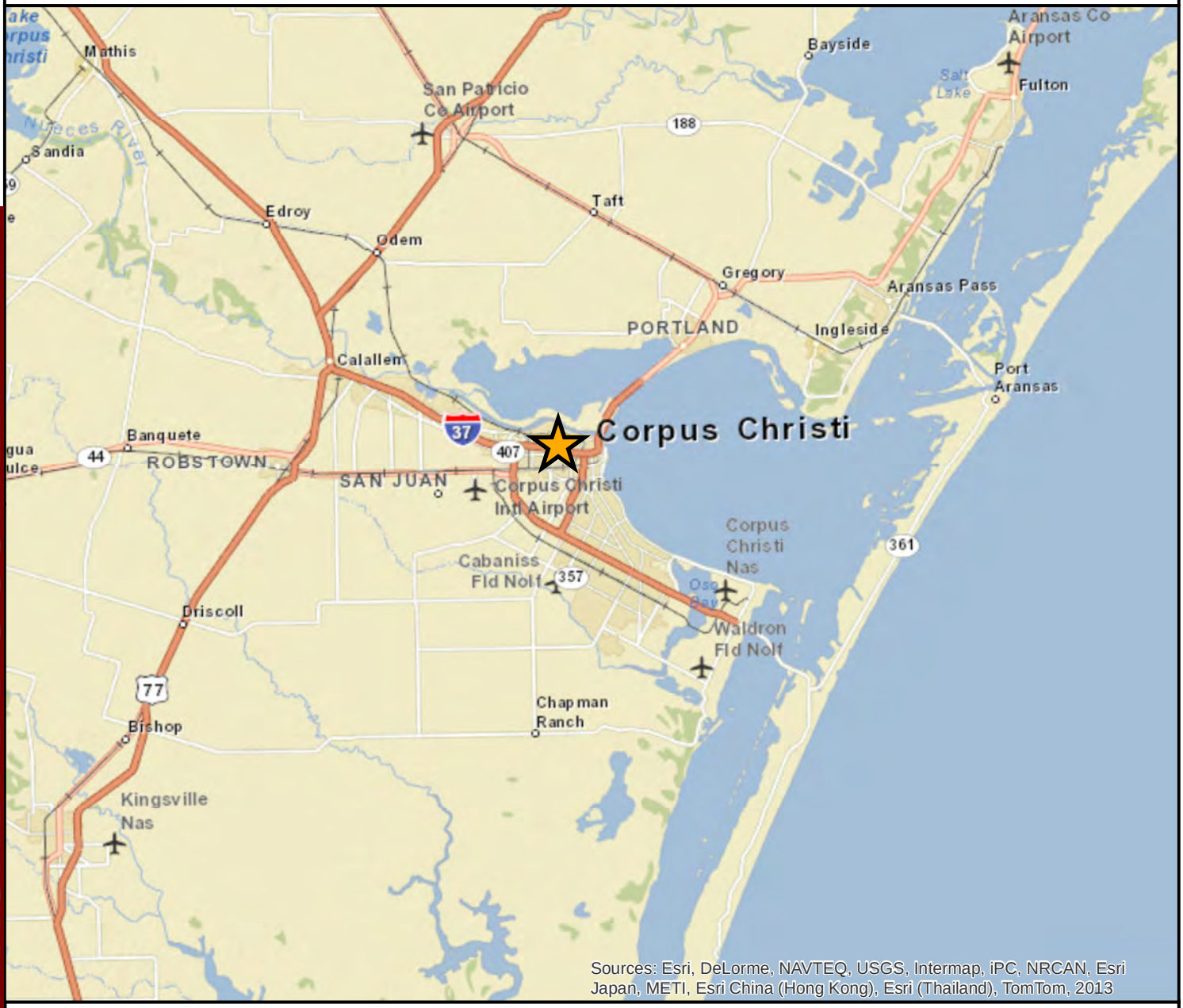
## 12.0 LIST OF PREPARERS

| | |
|---|---|
| Jayme A. Shiner, Ecologist | PWS, B.S. General Biology |
| Debbie A. Scott, Environmental Scientist | AWB, M.S., Wildlife Biology |
| Donna Hertlein, Wildlife Biologist | M.S., Zoology and Ecology |

# APPENDIX A

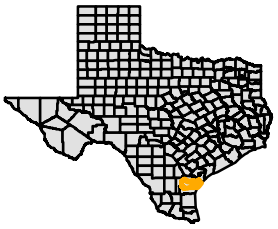
# FIGURES

# Figure 1
# Project Location
# Magellan Condensate Splitter Project
# Nueces County, Texas





Project Location



| | | | |
|---|---|---|---|
| Background Resources:<br>World Street Map | Surveyor(s):<br>Jayme Shiner PWS<br>Debra Scott AWB | Project Number and Information:<br>1417<br>Magellan Condensate Splitter Project<br>Biological Assessment | WHITENTON group environmental consultants<br>3413 Hunter Road San Marcos Texas 78666 |
| GPS and Coordinate Type:<br>Trimble Geo XH 6000 Series<br>UTM NAD 1983<br>Zone 14 North | Map Created:<br>3/3/2014 by D. Scott | | Miles<br>0 5 10<br>N |

# Figure 2
# Project Area and Action Area - Aerial Map
# Magellan Condensate Splitter Project
# Nueces County, Texas


**Project Area (~140 Acres)**

**Action Area (~0.9-Mile Maximum Radius)**

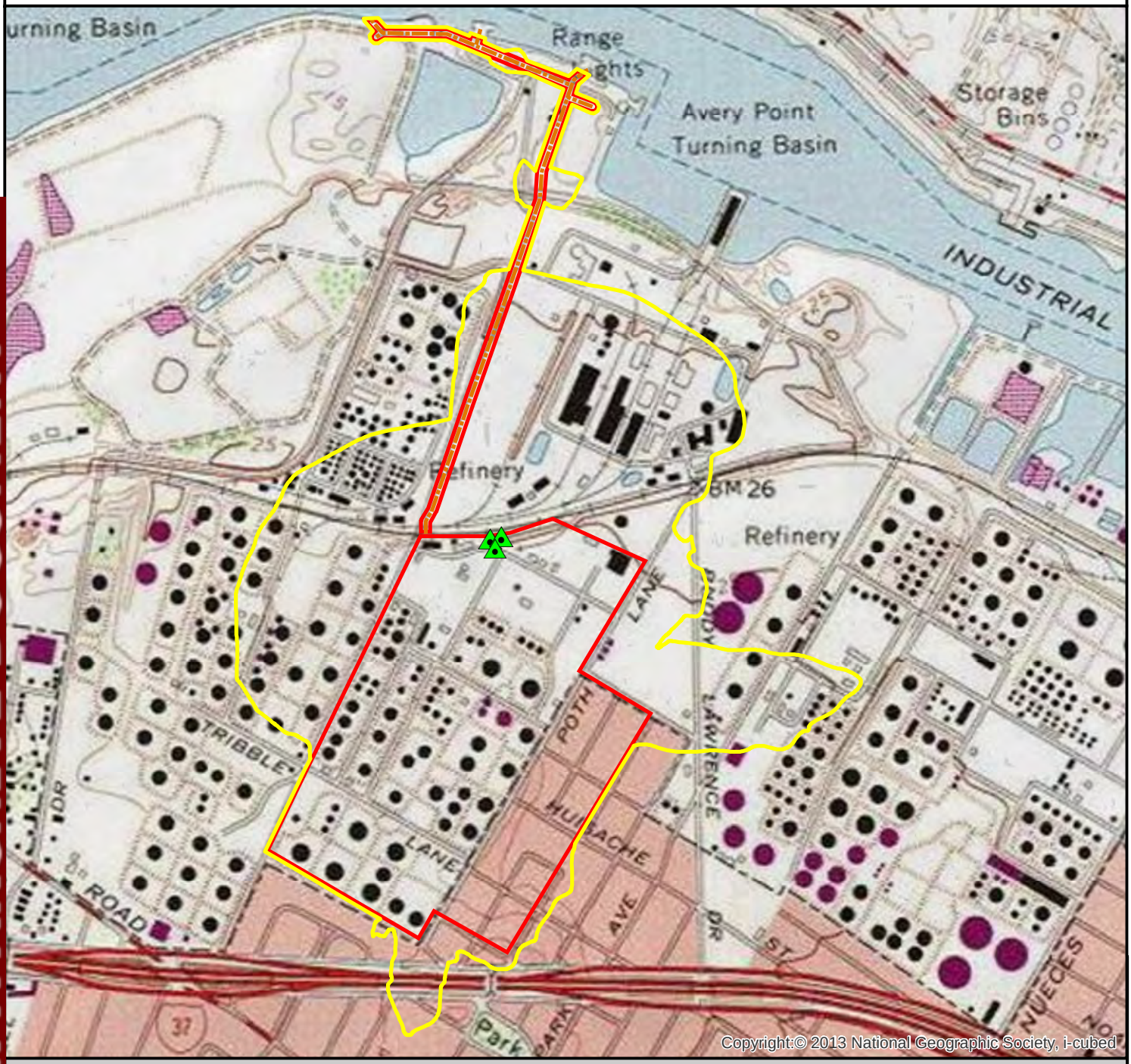
**Outfall**

**Pipeline**

**Stormwater Discharge Route**

| | | | |
|---|---|---|---|
| Background Resources:<br>ESRI Aerial Imagery Basemap | Surveyor(s):<br>Jayme Shiner PWS<br>Debbie Scott AWB<br>Bryan Whisenant | Project Number and Information:<br>1417<br>Magellan Condensate Splitter Project<br>Biological Assessment | WHITENTON group environmental consultants<br>3413 Hunter Road San Marcos Texas 78666 |
| GPS and Coordinate Type:<br>Trimble Geo XH 6000 Series<br>UTM NAD 1983<br>Zone 14 North | Map Created:<br>4/29/2014 by D. Scott | | Feet<br>0 750 1,500<br>N |

# Figure 3
# Project Area and Action Area - Topographic Map
# Magellan Condensate Splitter Project
# Nueces County, Texas




**Project Area (~140 Acres)**

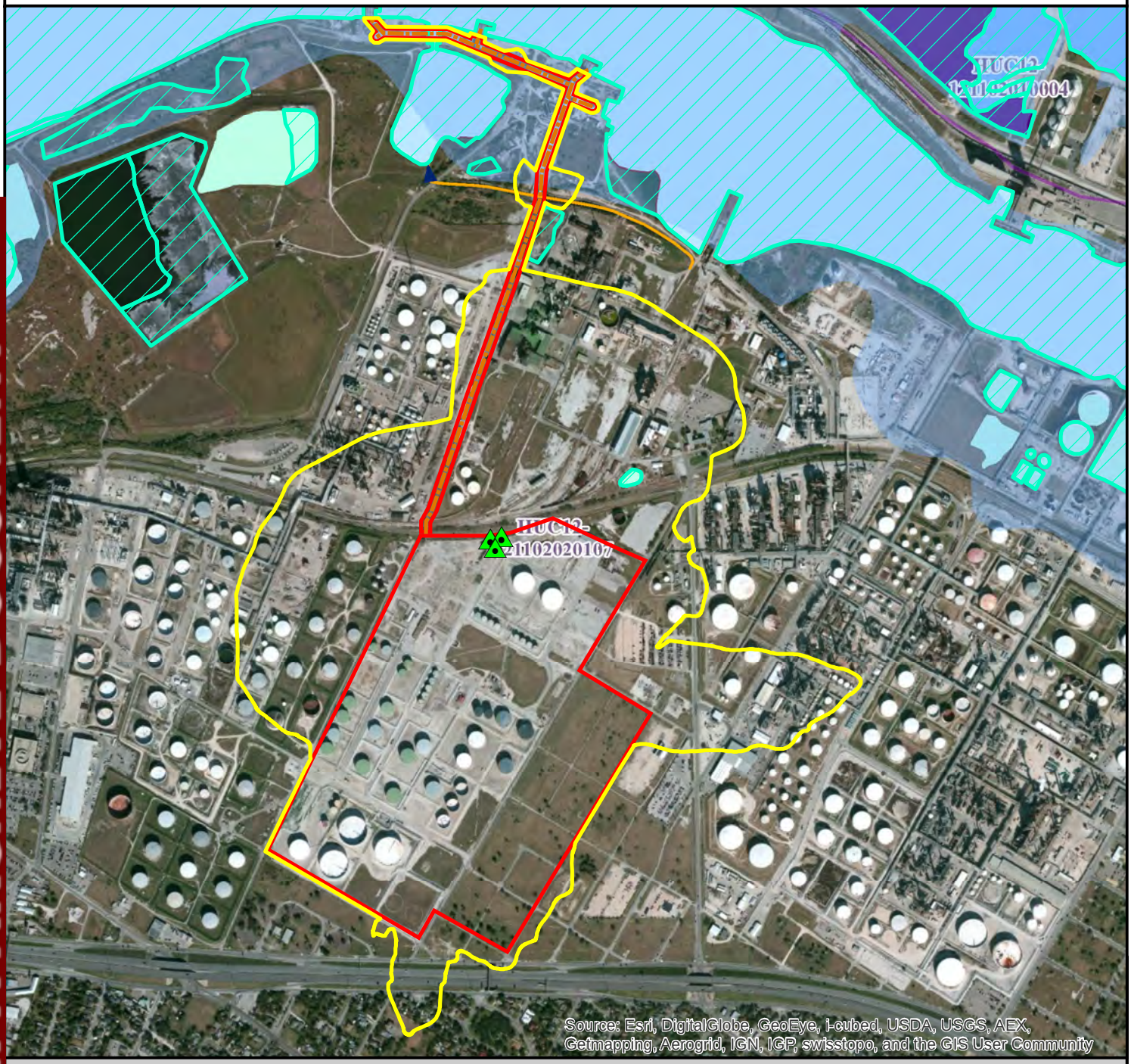
**Action Area (~0.9-Mile Maximum Radius)**

**Outfall**

**Pipeline**

| | | | |
|---|---|---|---|
| Background Resources:<br>USA Topo Basemap | Surveyor(s):<br>Jayme Shiner PWS<br>Debbie Scott AWB<br>Bryan Whisenant | Project Number and Information:<br>1417<br>Magellan Condensate Splitter Project<br>Biological Assessment | WHITENTON group environmental consultants<br>3413 Hunter Road San Marcos Texas 78666 |
| GPS and Coordinate Type:<br>Trimble Geo XH 6000 Series<br>UTM NAD 1983<br>Zone 14 North | Map Created:<br>4/29/2014 by D. Scott | | Feet<br>0 750 1,500<br>N |

# Figure 4
# National Wetlands Inventory, National Hydrography, and FEMA Floodplain Data
# Magellan Condensate Splitter Project
# Nueces County, Texas




Project Area (~140 Acres)
Action Area (~0.9-Mile Maximum Radius)
NWI Polygon
Lake/Pond
Reservoir
Outfall
Pipeline

| | | | |
|---|---|---|---|
| Background Resources:<br>ESRI Aerial Imagery Basemap<br>NWI Data<br>NHD<br>FEMA Floodplain Data | Surveyor(s):<br>Jayme Shiner PWS<br>Debbie Scott AWB<br>Bryan Whisenant | Project Number and Information:<br>1417<br>Magellan Condensate Splitter Project<br>Biological Assessment | WHITENTON group environmental consultants<br>3413 Hunter Road San Marcos Texas 78666 |
| GPS and Coordinate Type:<br>Trimble Geo XH 6000 Series<br>UTM NAD 1983<br>Zone 14 North | Map Created:<br>4/29/2014 by D. Scott | | Feet<br>0 750 1,500<br>N |

# Figure 5
# NRCS Soils Data
# Magellan Condensate Splitter Project
# Nueces County, Texas


**Project Area (~140 Acres)**

**Action Area (~0.9-Mile Maximum Radius)**

**NRCS Soil Polygon**

**Ma** Ijam clay loam

**Ua** Urban land

| | | | |
|---|---|---|---|
| Background Resources:<br>ESRI Aerial Imagery Basemap<br>NRCS Soils Data | Surveyor(s):<br>Jayme Shiner PWS<br>Debbie Scott AWB<br>Bryan Whisenant | Project Number and Information:<br>1417<br>Magellan Condensate Splitter Project<br>Biological Assessment | WHITENTON group environmental consultants<br>3413 Hunter Road San Marcos Texas 78666 |
| GPS and Coordinate Type:<br>Trimble Geo XH 6000 Series<br>UTM NAD 1983<br>Zone 14 North | Map Created:<br>4/29/2014 by D. Scott | | Feet<br>0 750 1,500<br>N |

# Figure 6
# Observed Habitats
# Magellan Condensate Splitter Project
# Nueces County, Texas


Project Area (~140 Acres)

Action Area (~0.9-Mile Maximum Radius)

Maintained Grassland

Wetland

Outfall

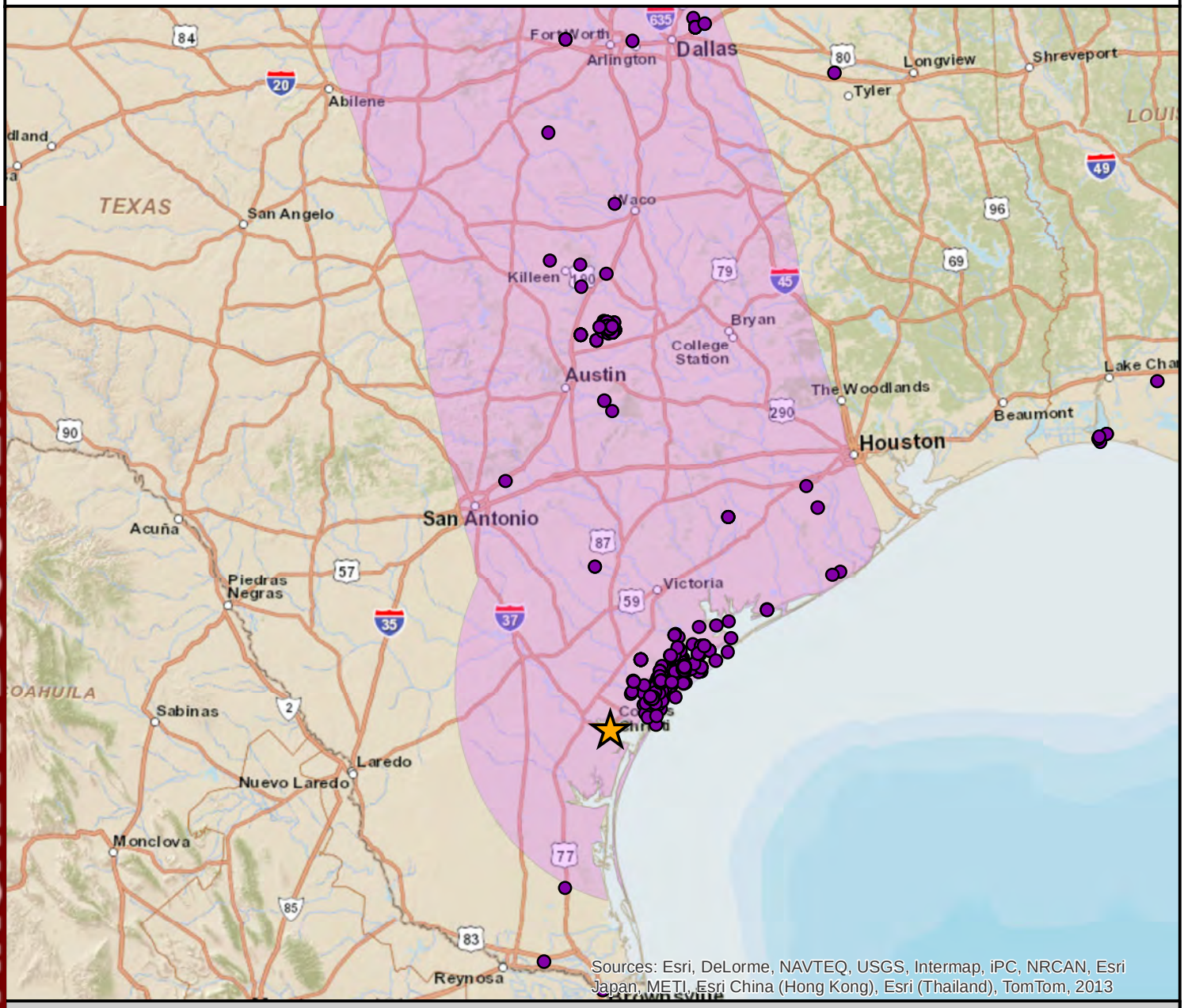
Estuarine Open Water

Pipeline

Drainage Ditch

| | | | |
|---|---|---|---|
| Background Resources:<br>ESRI Aerial Imagery Basemap | Surveyor(s):<br>Jayme Shiner PWS<br>Debbie Scott AWB<br>Bryan Whisenant | Project Number and Information:<br>1417<br>Magellan Condensate Splitter Project<br>Biological Assessment | WHITENTON group environmental consultants<br>3413 Hunter Road San Marcos Texas 78666 |
| GPS and Coordinate Type:<br>Trimble Geo XH 6000 Series<br>UTM NAD 1983<br>Zone 14 North | Map Created:<br>4/29/2014 by D. Scott | | Feet<br>0 750 1,500<br>N |

# Figure 7
# Whooping Crane Known Locations
# Magellan Condensate Splitter Project
# Nueces County, Texas




★ **Project Location**

● **Whooping Crane Sightings**

**Migration Corridor**

| | | | |
|---|---|---|---|
| Background Resources:<br>ESRI Street Map<br>Ebird | Surveyor(s):<br>Jayme Shiner PWS<br>Debbie Scott AWB<br>Bryan Whisenant | Project Number and Information:<br>1417<br>Magellan Condensate Splitter Project<br>Biological Assessment | WHITENTON group environmental consultants<br>3413 Hunter Road San Marcos Texas 78666 |
| GPS and Coordinate Type:<br>Trimble Geo XH 6000 Series<br>UTM NAD 1983<br>Zone 14 North | Map Created:<br>4/29/2014 by D. Scott | | Miles<br>0 50 100 |

# APPENDIX B

# FLOW DIAGRAM

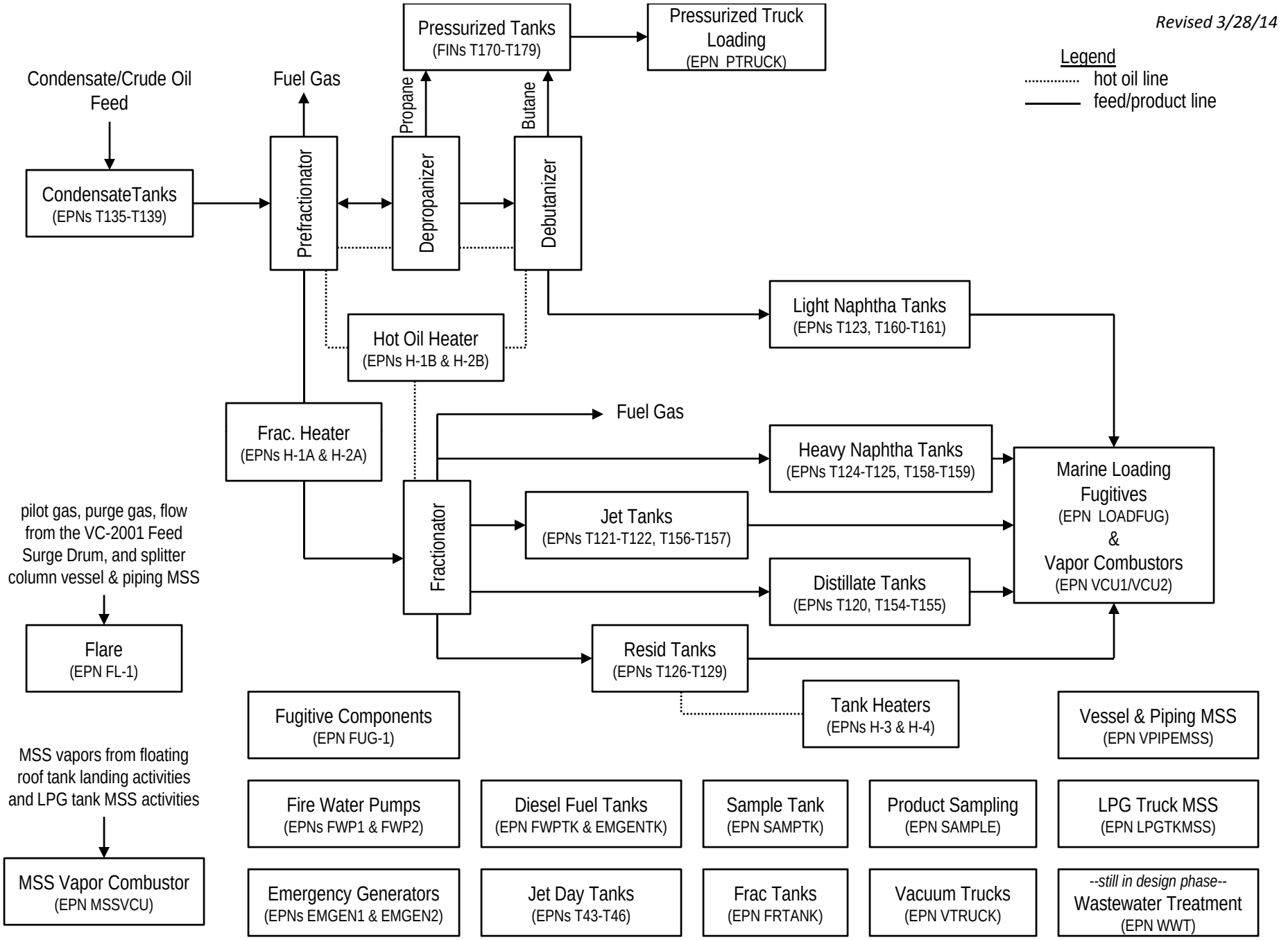
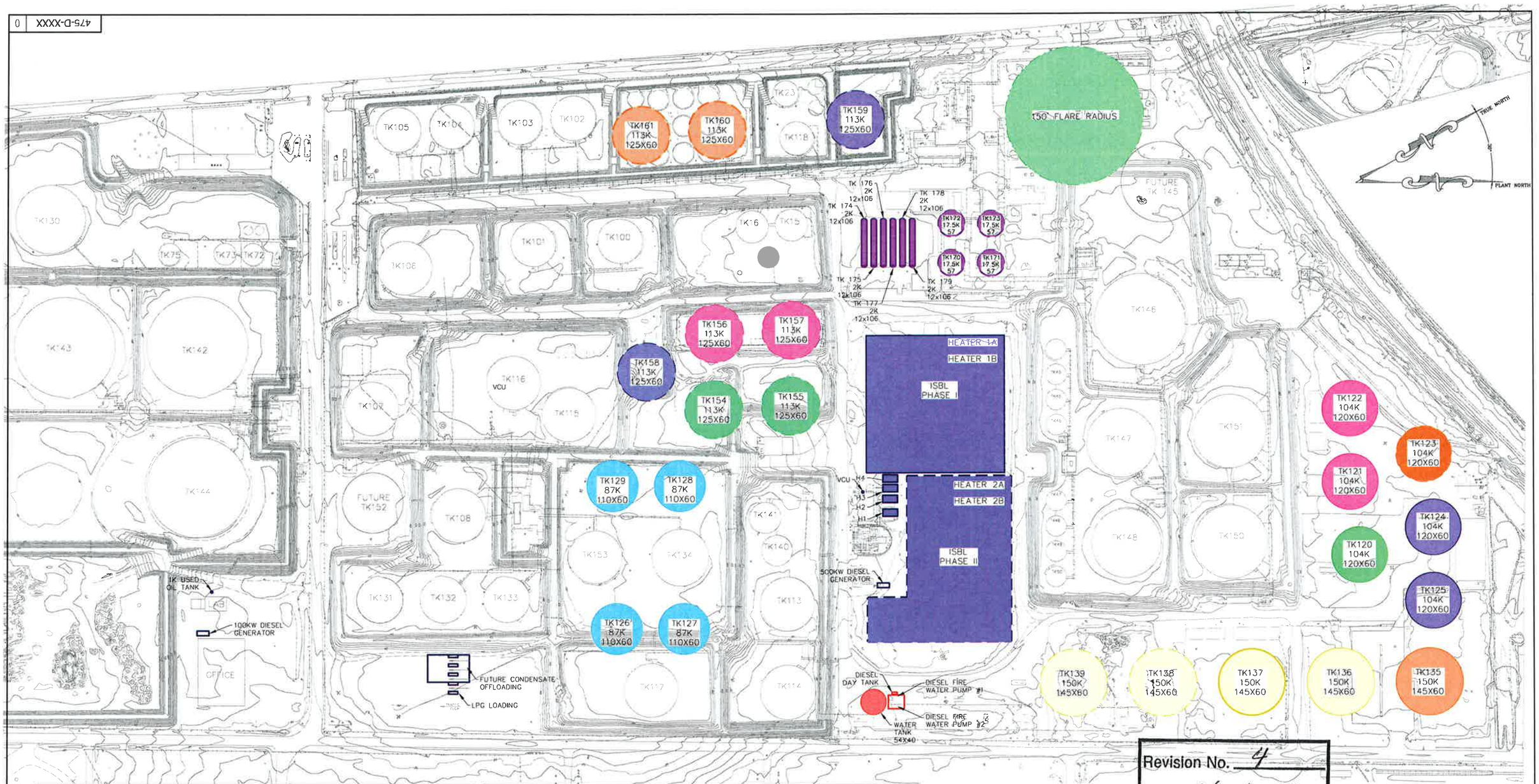



Figure 4-1 ◆ Magellan Processing L.P. ◆ Condensate Splitter Project ◆ Corpus Christi, Texas

# APPENDIX C

# PLOT PLAN




| Phase | Service | Tank No. | Color | Tank Type | Code | Qty (ea) | Dia (ft) | Height (ft) | Working Volume (bbl) |
|---|---|---|---|---|---|---|---|---|---|
| Phase 1 | | 136/137 | | Cone w/IFR | API 650 | 2 | 145 | 60 | 150,000 |
| Phase 2 | Condensate | 138/139 | | Cone w/IFR | API 650 | 2 | 145 | 60 | 150,000 |
| Phase 1 | LPG | 174/175/176/177/178/179 | | Bullet | ASME Section VIII | 6 | 12 | | 2,000 |
| Phase 2 | | 170/171/172/173 | | Sphere | ASME Section VIII | 4 | 57 | | 17,500 |
| Phase 1 | Light Naphtha | 135 | | Cone w/IFR | API 650 | 1 | 145 | 60 | 150,000 |
| Phase 2 | | 123/160/161 | | Cone w/IFR | API 650 | 3 | 125 | 60 | 113,000 |
| Phase 1 | Heavy Naphtha | 124/125 | | Cone w/IFR | API 650 | 2 | 120 | 60 | 104,000 |
| Phase 2 | | 158/159 | | Cone w/IFR | API 650 | 2 | 125 | 60 | 113,000 |

| Phase | Service | Tank No. | Color | Tank Type | Code | Qty (ea) | Dia (ft) | Height (ft) | Working Volume (bbl) |
|---|---|---|---|---|---|---|---|---|---|
| Phase 1 | Jet | 121/122 | | Cone w/IFR | API 650 | 2 | 120 | 60 | 104,000 |
| Phase 2 | | 156/157 | | Cone w/IFR | API 650 | 2 | 125 | 60 | 113,000 |
| Phase 1 | Distillate | 120 | | Cone w/IFR | API 650 | 1 | 120 | 60 | 104,000 |
| Phase 2 | | 154/155 | | Cone w/IFR | API 650 | 2 | 125 | 60 | 113,000 |
| Phase 1 | Gas Oil | 126/127 | | Cone | API 650 | 2 | 110 | 60 | 87,000 |
| Phase 2 | | 128/129 | | Cone | API 650 | 2 | 110 | 60 | 87,000 |
| Phase 1 | Fire Water | later | | Bolted | NFPA 22 | 1 | 54 | 40 | 16,300 |

GRAPHIC SCALE

100 0 100 200

( IN FEET )
1 inch = 100 ft.

Revision No. 4

Date: 6/12/2014

ISSUED FOR
JUNE 12, 2014
PRELIMINARY REVIEW

| REVISION NUMBER | DRAWN BY | DATE REVISED | CHECKED BY | PROJECT ENGINEER | APPROVED BY |
|---|---|---|---|---|---|
| 0 | | | | | |

MAGELLAN MIDSTREAM PARTNERS, L.P.

MAGELLAN PROCESSING, L.P.

AIR PERMIT
SITE PLAN

CORPUS CHRISTI TEXAS

| | | | |
|---|---|---|---|
| DRAWN BY | LH | SCALE 1" = 100' | A.F.E. |
| DATE DRAWN | 03/13/14 | DRAWING NO. | |
| CHECKED BY | PH | 475-D-XXXX | 0 |
| PROJECT ENGINEER | DP | | |
| APPROVED BY | | | |

# APPENDIX D

# PHOTOGRAPHIC LOG

WHITENTON group environmental consultants

**PHOTOGRAPHIC LOG 1**

| | |
|---|---|
| Magellan Condensate Splitter Project<br><br>4/4/2014<br><br>Nueces County, Texas<br><br>View: East view of the central-east portion of the Project Area. |  |
| Magellan Condensate Splitter Project<br><br>4/4/2014<br><br>Nueces County, Texas<br><br>View: Northeast view of the northern part of the Project Area. |  |
| Magellan Condensate Splitter Project<br><br>4/4/2014<br><br>Nueces County, Texas<br><br>View: South view of the existing outfall structures within the Project Area. |  |

WHITENTON group environmental consultants

**PHOTOGRAPHIC LOG 2**

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: South view of the oil water separator within the Project Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Southwest view of the eastern portion of the Project Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: North view of existing overhead piperacks within the Project Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Northwest view of the docking facilities within the Project Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Southeast view of the southeastern portion of the Project Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Southwest view of the southeastern portion of the Project Area.

WHITENTON group environmental consultants

**PHOTOGRAPHIC LOG 4**

| | |
|---|---|
| Magellan Condensate Splitter Project<br><br>4/4/2014<br><br>Nueces County, Texas<br><br>View: Representative photograph (facing southwest) of maintained grassland habitat within the Action Area. |  |
| Magellan Condensate Splitter Project<br><br>4/4/2014<br><br>Nueces County, Texas<br><br>View: Representative photograph (facing northeast) of maintained grassland habitat in the Action Area. |  |
| Magellan Condensate Splitter Project<br><br>4/4/2014<br><br>Nueces County, Texas<br><br>View: East view of a man-made vegetated drainage ditch within the Action Area. Outfalls 001-003 discharge into this ditch. |  |

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Northwest view of a concrete-lined drainage ditch in the Action Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: North view of wetland habitat within the Action Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Northwest view of estuarine open water habitat within the Action Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Aerial view (facing northeast) of the Action Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Aerial view (facing east) of the Action Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Aerial view (facing east) of the proposed pipeline and existing docks.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Aerial view (facing southeast) of the confluence of the Inner Harbor and the drainage ditch for discharged water from the proposed project.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Aerial view (facing south) of the Action Area.

Magellan Condensate Splitter Project

4/4/2014

Nueces County, Texas

View: Aerial view (facing west) of the Action Area.

# APPENDIX E

# FIELD SURVEY DATA SUMMARY

# FIELD SUMMARY FOR THE MAGELLAN CONDENSATE SPLITTER PROJECT, NUECES COUNTY, TEXAS

**Survey Date**: 4 April 2014

**Surveyors**: Jayme Shiner PWS, Debbie Scott AWB, Bryan Whisenant

**Activities**: Pedestrian survey (listed species habitat evaluation) at the Corpus Christi Terminal in Nueces County, TX; Windshield and aerial surveys within a 2-mile radius around the proposed Project Area.

## 1.0 INTRODUCTION

Whitenton Group, Inc. (WGI) surveyed the Action Area (0.9-mile radius) for the Magellan Condensate Splitter Project in Nueces County, Texas. The following notes from the survey conducted on 4 April 2014 describe general habitat descriptions. The listed species habitat evaluation included a pedestrian survey of the proposed Project Area and windshield and aerial surveys for all vegetated portions of the Action Area. The Project Area is an existing industrial site that is heavily disturbed. The soils are impacted and primarily consist of clay and caliche. Small patches of herbaceous habitat and maintained grasses with scattered trees are present within the Project Area.

## 2.0 PEDESTRIAN SURVEY METHODS AND RESULTS

WGI personnel walked and photographed the proposed Project Area. The Project Area is an existing industrial area. Industrial equipment, facilities, and infrastructure dominate the land cover. Groundcover is a composite of caliche, gravel, and pavement. Small patches of herbaceous habitat were noted over impacted clayey soils. We observed *Cynodon dactylon* (bermudagrass), *Bothriochloa ischaemum var. songarica* (King Ranch bluestem), *Parthenium hysterophorus* (false ragweed), and *Trifolium campestre* (field clover) in the herbaceous habitat. A designated area for parking and construction laydown consists of maintained grasses with scattered trees. Observed vegetation in this habitat included field clover, bermudagrass, *Prosopis glandulosa* (mesquite), *Quercus virginiana* (live oak), and *Lepidium virginicum* (Virginia pepperweed).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The current and proposed outfall locations are located in the same area. The discharged water is temporarily confined in a large concrete-boxed area. Water is then discharged into a vegetated man-made drainage ditch. Vegetation along the banks of the ditch includes *Panicum coloratum* (Kleingrass), mesquite, bermudagrass, *Albizia julibrissin* (mimosa), *Baccharis halimfolia* (eastern baccharis), and an unidentified palm species.

Additional pipelines are expected to be added to existing overhead pipe racks. The pipe racks primarily overlay industrial disturbed ground, including a concrete-lined drainage ditch. Some herbaceous habitat, a small area of estuarine open water, and a potential emergent wetland were also observed. Herbaceous habitat is as previously described. The estuarine open water was located between 2 docking facilities, and the shoreline was covered in riprap. Dominant vegetation in the wetland included *Borrichia frutescens* (sea-ox-eye daisy), *Schoenoplectus americanus* (chairmaker's bulrush), Kleingrass, and *Rhus* sp. (sumac).

Habitat along the Inner Harbor is lined with large docking facilities. The shoreline is either concrete-lined or covered in riprap. Small patches of disturbed bermudagrass and King Ranch bluestem are present.


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## 3.0 WINDSHIELD SURVEY METHODS AND RESULTS

From the Project Area, WGI drove north on Poth Lane, which primarily included areas within the Project Area. Turned south on Buddy Lawrence Drive and then west on I-37 access road. This area is industrially developed with small fragments of maintained grasses with scattered trees. Observed vegetation is similar to that in the Project Area. Headed northwest on Up River Road and then north on Cantwell Lane. The area was predominantly industrially developed. Natural habitat was observed north of Cantwell Lane but outside of the Action Area. Therefore, it is not included in this field summary.

## 4.0 AERIAL SURVEY METHODS AND RESULTS

Proceeded from airport to the Project Area from the southwest side. Conducted 2


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circular flights (inner and outer loop) around the Action Area. Aerial survey started from the southwest, then west, north, and then east. Viewed areas that were not accessible from public roadways. Observed wetland, estuarine open water, and maintained grassland habitats.




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# APPENDIX F

# TABLE 1-1 PROJECT EMISSION SUMMARY

**Table 1-1**
**Project Emission Summary**
**Magellan Corpus Christi Splitter Project**

| Source | FIN | EPN | Project Phase | NOx | | CO | | VOC | | HAPs | | $H_2S$ | | $SO_2$ | | PM | | $PM_{10}$ | | $PM_{2.5}$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy |
| Fractionator Heater H-1A | H-1A | H-1A | 1 | 1.16 | 2.77 | 4.29 | 17.09 | 0.63 | 2.49 | 0.21 | 9.73E-05 | | | 1.71 | 6.80 | 0.52 | 2.08 | 0.52 | 2.08 | 0.52 | 2.08 |
| Hot Oil Heater H-1B | H-1B | H-1B | 1 | 1.08 | 2.57 | 3.98 | 15.84 | 0.58 | 2.31 | 0.20 | 9.02E-05 | | | 1.58 | 6.30 | 0.48 | 1.93 | 0.48 | 1.93 | 0.48 | 1.93 |
| Fractionator Heater H-2A | H-2A | H-2A | 2 | 1.16 | 2.77 | 4.29 | 17.09 | 0.63 | 2.49 | 0.21 | 9.73E-05 | | | 1.71 | 6.80 | 0.52 | 2.08 | 0.52 | 2.08 | 0.52 | 2.08 |
| Hot Oil Heater H-2B | H-2B | H-2B | 2 | 1.08 | 2.57 | 3.98 | 15.84 | 0.58 | 2.31 | 0.20 | 9.02E-05 | | | 1.58 | 6.30 | 0.48 | 1.93 | 0.48 | 1.93 | 0.48 | 1.93 |
| Tank Heater H-3 | H-3 | H-3 | 1 | 1.57 | 4.71 | 1.32 | 4.18 | 0.09 | 0.38 | 0.03 | 2.95E-05 | | | 0.24 | 1.03 | 0.12 | 0.53 | 0.12 | 0.53 | 0.12 | 0.53 |
| Tank Heater H-4 | H-4 | H-4 | 1 | 0.58 | | 0.59 | | 0.09 | | 0.03 | | | | 0.24 | | 0.12 | | 0.12 | | 0.12 | |
| Marine Loading Fugitives | LOADFUG | LOADFUG | 1 | | | | | 165.07 | 82.88 | 10.26 | 3.40 | 2.39E-01 | 1.20E-01 | | | | | | | | |
| Vapor Combustor | VCU1/VCU2 | VCU1/VCU2 | 1 | 28.24 | 12.35 | 37.65 | 16.46 | 31.65 | 10.59 | 2.57 | 0.85 | 4.59E-02 | 1.54E-02 | 1.02 | 0.63 | 0.47 | 0.30 | 0.47 | 0.30 | 0.47 | 0.30 |
| Fugitives | FUG-1 | FUG-1 | 1 | | | | | 8.36 | 36.60 | 0.45 | 1.96 | 1.21E-02 | 5.29E-02 | | | | | | | | |
| Storage Tanks | (various) | TANKCAP | 1 & 2 | | | | | 470.34 | 93.04 | 2.03 | 1.38 | 6.80E-01 | 1.35E-01 | | | | | | | | |
| Flare | FL-1 | FL-1 | 1 | 0.03 | 0.14 | 0.07 | 0.28 | 0.06 | 0.26 | | | 9.96E-06 | 4.14E-05 | 9.38E-04 | 3.90E-03 | | | | | | |
| Pressurized Truck Loading | PTRUCK | PTRUCK | 1 | | | | | 4.61 | 5.89 | | | | | | | | | | | | |
| Fire Water Pump | FWP1 | FWP1 | 1 | 3.54 | 0.18 | 0.68 | 0.03 | 0.14 | 0.01 | 0.02 | 7.51E-04 | | | 1.26 | 0.06 | 0.12 | 0.01 | 0.12 | 0.01 | 0.12 | 0.01 |
| Backup Fire Water Pump | FWP2 | FWP2 | 1 | 3.54 | 0.18 | 0.68 | 0.03 | 0.14 | 0.01 | 0.02 | 7.51E-04 | | | 1.26 | 0.06 | 0.12 | 0.01 | 0.12 | 0.01 | 0.12 | 0.01 |
| Emergency Generator 1 | EMGEN1 | EMGEN1 | 1 | 8.48 | 0.42 | 0.59 | 0.03 | 0.01 | 7.39E-04 | 0.02 | 9.02E-04 | | | 1.38E+00 | 6.90E-02 | 2.66E-02 | 1.33E-03 | 2.66E-02 | 1.33E-03 | 2.66E-02 | 1.33E-03 |
| Emergency Generator 2 | EMGEN2 | EMGEN2 | 1 | 0.82 | 0.04 | 0.25 | 0.01 | 0.34 | 0.02 | 3.55E-03 | 1.77E-04 | | | 2.71E-01 | 1.36E-02 | 4.63E-02 | 2.31E-03 | 4.63E-02 | 2.31E-03 | 4.63E-02 | 2.31E-03 |
| Wastewater Treatment | WWT | WWT | 1 | 0.03 | 0.12 | 0.05 | 0.22 | 0.09 | 0.40 | 0.01 | 0.03 | 3.65E-06 | 1.60E-05 | 6.87E-04 | 3.01E-03 | | | | | | |
| MSS | (various) | (various) | 1 | 65.64 | 4.94 | 120.56 | 9.08 | 1,156.65 | 15.70 | 64.03 | 0.97 | 0.75 | 0.01 | 0.95 | 0.72 | 0.19 | 0.21 | 0.19 | 0.21 | 0.19 | 0.21 |
| ***Project Increase (tpy)*** | | | | **116.94** | **33.77** | **178.98** | **96.19** | **1,840.04** | **255.37** | **80.28** | **8.60** | **1.73** | **0.34** | **13.19** | **28.79** | **3.23** | **9.07** | **3.23** | **9.07** | **3.23** | **9.07** |
| ***Significant Modification Threshold (tons)*** | | | | --- | 40 | --- | 100 | --- | 40 | --- | 10 | --- | 10 | --- | 40 | --- | 25 | --- | 15 | --- | 10 |
| ***PSD Review Required?*** | | | | --- | No | --- | No | --- | **Yes** | --- | No | --- | No | --- | No | --- | No | --- | No | --- | No |
| ***Ozone Modeling Level (tpy)*** | | | | --- | 100 | --- | --- | --- | 100 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Above Ozone Impacts Assessment Level?*** | | | | --- | No | --- | --- | --- | **Yes** | --- | tpy | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

**Notes:**
- Appendix A contains detailed emission calculations for routine operations.
- Appendix B contains detailed emission calculations for MSS operations.
- $H_2S$ emission calculations are provided on Table A-9.
- HAP emission calculations are provided on Table A-10.