2 PROJECT DESCRIPTION

As discussed in Chapter 1, Introduction, this Environmental Impact Report (EIR) examines the potential environmental impacts associated with the Martinez Renewable Fuels Project (Project). Chapter 2 provides a detailed description of the proposed Project, including a Project overview, Project location, description of existing facilities and operations, proposed facility modifications, and proposed operations of the Martinez Refinery once modifications are complete. This chapter includes a description of the construction phase of the Project. Potential impacts resulting from construction and operation of the Project are described in Chapter 3.

Tesoro Refining & Marketing Company LLC, an indirect, wholly owned subsidiary of Marathon Petroleum Corporation (collectively, "Marathon"), is proposing the Martinez Renewable Fuels Project (Project) at its existing Martinez Refinery (Refinery or Site). The proposed Project would convert the existing Martinez Refinery from its current production of fossil fuels (conventional diesel fuel, gasoline, distillates, propane, and various by-products) to the production of renewable fuels, including renewable diesel, renewable propane, renewable naphtha, and potentially renewable jet. Marathon has proposed the Project to allow the Martinez Refinery to help meet demand in California for renewable fuels.

2.1 REFINERY HISTORY AND PROPOSED PROJECT SUMMARY

The Refinery has operated as a facility for the production of petroleum-based fuels on the Project Site since its initial construction in 1913. Historically referred to as the Golden Eagle Refinery, and with various owners since 1913 that have included Tosco Corporation, Phillips Petroleum, Valero Refining Company, and Tesoro Refining and Marketing Company, LLC, Marathon Petroleum Corporation acquired the facility in 2018 and is the current owner of the Refinery.

The Refinery's operations are currently permitted by the Bay Area Air Quality Management District (BAAQMD), and the facility has a reported crude oil refining capacity of 161,000 barrels per day (bpd) (EIA 2021), though Marathon recently suspended refining of crude oil in April 2020. Prior to idling of the Refinery, the majority of crude oil refined at the site was received via ship, with additional crude arriving at the facility by pipeline, and other (non-crude) refinery commodities arriving by rail. Following cessation of refining operations, refined petroleum products continued to be received at the facility's marine oil terminals for storage and distribution; however, no crude oil was processed into fuels at the Refinery. Refined petroleum products would continue to be received and distributed from the facilities' marine oil terminals. Products that can be produced at the Refinery with existing equipment include conventional diesel fuel, gasoline, distillates, petroleum coke, liquefied petroleum gas (LPG), heavy fuel oil, and refinery-grade propylene. Distribution of products from the Refinery to the market can be conducted by truck, rail, ship and pipeline.

The proposed Project is a request by Marathon to repurpose the existing Refinery to discontinue refining of crude oil and switch to production of fuels from renewable feedstock sources including rendered fats, soybean and corn oil, and potentially other cooking and vegetable oils, but excluding palm oil. Current petroleum-based terminaling operations would continue but would be limited to storage and movements and not crude processing or refining. Construction of the proposed Project would begin as soon as all necessary permits are received, with a target date

of 2022. Marathon anticipates that operations under the proposed Project would begin in 2022 with an estimated production of 23,000 bpd, ramping up to full production of 48,000 bpd expected to be achieved by the end of 2023. The repurposed Refinery would operate 24 hours per day, seven days per week.

2.2 PROJECT OBJECTIVES

The Applicant has identified the following objectives for the Project:

- Repurpose the Marathon Martinez Refinery to a renewable fuels production facility.
- Eliminate the refining of crude oil at the Martinez Refinery while creating high quality jobs.
- Provide renewable fuels to allow California to achieve significant progress towards meeting its renewable energy goals.
- Produce renewable fuels that significantly reduce the lifecycle generation of greenhouse gas emissions, as well as other criteria pollutants including particulate matter.
- Reduce emissions from mobile sources by providing cleaner burning fuels.
- Repurpose/reuse existing critical infrastructure, to the extent feasible.

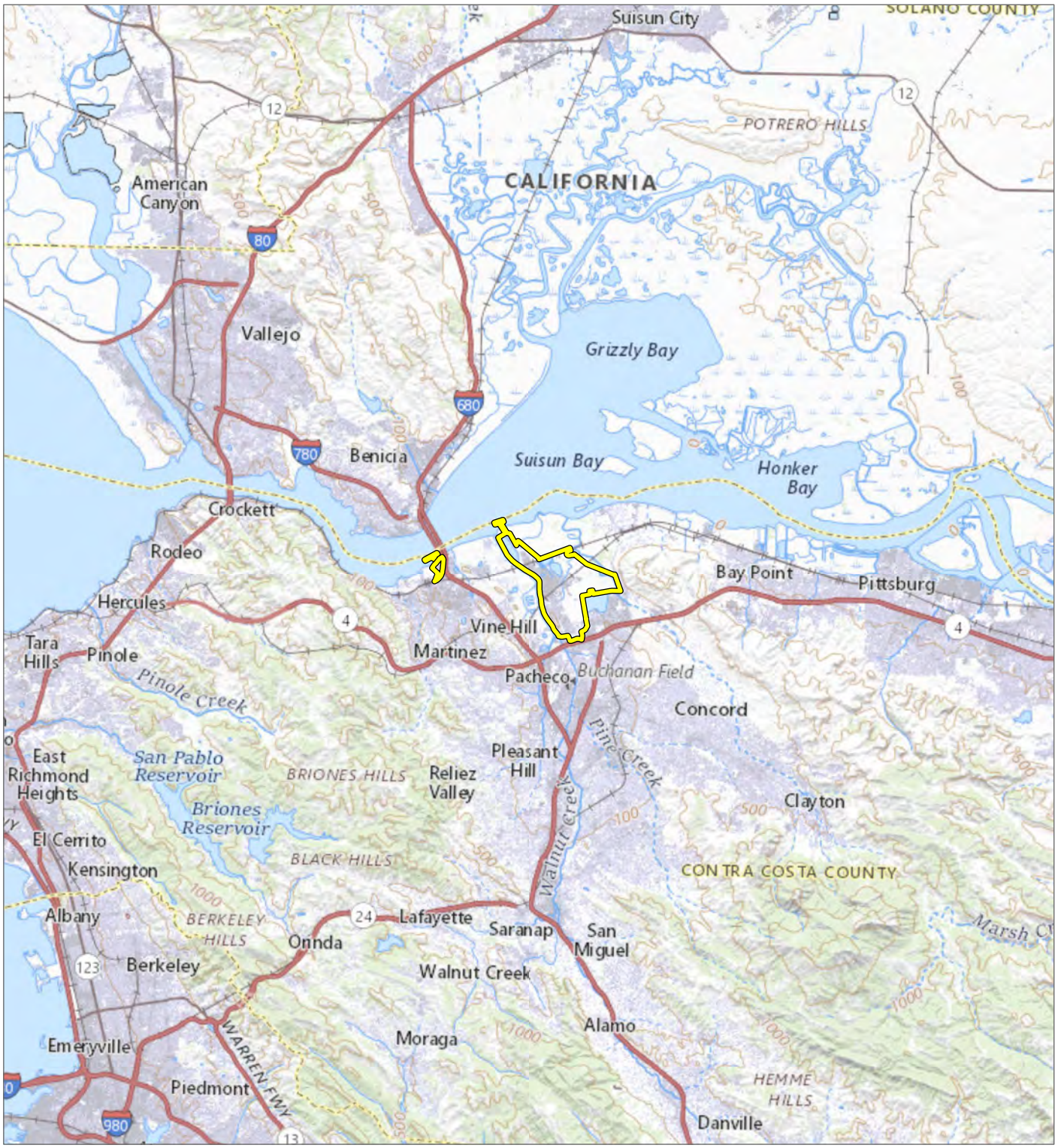
2.3 PROJECT LOCATION

2.3.1 Project Site

The Marathon Martinez Refinery is located at 150 Solano Way, Martinez, California. The site is situated on the Carquinez Strait in Contra Costa County (see **Figure 2-1**). The Refinery is located 3.25 miles east of downtown Martinez along Solano Way between Waterfront Road and Monsanto Way. Access to the Refinery is provided from the south via gated entrance on Solano Way and from the west via gated entrance on Waterfront Road.

The Refinery is situated east of Pacheco Creek, on the southern shore of Suisun Bay. Suisun Bay is connected to San Pablo Bay via the Carquinez Strait, a narrow, 12-mile-long band of water that extends from the Benicia-Martinez Bridge westward to Mare Island. In addition to Marathon, the Carquinez Strait, including its junction with San Pablo Bay, is host to numerous refinery facilities and their associated marine terminals. The Marathon Martinez Refinery has marine access through two marine oil terminals (MOTs) on Suisun Bay and the Carquinez Strait, namely the Avon MOT and Amorco MOT. Both MOTs are owned by Andeavor Logistics, LP, also a wholly owned subsidiary of Marathon. The Avon MOT is located on approximately 13.3 acres of leased sovereign land in the lower Suisun Bay, approximately 1.75 miles east of the Benicia-Martinez Bridge, in unincorporated Contra Costa County. The Amorco MOT is located on approximately 14.3 acres of leased sovereign land, approximately 0.6 miles west of the Benicia-Martinez Bridge in the city of Martinez. Lease agreements for both MOTs are managed by the California State Lands Commission.

The project area is approximately 2,000 acres owned by Marathon. Of these 2,000 acres, approximately 1,130 acres are currently developed for oil and gas refining operations, including ancillary support facilities such as administrative offices, internal roadways and parking lots. The remaining, approximately 870 acres includes undeveloped marshlands and grasslands. Mt. Diablo Creek and Seal Creek flow through the undeveloped areas on the eastern side of the site.



PROJECT BOUNDARY

BASE MAP: USGS/TNM "USGS TOPO"
DATA SOURCES: TRC, ESRI

N

0 2 4

MILES

1:250,000 1" = 20,833'

PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
REGIONAL LOCATION MAP

DRAWN BY:	D.SWEENEY	PROJ. NO.:	CDLP20-02046
CHECKED BY:	R. SPRING		
APPROVED BY:	D. AYERS		**FIGURE 2-1**
DATE:	SEPTEMBER 2021		

FILE: MARATHONRENEWABLESFUEL.APRX

Approximately 76 acres at the southern end of the Project site is developed with a complex of recreational baseball, softball and soccer fields that are used by local sports clubs and teams but are part of the property owned by Marathon.

The Amorco MOT is on Contra Costa Assessor's Parcel numbers 378-010-010 and 378-010-030 in the City of Martinez. The Refinery and Avon MOT encompass the following Contra Costa Assessor's Parcels located in unincorporated Contra Costa County:

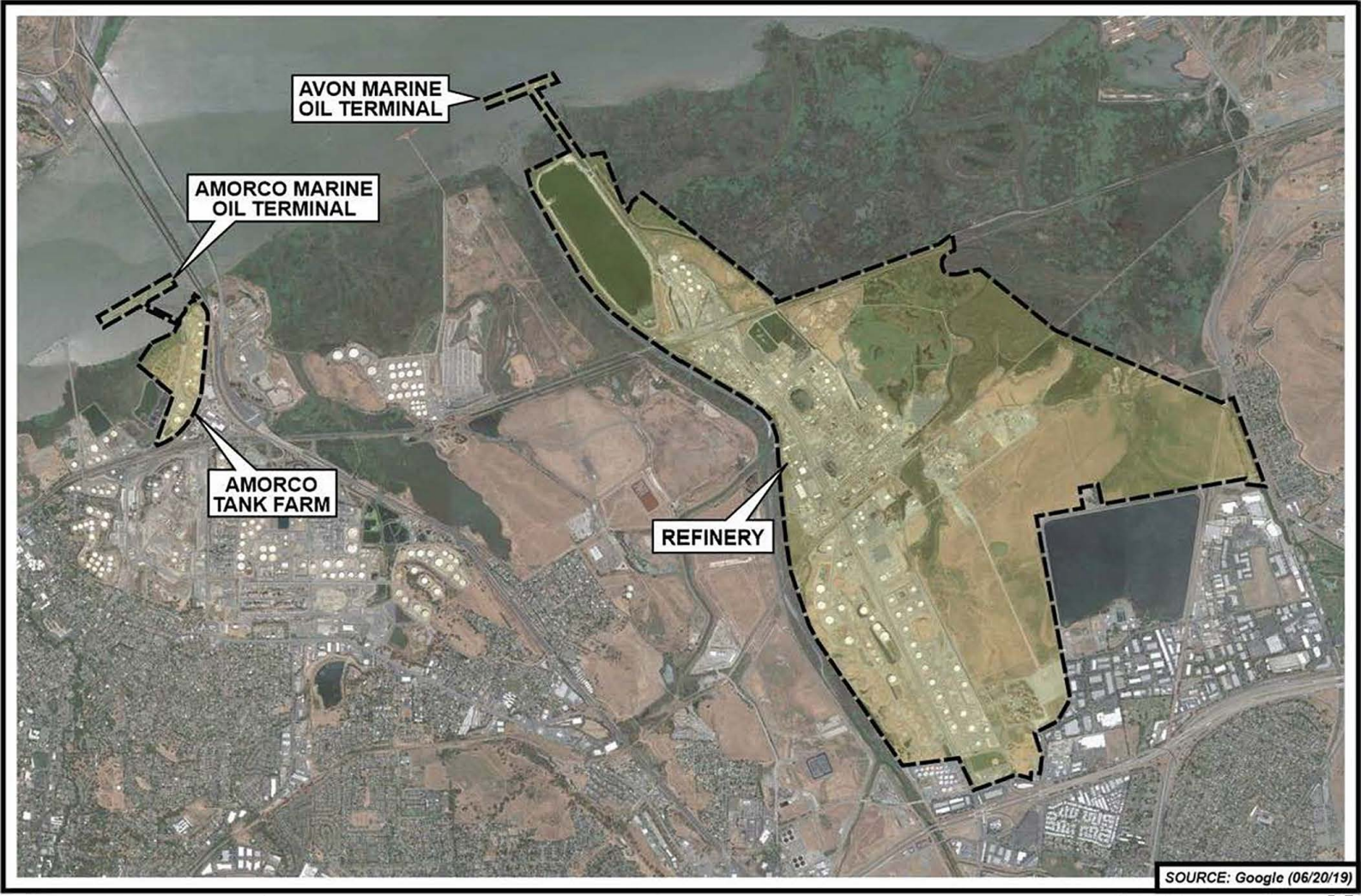
159-010-005	159-120-031	159-130-031
159-020-001	159-120-036	159-140-036
159-040-048	159-120-037	159-260-012
159-100-008	159-120-038	159-260-013
159-100-028	159-120-039	159-260-014
159-110-030	159-120-040	159-270-003
159-120-001	159-130-006	159-270-005
159-120-006	159-130-017	159-270-006
159-120-007	159-130-018	159-280-010
159-120-009	159-130-024	159-280-011
159-120-016	159-130-026	159-280-012
159-120-018	159-130-027	159-290-002
159-120-019	159-130-028	
159-120-023	159-130-029	

2.3.2 Surrounding Area

The open waters of the Carquinez Strait and lower Suisun Bay are offshore to the north of the Project site. Onshore, undeveloped lands on and around the Project site include marsh habitats between open water and onshore facilities and ruderal/upland habitat onshore between the marsh habitat and developed lands. Developed lands in the immediate and general vicinity of the Project site include a variety of residential, commercial, industrial and public uses (see **Figure 2-2**).

Just east of the Refinery and Avon MOT are several hundred acres of undeveloped marshlands. This area includes the Point Edith Wildlife Preserve, a 761-acre tidal area accessible to the public for wildlife viewing and hunting. The Preserve is managed by the California Department of Fish and Wildlife and located north of the Refinery's on-site marshlands. The unincorporated residential community of Clyde is east of the Refinery's on-site marshlands, on the opposite side of Port Chicago Highway from the Refinery's eastern property line. The Contra Costa Water District's Mallard Reservoir, and multiple complexes of light industrial warehouse buildings are also located east of the Project site.

The Refinery property's southern boundary adjoins the city of Concord municipal limit at Solano Way. The property's western boundary is as close as 0.25 mile eastward of the city of Martinez municipal limit at the northern end of the Refinery property. Development in the city of Concord south of the Project site includes a car dealership, retail and light industrial warehouses, a drive-in movie theater, the Buchanan Airfield and residential neighborhoods including a community park (Hillcrest). The closest residence in these neighborhoods is approximately 700 feet south of the site's southern property line, in the Dalis Gardens Mobilehome Park.



Audit, Inc.
@Environmental

0 3,600'

N

MARATHON MARTINEZ REFINERY
150 Solano Way
Martinez, CA 94553

Project No. 3192

Figure 1-2

N:\3192\PlotPlan (rev.1).cdr

Floyd I. Marchus, a public school operated by the Contra Costa County Office of Education and the closest public school to the site, is located in the neighborhood southwest of the mobile home park and is approximately 2,900 feet south of the Refinery's southern property line.

Pacheco Creek adjoins the Project site's western property line. Other single-family residential neighborhoods in the city of Martinez are approximately 2,900 feet or further west of the Refinery property's western boundary. Much of the land between the Refinery property and these neighborhoods is undeveloped, though several parcels have industrial land uses including a rock quarry, a concrete batch plant, a waste transfer station, and the treatment plant of the Central Contra Costa Sanitation District. Similarly, lands immediately adjacent to the Amorco MOT are developed with industrial uses including warehouses and tanks and equipment of the Shell Refinery. The closest non-industrial developments to the Amorco MOT are the public Waterfront Park and single-family residences, both of which are approximately 2,500 feet west and southwest, respectively, of the property line of the terminal.

State Route 4, a state-managed, east-west freeway extends through the Project area, south of the Project site and 500 feet south of the Refinery's southern boundary. State Route 4 currently has two travel lanes in each direction but is currently being widened to add one lane in each direction. Interstate 680 is a north-south freeway that extends through the Project area approximately 1.25 miles west of the Refinery's western property line. Both freeways provide regional access to and from the Refinery. On-ramps to and off-ramps from State Route 4 are just southeast of the Refinery's Solano Avenue entrance, and on-ramps to and off-ramps from Interstate 680 are on Waterfront Road approximately 2 miles west of the site.

Two railroad lines run through the Refinery property: the Union Pacific Railroad (UPRR) line, which runs in an eastwest direction through the Refinery along Waterfront Road and the BNSF Railway line, which also runs in an eastwest direction through the Refinery, roughly parallel to and north of Monsanto Way.

The Refinery is entirely within the service areas of the Contra Costa Water District and Contra Contra Costa County Sheriff's Department. Approximately 950 acres in the southeastern portion of the site is within the service area of the Contra Costa County Fire Protection District (CCCFPD); this acreage includes undeveloped lands and the sports fields near the south end of the property. The Refinery equipment and production facilities are outside of the service area of CCCFPD, and the Refinery has its own fire response teams for these areas of the site. The Refinery is also wholly outside the service area of the Central Contra Costa Sanitary District and operates its own on-site facilities for treatment of wastewater.

2.4 EXISTING FACILITIES

2.4.1 Overview

The Marathon Martinez Refinery is the second-largest refinery in Northern California and is currently permitted to refine crude oil. The Refinery has capacity to process up to 161,000 bpd of crude oil originating from within California, Alaska, and foreign sources. The facility features multiple refining units and produces cleaner-burning California Air Resources Board (CARB) gasoline, CARB diesel, conventional gasoline, distillates, petroleum coke, LPG, heavy fuel oil, and refinery-grade propylene. Existing refinery equipment includes three main hydroprocessing units: the No. 3 Hydrodesulfurization (HDS) Unit , the No. 2 HDS Unit, and a Hydrocracking Unit.

2.4.2 Project Site

2.4.2.1 Martinez Refinery

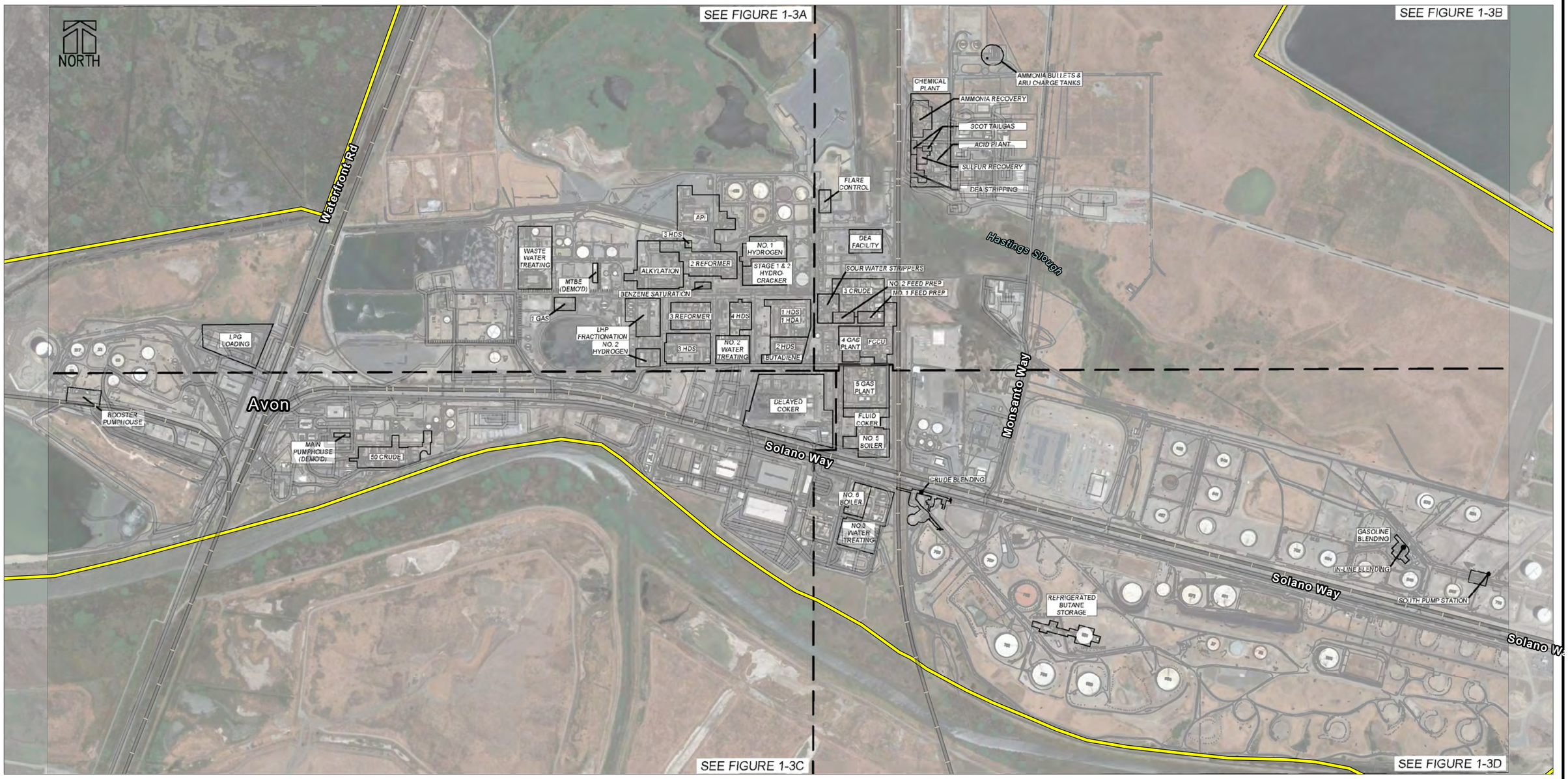
The Refinery is permitted to process as many as 161,000 bpd of fresh crude oil originating from within California, as well as from Alaska and other global sources. When the Refinery was operating, approximately 120,000 to 130,000 bpd of crude oil was delivered to the Refinery by vessel at the Amorco MOT, with approximately 34,000 to 38,000 bpd originating in the California San Joaquin Valley and delivered to the Refinery by pipeline. **Figure 2-3a** to **Figure 3e** depict the Refinery's existing layout.

When in operation, the Refinery processed crude oil to make gasoline, diesel, distillates, petroleum coke, LPG, heavy fuel oil and refinery-grade propylene. Existing Refinery units used in production include three main hydroprocessing units: Hydrodesulfurization (HDS) Unit Nos. 2 and 3 and a Hydrocracking unit. Other refining units used in processing of crude oil include a delayed coker, fluidized catalytic cracker, hydrocracker, catalytic reformer, and units used for atmospheric distillation, vacuum distillation, desulfurization (for naphtha, gasoline, diesel and gas oil) and sulfur recovery. (Main units proposed to be maintained, modified or taken offline are in discussed in Section 2.5, Project Description. A complete listing of units to be shut down can be found in Chapter 3.3, Air Quality of this EIR).

The Refinery has 67 aboveground oil storage tanks, the largest of which has a capacity of 11,886,000 gallons of oil. Total oil storage capacity among the 67 tanks is 260,442,252 gallons.

During peak operation of the Refinery, up to 27 railcars per day deliver loads of butane and iso-butane to the Refinery from within California, and from Utah and the Midwest. Other chemicals used in processing including ethanol, propane, acid, chemicals for cooling towers, sulfur, ammonia, caustic, biodiesel, diatomaceous earth, potassium hydroxide, and cetane are also delivered by rail. The Avon MOT has been used for daily shipment of distillate and gasoline from the Refinery.

Marathon recently suspended refining of crude oil in April 2020. For the 5-year period between 2015 and 2020, the Refinery processed an average of 121,000 bpd of crude oil. During periods of production, the Refinery operated 24 hours a day, seven days a week, and was staffed by an estimated 520 workers per day, consisting of production employees on rotating 12-hour shifts and maintenance, managerial and administrative support employees on standard 8- to 10-hour shifts.



PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 850 1,700 FEET

1:10,200 1" = 850'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	CURRENT SITE PLAN
DRAWN BY: R. SPRING	PROJ. NO.: CDLP20-20046
CHECKED BY: P. DEMICHELE	FIGURE 2-3A
APPROVED BY: D. AYERS	
DATE: SEPTEMBER 2021	
FILE:	MarathonRenewablesFuel.aprx

PROJECT BOUNDARY

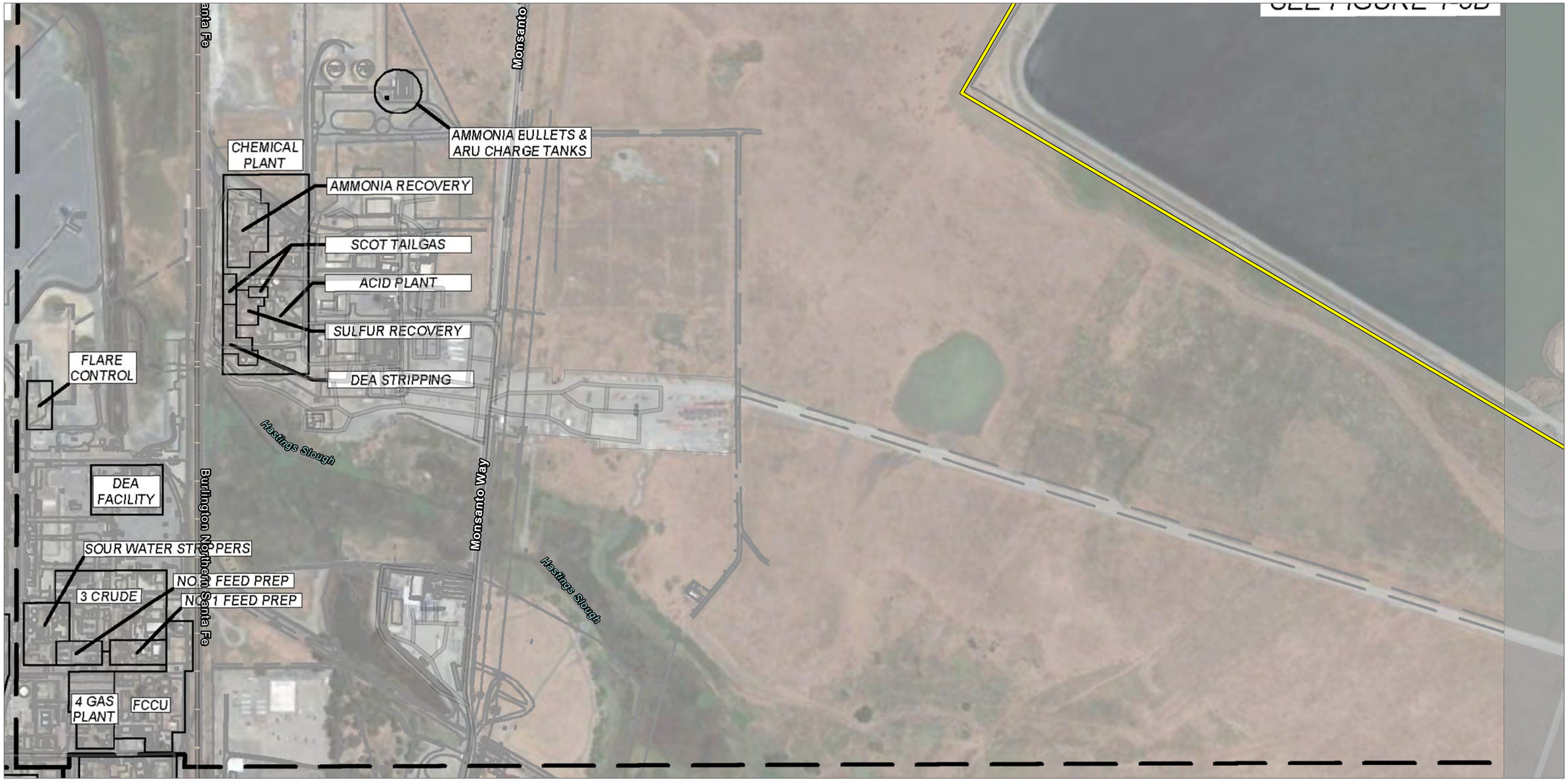
NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	CURRENT SITE PLAN
DRAWN BY: R. SPRING	PROJ. NO.: CDLP20-20046
CHECKED BY: P. DEMICHELE	FIGURE 2-3B
APPROVED BY: D. AYERS	
DATE: SEPTEMBER 2021	
FILE:	MarathonRenewablesFuel.aprx



PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

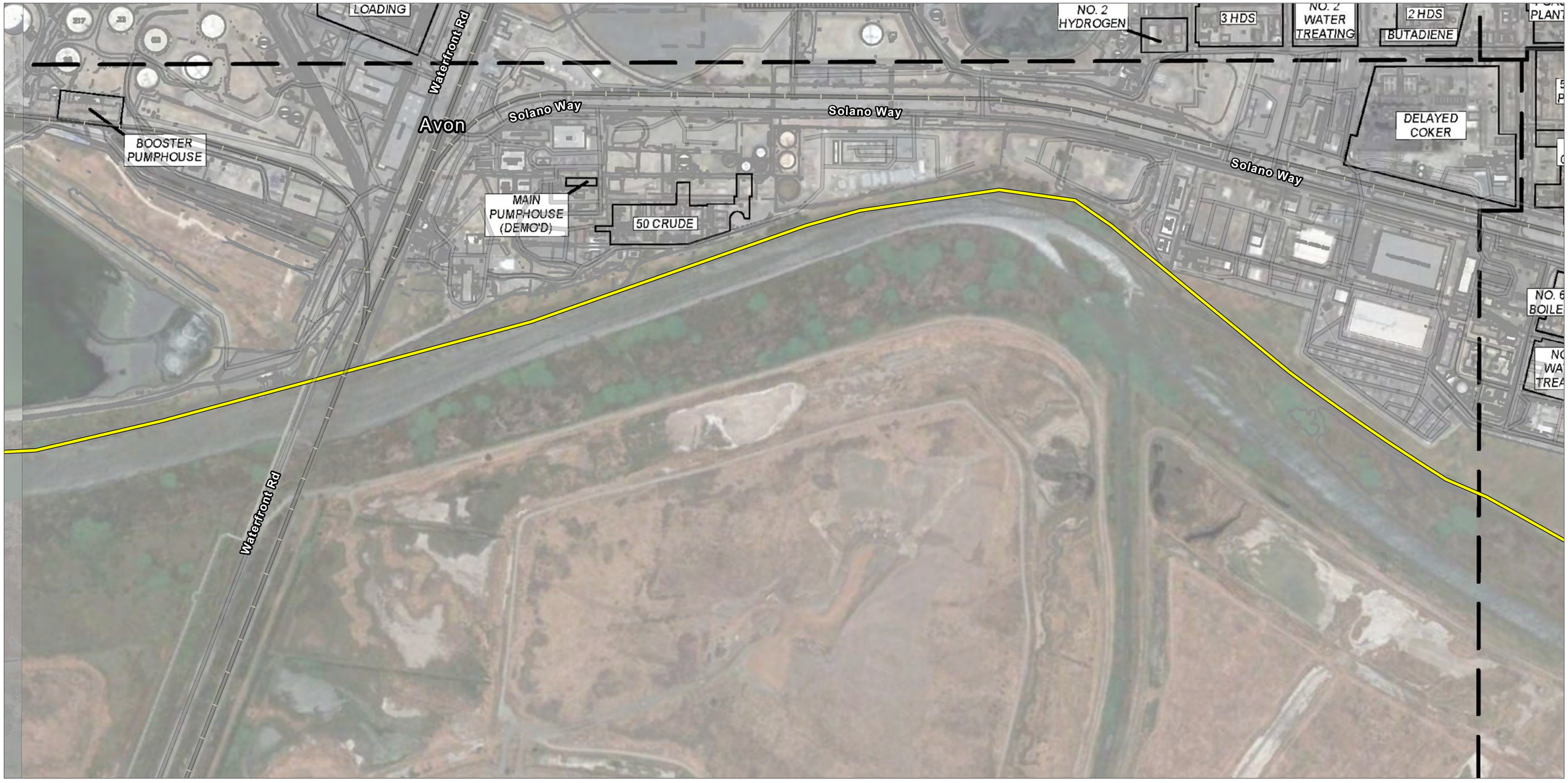
1:4,800 1" = 400'

PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
CURRENT SITE PLAN

DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		**FIGURE 2-3C**
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		

FILE: MarathonRenewablesFuel.aprx



PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 450 900 FEET

1:5,400 1" = 450'

PROJECT: CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE: CURRENT SITE PLAN

DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		FIGURE 2-3D
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		

FILE: MarathonRenewablesFuel.aprx

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet; Map Rotation: -50
Saved By: RSPRING on 9/14/2021 11:45:13 AM; File Path: \\entryvss\gis\arcgis\pro1.1_PROJECTS\Contra_Costa_County\430721_Marathon_Renewable_Fuels_EIR\2.2\APRX\MarathonRenewablesFuel.aprx; Layout Name: 2-3 Current Site Plan 11x17L

PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	CURRENT SITE PLAN
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-3E
FILE:	MarathonRenewablesFuel.aprx

2.4.2.2 Avon Marine Oil Terminal

The Avon MOT has been an existing point of distribution for distillate and gasoline produced at the Refinery. The facility has been in use since the 1920s and currently consists of one active berth (Berth 1A). The Avon MOT is permitted to transfer 30,000,000 barrels per 12 consecutive months pursuant to an air permit from the BAAQMD. Berth 1A is used for product shipments and feedstock deliveries, loading approximately 42,000 bpd of distillate and 5,000 bpd of gasoline for distribution. The wharf at the Avon MOT is currently equipped with a marine vapor recovery system to capture hydrocarbon vapors from loading operations, in compliance with BAAQMD Regulation 8, Rule 44. Any changes to the MOT must be compliant with Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) regulations.

2.4.2.3 Amorco Marine Oil Terminal

The Amorco MOT has been used by the Refinery primarily for receiving of approximately 108,000 bpd of crude oil and 5,000 bpd of heavy fuel oil for refining. The facility has received an average of 60 to 90 tanker vessels each year and consists of one active berth located on the eastern end of the wharf. The Amorco MOT is permitted to transfer 70,080,000 barrels per 12 consecutive months pursuant to its air permit from the BAAQMD. The Amorco MOT has 6 aboveground oil storage tanks, the largest of which has a capacity of 5,040,000 gallons of oil. Total oil storage capacity among the 6 tanks plus rented temporary storage tanks is 17,351,098 gallons.

The Avon and Amorco MOTs together received approximately 210 ships per year, on average between 2015 and 2020.

2.4.2.4 Pipeline, Truck and Rail Transportation

Additional crude not received by ship is received at the Refinery via pipeline. Petroleum products made at the Refinery have been distributed via truck, rail, pipeline, and by ship vessels.

Historic Refinery operations included transport of a number of commodities via rail, including ammonia, propane/propylene, butanes, spent caustic, and sulfuric acid. The UPRR line is the primary railroad line serving the facility and is used for the majority of deliveries and shipments by rail. The balance of the Refinery deliveries and shipments use the BNSF Railway line. Railcars are moved from the main line to spurs within the Refinery in trains of variable length, from one car to 10 or more cars. Rail deliveries and shipments occur as needed and in coordination with BNSF, and there is no set schedule. Refinery rail traffic has averaged approximately 13 railcars per day with a peak of 27 railcars per day, mostly receiving loads of butane and iso-butane from California, Utah, and occasionally the Midwest. In 2019, the Refinery transported commodities in approximately 5,300 railcars or an average of 15 railcars per day, which were primarily loaded or unloaded at the Refinery.

An average of 205 delivery and distribution truck shipments have occurred daily, with a peak of 310 trucks per day. Truck shipments primarily have been comprised of outbound shipments—approximately 40 percent of Refinery truck traffic associated with petroleum fuel production has been for transportation of gasoline to nearby cities, and another 30 percent of truck trips has been for hauling of petroleum coke (a product derived from the crude oil refining process) to a marine terminal in the city of Pittsburg approximately 10 miles east of the Refinery. Other chemicals

used in processing or resulting byproducts including ethanol, propane, acid, chemicals for cooling towers, sulfur, ammonia, caustic, biodiesel, diatomaceous earth, potassium hydroxide, and cetane are also transported by truck. Trucks access the Refinery using both the North Gate on Waterfront Road and the South Gate on Solano Way.

2.4.2.5 Existing Utilities

The Refinery currently collects and treats its refining process wastewater, sanitary wastewater, and most storm runoff from the Refinery on-site, using a treatment system that is regulated by a National Pollutant Discharge Elimination System (NPDES) permit issued by the San Francisco Bay Regional Water Quality Control Board (S.F. RWQCB). Components of the on-site wastewater treatment system include oil-water separators that remove oil and sediment from the effluent, lagoons for biological treatment of effluent, clarifiers for additional solids settling, and filters. Oil that is recovered from these separators is shipped off-site to another Refinery for processing. Treated effluent is discharged to Suisun Bay, though a portion of the effluent volume is reused at the Refinery.

Potable water to the Refinery is used to supply fixtures in restrooms and employee break areas; for landscaping irrigation, including irrigation of the on-site recreation fields at the southern end of the property; and in Refinery units used for cooling and treatment of wastewater from the fuel production process. Potable water used at the Refinery is purchased from the Contra Costa Water District (CCWD) and would continue to be purchased from CCWD with implementation of the Project.

Marathon operates a groundwater monitoring network of over 150 wells, located within and around the perimeter of the Refinery. These wells monitor the migration of historic groundwater contamination and have been installed in an effort to contain the contamination within the boundaries of the Refinery property. Marathon and Texaco Downstream Properties, Inc. (TDPI) work cooperatively together as the Avon Remediation Team (ART) under the supervision of the S.F. RWQCB and California Department of Toxic Substances Control (DTSC) for corrective action cleanup of portions of the facility where historical soil or groundwater contamination is present.

2.5 DESCRIPTION OF PROPOSED PROJECT

2.5.1 Overview

The proposed Project would repurpose the Refinery for production of fuels from renewable sources rather than from crude oil. Some existing Refinery equipment would be altered or replaced, and additional new equipment units and tanks would be installed, to facilitate production of fuels from renewable feedstock. Crude oil processing equipment that cannot be repurposed for processing of renewable feedstock would be shut down and removed from the Refinery based on an event-based decommissioning plan. Upon completion of facility changes, the Refinery is anticipated to process approximately 48,000 bpd of fresh renewable feeds and would produce renewable diesel fuel, renewable propane, renewable naphtha, and potentially, renewable aviation fuel. Initially, product from the Refinery would be distributed by truck to the Bay Area as well as Central and Northern California. Future regulatory changes may allow the facility to utilize existing petroleum-based product pipelines. Product would also be transported to destinations outside of the Bay Area by ship via the Avon MOT and Amorco MOT, located

approximately 0.5 mile north of the Refinery and approximately 2.5 miles west of the Refinery, respectively. Both terminals would undergo modifications to facilitate receipt of renewable feedstocks and distribution of renewable fuels associated with the proposed Project. Refined petroleum products would continue to be received, stored and distributed through the Project Site but would not be further processed at the facility.

2.5.2 Renewable Fuels Production

Production of renewable fuels involves three main hydroprocessing units, two hydrogen supply units, a hydrocracker gas plant for fractionation, and waste and byproduct systems including systems for treating ammonia and hydrogen sulfide-contaminated water (sour water), and a conventional wastewater treatment plant. Conversion of the Refinery to a renewable fuels production facility would primarily involve the alteration and addition of refinery equipment to process non-petroleum feedstocks into renewable diesel fuel, renewable propane, renewable naphtha, and potentially renewable aviation fuel. Changes would also be made to the Avon Marine Terminal to equip it for receiving renewable feedstocks for hydroprocessing and additional petroleum-based materials for storage and distribution, although processing of petroleum feedstocks into finished products would cease. Specifically, the hydrogen plants at the Refinery would provide hydrogen to the Hydrotreating and Hydrocracking Units to support the hydrodeoxygenation (HDO) and isomerization reactions, the principal processes required for creating renewable fuels. The production of renewable fuels would primarily use existing process equipment, although some construction for new and modified equipment would be necessary.

Marathon anticipates phasing in the project over a period of three years starting in 2022 with a maximum of 23,000 bpd and achieving full production capacity of 48,000 bpd of renewable feedstocks by the end of 2023. The Refinery would continue to operate 24 hours per day, seven days per week, and would be staffed by an estimated 110 workers per day on a rotating shift basis.

2.5.3 Site Preparation

Clearing, grading, and other site preparation work would be completed prior to commencement of construction. Equipment to be used in site preparation and demolition for the Project would include lifts, air compressors, industrial saws, cranes, excavators, forklifts, tractors, loaders and welders, as well as light-duty vehicles (passenger cars and trucks) and heavy-duty vehicles (cement, dump and water trucks). Approximately 2.4 acres of grading would be necessary for the proposed Project, with grading limited to 48- to 60-inch deep trenches to install utilities to new work units and foundations for new units and facilities.

2.5.4 Project Site and Equipment Modifications

2.5.4.1 Project Modifications at Refinery

Conversion of the Refinery to a facility for processing of renewable feedstocks would require installation of new equipment and modification of some existing units currently used for processing of crude oil. Other units that cannot be converted for production of renewable fuels would be taken out of operation and demolished. Once all equipment modifications have been completed, and due to limitations in the production of the on-site hydrogen plant, the Refinery

would have capacity to receive and process up to 48,000 bpd of fresh renewable feedstock. See **Table 2-1, Refinery Equipment Modifications** summarizes the equipment modifications associated with the proposed Project and shown **in Figure 2-4a through Figure 2-4e**. Proposed design and layout drawings are in **Figure 2-5 to Figure 2-8**. Interconnecting piping (for transmission of hydrogen, conveyance of wastewater, etc.) between new and modified Refinery units would also be installed, in addition to the new and modified units described in the table. Additionally, new adsorption vessels would be installed to remove hydrogen sulfide from the recovered fuel gas. An existing vessel will be converted to store sulfiding agent. Metering pumps are required to serve the No. 3 HDS Unit, the No. 2 HDS Unit, and the Hydrocracker 1st Stage. Sulfiding agent is continually injected to sulfide the catalysts used in the HDO Process Units, which include No. 3 HDS Unit, No. 2 HDS Unit, and Hydrocracker 1st Stage.

Emissions of vapors at product loading and offloading facilities of the Refinery would continue to be collected in the Refinery's existing vapor recovery system. Tanks that are not on the vapor recovery system would be vented through carbon canisters to capture any aromatics in the vapor space. Facility operators would continue to use third-party contractors to patrol odors occurring at the facility and in surrounding communities.

In addition to equipment changes at the Project Site, the conversion of the Martinez Refinery and development of a renewable fuels market in the Bay Area would require off-site equipment modifications at third-party facilities. These changes include the operation of new equipment or modifications to existing equipment at off-site terminals within the San Francisco Bay Area and in the San Joaquin Valley. The equipment anticipated for use includes small natural gas fired heaters to maintain the temperature of the renewable feedstock, piping components, renewable feedstock storage tanks, and unloading/loading racks to transfer the renewable feedstock from/to rail or vessel. Specific details of these modifications would be dependent on future market conditions and contracts executed following implementation of the Project.

2.5.4.2 Project Modifications at Avon MOT

At the Avon MOT, part of the system of pipes and hoses would be reconfigured to keep the finished petroleum products separate from the renewable feedstocks, and to facilitate transmission of the renewable feedstock through receiving pipelines. This renovation work would primarily occur on the Avon MOT's 26 Line pipeline, which extends from offshore on the east side of the paved access road and wharf, to an aboveground pipe rack on the east side of a pedestrian walkway onshore. The 26 Line would be equipped with heat tracing, wrapped in insulation, and then placed in a metal sleeve, the joints of which would be sealed with silicone, all of which is intended to keep the feedstock in a transmissible liquid state. While the offshore work in the 26 Line would occur over water, no in-water work is proposed as part of the Project.

2.5.4.3 Project Modifications at Amorco MOT

As part of the Project, modifications are proposed at the Amorco MOT to accommodate the smaller marine vessels (25,000- to 50,000-barrel capacities) expected to dock there. These modifications include a fender that would be mounted at Dolphin A-81, between the existing fenders on Dolphins A-76 and A-77. The new super cone fender, approximately 15 feet long and 7 feet wide, would be attached to the dolphin above the high water line, with the fender panel extending into the water but not into the substrate below. (See **Figure 2.10, Typical Super Code Fender**.) The Project would also include maintenance activities on Dolphins A-76 and A-77 consisting of repairs to the concrete and five of the pilings.

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Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
Pretreatment Unit	**New**	Removes impurities such as minerals (e.g. phosphorus, some metals), gums and fatty acids from raw renewable feedstocks (e.g., distillers corn oil, soybean oil, tallow) before the feedstocks are processed in hydrodeoxygenation units. New equipment purchased and installed with this unit would include a raw feed surge drum and charge pump, a wash water surge drum and charge pump, a weak acid surge drum and pump, heat exchangers and coolers as required to meet Pretreatment Unit operating conditions, a water/oil separator, and wash water effluent pH neutralization and cooling equipment. The oil layer from the oil/water separator is routed to renewable diesel processing. The water layer, approximately 300 to 400 gallons per minute of neutralized wash water, is sent to a new Stage 1 Wastewater Treatment Unit and subsequent treatment in the existing wastewater system.
Stage 1 Wastewater Treatment Unit	**New**	Initial stage of wastewater treatment to reduce biological oxygen demand in effluent from the Pretreatment Unit. Existing tanks would be utilized and repurposed for equalization and biological treatment of the waste stream.
Sour Water Stripper	**Maintained**	Provides treatment of ammonia and hydrogen sulfide-contaminated water (sour water) from the HDS and Hydrocracker processing units as well as the 5 Gas Plant. The stripped sour water is sent to wastewater treatment. The gases from the stripper are sent to the new Thermal Oxidizer.
Thermal Oxidizer	**New**	A three-stage, low NOx unit for control of emissions from the sour water stripper vent stream.

Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
No. 3 HDS	**Modified**	One among the first three units to be modified for the Project. Two reactors internal to unit would be lined with high chemical resistant steel, and new vessels installed for removal of hydrogen sulfide. Feed pipelines, pumps, and cooling and sour water handling systems would also be replaced or upgraded for processing of renewable feedstock. Processing capacity of the unit would be 17,000 bpd average, up to 23,000 bpd, excluding recycled feedstock volumes. This unit would be designed to be capable of independent operation, startup, and shutdown.
Hydrocracker 2nd Stage	**Modified**	One among the first three units to be modified for the Project. Three internal reactors would be converted to Diesel Isomerization Unit. This unit would receive and "dewax" product from No. 2 HDS and No. 3 HDS and Hydrocracker 1st Stage units and is one of the final processes in production of diesel fuel prior to storage. This unit would be designed to be capable of independent operation, startup, and shutdown.
No. 5 Gas Plant	**Modified**	One among the first three units to be modified for the Project. Processes gases and light hydrocarbon liquids from No. 2 HDS and Nos. 3 HDS and Hydrocracker 1st Stage units. Produces renewable naphtha, renewable propane, and treated fuel gas to be used in Refinery heaters and combustion equipment. This unit would be designed to be capable of independent operation, startup, and shutdown.
Hydrocracker 1st Stage	**Modified**	Reactors for the "cracking" of feedstock molecules in the fuel production process. Reactors would be lined with high chemical resistant steel to accommodate the renewable feedstock. Physical changes to the unit would include minor pump and pipe modifications; metallurgical upgrades to cooling, water handling, and sour water equipment; and upgrades to the temperature monitoring systems. New equipment would include a high-pressure cold separator and treat gas-effluent heat exchangers. Processing capacity of the unit would be 14,700 bpd average, up to 24,000 bpd, excluding recycled feedstock volumes.

Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
No. 2 HDS	**Modified**	A replacement reactor would be installed in the unit for removal of hydrogen sulfide. New equipment installed in the unit would include a reactor effluent air cooler. Water handling and product separation equipment would be lined with high chemical resistant steel to accommodate the renewable feedstock. Processing capacity of the unit would be 16,000 bpd average, up to 20,000 bpd, excluding recycled feedstock volumes.
No. 1 Hydrogen Plant	**Maintained**	Produces hydrogen for the No. 1 HDS, No. 2 HDS, and Hydrocracker 1st and 2nd Stage Units. Hydrogen is produced on-site and piped to reactors where it is immediately consumed in the deoxygenation and cracking reactions. No hydrogen is stored at the plant. Marathon is maintaining the hydrogen plant limit of 31,025 million standard cubic feet per year (MMscf/yr).
No. 1 Gas Plant	**Maintained**	Recovers vapor from marine loading operations, loading rack, and tanks for use in the fuel gas system. Marathon proposes to increase the compression to deliver fuel gas to the 100# fuel gas system; however, there would be no physical modification of the existing equipment.
No.1 HDS	**Modified**	The processing unit would be shut down, but the existing propane dryers would be repurposed for renewable LPG. Proposed new, modified, and replaced components would be installed as part of the Project.
No. 2 Hydrogen Plant (3rd-party owned & operated)	**Maintained**	No physical changes to this unit would be necessary for renewable fuels production.

Table 2-1: Refinery Equipment Modifications

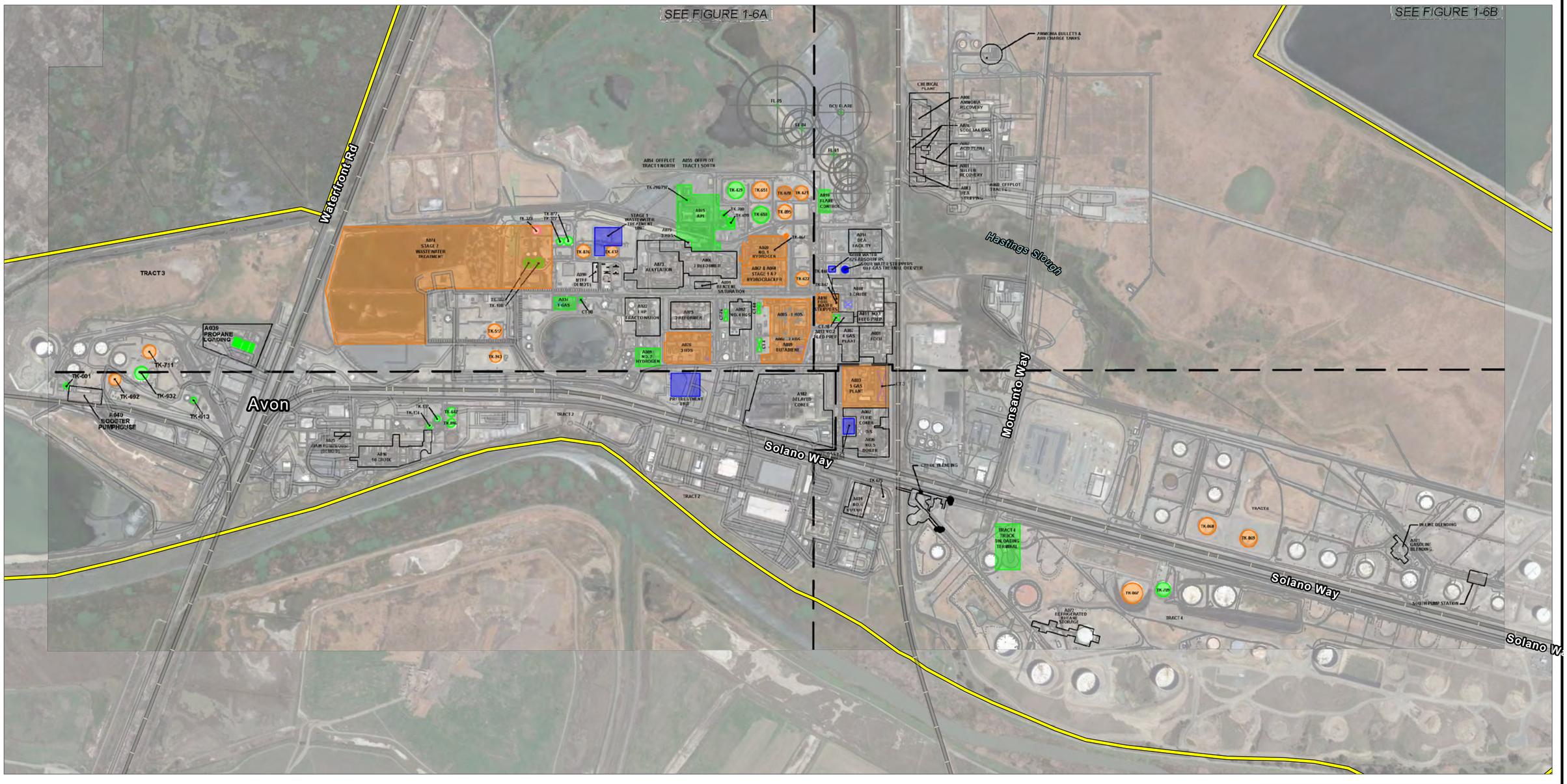
Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
Cogeneration Plant (3rd-party owned & operated)	**Maintained**	No physical changes to this electricity and steam source for the Refinery would be necessary for renewable fuels production.
Flare System and Flare Control	**Maintained**	No physical changes to these units would be necessary for renewable fuels production.
Stage 2 Wastewater Treatment Units	**Maintained**	No physical changes to this unit would be necessary for renewable fuels production.
Cooling Towers	**Maintained**	No physical changes to these units would be necessary for renewable fuels production.
Loading/Unloading Facilities	**Maintained**	No physical changes to existing rail and truck loading/unloading facilities would be necessary for renewable fuels production, though administrative Air District permit modifications may be necessary due to change to renewable diesel and renewable propane versus diesel and propane used on loading racks.
Storage Tanks	**Maintained or Modified**	As many as 29 existing aboveground tanks on the Refinery property would be repurposed for storage of renewable fuels and other commodities used in the process of fuel production. Fifteen of these tanks would receive upgrades or modifications to accommodate the proposed Project, including installation of heating units and mixers to keep renewable feedstocks in liquid form. Remaining tanks on the property would be maintained and utilized according to their pre-Project usage for petroleum-based materials storage prior to distribution to the market.
Delayed Coker	**Not applicable**	This unit would be taken offline; however, **Delayed Coker Heater No. 1** and **Delayed Coker Heater No. 2** would be **Maintained** and reused for the Project.
Booster Pumphouse	**Not applicable**	This unit would be taken offline.

Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
Chemical Plant (Ammonia and Sulfur Recovery, Acid Plant)	**Not applicable**	This unit would be taken offline.
Crude Units No. 3 and 50	**Not applicable**	These units would be taken offline.
Crude Building	**Not applicable**	This unit would be taken offline.
No. 4 HDS	**Not applicable**	This unit would be taken offline.
Gasoline Blending	**Not applicable**	This unit would be taken offline.
Refrigerated Butane Storage	**Not applicable**	This unit would be taken offline.
South Pump Station	**Not applicable**	This unit would be taken offline.
Fluidized Catalytic Cracking Unit	**Not applicable**	This unit would be taken offline.
Alkylation Unit	**Not applicable**	This unit would be taken offline.
No. 4 Gas Plant	**Not applicable**	This unit would be taken offline.
No. 2 Catalytic Reformer	**Not applicable**	This unit would be taken offline.

Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
No. 3 Platforming Unit	**Not applicable**	This unit would be taken offline.
Sulfur Recovery Unit	**Not applicable**	This unit would be taken offline.
Benzene Saturation Unit	**Not applicable**	This unit would be taken offline.
Boiler Nos. 6 and 7	**Not applicable**	This unit would be taken offline.
Vacuum Units	**Not applicable**	This unit would be taken offline.


SEE FIGURE 1-6A
SEE FIGURE 1-6B
Waterfront Rd
Avon
Solano Way
Monsanto Way
Hastings Slough
TRACT 3
TRACT 2
TRACT 4
TRACT 6
A039 PROPANE LOADING
A040 BOOSTER PUMPHOUSE
A054 STAGE 2 WASTEWATER TREATMENT
A055 STAGE 1 WASTEWATER TREATMENT
A085 API
A086 FLARE CONTROL
A001 BUTENE SATURATION
A002 DELAYED COKER
A003 5 GAS PLANT
A004 FLUID COKER
A005 NO. 4 HDS
A006 AMMONIA RECOVERY
A007 SCOTFAM GAS
A008 ACID PLANT
A009 SULFUR RECOVERY
A010 SEA STRIPPING
A011 NO.1 HDS
A012 NO.2 HDS
A013 NO.3 HDS
A014 NO.5 HDS
A015 NO.1 HYDROGEN
A016 NO.2 HYDROGEN
A017 NO.3 HYDROGEN
A018 GEA FACILITY
A019 FLUE GAS DESULFURIZATION
A020 SOUR WATER STRIPPERS
A021 OFFPLOT TRACT 1
A022 OFFPLOT TRACT 2
A023 OFFPLOT TRACT 3
A024 OFFPLOT TRACT 4
A025 OFFPLOT TRACT 5
A026 OFFPLOT TRACT 6
A027 GASOLINE BLENDING
A028 NO.1 HYDROCRACKER
A029 NO.2 HYDROCRACKER
A030 NO.1 FCCU
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A032 NO.1 CRUDE
A033 NO.2 CRUDE
A034 NO.3 CRUDE
A035 NO.4 CRUDE
A036 NO.5 CRUDE
A037 REFRIGERATED BUTANE STORAGE
A038 3 CRUDE
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A040 NO.2 FCC PREP
A041 NO.3 FCC PREP
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A457 NO.1 DELAYED COKER
A458 NO.2 DELAYED COKER
A459 NO.3 DELAYED COKER
A460 NO.4 DELAYED COKER
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A463 NO.2 FLUID COKER
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A1023 NO.2 SULFUR
A1024 NO.3 SULFUR
A1025 NO.4 SULFUR
A1026 NO.5 SULFUR
A1027 NO.1 AMINE
A1028 NO.2 AMINE
A1029 NO.3 AMINE
A1030 NO.4 AMINE
A1031 NO

SEE FIGURE 1-6A

TRACT 3

A039 PROPANE LOADING

TK-711

A074 STAGE 2 WASTEWATER TREATMENT

TK-323

TK-877
TK-327

TK-876

STAGE 1 WASTEWATER TREATMENT UNIT

TK-432

TK-10A
TK-10B

TK-517

TK-943

A090 MTBE (DEMO'D)

A034 1 GAS

CT-90

A054 OFFPLOT TRACT 1 NORTH

A055 OFFPLOT TRACT 1 SOUTH

TK-796/797

A045 API

TK-429

TK-651

TK-620

TK-621

TK-700

TK-699

TK-650

TK-895

A076 3 HDS

TK-467

A069 NO. 1 HYDROGEN

A073 ALKYLATION

A006 2 REFORMER

A067 & A068 STAGE 1 & 2 HYDROCRACKER

TK-622

A091 BENZENE SATURATION

A022 LHP FRACTIONATION

A075 3 REFORMER

A092 NO. 4 HDS

CT-76

CT-68

A005 - 1 HDS

A004 - 2 HDS
A009 BUTADIENE

CT-4

A089 NO. 2 HYDROGEN

A076 3 HDS

FL-05

FL-04

erfront Rd

PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

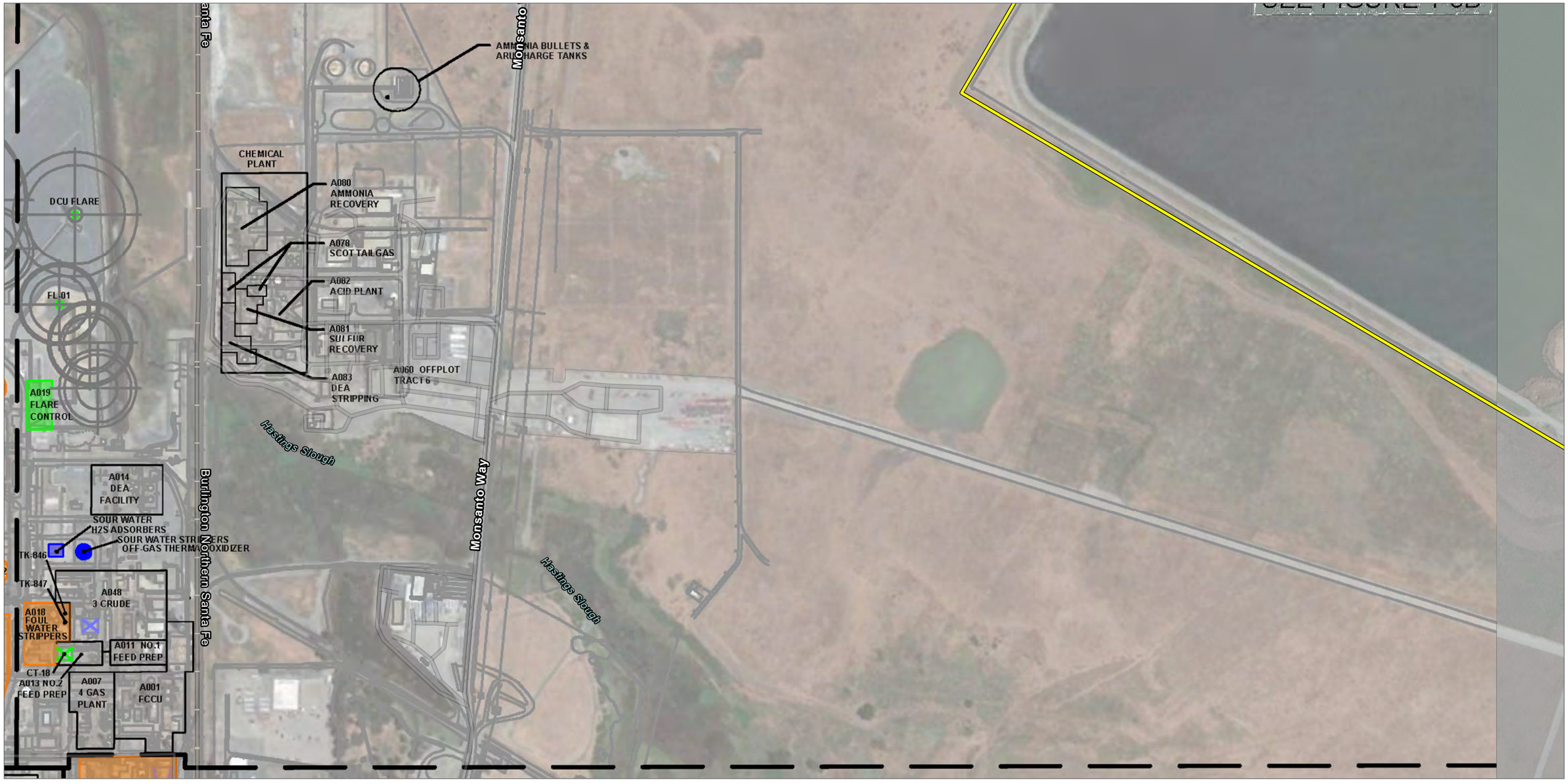
PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
PROPOSED REFINERY MODIFICATIONS

DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		FIGURE 2-4B
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		

FILE: MarathonRenewablesFuel.aprx

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet - Map Rotation: -50
Saved By: RSPRING on 9/15/2021 - 11:52:24 AM - File Path: \\employees\groups\cad\PROJECTS\Contra_Costa_County\430721_Marathon_Renewable_Fuels_EIR\2-4PRX\MarathonRenewableFuel.aprx - Layout Name: 2-4 Proposed Refinery Modifications 11x17L



PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED REFINERY MODIFICATIONS
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-4C
FILE:	MarathonRenewablesFuel.aprx

PROJECT BOUNDARY

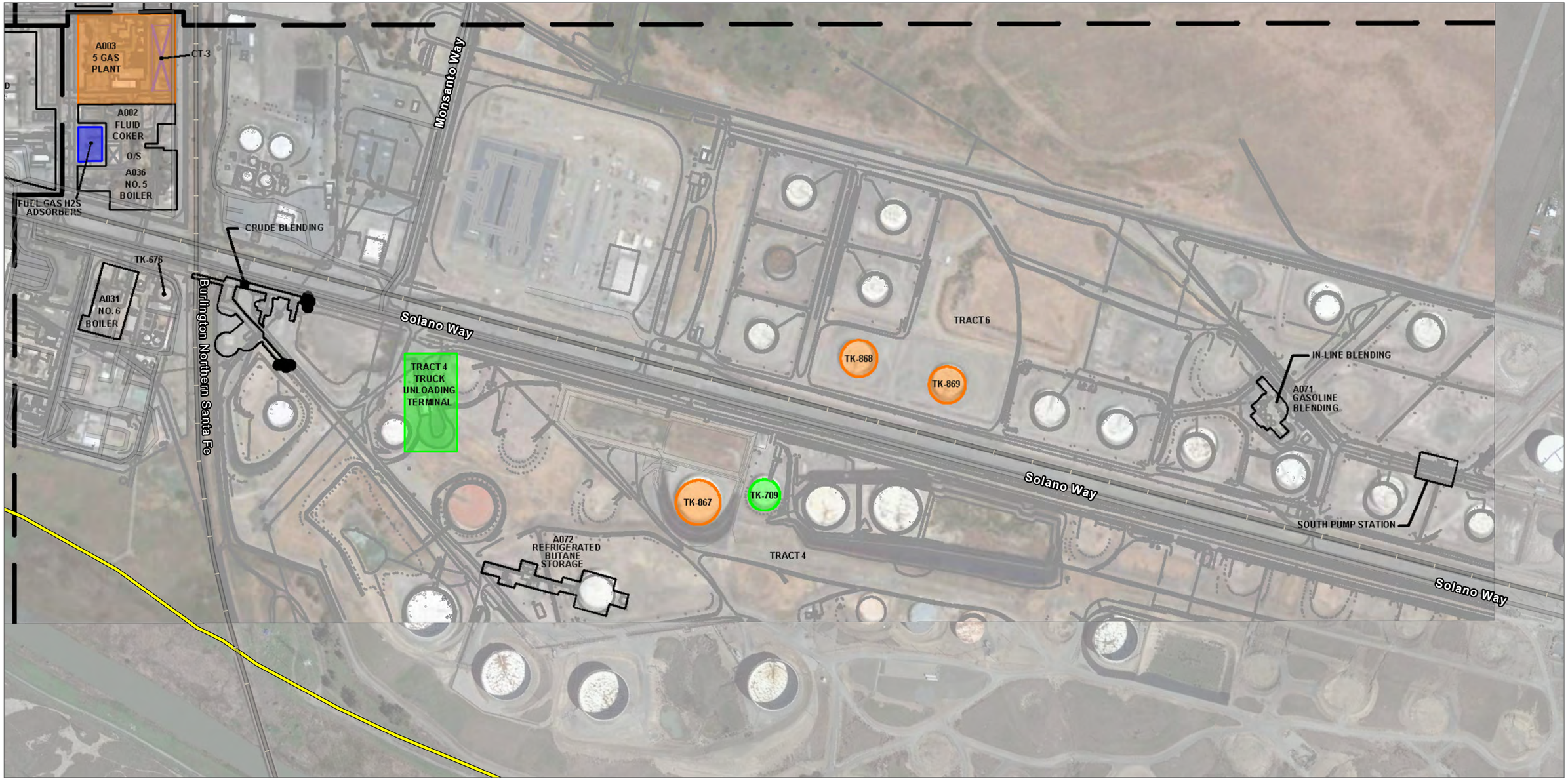
NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 450 900 FEET

1:5,400 1" = 450'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED REFINERY MODIFICATIONS
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-4D
FILE:	MarathonRenewablesFuel.aprx



PROJECT BOUNDARY

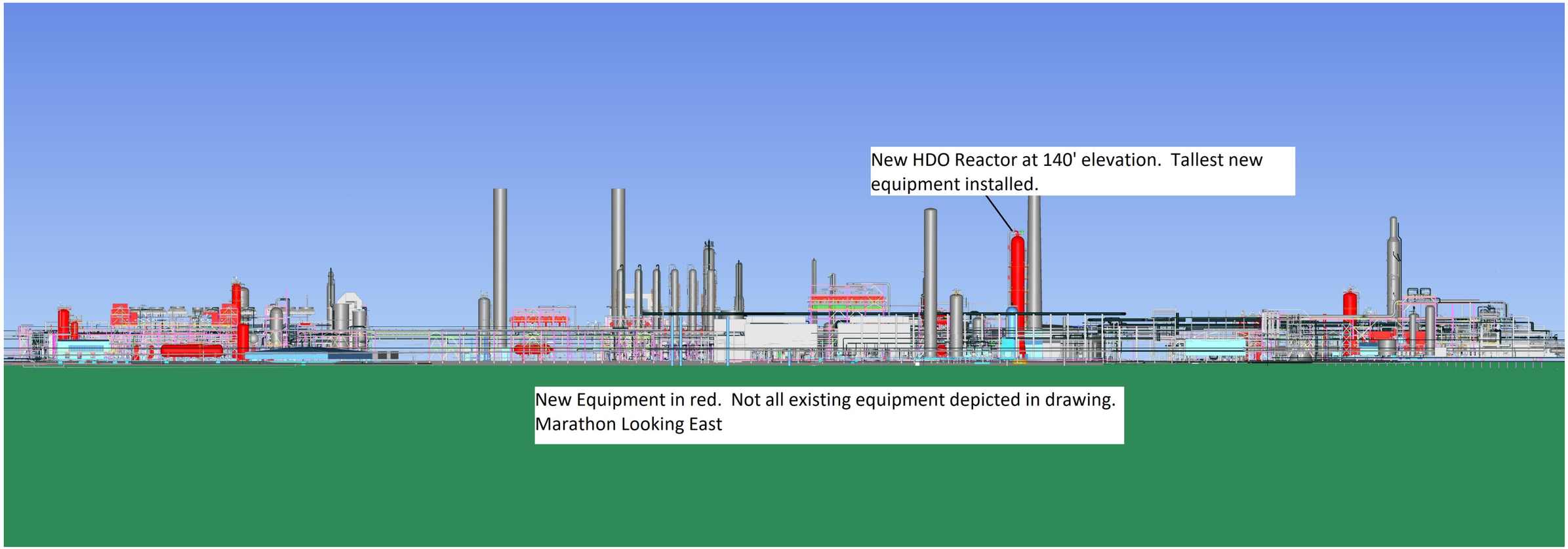
NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED REFINERY MODIFICATIONS
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-4E
FILE:	MarathonRenewablesFuel.aprx



New Equipment in red. Not all existing equipment depicted in drawing.
Marathon Looking East

NOTES:

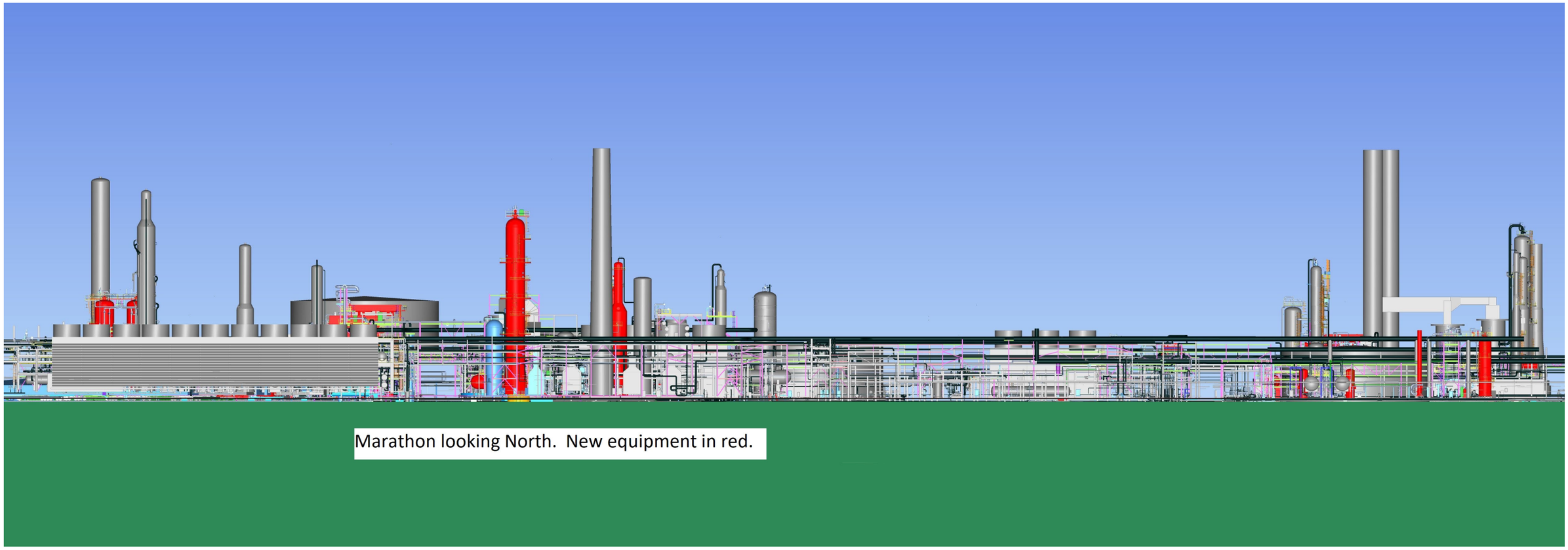
DATA SOURCES: MARATHON PETROLEUM CORPORATION

PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
PROPOSED DESIGN AND EQUIPMENT LAYOUT
(WEST LOOKING EAST)

DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		**FIGURE 2-5**
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		

FILE: MarathonRenewablesFuel.aprx

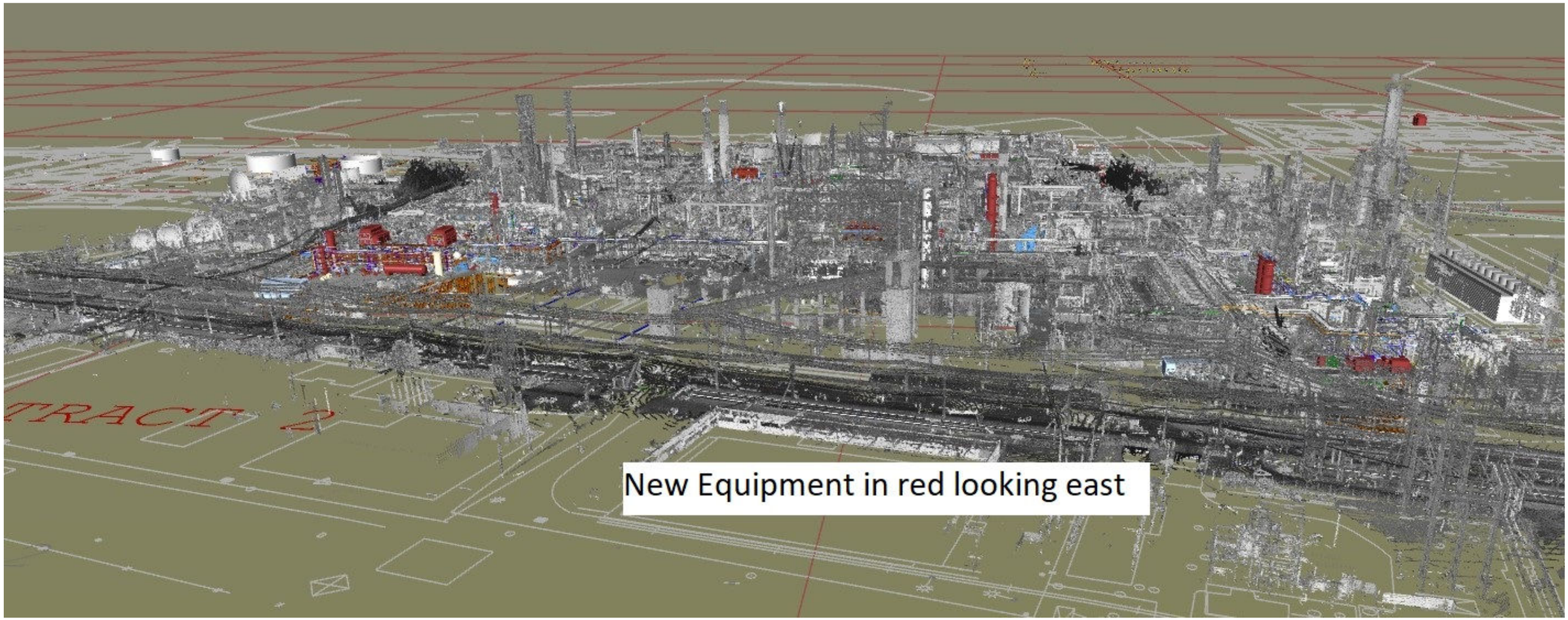


Marathon looking North. New equipment in red.

NOTES:

DATA SOURCES: MARATHON PETROLEUM CORPORATION

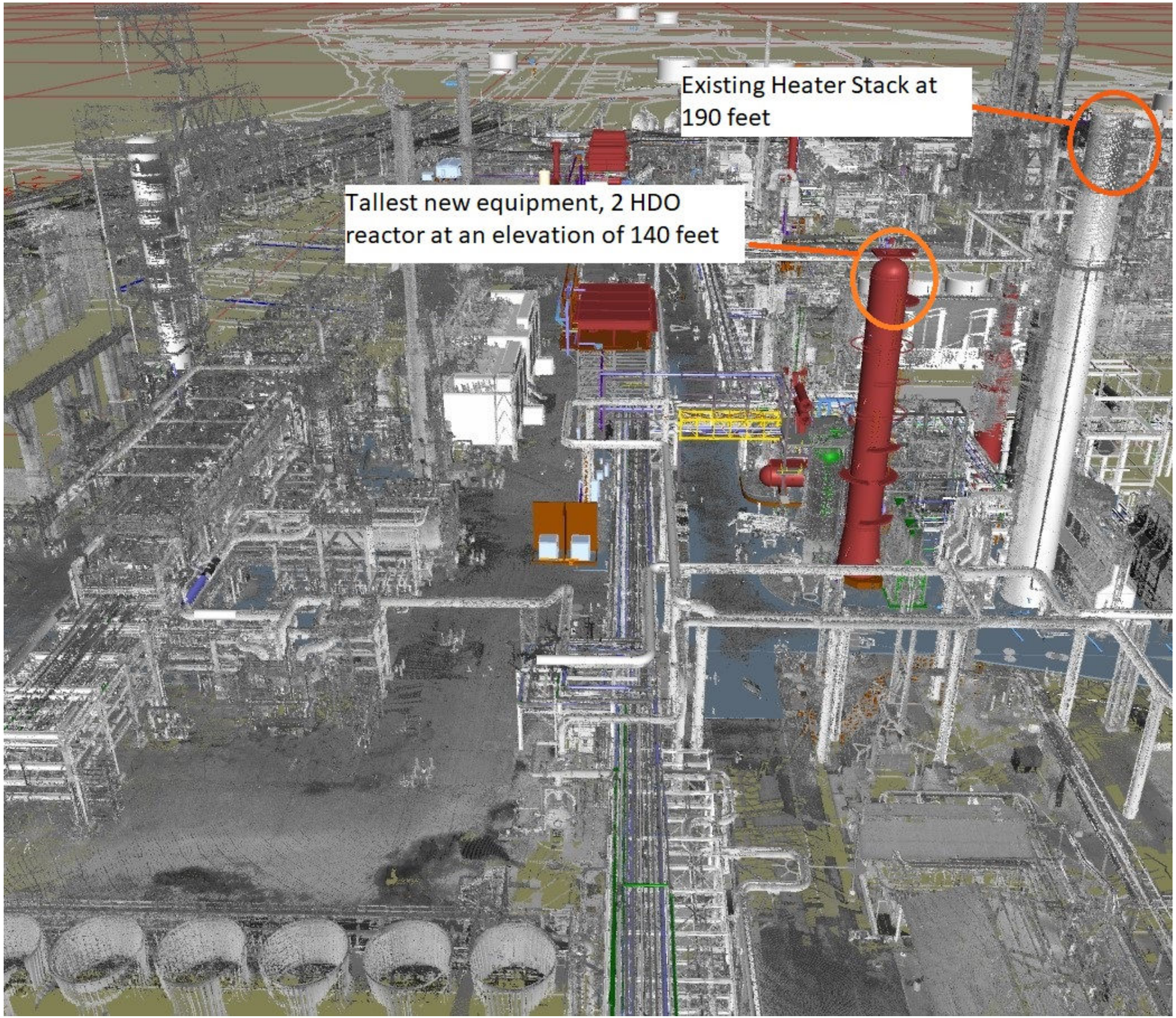
PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED DESIGN AND EQUIPMENT LAYOUT (SOUTH LOOKING NORTH)
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-6
FILE:	MarathonRenewablesFuel.aprx



NOTES:

DATA SOURCES: MARATHON PETROLEUM CORPORATION

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED DESIGN AND EQUIPMENT LAYOUT (LOOKING EAST)
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-7
FILE:	MarathonRenewablesFuel.aprx



NOTES:

DATA SOURCES: MARATHON PETROLEUM CORPORATION

PROJECT:	**CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA**		
TITLE:	**PROPOSED DESIGN AND EQUIPMENT LAYOUT (LOOKING NORTH)**		
DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		**FIGURE 2-8**
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		
FILE:	MarathonRenewablesFuel.aprx		

Figure 2-9

Martinez Renewable Fuels Facility Block Flow Diagram

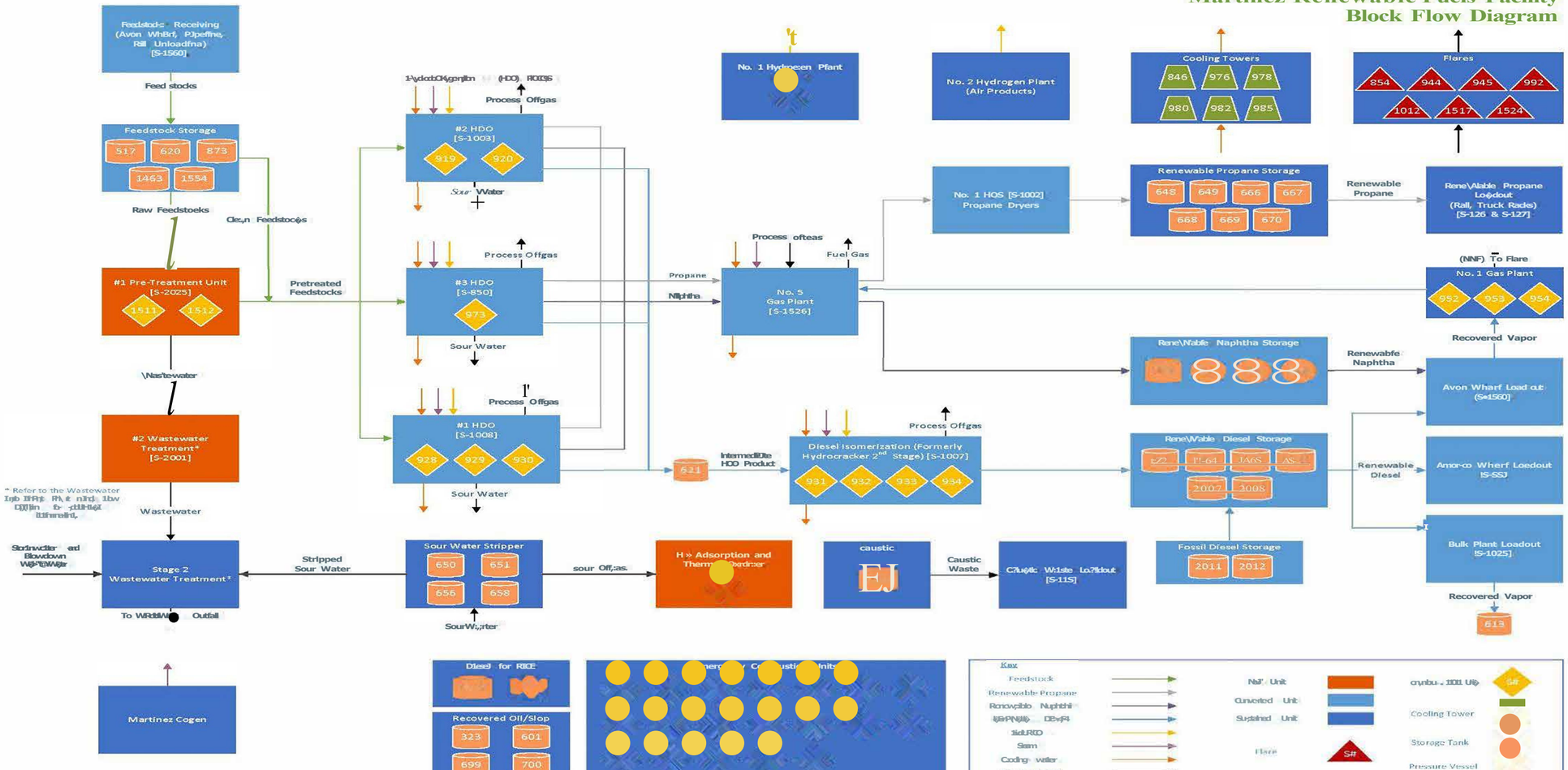


Figure 2.10 – Typical Super Cone Fender
Source: Marathon Petroleum Corporation, 2021

2.5.5 Project Operations

2.5.5.1 Refinery

Under the proposed Project, the Refinery would produce fuels (renewable diesel, propane, naptha, aviation) from renewable feedstock. Feedstock that would be processed at the Refinery is expected to include the following:

- Distillers corn oil (DCO), a by-product of the manufacture of grain/corn alcohols such as ethanol, and the result of the separation of the naturally-occurring oils in corn from the grain alcohol;
- Soybean oil (SBO), derived from the processing of soybeans, is used in food but can also be processed into renewable fuels and renewable plastics; in the process of crushing of soybeans, roughly 80 percent of the soybean content processed is meal used in food products, and the remaining 20 percent is oil; and
- Previously-rendered fats (tallow), a greasy, lard substance produced from the rendering of animal tissue.

It is noted that the processes of rendering, crushing and distillation of biological products, as described above, to create renewable feedstock would not occur at the Refinery. These processes occur at various facilities prior to sourcing the feedstock, such as at ethanol plants (DCO), Soybean Crushing facilities (SBO), and Rendering Plants (tallow). While the exact location is not known for every shipment of feedstock, these facilities are usually in the region of the initial agricultural suppliers such as the Midwest.

As technology evolves, other biological fuel sources such as used cooking oils, and plant and animal processing by-products, may also be used as feedstock using substantially the same equipment and processes as those proposed under the proposed Project.

Marine transportation of renewable feedstock and fuels produced at the Refinery would continue to use the Avon and Amorco MOTs in the proposed, modified operations of the Refinery. In addition, the Project would utilize the Stockton Terminal located a 3003 Navy Drive in Stockton, California. The Stockton Terminal is also owned by Marathon.

Under the proposed Project, the majority of the renewable feedstock is expected to be delivered in smaller barges with capacities of 25,000 to 50,000 barrels per vessel, thus resulting in a higher number of smaller marine vessels (up to approximately 400 vessels per year) calling at the marine terminals. Of these estimated 400 marine vessels per year, or approximately seven per week on average, the Avon MOT would receive about four ships each week and the Amorco MOT would have an estimated three ships per week. Up to six roundtrip barge trips are estimated to transport renewable feedstock and renewable fuel to the Stockton terminal, though the exact location to which feedstock would be transported has not yet been defined. To be conservative, Marathon has assumed Stockton as the furthest distance out that could be used in order to establish the reasonable worst case transportation by barge/vessel scenario.

2.5.5.2 Avon Marine Oil Terminal

Under the proposed Project, the use of the Avon MOT would change from a point of distribution to primarily a facility for receiving of renewable feedstocks, and modifications to the MOTs

existing system of pipes and hoses would be necessary for this change. The Avon MOT would still be used secondarily for receipt of finished petroleum products, though these petroleum products would not be processed at the Refinery and would instead be distributed to the market using Refinery loading facilities. In total, the Avon MOT would receive an average of 70,000 bpd of renewable feedstocks, gasoline product for distribution, and naptha for transfer.

2.5.5.3 Amorco Marine Oil Terminal

During Refinery operations, the Amorco Marine Terminal has been used for receiving approximately 108,000 bpd of crude oil and 5,000 bpd of heavy fuel oil for refining. Under the proposed Project, use of the Amorco MOT would change from a receiving facility to primarily a distribution facility for loading of renewable diesel product for outbound shipments from the Refinery. Product from the Refinery would be distributed from the Amorco MOT at an average rate of 27,000 bpd of renewable fuel, with the balance distributed by pipeline and trucks. It is expected that the actual daily maximum loading would fluctuate dependent on the size of the vessel being loaded, but that throughput across the wharf would remain within permitted levels.

2.5.5.4 Pipelines

Existing pipeline infrastructure in and around the Refinery is not well-suited to the movement of renewable fuels. Pipelines would be insulated with fiberglass insulation material and equipped with heat tracing to ensure that product stays fluid enough to flow through the pipeline. However, under the proposed Project, the renewable fuels Refinery would continue to use trucks and rail in addition to marine vessels for transportation of commodities and products, and pipelines would continue to be used to distribute finished petroleum products received at the Avon MOT.

2.5.5.5 Trucks

Under the proposed Project, trucks would continue to be used for distribution of finished fuels but not for hauling of petroleum coke from the Refinery because petroleum-based products would no longer be produced. The Project would utilize an estimated 180 trucks per day to transport renewable diesel, gasoline, and other finished renewable fuels to their distribution locations. Most trucks would have origins and distribution destinations within the Bay Area, though origins and destinations may also include other locations in Central & Northern California. Truck trips associated with hauls of petroleum coke and molten sulfur produced at the Refinery typically comprised 224 per day with a peak of 310; these trips would not occur with the Project because the Refinery would no longer process crude oil, and the existing coker and sulfur plant would be shut down.

2.5.5.6 Rail

The Project would utilize existing railcar loading racks. Railcars have been used at the Refinery to transport various commodities over longer distances, typically outside of the San Francisco Bay Area and state. With the Project, some commodities such as ammonia and sulfuric acid, would no longer be transported via rail as they would not be used for processing of renewable feedstock. However, rail transport is anticipated to increase post-project due to the movement of the renewable feedstock, which includes vegetable oils (e.g., soybean oil and corn oil), rendered fats, and other miscellaneous renewable feedstocks. Following completion of construction of the proposed project, the Facility is expected to require approximately 22,191 railcars per year or an

average of 63 per day, the majority of which are expected to be renewable feedstock coming from the mid-western area of the United States.

The Project would include transportation of renewable fuels feedstock via rail into third-party terminals in the region because the Refinery is not equipped to unload renewable feedstock from trains. The third-party terminals could be as far away as Stockton, at which point the renewable feedstock would be transferred onto a barge or other marine transport vessel and delivered to the Marathon facility via the Avon Terminal. Other third-party facilities closer to Martinez, at specific locations to be determined subject to contractual agreements, could also be used and could include facilities where railcars could be transported to, unloaded, and the feedstock delivered to Marathon via existing transportation infrastructure. To be conservative, Marathon has assumed Stockton as the furthest distance out that could be used in order to establish the reasonable worst case transportation scenario for analysis.

Propane and butane would continue to be transported via rail, although in reduced quantities with the Project. Railcars containing propane and butane would continue to be directly loaded/unloaded at the Refinery.

2.5.5.7 Utilities

Under the proposed Project, existing on-site wastewater treatment systems would continue to be used but would be augmented with new equipment (Pretreatment Unit and Stage 1 Wastewater Treatment Unit, also referred to as 2WWT) necessary for the purification of renewable feedstocks. The Stage 1 Wastewater Treatment Unit would receive washwater from the feedstock pretreatment unit only. Approximately 300 to 400 gallons per minute would be treated to primarily reduce chemical oxygen demand (COD) and biochemical oxygen demand (BOD). Other constituents, such as phosphorus, nitrogen, and metals would also be removed in the process. Effluent from this system would be commingled with other wastewater and stormwater from the rest of the facility and routed to the existing wastewater treatment plant for further treatment and polishing before discharge through a permitted outfall to Suisan Bay.

Potable water to the Refinery is purchased from the CCWD and would continue to be purchased from CCWD with implementation of the Project. Water would be required for the operation of the new Pretreatment Unit as described above; other crude oil processing units that require water would be taken offline with the Project. Under the Project, areas within the Refinery that historically contained waste materials would remain within Marathon's control, would continue to be monitored through the Refinery's network of groundwater monitoring wells, and would be managed in accordance with the closure plans approved by the S.F. RWQCB and DTSC.

2.6 PROPOSED PROJECT CONSTRUCTION

Construction activities for the proposed Project are projected to begin in Winter 2022 and to continue for approximately 22 months. Construction would require a supplemental workforce of up to 1,400 workers over multiple shifts and standard equipment such as crane trucks, cutting and welding equipment, forklifts, manlifts, portable generators, and material delivery trucks.

Construction would proceed as soon as appropriate permits are received, with the conversions of the No. 3 HDS Unit, the Hydrocracker 2nd Stage Unit, and the No. 5 Gas Plant constituting the first of the existing units to be modified for the Project. Other equipment modifications necessary

to facilitate the conversion from petroleum-based feedstock to renewable feedstock processing include:

- Complete revamp of No. 3 HDS to Renewable HDO Unit service to process average of 17,000 bpd of fresh feedstocks (short term maximum 23,000 bpd).
- Complete revamp of Hydrocracker 2nd Stage to the Diesel Isomerization Unit.
- Installation of a Renewable Feedstock Pretreatment system to process raw feedstock and increase the availability of low carbon intensity (CI) feedstocks (rendered fats, crude vegetable oils, etc.).
- Complete revamp of No. 2 HDS to Renewable HDO Unit service to process average of 16,000 bpd of fresh feedstocks (short term maximum 20,000 bpd).
- Complete revamp of Hydrocracker 1st Stage to Renewable HDO Unit service to process average of 14,700 bpd of fresh feedstocks (short term maximum 24,000 bpd)

The Renewable HDO Units, the Diesel Isomerization Unit, and the gas plant would be designed to be capable of independent operation, startup, and shutdown.

2.6.1 Marine Oil Terminal Construction

Pipeline modification work to the 26 Line at the Avon MOT would not require in-water work. Where the pipeline extends along the wharf over water from the shoreline to the end of the wharf, scaffolding would be installed to provide a safe platform for the over-water work on the pipeline, and a tarp would be secured to the underside of the scaffolding and pipe rack to catch any tools or material that may inadvertently fall. From the shoreline southward (inland), the aboveground pipeline would be accessed from the pedestrian walkway, with scaffolding used where needed to bridge gaps. A tarp would be secured underneath where work occurs over wetlands. Access to work areas would be directly from the developed areas of the Refinery and Avon MOT to avoid foot traffic in wetland areas. Upon completion of the work, the scaffolding will be removed using the same technique as its installation and using the existing pedestrian walkway and access road, to avoid equipment and foot traffic entering any wetland areas. Installation of heat tracing and application of insulating materials would be conducted using hand tools. Any repairs that may be necessary ahead of applying insulation may require use of a portable welder.

At the Amorco MOT, the repairs to the concrete and pilings of Dolphins A-76 and A-77 would be performed from scaffolding suspended from the deck. The piling repairs would be performed by placing a fiberglass (Fox) sleeve around the piling that is then filled with grout. The piling damage at Dolphin A-76 is close to the deck, and the jacket is not anticipated to extend below the mean higher high water (MHHW) level. Repairs to the three pilings at Dolphin A-77 are all expected to be below MHHW level, and the jacket installed on one of the pilings would likely extend to the substrate, but not into it. A marine construction barge with mooring spuds would be used for installing the fender and completing the repairs to the pilings. The mooring hooks at Dolphins A-76 and A-77 may also be rotated depending on mooring layouts.

2.6.2 Termination and Decommissioning

As summarized in Table 2-1, several units used in the processing of petroleum products would be taken offline with the Project. The equipment that would not be reused as part of the

Renewable Fuels project, logistics operations, and continuing terminal operation would be decommissioned and disposed of according to local, state, and federal laws and regulations. The long-term scheduling of this decommissioning and demolition would be based on several factors, including seismic codes, structural integrity, minimization of demolition emissions, and proximity to operating assets. Because much of the reused equipment is intertwined with equipment that would no longer be required, demolition of unused units must be deliberate and planned around safe periods where shutdowns can occur (i.e., maintenance outages/turnarounds). Any demolished equipment would be either preferentially recycled or disposed of according to all applicable waste regulations and would occur in accordance with a demolition and decommissioning program submitted to the County prior to the first demolition permit.

2.7 REFERENCES

United States Energy Information Administration (EIA), 2021, Full List of Refineries spreadsheet. Online: https://www.eia.gov/energyexplained/oil-and-petroleum-products/refining-crude-oil-refinery-rankings.php. Site accessed May 26, 2021.