City of Portland, Oregon - Bureau of Development Services

1900 SW Fourth Avenue • Portland, Oregon 97201 | 503-823-7300 | www.portland.gov/bds

Early Assistance Application

File Number: EA 22-143923 APPT
Appt Date/Time: 6/8/22 @ 10AM

FOR INTAKE, STAFF USE ONLY

Date Rec 5/18/22 by EW

LU Reviews Expected GW

Related cases

☐ Y ■ N Unincorporated MC

☐ Y ☐ N Potential Landslide Hazard Area (LD & PD only)

■ Y ☐ N 100-year Flood Plain

☐ Y ■ N DOGAMI (high)

Qtr Sec Map(s) 2423,2424,2523 Zoning IHik

Plan District Guilds Lake Industrial Sanctuary

Historic and/or Design District None

Neighborhood Linnton

District Coalition N-W/NW

Business Assoc Northwest Industrial

Neighborhood within 400/1000 ft n/a

APPLICANT: Complete all sections below. Email this application and supporting documents described below to: LandUseIntake@portlandoregon.gov. Once the application is received, staff will contact you regarding payment and scheduling a date and time for your meeting.

Site Address 5480 NW Front Ave Portland, OR 97210, R315780 R646342 Site Size/Area 26.5

Property ID(s) R 941180260 = R315786 R 941180170 = R315779 R 941190960 = R315872 R R315787, R646367

Short Project Description: do not leave blank or direct to "see attached". Attach additional sheets for a more detailed description, if needed. R680467

The Applicant is proposing to utilize existing, and construct new infrastructure at McCall's Portland facility to create a renewable feedstock hub on the Willamette River. The project would transload vegetable oil feedstock from barges and vessels, convert an existing asphalt tank to feedstock, add new infrastructure to load and unload feedstock by rail, and use existing infrastructure to deliver renewable diesel (RD) to market by rail, barge, and truck. Also included is, improving the existing rail to include 12 spots for loading and unloading feedstock and RD, adding 2 additional spots for a total of 10 available for asphalt. Adding two additional feedstock tanks and a pretreatment facility.

Design & Historic Review (New development: give project valuation. Renovation: give exterior alteration value) $ 17,789,100.00

Select an Early Assistance Type and check boxes for desired meeting/written notes options:

Early Assistance Type	City Reviewers	On-line MS Teams meeting & written notes provided	No meeting, written notes provided
❑ **Pre-application Conference** Only required for Type III and IV land use reviews	BDS Land Use Services, Transportation, Environmental Services, Water, Parks, others as needed	❑	
❑ **Design Advice Request** Public Zoom meeting with Design Commission or Historic Landmarks Commission	BDS Land Use Services and Design Commission or Historic Landmarks Commission		
■ **Zoning and Infrastructure Bureaus** (including initial bureau responses for street vacations)	BDS Land Use Services, Transportation, Environmental Services, Water, Parks	■	❑
❑ **Zoning Only**	BDS Land Use Services	❑	❑
❑ **Pre-Permit Zoning Plan Check** ❑ 1-2 housing units ❑ all other development	BDS Land Use Services		❑
❑ **Public Works Inquiry for 1-2 housing units** Only for 1-2 unit projects that do not require a land use review, land division or property line adjustment	Transportation, Environmental Services, Water		❑

Applicant Information Include a separate sheet for additional names if needed.

PRIMARY CONTACT, check all that apply ❑ Applicant ❑ Owner ■ Other Consultant

Invite to MS Teams Meeting?: Yes ☒ No ■

Name Laurie Parry Company Stewardship Solutions LLC.

Mailing Address 3370 10th Street, Suite C

City Baker City State Oregon Zip Code 97814

Day Phone 541-519-4891 email laurie@stewardshipsolutionsinc.com

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Check all that apply ■ Applicant ■ Owner ■ Other Owner's Agent

Invite to MS Teams Meeting?: ■ Yes ❑ No

Name Dustin Wilson/Craig Cole Company McCall Terminal

Mailing Address 5480 NW Front Street

City Portland State OR Zip Code 97210

Day Phone (503) 320-8886 (503) 221-6400 email dustin@mccallterminals.com craig@mccallterminals.com

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Check all that apply ❑ Applicant ❑ Owner ■ Other Engineer - Norwest Engineering

Invite to MS Teams Meeting?: ■ Yes ❑ No

Name Jason Anderson Company Norwest Engineering

Mailing Address 4110 NE 122nd Ave #207

City Portland State OR Zip Code 97230

Day Phone (503) 476-7144 email janderson@norwestengineering.com

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Please submit the following materials to LandUseIntake@portlandoregon.gov:

❑ Written project description, including proposed stormwater disposal system and additional property IDs if not included above.

❑ List of questions to be discussed.

❑ Site plans drawn to a measurable scale, with scale and scale bar identified and building elevations drawn to a measurable scale (if appropriate), with scale and scale bar identified.

❑ If the site is in a design overlay and you're planning to meet design standards, completed scorecards are required. Scorecards are available at https://www.portland.gov/bds/land-use-review-fees-and-types/design-standards.

Note:

1. See the Land Use Services fee schedule for detailed fee information: www.portland.gov/bds/current-fee-schedules.
2. Public notice (email and internet posting) is provided for Pre-application conferences and Design Advice Requests.
3. Only material submitted with the original application will be addressed by City staff; we are unable to address any additional material that is submitted after the application is received.
4. For some proposals, such as those using the Community Design Standards, you will receive more detailed information if you provide full-sized plans.
5. Estimates for System Development Charges (SDCs) are not provided at Early Assistance Meetings. Refer to SDC information on the BDS website.
6. Plans examiners do not participate in Early Assistance meetings and they do not provide written comments. For life/safety and building code questions, consult with a plans examiner by scheduling a 15-minute appointment or a Life Safety Preliminary Meeting (www.portland.gov/bds/documents/life-safety-preliminary-meeting-request-packet).

McCall Terminal Renewable Feedstock Hub

City of Portland – BDS Early Assistance Application

Project Narrative

Overview

McCall Terminals is proposing to create a Renewable Feedstock Hub at McCall's Portland Terminal (the "Project"). The existing terminal is ideally located on the Willamette River in Portland, Oregon's industrial waterfront. The Project, a joint venture between McCall Companies and Tidewater Midstream and Infrastructure Ltd., and/or its affiliate, Tidewater Renewables Ltd. (collectively "Tidewater"), will unlock access to local and global renewable diesel feedstocks consisting of animal fats, plant oils, and greases (FOG) and provide finished renewable diesel to displace higher carbon fuels. The Project will create a supply chain solution to provide multiple renewable feedstocks to various markets across North America by vessel, barge, railcar, and truck. Feedstock will be procured from both local and global supply by the same methods and delivered to renewable diesel plants including Tidewater's Renewable Diesel facility located in Prince George, BC. Additionally, the proposed modification would allow the finished renewable diesel to be distributed into the Portland market, helping to meet Oregon's targets under its Clean Fuels Program and Portland's Climate Action Plan.

Project Need

The global demand for renewable fuels is expected to increase by 28% over the next 5 years due to an effort to reduce greenhouse emissions and expand the renewable fuels sector while decreasing dependence on fossil fuels. Congress passed the Renewable Fuel Standard Program in 2005. The program is implemented by the Environmental Protection Agency (EPA) and increases the required gallons of renewable fuels produced and/or imported to the U.S. (replacing and/or reducing petroleum fuels) each year through 2022. Renewable diesel qualifies as a biomass-based diesel because the lifecycle greenhouse gas (GHG) emissions of the feedstocks (animal fats and plant oils) are 50 percent lower compared to the lifecycle GHG emissions of petroleum-based diesel.

In 2006 the State of California passed their own measure, Assembly Bill 32 (AB 32), which included the Low Carbon Fuel Standard (LCFS). The LCFS is designed to decrease the carbon intensity of the transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduce petroleum dependency and achieve air quality benefits including the decrease of GHG. Oregon, Washington, and British

Columbia, Canada, have joined California in a regional agreement to align policies to reduce GHG and promote clean energy. In addition, Oregon passed its own Clean Fuels Program (CFP) in 2009, with implementation beginning in 2016. The City of Portland developed the Climate Action Plan in 2009 with an update in 2015. Among other factors, a shift to lower-carbon energy sources such as renewable fuels are part of the strategy for lowering Portland's carbon emissions.

Multiple fossil fuel refining facilities on the west coast are being converted or constructed to produce renewable fuels due to the increased demand, however, one of the major constraints is the supply of feedstock. The Project will help to create a supply chain solution that can provide multiple renewable feedstocks to these facilities.

Early Assistance

The Project is in the early planning phase. The Applicant is requesting an Early Assistance meeting with the City of Portland's Bureau of Development Services and other reviewing officials to assist the Applicant in preparing and submitting a complete project proposal. The primary purpose of this narrative is to provide review officials with an overall understanding of the modification and components so reviewers can assist the applicant in identifying significant issues and relevant city requirements and procedures that could affect the permitting process and project timeline.

Location

The terminal is approximately 26.57 acres and is located at 5480 NW Front Avenue, Portland, Oregon. See Figures 1 through 6 for details including Location and Vicinity Maps, Aerial Photograph, Tax Lot Map, Topographic Map, Floodplain map, and Zoning Map for details. The terminal is comprised of 3 parcels with the following tax account numbers: R941180260, R941180170, and R941190960. The Project will occur on portions of all three parcels.

Tax Account #	Base Zone	Overlay Zone
R941180260, R941180170, and R941190960	Heavy Industrial	Greenway, River Industrial (i) Prime Industrial (k)

Regulatory

City of Portland

The Project is located within the jurisdiction of the City of Portland and will require, among other approvals and permits, a Greenway Review, a City Building Permit, Mechanical Permit, and an Electrical Permit. The Applicant intends to do multiple studies including a Geotechnical Evaluation prior to the design phase. The Applicant anticipates that the Early Assistance meeting will help identify critical design criteria, that will ensure that the Project meets relevant municipal codes, ordinances, and actions plans and identify any critical steps in the permitting process that could impact the viability of the Project.

US Army Corps of Engineers

The Project will require work on the dock (over water) in waters that are considered Waters of the United States (WOTUS). Work overwater is regulated by the US Army Corps of Engineers (USACE) and will require a Section 10 – Clean Water Act permit and a DEQ 401 Certification.

Department of Environmental Quality

- Stormwater - Stormwater control is currently permitted under McCall's existing NPDES Permit Number 1200-Z, File Number 54175. A 1200-C DEQ Construction Stormwater permit will be obtained if the Project disturbs more than 1-acre.
- Air Quality Permit – The Applicant currently operates under a DEQ Simple Air Contaminant Discharge Permit (Permit Number: 26-0350-SI-01). The Applicant will request a modification to the permit for the additional emission and provide DEQ with a construction notification prior to construction.

Project Description

To meet the goals of the proposed modifications and to mitigate impacts to resources, the Applicant is proposing to utilize existing infrastructure and construct new infrastructure at McCall's Portland facility (See Figure 7, Proposed Site Plan and McCall Terminals Renewable Feedstock Hub Site Plan D1335-SkC01).

The Project will require transloading of FOG feedstock from barges and vessels. To do so McCall will convert an existing asphalt tank to feedstock, add new infrastructure to load and unload feedstock by rail, and use existing infrastructure to deliver renewable diesel to market by rail, barge, and truck. Rail efficiency improvements include adding 12 spots, 10 for loading and unloading feedstock and renewable diesel, and 2 additional spots for asphalt.

The FOG feedstock design will be able to load and unload barges and vessels up to 250,000 barrels (bbl) in 48 hours into the existing Tank #2 (250,000 bbl capacity). It will also have the capability of loading and unloading 12 railcars per day at 29,300 gallons (697 bbls) per railcar, total throughput of 8,370 bpd.

Renewable diesel modifications will allow for loading and unloading barges and vessels up to 120,000 bbls in 48 hours using tanks #7 or #8 (both 60,000 bbl capacity). The system will be able to load and unload 12 railcars per day, similar to the vegetable oil feedstock. The existing truck rack will be used to load custom blend ratios of renewable diesel and conventional diesel. For more details on the process see the Block Flow Diagram on Plan Sheet D1335-F001.

If the Early Assistance meeting indicates that the Project is viable from a regulatory perspective, the Applicant is proposing a three-phase approach to implementing the Project. The Applicant would work to obtain the necessary permits for Phase 1 immediately, with the objective of being operational to receive and transfer feedstocks by the first quarter of 2023. The goal is to obtain the necessary permits and approvals for Phase 1, while planning for Phases 2 and 3.

The project phases include the following components:

Phase 1 would include rail infrastructure improvements and converting an existing asphalt tank to a vegetable oil feedstock tank. This would include a new pipeline from the dock to the tank and from the tank to the new rail facility and modification of the rail infrastructure for a 12-car per day loading and unloading facility and associated track as well as upgrades to an existing tank.

Phase 2 would build a new 150,000 tallow (animal fat) storage tank and convert an existing 10,000 tank to a used cooking oil tank. This would include construction of the new feedstock tank, new pipelines and associated ancillary components, and upgrades to the existing tank.

Phase 3 would build a Renewable Fuels Feedstock pre-treatment facility, a new 25,000-barrel feedstock tank, and a 100,000-barrel treated product storage tank. This would require the construction of the pre-treatment facility, two tanks, new pipelines, and associated ancillary components.

Phase One

This portion of the Project has three major work components:

- **1A: Vegetable Oil Feedstock Infrastructure:** The objective of this work component is to modify infrastructure to load and unload raw Vegetable Oil Feedstock from the McCall Dock, have the ability to store Feedstock on site, and create infrastructure to move Feedstock to and from the rail loading area.

  To accomplish the objective, an existing 250,000 bbls asphalt storage tank will be converted to accept and store vegetable oil feedstock. This requires the addition of three mixers mounted in the tank to keep the product turning over. The existing steam system will be utilized to maintain feedstock temperature. A new heated and insulated 12-inch pipeline from the dock to the newly converted storage tank will be installed on the current pipeline trestle.

  The addition of a new Pipeline Intervention Gadget or Pipeline Inspection Gauge (PIG) launcher and receiver, which will be utilized to flush the new feedstock pipeline, will be required to receive a variety of feedstocks at the dock. Two new barge and vessel loading pumps will be installed to load and unload feedstocks between the dock and the converted storage tank. The new heated pipeline will tie into an existing pipeline to deliver the products to the rail loading area (See Plan Sheet D1335-SKM02, Dock Layout for additional details).

  Parts and elements of the system that will be retained or remain the same include:

  1. Dock and decking
  2. Existing 6" Biodiesel pipeline to the rail will be used for feedstock
  3. Steam System for storage tank temperature control

  Components of the system that will be altered:

  1. 250,000 bbl storage tank will be converted from asphalt to feedstock storage

  New components involved in this phase of the Project include:

  1. 12" bi-directional piping from the dock to the converted storage tank
  2. Two 50% duty vegetable oil barge/vessel loading pumps with covers
  3. PIG Launcher /Receiver

4. Ancillary components including heat tracing for feedstock pipe, required valves to operate the terminal safely, and an expanded instrumentation control system for the operation of the feedstock system

- **1B: Upgrade Rail Terminal:** The objective of this work component is to modify the existing rail infrastructure to be able to load and offload Feedstock and finished renewable products, while maintaining existing asphalt offloading capabilities. The existing infrastructure is comprised of 12 rail spots with high pressure steam lines utilized for heating of asphalt railcars, and 6" pipelines which run from storage tanks to the rail area. The scope of this component would include the extension of the rail along NW Front Avenue to provide an additional 12 load and unload spots, the extension of the two northeast rails to add one additional spot on each of those rail lines for asphalt, contact water collection, stormwater collection, site development upgrades and fire water system upgrades (See Plan SheetD1334-SKMO1, Mechanical Site Plan). Infrastructure will be included to collect contact water at each new rail spot. The contact water will gravity drain to a proposed pump vault and then be pumped to the existing contact water system. The new rail spots will require a new overhead loading platform that will house the following components (See Plan Sheet D1335-SKC02, Section). Each new rail spot would be equipped with 2 loading arms, one for renewable diesel and one for feedstock, for a total of 24 arms. It is anticipated that the new rail loading and unloading area will require a new automatic sprinkler system comprised of 2" piping. To transport product to be loaded and unloaded by rail, two 8" pipelines will be included in the overhead rack. A 6" steam line will be required to regulate temperature and for heating railcars to unload feedstock. In order to receive feedstocks via the expanded rail system, a new package boiler will be required to supply steam to the new pipeline.

  Two 12" pipelines originating from the new rail spots will be placed underground and tie into a new 8" bidirectional renewable diesel pipeline and the 6" feedstock pipeline.

  Parts and elements of the system that will be retained or remain the same include:

  1. Two new 8" bi-directional pipelines for renewable diesel
  2. Two new 6" bi-directional pipelines for feedstock

3. 12 Rail spots with high pressure steam line
4. Existing pipelines from storage tanks to rail area

New components involved in this phase of the Project include:

1. Railcar access platform with 12 rail spots with all the ancillary components described above
2. 250 hp boiler
3. New fire water system
4. Contact water containment system
5. Accuload instrumentation control system for rail loading, unloading, temperature and pressure control, grounding, and over-flow protection.

1C Renewable Diesel: The Applicant is proposing to use existing infrastructure to bring in finished low-carbon renewable diesel(made from renewable feedstocks) by railcar, vessel, and barge for sale into the local market. Renewable diesel that is received by barge or vessel will be transported via an existing 10" pipe bi-directional pipe to and from the dock and stored in two existing 60,000 bbl capacity tanks (See Plan Sheet D1335-F001, Block Flow Diagram).

The 10" pipeline and storage tanks will tie into the new 8" bi-directional pipeline to the rail area. Railcar loading and unloading will be accomplished using the new 8" bi-directional pipeline. This work component will require the installation of 3 new pumps that will be utilized for loading and unloading vessels, barges and railcars.

Parts and elements of the system that will be retained or remain the same include:

1. Convert 1 existing 60,000 bbl storage tanks for renewable diesel
2. Existing 10" pipeline from the dock to the storage tanks

New components involved in this phase of the Project include:

1. One renewable diesel pump for barge and vessel loading
2. One renewable diesel pump for railcar loading
3. One renewable diesel pump for railcar unloading
4. Ancillary components including required valves to operate the terminal safely and an expanded instrumentation control system for the operation of the renewable diesel system

More details on Phase 1 are included below in the Design Basis information.

Phase 2

The objective of this future phase is to have the ability to receive and load additional types of feedstocks. The Applicant is proposing to build a new 150,000 bbl Tallow Storage Tank with the ability to receive and load various grades of tallow to and from vessels, barges, and railcars. In addition, an existing 10,000 bbl tank would be converted into used cooking oil service to use as collection and storage point.

Parts and elements of the system that will be retained or remain the same include:

1. Dock and decking

Components of the system that will be altered:

1. 10,000 BBL storage tank will be converted to used cooking oil storage

New components involved in this phase of the Project include:

1. 150,000 bbl tallow storage tank
2. New pipeline to the truck rack for loading and unloading used cooking oil
3. Associated pumps, connection, and infrastructure as required

Phase 3

The Applicant is proposing to build a 3,000-5,000 bbl/day Renewable Fuel Feedstock Pre-Treatment Facility at McCall's Terminal (See Plan Sheet D1135-SKG02, Pretreatment Bldg. Elevations). The objective is to construct a facility that would have the ability to process raw feedstocks that could be utilized to produce renewable diesel. Pre-treatment would remove impurities from the feedstock creating a product that can be immediately refined by receiving clients without additional treatment.

New components involved in this phase of the Project include:

1. New Pre-Treatment Facility
2. New 25,000 bbls Feedstock tank
3. New 100,000 bbl Treated Product storage tank
4. Buffer tankage for disposal products (1,000-2,000 bbl tanks based on size of pre-treatment facility)
5. Pipeline to the Feedstock Tank from the following:

Vegetable Oil Tank, Tallow Tank, Used Cooking Oil Tank, and New Rail Terminal

6. Pipeline from the Treated Product storage tank to the following: Vessel/Barge, New Rail Terminal

The Applicants would work to obtain the necessary permits for Phase 1 immediately, with the objective of being operational to receive and transfer feedstocks by the first quarter of 2023. However, the Applicant requests that the Reviewers of this application consider all phases of the Project to assist the applicant in determining if there are any potential pitfalls that could materially y impact the Applicants ability to implement the Project.

Design Basis for Phase 1

For Phase 1 of the Project, the overall footprint of the facility will not significantly increase, but additional infrastructure with a valuation of approximately $17,789,100 will be added.

The design basis for Phase 1 of the Project is outlined in the following sections:

Site Civil Engineering Design Basis

Survey for topographic data, utility locates, property lines and right of way, and benchmarks tied to coordinate system will be included prior to the engineering phase. The coordinate system used is the North American Datum of 1983 (NAD83), Oregon state plane, north zone, U.S. survey feet. The North American Vertical Datum of 1988 (NAVD88), U.S. survey feet, is used for elevations.

Geotechnical engineering services provided in the structural section will also include evaluations and recommendations for rail sections.

Rail layout will be designed to meet BNSF Industry Track standards and set back requirements per City of Portland Code and NFPA and State fire codes. The rail car crossing will be evaluated with BNSF and the City of Portland Transportation Bureau to determine if upgrades to the existing grade crossings are required.

Contact water will be collected at each new rail load/unload spot. The contact water will gravity drain to a proposed pump vault and then will be pumped to the existing contact

water system. The contact water will then be discharged to the existing oil/water separator.

Grading and erosion control will be provided to meet City of Portland site development requirements for the required grading at the rail.

Additional improvements may be required to meet current City of Portland site development and source control requirements. Evaluate source control requirements for roof covers over equipment with flanged connections. Evaluate site development requirements for landscaping, parking, and bicycle parking. Parking spaces will be removed along the front of the Brenntag Pacific building. New parking spaces and landscaping will be required to replace the removed spaces (See Plan Sheet D1335-SKC04, Site Parking Requirements).

Evaluate and upgrade utilities at rail crossings to meet current BNSF and City of Portland utility crossing requirements. Evaluate and upgrade any overhead power crossings to meet BNSF clearance requirements. Evaluate firewater main back flow prevention and upgrade to City of Portland and Oregon water standards.

Structural Engineering Design Basis:

In the absence of engineering standards specified by McCall Terminals, the set of standards typically applied to industrial sites will be used. This includes the Oregon Structural Specialty Code (OSSC) along with reference standards such as ASCE 7, ACI 318, AISC/ANSI 360, and API 650. Practice-related standards such as those from ASCE and Process Industry Practice (PIP) will be used. PIP standards will be considered as the primary resource for loads not specified in the building code. Structural Design Hazards Values per ASCE 7-16 and 2019 OSSC, Risk Category III are shown in 3.0. There are no ice-sensitive structures on this Project and load combinations with ice loading will not be evaluated.

Geotechnical Engineering for the site will be included in later phases of the Project. At this point in the Project, it can be considered that the seismic hazards of liquefaction and lateral spread are present. There are no established guidelines for a pragmatic treatment of these hazards for minor structures such as single line pipe stanchions and/or for existing structures receiving additional load. Because new and existing piping support structures that carry less than 5 lines are low risk for significant environmental damage, the Applicant does not anticipate the need to mitigate for liquefaction and lateral spread. New structures taller than 4' will not be utilized.

The dock approach and low-level sleeper-type support through the tank farm is adequate, elevated piping support from the tank farm to the asphalt plant is not suitable and cannot be used for new piping. The elevated pipe rack in asphalt plant does meet the 5-line criteria and new supports will be evaluated. Piping support on existing containment walls is suitable and will be evaluated.

Marine Engineering

The marine facility is capable of handling up to Handymax/Midrange sized vessels, fully laden, with displacements of up to 61,000 MT, per recent engineering analysis by others. Recent improvements to the fender system (HDR, 2018) assumed such a vessel in the design basis, and the breasting dolphins are assumed to be capable of supporting the reaction loads. The mooring dolphins are spaced appropriately for line geometry to berth 600-foot vessels. No terminal operating limits drawings or analysis has been reviewed. It is assumed for now that the environmental limits for wind, current, and passing vessel effects are appropriate for operations. The mudline elevation noted in the dock mooring plan (35 feet; ATGI, 2021) appears appropriate for the design vessels, provided vessels are not fully laden at low water levels.

The service platform supports piping, laydown space for hoses, and the dock crane. The crane was replaced in 2021. It was sized to accommodate chemical carriers. Handymax/Midrange vessels have freeboard as much as 7-8 feet taller in the water. However, the crane reach at high water should still be sufficient for hose handling, either alone or in tandem with the vessel crane.

The service platform and approach structure were evaluated in 2019 by Norwest Engineering Inc, to determine if additional capacity existed for new pipe loads. A second level would need to be added to the pipe rack for new pipe runs along the approach, and McCall had determined that the pedestrian space adjacent to the existing rack could be utilized for new rack columns as necessary. The evaluation indicates the design loading for phase 1 can be supported by the existing structures without major structural modification. New pipe runs will likely need to be routed over the approach and into the relatively vacant upstream half of the platform; the pipe rack running downstream and supporting the current marine product lines is full and likely cannot be added onto without rebuilding and potentially upgrading pile foundations, depending on the design loads.

The service platform has enough room for hose laydown. Additional space will be utilized if a pig launcher/receiver station is needed for a future feedstock line, which would impact the available laydown area.

Marine Design Basis

Terminal operating limits will be evaluated for the marine facility. This will include mooring and breasting analyses for all vessel classes that would call on the dock; evaluation of high and low water levels relative to mudline elevation and vessel draft; establishing wind and current limits; and evaluating passing vessel effects. Analyses will follow industry guidelines for marine facilities and liquid bulk carriers (OCIMF, PIANC, BS).

The approach and service platform load rating will be based on strength by analyzing the bending moment at midspan against the design loading (H-15 truck or 100 psf, per the 1974 construction drawings). The limit for the combined loads will be based on the capacity of the structural members.

Mechanical Engineering - Piping and Pumping

Piping

- Vegetable Oil Feed

The vegetable oil is received by barge or vessel and stored in Tank #2, 250,000 bbl capacity. The new 12" piping to and from the dock will be bi-directional and piggable for cleaning between operations. Two 50% duty pumps, each having a capacity of 1850 GPM capacity at 170 ft discharge head will be used for loading vessels or barges.

Railcar loading and unloading will be accomplished using an existing 6" bi-directional piping, currently in soy-biodiesel service. Each unload pump will have a capacity of 900 GPM at 170 ft discharge head, to unload 12 railcars in 6 hours. There will be one (1) in-line spare for the unload pump. Two 50% duty pumps for loading pump will have a capacity of 450 GPM at 200 ft discharge head to load two railcars at a time at a rate of 900 GPM. This will achieve loading twelve (12) railcars in approximately 7 hours. The railcar heat up time for vegetable oil will be 6 hours. If the feedstock is tallow that heat up time will be increased up to 20 hours, depending on the receiving conditions.

All piping for vegetable oil and tallow will be electric heat traced and insulated to maintain 140 °F. The heat tracing temperature can be lowered to 110 °F if primarily handling vegetable oil. Piping will conform to PIP carbon steel specifications.

- Renewable Diesel

The renewable diesel is received by barge or vessel and stored in existing tanks #7 or #8, 60,000 bbl capacity each. The existing 10" piping to and from the dock will be bi-directional. Two 50% duty pumps, each with a capacity of 875 GPM capacity at 160 ft discharge head will be used for loading vessels or barges.

Railcar loading and unloading will be accomplished using a new 8" bi-directional piping. Each unloading pump will have a capacity of 900 GPM at 220 ft discharge head, to unload 12 railcars in approximately 7 hours. There will be one in-line spare. There will be two 50% loading pumps with a capacity of 450 GPM at 255 ft discharge head to load two railcars at a time at a rate of 900 GPM. This will achieve loading twelve (12) railcars in approximately 7 hours.

Each railcar spot will contain its own measuring system and controls. These controls will be configured to maintain less than 3 ft/s velocity at start of loading and less than 23 ft/s throughout the rest of the loading as recommend by API 2003. Each loading branch is 4" diameter and has its own 3" loading arm.
Piping for renewable diesel will be uninsulated, carbon steel piping, conforming to PIP carbon steel specifications.

Pumps

The table below summarizes the pumps which are used in the design. All process pumps are designed in accordance with API 676 positive displacement pumps and API 610 centrifugal pumps. The motors will have VFD capabilities, however, the VFD determination is still to be decided.

The main process pumps designed for the facility are shown in the table below.

Pump No.	Service	Pump Specification	Motor Specification
P-XXX A/B	Vegetable Oil Barge/Vessel Loading Pumps	Type: Centrifugal Design Flowrate: 1850 GPM Total Discharge Head: 170 ft	HP: 125 RPM: 1785
P-XXX A/B	Vegetable Oil Railcar Loading Pumps	Type: Centrifugal Design Flowrate: 450 GPM Total Discharge Head: 200 ft	HP: 40 RPM: 3550
P-XXX A/B	Vegetable Oil Railcar Unload Pump	Type: Positive Displacement Design Flowrate: 900 GPM Total Discharge Head: 170 ft	HP: 75 RPM: 1800

P-XXX A/B	Renewable Diesel Barge/Vessel Loading Pump	Type: Centrifugal Design Flowrate: 875 GPM Total Discharge Head: 160 ft	HP: 50 RPM: 3560
P-XXX A/B	Renewable Diesel Railcar Loading Pump	Type: Centrifugal Design Flowrate: 450 GPM Total Discharge Head: 255 ft	HP: 40 RPM: 3550
P-XXX A/B	Renewable Diesel Railcar Unloading Pump	Type: Positive Displacement Design Flowrate: 900 GPM Total Discharge Head: 220 ft	HP: 100 RPM: 1800

Storage

The Project will use existing tanks for storage of vegetable oil feedstock and renewable diesel. Tank #2, with a 250,000 bbl capacity, will be converted from asphalt service to vegetable oil. The tank will have (3) mixers mounted to keep the product turning over.

There will be an external heat exchanger loop to maintain feedstock temperature, using the existing steam system near the tank. This loop will consist of a small recirculating pump and shell and tube heat exchanger. Sizing will be determined in detailed engineering.

Renewable diesel will be stored in existing tanks #7 and/or #8, each tank with a 60,000 bbl capacity.

Additional tanks for tallow and used cooking oil are planned for phase 2 of the site build-out. Initial sizing of those tanks is 150,000 bbl and 10,000 bbl, respectively.

The table below is an overview of the major tanks featured in the Project:

Tank Tag #	Commodity	Heating Coils	Mixers	Installed Storage Capacity	Material of Construction
Tank 2	Vegetable Oil	No	Yes	250,000 bbl	Carbon Steel
Tank 7	Renewable Diesel	No	No	60,000 bbl	Carbon Steel
Tank 8	Renewable Diesel	No	No	60,000 bbl	Carbon Steel

Tank XX	Tallow	Yes	TBD	150,000 bbl	Carbon Steel
Tank XX	Used Cooking Oil	TBD	TBD	10,000 bbl	Carbon Steel

Other Miscellaneous Mechanical Items
Other equipment used on this Project are as follows:

a) 24 loading arms designed to load product into 12 rail spots, one each renewable diesel and feedstock.
b) Required manual valves, motor operated valves, and specialty valves (PSV, FCV, etc.) to operate the terminal properly and safely.
c) Rail offloading hoses for feedstock and renewable diesel.

Utilities

The following sections outlines the scope of the utility for this Project. Instrument Air and Plant Air Supply:

- Instrument air will be needed for actuated valves.
- Plant air will be routed to rail area for routine maintenance and blowdown activities.

Water:
Feedwater will be required for the new 250 hp package boiler for heating the railcars. The feedwater line will need to be at least a 2-inch line. Water to the facility is provided by the City of Portland.

Natural Gas:
Natural gas will be required for the new 250 hp package boiler. The boiler will require 10,000 SCFH of gas. The natural gas line to the boiler will be 1 ½ inch line or larger. Natural gas is provided by Northwest Natural and exists on the site. No new service will be needed.

Site Power:
Electrical power will be provided by the local utility Portland General Electric (PGE) and the electrical design will coordinate with the electrical utility. PGE will have to intercept the existing 12.47KV underground line that runs north south and extend it to provide a new 1.5MVA service for this Project.

Steam:
A new package boiler will be required for heating railcars for unloading feedstock The size of this boiler is 250 HP for 8000 lb/hr of 50 psig steam. This sizing assumes 25% frozen tallow in the railcars and a 140-degree Fahrenheit heat up temperature for the railcars.

Fire Water:
It is anticipated the rail loading and unloading area will require automatic sprinklers as required by Oregon Fire Code for Occupancy Group H-3. The facility has an existing fire system, and it is anticipated that the existing system has adequate flow to support the new sprinkler system.

Waste and Emission Streams

Below is a summary of the anticipated new emission or waste streams.

1. Contact water from the new rail area track containment, 25-year storm, 10,000 gallons
2. Boiler blowdown water – TBD.
3. Boiler emissions:

Stack Emissions-Natural Gas (1,000 Btu/CF)				
	PPMv (Corr to 3% O_2)	lb/MBtu	lb/hr @ Full Rate	Ton/Yr @ Full Rate
NO_x *	110	0.131	1.340	5.867
	30	0.036	0.365	1.600
	9	0.011	0.110	0.480
CO	50	0.037	0.38	1.646
CO_2	2.55 lb/lb fuel	119.76	1,225	5,366
H_20	2.03 lb/lb fuel	106.16	1,086	4,757

Instrumentation / Controls

Control System
The Project will expand the existing Siemens control system for the operation of the new renewable diesel and feedstock systems. All new hardware will match the existing site specifications for module requirements. The feedstock offloading and rail loading

pumps, feedstock storage tank and mixers, renewable diesel storage tanks, renewable diesel offloading and rail loading pumps and steam boiler will be controlled and monitored by the new control system. Based on the layout of the site, there will be three Remote IO (RIO) enclosures located strategically throughout the facility including at rail area and tank farm. The new PLC system will also interface with the Accuload systems for the initiation and halting of loading operations. There will be a dedicated HMI for operations to review process conditions and control the process remotely. The PLC will also be responsible for the ESD operations. Accommodations will be made for communication of the PLC and Accuload data to the site control system via existing ethernet network.

Feedstock Unloading

There are dedicated offloading stations for the feedstocks. The PLC will monitor the temperature of the offloaded material to ensure that there will not be issues with the offload process.

Storage Tanks

These notes are typical for both the feedstock tank and the renewable diesel storage tanks.

The PLC will be responsible for monitoring the temperature and level of the tanks. There will be dual level transmitters at each tank that will provide a local level display at each tank and at the PLC.

The feedstock tank will also have four agitators that will be controlled by the PLC to keep the feedstock homogenous while in storage. This will be started locally or remotely and halted upon low level in the storage tank.

Loading Pumps

The pumps in the renewable diesel system will be controlled locally and/or remotely and will run until stopped by operators or low flow is observed by the PLC.

Railcar Loading

The rail loading area will have six Accuload systems that will be responsible for the metering and control of the renewable diesel and feedstock. The Acculoads will monitor temperature, pressure, flow and permissives, and modulate a dedicated flow control valve, to safely load renewable diesel and feedstock to railcars. The Accuload will interface with the new PLC for pump operations to ensure that loading is safely executed. Each dedicated Accuload system will be programed to ensure the loading complies with API 2003 by limiting the flow during the initial loading phase. Each product will have its own dedicated loading arm.

Electrical Design

The design of the electrical infrastructure for the terminal will be based on industry standards. The design will facilitate the operation of the plant and meet electrical safety and National Electric Code requirements (See Plan Sheet D1335-SKE01, Electrical Site Plan).

The limit for the combined loads will be based on the capacity of the structural members. Serviceability checks will be excluded.

Questions for the City:

- Will the Bureau of Transportation have restrictions on the amount of time that the road is closed, at the existing street crossing, during railcar deliveries?
- Does the Fire Department have any additional requirements for the spacing between equipment and building?
- Does the Bureau of Development Services have additional requirements for the rail along the street frontage?
- Will Bureau of Environmental Services require a cover over the load rack and equipment?
- What source control requirements will be required at the rail and the rail load/unload spots?
- What components will be required to address non-conforming development?