RE: NEXT First Open Record Submittal (App DR 21-03; V 21-05 and CU 21-04) Email 2 A

Stephenson, Garrett H. <GStephenson@SCHWABE.com>

Wed 1/26/2022 5:40 PM

To: **ePermits - Planning <planning@columbiacountyor.gov>**; Jacyn Normine <Jacyn.Normine@columbiacountyor.gov>

Cc: 'Jesse Winterowd' <jesse@winterbrookplanning.com>; Robin McIntyre <Robin.McIntyre@columbiacountyor.gov>; Robert Wheeldon <Robert.Wheeldon@columbiacountyor.gov>; Brian Varricchione (BVarricchione@mcknze.com) <BVarricchione@mcknze.com>

To Whom it May Concern:

As you can see below, I attempted to send a large PDF file that enclosed NEXT's updated Stormwater Management Plan, which was Exhibit B to Mackenzie's letter submitted as part of our first open record submittal. In our third email, sent at 4:58 PM, we included a link to this document in case the file was too large. Indeed it was, and I have now received bounce back emails from the County (see attached). The County can nonetheless find that the document link is sufficient to submit the document prior to 5:00 PM.

Nonetheless, I understand that the County will accept documents until midnight because it did not indicate a time cutoff at the hearing. Therefore, we have reformatted the document and provide it in sections which are hopefully small enough to be accepted by the County's email server.

Please confirm that you have received this document and that it is part of the record under one or both methods of submittal discussed above.

Thanks!

Garrett H. Stephenson
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Schwabe Williamson & Wyatt
Please visit our COVID-19 Resource page

From: Stephenson, Garrett H.
Sent: Wednesday, January 26, 2022 4:54 PM
To: 'planning@columbiacountyor.gov' <planning@columbiacountyor.gov>; Jacyn.Normine@columbiacountyor.gov
Cc: 'Jesse Winterowd' <jesse@winterbrookplanning.com>; 'Robin McIntyre' <Robin.McIntyre@columbiacountyor.gov>; 'Robert Wheeldon' <Robert.Wheeldon@columbiacountyor.gov>; 'Christopher Efird' <chris@nextrenewables.com>; 'Brian Varricchione (BVarricchione@mcknze.com)' <BVarricchione@mcknze.com>; 'Gene Cotten' <gene@nextrenewables.com>; 'Laurie Parry'

<Laurie@stewardshipsolutionsinc.com>
Subject: RE: NEXT First Open Record Submittal (App DR 21-03; V 21-05 and CU 21-04) Email 2

To Whom it may Concern:

Please find attached Exhibit B to the Mackenzie exhibit referenced in email one.

Garrett H. Stephenson
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Schwabe Williamson & Wyatt
Please visit our COVID-19 Resource page

From: Stephenson, Garrett H.
Sent: Wednesday, January 26, 2022 4:41 PM
To: 'planning@columbiacountyor.gov' <planning@columbiacountyor.gov>
Cc: Jesse Winterowd <jesse@winterbrookplanning.com>; 'Robin McIntyre' <Robin.McIntyre@columbiacountyor.gov>; Robert Wheeldon <Robert.Wheeldon@columbiacountyor.gov>; 'Christopher Efird' <chris@nextrenewables.com>; Brian Varricchione (BVarricchione@mcknze.com) <BVarricchione@mcknze.com>; Gene Cotten <gene@nextrenewables.com>; Laurie Parry <Laurie@stewardshipsolutionsinc.com>
Subject: NEXT First Open Record Submittal (App DR 21-03; V 21-05 and CU 21-04) Email 1

To Whom it may Concern:

Please find attached NEXT's first open record submittal, which includes additional factual testimony. This is the first of a few emails, given the size of some of the files. Please confirm that you have received this, include this in the official record, and place it before the Board.

Thank you,

Garrett H. Stephenson
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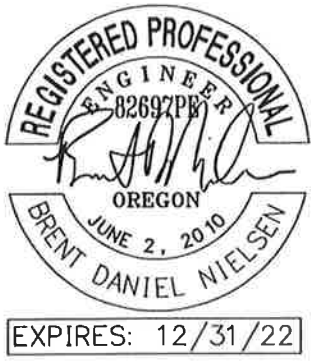
Schwabe Williamson & Wyatt
Please visit our COVID-19 Resource page

MACKENZIE.

DESIGN DRIVEN I CLIENT FOCUSED

NEXT RENEWABLE FUELS OREGON POST CONSTRUCTION STORMWATER MANAGEMENT PLAN FOR PORT WESTWARD RENEWABLE FUELS FACILITY



To
Columbia County

For
NEXT Renewable Fuels
Oregon
Port Westward

Dated
January 8, 2021
Revised July 12, 2021
Revised October 15, 2021

Project Number
2200315.01

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TABLE OF CONTENTS

ATTACHMENTS

LIST OF FIGURES

LIST OF TABLES

I. PROJECT INTRODUCTION

The proposed NEXT Renewables facility includes development of renewable diesel refining, processing, and storage uses at the Port Westward property near Clatskanie, Oregon. The development will include the industrial and processing uses, as well as buildings, parking, utilities, roadways, and rail spurs to support the biofuels production systems.

The proposed facility is located on approximately 109 acres at Port Westward along the southern bank of the Columbia River. Additional site areas around the facility include space planned for access roads, rail spurs, and pipe racks. The vicinity map and site plan below show the project location and overall scope of the project development.

The design criteria utilized for the proposed stormwater system is included in Section III of this document.

Figure 1: Vicinity Map

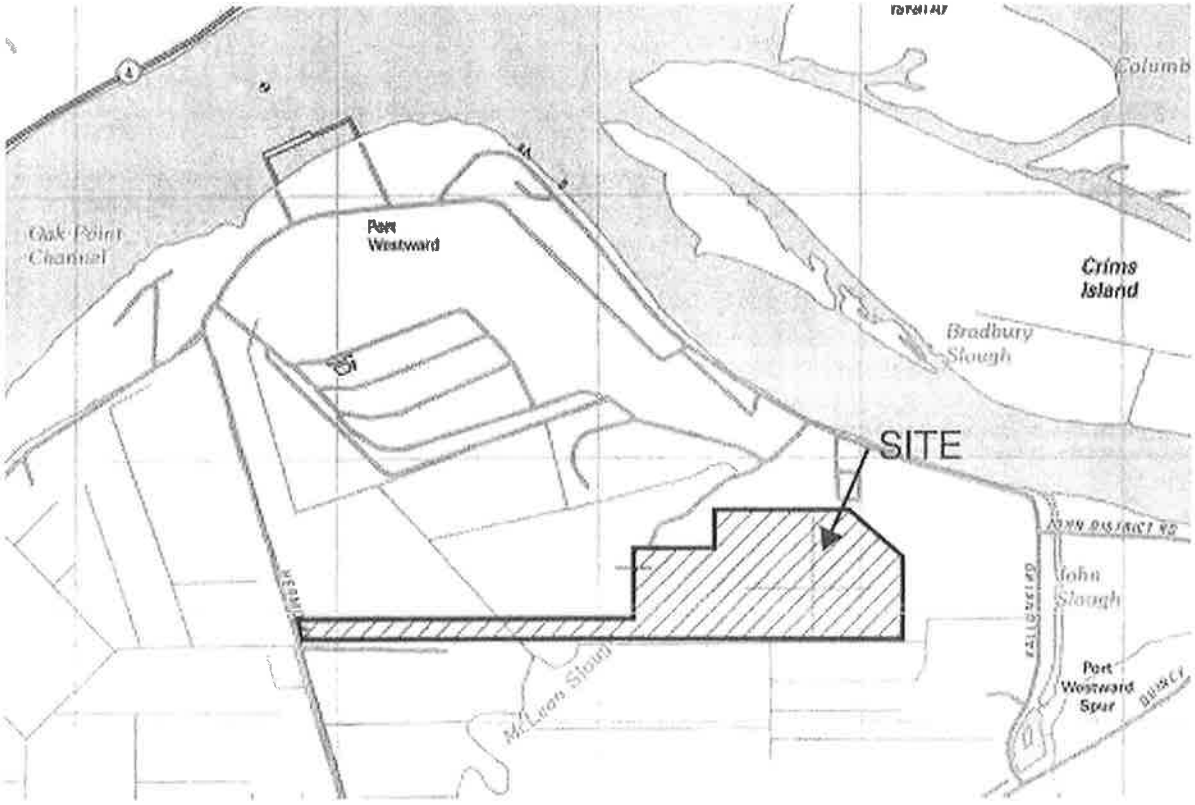
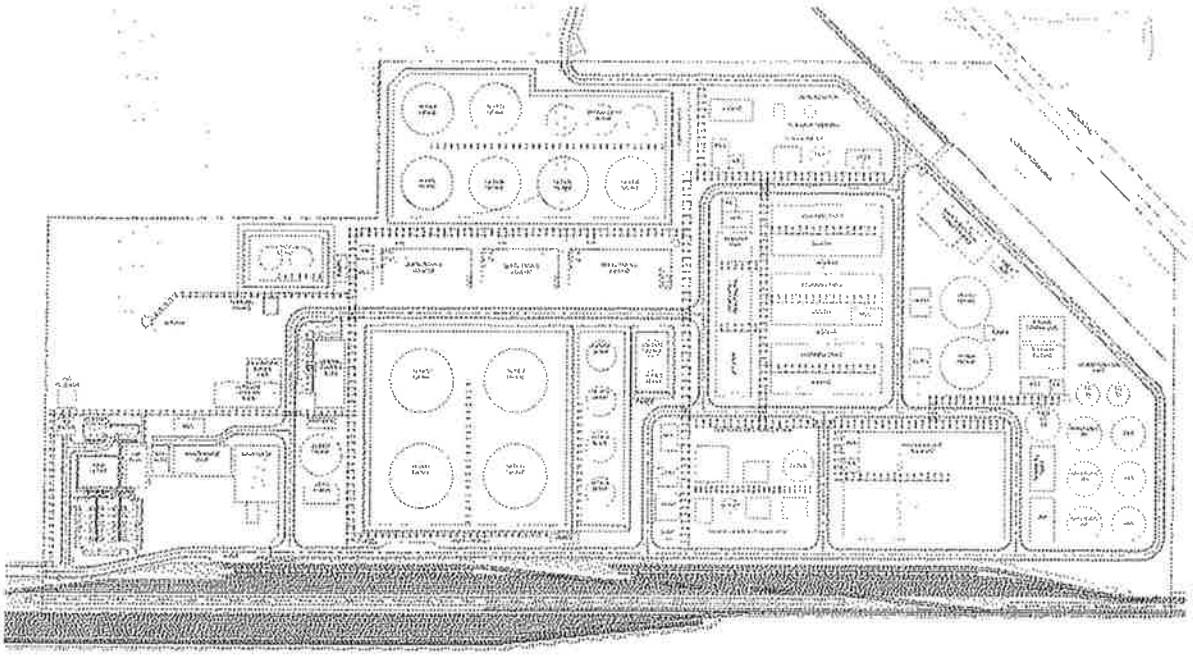


Figure 2: Main Plant Site Plan



I. EXISTING DRAINAGE CONDITIONS

The project site comprises approximately 141.99 acres which is primarily covered with existing agricultural and open land. This area comprises the renewable diesel production facility, access road, rail spur, and pipeline footprints. A network of excavated ditches crosses the site and primarily directs storm water to McLean Slough near the southwest corner of the site.

The following summarizes the existing ground coverage of the project site:

Existing Gravel Roads (Impervious):	0.73 ac
Existing Vegetation (Pervious):	141.26 ac
Total Existing Site Area:	141.99 ac

Existing conditions plans are provided in Appendix A of this report.

The existing site soils primarily consist of the Udipsamments and Silt Loam soils, which generally have the following drainage characteristics:

- Udipsamments: sandy, well-drained soils, hydrologic soil group A
- Wauna-Lacoda Silt Loam: loamy, poorly-drained soils, hydrologic soil group C
- Wauna Silt Loam: loamy, poorly-drained soils, hydrologic soil group C

The soil survey, including the soil map, is provided in Appendix B of this report.

A geotechnical report was prepared in 2001 for a prior development opportunity at the project site. The subsurface investigation located the groundwater between 2 feet to 4 feet below the ground surface. Based on this finding, we do not expect infiltration to be a feasible discharge option for the site runoff. The geotechnical report is provided in Appendix F of this report.

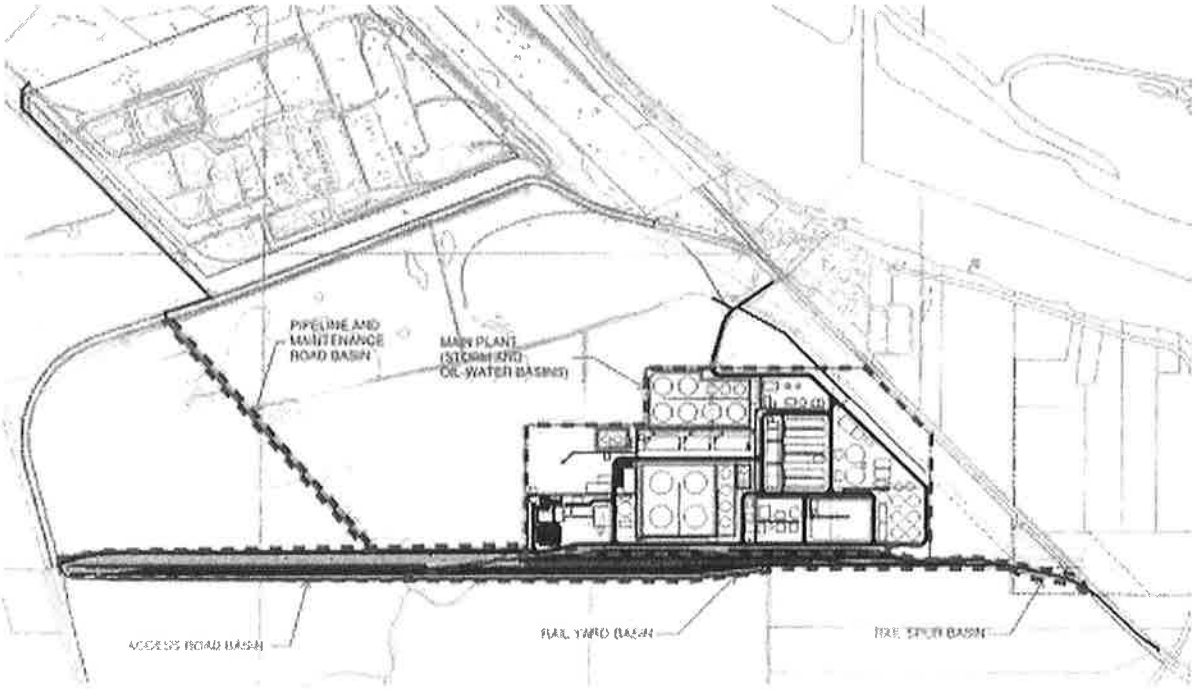
II. PROPOSED DRAINAGE CONDITIONS

The proposed development includes construction of buildings, concrete equipment pads, paved drive aisles, and paved parking areas which comprise new impervious area on the project site. Stormwater runoff from the project area will be routed to separate drainage paths:

- Access road: runoff will be routed to a new drainage swale which discharges to existing channels
- Pipeline maintenance road and rail spur: runoff will be routed to the existing drainage ditch
- Equipment pads within the biorefinery footprint: runoff will be routed to the on-site waste water treatment facility for testing, treatment, and discharge via pump to the Port Westward storm outfall
- Non-equipment impervious surfaces within the plan footprint: runoff will be routed to the on-site storm water basin to be discharged via pumping to the Port Westward storm outfall

Each of the above areas will receive runoff treatment through various BMPs, described later in this report.

Figure 3: Overall Drainage Basin Map



M.

III. STORMWATER MANAGEMENT STANDARDS

The project is located within Columbia County, Oregon. Those portions of the site which discharge to non-wetland facilities will be subject to County's "Stormwater and Erosion Control Ordinance" from November 2001.

The project will include wetland fill impacts and mitigation; therefore, the application is subject to SLOPES V regulations under administration by Army Corps of Engineers and National Marine Fisheries Service. The following outlines the applicable standards for the project.

Additionally, the project is expected to meet the requirements for the Oregon DEQ 1200-Z industrial stormwater discharge permit. The proposed facility will be classified under SIC #2861-2869 Industrial Organic Chemicals.

Water Quality Treatment

From Columbia County *Stormwater and Erosion Control Ordinance, November 21, 2001*:

> **Section 1.C.18**: "Water quality storm" means the rainfall from a six-month, 24-hour storm. This rainfall equals approximately 64% of rainfall from the 2-year, 24-hour storm or 0.83 inches.
>
> **Appendix E**: "The Water Quality Storm equals one-third of the 2-year storm." (For Clatskanie, the water quality storm depth equates to 0.93".)
>
> **Section III.B.2.a.i**: Stormwater and Runoff from parking lots, driveways, and other exposed traffic areas shall be treated using one of the following treatment methods: biofiltration swales, vegetative filter strips, or *alternative treatment methods*.

From National Marine Fisheries Services *SLOPES for Stormwater, Transportation, or Utilities NWR-2013-10411*:

> **Section 36.e**: All stormwater quality treatment practices and facilities will be designed to accept and fully treat the volume of water equal to 50% of the cumulative rainfall from the 2-year 24-hour storm for that site. (For Clatskanie, the SLOPES V water quality storm depth equates to 1.40".)
>
> **Section 36.f**: Use low impact development practices to infiltrate or evaporate runoff to the maximum extent feasible. For runoff that cannot be infiltrated or evaporated and therefore will discharge into surface or subsurface waters, apply one or more of the following specific primary treatment practices, supplemented with appropriate soil amendments:
>
> i. Bioretention cell
> ii. Bioslope, also known as an "ecology embankment"
> iii. Bioswale
> iv. Constructed wetlands
> v. Infiltration pond
> vi. Media filter devices with demonstrated effectiveness.
> vii. Porous pavement, with no soil amendments and appropriate maintenance

From the DEQ Section 401 *Post-Construction Stormwater Management Plan Submission Guidelines:*

Section E.1.1: Multiply the 2-year 24-hour precipitation by the appropriate water quality design storm factor: ... 0.5 for the rest of the state.... If the results are less than 0.7 inch, use 0.7 inch.

For water quality treatment, the SLOPES V standards exceed the Columbia County and DEQ standards; therefore, we have used the SLOPES V standard for water quality design.

Runoff Control and Water Quantity

From Columbia County *Stormwater and Erosion Control Ordinance, November 21, 2001*:

Section III.B.2.b.i: Runoff from the development site shall be controlled such that the following criteria are met:

A) The peak flows for the 10 and 100-year design storms after development does not exceed the respective predevelopment peak flows.
B) The peak flow for the 2-year design storm after development does not exceed one-half the predevelopment peak flow for the 2-year storm.

From National Marine Fisheries Services *SLOPES for Stormwater, Transportation, or Utilities NWR-2013-10411*:

Section 36.c.iii: Water quantity treatment (retention or detention facilities), unless the outfall discharges directly into a major water body (e.g., mainstem Columbia River, Willamette River (downstream of Eugene), large lakes, reservoir, ocean, or estuary). Retention or detention facilities must limit discharge to match pre-developed discharge rates (i.e., the discharge rate of the site based on its natural groundcover and grade before any development occurred) using a continuous simulation for flows between 50% of the 2-year event and the 10-year flow event (annual series).

For runoff control, the Columbia County and SLOPES V standards are equivalent.

Storm Conveyance Design

From Columbia County *Stormwater and Erosion Control Ordinance, November 21, 2001*:

Section II.E.1: Conveyance systems shall be designed to carry runoff from the 25-year storm where the contributing drainage area is less than 40 acres and the 100-year storm where the contributing drainage area exceeds 40 acres.

From National Marine Fisheries Services *SLOPES for Stormwater, Transportation, or Utilities NWR-2013-10411*:

Section 36.g: When conveyance is necessary to discharge treated stormwater directly into surface water or a wetland, the following requirements apply:

i. Maintain natural drainage patterns.
ii. To the maximum extent feasible, ensure that water quality treatment for contributing impervious area runoff is completed before commingling with offsite runoff for conveyance.

iii. Prevent erosion of the flow path from the project to the receiving water and, if necessary, provide a discharge facility made entirely of manufactured elements (e.g., pipes, ditches, discharge facility protection) that extends at least to OHW.

For conveyance design, the Columbia County standards apply for piped and channelized flow paths.

Design Storms

The design storms used for the project are based on the Columbia County Stormwater Ordinance, Appendix E, using the rainfall depth for Clatskanie.

Table 1: Columbia County Design Storm Rainfall Depths

Storm Event	Water Quality (SLOPES V)	2-yr 24-hr	5-yr 24-hr	10-yr 24-hr	25-yr 24-hr	100-yr 24-hr
Rainfall Depth	1.40"	2.8"	3.4"	3.9"	4.5"	5.4"

Groundwater at the site is estimated to be within 5 feet of the ground surface and seasonally reaching up to the ground surface during, which limits the infiltration opportunity on the site. Storm facilities for this project are designed with the assumption that infiltration is negligible. The runoff curve numbers for the site soils are selected for hydrologic soil group C and D to reflect the low-infiltration conditions, as follows.

Table 2: Runoff Curve Numbers

Surface Coverage	Runoff Curve Number
Paved Roadway, Building Roof, and Sidewalks	98
Gravel Surfacing and Roadways	92
Proposed Landscaping	78
Existing Grass or Vegetated Field	80

We used the software Hydraflow to calculate hydrograph volumes and peak runoff rates based on a Type 1A storm and the Santa Barbara Urban Hydrograph (SBUH) calculation method.

Conveyance calculations are performed using the Rational Method. Per the Columbia County 2001 Stormwater Ordinance, the conveyance design storm is the 10-year event for basins up to 40 acres, and the 100-year event for larger basins. The rainfall intensity for conveyance flow rate determination is based on the ODOT Zone 5 IDF Curves published in the 2014 ODOT Hydraulics Manual.

IV. RUNOFF WATER QUALITY TREATMENT

Runoff water quality treatment will be provided through a variety of facilities within the four generalized drainage basins across the site:

- **Access road**: treatment swale located between the access road and rail spur
- **Northwest pipeline maintenance road:** filter strip located between access road and drainage ditch
- **Rail spur**: filter strip along south shoulders of the track embankment
- **Rail yard**: treatment swales located between the loading and bypass rail alignments
- **Storage Tank Areas**: stormwater runoff will be allowed to infiltrate within the tank containment berm footprint
- **Equipment pads within the biorefinery footprint**: oil and sediment treatment provided through on-site wastewater treatment facility
- **Non-equipment impervious surfaces within the plant footprint**: filtration treatment through final stage of on-site wastewater treatment facility

Access Road Swale Design

The proposed paved access road runs from Hermo Road at the West to the proposed main plant at the east. The road is approximately 3,800 lf and comprises a 30-ft wide paved road along the north edge and an approximately 88-ft wide gravel laydown yard to the south. The laydown area will be used for equipment staging during construction of the facility and during ongoing operation. Further south is a proposed set of rail spur tracks to support the biorefinery facility, which run nearly to Hermo Road.

Both the access road and rail areas are designed to drain to a swale running between them, which will provide water quality treatment before discharging to the relocated drainage ditch south of the rail spurs. Approximately 4 culverts will be installed under the rail lines to convey the drainage to the ditch. The ditch eventually connects to McLean Slough south of the project boundary.

The culverts divide the access road basin into sub-basins which will each be treated by a portion of the overall swale. The swale will be constructed with growing medium suitable for filtration and planted with vegetation or grass per Columbia County standards. Detailed sizing and planting will be developed for final permitting of the project. The following summarizes the preliminary Access Road swale sizing:

- Swale width: 4' bottom width, top width between 18'-30'
- Side slopes: 3H:1V
- Swale length: 100' minimum for each sub-basin section
- Swale slope: 0.5%-1.5% typical

The design water quality flow rate for the Access Road swale is calculated per the SLOPES V standard described above, using the contributory area for non-landscape surfaces within the basin.

Table 3: Access Road Surface Area Summary

Surface Type	Basin Area	Runoff Curve Number
Paved Roads	2.68 AC	98
Gravel Roads and Laydown	6.72 AC	92
Rail Yard Pervious Gravel Base	4.66 AC	78
Total Access Road Basin	14.06 AC	88.4 Composite CN

This surface coverage results in a design flow rate of 1.44 cfs for the entire basin. The swale is broken up into segments along the road, each draining to a culvert which discharges to the southern ditch. For each segment, the expected water quality flow depth and residence time is calculated. The segmental summary is presented below.

Table 4: Access Road Basin Swale WQ Summary

Swale Segments	Contributory Area	WQ Flow Rate (cfs)	WQ Depth (in)	WQ Residence Time (min)
Swale A STA 1+30 to 13+30	4.98 AC	0.52	4.2	17.0
Swale B STA 13+30 to 20+30	3.20 AC	0.34	3.3	19.5
Swale C STA 20+30 to 26+30	2.73 AC	0.29	3.0	20.6
Swale D STA 26+30 to 39+40	4.09 AC	0.99	6.0	13.9

Maintenance Road and Rail Spur Basin Treatment

The proposed maintenance road and rail spur basins include development of gravel-surfaced roadways and rail subgrade located northwest and southeast of the main plant area. Each of these gravel areas will be infrequently traveled by vehicles and will be surfaced with primarily open-graded aggregate base materials. Runoff from these surfaces will be treated with filter strips adjacent to the roadway, then continue to sheet flow to adjacent existing drainage basins.

The proposed filter strips will be sized to meet the required 9-minute residence time per the Columbia County 2001 Stormwater Ordinance. The filter strips are expected to extend the length of the gravel roadway with a minimum width of 5 feet as recommended in the Clean Water Services LIDA Handbook, since the Columbia County ordinance does not specify dimensional guidelines.

Rail Yard Swale Design

The proposed rail yard runs along the south side of the proposed biorefinery plant and comprises 8 parallel rail spur tracks to handle loading, unloading, and transport of cargo train cars. The rail yard drainage basin is approximately 4,500 feet long and 175 feet wide, for an approximate total basin area of 16.48 ac. The rail yard surface coverage consists of open-graded ballast rock. A gravel maintenance road runs along the southern edge of the rail yard.

A treatment swale runs along the middle of the rail yard, separating the southern 3 tracks from the others. The rail yard will be graded to drain to the central swale, which will be divided into segments by culverts which drain to the relocated drainage ditch to the south.

The swale will be constructed with growing medium suitable for filtration and planted with vegetation or grass per Columbia County standards. Detailed sizing and planting will be developed for final permitting of the project. The following summarizes the preliminary Rail Yard swale sizing:

- Swale width: 2' bottom width, top width 16'
- Side slopes: 3H:1V
- Swale length: 100' minimum for each sub-basin section
- Swale slope: 0.5%-1.5% typical

The design water quality flow rate for the Rail Yard swale is calculated per the SLOPES V standard described above, using the contributory area for non-landscape surfaces within the basin.

Table 5: Rail Yard Surface Area Summary

Surface Type	Basin Area	Runoff Curve Number
Paved Roads	0.0 AC	98
Gravel Roads and Laydown	2.65 AC	92
Rail Yard Pervious Gravel Base	12.01 AC	78
Total Rail Yard Basin	14.67 AC	80.5 Composite CN

This surface coverage results in a design flow rate of 0.37 cfs for the entire basin. The swale is broken up into segments, each draining to a culvert which discharges to the southern ditch. For each segment, the expected water quality flow depth and residence time is calculated. The segmental summary is presented below.

Table 6: Rail Yard Basin Swale WQ Summary

Swale Segments	Contributory Area	WQ Flow Rate (cfs)	WQ Depth (in)	WQ Residence Time (min)
Swale E	3.70 AC	0.06	1.7	30.9
Swale F	2.67 AC	0.04	1.4	34.5
Swale G	2.36 AC	0.04	1.3	36.3
Swale H	3.29 AC	0.05	1.5	32.9
Swale I	1.89 AC	0.03	1.1	40.0

Oily Water Sewer Basin Treatment

The proposed NEXT Renewables facility includes equipment, piping, and structures which handle oil-based products. As is standard for similar facilities, the project proposes to provide wastewater treatment process facilities on site to monitor and treat stormwater runoff from the plant areas which may accumulate oil in the runoff due to contact with the oil-handling equipment. The proposed NEXT Renewables wastewater treatment plant will be located near the north side of the property.

The proposed wastewater treatment plant comprises a proprietary system designed to treat effluent and oily water sewer runoff from the renewable diesel facility. The system will treat effluent for oil, suspended solids, and temperature variations to meet applicable regulatory requirements. The treated discharge

from the wastewater plant will connect to the existing Port Westward discharge to the Columbia River, to be incorporated into the Port's existing NPDES permit. Since the oily water sewer drainage will be mixed with other effluents from the buildings and plant facilities, the treatment and discharge standards will meet regulatory standards for the NPDES permit instead of the Columbia County Stormwater Ordinance requirements.

Additional detail for the proposed wastewater treatment system is provided in Appendix E of this report.

Plant Stormwater Basin Treatment

Stormwater runoff from non-oily areas within the proposed renewable diesel plant will be collected and routed to a separate stormwater treatment facility located near the wastewaster treatment plant near the north edge of the project. The site is graded to drain internal roadways to a system of gutters and catch basins which capture runoff and isolate the non-oily portions of the plant from the equipment areas described above. Additionally, runoff from building roofs, laydown yards, parking areas, and other non-process areas is conveyed via pipe to the stormwater treatment facility.

The stormwater treatment facility consists of a surge storage tank, filtration system, and pump station. The surge storage tank will be used to moderate peak runoff flows before the runoff is routed to the tertiary filtration system located within the wastewater treatment plant. The filtration system will be designed to accommodate flows from both the wastewater treatment process and the on-site stormwater drainage system. This filtration will provide stormwater treatment to meet discharge requirements per the Columbia County 2001 Stormwater Ordinance.

Following treatment, the stormwater will be co-mingled with the treated wastewater from the plant and discharged to the Port's existing outfall, to be incorporated into the existing NPDES permit.

The stormwater ordinance requires that "runoff from parking lots, driveways, and other exposed traffic areas shall be treated" with treatment methods sized to handle the water quality storm. The following summarizes the plant stormwater basin coverage and water quality storm:

- Paved roadways: 16.85 ac
- Gravel roadways: 8.84 ac
- Total water quality treatment area: 25.69 ac
- Water quality design flow: 6.43 cfs

Additional details of the filtration system are provided in Appendix E of this report.

V. RUNOFF WATER QUANTITY TREATMENT

Runoff water quantity control will be provided through a variety of facilities within the four generalized drainage basins across the site:

- **Access road**: check dams and weirs within the drainage swales
- **Pipeline maintenance road and rail spur**: filter strips
- **Equipment pads within the biorefinery footprint**: pumped discharge metered to existing NPDES permit limits
- **Non-equipment impervious surfaces within the plant footprint**: pumped discharge metered to existing NPDES permit limits

Access Road Runoff Flow Control

As described above, the Access Road basin comprises approximately 14.06 ac of paved roadway, gravel laydown area, and rail yard located west of the main plant area. The drainage basin is graded to drain to the series of central treatment swales between the gravel and rail yard which connect to the adjacent drainage ditch at 4 locations.

The swales are sized to provide water quality treatment for the design storm, and periodic weir structures along the ditch will provide detention storage to reduce the discharge rate from the impervious surfaces. The following summarizes the preliminary Access Road basin detention flows.

Table 7: Access Road Basin Runoff Flow Control Summary

Road Sub-Basin ID	Sub-Basin Area and CN	Pre-Development Peak Flow Rate (cfs)	Post-Development Peak Flow Rate (cfs)	Maximum Peak Flow Rate Discharge to Ditch (cfs)
Swale A STA 1+30 to 13+30	4.65 ac CN: 88.0	2-yr: 1.10 10-yr: 2.19 100-yr: 3.88	2-yr: 2.03 10-yr: 3.38 100-yr: 5.27	2-yr: 0.55 10-yr: 2.19 100-yr: 3.88
Swale B STA 13+30 to 20+30	2.96 ac CN: 87.6	2-yr: 0.71 10-yr: 1.41 100-yr: 2.49	2-yr: 1.34 10-yr: 2.22 100-yr: 3.47	2-yr: 0.35 10-yr: 1.41 100-yr: 2.49
Swale C STA 20+30 to 26+30	2.53 ac CN: 87.6	2-yr: 0.60 10-yr: 1.20 100-yr: 2.13	2-yr: 1.14 10-yr: 1.89 100-yr: 2.96	2-yr: 0.30 10-yr: 1.20 100-yr: 2.13
Swale D STA 26+30 to 39+40	3.92 ac CN: 90.4	2-yr: 0.90 10-yr: 1.80 100-yr: 3.19	2-yr: 2.47 10-yr: 3.64 100-yr: 5.22	2-yr: 0.45 10-yr: 1.80 100-yr: 3.19

Maintenance Road and Rail Spur Basin Runoff Flow Control

As described above, the proposed pipeline maintenance road and rail spur basins include gravel surfaces which will be open graded aggregate base. Therefore, the runoff from these areas is expected to mimic

drainage patterns from pervious ground surfacing. No flow control is required since this runoff will be similar intensity to pre-development drainage patterns.

Erosion protection will be provided to prevent sediment transport and flow channelizing off the gravel areas.

Rail Yard Runoff Flow Control

As described above, the Rail Yard basin comprises approximately 16.48 ac of gravel road and rail yard located south of the main plant area. The drainage basin is graded to drain to the series of central treatment swales between the rail yard tracks which connect to the adjacent drainage ditch at 4 locations.

The swales are sized to provide water quality treatment for the design storm, and periodic weir structures along the ditch will provide detention storage to reduce the discharge rate from the impervious surfaces. The following summarizes the preliminary Rail Yard basin detention flows.

Table 8: Rail Yard Basin Runoff Flow Control Summary

Road Sub-Basin ID	Sub-Basin Area and CN	Pre-Development Peak Flow Rate (cfs)	Post-Development Peak Flow Rate (cfs)	Maximum Peak Flow Rate Discharge to Ditch (cfs)
Swale E	3.33 ac CN: 79.5	2-yr: 0.82 10-yr: 1.63 100-yr: 2.88	2-yr: 0.81 10-yr: 1.65 100-yr: 2.96	2-yr: 0.41 10-yr: 1.63 100-yr: 2.88
Swale F	2.46 ac CN: 79.2	2-yr: 0.59 10-yr: 1.18 100-yr: 2.08	2-yr: 0.58 10-yr: 1.19 100-yr: 2.13	2-yr: 0.29 10-yr: 1.18 100-yr: 2.08
Swale G	2.18 ac CN: 79.3	2-yr: 0.52 10-yr: 1.04 100-yr: 1.84	2-yr: 0.51 10-yr: 1.05 100-yr: 1.88	2-yr: 0.26 10-yr: 1.04 100-yr: 1.84
Swale H	4.86 ac CN: 79.3	2-yr: 0.73 10-yr: 1.45 100-yr: 2.56	2-yr: 0.66 10-yr: 1.39 100-yr: 2.53	2-yr: 0.36 10-yr: 1.45 100-yr: 2.56
Swale I	3.66 ac CN: 79.4	2-yr: 0.42 10-yr: 0.83 100-yr: 1.47	2-yr: 0.38 10-yr: 0.80 100-yr: 1.45	2-yr: 0.21 10-yr: 0.83 100-yr: 2.85

Main Plant Stormwater and Oily Water Sewer Basins Flow Control

Runoff from the proposed main plant drainage basins will be piped to the proposed treatment facilities located at the north side of the site. The treatment systems will be sized to handle incoming flows from the drainage basins, provide treatment, and discharge to the existing Port Westward stormwater outfall in accordance with the Port's regulatory requirements. Since the main plant basins will not discharge directly to the wetland or surface drainage, runoff flow control limits will be based on the Port's outfall capacity, not the Columbia County Stormwater Ordinance standards. Details of the main plant basin treatment and pumping systems will be provided with final design. The following summarizes the expected peak runoff flows from the basins. Runoff calculations are presented in Appendix D of this report.

Table 9: Main Plant Basins Runoff Flow Summary

Basin	Drainage Discharge Point	Peak Developed Runoff Flow Rate (cfs)
Oily Water Sewer	On-Site Wastewater Treatment Plant	2-yr: 22.67 10-yr: 33.38 100-yr: 47.82
Plant Stormwater	On-Site Stormwater Treatment System	2-yr: 17.62 10-yr: 25.94 100-yr: 37.16
Total Plant Drainage Basin	Treated Runoff Discharged to Port Westward Storm[1]	2-yr: 41.10 10-yr: 60.53 100-yr: 86.71

[1] Peak runoff flow reported for the total site is the drainage runoff. Discharge to the Port outfall system will be determined based on final design of the treatment plant and pumped discharge facilities.

VI. CONVEYANCE SIZING

The proposed development will include stormwater conveyance to separate discharge points for each of the generalized drainage basins across the site. The following summarizes the expected conveyance system, design storm parameters, and preliminary sizing.

- **Access Road Basin**: stormwater runoff will be conveyed through the swale along the south side of the laydown yard. Preliminary swale sizing is provided in Appendix C of this report. The swale will discharge to the adjacent drainage ditch at three locations along the length of the access road. The Access Road basin comprises approximately 10.44 acres, so the 10-year design storm is used for conveyance sizing. Swale conveyance calculations are provided in Appendix C.

- **Pipeline Maintenance and Rail Spur Basins**: stormwater runoff from the pervious gravel surfaces will be non-concentrated sheet flow which is expected to follow existing drainage paths to the nearby ditches. No specific conveyance system sizing is required for these drainage areas.

- **Oily Water Sewer Basin:** the oily water sewer drainage basin runoff will be conveyed via pipe to the on-site wastewater treatment plant near the north side of the site. The conveyance system is expected to include at least one lift station in the southeast portion of the site to pump drainage from the outlying Hydrogen Plant and Ecofining Units and reduce the overall pipe depth approaching the wastewater treatment plant. The oily water sewer basin comprises approximately 45.16 acres, so the conveyance design storm is the 100-year event. Gravity storm pipes in this basin are expected to range from 18" to 36" diameter. Pipe conveyance sizing calculations are provided in Appendix D.

- **Main Plant Stormwater Basin:** the plant stormwater drainage basin runoff will be conveyed via pipe to the on-site stormwater treatment plant near the north side of the site. The conveyance system is expected to include at least one lift station near the control building to pump drainage from the outlying Office, Warehouse, and Parking areas. The plant stormwater basin comprises approximately 57.30 acres, so the conveyance design storm is the 100-year event. Gravity storm pipes in this basin are expected to range from 18" to 36" diameter. Pipe conveyance sizing calculations are provided in Appendix D.

VII. OPERATIONS AND MAINTENANCE GUIDELINES

The proposed stormwater treatment systems for the NEXT Renewable Fuels Oregon project include a variety of facilities located across the site. Maintenance of the facilities will be the responsibility of the plant owner and operator, NEXT Renewable Fuels Oregon. The following summarizes typical maintenance requirements for the types of facilities expected to be utilized on site:

- Vegetated Swales: periodic inspection, pruning, debris removal, sediment removal, replanting dead vegetation, irrigation during establishment period
- Filter Strips: periodic inspection, debris removal, sediment removal, replanting dead vegetation, irrigation during establishment period, re-grading channelized areas
- Catch basins: periodic inspection, sediment removal
- Lift stations: periodic inspection, sediment removal, pump maintenance

An Operations and Maintenance Plan and Manual will be completed for use by the responsible parties. The plan will identify the responsible parties, describe the stormwater management system, provide information on inspecting and maintaining the stormwater components, and include inspection logs. A maintenance and inspection schedule will be determined and included. The Operations and Maintenance Plan will be included with the final project design.

VIII. CONCLUSION

The proposed Next Renewable Fuels facility will include a stormwater management system that follows standards set forth by the Columbia County Stormwater Ordinance (2001), SLOPES V for Stormwater, Transportation, or Utilities (USACE, 2014), and Clean Water Act Section 401 Certification (2020).

The proposed facility includes industrial and processing uses, as well as buildings, parking, utilities, roadways, and rail spurs to support the biofuels production systems.

The stormwater management system will include vegetated facilities such as swales, filter strips, and drainage ditches to provide water quality treatment, detention, and conveyance of stormwater runoff outside the industrial plant. Within the plant, stormwater will be conveyed by pipes and pump stations, and treatment will be conducted in an onsite treatment facility. The treatment facility will handle treatment for wastewater and stormwater, with discharge to Port Westward under the Port's existing NPDES discharge permit.

IX. REFERENCES

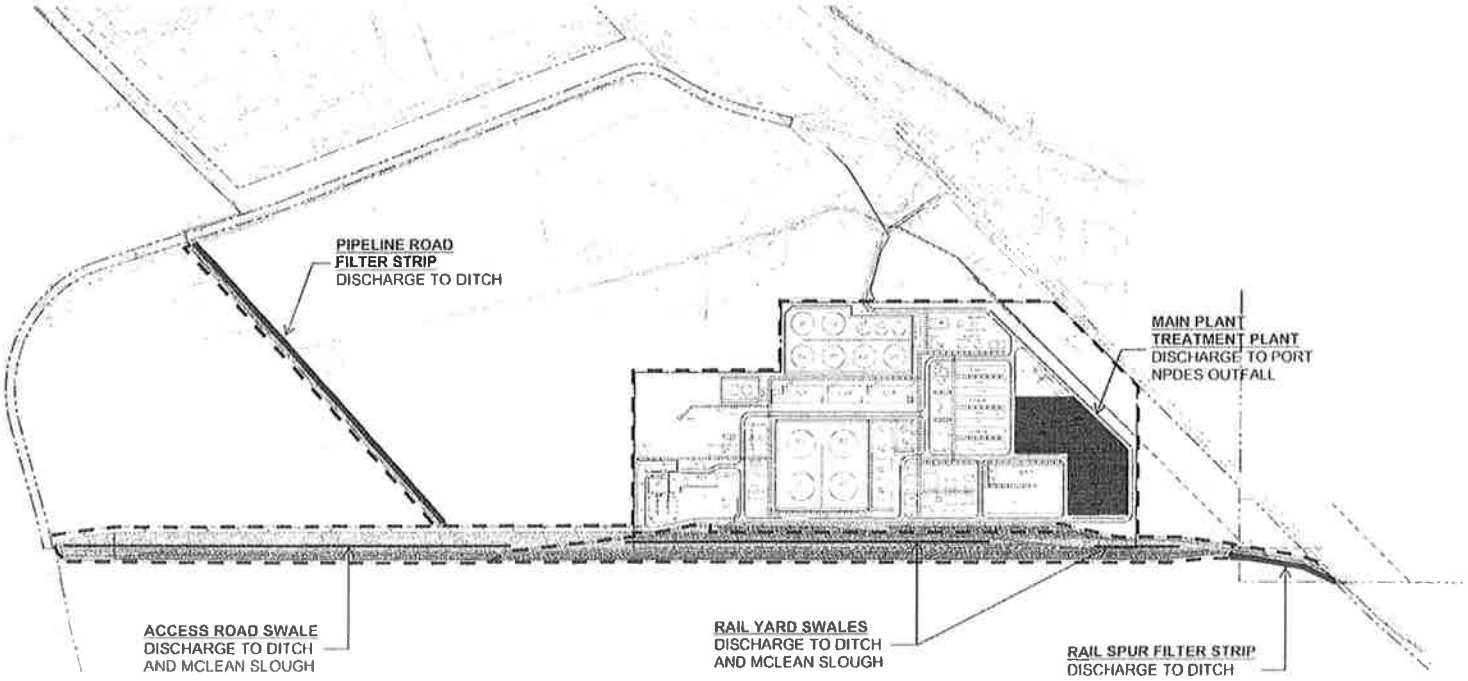
1. Columbia County *Stormwater and Erosion Control Ordinance, November 21, 2001*

2. National Marine Fisheries Services *SLOPES for Stormwater, Transportation, or Utilities NWR-2013-10411*

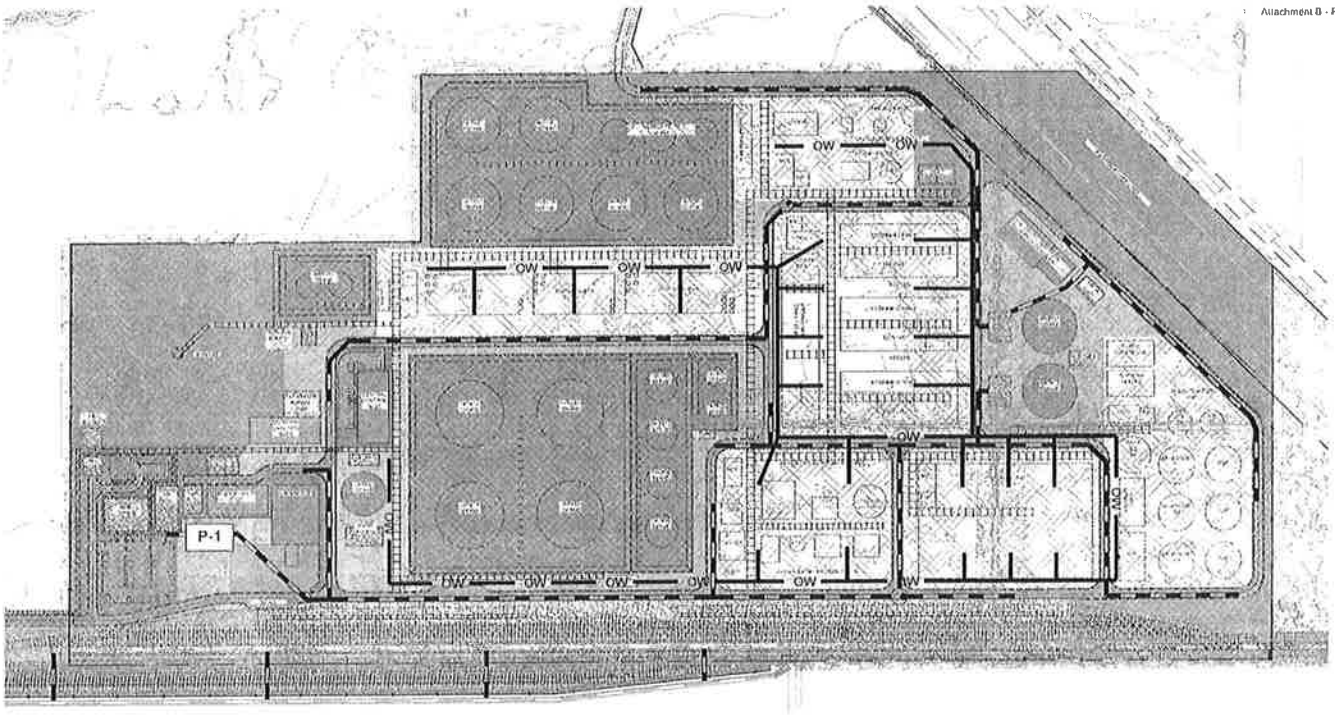
3. ODOT Hydraulics Manual, 2014 edition

APPENDIX A

BASIN MAPS AND SITE PLANS


PIPELINE ROAD
FILTER STRIP
DISCHARGE TO DITCH
MAIN PLANT
TREATMENT PLANT
DISCHARGE TO PORT
NPDES OUTFALL
ACCESS ROAD SWALE
DISCHARGE TO DITCH
AND MCLEAN SLOUGH
RAIL YARD SWALES
DISCHARGE TO DITCH
AND MCLEAN SLOUGH
RAIL SPUR FILTER STRIP
DISCHARGE TO DITCH

APPENDIX A



PLANT AREA - STORMWATER DRAINAGE BASIN

PAVEMENT AREA

BUILDING AREA

GRAVEL AREA

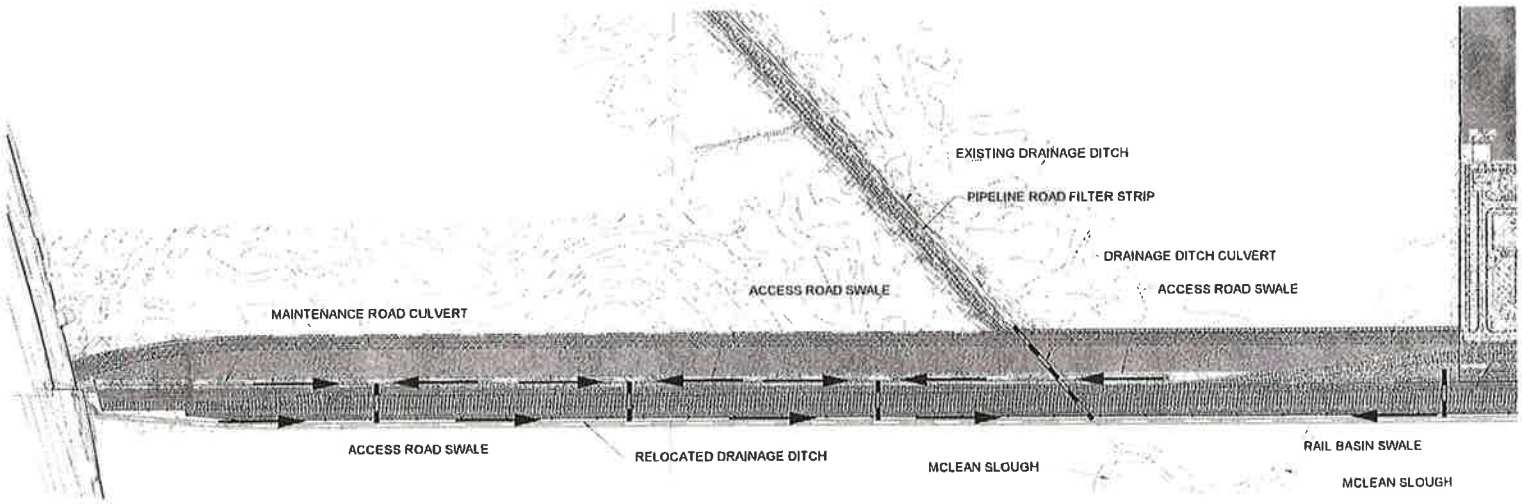
LANDSCAPE AND PERVIOUS SURFACING

PLANT FACILITY STORMWATER BASIN		
SURFACE COVERAGE	TOTAL AREA	CURVE NUMBER
ASPHALT AND CONCRETE PAVING	16.85 AC	98
BUILDINGS AND TANKS	1.09 AC	98
GRAVEL ROADS AND LAYDOWN YARDS	8.84 AC	92
PERVIOUS GRAVEL AND LANDSCAPING	34.47 AC	78
TOTAL STORMWATER BASIN AREA	61.25 AC	85.9 COMPOSITE

APPENDIX A

PLANT FACILITY OILY WATER SEWER BASIN		
SURFACE COVERAGE	TOTAL AREA	CURVE NUMBER
ASPHALT AND CONCRETE PAVING	7.44 AC	98
BUILDINGS AND TANKS	15.11 AC	98
GRAVEL ROADS AND LAYDOWN YARDS	17.73 AC	92
PERVIOUS GRAVEL AND LANDSCAPING	6.01 AC	78
TOTAL STORMWATER BASIN AREA	46.29 AC	93.1 COMPOSITE

APPENDIX A



ACCESS ROAD DRAINAGE BASIN

PAVEMENT AREA

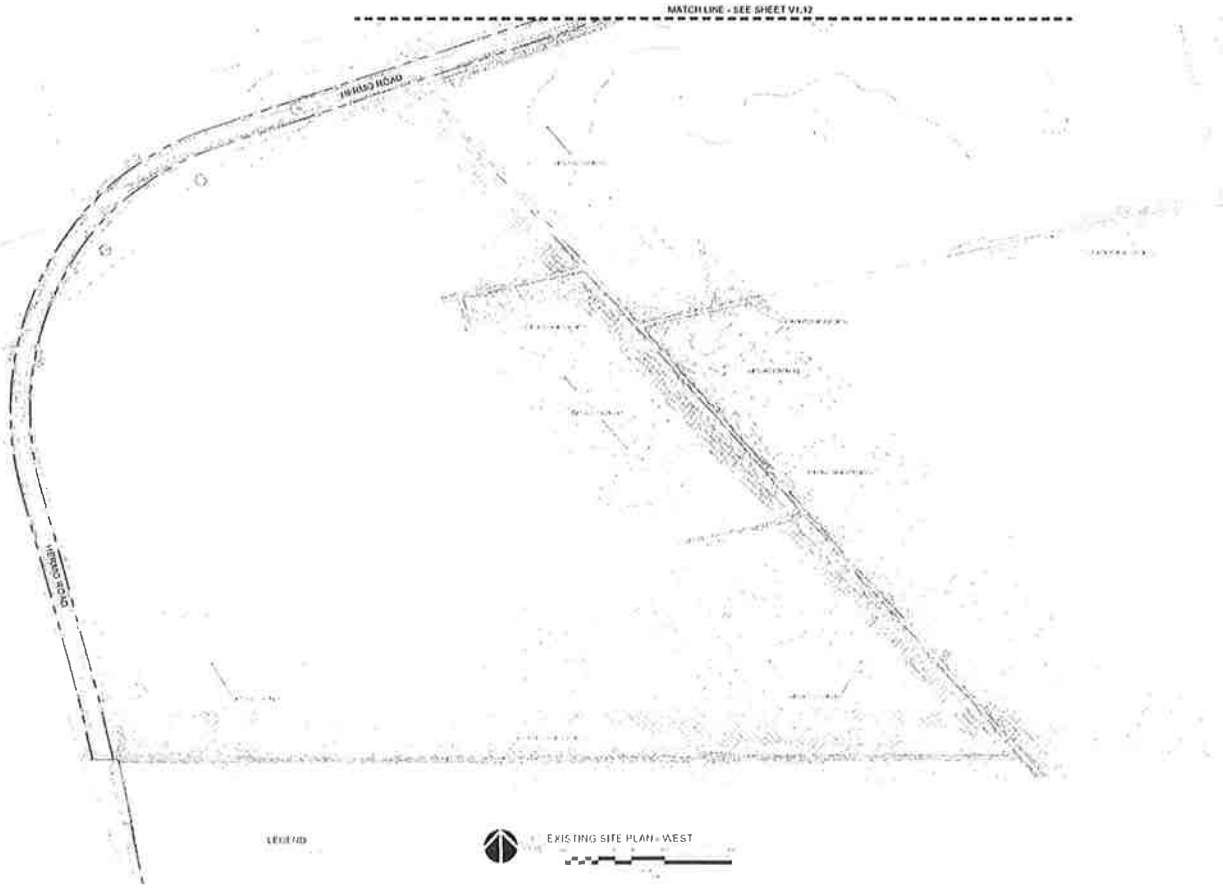
GRAVEL AREA

SWALE OR DITCH FLOW DIRECTION

0 125 250 500

ACCESS ROAD BASIN		
SURFACE COVERAGE	TOTAL AREA	CURVE NUMBER
ASPHALT AND CONCRETE PAVING	2.68 AC	98
GRAVEL ROADS AND LAYDOWN YARDS	5.14 AC	92
RAIL YARD PERVIOUS GRAVEL BASE	12.31 AC	78
TOTAL ACCESS ROAD BASIN AREA	20.13 AC	84.2 COMPOSITE

APPENDIX A



MACKENZIE

NEXT RENEWABLE FUELS OREGON

NEXT RENEWABLE FUELS, INC
PORT WESTWARD
COLUMBIA COUNTY, OR

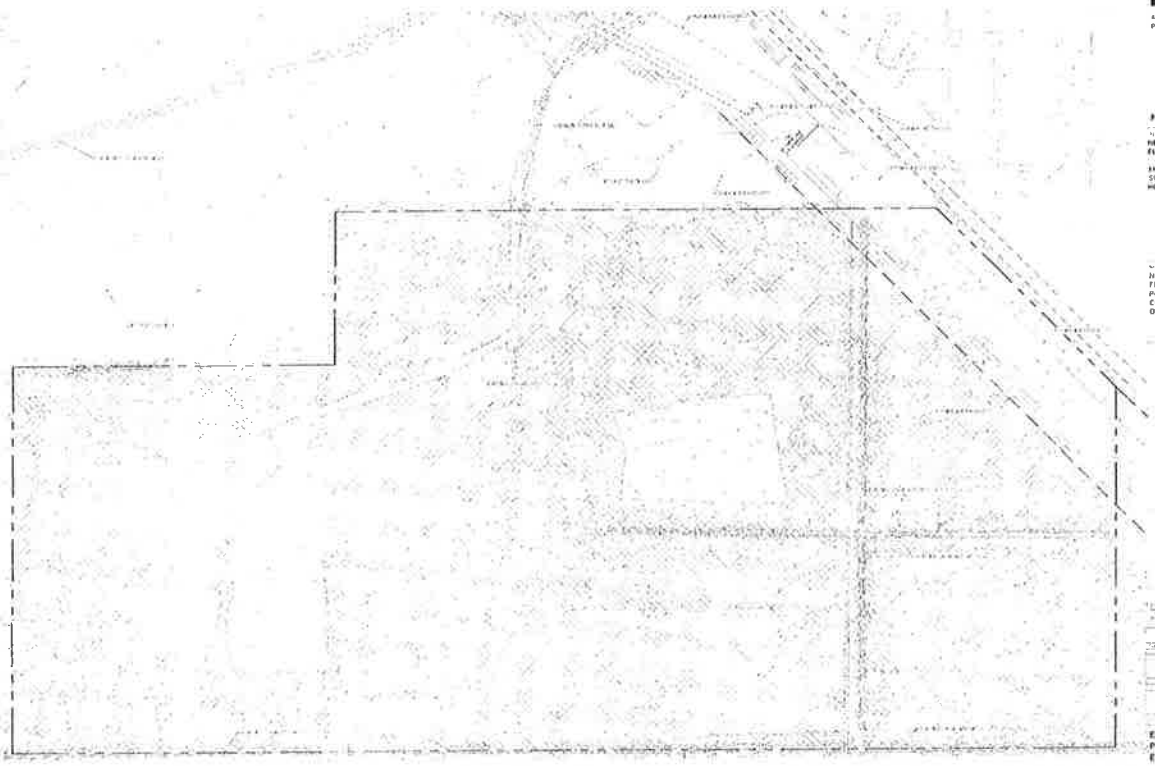
EXISTING SITE PLAN WEST

V1.10

2200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



MATCH LINE - SEE SHEET V1.10

LEGEND

EXISTING SITE PLAN - EAST

MACKENZIE

NEXT RENEWABLE FUELS OREGON

SUITE 705
HOUSTON TX 77079

NEXT RENEWABLE FUELS, PIC
PORT WESTWARD
COLUMBIA COUNTY, OR

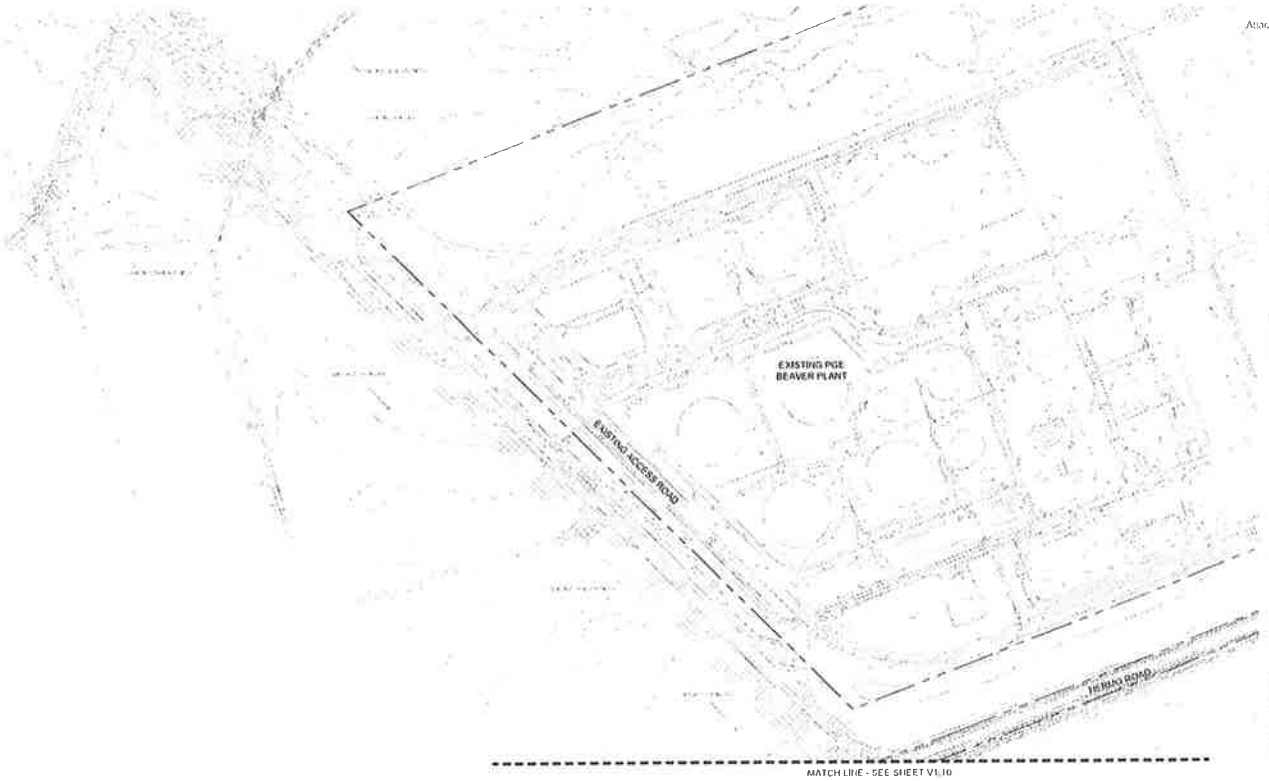
EXISTING SITE PLAN - EAST

V1.11

2200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



LEGEND

MACKENZIE

NEXT RENEWABLE FUELS, INC.
PORT WESTWARD
COLUMBIA COUNTY, OR

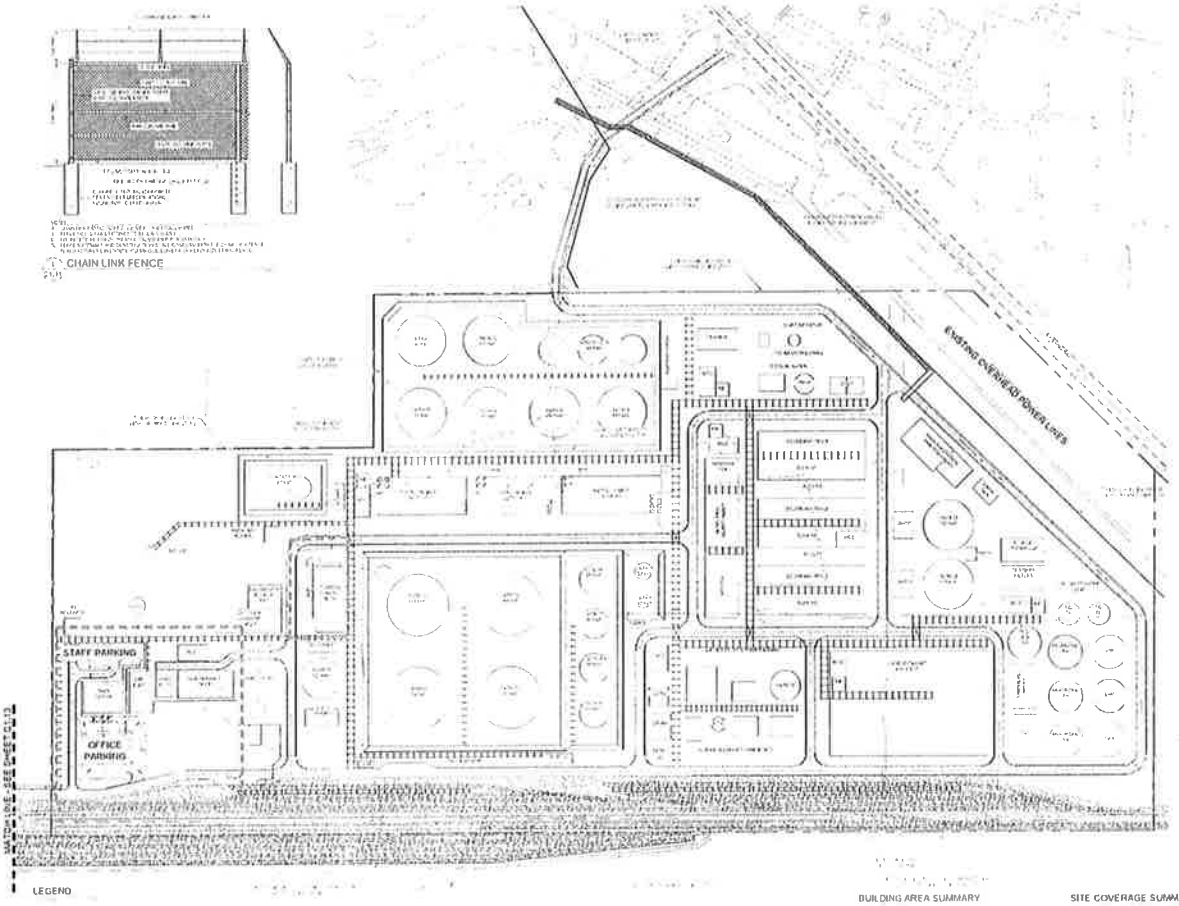
EXISTING SITE PLAN
NORTH

V1.12

2200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



LEGEND

PARKING SUMMARY

PROPOSED SITE PLAN

BUILDING AREA SUMMARY

SITE COVERAGE SUMMARY

MACKENZIE

WEST RENEWABLE FUELS OREGON

11757 KATY FREEWAY SUITE 703 HOUSTON TX 77079

WEST RENEWABLE FUELS INC PORT WESTWARD COLUMBIA COUNTY, OR

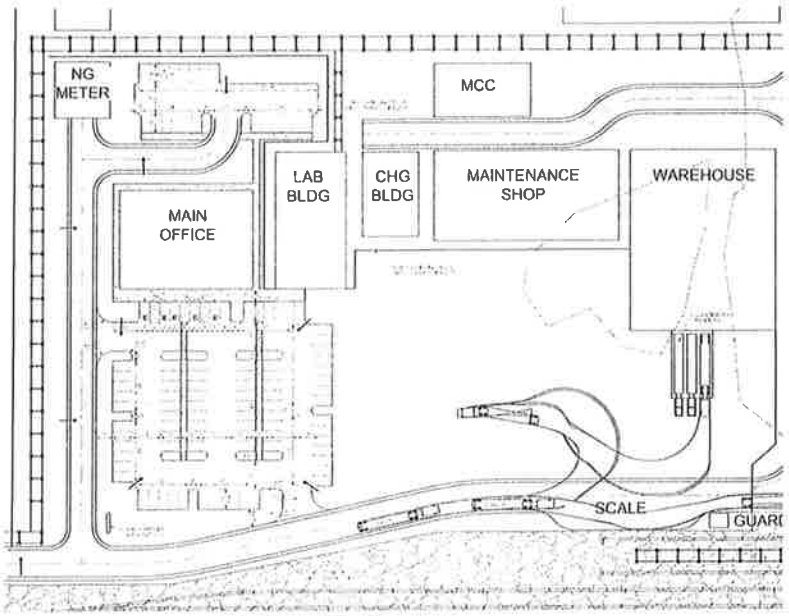
PROPOSED SITE PLAN

C1.11

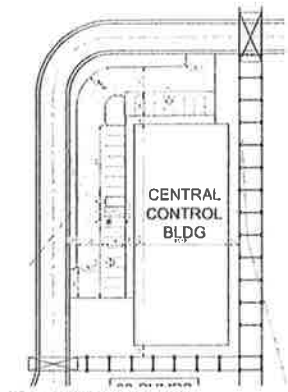
2200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



MAIN PARKING AND OFFICE AREA



CENTRAL PARKING AREA

LEGEND

MACKENZIE

NEXT RENEWABLE FUELS OREGON

11767 KATY FREEWAY SUITE 705 HOUSTON, TX 77079

NEXT RENEWABLE FUELS, INC. PORT WESTWARD COLUMBIA COUNTY, OR

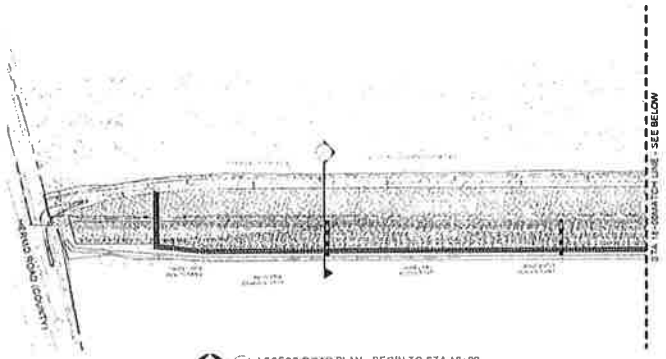
ACCESS, PARKING, AND CIRCULATION PLAN

C1.12

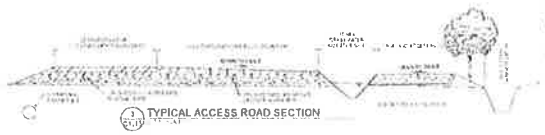
7200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



ACCESS ROAD PLAN - BEGIN TO STA 18+00



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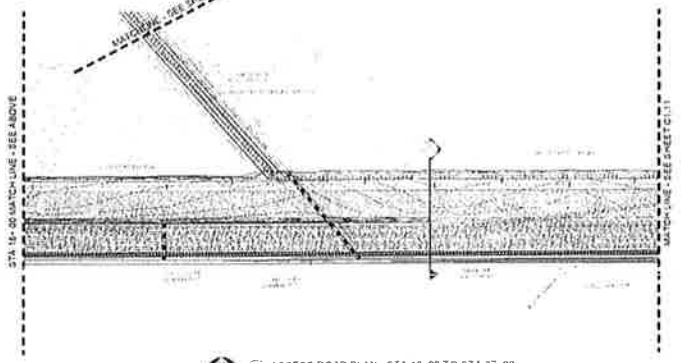


ACCESS ROAD PLAN - STA 18+00 TO STA 37+00

TYPICAL ACCESS ROAD SECTION

MACKENZIE

NEXT RENEWABLE FUELS OREGON

10497 HAFN FREEWAY SUITE 705 HOUSTON TX 77070

NEXT RENEWABLE FUELS, INC PORT WESTWARD COLUMBIA COUNTY OR

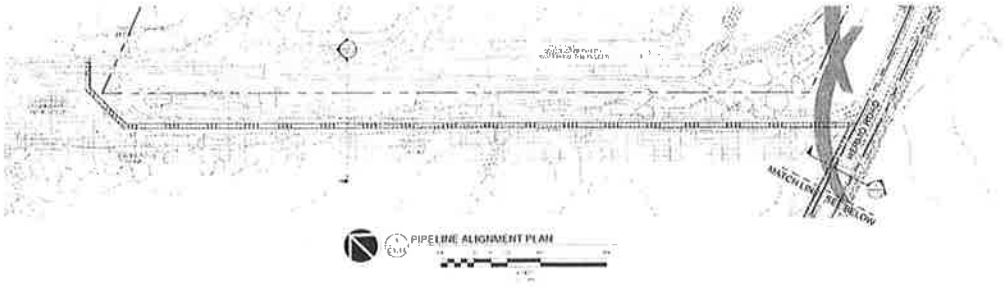
ACCESS ROAD PLAN

C1.13

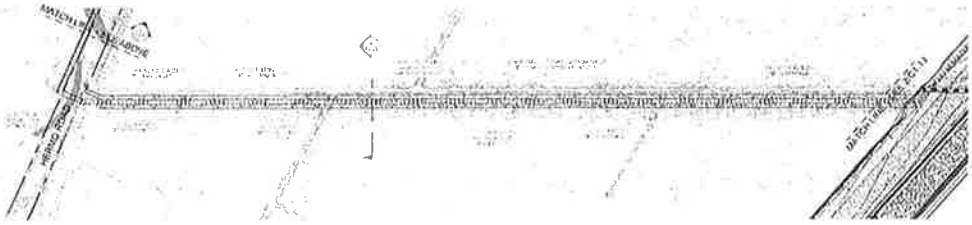
3200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



PIPELINE ALIGNMENT PLAN



PIPELINE ALIGNMENT PLAN

LEGEND

MACKENZIE

NEXT RENEWABLE FUELS OREGON

11781 KATY FREEWAY SUITE 185 HOUSTON TX 77079

NEXT RENEWABLE FUELS, INC. PORT WESTWARD COLUMBIA COUNTY, OR

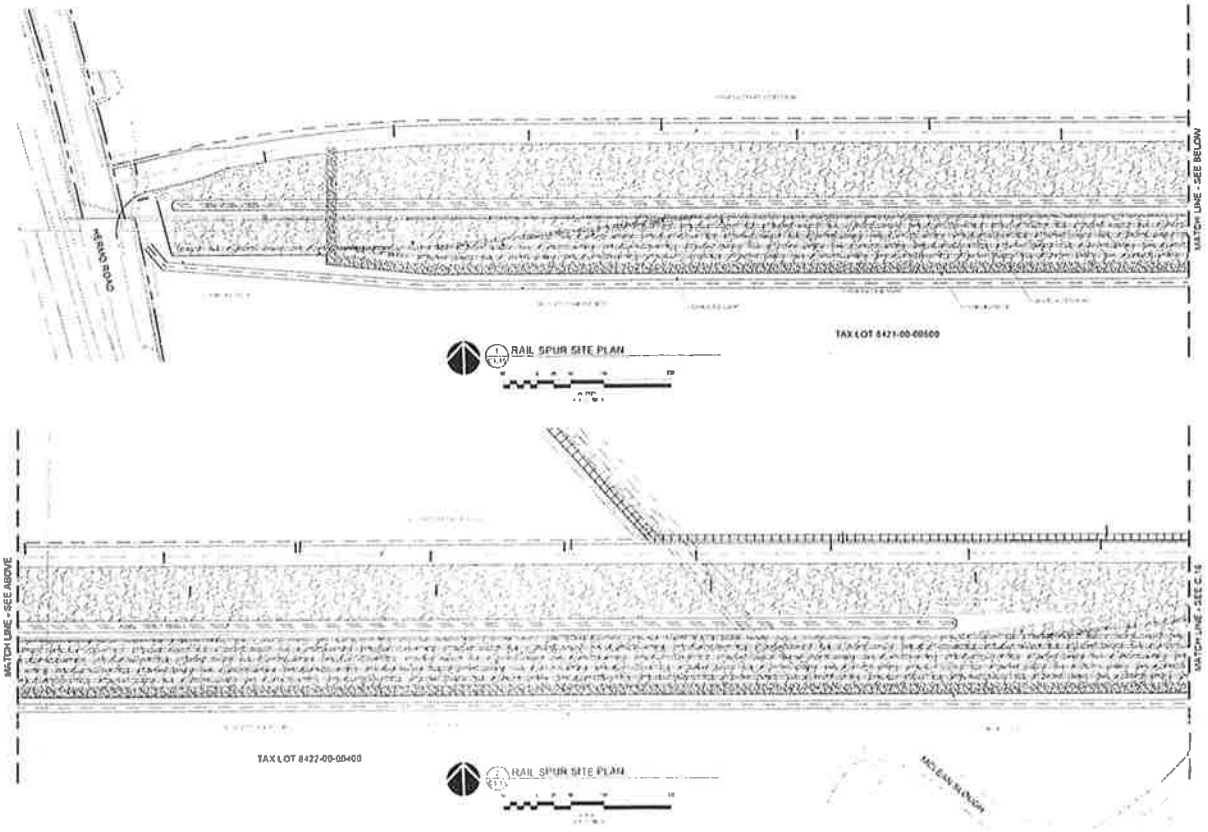
PIPELINE ALIGNMENT PLAN

C1.14

3200315 01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



HACKENZIE

HELI RENEWABLE FUELS OREGON

HELI RENEWABLE FUELS, INC.
PORT WESTWARD
COLUMBIA COUNTY, OR

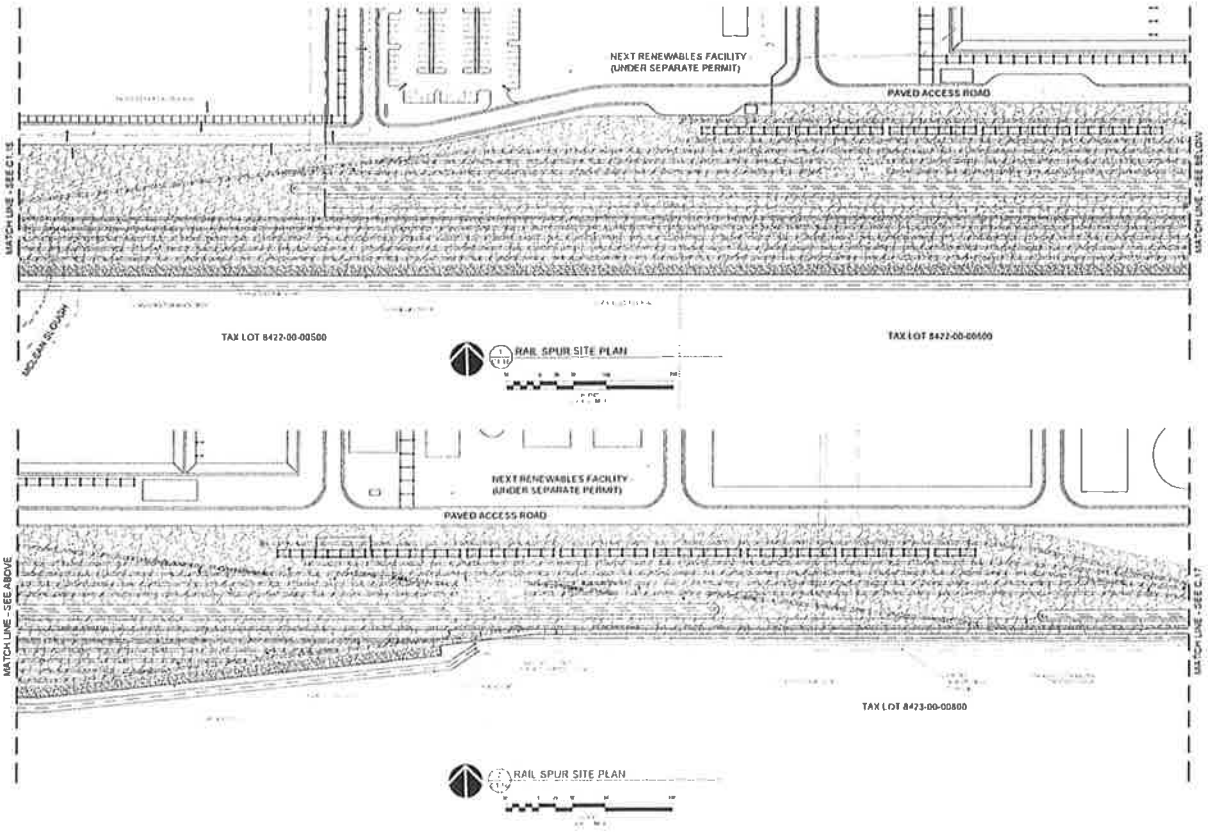
RAIL SPUR SITE PLAN

C1.15

7700315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



MACKENZIE

NEXT RENEWABLE FUELS OREGON

NEXT RENEWABLE FUELS, INC.
PORT WESTWARD
COLUMBIA COUNTY, OR

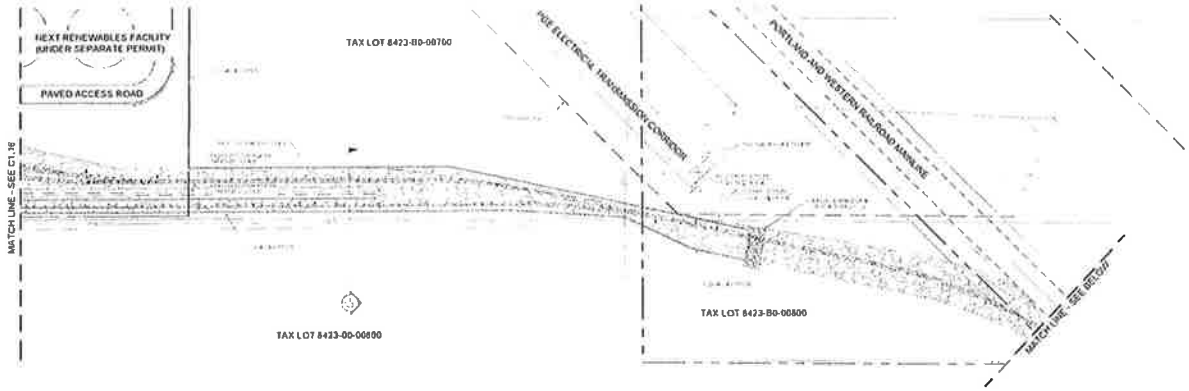
RAIL SPUR SITE PLAN

C1.16

2200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



RAIL SPUR SITE PLAN

RAIL SPUR SITE PLAN

MACKENZIE

NEXT RENEWABLE FUELS OREGON

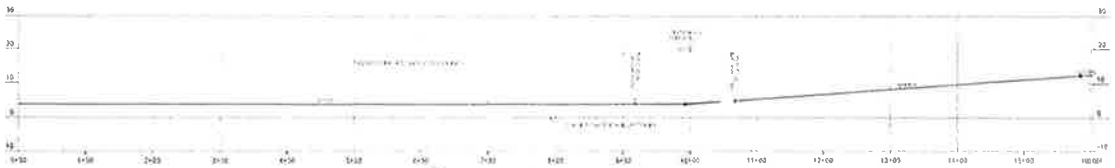
NEXT RENEWABLE FUELS, INC. PORT WESTWARD COLUMBIA COUNTY, OR

RAIL SPUR SITE PLAN

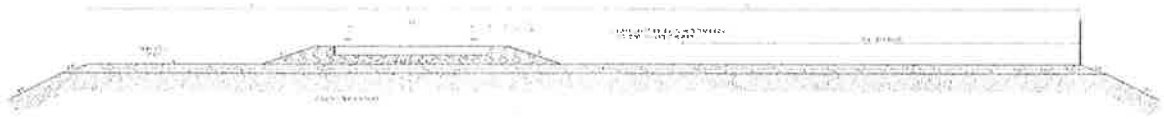
C1.17

7700315.01

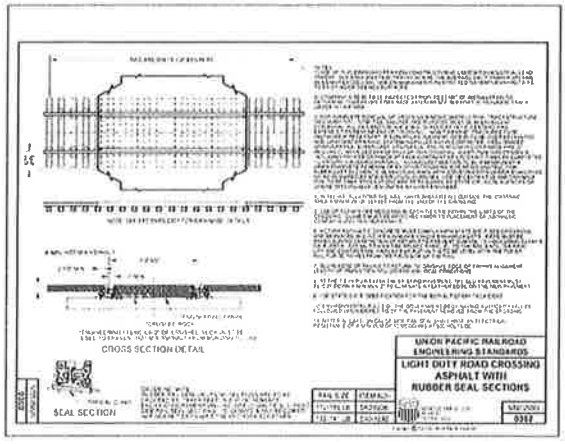
APPENDIX A



PROPOSED RAIL SPUR PROFILE



TYPICAL RAIL SPUR EMBANKMENT SECTION



TYPICAL LIGHT DUTY RAIL CROSSING

MACKENZIE
NEXT RENEWABLE FUELS OREGON
11767 KATY FREEWAY
SUITE 705
HOUSTON, TX 77079

NEXT RENEWABLE FUELS, INC.
PORT WESTWARD
COLUMBIA COUNTY,

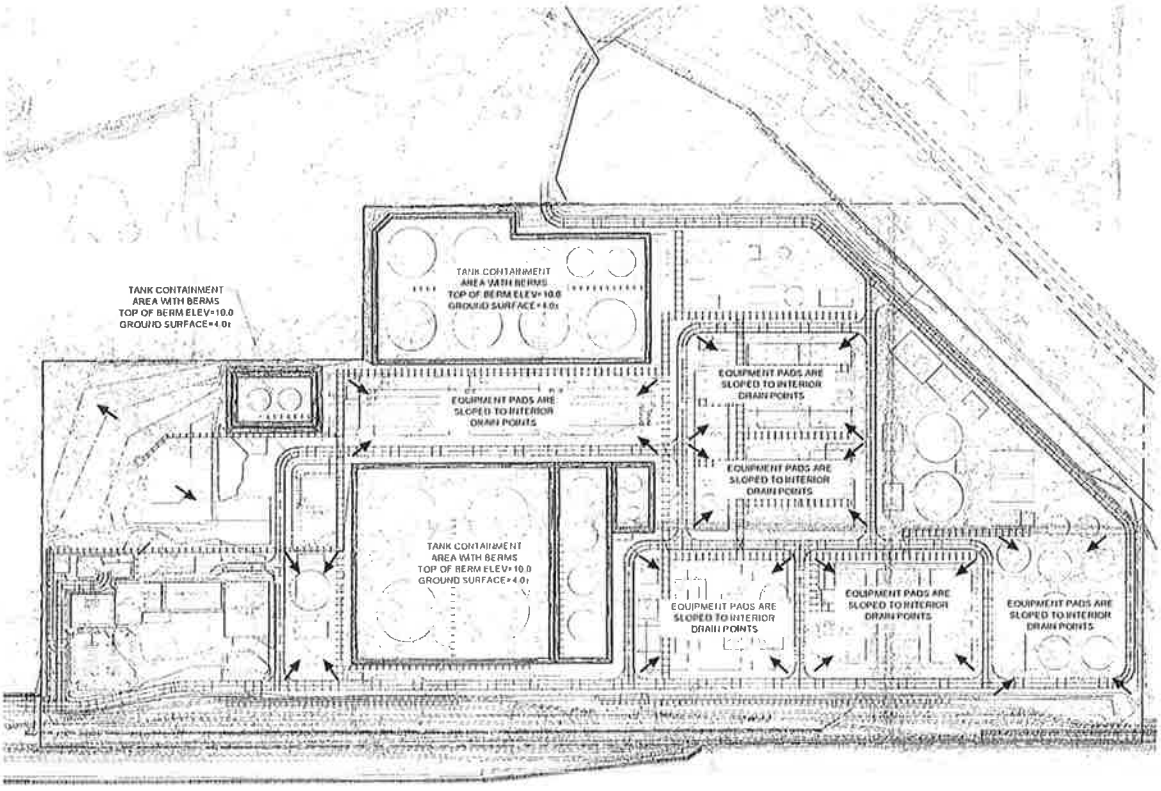
RAIL SPUR PROFILE AND DETAILS

C1.18

2200315.01

APPENDIX A

COMPLETENESS SUBMITTAL SET - 7/8/2021



LEGEND

GRADING PLAN

MACKENZIE

NEXT RENEWABLE FUELS OREGON

NEXT RENEWABLE FUELS, INC.
PORT WESTWARD
COLUMBIA COUNTY, OR

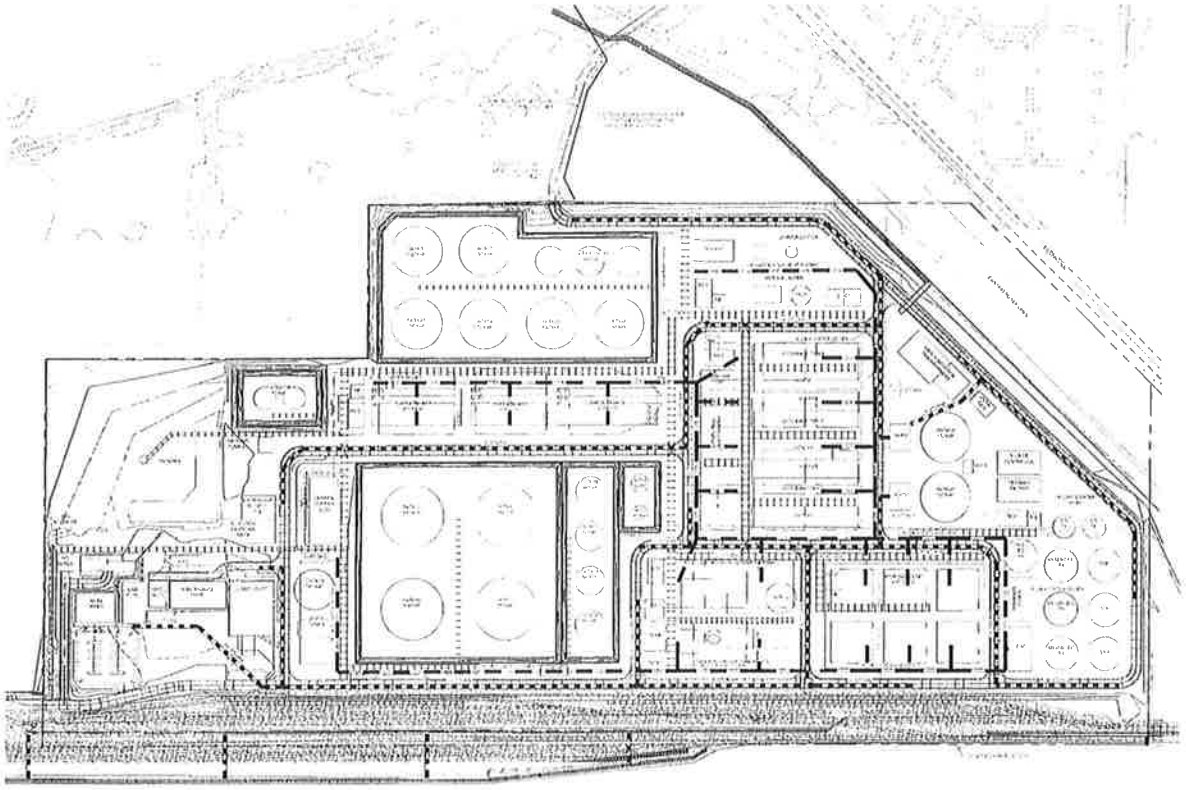
GRADING PLAN

C1.20

3200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



LEGEND

DRAINAGE PLAN

MACKENZIE

NEXT RENEWABLE FUELS OREGON

11757 KATY FREEWAY
SUITE 305
HOUSTON TX 77079

NEXT RENEWABLE FUELS, INC.
PORT WESTWARD
COLUMBIA COUNTY, OR

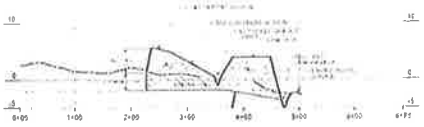
DRAINAGE PLAN

C1.30

2200315.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A



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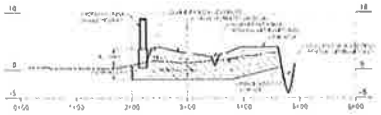
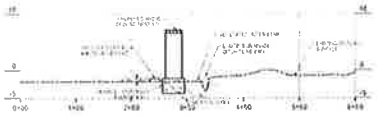


2 ACCESS ROAD CROSS SECTION WITH WIDENED PAVING

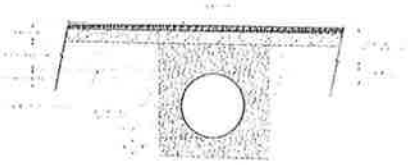
3 RAIL SPUR BRANCH LINE TYPICAL CROSS-SECTION



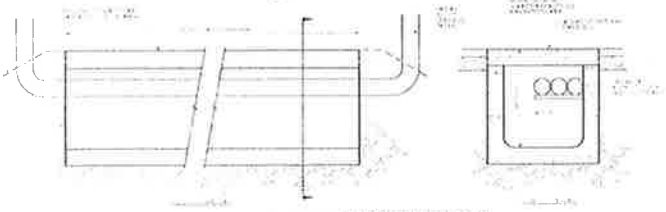
4 PIPELINE MAINTENANCE ROAD TYPICAL CROSS-SECTION

5 TYPICAL CROSS-SECTION OF PIPERACK ALONG HERMO ROAD

6 TYPICAL CROSS-SECTION OF PIPERACK ALONG SERVICE ROAD



7 TYPICAL CROSS-SECTION OF CULVERT INSTALLATION



8 PIPELINE CULVERT ROAD CROSSING

Architecture • Interiors
Planning • Engineering

MACKENZIE

MEP RENEWABLE FUELS OREGON

6757 KATY FREEWAY
SUITE 105
HOUSTON, TX 77079

MEP RENEWABLE FUELS, INC.
PORT WESTWARD
COLUMBIA COUNTY, OR

WETLAND IMPACTS - TYPICAL SECTIONS

C2.23

2200345.01

COMPLETENESS SUBMITTAL SET - 7/8/2021

APPENDIX A

APPENDIX B

SOIL SURVEY REPORT

United States Department of Agriculture

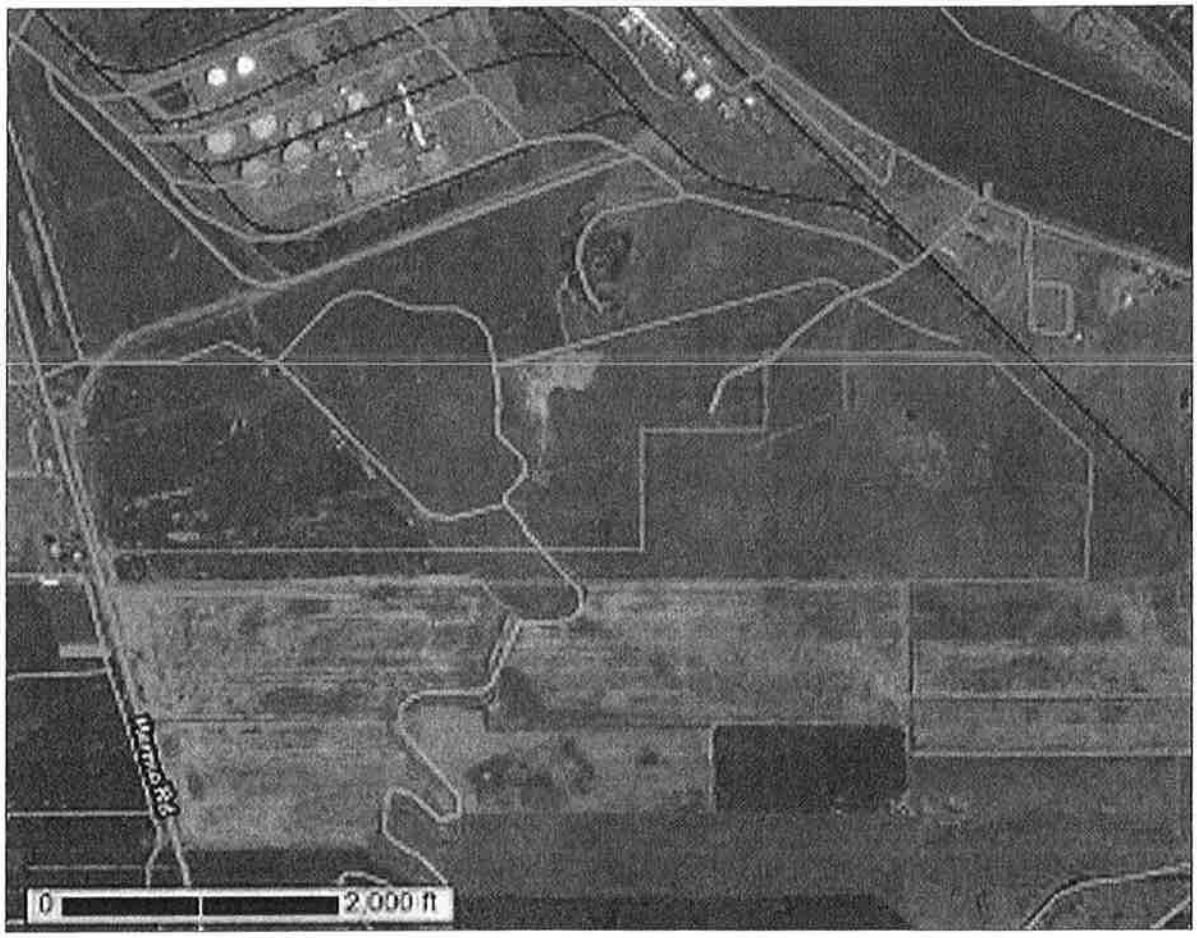
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Columbia County, Oregon

NEXT Renewables



December 8, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents