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

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

Wed 1/26/2022 5:43 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>

Here is the third of four sections of Mackenzie Exhibit B, noted below.

Garrett H. Stephenson
Shareholder
Direct: 503-796-2893
Mobile: 503-320-3715
gstephenson@schwabe.com

Schwabe Williamson & Wyatt
Please visit our COVID-19 Resource page

From: Stephenson, Garrett H.
Sent: Wednesday, January 26, 2022 5:40 PM
To: 'planning@columbiacountyor.gov' <planning@columbiacountyor.gov>; 'Jacyn.Normine@columbiacountyor.gov' <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>
Subject: RE: NEXT First Open Record Submittal (App DR 21-03; V 21-05 and CU 21-04) Email 2.B

Here is the second of four sections of Mackenzie Exhibit B, noted below.

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 5:39 PM
To: 'planning@columbiacountyor.gov' <planning@columbiacountyor.gov>; 'Jacyn.Normine@columbiacountyor.gov' <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>
Subject: RE: NEXT First Open Record Submittal (App DR 21-03; V 21-05 and CU 21-04) Email 2.A

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
Shareholder
Direct: 503-796-2893
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gstephenson@schwabe.com

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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gstephenson@schwabe.com

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
Shareholder
Direct: 503-796-2893
Mobile: 503-320-3715
gstephenson@schwabe.com

Schwabe Williamson & Wyatt
Please visit our COVID-19 Resource page

Hydrograph Report

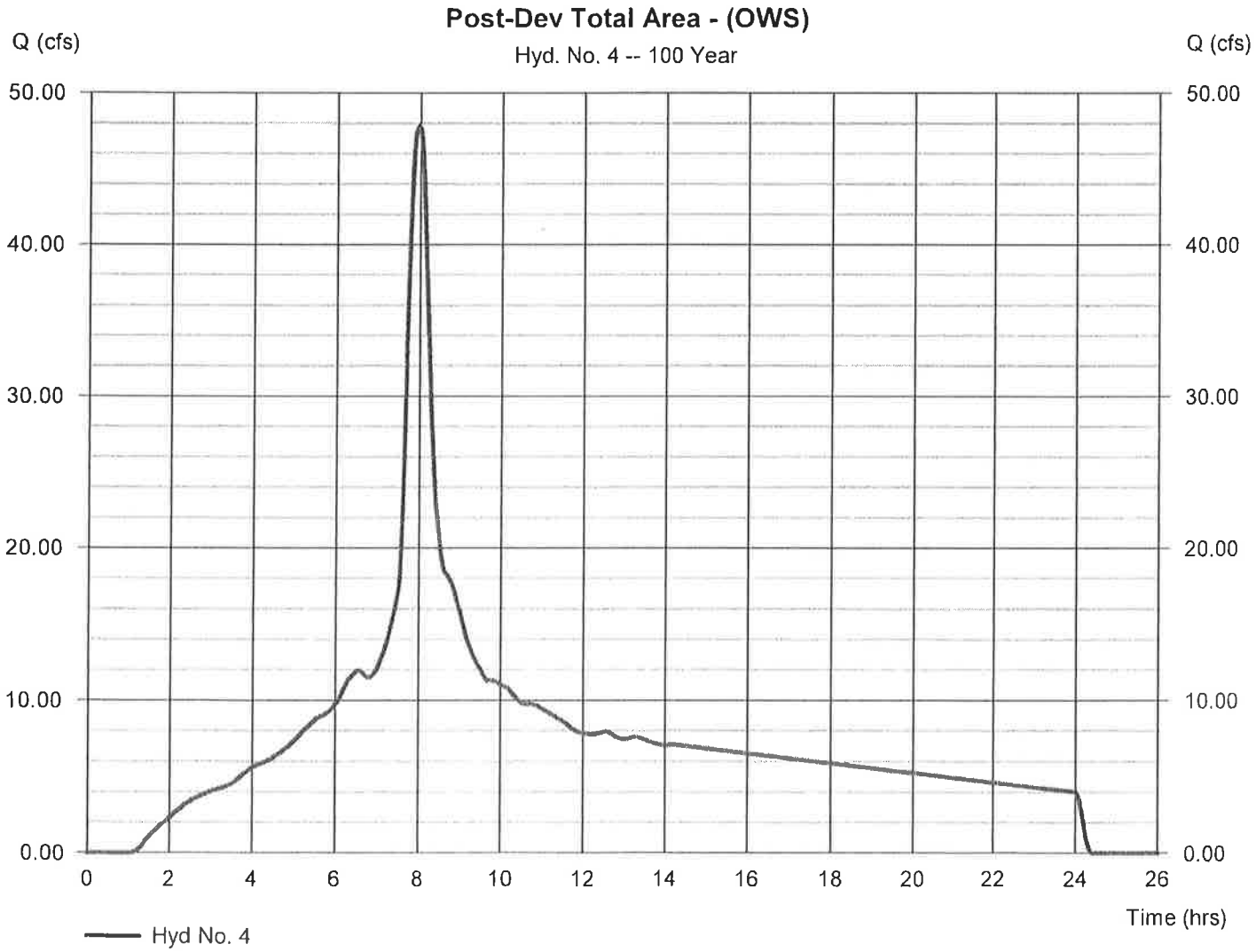
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Monday, 07 / 12 / 2021

Hyd. No. 4

Post-Dev Total Area - (OWS)

Hydrograph type	= SCS Runoff	Peak discharge	= 47.82 cfs
Storm frequency	= 100 yrs	Time to peak	= 7.97 hrs
Time interval	= 2 min	Hyd. volume	= 679,074 cuft
Drainage area	= 39.840 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(7.000 x 98) + (17.730 x 92) + (15.110 x 98)] / 39.840

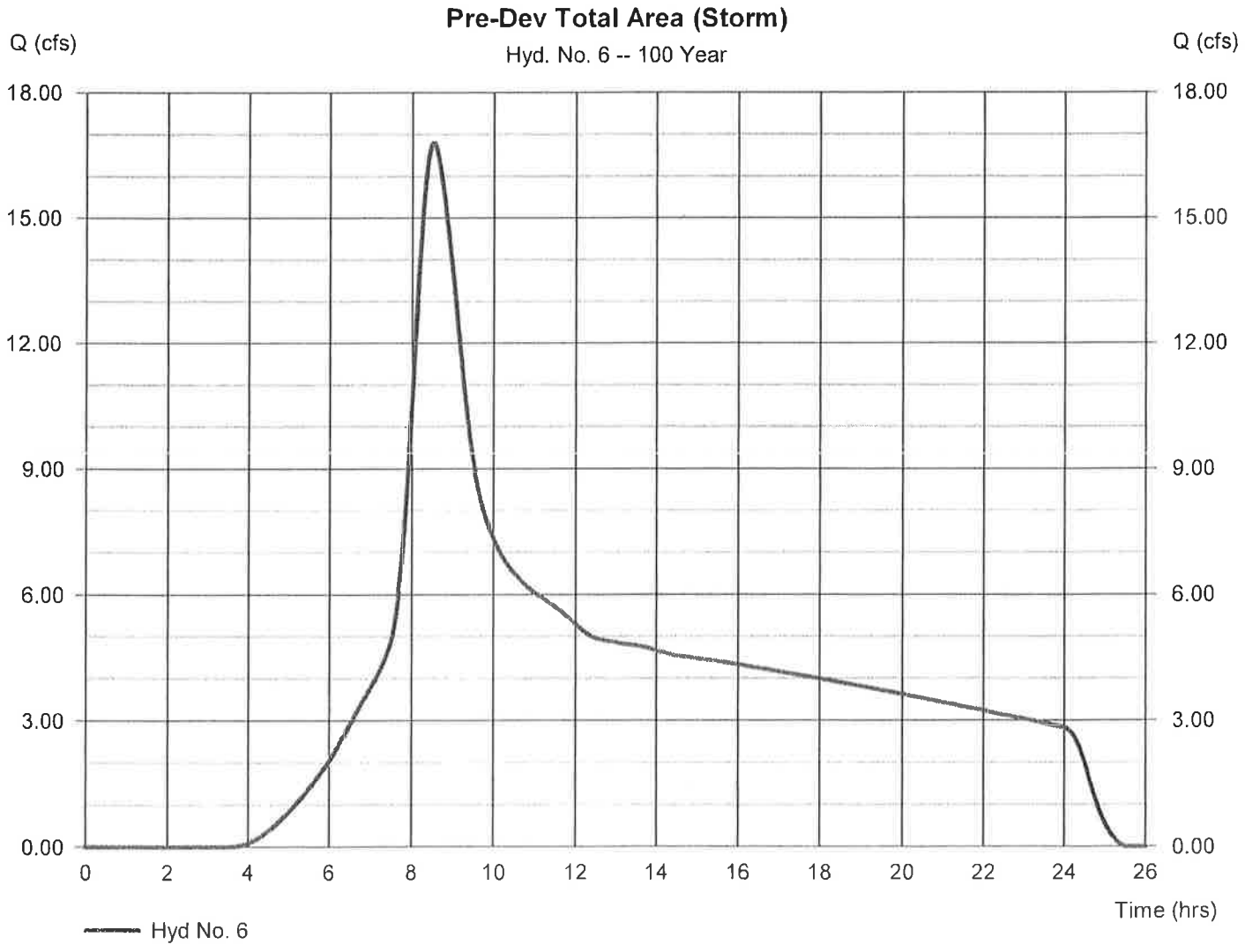


Hydrograph Report

Hyd. No. 6

Pre-Dev Total Area (Storm)

Hydrograph type	= SCS Runoff	Peak discharge	= 16.79 cfs
Storm frequency	= 100 yrs	Time to peak	= 8.50 hrs
Time interval	= 2 min	Hyd. volume	= 348,861 cuft
Drainage area	= 29.620 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 60.00 min
Total precip.	= 5.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



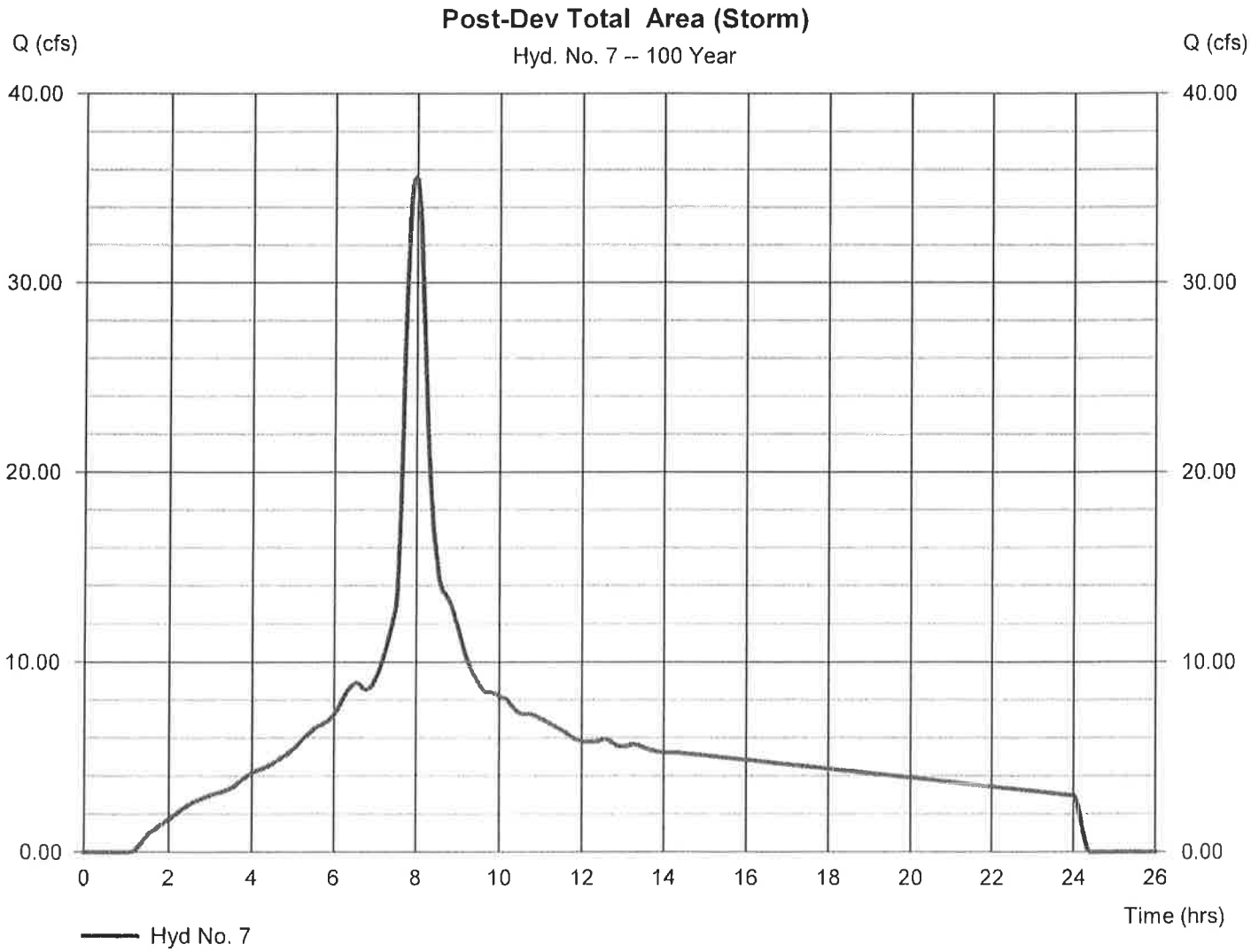
Hydrograph Report

Hyd. No. 7

Post-Dev Total Area (Storm)

Hydrograph type	= SCS Runoff	Peak discharge	= 35.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 7.97 hrs
Time interval	= 2 min	Hyd. volume	= 504,874 cuft
Drainage area	= 29.620 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(16.850 x 98) + (8.840 x 92) + (2.840 x 98) + (1.090 x 78)] / 29.620

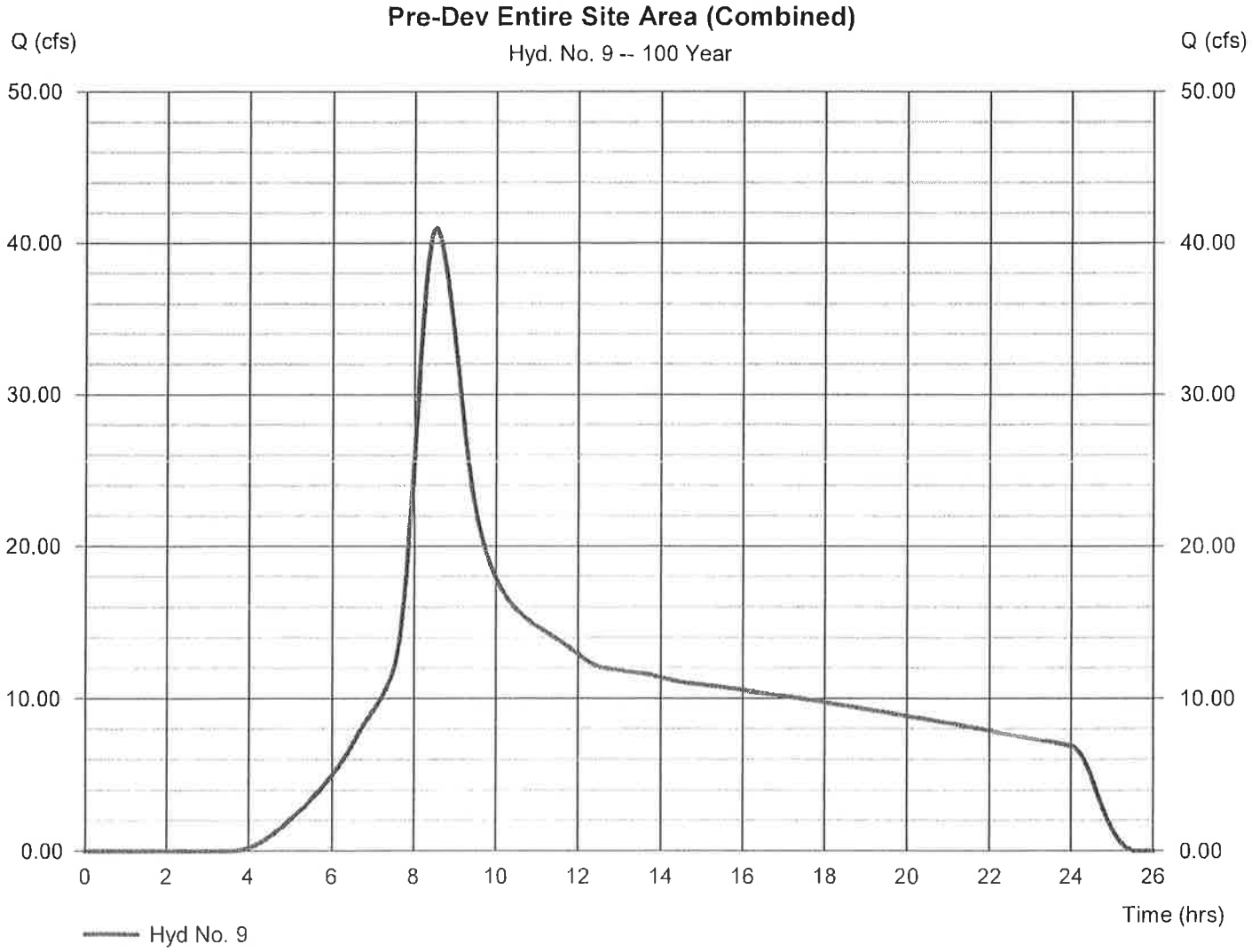


Hydrograph Report

Hyd. No. 9

Pre-Dev Entire Site Area (Combined)

Hydrograph type	= SCS Runoff	Peak discharge	= 40.95 cfs
Storm frequency	= 100 yrs	Time to peak	= 8.50 hrs
Time interval	= 2 min	Hyd. volume	= 850,834 cuft
Drainage area	= 72.240 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 60.00 min
Total precip.	= 5.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

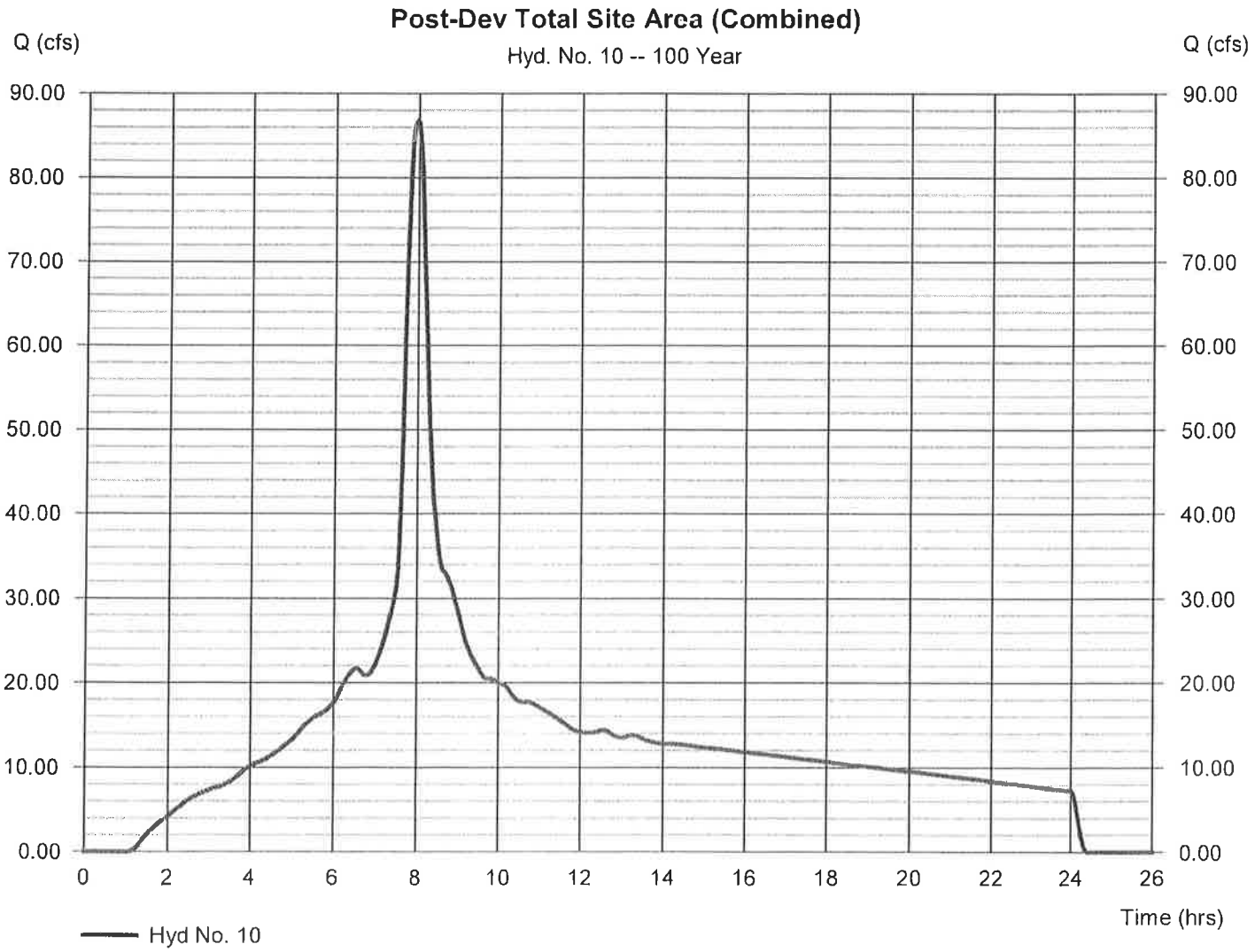
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 — Monday, 07 / 12 / 2021

Hyd. No. 10

Post-Dev Total Site Area (Combined)

Hydrograph type	= SCS Runoff	Peak discharge	= 86.71 cfs
Storm frequency	= 100 yrs	Time to peak	= 7.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,231,334 cuft
Drainage area	= 72.240 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(19.040 x 98) + (26.570 x 92) + (24.290 x 98) + (2.340 x 78)] / 72.240



Project name: NEXT Renewables **Project number:** 2200315.00

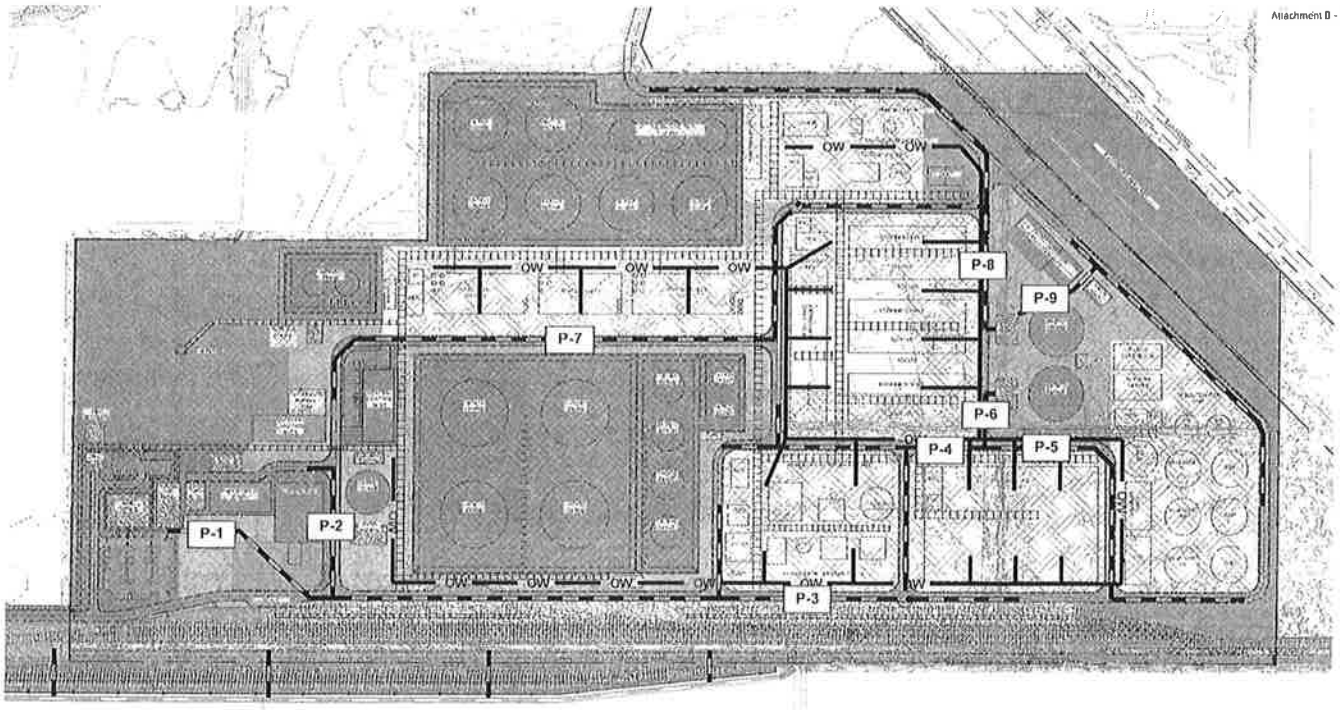
10 year/24-hour storm event

By: BDN Checked:

Date: 10/14/2021 Date:

n = 0.013

Pipe Link	Drainage Basin	Time of Concentration (min)	Total Time(min)	100-yr Storm Intensity(in/hr)	Building + Paved Area C=0.90	Gravel Area C=0.70	Landscape Area C=0.40	Incremental Equiv. Area	Total Equiv. Area	**Runoff (cfs)**	Slope(%)	Diameter (in)	Pipe Area (sf)	Hydraulic Radius^2/3	**Capacity (cfs)**	Velocity at Design Flow (fps)	Runoff/Capacity (ratio)	Length(ft)	Incr. Time(min)
STORMWATER BASIN																			
P-1	P1	5.00	5.00	3.70	2.540	0.870	2.060	3.72	3.72	**13.76**	1.00	21	2.405	0.576	**15.78**	7.31	0.87	520	1.19
P-2	P2	5.00	5.00	3.70	2.550	3.880	0.000	5.01	5.01	**18.54**	1.00	24	3.142	0.630	**22.53**	7.92	0.82	425	0.89
P-3	P1+P2+P3	5.00	6.19	3.51	1.140	0.000	0.000	1.03	9.76	**34.25**	1.00	30	4.909	0.731	**40.85**	9.21	0.84	1980	3.58
P-4	P3+P4	5.00	9.77	2.94	1.010	0.000	0.000	0.91	10.67	**31.33**	1.00	30	4.909	0.731	**40.85**	9.07	0.77	195	0.36
P-5	P5	5.00	5.00	3.70	1.480	0.000	0.000	1.33	1.33	**4.93**	1.00	15	1.227	0.461	**6.43**	5.71	0.77	1090	3.18
P-6	P4+P5	--	10.13	2.89	0.660	0.000	0.000	0.59	12.59	**36.39**	1.00	30	4.909	0.731	**40.85**	9.29	0.89	130	0.23
P-7	P7	5.00	5.00	3.70	2.030	0.670	0.280	2.41	2.41	**8.91**	1.00	18	1.767	0.520	**10.46**	6.57	0.85	2225	5.64
P-8	P7+P8	5.00	5.00	3.70	2.920	0.240	0.000	2.80	5.20	**19.25**	1.00	24	3.142	0.630	**22.53**	7.97	0.85	311	0.65
P-9	P9	5.00	5.00	3.70	1.270	3.180	0.000	3.37	3.37	**12.47**	1.00	21	2.405	0.576	**15.78**	7.19	0.79	1205	2.79
OIL-WATER-SEWER BASIN																			
OW-1	OW1	5.00	5.00	3.70	2.900	3.010	0.000	4.72	4.72	**17.45**	1.00	24	3.142	0.630	**22.53**	7.83	0.77	955	2.03
OW-2	OW1+OW2	5.00	7.03	3.37	1.220	1.070	0.000	1.85	6.56	**22.15**	1.00	24	3.142	0.630	**22.53**	8.07	0.98	450	0.93
OW-3	OW1+OW2+OW3	5.00	7.96	3.23	0.640	1.740	0.000	1.79	8.36	**26.96**	1.00	30	4.909	0.731	**40.85**	8.80	0.66	525	0.99
OW-4	OW4	5.00	5.00	3.70	0.510	1.370	0.000	1.42	1.42	**5.25**	1.00	15	1.227	0.461	**6.43**	5.78	0.82	780	2.25
OW-5	OW4+OW5	5.00	7.25	3.34	2.490	0.000	0.000	2.24	3.66	**12.22**	1.00	21	2.405	0.576	**15.78**	7.17	0.77	775	1.80
OW-6	OW6	5.00	5.00	3.70	0.970	2.460	0.000	2.60	2.60	**9.60**	1.00	18	1.767	0.520	**10.46**	6.63	0.92	670	1.68
OW-7	OW6+OW7	5.00	6.68	3.43	3.200	2.040	0.000	4.31	6.90	**23.68**	1.00	30	4.909	0.731	**40.85**	8.54	0.58	600	1.17
OW-8	OW3+OW7+OW8	5.00	8.96	3.07	2.180	0.000	0.000	1.96	8.87	**27.19**	1.00	30	4.909	0.731	**40.85**	8.81	0.67	565	1.07
OW-9	OW5+OW8+OW9	5.00	10.03	2.90	2.390	3.230	0.000	4.41	16.94	**49.08**	1.00	36	7.069	0.825	**66.43**	10.17	0.74	0	0.00



PLANT AREA - STORMWATER DRAINAGE BASIN

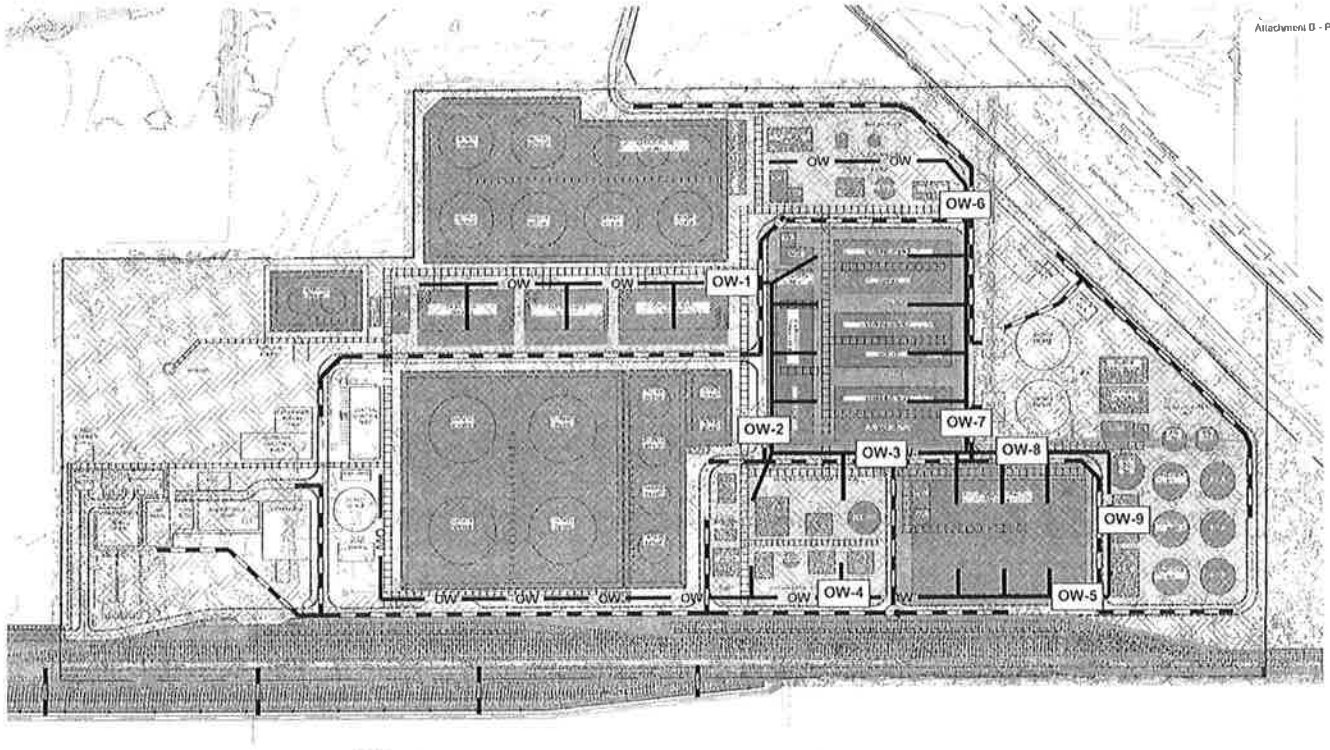
0 125 250 500

PAVEMENT AREA

BUILDING AREA

GRAVEL AREA

LANDSCAPE AND PERVIOUS SURFACING



PLANT AREA - OIL-WATER SEWER DRAINAGE BASIN

PAVEMENT AREA

BUILDING AREA

GRAVEL AREA

LANDSCAPE AND PERVIOUS SURFACING

INFILTRATION AREA

APPENDIX E

WASTEWATER TREATMENT PLANT DESIGN INFORMATION

NEXT Renewable Fuels, Oregon LLC.

PROJECT DESIGN BASIS

NEXT Renewable Fuels, Inc.

50,000 BPD
RENEWABLE DIESEL PROJECT

Revision B
May 7, 2021

Table of Contents

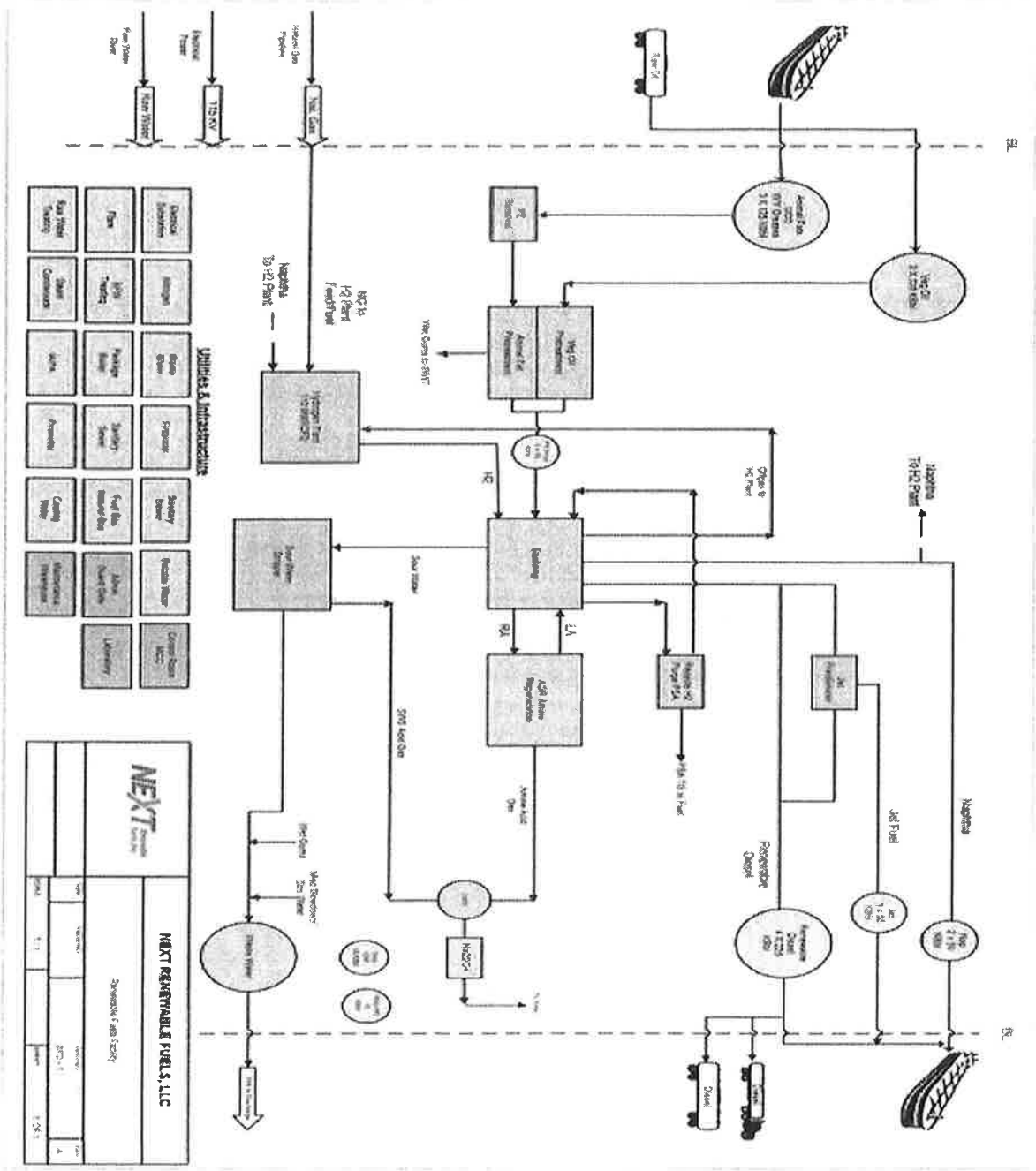
1. Introduction

NEXT Renewable Fuels, LLC is a private company focused on producing and delivering clean transportation fuels. NEXT Renewable Fuels plans to build a flexible Green Diesel facility utilizing the Honeywell UOP Ecofining™ Green Diesel technology. This design basis was prepared for NEXT Renewable Fuels based on constructing a facility that can produce 50,000 BPD of renewable fuels utilizing the Honeywell UOP Ecofining™ Green Diesel technology. The facility would be located in the Pacific Northwest with access to West Coast markets.

The Ecofining™ process is a versatile solution for producing renewable diesel from a range of sustainable feedstocks such as used cooking oil, animal fats, and various vegetable oils. Renewable diesel produced in the Ecofining process is a drop-in fuel which can directly replace up to 100% petroleum-based diesels complying with ASTM975 diesel specification.

The Renewable Diesel facility will be designed to process a variety of used cooking oils, animal fats, vegetable oils, and choice white and yellow greases. The facility will process 51,500 BPD of raw vegetable oils, tallows and animal fats to produce ~50,000 BPD of renewable products. Outlined in Figure 1 is the general block flow for the overall NEXT Green Diesel facility.

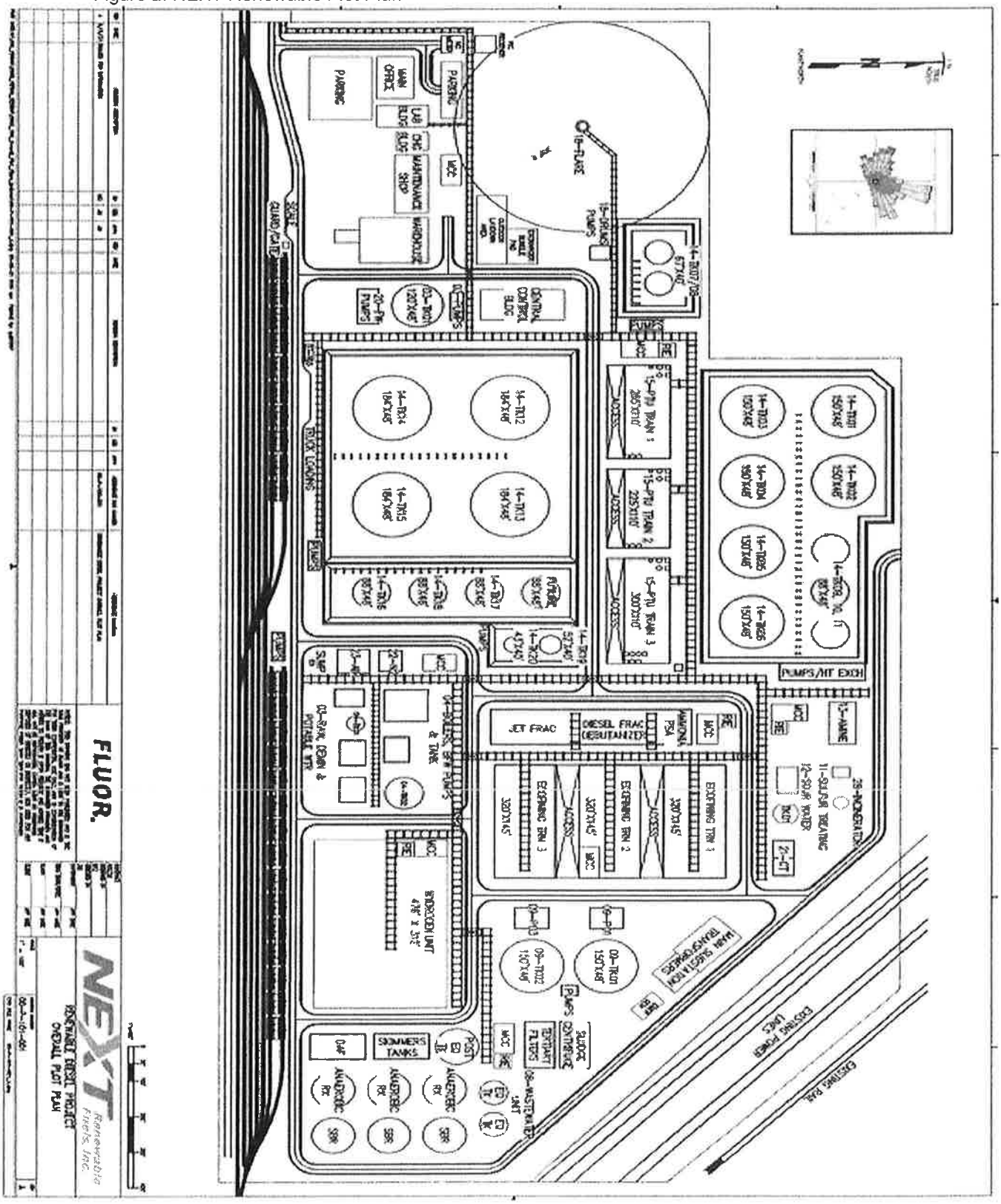
Figure 1: NEXT Renewable Diesel BFD



Due to the capacity of the Renewable Diesel facility, the Raw Oil Pretreat and Ecofining™ Units will be multi-train.

A preliminary plot plan, Figure 2, has been developed for the NEXT Renewable Fuels site.

Figure 2: NEXT Renewable Plot Plan



2. Overall Design Basis

NEXT Renewable Fuels is planning to construct a UOP Green Diesel facilitylocated in the pacific northwest. .The design of the facility will be based on processing vegetable oils, animal fats or reclaimed oil / greases (Soybean, DCO, Used Cooking Oil, Beef Tallow, Choice White Grease and Yellow Grease). The planned distribution is listed below.

Raw Oil Feedstock	Oil	Wt%
Soybean Oil	Veg Oil	30
Distillers Corn Oil	Veg Oil	15
Used Cooking Oil	Veg Oil	15
Beef Tallow	Animal Fat	20
Choice White Grease (Pork Oil)	Animal Fat	10
Yellow Grease	Animal Fat	10

The Raw Oil Pretreatment System will be designed to process a total of 51,500 BPSD of raw oils. The pretreament unit will be three (3) trains of equal hydraulic capacity but each unit configuration will be have different features to provide flexibility in processing vegatable oils, tallows/greases and used cooking oils.

The general steps included in each train are:

- Train 1: Enzymatic Degumming/Special Degumming and Adsorption
- Train 2: Acid Washing/Special Degumming and Adsorption
- Train 3: Polyethylene Removal, Acid Washing/Special Degumming and Adsorption

Train (1) one will utilize enzymatic degumming to process phospholipids in the vegetable oils. Train (3) three will have a PE removal system ahead of the Degumming and Adsorption facilities.

The goal is to remove feed gums, metals, soaps, color, and phospholipids with minimal loss of free fatty acids. A deodorizing step is not needed with these feeds.

The Ecofining™ Units will process the treated raw oils from the Raw Oil Pretreat facilities. The facility will be designed to process 50,000 BPD treated oil feedstock.

The Ecofining™ Unit equipment will be designed to bracket a range of feedstocks and operating modes.

- Max Diesel - 100% Beef Tallow
- 25 vol% Jet Fuel - 100% Camelina Vegetable Oil
- Max Diesel - design feedstock blend
- 25 vol% Jet Fuel - design feedstock blend

3. Feed and Product Specifications

Feedstock Specifications

The Base design feedstock to the Ecofining™ Unit will be a combination of Vegetable Oils and Animal Fats. Listed below are chemical and physical properties for the base raw oil feedstocks.

Raw Oils / Fats General Properties	Unit	Soybean (VO)	Corn Oil Distillers (VO)	Used Coooking Oil (UCO)	Tallow (AF)	Choice White Greases (AF)	Yellow Greases (AF)
Feed Comp	**wt%**	**30**	**15**	**15**	**20**	**10**	**10**
Density	SG	0.92	0.92	0.89	0.92	0.92	0.92
Kinematic Viscosity	mm2/s 40°C	28.9	30.8	27	45.34	41	132.1
Unsponifiables	wt%	0.4	1.3	0.1	0.4	0.5	0.4
Phospholipids	wt%	1.5-2.5	0.7-2.0*	-	-	-	-
Sponification Value	mgKOH/g	195	183	199	198	202	198
Phosphorous	ppmw	200	500*	27	271	42.5	132.1
Ca+Na+Mg+K	ppmw	0.5*	1*	1	100*	1	38.9
Fe	ppmw	2-6	-	-	-	-	-
Sulfur	ppmw	0.8	10.5	3.4	25.2	7.7	30.7
Nitrogen	ppmw	*	*	*	*	*	*
Moisture	wt%	0.03	0.15	0.24	0.05	0.22	0.49
FAC Color			33	11B	11A	<13	11B
Chlorides	ppmw	*	*	*	*	*	*
MIU	wt%	0.77	2.36	0.85	0.8	1	0.8
FFA	wt%	0.3-0.7	12.22	2.72	1.61	0.5-2.5	7-15
Fatty Acid Composition							
C12:0	Lauric	0.1	--	0.3	0.2	0.2	0.1
C14:0	Myristic	0.1	--	0.7	2.4	1.4	0.7
C15:0	entadecano	--	--	--	--	0.1	0.2
C16:0	Palmitic	11.4	11.8	17.3	24.4	21.3	15
C16:1	Palmitoleic	0.2	0.1	3.6	2.7	3.3	2
C18:0	Stearic	4.1	2.1	7.3	20	9.5	9.1
C18:1	Oleic	23.5	27.4	44.3	41.7	43.4	49
C18:2	Linoleic	53.5	57.7	22.8	5.9	17.4	21.3
C18:3	Linolenic	6.6	0.6	2	0.7	1.9	2
C20:0	Arachidic	0.3	0.3	0.4	0.4	0.1	0.5
C20:1	Eicosenoic	0.2	0.3	0.6	0.5	0.8	--
C22:0	Behenic	0.3	--	0.4	--	--	0.3
C22:1	Erucic	--	--	0.15	0.1	0.1	--
C24:0	Lignoceric	--	0.14	0.3	0.27	0.43	--

The raw oil feedstock specifications are:

NEXT Renewable Inc Pretreat Unit Feed / Product Specs					
Property	Unit	Feed Blend		Max Any Feedstock	Product Spec
Moisture	%	1	max	2	No Free Water
Insoluables	wt%	0.2	max	1.00	<0.05
FFA	wt%	10	max	20	N/A
Unsaponafiables	wt%	1	max	2	N/A
Total Metals (Ca+Mg+Na+K+Fe+Si+Al)	ppmw	500	max	750	<10
Ca+Mg	ppmw	50		100	TotMtl Spec
Na+K	ppmw	150		300	<2
Fe	ppmw	10		25	TotMtl Spec
Si	ppmw	5		10	TotMtl Spec
Phosphorous	ppmw	200	max	1000	<3
Polyethylene	ppmw	150 (Note 3)	Max	50	<10
Total Chlorides (Organic + Inorganic)	ppmw	+25 over Inorganic	Max	100 over inorganic	N/A
Inorganic Chlorides (Salt)	ppmw	100	Max	200	<5
Sulfur	ppmw	20	max	250	N/A
Nitrogen	ppmw	350	max	500	N/A
Temperature	F	120	min		120

Note 3: PE Train only, other trains 50 ppmw

The crude vegatable oil and animal fat pretreat product specifications are required to meet UOP's Ecofining fresh feed specifications:

UOP Property Specifications	Contaminant Limit (Note 3)	Test Method
Free Fatty Acid (FFA), %	< 20 (Note 1)	AOCS Ca 5a-40
Total Metals (Si, Fe, Al, K, Na, Mg, Ca, P), wppm	< 10	UOP 391 or UOP 389
Including these separate maximums:		UOP 391 or UOP 389
Sodium, wppm	< 2	UOP 391 or UOP 389
Phosphorous, wppm	< 3	UOP 391 or UOP 389
Sulfur, wppm	< 20	ASTM D 1552 or ASTM D 4294
Nitrogen, wppm	< 30 (Note 2)	ASTM D 4629
Chloride, wppm	< 50	UOP 7359
Water, wppm	no free water	ASTM D 2709
Unsaponifiables, wt-%	<1.0	AOCS Ca 6a-40
Insoluble impurities, wt-%	0.05 max	AOCS Ca 3a-46
Polyethylene, wppm	<50	AOCS Ca 16-75

Make up hydrogen will be PSA quality:

Property	Unit	Contaminant Limit
Hydrogen Purity	mol%	>99.9
Methane	mol%	<0.1
Nitrogen	vppm	<150
CO+CO2	vppm	<20

Product specifications

The products generated from the UOP Ecofining™ Process will be:

- C5+ Naphtha
- Renewable Jet Fuel
- Renewable Distillate

The product specifications for the evaluation are:

- C5+ Naphtha
  - RVP 7.0-7.5 psia Target

- Renewable Jet Fuel (Meet ASTM D7566 specification)
  - Sulfur <0.3 wt%
  - Copper Strip Corrosion 1.0 max
  - Distillation
    - T10 / FBP 205 °C max / 300 °C max
  - Flash Point 38 °C min
  - Smoke Point 25 mm min
  - Existent Gum 7 mg/100ml max

- Renewable Diesel (Meet ASTM D975 specification)
  - Sulfur <10 ppmw
  - Cetane Number Report
  - Cloud Point
    - Summer -7 °C
    - Winter -10 °C
  - Pour Point Report
  - Flash Point >135 °F
  - CFPP Report

4. Facility Components

This design basis has been developed with the understanding that all facility components will be required to meet environmental permitting requirements set by the governing agencies located in the Pacific Northwest. Final design of all components will be modified, if necessary, in order to meet the requirements of the location where the project is permitted.

The overall basis for the project is defined below:

- Overall plant vegetable oil and animal fat input 51,500 BPD
- Overall plant input 50,000 BPD feed to Ecofiner
- Three (3) Alfa Laval Pretreat units
- Three (3) UOP Ecofiner units
- All Ecofiner heaters will utilize SCR Technology. Specification of 5 ppm NOx / 20 ppm CO
- 110 MMSCFD SMR Hydrogen Plant. SMR furnace will have SCR 5 ppm NOx / 10 ppm CO
- Jet Fractionation designed to process mid-distillate product from 2 Ecofiner trains at 25 vol% jet yield.
- Jet Fractionator heater will require SCR controls 5 ppm NOx / 20 ppm CO
- 225 gpm Sour Water Stripper
- MDEA Amine system
- Incinerator for Treated Sour Water Offgas and Amine Regenerator Offgas. Incinerator will require SCR 9 ppm NOx / 20 ppm CO / 75 ppm SO2
- HP and LP flare system for overall plant capacity
- Access to a two-ship berth operation with the following capacity:
    - Berth 1 - Vessel size –19,000 - 80,000 DWT
        - Diesel Export - 20 KBPH
        - Veg Oils / Animal Fats Import – 10 KBPH
    - Berth 2 - Vessel/Barge size - 5,000 - 35,000 DWT
        - Veg Oils / Animal Fats Import – 10 KBPH

- Rail
    - 22,500 LF Track
    - 10 spot unloading bleaching earth 80 cars/month
    - 30 spot unloading feedstock oils 930 cars/month
    - 10 spot loading renewable diesel 240 cars/month

- Truck
    - 1 spot loading renewable diesel 60 trucks/month

- Process Tankage:

Service	# Tanks	Design Volume (BBLS)	Type of Roof	Seals	Heated Y/N	Approx. Dimen ft
Raw Oil Feedstock	6	125,000	Fixed	N/A	Y	150x48
Treated Oil	3	50,000	Fixed	N/A	Y	88x48
Renewable Diesel	3	225,000	Fixed	N/A	N	184x48
Renewable Jet	1	225,000	IFR	Dual	N	184x48
Naphtha/Jet	3	50,000	IFR	Dual	N	88x48
HC Slop	1	15,000	IFR	Dual	Y	52x40
OWS Slop	1	10,000	IFR	Dual	Y	43x40
PT Prod Day TK	2	25,000	Fixed	N/A	Y	67X40
Sour Water Tank	1	10,000	IFR	Dual	N	43X48

- Utilities
  - 1880 gpm raw water treatment facilities
  - 2 - 50 KPPH 600 psig steam boiler. Boiler will have SCR 5 ppm NOx / 20 ppm CO / 10 ppm NH3
  - 20,000 gpm 2 cell Cooling Tower
  - 750 gpm wastewater treatment facility
  - Process and Storm water collection / containment system
  - 115 KV electrical supply – estimated power demand 40-50 MW
  - Natural Gas – 8" pipeline / normal demand 15-25 MMSCFD
  - Nitrogen – VSA

- Infrastructure
  - Buildings
    - Administration – 20,000 ft^2 (2 story)
    - Guard Shack – 250 ft^2
    - Maintenance Facility – 13,500 ft^2
    - Warehouse – 20,000 ft^2
    - Fire Station – 5,000 ft^2
    - DCS Control Room – 8,000 ft^2
    - Local Operator Shelters – 4 x 400ft^2
    - Change Room – 5,000 ft^2
    - Laboratory – 7,500 ft^2
    - Raw water treatment/RO – TBD
    - Instrument Air/Plant Air – TBD

5. Process Units

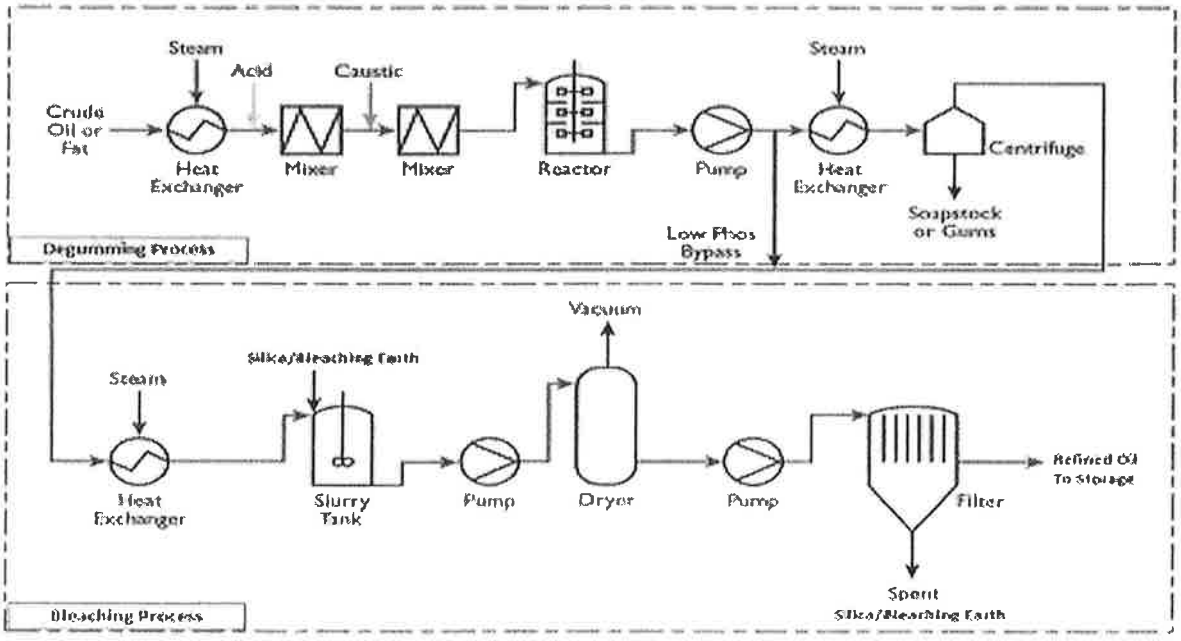
The ISBL Process facilities consist of following units:

- Raw Oil Pretreatment Units
- UOP Ecofining™ Units

5.1 Raw Oil Pretreatment Unit

The Raw Oil Pretreatment (ROP) System will be designed to produce a total of 50,000 BPSD of feed oils to the Ecofining™ units. The Pretreat process facility will consist of three (3) Pretreat Units. All the Pretreat Units will include a two-stage refining system which consists of degumming and bleaching units, Figure 3.

Figure 3: Raw Oil Pretreat Simplified PFD



Additional or modified processes from the base degumming/bleaching are outlined below.

Vegetable Oil – Trains 1 will be designed to process high phospholipid vegetable oils. The degumming process will incorporate enzymatic degumming to allow processing of the gums in the wastewater and to maximize FFA yields.

Animal Fats – Trains 3 will be designed to process high PE animal fats. A polyethylene removal (PE) system has been incorporated into Train 3 due to contamination of animal

fats, mainly tallows. Polyethylene finds its way into the rendering plant as meat wrappers mixed in with the raw material. Most of the polyethylene wrappers used by the meat industry are of low-density type that will melt at lower temperatures and stay soluble in the tallow. At present the only feasible means of removing PE from tallow is to filter the tallow at low temperature using special filter aids.

Outlined below are the processing steps incorporated into each train:

Pretreat Unit Configuration Process Steps	Soy/DCO Train 1	DCO/UCO YG Train 2	Tallow Greases Train 3
PE / Solids Removal			X
Enzymatic	X		
Special Degumming	X	X	X
Hot Wash	X	X	X
Adsorption/Bleaching	X	X	X

The majority of the Pretreat Train processing equipment will be indoors in separate buildings. Bulk acid, caustic, filter silo's and area sump will be located outside.

5.2 UOP Ecofining™ Units

The UOP Ecofining™ Units will be designed to process a total of 50,000 BPSD of treated feed oils. There will be 3 reactor trains with integrated fractionation.

The Ecofining™ Unit equipment will be designed by UOP to bracket a range of feedstocks and operating modes. The following feedstock and operating options will be incorporated into the Ecofining equipment design to provide flexability and capacity.

Design Feedstock Blend	Oil	Wt%
Soybean Oil	Veg Oil	30
Distillers Corn Oil	Veg Oil	15
Used Cooking Oil	Veg Oil	15
Beef Tallow	Animal Fat	20
Choice White Grease (Pork Oil)	Animal Fat	10
Yellow Grease	Animal Fat	10

- Max Diesel - 100% Beef Tallow
- 25 vol% Jet Fuel - 100% Camelina Vegetable Oil
- Max Diesel - design feedstock blend
- 25 vol% Jet Fuel - design feedstock blend

The Ecofiner Fractionation system will consist of the following:

- Jet Fractionator/Stripper for 2 trains
- Diesel Stripper/Dryer for 1 train

- Debutanizer common to all 3 trains.
- Make up Hydrogen specified as PSA quality hydrogen, 99.9% H2.
- Fired Heater
  - SCR technology with Low NOx burners will be installed on all Ecofiner heaters.
  - The charge and isom heater flue gas stacks will be combined into a single exhaust stack.
  - Stack testing ports – 2- 4" ports
  - Heater fuel gas piping will be upgraded to stainless steel.
  - A coalescer filter will be installed inline in the new fuel gas piping.
  - Piping downstream of the coalescer/filter will be steam traced and insulated.
  - A BMS, instruments, and controls will be required.
- All rotating equipment will be motor driven
- No LPG will be recovered as liquid product. All the LPG produced will be recovered as a gas product and routed to the Hydrogen Plant.
- The offgas from the Ecofining™ units routed to the Hydrogen plant as feed.
- The DMDS tank and injection system will be designed for 15 days inventory at 100% of sulfur demand.
- Fractionation will consist of a common jet fuel fraction section designed to recovery 25 vol% jet fuel from two Ecofiner trains and a diesel stripper on a single Ecofiner train.
- A single recycle gas purge PSA for all three Ecofiner trains will be installed.

6. Auxiliary Support Units

The NEXT Renewable Diesel facility is a grassroots facility and consequently requires all process support and utility infrastructure systems. Outlined below are the significant systems required which are further described in the sections below:

Process Support

- Hydrogen Supply
- Offgas Sulfur Management / H_2S Treaters and Incineration
- Acid Gas Regeneration Units (AGR)
- Sour Water Stripper
- Feed, Product, and Intermediate Storage
- Logistic Facilities Dock/Rail/Truck
- Flare System
- Pipelines

Utilities

- Steam and Condensate
- Raw water and boiler feed water treating facilities
- Electrical supply and distribution

- Natural gas
- Fuel gas
- Cooling water
- Fire Water
- Potable Water
- Sanitary Sewer
- Plant and Instrument Air
- Wastewater Treatment
- Storm Water Treatment
- Nitrogen
- DCS/SIS Systems
- Communications

Infrastructure

- Buildings

6.0 AUXILARY SUPPORT DESIGN CRITERIA:

6.1 Hydrogen Supply

The Hydrogen Production and Compression facility to support the Ecofiner™ hydrogen requirements are planned to be a combination of stick-built and module fabrication. The facility will include a hydrogen production unit with a design capacity of 110 MMSCFD. The SMR design will combine standard SMR technology with an HTER reformer to provide the required hydrogen capacity.

Additional considerations for the hydrogen plant are defined below:

- The permitted SMR furnace duty is limited to 700 MMBTU/hr HHV.
- Hydrogen plant design should incorporate processing all the Ecofiner offgas as supplement hydrogen plant feed.
- Hydrogen plant design should incorporate processing up to 3500 BPD of renewable naphtha as supplemental hydrogen plant feed.
- The Hydrogen purity to be no less than 99.9% and hydrogen recovery 85% minimum.
- Plant Hydrogen header pressure 350 psig.
- Natural gas supply pressure 400 psig.
- Natural gas compressor is anticipated to be required. The design of the compressor is for 100% of the required feed with a 100% spare,
- On-line stream factor for the facility is to be a minimum of 98%.
- All drivers shall be electric motors.
- The Hydrogen Plant shall be designed with a minimum catalyst life of four (4) years for feed gas pre-reforming, steam reforming, and temperature shift converter systems.

- Any Sulfur guard system shall be designed with two beds in series and such that either bed can be switched to the lead bed or by-passed. Each bed shall be designed for an on-stream operation of 6 (six) months.
- The burners in the steam reforming furnace shall be based on Low NOx type.
- SMR furnace is utilize SCR for NOx.
- CEMS stack gas analyzers will be installed.
- SMR heater stack emissions requirements are:
  - NOx 5 ppm
  - CO 10 ppm
  - NH_3 Slip 10 ppmv @ 3% O2
- CO_2 recovery is not required.

6.2 AGR Amine Regeneration System

The AGR Amine Systems is the regeneration section for the following Ecofiner™ amine systems:

- High pressure lean offgas
- Recycle Hydrogen purge gas
- DeC4 offgas

The amine system will include

- Amine absorbers (2x50%)
- Amine Regeneration tower and required exchanges, pumps and vessels
- Amine flash drum with acid gas stripper
- Amine storage tank and amine sump
- Amine cartridge filter and carbon filter
- Lean Amine storage tank

The acid gas produced off the regeneration system will be routed the offgas sulfur incineration / treating system.

6.3 Sour Water Stripper

A sour water stripper will be required to process sour water from the Ecofiner™ units. The Sour Water Stripper will be designed for up to 225 GPM sour water. The SWS stripper will be a single tower design. H_2S/NH_3 Acid Gas from the SWS Stripper will be routed to the H2S scavenger system then to the Incinerator.

The stripped water specification is NH_3 <50 ppmw and H_2S <10 ppmw. Stripped sour water will be routed to wastewater treatment.

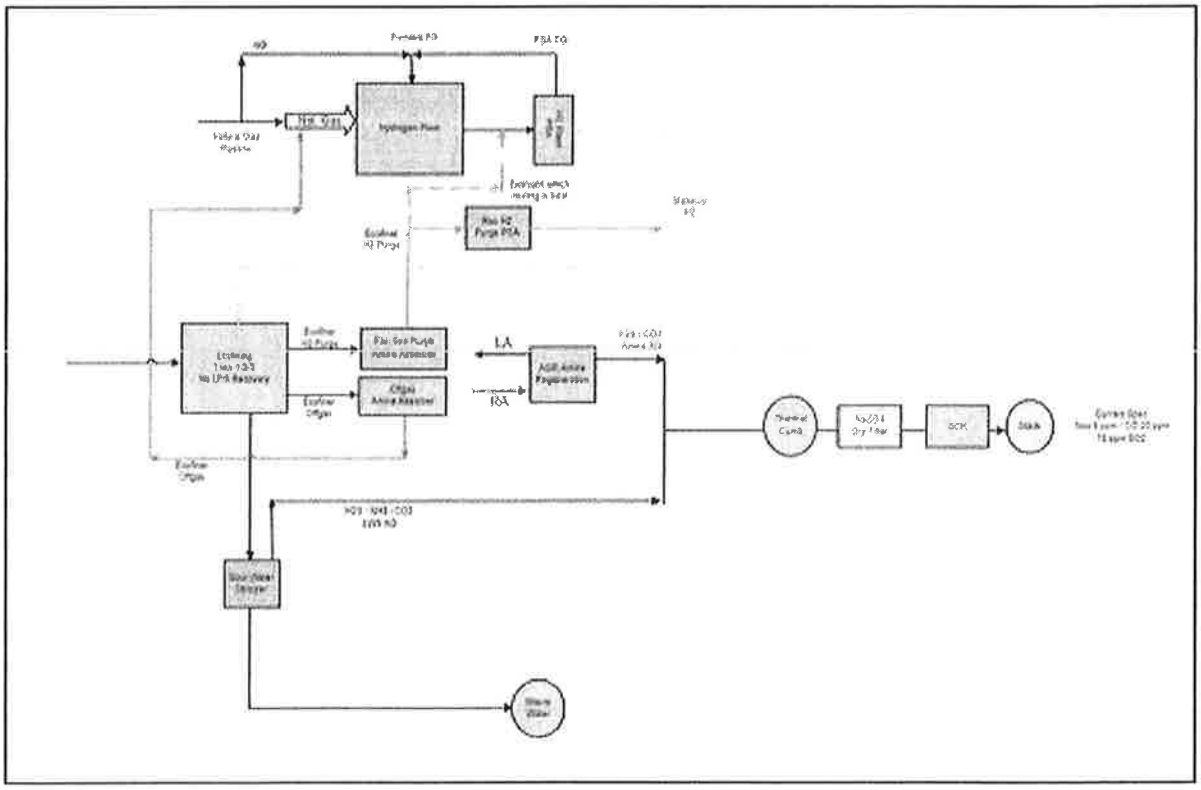
The Sour Water Stripper(s) will consist of the following:

- SWS towers and required exchangers, pumps and vessels
- Pumparound cooling with no overhead system
- Reboilers with condensate recovery
- NH_3 offgas water wash system
- Sour water feed multiphase flash drum
- Sour water storage tank designed for 3 days sour water capacity.
- Sour water tank will require an IFR with dual seals and floating suction system.

6.4 Offgas Sulfur Incineration / Treating System

A sour water offgas H_2S capture system needs to be installed to remove H_2S from the sour water stripper and amine acid gas streams.

A UOP nViro Eco acid gas Incineration system will be installed on the SWS and Amine Acid Gas systems. The nViro Eco system will recover the sulfur as Na2SO4 which potentially can be sold as a product versus disposed. The nViro Eco system will include incineration, Na2SO4 removal and a flue gas stack with SCR technology.



6.5 Feed, Product, and Intermediate Tankage

The Renewable Diesel facility tankage that is required in hydrocarbon service is listed below.

Service	# Tanks	Tank Volume (BBLS)	Type of Roof	Seals	Heated Y/N	Approx Dimen ft
Raw Oil Feedstock	6	125,000	Fixed	N/A	Y	150x48
Treated Oil	3	50,000	Fixed	N/A	Y	88x48
Renewable Diesel	3	225,000	Fixed	N/A	N	184x48
Renewable Jet/Diesel	1	225,000	IFR	Dual	N	184x48
Naphtha/Jet	3	50,000	IFR	Dual	N	88x48
HC Slop	1	15,000	IFR	Dual	Y	52x40
OWS Slop	1	10,000	IFR	Dual	Y	43x40
PT Prod Day TK	2	25,000	Fixed	N/A	Y	67X40
Sour Water Tank	1	10,000	IFR	Dual	N	43X48

All tanks that require heating will be a pumped system through an external heat exchange. MP or LP steam will be the heating medium. The pump systems will return tangentially into the tank to ensure good mixing.

Product tanks used in intermittent service will be installed with one pump with a warehouse spare. Raw Oil, Treated Oil, and Slop tanks in continuous service will have spare pump installed.

6.6 Logistic Loading and Unloading Systems

Ship Dock Services	Unload/ Load	Production[1] BPD	Avg[2] MMBbl/ Mth	VCU Required
Raw Oil – Ship/Barge Train	U	52,000[1]	1.61	No
Diesel* Ship Train Truck	L L L	50,000[1]	1.55	No

Jet* - Ship	L	6,425[1]	0.20	No

Production[1]- Peak production for either Max Diesel or Jet Modes.
Avg[2] – based on 31 day/month
*** Future**

Raw Oil Unloading

- Ship / Barge Unloading – **1-2 ships per month / 10-11 barges per month**
  - Access to unloading facilities at a dock with two berths able to handle the necessary capacity is required.
  - The raw vegetable oils, used cooking oils, and animal fats/greases will be discharged from a dock facility at both berth 1 and 2.
  - One berth will need to have the capacity to discharge larger ships 150,000-200,000 bbls.
  - The second berth will need to have the capacity to discharge barge and smaller ships 50,000-150,000 bbls
  - The ship/barge unloading rate will be designed to offload a ship in less than 24 hours.
  - One berth at the loading facility will require a single 10,000 BPH unloading booster pump to achieve unloading capacity. Raw oil has a high pour point and will require capability to heat ship/barge cargoes prior to discharge. This capability will be provided by the ship and is not a design requirement for the dock facilities.
  - All raw oil unloading facilities will require insulation and heat tracing.
  - No vapor combustion is required.

- Rail Unloading – **930 railcars per month**
  - Raw Oil rail unloading will be 2 - 15 bottom unloading spots with individual unloading arms
  - All loading arms will be capable of unloading at the same time
  - Two discharge lines will be provided, one dedicated to vegetable oil and the other to animal fats
  - Two pumps with a common spare will be provided
  - All rail cars should be unloaded in less than 5 hours
  - No vapor combustion is required

Diesel Loading

- Ship Loading – **4-6 ships per month**
  - Diesel ship loading rate will be designed to load a 320,000 bbl. ship in less than 24 hours.

- One berth at the loading facility will require a single 20,000 BPH loading pump to achieve loading capacity.
- Vapor combustion is not required.

- Rail Loading – **240 rail cars per month**
  - Diesel rail loading will be a 10 spot rack with individual loading arms
  - All rail loading spot will be capable of filling rail cars at the same time
  - All rail cars should be loaded in less than 12 hours
  - Vapor combustion is required.
  - Combine Rail and Truck loading VCU.

- Truck Loading – **60 trucks per month**
  - A single (1) spot truck loading facility should be located adjacent to the diesel rail loading facilities.
  - The rail and truck loading pumps (500 gpm) and lines should be common
  - The truck should be loaded in less than 1 hour
  - Vapor combustion is required.

Jet Loading - Future

- Jet product will only be transported by ship.
- Ship Loading – **2-5 ships per month (Depends on operating mode)**
  - Jet assumed to loaded on diesel ships in segregated compartment.
  - Ship loading rate will be designed to load an 80,000 bbl. ship volume in less than 24 hours.
  - One berth at the loading facility will require a Jet loading 7,500 BPH single pump to achieve loading capacity
  - Separate Jet loading line from tankage to the dock will be required.

Bleaching Earth Unloading

- Bleaching earth and filter aid will be imported by rail for use in the Pretreatment Unit
- Rail Unloading – **80 rail cars per month**
  - A 10 spot rack with pneumatic unloading system for bleaching earth and filter aid.
  - Rail cars will be used as temporary bulk storage and unloaded as required.
  - Rail cars will be pneumatically unloaded to unit silo's.
  - Design pneumatic system to unload 1 rail car in 2-3 hours.

Rail Car Storage Siding

- Rail siding will be installed to support the storage of railcars on-site.

- The rail siding linear feet is ~22,500 ft. and will consist of 5 lines.
- Two (2) rail siding lines will be dedicated to feedstock and will extend through the plant down the plant entrance access. Each line will be ~6,500 LF.

6.8 Flare System

- A flare system will be required.
- An elevated flare is preferred. Vendor to advise type of elevated flare, derrick vs guy wire.
- Flare height will be determined based on radiant heat impacts at grade. Target 500-1500 BTU/hr/ft2.
- Design will incorporate a high pressure (HP) and low pressure (LP) header design.
- A common flare knock out drum and pumps are required.

6.10 Pipelines

- An 8" Natural Gas pipeline will be designed to run down the main plant entrance road where it will need to have access to tie into an existing natural gas supply. A custody meter will be required.

- Wastewater and Stormwater will be required to be routed to an existing permitted outfall via pipeline and lift station. If there is no currently permitted outfall at the permitted facility site, NEXT will be required to obtain a NPDES permit for wastewater discharge and build a discharge outfall facility.

- Raw Water will be required via an existing water intake system.

- Pipelines to and from the plant/dock are:

    - Raw Oil – 18" electric traced and insulated
    - Diesel – 20"
    - Jet Fuel - 12"

- Routing of the Raw Oil, Diesel, and Jet Fuel lines is shown on the overall location plot plan.

- Raw Oil line will require backup electric supply to support electric tracing in case of loss of power.

7.0 UTILITIES

All utility balances and process support capacities are assumed to be preliminary and will require verification as overall plant balances are completed. Following are design criteria for the NEXT Renewable Diesel Project.

7.1 Steam/Condensate/Boiler Feed Water Systems

- The steam, condensate and BFW systems consist of:
  - Two (2) 50,000 PPH Package 600 psi steam boilers, to support Hydrogen plant startup requirements
  - An SCR is required on the Boiler.
  - Deaerator – capacity 550-600 KPPH BFW
  - 3 boiler feed water pumps, 3 – 75%, with at least one turbine drive
  - Treated Water tank
  - 2 deaerator feed pumps, 2 – 100%
  - LP Condensate flash drum
  - Desuperheater

7.2 Raw Water/BFW Treatment Systems

- A water intake system will be required. The raw water will flow through an ultrafiltration system and prior to the Raw Water storage tank. The raw water storage tank supplies water for utility water, potable water, fire water, cooling water and boiler feed water systems. The raw water makeup is estimated to be ~1850 gpm.

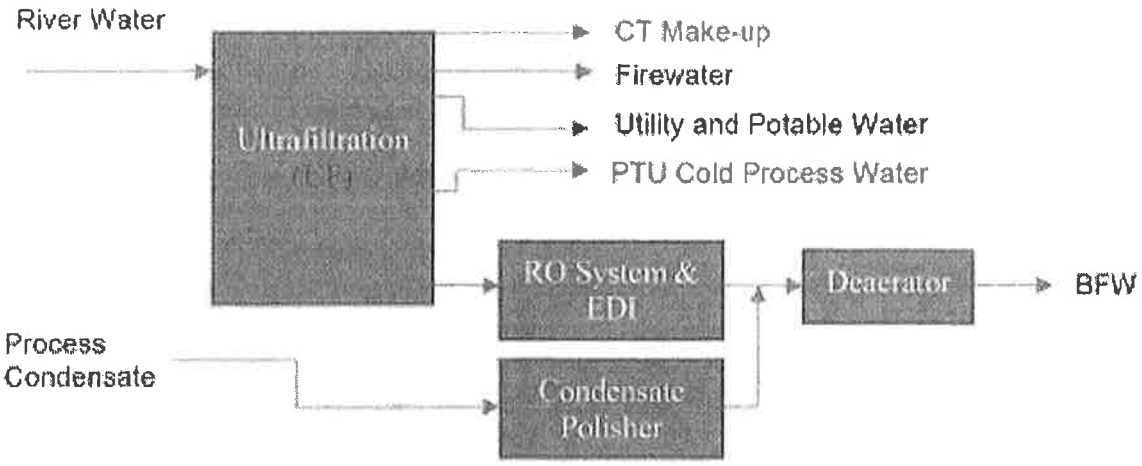
- The raw water treatment will require the following:

  - Ultra filtration systems
  - Chemical injection system, chlorination/sulfite etc.

- The Raw Water and Fire Water storage volume will be combined into one common tank – 1.2 MMgal. The tank will be a cone roof design. The basis for the tank volume is:

  - Raw Water – 1 day supply
  - Fire Water – 4 hour fire water supply at 5,000 gpm

- The boiler feed water (BFW) system will treat filtered raw water to produce 600# steam. The water treatment design is ~600 gpm input to produce ~550,000 PPH BFW. The plant condensate be processed through a condensate polisher system before being deaerated to produce BFW.



7.3 Electrical Supply

- Main power feed will need to be supplied via the specific Power Authority system that supplies the permitted location of the facility. The preliminary base load required is ~40-50 MW.
- Main sub will have 2-100% 115 to 13.8 KVA transformers.
- Internal unit subs will have dual feed and double ended design. The subs will require 4160 and 480 V step down transformers.
- Two 1500 HP emergency backup diesel generators will be required.

7.4 Natural Gas

- Natural gas supply pressure required to the facility is ~400 psig.
- Gas will need to be supplied already treated to an H2S concentration less than 0.25 grain/100 ft^3 and total sulfur less than 0.75 grain/100 ft^3.
- Natural gas will be used for heater & boiler pilots, flare pilots, building heating, Incinerator, other start-up services such as startup gas.
- A custody metering skid with analyzers will be required.
- The system will consist of a natural gas knock drum / coalescer and OSBL distribution headers.

7.5 Fuel Gas

- Gas produced at the Ecofining™ Units will be amine treated to an H2S concentration of <20 ppmv and routed normally to hydrogen plant as feed but could also be routed to the fuel system as backup.
- Natural gas / fuel gas will be used as the primary fuel source for all applications unless natural gas is specifically required.

- The fuel gas system will consist of a fuel gas knock out drum / coalescer and OSBL distribution headers.

7.6 Cooling Water

- The cooling tower circulation design is ~20,000 gpm with a duty of ~206 MMBTU/hr. The tower will be induced draft, counter flow equipped with drift eliminators.
- 3x50% recirculation pumps are required; 2 operating / one spare. A letdown steam turbine should be considered for one (1) cooling tower recirculation pump driver.
- Tower drift will be controlled with enhanced drift eliminators with an estimated efficiency of 0.00050%. Target PM_{10} limit of <0.2 ton/year.
- An in-line hydrocarbon monitor in the return cooling water line to the cooling tower is required to detect hydrocarbon leaks.
- Chemical injections systems will be required.

7.7 Fire Water

- Three fire water pumps will be supplied with autostart on low fire water header pressure. Two of the pumps will be diesel driven. A jockey pump is required ~100 gpm.
- Preliminary fire water demand is 5,000 gpm.
- Firefighting equipment, deluge systems and firewater tank size will be designed to comply with NFPA requirements.
- A foam firefighting system will be required.
- Firewater and raw water will be stored in the same tank with different suction locations to ensure firewater supply.

7.8 Potable Water/Sanitary Sewer

- A potable water treatment system will be provided.
- The potable water system will be designed for ~150 people at 5 gph per person. The potable water tank will be designed for one (1) day storage.
- The sanitary grey and black water sewer systems will be segregated. Black water will be collected in a tank with vacuum truck disposal. Grey water disposal is to be routed to the wastewater treatment for final disposal.

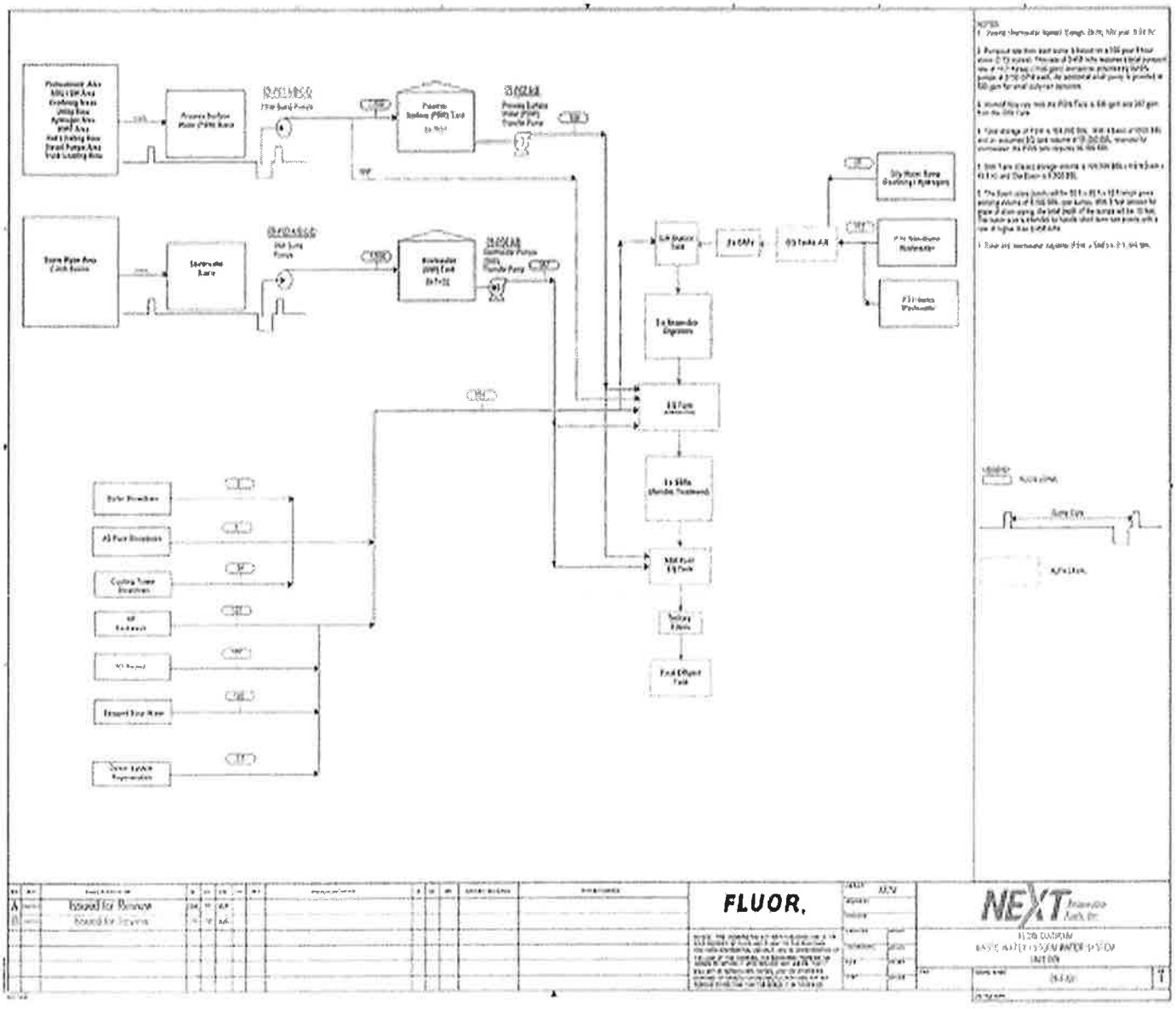
7.9 Plant / Instrument Air

- A combined plant & instrument air compressor and drier system will be provided to reduce the dew point to -40°F. Three (3) 50% instrument/plant air systems will be installed. Both instrument and plant air will be dried.
- A plant air receiver will be installed designed for 5 min surge.

- A design margin of 115% will be built into all equipment within the Plant/Instrument Air system.

7.10 Waste Water Treatment / Water Drainage Systems

All waste water systems must meet 40 CFR 60 Subpart QQQ, Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems requirements. The inputs to the water treatment system is oily sewer, pretreat water, stripped sour water, cooling tower blowdown, boiler blowdown, storm water and RO reject water.



The NEXT wastewater / stormwater effluent will be comingled and require discharge to an outfall. The effluent qualities will be required to comply with any existing NPDES permit for wastewater discharge at the permitted facility site. To ensure compliance with any NPDES permit, the NEXT WWT effluent design specifications will more stringent than required by current NPDES permits. If necessary NEXT will obtain an individual NPDES permit.

Wastewater Treatment

The Renewable Diesel facility provides some unique waste treatment challenges. As the figure above highlights, the WWT flow scheme has been designed to segregate and optimize the treating of the various stream contaminants.

The WWT system will consist of the following:

- Oil/Water Separator DAF
- Equalization Tanks
- Anerobic Digestors
- Aerobic Digestors
- Post Equalization Tank
- Sludge Decanter and Dewatering Centrifuge
- Tertiary Filtration

Storm Water System

The storm water system will be designed to collect and process water for a 24-hour 100 year rain event. The design will be based on the county ordinances, utilizing the rainfall depth, of the permitted facility location.

The facility storm water's will be segregated and provided with several different types of drainage systems. These include:

- Systems for disposal of uncontaminated storm water from outside the process unit paved areas.
- Systems for collection and transfer for treatment of storm water from process and utility areas.
- An oily water system for drains from the Ecofiner equipment and vessels.

7.11 Nitrogen

Nitrogen is required in the Pretreat adsorption system. A leased liquid nitrogen tank/vaporization or VSA system will be used for normal

operations. The system will be designed to supply gaseous nitrogen. Nitrogen for reactor inerting will be supplied by a pumper truck and rental trailer with an evaporation system.

7.12 DCS/SIS/UPS

A general control systems philosophy will be required. The scope of the control system philosophy should include, minimum, the following:

- Basic process control system
- Packaged equipment control system
- Safety instrument system
- Fire and gas system
- UPS and emergency power system
- Information management / Report tool system
- Redundancy and security philosophy
- Hardware and software recommendations
- Control system implementation plan.

7.13 Communications

Includes requirements for:

- Security System
- Site Radio System
- Phone, data network, and public address system
- Fiber optic communication line to facility.
- Plant data historian system

8.0 INFRASTRUCTURE DESIGN CRITERIA

8.1 Buildings

- Primary facility buildings include the following
  - Administration – 20,000 ft^2 (2 story)
  - Guard Shack – 250 ft^2
  - Maintenance Facility – 13,500 ft^2
  - Warehouse – 20,000 ft^2
  - Fire Station – 5,000 ft^2
  - DCS Control Room – 8,000 ft^2
  - Local Operator Shelters – 4 x 400ft^2
  - Change Room – 5,000 ft^2
  - Laboratory – 7,500 ft^2
  - Raw Water / RO Shelter – TBD