MHA CLEAN FUELS PROPOSED REFINERY
At
25300 366 STREET S.W.
MAKOTI, N.D. 58756

SUPPLEMENTAL INFORMATION REPORT

Denver April 20, 2010

TRIAD

Prepared by Triad Project Corporation
471 East 1000 South Suite D
Pleasant Grove, Utah 84062

MHA Nation Clean Fuels Refinery
Release of the Record of Decision (ROD)

Supplemental Information Report (SIR)
Presented to EPA on April 20th, 2010
In Denver
Revision 1

The MHA Nation conceived a plan for economic independence in 2001, and began the work to realize it. The Tribe is a Sovereign Nation with large people resources significantly underutilized. There is a majority will to use a nominal 480 acre piece of their land ideally situated to produce clean energy fuels from crude feedstock at a time when fuel prices are escalating. The economy is depressed, but the Nation's energy is devoted to its recovery. In a healthy economy, the demand for clean fuels exceeds the supply available. The ROD release from EPA is on the critical path to start work in the field this spring, and realize an independent economic engine with a completed refinery within 2 more years.

The key issue is a proposed change in the feedstock to be used as a result of the recent development of the local Bakken deposit holding 4.3 billion barrels of recoverable oil. Rather than exporting this valuable natural resource for others to benefit from, the MHA plan is to fully upgrade the resource and export value added clean fuels products. Everyone in North Dakota thereby benefiting from an improved standard of living. The clean fuels produced will benefit the environment by reducing pollution from the refinery, as well as cleaner burning fuels.

This report (SIR) deals with the effect of changing the feedstock from foreign to local feedstock now available in rich abundance. Refiners are always looking for better sources of feed, so changing feedstock is not an issue. The issue is to remain within the limits of the emissions allowed by the FEIS.

Accordingly, the assays for Synthetic Crude and local Bakken are attached. The following comparisons are highlited:

Property	Bakken	Synthetic
API Gravity, °API	38.4	33.7
Asphaltenes, wt%	0.06	<0.1
BS&W, vol%	<0.1	<0.1
Carbon Residue (MCRT), wt%	0.75	0.02
Pour Point, °F	-40	
Salt Content, pounds/1000 bbls.	4	<1
Sulfur, wt%	0.082	0.19

Both crudes are light, sweet (low sulfur), pipeline quality, and can be processed by the existing refinery configuration. The Bakken crude has a bottoms component with a higher MCR content than the Hydrocracker catalyst can tolerate. To compensate for this we will need to add a Vacuum Unit to separate the Gas oil (feed for the Hydrocracker) from the Vacuum Tower Bottoms (low value product).
The environmental effects of adding the Vacuum Unit are:

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- Add a Vacuum Unit Heater that would increase the flue gas emissions by less than 5% in weight. Reference to Table 1 in the Air Quality Technical Report shows that none of the Annual Project Emission Rates will exceed the allowable.

The Fuel Gas to the Process heaters is shown in Table 15 of the Air Quality Technical Report with a LHV of 915 Btu/scf, and a maximum Total Sulfur content of 10 ppmv. So, the additional heater in the Vacuum Unit will produce less than 5% more of the same kind of Flue Gas shown in Table 1.

Table 16 shows the Criteria Pollutant Emissions from the heaters. The addition of the Vacuum furnace will change the totals as below; all within the allowable limits.

Table 16 revised Maximum Combustion Source Criteria Pollutant Emissions

	Concentration of Pollutant (tons/year)				
Source	**NOx**	**CO**	**SO_2**	**VOC**	**$PM_{10}/PM_{2.5}$**
Previous Total	35.68	78.34	51.18	12.21	8.28
Vacuum Heater	1.19	1.81	0.85	0.26	0.36
Revised Total	**36.87**	**80.15**	**52.03**	**12.47**	**8.64**

The salt content of the Bakken Crude is significantly higher than Synthetic Crude leading to a need to desalt the crude to avoid accelerated corrosion in the process units. To avoid this, we would add a desalter that would yield about 700 bpsd of briney water for disposal to an underground disposal well. There are presently over eighty such disposal wells in North Dakota, and we would propose to use one, or create our own.

The General Information provided by the Tribe on EPA form 3510-1 (8-90) is out of date, and a revision is provided herewith by MHA.

The Waste Water Treatment diagram and description dated May 2004 was revised in close cooperation with EPA engineers in February 2006, and is attached to this SIR.

On page 3 of the EPA letter (March 24, 2010) you have asked specific questions with the following answers.

1)There would be no significant change to the footprint of the refinery to accommodate the new Vacuum Heater. As detailed engineering proceeds, there may be some changes to minimize the cost of interconnecting piping.

2) Add the Vacuum Furnace, and the Desalter vessel.

3) None. We may wish to run more crude and less field butanes, but all within the proposed emission limits.

4) Comparisons of Bakken and Synthetic crudes are shown above.

5) Noted above

6) Horace Pipe will address this point. Generally, we intend to use pipeline gathering systems that will be developed in the next 2 years, and reduce truck traffic accordingly.
7) Horace Pipe will address this point.

8) The effect of changing feedstock will not have any other effects on the environment.

We cannot deal with EPA's second point at the top of page 2 of the letter. We feel that the study already done by Greystone and EPA is comprehensive. If EPA would clarify the "uncertainties" we can discuss the matter at the meeting next Tuesday.

The typographical errors in Appendix "C" discussed between EPA and Gordon Frisbie, formerly of Greystone, can be corrected as you have suggested, and this is the Tribe's intention.

The problem in the US is the deficiency of refining capacity. Although we need more oil, we can do nothing with it unless we have more refining capacity. The MHA Clean Fuels refinery is a small but significant contribution to the fulfillment of the country's basic energy need, to convert oil to clean fuels.

We submit this report in compliance with your request to cover the change in feedstock proposed as a result of changing circumstances. This is a common occurrence throughout the industry. We intend to operate a clean refinery with the latest proven technology, and produce clean fuels, all of which will substantially reduce emissions from the moment the refinery is in operation.

Core Lab
RESERVOIR OPTIMIZATION

CORE LABORATORIES

8210 Mosley Rd.
Houston, TX 77075
713-943-9776

Report Number: 57801-100535
Date Reported: 4/14/10
Date Received: 2/24/10
Sample No.: 100535-001
Date Sampled:
Sample ID: Bakken Crude
Crude

MHA Nation
Horace Pipe
253090 - 366th Street
Makoti ND 58756

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
API Gravity	38.4	Deg @ 60 F	ASTM D-287/5002	3/4/10	MN
Specific Gravity	0.8326	60/60 Deg. F	ASTM D-1298/5002		
Asphaltene	0.06	WT %	ASTM D-6560	3/2/10	TH
Carbon Residue-Micro	0.75	WT %	ASTM D-4530	3/4/10	*01
Salt Content	4.0	lbs/1000bbls	ASTM D-3230	4/7/10	TH

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Date Reported: 4/14/10
Date Received: 2/24/10
Sample No.: 100535-001
Date Sampled:
Sample ID: Bakken Crude
Crude

Analytical Report

Test	Result	Units	Method	Date	Analyst
Simulated Distillation					
IBP	32	Deg F	ASTM D-5307	3/1/10	JT
5 % off	172	Deg F			
10 % off	211	Deg F			
15 % off	256	Deg F			
20 % off	292	Deg F			
25 % off	331	Deg F			
30 % off	370	Deg F			
35 % off	410	Deg F			
40 % off	449	Deg F			
45 % off	489	Deg F			
50 % off	530	Deg F			
55 % off	575	Deg F			
60 % off	619	Deg F			
65 % off	668	Deg F			
70 % off	719	Deg F			
75 % off	774	Deg F			
80 % off	834	Deg F			
85 % off	901	Deg F			
90 % off	984	Deg F			
95 % off	---	Deg F			
% Recovered	90.5	@ 1000 Deg.			
% Residue	9.5	@ 1000 Deg.			
Sulfur, Total by X-Ray Fluoresc.	0.082	WT %	ASTM D-4294	3/1/10	TH

Approved By:______________________________

Core Lab
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PETROLEUM SERVICES

MHA Nation
Bakken Crude
Job: 100535

CORE LABORATORIES
8210 Mosley Rd.
Houston, TX 77075
713-943-9776

MHA Nation
Horace Pipe
253090 - 366th Street
Makoti ND 58756

Report Number:	57801-100535
Date Reported:	3/29/10
Date Received:	2/24/10
Sample No.:	100535-001
Date Sampled:	
Sample ID:	Bakken Crude Crude

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
API Gravity	38.4	Deg @ 60 F	ASTM D-287/5002	3/4/10	MN
Specific Gravity	0.8326	60/60 Deg. F	ASTM D-1298/5002		
Asphaltene	0.06	WT %	ASTM D-6560	3/2/10	TH
Carbon Residue-Micro	0.75	WT %	ASTM D-4530	3/4/10	*01
Simulated Distillation					
IBP	32	Deg F	ASTM D-5307	3/1/10	JT
5 % off	172	Deg F			
10 % off	211	Deg F			
15 % off	256	Deg F			
20 % off	292	Deg F			
25 % off	331	Deg F			
30 % off	370	Deg F			
35 % off	410	Deg F			
40 % off	449	Deg F			
45 % off	489	Deg F			
50 % off	530	Deg F			
55 % off	575	Deg F			
60 % off	619	Deg F			
65 % off	668	Deg F			
70 % off	719	Deg F			
75 % off	774	Deg F			
80 % off	834	Deg F			
85 % off	901	Deg F			
90 % off	984	Deg F			
95 % off	---	Deg F			
% Recovered	90.5	@ 1000 Deg.			
% Residue	9.5	@ 1000 Deg.			

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Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-001
Date Sampled:
Sample ID: Bakken Crude
Crude

Analytical Report

Test	Result	Units	Method	Date	Analyst
Sulfur, Total by X-Ray Fluoresc.	0.082	WT %	ASTM D-4294	3/1/10	TH

Approved By: ____________
Dan B. Carlson

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713-943-9776

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Horace Pipe
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Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-002
Date Sampled:
Sample ID: Bakken Crude
IBP-82 F

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	1.34	%	ASTM D-2892	3/16/10	DBC
Weight Percent	0.97	%	ASTM D-2892		
API Gravity	104.1	Deg @ 60 F	By Cap GC	3/12/10	JAT
Specific Gravity	0.6005	60/60 Deg. F	By Cap GC		

Approved By: [signature]

Dan B. Carlson

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MHA Nation
Horace Pipe
253090 - 366th Street
Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-003
Date Sampled:
Sample ID: Bakken Crude
82-200 F

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	8.03	%	ASTM D-2892	3/16/10	DBC
Weight Percent	6.68	%	ASTM D-2892		
API Gravity	72.7	Deg @ 60 F	ASTM D-287/5002		
Specific Gravity	0.6928	60/60 Deg. F	ASTM D-1298/5002		
Sulfur, Total by Microcoulometry	<1	ppm wt	ASTM D-3120	3/23/10	CB

Approved By: [signature]

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713-943-9776

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-004
Date Sampled:
Sample ID: Bakken Crude
200-310 F

MHA Nation
Horace Pipe
253090 - 366th Street
Makoti ND 58756

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	15.99	%	ASTM D-2892	3/16/10	DBC
Weight Percent	14.39	%	ASTM D-2892		
API Gravity	57.3	Deg @ 60 F	ASTM D-287/5002		
Specific Gravity	0.7495	60/60 Deg. F	ASTM D-1298/5002		
Sulfur, Total by Microcoulometry	2	ppm wt	ASTM D-3120	3/24/10	CB

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Houston, TX 77075
713-943-9776

MHA Nation
Horace Pipe
253090 - 366th Street
Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-005
Date Sampled:
Sample ID: Bakken Crude
310-390 F

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	10.99	%	ASTM D-2892	3/16/10	DBC
Weight Percent	10.41	%	ASTM D-2892		
API Gravity	48.1	Deg @ 60 F	ASTM D-287		
Specific Gravity	0.7880	60/60 Deg. F	ASTM D-1298		
Sulfur, Total by Microcoulometry	6	ppm wt	ASTM D-3120	3/24/10	CB

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713-943-9776

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Horace Pipe
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Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-006
Date Sampled:
Sample ID: Bakken Crude
390-505 F

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	14.53	%	ASTM D-2892	3/16/10	DBC
Weight Percent	14.36	%	ASTM D-2892		
API Gravity	40.4	Deg @ 60 F	ASTM D-287		
Specific Gravity	0.8232	60/60 Deg. F	ASTM D-1298		
Sulfur, Total by X-Ray Fluoresc.	0.010	WT %	ASTM D-4294	3/22/10	TH

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Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-007
Date Sampled:
Sample ID: Bakken Crude
505-600 F

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	10.18	%	ASTM D-2892	3/16/10	DBC
Weight Percent	10.38	%	ASTM D-2892		
API Gravity	35.1	Deg @ 60 F	ASTM D-287		
Specific Gravity	0.8493	60/60 Deg. F	ASTM D-1298		
Sulfur, Total by X-Ray Fluoresc.	0.017	WT %	ASTM D-4294	3/22/10	TH

Approved By: ____________
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Horace Pipe
253090 - 366th Street
Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-008
Date Sampled:
Sample ID: Bakken Crude
600-650 F

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	4.89	%	ASTM D-2892	3/16/10	DBC
Weight Percent	5.10	%	ASTM D-2892		
API Gravity	31.5	Deg @ 60 F	ASTM D-287/5002		
Specific Gravity	0.8679	60/60 Deg. F	ASTM D-1298/5002		
Carbon Residue-Micro	<0.01	WT %	ASTM D-4530	3/17/10	MKM
Sulfur, Total by X-Ray Fluoresc.	0.081	WT %	ASTM D-4294	3/22/10	TH

Approved By: ____________
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Houston, TX 77075
713-943-9776

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Horace Pipe
253090 - 366th Street
Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-009
Date Sampled:
Sample ID: Bakken Crude 650+

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	33.95	%	ASTM D-2892	3/16/10	DBC
Weight Percent	37.57	%	ASTM D-2892		
API Gravity	22.1	Deg @ 60 F	ASTM D-287/5002		
Specific Gravity	0.9213	60/60 Deg. F	ASTM D-1298/5002		
Carbon Residue-Micro	2.10	WT %	ASTM D-4530	3/17/10	MKM
Sulfur, Total by X-Ray Fluoresc.	0.190	WT %	ASTM D-4294	3/22/10	TH

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8210 Mosley Rd.
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713-943-9776

MHA Nation
Horace Pipe
253090 - 366th Street
Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-010
Date Sampled:
Sample ID: Bakken Crude
650-850 F

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	15.55	%	ASTM D-5236	3/16/10	DBC
Weight Percent	16.80	%	ASTM D-5236		
API Gravity	25.8	Deg @ 60 F	ASTM D-287		
Specific Gravity	0.8993	60/60 Deg. F	ASTM D-1298		
Carbon Residue-Micro	<0.01	WT %	ASTM D-4530	3/17/10	MKM
Metals By ICP					
ASTM D5708 / D5708M Proc B	*		ASTM D5708 Proc B	3/29/10	ANM
Iron	<0.010	mg/kg	ASTM D-5708	3/29/10	ANM
Nickel	<0.025	mg/kg	ASTM D-5708	3/29/10	ANM
Vanadium	<0.015	mg/kg	ASTM D-5708	3/29/10	ANM
Sulfur, Total by X-Ray Fluoresc.	0.137	WT %	ASTM D-4294	3/22/10	TH

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713-943-9776

MHA Nation
Horace Pipe
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Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-011
Date Sampled:
Sample ID: Bakken Crude
850-1000 F

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	8.64	%	ASTM D-5236	3/16/10	DBC
Weight Percent	9.55	%	ASTM D-5236		
API Gravity	22.2	Deg @ 60 F	ASTM D-287		
Specific Gravity	0.9204	60/60 Deg. F	ASTM D-1298		
Carbon Residue-Micro	0.33	WT %	ASTM D-4530	3/17/10	MKM
Metals By ICP					
ASTM D5708 / D5708M Proc B	*		ASTM D5708 Proc B	3/29/10	ANM
Iron	<0.010	mg/kg	ASTM D-5708	3/29/10	ANM
Nickel	<0.025	mg/kg	ASTM D-5708	3/29/10	ANM
Vanadium	<0.015	mg/kg	ASTM D-5708	3/29/10	ANM
Sulfur, Total by X-Ray Fluoresc.	0.181	WT %	ASTM D-4294	3/22/10	TH

Approved By: ____________
Dan B. Carlson

Core Lab
RESERVOIR OPTIMIZATION

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8210 Mosley Rd.
Houston, TX 77075
713-943-9776

MHA Nation
Horace Pipe
253090 - 366th Street
Makoti ND 58756

Report Number: 57801-100535
Date Reported: 3/29/10
Date Received: 2/24/10
Sample No.: 100535-012
Date Sampled:
Sample ID: Bakken Crude 1000+

Analytical Report

Test	Result	Units	Method	Date	Analyst
Distillation Data					
Liquid Volume	9.76	%	ASTM D-5236	3/16/10	DBC
Weight Percent	11.22	%	ASTM D-5236		
API Gravity	16.3	Deg @ 60 F	ASTM D-287		
Specific Gravity	0.9571	60/60 Deg. F	ASTM D-1298		
Asphaltene	0.20	WT %	ASTM D-6560	3/18/10	TH
Carbon Residue-Micro	7.02	WT %	ASTM D-4530	3/17/10	MKM
Sulfur, Total by X-Ray Fluoresc.	0.271	WT %	ASTM D-4294	3/22/10	TH

Approved By: ____________
Dan B. Carlson

Core Lab
PETROLEUM SERVICES

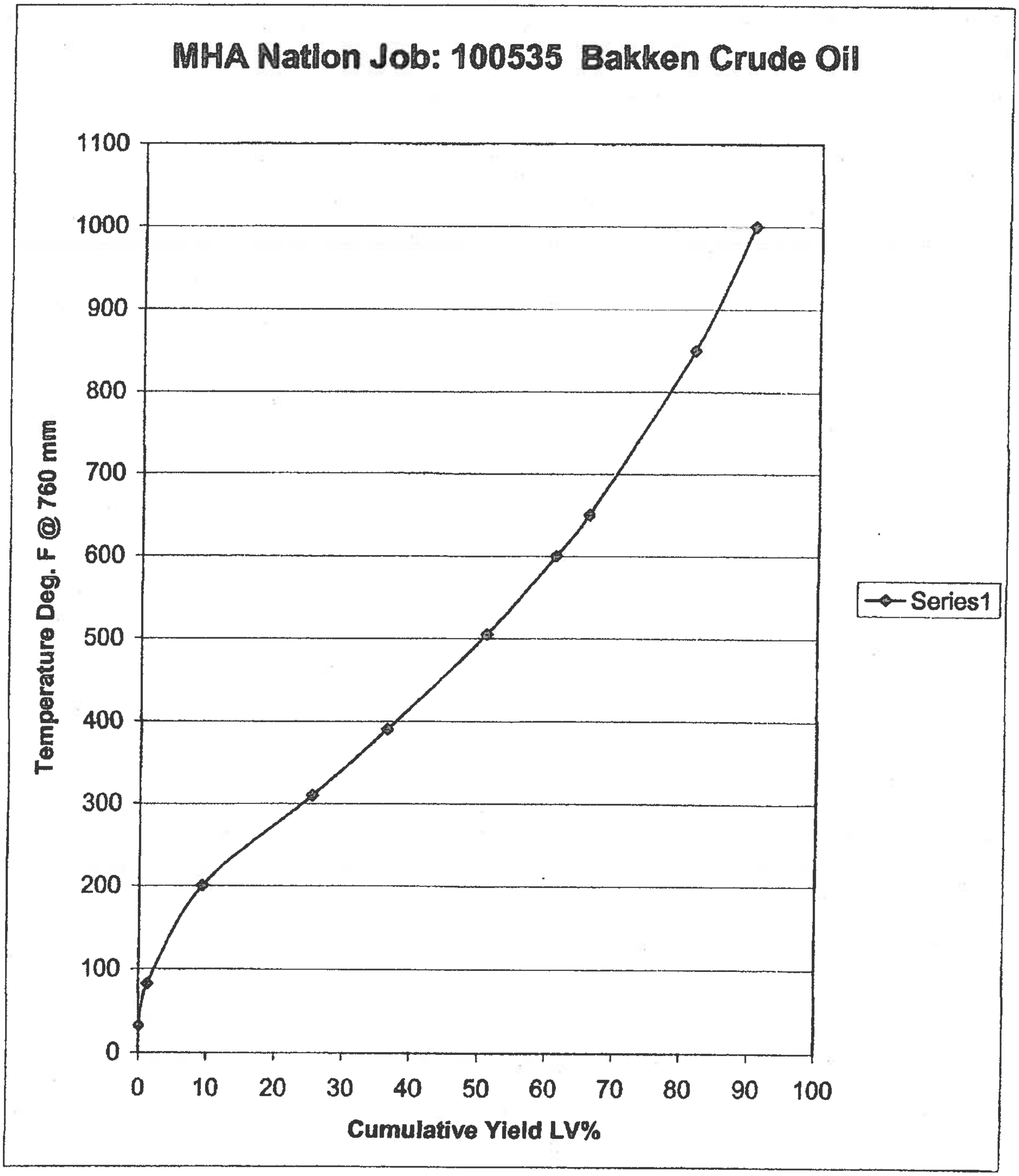
8210 Mosley Rd.
Houston, TX 77075
713-943-9776 Telephone
713-943-3846 Facsimile

CORE LABORATORIES

MHA Nation
Job: 100535
Well: Bakken Crude

FRACTIONAL DISTILLATION SUMMARY

Deg. F	LV%	Cum. LV%	WT%	Cum WT%	Deg. F
IBP- 82	1.34	1.34	0.97	0.97	IBP- 82
82-200	8.03	9.37	6.68	7.65	82-200
200-310	15.99	25.36	14.39	22.04	200-310
310-390	10.99	36.35	10.41	32.45	310-390
390-505	14.53	50.88	14.36	46.81	390-505
505-600	10.18	61.06	10.38	57.19	505-600
600-650	4.89	65.95	5.10	62.29	600-650
650-850	15.55	81.50	16.80	79.09	650-850
850-1000	8.64	90.14	9.55	88.64	850-1000
1000+	9.76	99.90	11.22	99.86	1000+
650+	33.95	99.90	37.57	99.86	650+


MHA Nation Job: 100535 Bakken Crude Oil
1100
1000
900
800
700
600
500
400
300
200
100
0
Temperature Deg. F @ 760 mm
0
10
20
30
40
50
60
70
80
90
100
Cumulative Yield LV%
Series1

SUNCOR BLEND ASSAY

Suncor Blend Name **OSA**

This assay is an estimate, developed from blend component samples at source. There may be variations in properties of the blend from time to time.

		23.2		37.0			39.8			
CUT	Whole Crude	Light Naphtha	Heavy Naphtha	Jet	Light Diesel	Heavy Diesel	Swing	Gas Oil	Heavy Gas Oil	Vacuum Gas Oil
TBP TEMPERATURE AT START OF CUT, F	-44	-44	200	340	470	550	650	700	800	900
TBP TEMPERATURE AT END OF CUT, F	1000	200	340	470	550	650	700	800	900	1000
		10.6	23.2	34.7	43.8	60.2	60.8	87.7	97.8	100.0
YIELD OF CUT (LV% OF CRUDE)	100	10.6	12.6	11.5	8.9	16.5	9.6	17.9	10.1	2.2
YIELD OF CUT (wt% OF CRUDE)	100	8.0	11.1	11.2	9.1	17.4	10.3	19.5	11.1	2.5
Cum LV		10.6	23.2	34.7	43.6	60.2	69.8	87.7	97.8	100.0
API GRAVITY 15°C	33.7	88.1	56.4	37.9	30.5	26.0	23.0	20.6	18.8	17.1
SPECIFIC GRAVITY 15/15°C	0.857	0.644	0.753	0.835	0.873	0.898	0.916	0.930	0.942	0.952
			0.703	0.747						
ACID NUMBER (TAN), mg KOH/g	0.05	0.01	0.02	0.03	0.04	0.05	0.07	0.07	0.09	0.16
ANILINE POINT, °F			127	119	128	130	132	145	172	201
ASH, wt%	0.2									
ASPHALTENES, wt%	< 0.1						0.07	0.08	0.12	0.36
BS&W, vol%	< 0.1									
BROMINE NUMBER	1.7	0.2	0.4	0.0	1.1	1.0	2.3	3.0	3.5	3.6
CARBON RESIDUE (MCRT), wt%	0.02						< 0.01	<0.01	0.02	0.75
CETANE INDEX				38.2	41.9	44.0	43.6			
CETANE NUMBER				35.9	38.9	39.4	39.4			
CHARACTERIZATION FACTOR (K-FACTOR)	11.6	12.5	11.9	11.4	11.3	11.4	11.4	11.5	11.6	11.9
CHLORIDES, Organic, ppm	< 1									
CHLORIDES, Total, ppm	< 1									
CLOUD POINT, F		< -76	< -76	< -76	-55	-27	-7			
Cu STRIP CORROSION	1a									
FLASH POINT (Chevron), °F				149	234	295	355			
FLASH POINT (API), °F			51	147	218	254	284	302	322	334
FREEZE POINT, °F		< -76	< -76	-65	-41					
HYDROGEN SULPHIDE (DISSOLVED), ppm	8									
INSOLUBLES, TOLUENE, wt%	< 0.005									
MERCAPTAN SULPHUR, ppm	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
METALS										
Arsenic, ppm	< 0.3						< 0.3	< 0.3	< 0.3	< 0.3
Iron, ppm	< 0.15						< 0.15	< 0.15	< 0.15	< 0.15
Nickel, ppm	< 0.15						< 0.15	< 0.15	< 0.15	< 0.15
Silicon, ppm	< 1									
Sodium, ppm	< 1.5						1.7	1.7	< 1.5	< 1.5
Vanadium, ppm	< 0.05						0.1	0.1	0.1	0.0
NAPHTHALENES, LV%				0.20	3.25	4.42	4.05	2.75	2.61	3.43
NITROGEN - TOTAL, ppm	426	< 0.3	< 0.3	11	47	183	421	779	1,167	1,476
NITROGEN - BASIC, ppm	109	< 0.3	< 0.3	9	44	92	135	178	258	336
OCTANE NUMBER CLEAR, MON		69.4	45.3							
OCTANE NUMBER CLEAR, RON		70.2	43.5							
PONA ANALYSIS, LV%										
Paraffins		89.1	50.7	19.9						
Olefins		0.0	0.1	0.2						
Naphthenes		10.8	34.4	48.5						
Aromatics		0.1	14.9	31.4						
POUR POINT, °F		< -76	< -76	< -76	-59	-30	-9	20	38	50
PNA SUMMARY, wt%										
Saturates					62.8	53.8	48.3	43.9	43.8	43.3
Aromatics					37.1	45.9	52.8	54.8	53.6	51.7
Polars					0.1	0.5	0.9	1.3	2.6	5.0
REID VAPOR PRESSURE, psia	2.8	16.9	0.9	0.1						
REFRACTIVE INDEX @ 67°C					1.481	1.479	1.495	1.502	1.505	1.505
SALT CONTENT, mg/L	< 3									
SMOKE POINT, mm			30	17						
SULPHUR, wt%	0.19	< 0.01	< 0.01	0.00	0.07	0.15	0.26	0.36	0.47	0.55
VISCOSITY, cSt @ 60 F (15.5 C)		0.4	0.9	2.4	5.1	14.6	54.2			
VISCOSITY, cSt @ 104 F (40 C)	4.5	0.4	0.7	1.5	2.8	6.3	15.9	48.3		
VISCOSITY, cSt @ 212 F (100 C)						1.9	3.0	5.3	10.7	27.3
VISCOSITY, cSt @ 275F (135C)									5.5	9.6
WAX, wt%	0.20								0.3	0.5
PNA COMPONENTS, wt%										
SATURATES					62.8	53.6	46.3	43.9	43.8	43.3
TOTAL AROMATICS					37.1	45.9	52.8	54.8	53.6	51.7
Monoaromatics					32.1	32.9	30.8	29.3	28.9	29.9
Diaromatics					4.9	11.1	16.3	14.9	13.1	12.8
Polyaromatics					0.2	1.9	5.7	10.6	11.6	9.1

SUNCOR BLEND ASSAY

Suncor Blend Name: OSA

Date Issued: 4/23/2002

This assay is an estimate, developed from blend component samples at source. There may be variations in properties of the blend from time to time.

CUT	Whole Crude	Light Naphtha	Heavy Naphtha	Jet	Light Diesel	Heavy Diesel	Swing	Gas Oil	Heavy Gas Oil	Vacuum Gas Oil
TBP TEMPERATURE AT START OF CUT, F	-44	-44	200	340	470	550	650	700	800	900
TBP TEMPERATURE AT END OF CUT, F	1000	200	340	470	550	650	700	800	900	1000
YIELD OF CUT (LV% OF CRUDE)	100	10.6	12 6	11 5	8 9	16 5	9.6	17 9	10.1	2.2
YIELD OF CUT (wt% OF CRUDE)	100	8 0	11 1	11 2	9 1	17.4	10.3	19.5	11.1	2.5
POLARS					0 1	0 5	0 9	1.3	2.6	6.0
GC COMPONENTS, VOL%										
ETHANE	0.0									
PROPANE	0.1									
ISO-BUTANE	0.5									
NORMAL BUTANE	1.8									
ISO-PENTANE	0.9									
NORMAL-PENTANE	2 2									
CYCLO PENTANE	0.3									
ISO-HEXANE	0 0									
NORMAL HEXANE	2 0									
BENZENE	0.1									
TBP Distillation										
IBP	-44	-44	200	340	470	550	650	700	800	900
5% OFF	122	35	208	347	475	556	653	705	803	902
10% OFF	192	51	216	354	479	562	655	710	807	905
30% OFF	421	96	246	381	497	584	665	729	821	917
50% OFF	583	127	274	408	513	604	675	748	838	931
70% OFF	701	157	301	434	529	623	685	768	857	947
90% OFF	818	186	326	458	543	641	695	789	882	976
95% OFF	860	193	333	464	547	646	698	794	891	988
FBP	1,000	200	340	470	550	650	700	800	900	1,000

File Ref OSA0202

(For Use in the DEIS)

The site for the new MHA Clean Fuels refinery has been carefully selected from among several alternatives to achieve economic viability and the least intrusive overall environmental effect. In fact, the Clean Fuels refinery consists of state of the art equipment that can produce clean compliant fuels. The completion of this project will signal a benefit to the environment by providing a clean plant producing clean fuels that lower vehicle emissions. The facility will be a significant addition to the industrial inventory of North Dakota, and will provide stable employment to the tribe and the communities.

All of these factors have been evaluated to provide a site arrangement that is safe and efficient with the least environmental impact to carry forward to a final design and construction.

The management of the wastewater and stormwater is shown on the Wastewater System Diagram (rev J). Wastewater originates from four sources on the site.

- Process water from the process system to the WWTU (Wastewater Treatment Unit) via underground segregated closed pipe drains
- Potentially contaminated stormwater from inside the paved and curbed process areas to underground Surge Tanks via underground segregated open pipe drains
- Uncontaminated stormwater from the roads and ditches to the Evaporation Ponds
- Sanitary waste to a dedicated Holding Tank for removal from the MHA site to an approved site (maximum 1 truck per day holding 3750 gallons, average 4500 gallons per week or 1.2 trucks per week). Alternatively, a modular sanitary waste treater will be installed to yield treated water to a third outfall, and solids waste removal to an offsite approved landfill site.

The WWTU consists of an API separator, Dissolved Air Flotation unit, Equalization Tank, Bio treatment unit, Settler, Sludge Handling facility, and release tanks. The capacity will be sufficient to permit recycle of wastewater from the release tanks, as well as potentially contaminated stormwater from the surge tanks. The equipment cleaning pad will be located near the WWTU to facilitate handling the solids waste generated. The solids will be removed from the refinery within the 90 day period to an approved TSDF location.

Skimmed oil removed from the API separator will be returned to the process. The emulsion solids (KO49 listed hazardous waste) will be disposed of at an offsite hazardous waste disposal facility. Separator solids (KO51 listed hazardous waste) from the API Separator and Dissolved Air Flotation Float (KO48 listed hazardous waste) and settled solids from the Dissolved Air Flotation unit will be pumped to a sludge thickener for dewatering, followed by drying in a sludge drier and offsite disposal at an approved hazardous waste disposal site.

(For Use in the DEIS)

The use of water in direct contact with hydrocarbon in the process has been minimized by the plant design. The WWTU incorporates aggressive biological treatment, as defined in 40 CFR 261.31 (b), which exempts the sludges from listing as F037 and F038 wastes. This oily water is conveyed directly to the WWTU at a steady rate determined by the process conditions via underground segregated closed pipe drains. After treatment in the WWTU, the water goes to a release tank (part of the WWTU) for testing prior to its release, or back to the front of WWTU if required. After successful testing, the treated water is available for irrigation or is released to Outfall No.2

The surface process areas within which stormwater may be contaminated by hydrocarbon (potentially contaminated stormwater) include each process unit, loading areas, and equipment cleaning areas. Each of these is paved and curbed for containment. The paved areas are sloped to surface drains flush with the paved surfaces, and tied into a segregated contaminated stormwater underground pipe drain. This drain system is separate from the process oily water drain described above.

The potentially contaminated stormwater is directly conveyed to a group of Surge Tanks located between the process units and the Evaporation Ponds. These are underground shallow tanks to accommodate gravity filling along the site gradient available. The tanks will be made of double wall steel or equivalent in compliance with 40 CFR 280. The total capacity of the tanks is 15,000 barrels, but multiple tanks will be used to minimize the size and the risk of potential leakage. If there is leakage, then only one tank will be taken out of service for repair, leaving all the others in service. The tanks are sized to contain the maximum stormwater flow predicted to be 5"/24 hour. Normal flow is 18"/year (0.05"/24 hour average). So, the Holding Tanks provide the surge capacity to hold the stormwater for testing before its release to the Release Tanks, or to the WWTU if required. The Release Tanks are located near the Surge Tanks, but the piping is segregated for release control. After testing, The water in the Release Tanks is either recycled to WWTU or released to Outfall 2a. This water is also available for irrigation. The tankage system is included to maintain the status of the refinery as a RCRA generator, and not a TSDF site (no RCRA part B permit).

The Uncontaminated stormwater is surface drainage outside the paved and curbed process areas. This water is conveyed in surface ditches to the Evaporation Ponds for holding and testing prior to release to Outfall 1, or to the Firewater inventory. The average flow here is based on 18"/year of precipitation, but the Evaporation Pond is large enough to hold the 5"/24 hour 100 year maximum. The normal operation is to recycle this water (after testing) to the plant, and release any excess (up to the 55 gpm maximum) to Outfall 1. The average recycle rate is 30 gpm along with 10 gpm from the water wells for the total refinery average water needs.

With respect to the status of the existing swale on the west side of the site as a wetland, the design has been arranged to minimize the impact of the new facilities. The ditches containing the uncontaminated stormwater from the western part of the site will be

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directed to one or two collection points adjacent to the east side of the swale. This water will cross the swale via an underground pipe consistent with a minimal impact. The total area of the swale is about 0.6 acres, and the final design will impact less than 0.1 acres to achieve safe and reliable crossing of the swale. The permitting process can then be satisfied by reliance upon the Nationwide Permit already in place to serve a situation like ours. The site will then not require a paragraph 404(b)(1) permit.

In revision M, the locations of the Utility Buildings, Main Electrical Substation, and Sulfur Plant have been adjusted as required to remain within the parameters described above. This move compromises the availability of "Future Expansion" area shown on revision L.

Other surface stormwater outside potentially contaminated areas, will continue to follow natural contours.

The Sanitary Waste will be collected in a dedicated holding tank that will be removed by truck on a weekly basis for removal to an approved disposal site. The laboratory waste will be collected in a dedicated holding tank for testing, and removal by truck to an approved disposal site.

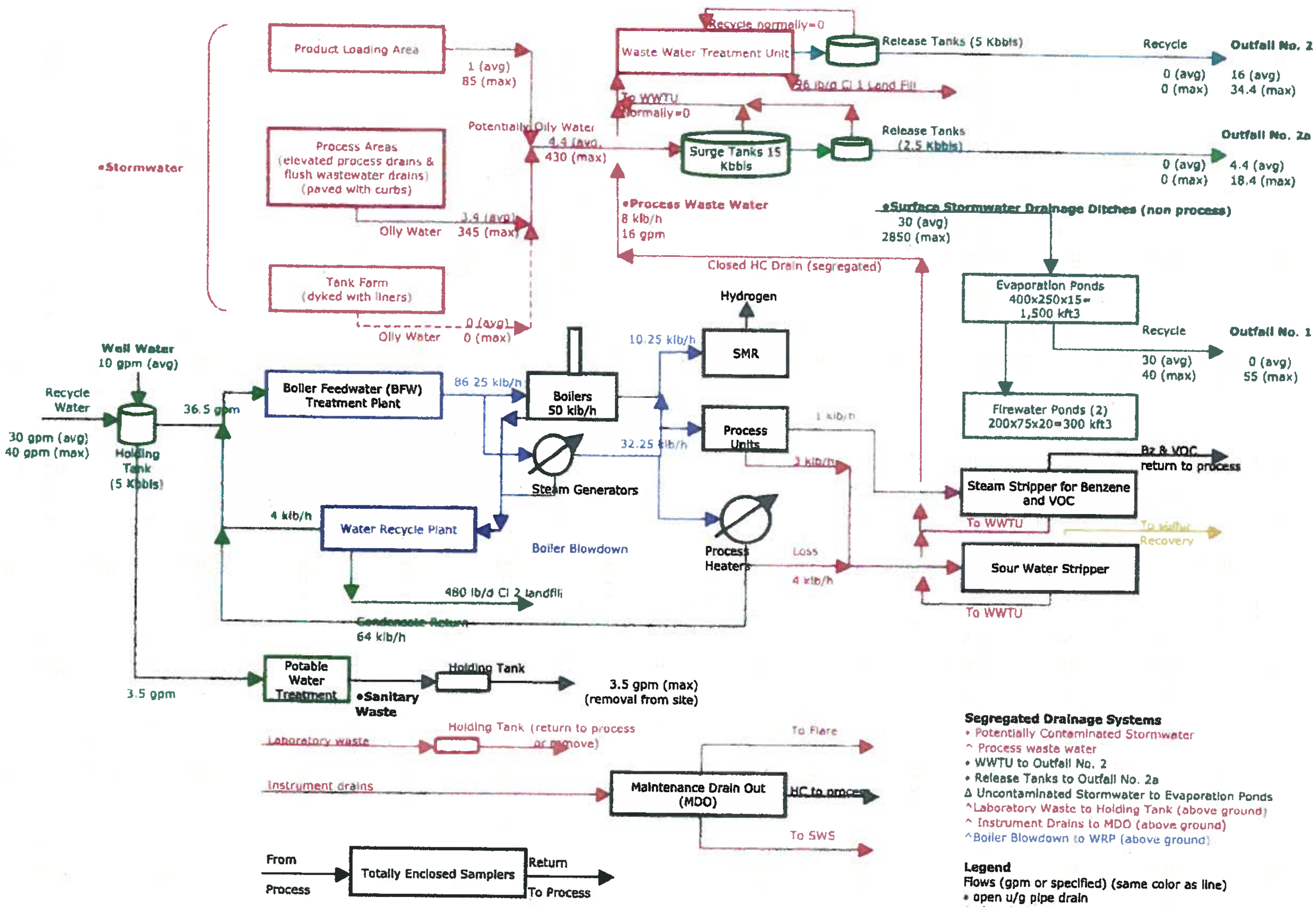
An immediate cleanup and reporting of any spills will be a specific subject of the plant operating policy to prevent the accumulation of potential contamination from this source.

Water inventories will be maximized in the fall to service the plant recycle needs during winter. Shortfalls of water will be made up by the water wells. Water inventories will be at a minimum just prior to the spring thaw.

Companion Documents:
Wastewater Treatment System flow diagram Revision J
Refinery Area Layout revision L
Refinery Area Layout revision M

Wastewater Treatment System

(For Use in the DEIS)

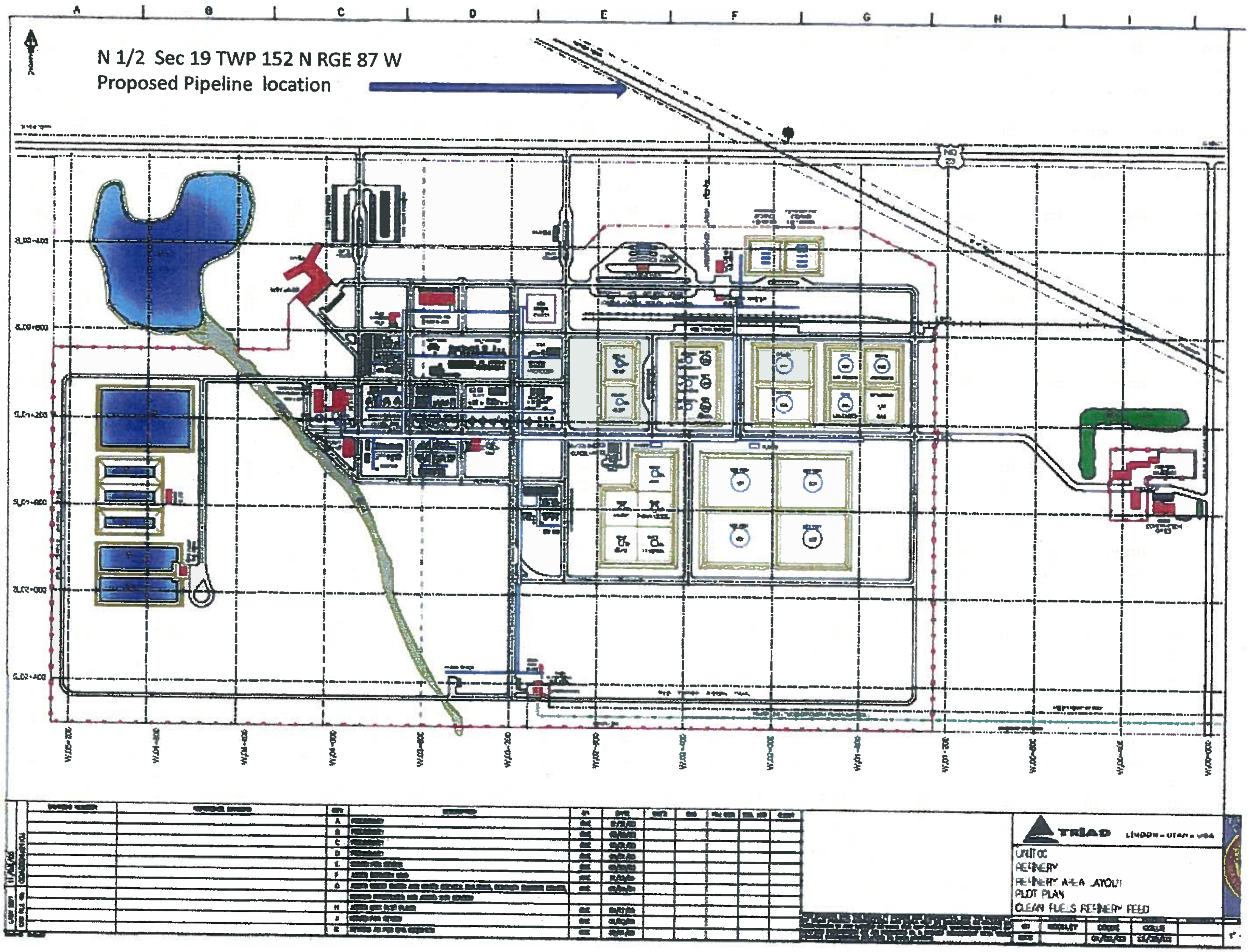


Segregated Drainage Systems

- • Potentially Contaminated Stormwater
- ^ Process waste water
- • WWTU to Outfall No. 2
- • Release Tanks to Outfall No. 2a
- Δ Uncontaminated Stormwater to Evaporation Ponds
- ^Laboratory Waste to Holding Tank (above ground)
- ^ Instrument Drains to MDO (above ground)
- ^Boiler Blowdown to WRP (above ground)

Legend

Flows (gpm or specified) (same color as line)
• open u/g pipe drain
^ closed u/g pipe drain (unless otherwise noted)
Δ Surface open ditch


N 1/2 Sec 19 TWP 152 N RGE 87 W
Proposed Pipeline location
TRIAD
LINDON • UTAH • USA
UNIT 0C
REFINERY
REFINERY AREA LAYOUT
PLOT PLAN
CLEAN FUELS REFINERY FEED