WRR Environmental Services, Co, Inc.
Eau Claire, Wisconsin

Part 2

Section H – Tank Standards:
Secondary Containment

WRR utilizes 41 waste tanks located in three dike systems for the management of hazardous waste; this includes 38 waste tanks and 3 overflow tanks.

2H-1 Detailed plans and description of secondary containment systems NR 670.016(7)

Detailed plans and description of how the secondary containment system for each tank system is designed, constructed and operated to meet the applicable sections of NR 664.0193 is discussed in the following sections.

2H-2 Prevention of migration of accumulated liquid out of the system NR 664.0193(2)(a)

All hazardous waste storage tanks are located in areas with impervious coatings on concrete bases surrounded by concrete dikes. The joints of all secondary containment structures are filled with chemically resistant materials that prevent migration of chemicals beyond the secondary containment system. The concrete base and dike is designed to contain 100% of the capacity of the largest tank within the secondary containment system. Since these tanks are not enclosed, additional containment capacity was provided for a 24-hour, 25-year rainfall event. All spills within the secondary containment systems are emptied with a portable pump into either drums or storage tanks for processing.

2H-3 Detection and collection of releases until removal NR 664.0193(2)(b)

All secondary containment systems are designed, installed and operated to prevent the migration of wastes or accumulated liquid out of the system to soil, groundwater, or surface water at all times during the use of the tank system. Any liquid in the secondary containment area can only be removed by pumping. There are no drain valves.

The secondary containment systems are visually inspected daily and have adequate capacity for collecting releases and accumulated liquids until the material can be removed.

2H-4 Constructed and lined with materials compatible with waste NR 664.0193(3)(a)

All hazardous waste storage tanks are located in areas with impervious coatings on concrete bases surrounded by concrete dikes. The joints of all secondary containment structures are filled with chemically resistant materials that prevent migration of chemicals beyond the secondary containment system.

The impervious coating as well as the concrete base and dikes are compatible with the hazardous wastes stored in the tank systems.

2H-5 Sufficient strength to prevent failure NR 664.0193(3)(a)

The secondary containment is constructed and lined with materials that have sufficient strength and thickness to prevent failure from contact with waste, climatic conditions and the stress of daily operations.

The secondary containment for the waste storage tank systems located at the WRR facility were installed and in use prior to the advent of the New Tank Standards on March 1, 1991. Since their construction, the secondary containment systems have provided a stable base to support the tanks and their contents.

The floor in each containment system is constructed of 6 inch thick concrete with 6X6 wire mesh. In the EI, EI South and EII tank farms, tanks may be elevated off of the dike floor by concrete pedestals. Appendix H-1 has copies of pre-1991 containment drawings showing the use of 6X6 mesh in the dike floors. Also located in Appendix H-1 are the current drawings of the tank containment systems indicating the concrete thickness used on the dike floors.

Through a combination of daily inspections and on-going maintenance, the floor of each dike system can maintain sufficient strength to prevent failure of the tank system.[1]

2H-6 Base strength NR 664.0193(3)(b)

All secondary containment systems have been placed upon a base capable of providing support to the secondary containment system, resistance to pressure gradients above and below the systems and capable of preventing failure due to settlement, compression, or uplift.

The secondary containment for the waste tank storage tank systems located at the WRR facility were installed and in use prior to the advent of the New Tank Standards on March 1, 1991. No settling, compression or uplift has been noted since their installation.[2]

2H-7 Detect the release of hazardous waste NR 664.0193(3)(c)

The secondary containment systems are visually inspected daily and have adequate capacity for collecting releases and accumulated liquids until the material can be removed.

2H-8 and 2H-9 Designed and operated to remove liquids NR 664.0193(3)(d)

All secondary containment systems provided for hazardous waste bulk storage are designed to contain 100% capacity of the largest tank and ancillary equipment or 10% of the total hazardous waste tank volume within its boundary. These secondary containment systems completely

[1] Item 77
[2] Item 78

surround the tanks. Because these containment systems are not covered or enclosed, additional containment capacity is provided for a 24-hour, 25 year storm event.

The secondary containment systems are designed with a shallow sump that assists in the removal of accumulated liquid with a portable pump. The accumulated liquid will be collected into either drums or storage tanks for processing, or allowed to accumulate in the storm water collection system. Spills or leaked waste and accumulated precipitation are removed within 24 hours, or at the earlier practical time to prevent harm to humans and the environment.

Drawings showing the secondary containment system for each WRR storage tank system are identified below:

Drawing Title	Drawing Number
EI Sludge Dike Containment	2H-8 EI Sludge Dike Containment
EI South Dike Containment	2H-8 EI South Sludge Dike Containment
EII Sludge Dike Containment	2H-8 EII Sludge Dike Containment

2H-10 External liner systems NR 670.016(7)

As required by s. NR 670.06(7) Wis. Admin. Code, the following sections provide information on the design and construction of the secondary containment systems for the hazardous waste tanks systems at the WRR facility.

2H-11 Design capacity of secondary containment NR 664.0193(5)(a)1

All secondary containment systems provided for hazardous waste bulk storage are designed to contain 100% capacity of the largest tank within its boundary. These secondary containment systems completely surround the tanks. Because these containment systems are not covered or enclosed, additional containment capacity is provided for a 24-hour, 25 year storm event. Table 2H-11 lists secondary containment capacities.

Table 2H-11 SECONDARY CONTAINMENT CAPACITY FOR TANK FARM AREAS

Tank Farm Areas				
Tank Farm	**Largest Tank (Gallons)**	**25 Year/24-Hour Rainfall Event (Gallons)**	**Required Capacity- Capacity of the largest tank, plus the 25 year/24-hour rainfall event (Gallons)**	**Available Containment Capacity (Gallons)**
E-I Sludge	17,530	10,629	28,159	33,061
E-II Sludge	13,280	9,051	22,331	28,706
E-I South	18,570	5,543	24,113	33,888

Appendix H-2 through H-4 contains the containment calculations for the three hazardous waste storage tanks dike systems. Appendix H-2 contains the calculations for the E-I Sludge Dike system. Appendix H-3 contains the calculations for the E-I South dike system. The containment calculations for the E-II Sludge Dike system are located in Appendix H-4.

2H-12 Infiltration of precipitation NR 664.0193(5)(a)2

Since the hazardous waste containment systems are not enclosed or covered, the secondary containment systems for these tanks are designed to include additional containment capacity for a 24-hour, 25 year storm event.

The heights of the dike walls surrounding the WRR hazardous waste storage tank systems are high enough to prevent the run-on of liquids from outside of the dike walls.

2H-13 Free of cracks and gaps NR 664.0193(5)(a)3

The base and dike walls of the secondary containment for the hazardous waste tanks at the WRR facility are maintained free of cracks and gaps. If any develop, they are patched.

2H-14 Designed to surround tanks NR 664.0193(5)(a)4

All secondary containment systems provided for hazardous waste bulk storage completely surround the tanks. The design is such that the lateral and vertical migration of waste is prevented.

The height of the dike walls are designed to prevent lateral migration of waste from the dike system in the event of a catastrophic waste release.

The joints between the vertical dike walls and the base are filled with a silicone caulk to prevent liquid migration between the wall and base.

Dikes are coated first with a 2 part epoxy resin primer system. The primer is then coated with an epoxy top coat. MSDS's representing the current Ceilcote coatings by International Paints are located in Appendix H-5. In the future, coatings from different manufacturers may be used. These coatings will provide equal or superior protection to the containment systems as the current Ceilcote materials.

The areas located directly outside the dike walls are either asphalt or concrete. None of the hazardous waste bulk storage areas are surrounded by bare earth.[3]

[3] Item 79

2H-15 to 2H-21 Design of vault systems NR 670.016(7)

None of the hazardous waste tanks at the WRR facility utilize a vault system for secondary containment. Ss. NR 664.0193(5)(b)1 through NR 664.0193(5)(b)6 Wis. Admin. Code are not applicable to this facility.

2H-22 to 2H-25 Design of double walled tanks NR 670.016(7)

All of the hazardous waste storage tanks at the WRR facility have single walled construction . Ss. NR 664.0193(5)(c)1 through NR 664.0193(5)(c)3 Wis. Admin. Code are not applicable to this facility.

2H-26 Secondary containment for ancillary equipment NR 664.0193(6)

40 CFR s. 260.10 sets forth the following definition for Ancillary equipment. *Ancillary equipment* means any device including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps, that is used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal onsite, or to a point of shipment for disposal off-site.

Secondary containment is required to be designed and operated for all ancillary equipment except for the following:

1. Aboveground piping (exclusive of flanges, joints, valves and other connections) that is visually inspected for leaks on a daily basis.
2. Welded flanges, welded joints and welded connections that are visually inspected for leaks on a daily basis.
3. Seal-less or magnetic coupling pumps and seal-less valves, that are visually inspected for leaks on a daily basis.
4. Pressurized aboveground piping systems with automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss of pressure actuated shut-off devices) that are visually inspected for leaks on a daily basis.

All ancillary equipment used for the transfer of hazardous waste to and from the storage tank systems at the WRR facility is located above ground, within the secondary containment of the tank systems, within the secondary containment of the buildings themselves or over the asphalt and concrete surface of the facility itself. The transfer system components are inspected visually each operating day.

The above ground piping systems are constructed of metal; the piping is either carbon steel or stainless steel which is compatible with the wastes processed at WRR. The piping system components are connected with metal welded and threaded joints and bolted flanges. Ancillary equipment within the secondary containment of the tank systems or inside buildings use bolted flanges as well as threaded and welded joints. Ancillary equipment that exists outside tank system or building containment consists of welded joints and bolted flanges.[4]

Per guidance from EPA memorandum, OSW Directive No. 9523.00-17, bolted flange joints that are above ground and inspected daily, are not required to have secondary containment; however, the completed and installed system must be tested for tightness prior to use. A copy of OSW Directive No. 9523.00-17 can be found in Appendix H-6.

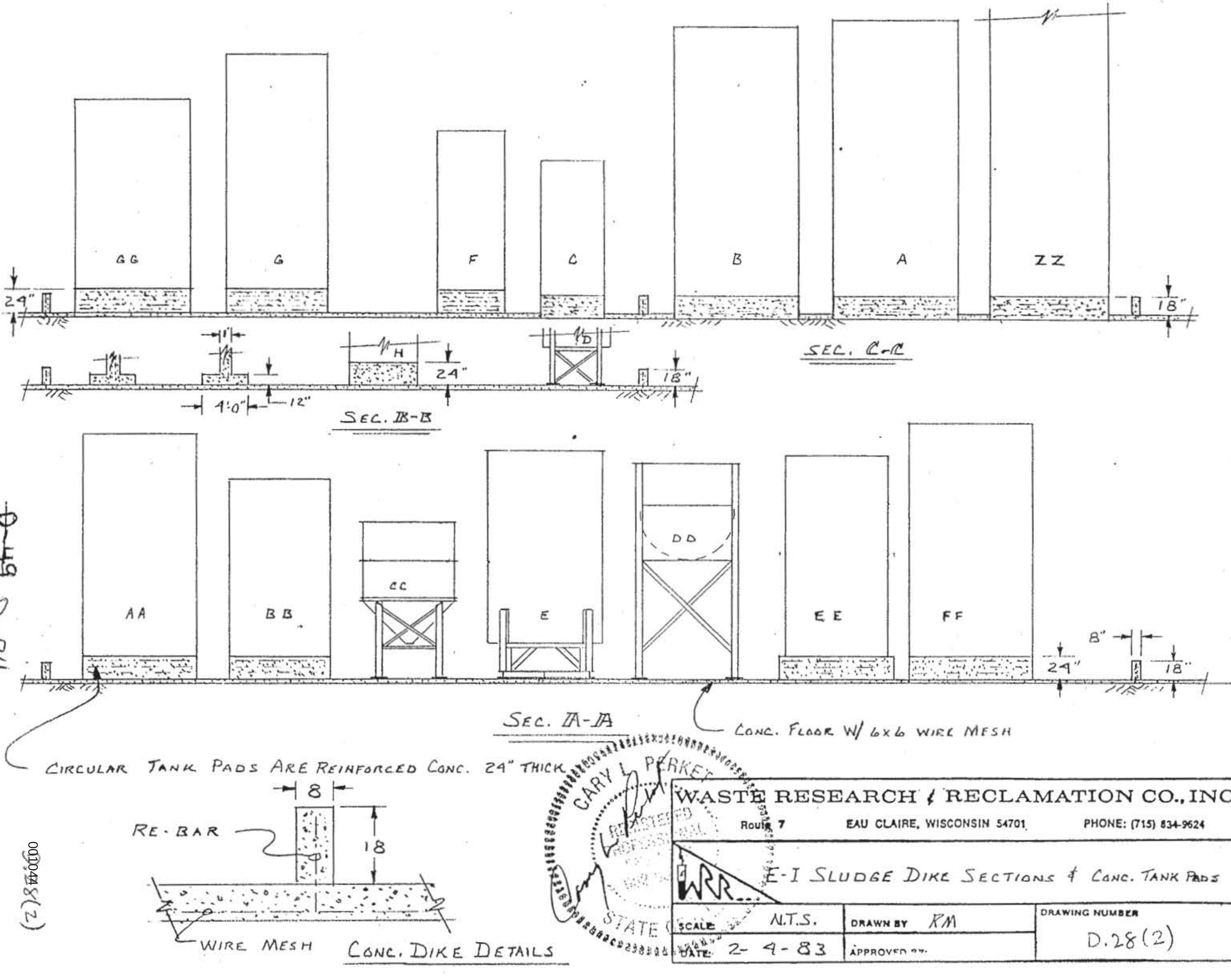
WRR does not utilize seal-less or magnetic coupling pumps or seal-less valves. The aboveground piping systems are not pressurized. There are no underground piping systems used for the transfer of hazardous waste at the WRR facility.

[4] Item 80

Part 2

Section H – Tank Standards: Secondary Containment

Appendix H-1
Dike Floor Drawings



WASTE RESEARCH & RECLAMATION CO., INC.

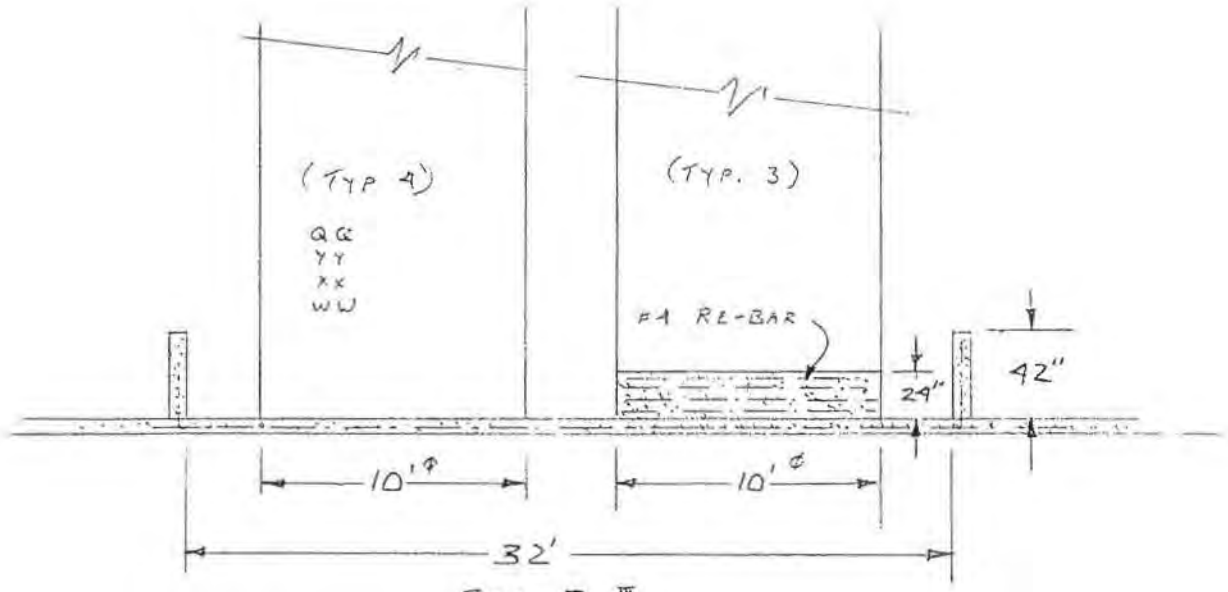
Route 7 EAU CLAIRE, WISCONSIN 54701 PHONE: (715) 834-9624

E-I SLUDGE DIKE SECTIONS & CONC. TANK PADS

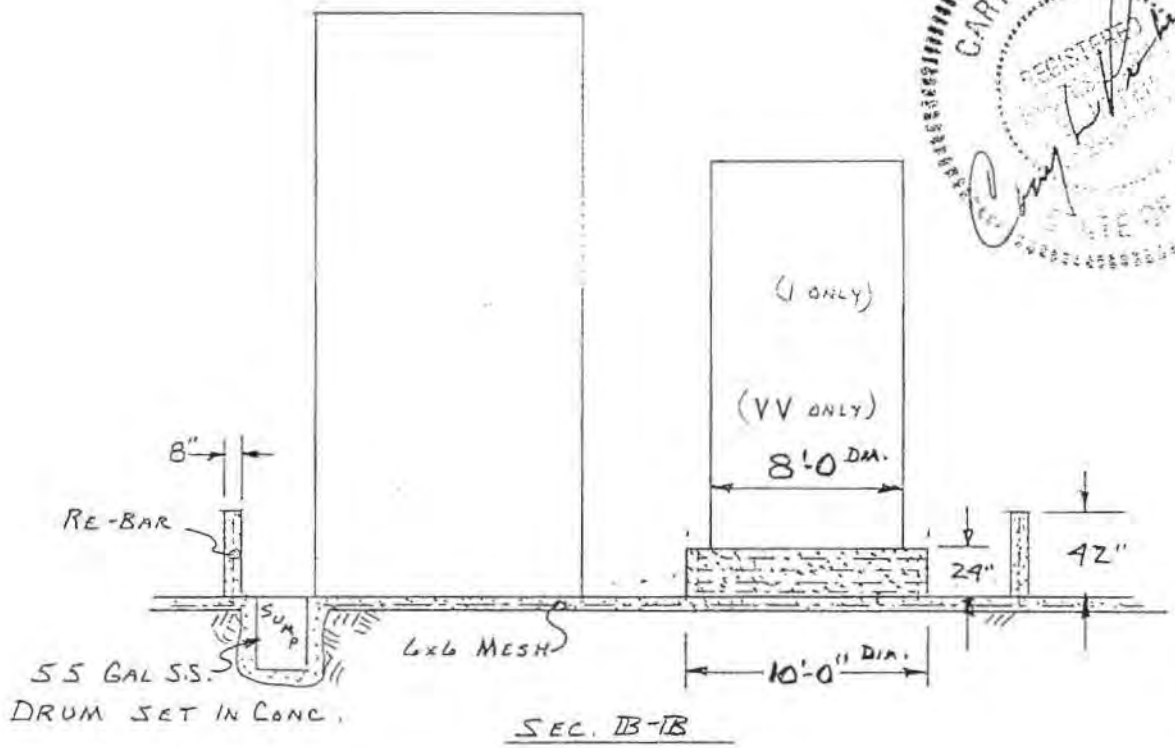
SCALE N.T.S.	DRAWN BY RM	DRAWING NUMBER D.28(2)
DATE 2-4-83	APPROVED BY:	

D-194

001044



SEC. A-A

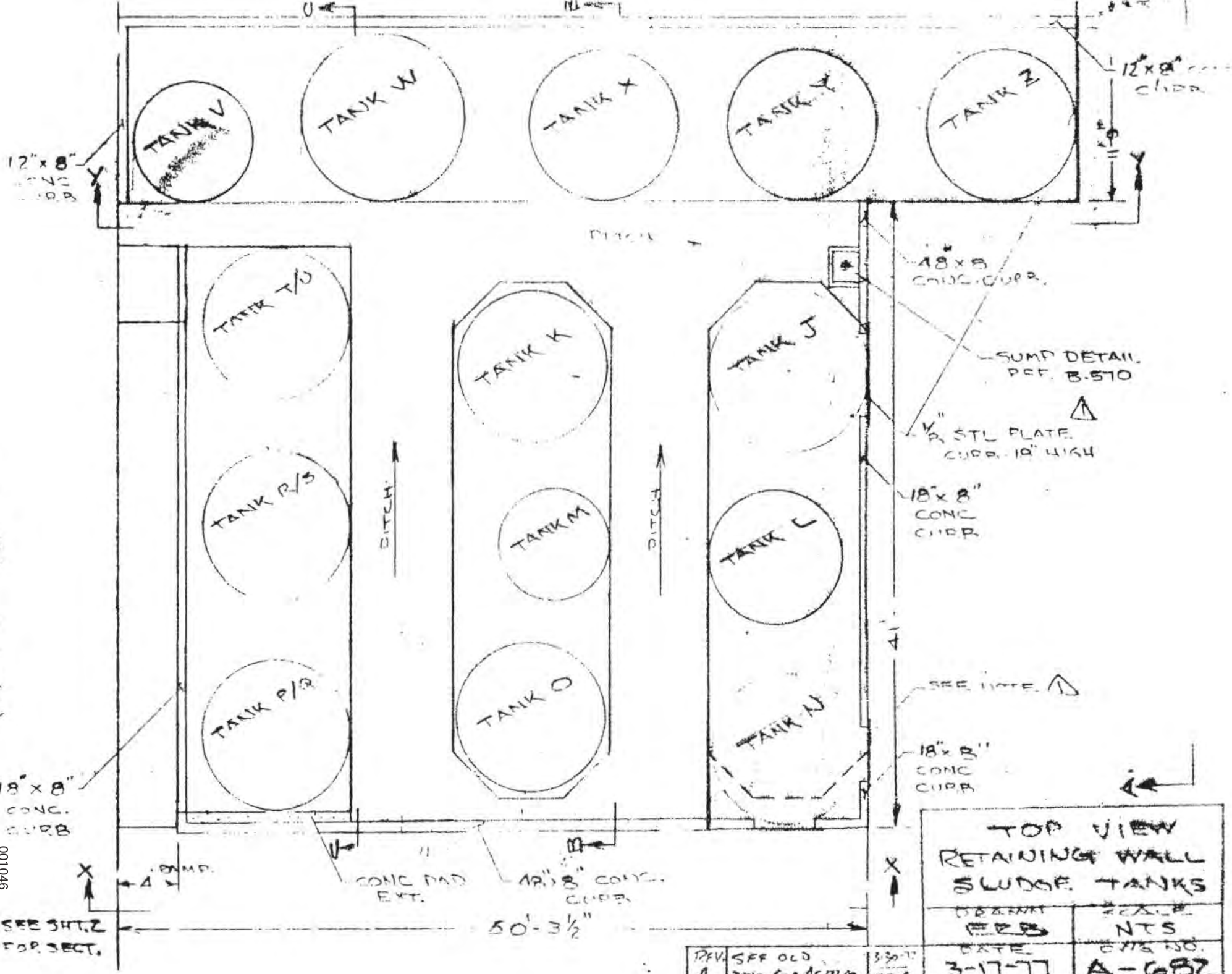


SEC. B-B

NOTE:
PIPING IS ABOVE GROUND AND OVER SECONDARY CONTAINMENT

WASTE RESEARCH & RECLAMATION CO., INC.		
Route 7 EAU CLAIRE, WISCONSIN 54701 PHONE: (715) 834-9624		
WRR SLUDGE TANK DIKE SOUTH OF E-I		
SCALE: N.T.S.	DRAWN BY RM	DRAWING NUMBER D.29 (3)
DATE: 2-3-83	APPROVED BY:	

~~D-79~~ D-105



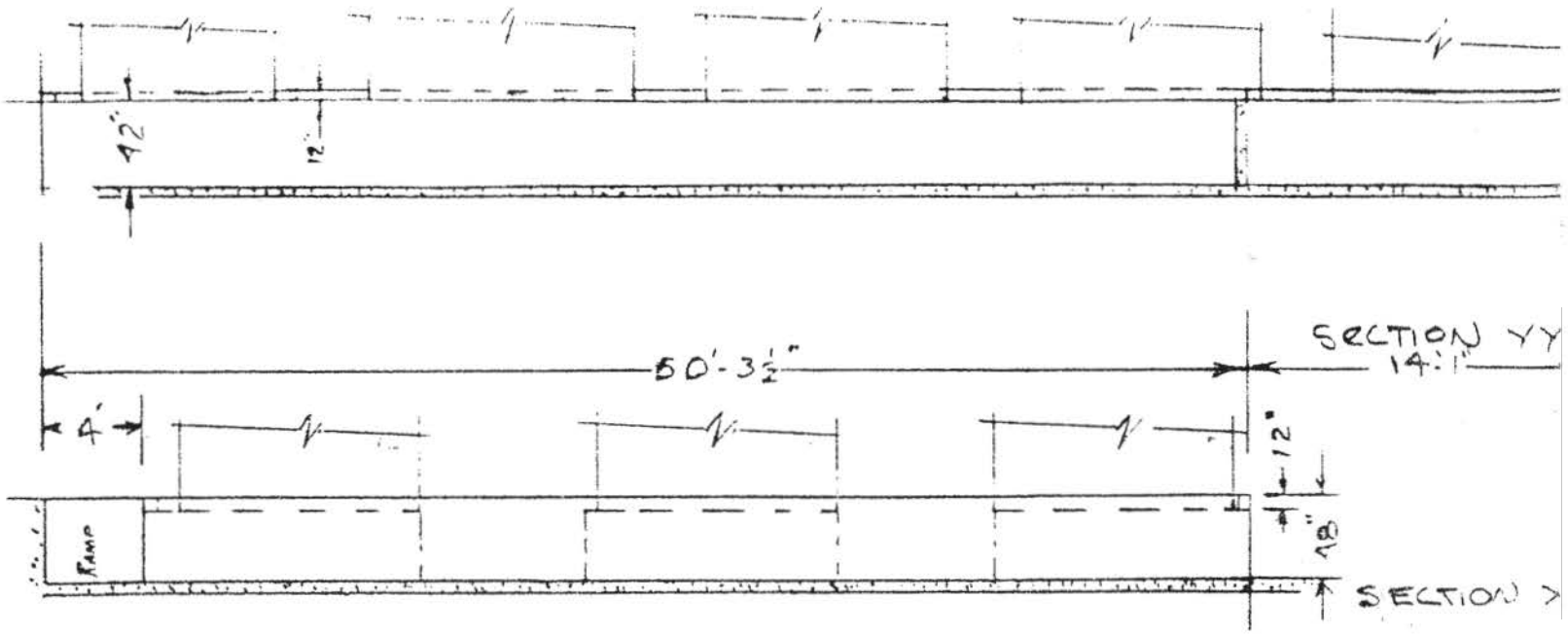
TOP VIEW
RETAINING WALL
SLUDGE TANKS

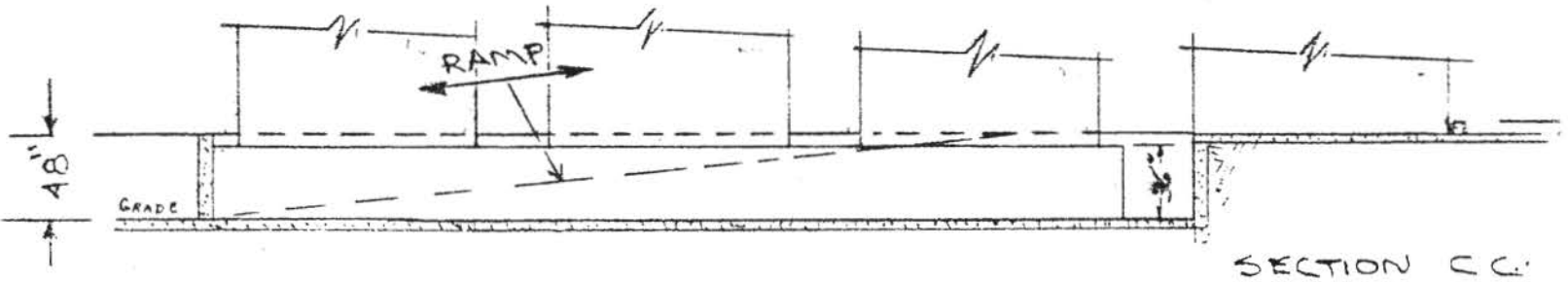
DRAWN	SCALE
ERB	NTS
DATE	DWG NO.
3-17-77	A-682

REV.		
A	SEE OLD DWG FOR ASSOC.	3-30-77 ERB

D-94 120 D.30(2)

001046





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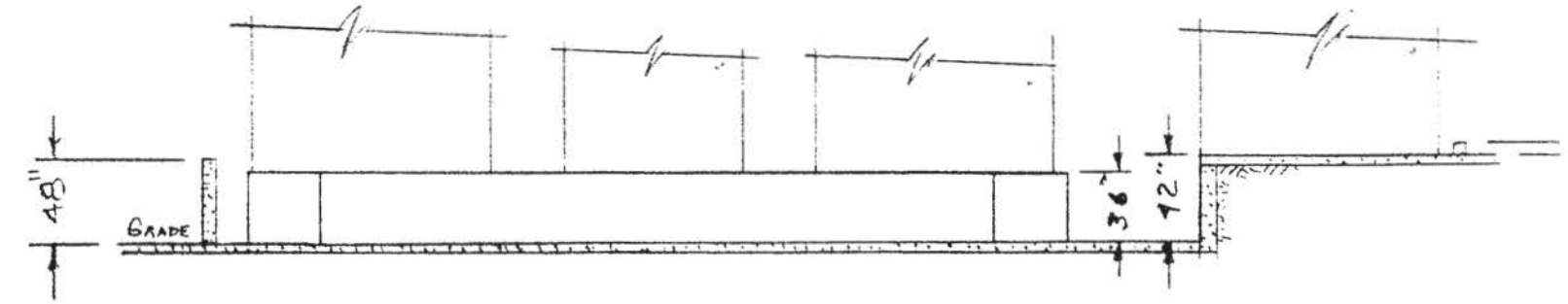

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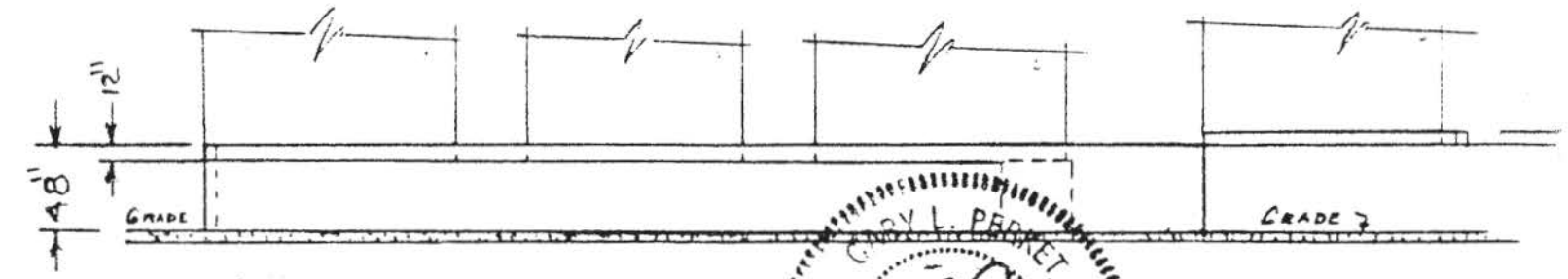


NOTE:
PIPING IS ABOVE GROUND AND OVER SECONDARY CONTAINMENT

SECTION AA

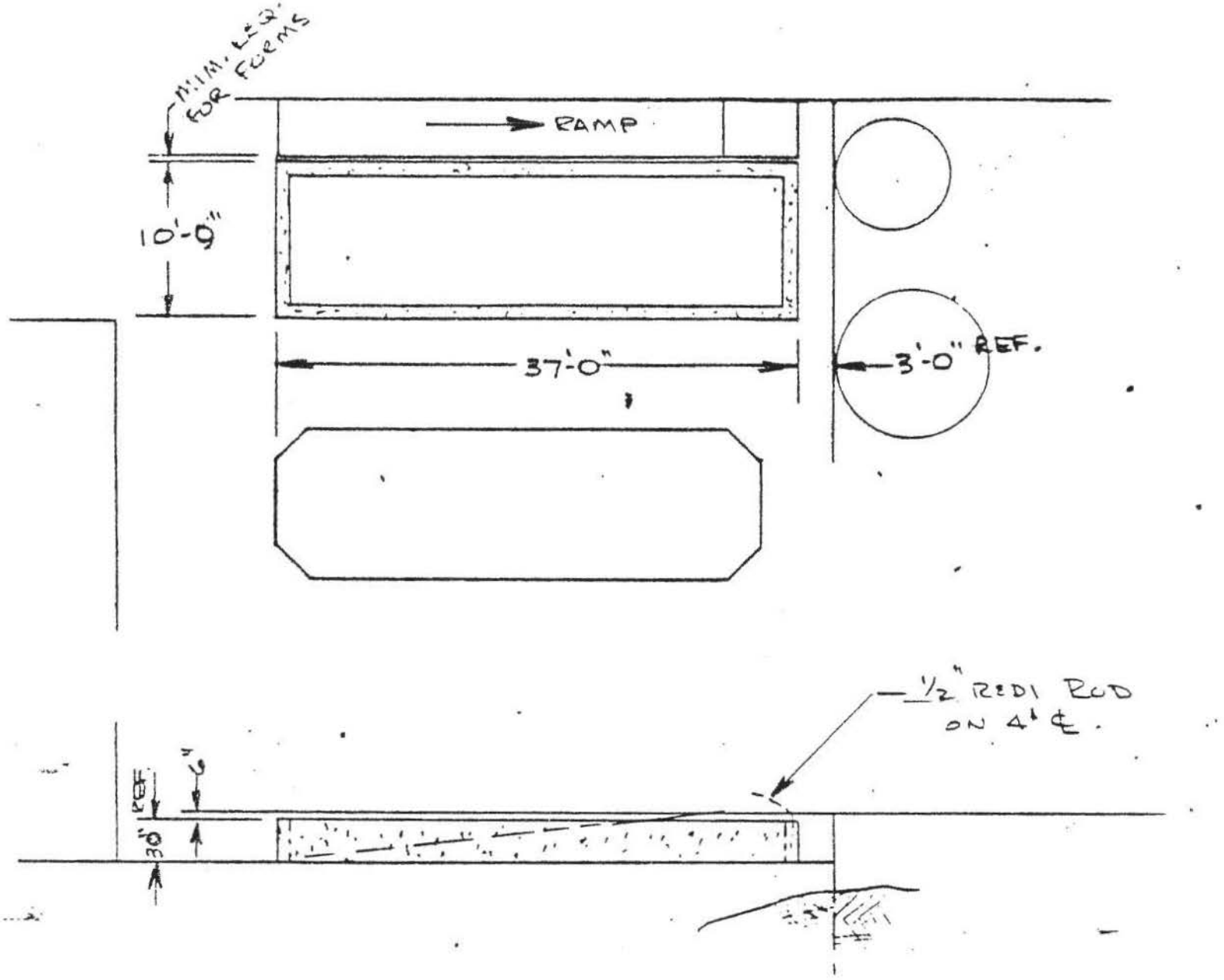
A-682 2002

D-121

D-48

D.30(3)

001047

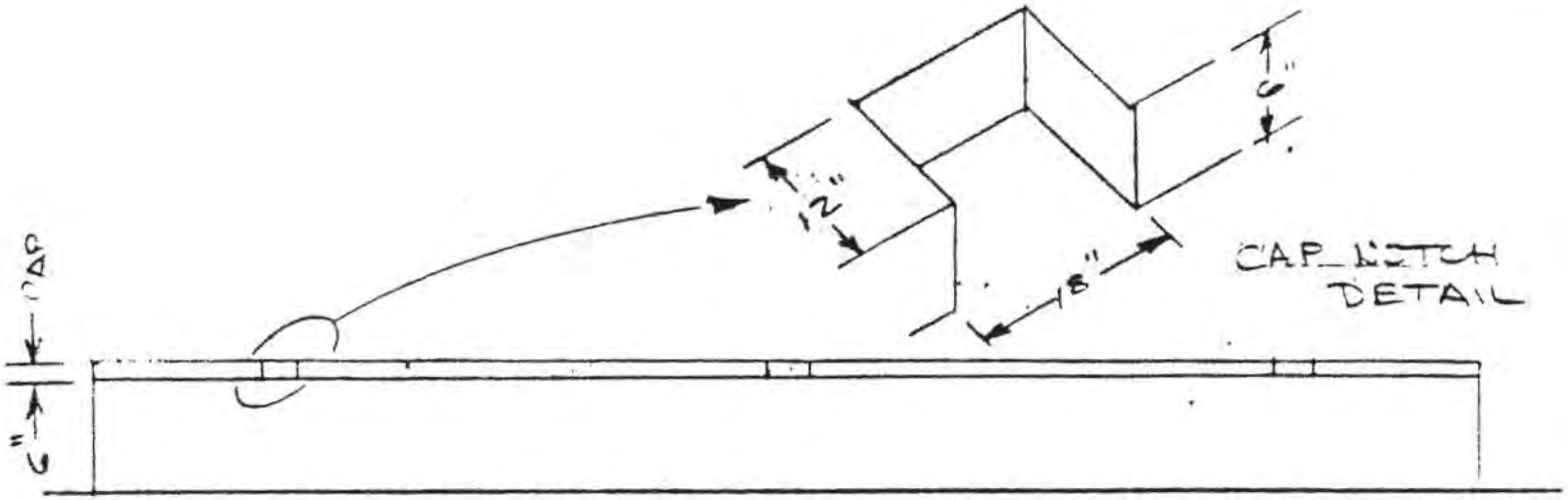


				WASTE, RESEARCH & RECLAMATION CO RT 3. EAU CLAIRE, WISC.			
A.	111'6" WAS 10'6"	DRSHE	11-1-76	TOLERANCE	WHERE USED	CONCRETE WALL FOR PEDESTLE TANKS P, Q, & R.	
	ISSUED						
	DESCRIPTION	ECO	DATE				
BLANK SIZE	MATL.	FINISH				DRAWN ERB	SCALE NTS
				JOB NO	P. O. NO.	DATE 10-21-76	DWG. NO. A-611

001048

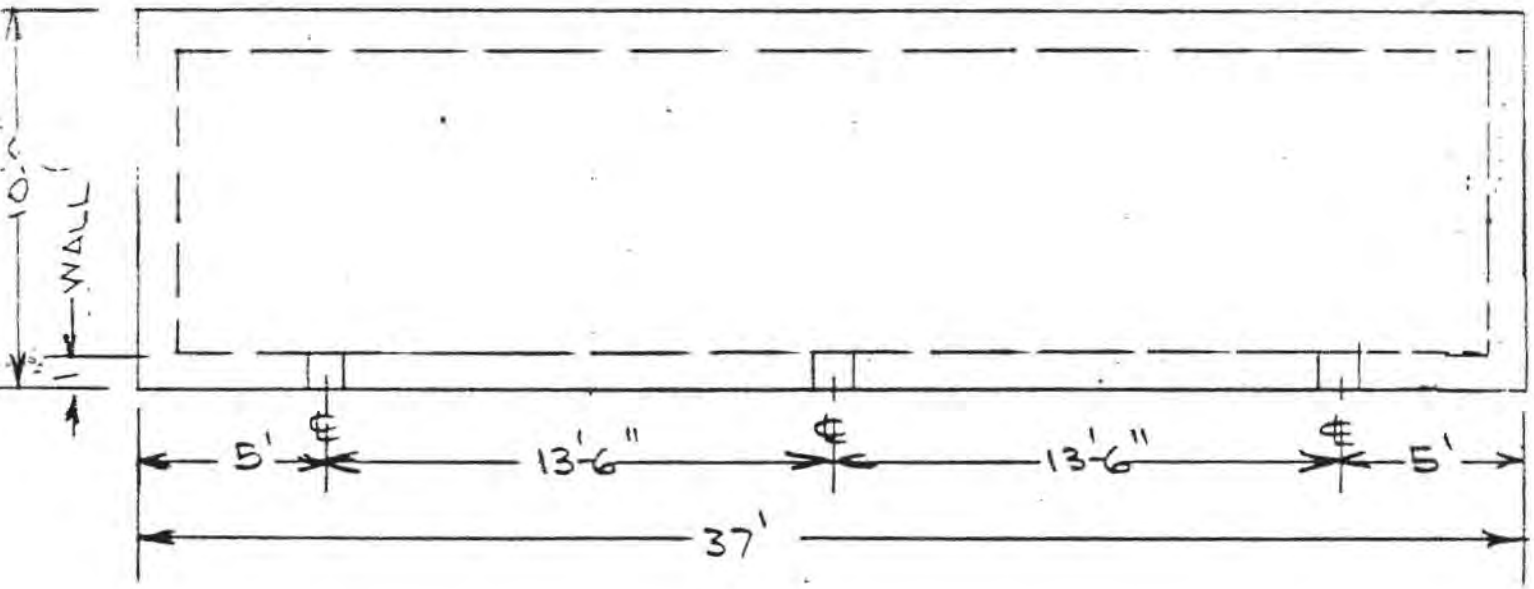
D-122
D-95

D.30(4)



CAP LATCH DETAIL

NOTE: USE REDI-ROD & 6x6 WIRE MESH AS REQ.



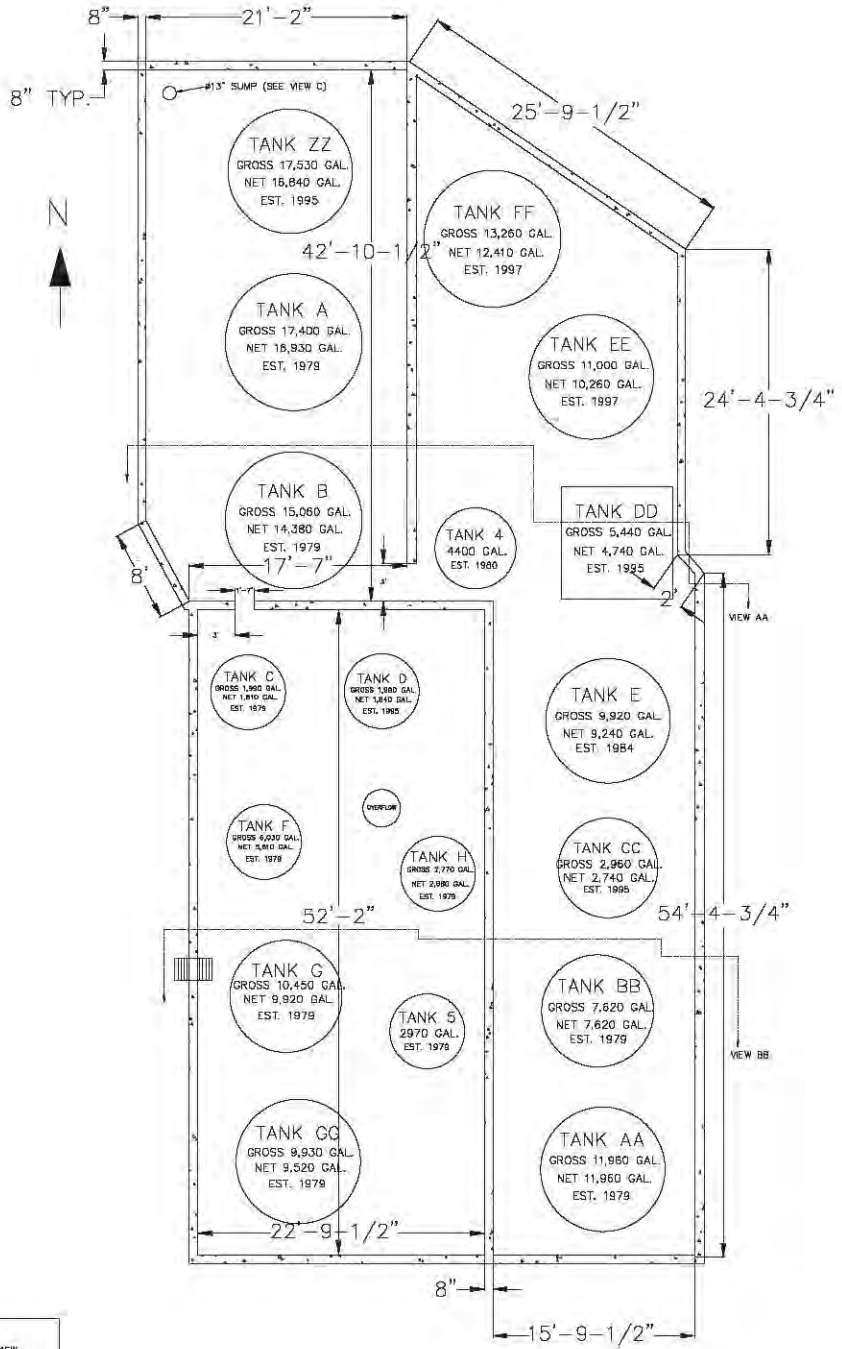
				WASTE, RESEARCH & RECLAMATION CO RT 3. EAU CLAIRE, WISC.		
A.	11'-6" WAS 10'-6"	DE She	1-11-76	TOLERANCE	WHERE USED	CONCRETE FLOOR CAP TANKS - F THRU U
	ISSUED					
	DESCRIPTION	ECO	DATE			
BLANK SIZE	MAT'L.	FINISH		APPROVED		DRAWN ERB / SCALE NTS
				JOB NO	P. O. NO.	DATE 10-20-76 / DWG. NO. A-613

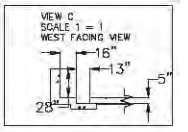
001049

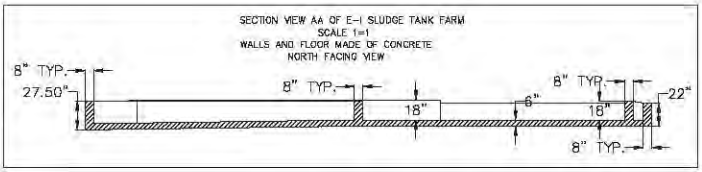
D-123

D-97

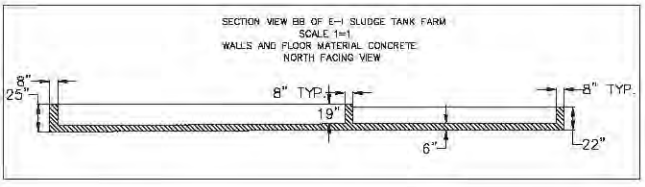
D.30(5)







NOTES:
1. ALL DIMENSIONS ARE IN FOOT, INCHES
2. TOLERANCES ON ALL DIMENSIONS ARE ± 1"
3. DIKE WALLS AND FLOOR ARE CONCRETE



NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	FIELD REVIEW	QC CHECK
1	04/15/13		RJH 04/13	MG 04/13		BA 04/13
2	04/16/13	CHANGED TO NORTH FACING VIEWS	MNG 04/13	MG 04/13		

WRR

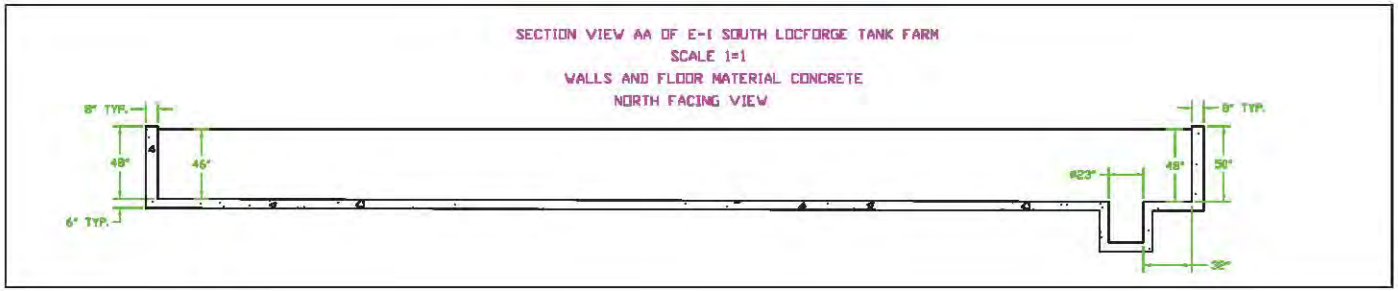
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

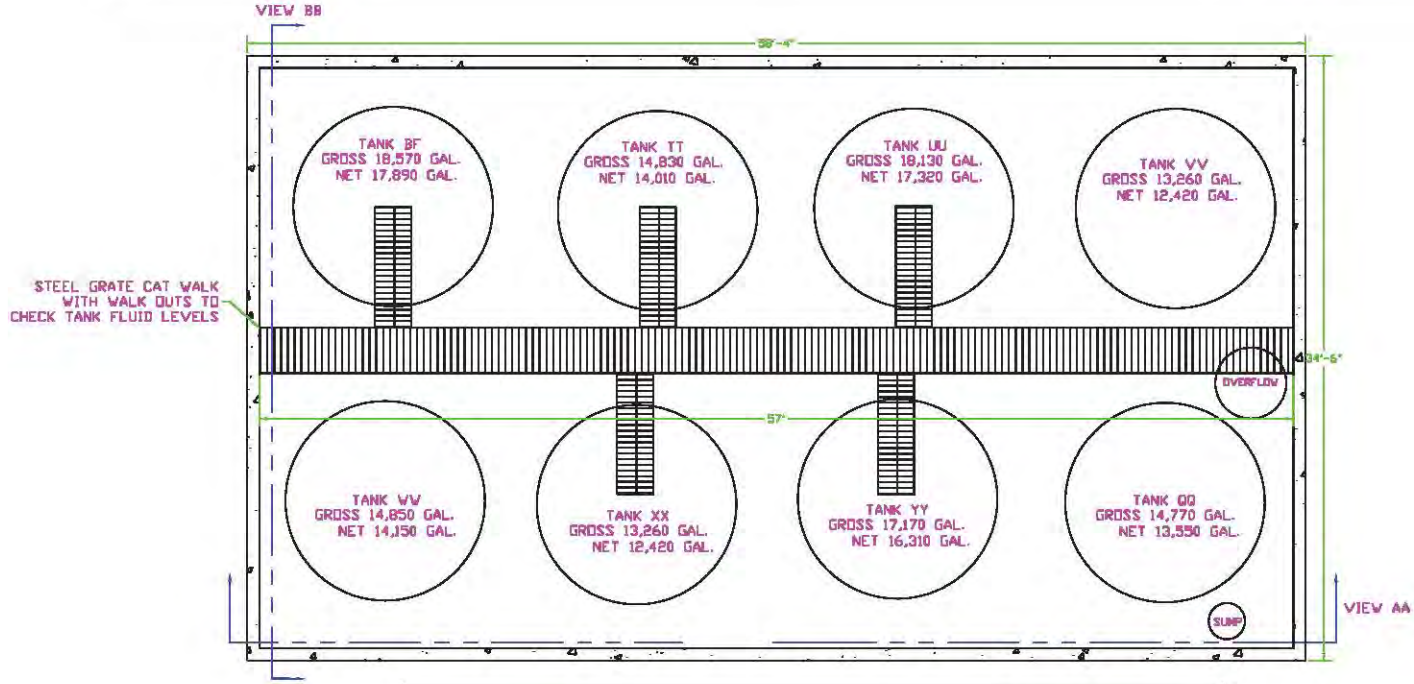
FIGURE 2H-8
EI SLUDGE DIKE CONTAINMENT

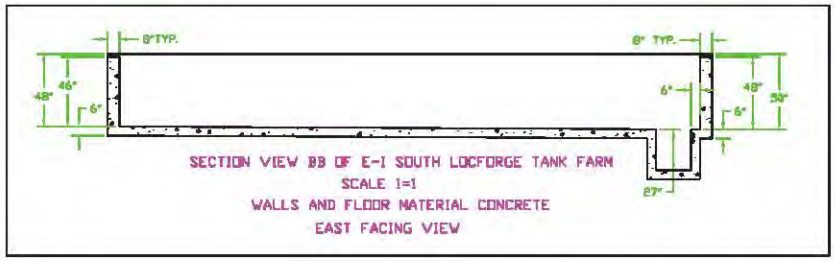
PROJ. NO. WRRES118488
DATE 04/15/13

001050

WRR DRAWING DIRECTORY: V:\PART B\2013 SUBMITTAL\DRAWINGS\SLUDGE DIKES\FIGURE 2H-8 EI SLUDGE DIKE CONTAINMENT
SEH DRAWING DIRECTORY: P:\UZ\W\WRRES\118488\FIGURES\FIGURE 2H-8 EI SLUDGE DIKE CONTAINMENT



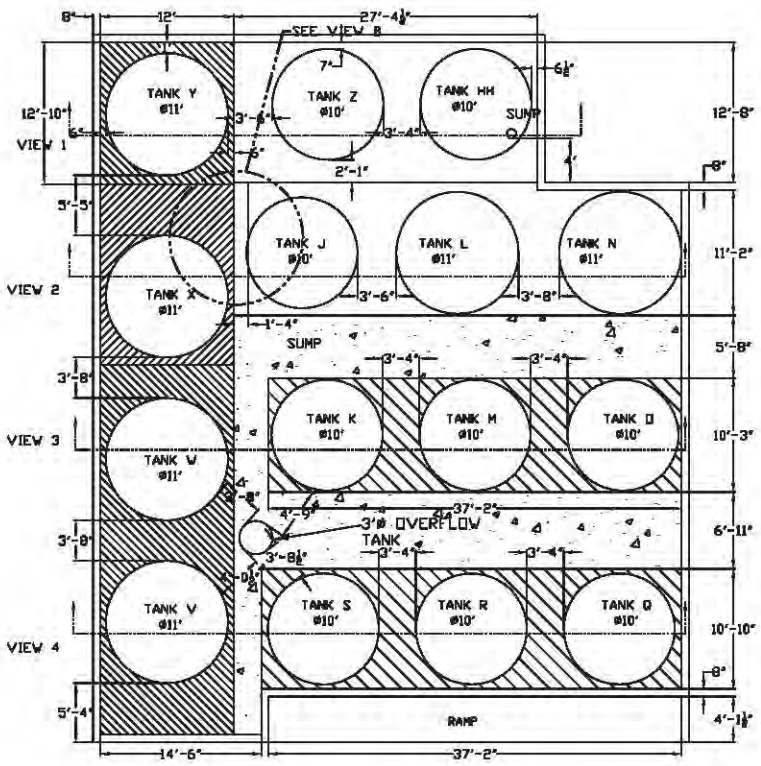


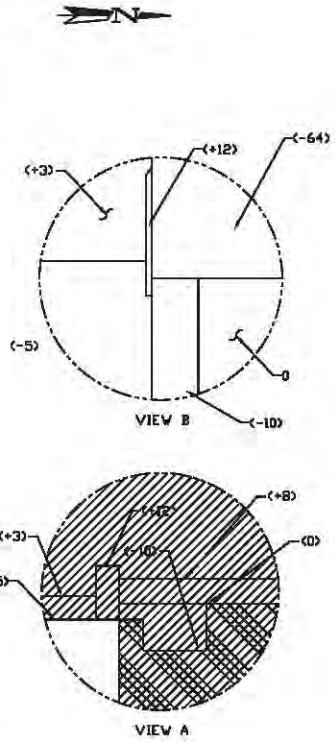


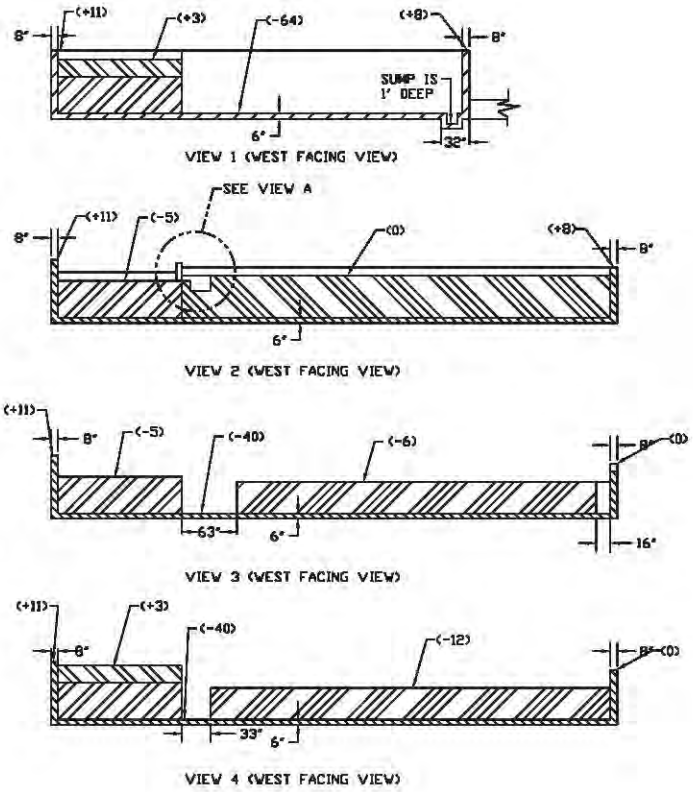
NOTES:
1. ALL DIMENSIONS ARE IN FOOT, INCHES.
2. TOLERANCES ON ALL DIMENSIONS ± 1"
3. WALLS AND FLOOR MATERIAL ARE CONCRETE

WRR ENVIRONMENTAL SERVICES CO., INC. 5200 RYDER RD, EAU CLAIRE, WI 54701 715-834-9624

DATE	REVISED 04/04/2013	TITLE	E-1 SOUTH SLUDGE DIKE CONTAINMENT					001051
DWG. NO.	EH-8 E1 SOUTH SLUDGE DIKE CONTAINMENT		BY	MNG	SCALE	NTS	PAGE #	E1 SOUTH CONTAINMENT







TANK LETTER	GROSS GALLONS	NET GALLONS	TANK LETTER	GROSS GALLONS	NET GALLONS
J	10,730	9,528	V	13,280	12,532
K	10,730	9,528	W	13,280	12,532
L	13,280	12,532	X	13,280	12,532
M	6,180	5,561	Y	13,280	12,532
N	13,280	12,532	Z	10,730	9,528
O	10,730	9,528	HH	6,180	5,561
Q	10,730	9,528			
R	10,730	9,528			
S	10,730	9,528			

NOTES:
1. ALL DIMENSIONS ARE IN INCHES
2. TOLERANCES ON ALL DIMENSIONS ± .13"
3. DYKE WALL & PEDESTAL MATERIAL CONCRETE
4. ALL SECTION VIEWS SCALES ARE 1 = 1
5. (0) IS THE ELEVATION OF THE LOWEST DIKE WALL.
6. (#) = ELEVATION FROM 0.

WRR

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Date	REVISED 04/04/2013	Title	E-II SOUTH SLUDGE TANK FARM CONTAINMENT					
Dwg. No.	2H 8 EII SLUDGE DIKE CONTAINMENT	By	HNG	Scale	NTS	PAGE #	EII SLUDGE DIKE CONTAINMENT	061052

Part 2

Section H – Tank Standards: Secondary Containment

Appendix H-2
E-I Sludge Tank Farm Containment

There are three containment systems within the E-I Sludge Tank Farm:

1. E-I Secondary Containment System #1 - This containment system includes tanks C, D, F, G, H, GG, product tank 5, and the overflow tank.
2. E-I Secondary Containment System #2 - This containment system includes tanks E, AA, BB, CC, DD, EE, FF, and product tank 4.
3. E-1 Secondary Containment System #3 - This containment system includes tanks A, B, and ZZ.

All three systems are interconnected so that if there is a spill in one system, it can flow into the other two systems.

Total Containment Area

The gross containment calculation is broken into five areas:

Area A = 22.79' x 52.17' = 1,189 ft²
Area B = 15.79' x 52.83' = 834 ft²
Area C = (21.17' x 42.875') - ((5.656)²/2) = 892 ft²
Area D = 27.6' x 21.1' = 582 ft²
Area E = 0.5 x 21.1' x 12.4' = 131 ft²

Total Gross Containment Area = 3,628 ft²

Total Floor Area

Area A

Tank	Tank Diameter (ft)	Bottom Type	Area (ft²)
Tank 5	-	4 legs	.44
Tank C	5.3	Flat	22.1
Tank D	-	4 legs	.08
Tank F	8	Flat	50.3
Tank G	9	Flat	63.6
Tank H	-	4 legs	.08
Tank GG	11	Flat	95
Overflow	3	Flat	7.1
Total Floor Area of Area A			239

Area B

Tank	Tank Diameter (ft)	Bottom Type	Area (ft²)
Tank E	-	4 legs	1.4
Tank CC	-	4 legs	1.4
Tank BB	9	Flat	64
Tank AA	10	Flat	79
Total Floor Area of Area B			146

Area C

Tank	Tank Diameter (ft)	Bottom Type	Area (ft²)
Tank ZZ	10	Flat	79
Tank A	11	Flat	95
Tank B	11	Flat	95
Total Floor Area of Area C			269

Area D

Tank	Tank Diameter (ft)	Bottom Type	Area (ft²)
Tank EE	-	4 legs	0.08
Tank DD	-	4 legs	0.08
Tank 4	-	6 legs	0.35

Total Floor Area of Area D 0.51

Area E

Tank	Tank Diameter (ft)	Bottom Type	Area (ft²)
Tank FF	-	4 legs	0.08
Total Floor Area of Area E			0.08

Total Floor Area Displaced in Areas A, B, C, D, and E = 655 ft²

Pumps within Containment
(27" x 50") + (29" x 54") = 21 ft²

Piping Within Containment Area
There are both solid piping runs and flexible hoses located within the containment area.
Volume Displaced = [87*π*(2/12)²] * 7.48 = 60 gal

Net total containment area = Total Containment Area - Total Floor Area - Pumps
= 3,628 - 655 - 21 = 2,952 ft²

Containment Volume
The dike wall for the tank farm is at least 18" high.
Available containment volume = (2,952 ft² x 1.5') * 7.48 - 60
= 33,061 gallons

24-Hour, 25-Year Rainfall Event = 4.7 inches
Area of Containment System = 3,628 S.F.
Volume of 24-Hour, 25-Year Rainfall = 3,628 x 4.7/12 = 1,421 ft³
Liquid Volume = 1,421 ft³ x 7.48 gallons/ ft³ = 10,629 gal

NR 664.0193(5)(a) requires containment for the largest tank plus the 24-Hour, 25-Year rainfall event.
The largest tank in the tank farm is Tank ZZ = 17,530 gallons
The required containment capacity = 17,530 + 10,629 = 28,159 gallons

E-I Tank Farm Excess Containment Capacity
= 33,061 – 28,159 = 4,902 gallons

Part 2

Section H – Tank Standards: Secondary Containment

Appendix H-3
E-I South Sludge Tank Farm Containment

Containment System:
The gross volume of containment system
= (58.33' – 2 x 8") x (34.5' – 2 x 8") x 46/12 x 7.48 gallons/C.F.
= 57 * 33.17 * 3.83 * 7.48
= 54,165 Gallons

Tanks VV and XX:

Concrete footings for both tanks are at an average height of 1.5', and both have 11' diameters. Liquid volume displaced by both footings
= 2 Footings x 1.5 x π x $(11/2)^2$ x 7.48 = 2,133 gallons

Volume of Submerged Diagonal Braces
= 2 Tanks x [6 Braces/Tank x (4' Depth – 17") x (.25" x (2" + 2")]
(but actual length of braces are less than 4' because at an angle)
= 0.3 ft^3

Volume of Submerged Legs
= 2 Tanks x [4 Legs/Tank x (4' – 1.5' Depth) x (.5" x (6" + 6")]
= 0.8 ft^3

Volume of submerged cones is 0 because cone bottom is above 4' depth

Liquid volume displaced by Tanks VV and XX
= (0.3 + 0.8) * 7.48 gallons/C.F. + 2,133 = 2,142 gallons

Tanks BF, TT, UU, WW, YY, QQ, and OF:

Volume Displaced = [6 * π * $(11/2)^2$ * 4) + (1 * π * $(4/2)^2$ * 4)] * 7.48
= 17,436 gallons
This does not account for the legs of the OF tank which raise it a few inches off the containment floor.

Overhead Walkway Structure Concrete Footings

There are 6 concrete footings within the containment area. Each is approximately two foot square by 2.5' high.
Volume Displaced = 6 x 2 x 2 x 2.5 x 7.48 = 450 gallons

Stairway at East End of Tank Farm

Based upon the new stairs to be installed in the E-II Tank Farm, the existing stairs in the E-I south tank farm displaces a volume of approximately 9 gallons.

Piping Within Containment Area

There are approximately three solid piping runs and several flexible hoses located within the containment area.

Volume Displaced = [3*55*π*$(2/12)^2$ + 8*25* π*$(2/12)^2$] * 7.48 = 240 gallons

Net Volume of Containment
= 54,165 - 2,142 - 17,436 - 450 - 9 - 240 = 33,888 gallons

24-Hour, 25-Year Rainfall Event = 4.7 inches

Area of Containment System = 54,165/(7.48 * 46/12) = 1,890 S.F.
Volume of 24-Hour, 25-Year Rainfall = 1,890 x 4.7/12 = 741 ft^3 = 5,543 gallons

NR 664.0193(5)(a) requires containment for the largest tank plus the 24-Hour, 25-Year rainfall event.
The largest tank in the tank farm is Tank BF = 18,570 gallons
The required containment capacity = 18,570 + 5,543 = 24,113 gallons

E-I South Tank Farm Excess Containment Capacity
= 33,888 – 24,113 = 9,775 gallons

Part 2

Section H – Tank Standards: Secondary Containment

Appendix H-4
E-II South Sludge Tank Farm Containment

There are 2 containment systems at the E-II South Sludge Tank Farm:

1. E-II Secondary Containment System #1. This includes Tanks Z and HH.
2. E-II Secondary Containment System #2. This includes Tanks J, L, N, K, M, O, Q, R, S, Y, X, W, V, and the overflow tank.

The elevation of the concrete foundation under Tanks J, L, N, V, W, X, and Y is above the containment area.

Containment System #1:
The gross volume of Containment System #1 = (5.33 x 27.38 x 12.67) + Sump = 1,849.8 ft^3

Tanks Z and HH:
Volume of Submerged Legs = 2 x [4 x 5.33 x (.04 x .67 + .04 x (.67 - .04))]
= 2 x 4 x 5.33 x .06
= 2.6 ft^3

Volume of Submerged Cones
= 2 x [π/3 x $(1.58)^2$ x 1.33 x (1 + .25/1.58 + $(.25/1.58)^2$)]
= 8.3 ft^3

Net Volume of Containment System #1 = 1,849.8 – 2.6 – 8.3 = 1,838 ft^3

Containment System #2:
The gross volume of Containment System #2 = 3.33 x 40.59 x 33.67 = 4,551 ft^3

The volume of the concrete foundation under Tanks K, M, and O = (40.71 – 5.21) x 10.25 x 3.33 = 1,211.7 ft^3

The volume of the concrete foundation under Tanks Q, R, and S = 3.33 x 10.83 x 37.83 = 1,365 ft^3

Volume of Submerged Legs in Containment System #2:
Tank K = 4 x .5 x .06 = .12 ft^3
Tank M = 4 x .5 x .06 = .12 ft^3
Tank O = 4 x .5 x .06 = .12 ft^3
Tank Q = 4 x 1.0 x .06 = .24 ft^3
Tank R = 4 x 1.0 x .06 = .24 ft^3
Tank S = 4 x 1.0 x .06 = .24 ft^3
Total Volume of Tank Legs in Containment System #2 = 1.08 ft^3

Overflow Tank Volume = π x $(1.5)^2$ x 3.33 = 23.6 ft^3

Volume of Area Northeast of Tank V = (14.5 – 12) x 4.125 x 4 = 41 ft^3

Net Volume of Containment System #2
= 4,551 – 1,211.7 – 1,365 – 1.08 + 41 – 23.6
= 1,990.6 ft^3

Volume of Trench Connecting Containment Systems #1 and #2 = 1.33 x (8.17 + 2.13) x 0.833 = 11.4 ft^3

Total Containment & Excess Containment:

Subtotal Net Containment Volume for the E-II Sludge Tank Farm = 1,838 + 1,990.6 + 11.4 = 3,840 ft^3 = 3,840 x 7.48 gallons/ft^3 = 28,723 gallons

In 2013, a steel ladder and supports are planned for installation within the containment system of this tank farm. The volume displaced by this will be approximately 17 gallons.

Total Net Containment Volume for the E-II Sludge Tank Farm
= 28,723 - 17 = 28,706 gallons

24-Hour, 25-Year Rainfall Event = 4.7 inches.
Area of Containment System = (63.75 x 53.667) – (13.33 x 13.25) – (4.125 x 37.83) = 3,088.6 ft^2
Volume of 24-Hour, 25-Year Rainfall = 3,088.6 x 4.7/12 = 1,210 ft^3=9,051 gallons

NR 664.0193(5)(a) requires containment for the largest tank plus the 24-Hour, 25-Year rainfall event.
The largest tanks in the tank farm are Tanks L, N, V, W, X, and Y
= 13,280 gallons each
The required containment capacity = 13,280 + 9,051 = 22,331 gallons

E-II Tank Farm Excess Containment Capacity
= 28,706 – 22,331 = 6,375 gallons

Part 2

Section H – Tank Standards: Secondary Containment

Appendix H-5
MSDS and Technical Document for Dike System Coating

Material Safety Data Sheet
CEILCOTE 690 PRIMER PART A

Sales Order: {SalesOrd}

Bulk Sales Reference No.:	NCA065
MSDS Revision Date:	05/16/2011
MSDS Revision Number:	A0−3

International.

1. Identification of the preparation and company

Product Identity	CEILCOTE 690 PRIMER PART A
Bulk Sales Reference No.	NCA065
Company Name	International Paint LLC 6001 Antoine Drive Houston Texas 77091
Emergency	
CHEMTREC (USA)	(800) 424−9300
International Paint	(713) 682−1711
Poison Control Center	(800) 854−6813
Customer Service	
International Paint	(800) 589−1267
Fax No.	(800) 631−7481

2. Hazard identification of the product

GHS Classification;

Item	Category	Hazard
Flammability	4	Combustible liquid
Acute Toxicity (mouth)	Not classified	Not applicable
Acute Toxicity (skin)	Not classified	Not applicable
Acute Toxicity (inhalation)	Not classified	Not applicable
Acute Toxicity (ingestion)	Not classified	Not applicable
Skin corrosion/irritation	Not classified	Not applicable
Eye damage/irritation	Not classified	Not applicable
Sensitization (respiratory)	Not classified	Not applicable
Sensitization (skin)	Not classified	Not applicable
Germ toxicity	Not classified	Not applicable
Specific target organ systemic toxicity (single exposure)	1	Not applicable
	2	Not applicable
	3	Not applicable
Specific target organ systemic Toxicity (repeated exposure)	1	Not applicable
	2	Not applicable
Aspiration hazard	Not classified	Not applicable
Harmfulness to aquatic Environment (acute)	Not classified	Not applicable
Harmfulness to aquatic Environment (long term effect)	Not classified	Not applicable
Carcinogenicity	Not classified	Not applicable

Reproductive Toxicity	Not classified	Not applicable
Organic Peroxide	Not classified	Not applicable

Safety Phrases: Not Applicable

Overview	NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Avoid contact with eyes, skin and clothing.
Inhalation	Harmful if inhaled. Causes nose and throat irritation. Vapors may affect the brain or nervous system causing dizziness, headache or nausea.
Eyes	Causes severe eye irritation. Avoid contact with eyes.
Skin	Causes skin irritation. May be harmful if absorbed through the skin.
Ingestion	Harmful if swallowed. May cause abdominal pain, nausea, vomiting, diarrhea, or drowsiness.
Chronic effects	

HMIS Rating Health: 2 Flammability: 1 Reactivity: 0 PPE: X

3. Composition/information on ingredients

Ingredient	CAS No.	Percent
Oxirane, [(2−methylphenoxy)methyl]−	0002210−79−9	1.0 – 10
Oils, pine	0008002−09−3	10 – 25
Reaction product of epichlorohydrin & bisphenol A	0025085−99−8	75 – 100

4. First aid measures

General	Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin	In case of contact, immediately flush skin with soap and plenty of water. Get medical attention immediately.
Ingestion	If swallowed, immediately contact Poison Control Center at 1−800−854−6813. DO NOT induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person.

5. Fire−fighting measures

Flash Point F: 200
C: 93

Lower Explosive Limit (LEL) 1 (%vol in air) at Normal Atmospheric Temp and Pressure

ERG Guide No. 159

6. Accidental release measures

Spill Response Procedures	ELIMINATE ALL IGNITION SOURCES (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. Absorb or cover with dry earth, sand, or other non−combustible material and transfer to containers. LARGE SPILLS: Dike far ahead of liquid spill to contain released material and runoff from fire control.
Public Safety	CALL CHEMTREC at (800)−424−9300 for emergency response. Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed

spaces before entering.

ERG Guide No. 159

7. Handling and storage

Storage Temperature	Store between 40–100F (4–38C).
Handling and Storage Precautions	Keep away from heat, sparks and flame. Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Vapors may cause flash fire or ignite explosively. Prevent build–up of vapors by opening all windows and doors to achieve cross–ventilation. Avoid contact with eyes and clothing. Avoid prolonged or repeated contact with skin. Close container after each use. Wash thoroughly after handling.

8. Exposure controls and personal protection

Exposure

CAS No.	Ingredient	Source	Value
0002210–79–9	Oxirane, [(2–methylphenoxy)methyl]–	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
0008002–09–3	Oils, pine	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
0025085–99–8	Reaction product of epichlorohydrin & bisphenol A	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit

Health Data

CAS No.	Ingredient	Source	Value
0002210–79–9	Oxirane, [(2–methylphenoxy)methyl]–	NIOSH	No Established Limit
0008002–09–3	Oils, pine	NIOSH	No Established Limit
0025085–99–8	Reaction product of epichlorohydrin & bisphenol A	NIOSH	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0002210–79–9	Oxirane, [(2–methylphenoxy)methyl]–	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0008002–09–3	Oils, pine	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

0025085−99−8	Reaction product of epichlorohydrin & bisphenol A	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

Respiratory	Select equipment to provide protection from the ingredients listed in Section 3 of this document. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates dust, vapor, or mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use. FOR USERS OF 3M RESPIRATORY PROTECTION ONLY: For information and assistance on 3M occupational health and safety products, call OH&ESD Technical Service toll free in U.S.A. 1−800−243−4630, in Canada call 1−800−267−4414. Please do not contact these numbers regarding other manufacturer's respiratory protection products. 3M does not endorse the accuracy of the information contained in this Material Safety Data Sheet.
Eyes	Avoid contact with eyes. Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site−specific conditions of use, safety glasses, chemical goggles, and/or head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Skin	Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site−specific conditions of use, protective gloves, apron, boots, head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Engineering Controls	Prevent build−up of vapors by opening all windows and doors to achieve cross−ventilation.
Other Work Practices	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, using toilet facilities, etc. Promptly remove soiled clothing and wash clothing thoroughly before reuse. Shower after work using plenty of soap and water.

9. Physical and chemical properties

Physical State	Liquid Coloured
pH	No Established Limit
Specific Gravity	1.11
Boiling Point F	220
Vapor Density	Heavier than air
VOC %	Refer to the Technical Data Sheet or label where information is available.
Evaporation Rate	Slower than ether

10. Stability and reactivity

General	This product is stable and hazardous polymerization will not occur. Not sensitive to mechanical impact. Excessive heat and fumes generation can occur if improperly handled.
Incompatible Materials	Strong oxidizing agents.
Hazardous Decompostion	May produce hazardous fumes when heated to decomposition as in welding. Fumes may produce Carbon Dioxide and Carbon Monoxide.

11. Toxicological information

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr
Oxirane, [(2−methylphenoxy)methyl]− − (0002210−79−9)	4,000.00, Rat − Category: 5	−−−−−	−−−−−
Oils, pine − (0008002−09−3)	3,200.00, Rat − Category: 5	5,000.00, Rabbit − Category: 5	−−−−−
Reaction product of epichlorohydrin & bisphenol A − (0025085−99−8)	−−−−−	−−−−−	−−−−−

General	NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. No additional information provided for this product. See Sections 8 and 11 for chemical specific data.

12. Ecological information

No additional information provided for this product. See Sections 8 and 11 for chemical specific data.

13. Disposal considerations

Dispose of in accordance with local, state and federal regulations. (Also reference RCRA information in Section 15 if listed).

14. Transport information

DOT (Domestic Surface Transportation)		IMO / IMDG (Ocean Transportation)	
DOT Proper Shipping Name	PAINT OR PAINT RELATED MATERIAL, NMFC 149980	IMDG Proper Shipping Name	PAINT OR PAINT RELATED MATERIAL, NMFC 149980
DOT Hazard Class	NR	IMDG Hazard Class	Not Regulated
UN / NA Number	Not Regulated	UN / NA Number	Not Regulated
DOT Packing Group	Not Regulated	IMDG Packing Group	Not Regulated
CERCLA/DOT RQ	Not Applicable gal. / Not Applicable lbs.	System Reference Code	9

15. Regulatory information

Regulatory Overview	The regulatory data in Section 15 is not intended to be all–inclusive, only selected regulations are represented. All ingredients of this product are listed on the TSCA (Toxic Substance Control Act) Inventory or are not required to be listed on the TSCA Inventory.
WHMIS Classification	No Established Limit

DOT Marine Pollutants (10%):
(No Product Ingredients Listed)

DOT Severe Marine Pollutants (1%):
(No Product Ingredients Listed)

EPCRA 311/312 Chemicals and RQs (>.1%) :
(No Product Ingredients Listed)

EPCRA 302 Extremely Hazardous (>.1%) :
(No Product Ingredients Listed)

EPCRA 313 Toxic Chemicals (>.1%) :
(No Product Ingredients Listed)

Mass RTK Substances (>1%) :
(No Product Ingredients Listed)

Mass Extraordinarily Haz Sub (>.01%) :
(No Product Ingredients Listed)

Penn RTK Substances (>1%) :
(No Product Ingredients Listed)

Penn Special Hazardous Substances (>.01%) :
(No Product Ingredients Listed)

Rhode Island Hazardous Substances (>.1%) :
(No Product Ingredients Listed)

RCRA Status:
(No Product Ingredients Listed)

N.J. RTK Substances (>1%) :
Oils, pine

N.J. Special Hazardous Substances (>.01%) :
(No Product Ingredients Listed)

Benzene, ethyl–

Isobutyl alcohol

Xylenes (o–, m–, p– isomers)

N.J. Env. Hazardous Substances (>.1%) :
(No Product Ingredients Listed)

Proposition 65 – Carcinogens (>0%):

Benzene, ethyl–

Proposition 65 – Female Repro Toxins (>0%):
(No Product Ingredients Listed)

Proposition 65 – Male Repro Toxins (>0%):
(No Product Ingredients Listed)

Proposition 65 – Developmental Toxins (>0%):
(No Product Ingredients Listed)

Risk Phrases: Not Applicable

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

Material Safety Data Sheet
CEILCOTE 690 PRIMER HARDENER PART B

Sales Order: {SalesOrd}

Bulk Sales Reference No.:	NCA066
MSDS Revision Date:	05/16/2011
MSDS Revision Number:	A0–5

International.

1. Identification of the preparation and company

Product Identity	CEILCOTE 690 PRIMER HARDENER PART B
Bulk Sales Reference No.	NCA066
Company Name	International Paint LLC 6001 Antoine Drive Houston Texas 77091
Emergency	
CHEMTREC (USA)	(800) 424–9300
International Paint	(713) 682–1711
Poison Control Center	(800) 854–6813
Customer Service	
International Paint	(800) 589–1267
Fax No.	(800) 631–7481

2. Hazard identification of the product

Danger

GHS Classification;

Item	Category	Hazard
Flammability	4	Combustible liquid
Acute Toxicity (mouth)	5	May be harmful if swallowed
Acute Toxicity (skin)	5	May be harmful in contact with skin
Acute Toxicity (inhalation)	Not classified	Not applicable
Acute Toxicity (ingestion)	Not classified	Not applicable
Skin corrosion/irritation	1A	Causes severe skin burns and eye damage
Eye damage/irritation	Not classified	Not applicable
Sensitization (respiratory)	Not classified	Not applicable
Sensitization (skin)	1	May cause allergic reaction.
Germ toxicity	Not classified	Not applicable
Specific target organ systemic toxicity (single exposure)	1	Not applicable
	2	Not applicable
	3	Not applicable
Specific target organ systemic Toxicity (repeated exposure)	1	Not applicable
	2	kidneys
Aspiration hazard	Not classified	Not applicable
Harmfulness to aquatic Environment (acute)	2	Toxic to aquatic life.
Harmfulness to aquatic Environment (long term effect)	2	Toxic to aquatic life with long lasting effects

Carcinogenicity	Not classified	Not applicable
Reproductive Toxicity	2	Suspected of damaging fertility or the unborn child.
Organic Peroxide	Not classified	Not applicable

Safety Phrases:

S20: When using do not eat or drink.

S24: Avoid contact with skin.

S28: After contact with skin, wash immediately with plenty of soap and water.

S37: Wear suitable gloves.

S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S46: If swallowed, seek medical advice immediately and show this container or label.

S49: Keep only in the original container.

S51: Use only in well−ventilated areas.

S61: Avoid release to the environment. Refer to special instructions/Safety data sheets.

Overview	NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Avoid contact with eyes, skin and clothing. Contains an ingredient which may cause reproductive disorders based on animal data (See Section 2 and Section 15 for each ingredient).
Inhalation	Harmful if inhaled. May cause lung injury. Causes nose and throat irritation. Vapors may affect the brain or nervous system causing dizziness, headache or nausea.
Eyes	Causes eye burns. Avoid contact with eyes.
Skin	Causes skin burns. May cause allergic skin reaction. May be harmful if absorbed through the skin.
Ingestion	Harmful if swallowed. May cause abdominal pain, nausea, vomiting, diarrhea, or drowsiness. Can result in irritation of the mouth, stomach tissue and digestive tract.
Chronic effects	Birth defect hazard. Contains an ingredient which can cause birth defects (See Section 2 and Section 15 for each ingredient).
HMIS Rating	Health: 3* Flammability: 2 Reactivity: 0 PPE: X

3. Composition/information on ingredients

Ingredient	CAS No.	Percent
2,4,6−Tri(dimethylaminomethyl)phenol	0000090−72−2	1.0 – 10
Benzyl alcohol	0000100−51−6	1.0 – 10
3−(Dimethylamino)−propylamine	0000109−55−7	1.0 – 10
Tetraethylenepentamine	0000112−57−2	1.0 – 10
Nonylphenol	0025154−52−3	1.0 – 10
FORMALDEHYDE, POLYMER WITH BENZENAMINE, HYDROGENAT	0135108−88−2	25 – 50

4. First aid measures

General	Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin	In case of contact, immediately flush skin with soap and plenty of water. Get medical attention immediately.
Ingestion	If swallowed, immediately contact Poison Control Center at 1−800−854−6813. DO NOT induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person.

5. Fire–fighting measures

Flash Point	F: 142 C: 61
Lower Explosive Limit (LEL)	1.3 (%vol in air) at Normal Atmospheric Temp and Pressure
ERG Guide No.	153

6. Accidental release measures

Spill Response Procedures	ELIMINATE ALL IGNITION SOURCES (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. Absorb or cover with dry earth, sand, or other non–combustible material and transfer to containers. LARGE SPILLS: Dike far ahead of liquid spill to contain released material and runoff from fire control. DO NOT GET WATER INSIDE CONTAINERS.
Public Safety	CALL CHEMTREC at (800)–424–9300 for emergency response. Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. LARGE SPILLS: Consider initial downwind evacuation for at least 300 meters (1000 feet).
ERG Guide No.	153

7. Handling and storage

Storage Temperature	Store between 40–100F (4–38C).
Handling and Storage Precautions	Keep away from heat, sparks and flame. Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Vapors may cause flash fire or ignite explosively. Prevent build–up of vapors by opening all windows and doors to achieve cross–ventilation. Avoid contact with eyes and clothing. Avoid prolonged or repeated contact with skin. Close container after each use. Wash thoroughly after handling.

8. Exposure controls and personal protection

Exposure

CAS No.	Ingredient	Source	Value
0000090–72–2	2,4,6–Tri(dimethylaminomethyl)phenol	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
0000100–51–6	Benzyl alcohol	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
0000109–55–7	3–(Dimethylamino)–propylamine	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	0.5 ppm TWA; 2 mg/m3 TWA

		Mexico	No Established Limit
		Brazil	No Established Limit
0000112–57–2	Tetraethylenepentamine	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
0025154–52–3	Nonylphenol	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
0135108–88–2	FORMALDEHYDE, POLYMER WITH BENZENAMINE, HYDROGENAT	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit

Health Data

CAS No.	Ingredient	Source	Value
0000090–72–2	2,4,6–Tri(dimethylaminomethyl)phenol	NIOSH	No Established Limit
0000100–51–6	Benzyl alcohol	NIOSH	No Established Limit
0000109–55–7	3–(Dimethylamino)–propylamine	NIOSH	No Established Limit
0000112–57–2	Tetraethylenepentamine	NIOSH	No Established Limit
0025154–52–3	Nonylphenol	NIOSH	No Established Limit
0135108–88–2	FORMALDEHYDE, POLYMER WITH BENZENAMINE, HYDROGENAT	NIOSH	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0000090–72–2	2,4,6–Tri(dimethylaminomethyl)phenol	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000100–51–6	Benzyl alcohol	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000109–55–7	3–(Dimethylamino)–propylamine	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000112–57–2	Tetraethylenepentamine	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0025154–52–3	Nonylphenol	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

0135108–88–2	FORMALDEHYDE, POLYMER WITH BENZENAMINE, HYDROGENAT	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

Respiratory	Select equipment to provide protection from the ingredients listed in Section 3 of this document. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates dust, vapor, or mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use. FOR USERS OF 3M RESPIRATORY PROTECTION ONLY: For information and assistance on 3M occupational health and safety products, call OH&ESD Technical Service toll free in U.S.A. 1–800–243–4630, in Canada call 1–800–267–4414. Please do not contact these numbers regarding other manufacturer's respiratory protection products. 3M does not endorse the accuracy of the information contained in this Material Safety Data Sheet.
Eyes	Avoid contact with eyes. Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site–specific conditions of use, safety glasses, chemical goggles, and/or head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Skin	Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site–specific conditions of use, protective gloves, apron, boots, head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Engineering Controls	Prevent build–up of vapors by opening all windows and doors to achieve cross–ventilation.
Other Work Practices	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, using toilet facilities, etc. Promptly remove soiled clothing and wash clothing thoroughly before reuse. Shower after work using plenty of soap and water.

9. Physical and chemical properties

Physical State	Liquid Coloured
pH	10
Specific Gravity	0.98
Boiling Point F	275
Vapor Density	Heavier than air
VOC %	Refer to the Technical Data Sheet or label where information is available.
Evaporation Rate	Slower than ether

10. Stability and reactivity

General	This product is stable and hazardous polymerization will not occur. Not sensitive to mechanical impact. Excessive heat and fumes generation can occur if improperly handled.
Incompatible Materials	Strong oxidizing agents.
Hazardous Decompostion	May produce hazardous fumes when heated to decomposition as in welding. Fumes may produce Carbon Dioxide and Carbon Monoxide.

11. Toxicological information

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr
2,4,6–Tri(dimethylaminomethyl)phenol – (0000090–72–2)	1,000.00, Rat – Category: 4	1,280.00, Rat – Category: 4	–––––
Benzyl alcohol – (0000100–51–6)	1,230.00, Rat – Category: 4	2,000.00, Rabbit – Category: 4	8.80, Rat – Category: 3
3–(Dimethylamino)–propylamine – (0000109–55–7)	922.00, Rat – Category: 4	–––––	4.31, Rat – Category: 3

Tetraethylenepentamine – (0000112–57–2)	2,100.00, Rat – Category: 5	660.00, Rabbit – Category: 3	–––––
Nonylphenol – (0025154–52–3)	580.00, Rat – Category: 4	2,031.00, Rabbit – Category: 5	–––––
FORMALDEHYDE, POLYMER WITH BENZENAMINE, HYDROGENAT – (0135108–88–2)	–––––	–––––	–––––

General — NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. No additional information provided for this product. See Sections 8 and 11 for chemical specific data.

12. Ecological information

Not Defined

No additional information provided for this product. See Sections 8 and 11 for chemical specific data.

13. Disposal considerations

Dispose of in accordance with local, state and federal regulations. (Also reference RCRA information in Section 15 if listed).

14. Transport information

DOT (Domestic Surface Transportation)		IMO / IMDG (Ocean Transportation)	
DOT Proper Shipping Name	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS: TETRAETHYLENEPENTAMINE, TRIS–2,4,6–(DIMETHYLAMINOMETHYL) PHENOL)	IMDG Proper Shipping Name	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS: TETRAETHYLENEPENTAMINE, TRIS–2,4,6–(DIMETHYLAMINOMETHYL) PHENOL)
DOT Hazard Class	8	IMDG Hazard Class	Class 8, No division Corrosive materials
UN / NA Number	UN 2735	UN / NA Number	UN 2735
DOT Packing Group	III	IMDG Packing Group	III
CERCLA/DOT RQ	Not Applicable gal. / Not Applicable lbs.	System Reference Code	219

15. Regulatory information

Regulatory Overview — The regulatory data in Section 15 is not intended to be all–inclusive, only selected regulations are represented. All ingredients of this product are listed on the TSCA (Toxic Substance Control Act) Inventory or are not required to be listed on the TSCA Inventory.

WHMIS Classification — B3:D2B:E

DOT Marine Pollutants (10%):
(No Product Ingredients Listed)

DOT Severe Marine Pollutants (1%):
(No Product Ingredients Listed)

EPCRA 311/312 Chemicals and RQs (>.1%) :
(No Product Ingredients Listed)

EPCRA 302 Extremely Hazardous (>.1%) :
(No Product Ingredients Listed)

EPCRA 313 Toxic Chemicals (>.1%) :
(No Product Ingredients Listed)

Mass RTK Substances (>1%) :
Benzyl alcohol

3–(Dimethylamino)–propylamine
Nonylphenol
Tetraethylenepentamine

Mass Extraordinarily Haz Sub (>.01%) :
(No Product Ingredients Listed)

Penn RTK Substances (>1%) :
Benzyl alcohol
3–(Dimethylamino)–propylamine
Nonylphenol
Tetraethylenepentamine

Penn Special Hazardous Substances (>.01%) :
(No Product Ingredients Listed)

Rhode Island Hazardous Substances (>.1%) :
(No Product Ingredients Listed)

RCRA Status:
(No Product Ingredients Listed)

N.J. RTK Substances (>1%) :
3–(Dimethylamino)–propylamine
Tetraethylenepentamine

N.J. Special Hazardous Substances (>.01%) :
3–(Dimethylamino)–propylamine
Tetraethylenepentamine

N.J. Env. Hazardous Substances (>.1%) :
(No Product Ingredients Listed)

Proposition 65 – Carcinogens (>0%):
(No Product Ingredients Listed)

Proposition 65 – Female Repro Toxins (>0%):
(No Product Ingredients Listed)

Proposition 65 – Male Repro Toxins (>0%):
(No Product Ingredients Listed)

Proposition 65 – Developmental Toxins (>0%):
(No Product Ingredients Listed)

Risk Phrases:

R22: Harmful if swallowed.

R34: Causes burns.

R43: May cause sensitisation by skin contact.

R51/53: Toxic to aquatic organisms, may cause long–term adverse effects in the aquatic environment.

R62: Possible risk of impaired fertility.

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

CEILCOTE® 690 Primer

Oil and Moisture Tolerant Epoxy Primer

Description
Ceilcote 690 Primer is a low vicosity, 100% solids epoxy resin system with a unique curing agent. This primer is based on technology that results in tolerance for surface oils and moisture.

Typical Uses
- Can be used on concrete or steel
- Used on damp concrete surfaces
- Used on oil saturated surfaces
- Primer or Sealer

Advantages
- Good chemical resistance
- 100% solids
- Moisture tolerance
- Bonds to oily or moisture saturated surfaces

Chemical Resistance
Resistant to synthetic and mineral lubricants, most acids, alkalis and solvents. Specific information on the chemical resistance properties will be furnished on request.

Substrate
The substrate must be free from any standing water or oil contaminants and any other contaminants.

Surface Preparation
Concrete:
Abrasive blasting or scarification to remove laitance and surface contaminants is desired. Concrete must be thoroughly cured, free of curing solutions or mold release agents, dust and must be dry at time of application when ever possible. Refer to ASTM D-4263. Remove as much as oil as possible prior to application of the primer. Please note that although CEILCOTE 690 Primer has excellent bond to oil and moisture saturated concrete, contamination does reduce bonding properties.

Application
CEILCOTE 690 Primer is a two-component compound consisting of resin and hardener.

Pour 690 Primer resin and hardener into a clean pail. Stir well for 2 minutes or longer and scrape the sides and bottom of pail to assure that a uniform blend is attained. A jiffy type mechanical mixer operated at low speed is recommended for best results.

Mixing Ratio

	By Weight	By Volume
CEILCOTE 690 Primer		
690 Primer Resin	100	2
690 Primer Hardener	44	1

Handling Properties
Working Time

Temperature	Time
50°F (10ºC)	2 hrs
70°F (21ºC)	1 hr
90°F (32ºC)	30 min

Time to Re-coat

Temperature	Time
50°F (10ºC)	16 hrs
70°F (21ºC)	8 hrs
90°F (32ºC)	4 hrs

Coverage
Concrete* 150-200 ft^2/gallon (3.7-4.9 m^2/liter)
Steel 250-325 ft^2/gallon (6.1-7.9 m^2/liter)
With the addition of Ceilcote C#1 140-160 ft^2/gallon (3.4-3.9 m^2/liter)

*Coverage may vary depending on density of concrete.

Packaging
The following standard packages are available
CEILCOTE 690 Primer 1, 3 & 15 gal Unit (3.79, 11.35, 56.77 liter units)

Storage
Store in a cool, dry and covered location away from fire hazards and direct sunlight. Minimum shelf life at 70°F (21°C).

CEILCOTE 690 Primer 18 months

Higher temperature will shorten the shelf life of these products. The packing drums are to be kept tightly sealed and are to be resealed each time materials have been removed. All liquid products are to be stored in a frost-free place.

Safety
Store in cool, dry area [50°- 90° F (10° - 32° C)] away from direct sunlight, flame or other hazards.

CEILCOTE 690 Primer contains epoxy resins and polyamine catalyst. The product's components have been CEILCOTE 690 Primer contains epoxy resins and polyamine catalyst. The product's components have been formulated to optimize physical characteristics such as strength and chemical resistance while minimizing hazardous physical and health factors encountered during application. A concerted effort is made to be aware of the latest chemical toxicological information and to apply this knowledge in a responsible manner to ensure product safety.

001076

During application of CEILCOTE 690 Primer materials, always wear gloves and appropriate work clothing to minimize contact. Ventilation is required with special consideration for enclosed or confined areas. Air movement must be designed to insure turnover at all locations in work area and adjacent areas to avoid buildup of heavy vapors. Use caution when handling flammable liquids, eliminate sources of ignition from work area and containers with residues. Observe safe storage practices by separating resins from hardeners, by keeping solvents in a cool area, free of sources of ignition.

Product Material Safety Data Sheets are available and should be consulted when handling products. These products are for industrial and professional use only; application directions must be followed.

Maintenance
Periodically inspect the applied material and repair localized areas as needed. Consult your CEILCOTE representative for additional information.

Technical and Physical Data

	Test standard	Unit	Value
Generic Type			Epoxy
Density - mixed	ASTM D 1475	lbs/gal (kg/ltr)	9 (1.08)
Color			Amber
Viscosity - mixed	ASTM D 2196	cps	1000
Adhesion to Concrete	ASTM D4512	psi	>300
Adhesion to Oily Concrete*[1]	ASTM D4512	psi	>300
Adhesion to Damp Concrete*[2]	ASTM D4512	psi	>300
Hardness		Shore D	75-80
Temperature Resistance		ºF (ºC)	250 (121)
Shelf Life		Months	18
Solids content		%	100
Flash Point		ºF (º C)	>212 (>100)

*[1] 24 hr soak with SAE 30 Detergent Motor Oil
*[2] 24 hr soak with Tap Water

Issue date: 18/06/07

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www.international-pc.com

Part 2

Section H – Tank Standards: Secondary Containment

Appendix H-6
EPA memorandum, OSW Directive No. 9523.00-17

OSW Directive No. 9523.00-17

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

SEP -2 1988

MEMORANDUM

SUBJECT: Summary of Assistance Branch Permitting Comments

FROM: Sylvia Lowrance, Director
Office of Solid Waste (OS-310)

TO: Hazardous Waste Management Division Directors
Regions I-X

Attached is the fourth in a series of periodic reports which summarize major issues that Assistance Branch members have addressed in their reviews of specific Part B applications, permits and closure plans. (These reports were formerly called the "PAT Summary Reports"; previously reports were issued in March 14, 1986 (OSWER Policy Directive No. 9523.00-14), March 30, 1987 (OSWER Policy Directive No. 9523.00-12), and March 30, 1988 (OSWER Policy Directive No. 9523.00-15)). These reports cover issues that are of generic national interest rather than strictly site-specific interest. The attached report includes reviews conducted by the Disposal and Remediation Section and the Alternative Technology and Support Section from January 1987 to March 1988. In order to ensure that the report reflects current EPA policy and guidance, we obtained review comments from within OSW and from the Office of General Counsel.

We hope that the recommendations provided in this document will be helpful for permit writers encountering similar situations at other RCRA facilities. By sharing the Assistance Branch's suggestions from a few sites, we hope that permit decision making will be somewhat easier and faster at many more sites nationally. We encourage you to distribute this report to your staff and State permit writers. To make that easier, I have attached multiple copies of the report.

Attachment A to the report lists the facility names, Reports, coordinators, and dates for the reviews summarized in this report. Attachment B provides a list of guidance documents and directives used in preparing the reviews.
If you have any questions, comments, or suggestions on the Summary of Assistance Branch Permitting Comments, please contact James Michael at FTS 382-2231.

Attachments

cc: RCRA Branch Chiefs
Regions I-X
Permit Section Chiefs
Regions I-X
J. Winston Porter
Jack McGraw
Tom Devine
Jeff Denit
Bruce Weddle
Susan Bromm
Ken Schuster
Joe Carra
Jim O'Leary
Suzanne Rudzinski
Elizabeth Cotsworth
Jim Michael

DRS Staff
ATSS Staff
Paul Cassidy
Les Otte
Art Day
Jim Bachmaier
Elaine Stanley
Lisa Friedman
Tina Kaneen
Fred Chanania
Matt Hale
George Garland
Tom Kennedy (ASTSWMO)

Summary of Assistance Branch Permitting Comments

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SUMMARY OF ASSISTANCE BRANCH PERMITTING COMMENTS

January 1987 - March 1988

This is fourth in a series of documents summarizing some of the comments provided to Regional permit writers by staff of OSW's Assistance Branch on permitting. It was formerly called the "PAT Summary Report".

This summary is organized into three sections. The first section, Issue Resolution, provides examples of issues that have been raised at one or more facilities. This section covers special situations where regulations or policy decisions were applied to actual circumstances. The second section, Recommendations, addresses comments routinely made to answer questions on items often overlooked or poorly understood, and to convey technical information. This section should be generally helpful to the permit writer. Finally, there is a section describing new guidance that may be of interest to the Regions.

ISSUE RESOLUTIONS

Ancillary Equipment on Tank Systems

1) Secondary Containment for Flanges and Joints

Threaded joints and flanges used in tank system piping vary widely. Frequently, the Assistance Branch staff is asked to clarify if a specific design is exempt from the requirement for secondary containment.

An owner/operator asked if a joint consisting of a flange bolted to a second flange is required to have secondary containment. Bolted flange joints, that are above ground and inspected daily, are not required to have secondary containment; however, the completed and installed system must be tested for tightness prior to use.

Secondary containment is intended to apply to any threaded joint system, including threaded joints fabricated of special materials such as teflon or plastic. Any joint where waste may come in contact with the thread must have secondary containment.

2) Secondary Containment for Ancillary Equipment

A facility submitted a design for a secondary containment system for the waste lines entering a neutralization tank. The proposed secondary containment system was an existing

trench that conveyed non-hazardous wastewater to the same neutralization tank. The Assistance Branch was asked to determine if the existing trench was acceptable as secondary containment.

The hazardous waste pipe was to be suspended over the existing trench which was adequately sized to contain both the flow in the pipe, should a leak occur, and the maximum volume of wastewater. Secondary containment, however, must be dry in order to detect any leaks from the hazardous waste line. Once a release is detected, any waste must then be removed. The proposed system, therefore, was not acceptable.

The facility modified its proposal to include a dry trough below the hazardous waste pipe. The second proposal met the full intent of the secondary containment requirement and was deemed acceptable.

New Tank Systems

1) The Status of New Tank Systems at Facilities Permitted between the Promulgation and Effective Dates of the New Tank System Regulations

Any tank system installed after July 14, 1986 is, by definition, a new tank system. About six months fall between this date and the effective date of the revised Federal regulations (January 12, 1987). For tanks subject to RCRA standards but not HSWA, this time lapse is even more pronounced in States that had pre-HSWA authorization and have additional time to adopt equivalent tank system regulations. Can permits issued during this time lag reflect the intent of the revised tank regulation?

In the case of a State-issued permit, the permit must reflect the State statutory or regulatory requirement in effect prior to final permit disposition. If a State has a regulation analogous to Section 270.41(a)(3) (Reference 5) the Director can modify a permit in order to include new statutory requirements or regulations applicable to the permit upon the effective date of the legal authority. Thus, a permit issued for a tank system can be modified to reflect the revised standards when they go into effect.

After the permit modification, any tank system installed after July 14, 1986 would be considered a "new" tank system which must have secondary containment. The phase-in period allowed for 'existing' tank systems would not apply.

The State Director has the option to use a State law analogous to the "omnibus provision" (Section 270.32(b)(2)) to reflect the requirements of the regulations during this lag time. OSWER Policy Directive #9523.00-15 (Refer ence 11) clarifies when to use the (Federal) omnibus provision.

It should be noted that new underground tanks are regulated under HSWA. At this time, no States are authorized to apply these requirements.

Variances for Classification as a Boiler

The Assistance Branch was requested to determine if specific units which do not meet the definition of boiler were eligible for a variance to be classified as a boiler under Section 260.32. Two proposals were reviewed and the following issues were specifically addressed. An evaluation of all the applicable criteria, however, was conducted in each case prior to making the final determination. At both facilities, the inability of either unit to meet any of the criteria for classification as a boiler supports the final determination that these units are not eligible for a variance.

1) Integral Boiler Design of the Combustion and Energy Recovery Sections.

In order for a controlled flame combustion unit to meet the definition of a boiler given in Section 260.10, the combustion chamber and the energy recovery section must be of integral design. Two facilities have units which they refer to as "post-combustion chambers" located between the combustion section and the energy recovery section. The post-combustion chambers are insulated flow passages between the main combustion chamber and the heat recovery section. The owners of these units requested variances. they contend that these passages are not ducts or other connectors which, as stated in the regulations, are not permissible as components between the combustion and energy recovery sections in units which meet the integral design requirements of a boiler.

The owners assert that additional thermal oxidation of wastes occur in the post-combustion chambers, providing high hazardous waste destruction, and that combustion therefore continues until the gases reach the energy recovery section.

The oxidation of additional waste products, however, does not mean that combustion occurs. Combustion, as defined

in Webster's New Collegiate Dictionary, is a specific process which is "accompanied by the evolution of light and heat". In fact, information on the performance of these units showed a net loss of heat over the length of the chamber instead of a heat gain as would occur during combustion. The conditions in the chamber that promote the oxidation of trace organics is part of a good incinerator design. The Assistance Branch found that these units do not meet this criteria for a boiler.

2) Integral Boiler Design Based Upon the Operation of a Control System Between the Combustion and Energy Recovery Sections

40 CFR Section 260.10, which defines boilers, provides an example of units that do not meet the integral design requirements as units "in which the combustion chamber and the primary energy recovery section(s) are joined only by ducts or connections carrying flue gas..." An owner/operator maintained that his unit was a boiler because the combustion section was connected to the energy recovery unit not only by a duct but by a control system as well. The Assistance Branch evaluated the owner's contention that his unit was a boiler.

The control system in this unit does connect the steam raising portion with the combustion chamber. The control system, however, was designed for safety purposes to reduce the risk of explosion and other unsafe conditions. Under unsafe conditions this type of automatic control system would shut the unit down.

True boilers have control systems designed to regulate steam output. Boiler control systems would typically provide at least a 3 to 1 turn down control on steam production by varying the fuel, air and water. When evaluating the appropriateness of any unit to meet the definition of a boiler, the common and customary usage of similar units is important. The lack of steam control by this unit's control system is typical of incinerators. The Assistance Branch noted that the lack of a true boiler control system supported the denial of the boiler petition.

3) Variance Petition under Section 260.32 for classification as a Boiler Based upon Innovative Design of the Unit

An owner submitted a petition for classification of his unit as a boiler. He maintained that the innovative techniques employed during the construction of his unit should be a factor in the evaluation of his petition since

the boiler classification variance was meant to allow for new or unusual units which EPA did not have the opportunity to consider when developing the boiler definition. During the review of the petition, the Assistance Branch evaluated the performance of the innovative component in order to determine if it was significantly different from that of the current technology.

The innovative component was the insulation around the post-combustion chamber. The insulation was constructed of 8 inches of compressed refractory material installed by a unique, soon to be patented process. The owner of the unit and the designer of the process stated that the use of this material was innovative.

The performance of the insulation was both theoretically and practically evaluated. Actual performance was considerably less than what was anticipated from the theoretical calculations. Based on the theoretical heat transfer calculations, the performance of the innovatively applied insulation was not significantly better than that for insulation designed and installed according to current incinerator industry standards. While the installation technique for the insulation may be "innovative", the insulation process did not provide any improvement over current practice. Thus, even though the insulation was different from the type normally used, the difference was deemed insignificant since it achieved results similar to conventional insulation.

4) Thermal Efficiency Requirement for Boilers

Section 260.10 states that any "boiler" must "maintain a thermal energy recovery efficiency of at least 60 percent". As part of a demonstration to support a waiver petition for classification as a boiler, a unit was described as operating with a 65% energy recovery. The Assistance Branch evaluated this claim.

The unit in question is not able to measure the fuel flow rate and the waste addition varies by 50 percent. Without appropriate documentation, the thermal efficiency data is unsupported. The determination of boiler efficiency should be conducted under controlled conditions following one of the methods certified by the American Society of Mechanical Engineers.

Incinerators

1) Use of Thermal Relief Vents

Design drawings in a permit application for a new incinerator included a thermal relief vent between the combustion chamber and the air pollution control equipment. The Assistance Branch was requested to determine if the use of a vent to bypass the air pollution control equipment should be allowed.

The thermal relief vent was proposed to protect the air pollution control equipment from excessive heat during emergency situations such as failure of power and water cooling systems. OSWER Policy Directive #9488.00-3 (Reference 1) discusses the acceptability of these vents in new incinerators. Indiscriminate use of relief vents is deemed to be a violation, however, EPA has recognized that they may occasionally be needed to protect employees and air pollution control equipment. Thermal relief vents, therefore, are allowed in the design of new incinerators.

The permit, however, should require the design to include the necessary backup systems to reduce the use of these vents. The system should have interlocks such that the vent can only open after the waste feed has been cut off. The operating plan should include a list of parameters and cut-off points at which the vent may be used. A review of the permittee's operating plan should be made to identify and eliminate the use of the thermal relief vent in situations where it may not be absolutely necessary.

Minimum Technology Requirements for Vertical and Lateral Expansions

1) Application of Minimum Technology Requirements to Vertical Expansions.

A facility planned to expand its landfill vertically. During the public comment period on their draft permit, the applicability of minimum technological requirements to such an expansion was raised. The Assistance Branch was requested to evaluate the issue.

The facility opened the landfill trench in question in 1978 under a TSCA permit. Currently the unit accepts RCRA waste under interim status. The proposed vertical expansion would not exceed the capacity of the unit stated in the Part A application, and there are no limits in the

existing permits on the elevation of RCRA wastes placed in the unit. The proposed expansion will extend 21 feet vertically above the original grade limitation for TSCA wastes; however, no waste will be placed beyond the existing lateral boundaries.

The Assistance Branch found that the proposed vertical expansion is permissible without meeting the minimum technological requirements because: (1) The proposed vertical expansion does not exceed the unit boundaries; and (2) The landfill was in use and operational prior to the date of the enactment of HSWA, therefore, the above-grade expansion does not fit the definition of a new unit.

May 1985 guidance (Reference 4), however, states that a vertical expansion beyond any hazardous waste permit capacity or elevation limits affects the operational status of the unit. If the operation of the unit was limited on November 8, 1984, a subsequently proposed vertical expansion would constitute a "new unit" and is subject to minimum technology requirements. This facility has no vertical RCRA hazardous waste permit limits; therefore, the minimum technology requirements do not apply to this vertical expansion.

2) Lateral Expansion During Closure.

After a RCRA Facility Investigation (FRI), an owner/operator planned to close several solid waste management units by consolidating the waste from two waste soil piles with the residue in a surface impoundment regulated under interim status. The volume of the resulting waste mixture is estimated to exceed the existing capacity of the impoundment. The Region was concerned that the proposed closure plan would not be permissible.

The consolidation of waste material is an acceptable closure activity. If the proposed consolidation necessitates the placement of any hazardous waste beyond the boundary of the regulated unit or beyond any limits imposed by a RCRA permit since November 8, 1984, the action results in a lateral expansion which must meet the minimum technological requirements. Moreover, if the consolidation into the surface impoundment occurs after November 8, 1988, the surface impoundment must meet minimum technology requirements. Finally, if waste from any of the units being placed in the impoundment are subject to the land disposal ban, then the waste may not be placed in the impoundment unless it is treated in accordance with 40 CFR 268 Subpart D or the owner/operator has successfully petitioned under 40 CFR 268.6.

Waiver Petitions from Minimum Technological Requirements - 3004(o)(2)

A facility may petition for a waiver from minimum technological requirements under Section 3004(o)(2) if their alternate design and specific operating practices, when viewed in combination with the characteristics of the site location, will prevent the migration of hazardous constituents into ground or surface water as effectively as the required design. The Assistance Branch is often asked to evaluate facility specific factors to see if they meet the conditions of the waiver. During two recent evaluations, the following issues were raised.

1) Minimum Technology Waiver Petition due to Alternate Design and Operational Factors

An owner/operator of an existing surface impoundment proposed to install a liner system consisting of a 36-ml hypalon sheet over a leachate collection system constructed over two existing 4-inch layers of bentonite separated by a drainage layer. The owner contends that this design is at least as effective as the minimum technology requirements (MTR). The MTR specify a 36-inch clay layer because a liner of such thickness would be constructed by the placement of several clay lifts. Discontinuities in an individual lift would be unlikely to occur in the same area on subsequent lifts. The existing 4-inch layer is applied in one lift and does not provide any safeguard over any irregularities that might allow leakage.

While the new design alone was insufficient, the owner/operator also planned to use operational factors which he claimed would make the alternate design as effective as the minimum technology requirements. The impoundment has a limited life span with planned closure in 1989 which makes the unit a short-term operation. The leachate system does not show any evidence of a leak, and no ground-water contamination has been found. If a leak were to occur, the owner plans to drain the impoundment. While the liquids stored in the impoundment are listed hazardous wastes, they do not exhibit any of the characteristics for which the wastes were listed. The Permit Assistance Staff recommended that the waiver be granted contingent upon the short-term operation of the unit.

2) Waiver Petition Demonstrating Design and Operating Practices which Prevent Migration

A facility petitioned for an alternate design and operation approach that prevents the migration of contaminated ground water from under the unit. The Assistance Branch was asked to determine if the proposed design met the intent of the 3004(o)(2) waiver provision.

The owner of the surface impoundment proposed to install intragradient cut-off walls downgradient of their surface impoundment. The collected, contaminated ground water would be removed from behind the walls and treated. Migration of contaminated ground water beyond the waste management area, therefore, would be prevented.

Section 3004(o)(2) allows a waiver only if the owner can demonstrate that the proposed alternative will "prevent the migration of any hazardous constituents into the ground water". The term "ground water" is intended to mean any ground water and not ground water beyond the waste management area. In order to meet the equivalency test required by this waiver, the alternate liner design must be as effective as the minimum technology requirements for liner design in preventing the migration of any constituent through the liner. The Assistance Branch recommended denial of this waiver request.

RD&D Permits

1) Qualifying for a RD&D Permit for an Incinerator

Research, development and demonstration permits, regulated by Section 270.65, were intended to be available for processes and units which treat hazardous wastes with innovative technologies. Several Regions have received applications for RD&D permits for technologies already established for treating hazardous wastes and which are specifically regulated elsewhere under RCRA. The Assistance Branch was asked to determine if incinerators, in particular, could be eligible for a RD&D permit and under what circumstances they would qualify.

The purpose of RD&D permits is to produce data on technical or economic feasibility of experimental processes or technologies; however, existing treatment methods may qualify if the permit is intended to allow treatment of waste streams not previously treated by this type of unit, of if the operating conditions would be modified for different or expanded uses of the technology. The Assistance Branch, after discussion with the Office of General Counsel, clarified that incinerators are eligible for RD&D permits (Reference 8) if they further the

knowledge on treatability, design and/or combustion research through experimental (but not commercial) research applications.

In one such instance, a research facility applied for an RD&D permit for an incinerator and they proposed to conduct a study on the products of incomplete combustion (PICs) from incinerators. They also proposed to produce a biological system study on the fate and transport of PICs in the environment. The results of these proposed studies would add to the body of information on the characteristics and quantity of residuals emitted from incinerators. Based upon the proposed study of the effects of PICs on biological systems, the proposed incinerator was determined to be eligible for a RD&D permit.

2) Operating Time for RD&D Permits

Section 270.65(a)(1) states that an RD&D permit can be issued for up to 365 days of operation. A particular facility wishes to continue operation under its RD&D permit for longer than one calendar year. A Region asked the Assistance Branch for appropriate wording on the permit.

While RD&D permits are limited to 365 days of actual operation, many experimental units operate sporadically for a few days and are then shut down for longer periods while the results are evaluated. In some cases, 365 days of operation may extend over numerous years. In order to keep track of the unit's operation, guidance (Reference 3) suggests that permit writers may include a calendar-based expiration date in RD&D permits in cases when warranted.

RD&D permits may be renewed up to three times. The appropriateness of the justifications for an extension should be considered with any future permit renewal applications. The application will be evaluated based upon the initial results of operation, the need for more data, any changes in operating conditions and the occurrence of any enforcement actions.

RECOMMENDATIONS

Tank Systems

1) Applying Regulations Promulgated Under Two Authorities

The universe of hazardous waste tank systems currently affected by the July 14, 1986 regulatory amendments varies from State to State. The tank system regulations were promulgated under two authorities. Those applicable to RCRA tank systems are now in effect only in States that do not have authorized RCRA base programs. States authorized for the base RCRA program must amend their programs before the regulations become effective. Those provisions applicable to HSWA regulated tank systems are effective in all States. The Assistance Branch is often asked to clarify which provisions apply universally and which apply only in unauthorized states.

The following requirements apply in all states:

- interim status requirements applicable to small quantity generator tank systems (Section 3001(d))

- leak detection for all new underground tanks that cannot be entered for inspection (Section 3004(o)(4))

- permitting standards for underground tanks that cannot be entered for inspection (Section 3004(w))

Regulations applicable to above-, on-, in-, and enterable underground tanks currently apply only in unauthorized States. Authorized States have until July, 1988 (if only regulatory changes are needed) or July, 1989 (if statutory changes must be made) to amend their programs to reflect the Federal requirements. Further information is provided in the Implementation Strategy for Tank Systems (Reference 12).

Incinerators

1) Selection of Principle Organic Hazardous Constituents (POHCs)

Current research by the University of Dayton Research Institute has led to a new incinerability ranking of Appendix VIII compounds based upon thermal stability data (Reference 9). Until now, incinerability ranking of Appendix VIII compounds has been based upon a compound's heat of combustion.

Guidance is being developed to reflect the new ranking of compounds. A Regional Office proposed to specify at least one POHC based on each of these rankings as an interim approach. The Assistance Branch agreed that this approach is acceptable, and suggested additional criteria, such as chemical structure, toxicity and concentration, which may also be used.

2) Use of Surrogate Wastes During a Trial Burn

Surrogate wastes are mixtures of chemicals combined to exhibit the characteristics of the actual waste materials and to contain the same hazardous chemicals expected to be burned by an incinerator. Surrogate wastes are often proposed by facilities for use during the trial burn. Simulating the burning characteristics of any individual waste, however, is very difficult. As a result of this difficulty, facilities should use actual wastes during the trial burn if they are available. In cases where the principle organic waste are not high enough to determine the destruction and removal efficiency (DRE), the wastes may be spiked.

If the facility cannot modify its plan to burn actual wastes, such as in the case of a commercial incinerator, the owner/operator should provide justification for the use of surrogates. If any facility must use surrogate wastes, the surrogate waste should be as much like the actual waste as possible. If an incinerator is planning to burn solid waste, surrogate solids should be mixed with the POHC feed.

3) Destruction and Removal Efficiency (DRE) Calculations

A facility planned to include in their DRE calculations the POHC input into the system from city water used to prepare a lime slurry for removing acid gases by their scrubber. During a review of the trial burn plan, the Assistance Branch evaluated their methodology for the DRE determination.

According to Section 264.343(a)(1), the mass feed rate of POHC input used for DRE calculations must equal the mass feed rate in the waste stream only. In order to complete the determination, all the POHCs in the exhaust gases must be included in the calculations. Any additional POHCs volatilized from the slurry used in the scrubber system must be included if they are released with the emission gases.

4) Sampling During a Trial Burn

In their trial burn plan, a facility proposes to obtain one grab sample per test run for residue analysis. The proposed frequency of sample collection is inadequate for the collection of a representative sample from any test run. An acceptable plan would be to collect grab samples at frequent intervals over the entire test period. These samples should be composited before analysis.

5) Use of Sampling Trains in Modified Method 5 (MM5)

Several facilities planned to use a single MM5 train to sample for both particulates and semi-volatile POHCs during a trial burn. This approach is incorrect. The drying of the filter for the particulate analysis results in the potential loss of semi-volatile compounds. The correct procedure involves the use of two separate trains, one for particulate sampling and one for the two separate trains, one for particulate sampling and one for the sampling of semi-volatile organics.

Ground-water Monitoring

1) Confirming Ground-water Contamination

A draft permit condition for a detection monitoring program required three sampling events to confirm ground-water contamination. Under Part 264 Subpart F, only one confirmatory sampling event is necessary to trigger a compliance monitoring program.

The Subpart F requirement for triggering a compliance monitoring program is based upon one sampling event and one confirmatory sampling. A slug of contamination detected in the initial sampling could pass the compliance point during the time it takes to obtain results from additional confirmatory sampling events.

2) Disposal of Purged Water.

The ground-water sampling and analysis plans at many facilities have no procedures for handling purged water. Purged water from monitoring wells should not be discarded onto the ground because the purged water could contain hazardous waste. It should be tested for hazardous characteristics in order to determine an appropriate disposal method, particularly if previous sampling events indicated the presence of hazardous constituents. Alternately, collected purge water can be disposed back into surface impoundments that are permitted to receive any constituents expected in leachate or contaminated ground water.

Ground-water Modeling

1) Determination of Site-specific Permeability for Application in a Model.

A facility proposed to use a model to support their no-migration waiver petition. They obtained several soil samples in order to determine a soil permeability factor. A mean value was calculated for input into the model.

Modeling efforts to determine the potential for migration of hazardous constituents to or in ground water should use the worst-case value measured representative of a site in order to incorporate a margin of safety. The applicant was asked to re-run the model using the highest value of the coefficient of permeability.

2) Selection of Critical Constituents for Use in a Transport Model

A waiver applicant planned to demonstrate no migration into ground water by selecting critical constituents for use in their modeling effort. Inputs include half-life and retardation factors. The applicant selected acrolein and acrylonitrile based upon their relatively long half-lives in ground water

However, the high retardation factors which indicate slow movement, make the selection of these two chemicals unrepresentative of the worst case. The most appropriate constituent(s) for modeling must be based on an evaluation of all relevant factors. Concentration of the constituents in the waste and their retardation factors should be evaluated along with half-life when selecting constituents with the greatest potential to migrate. The Assistance Branch recommended that other constituents be chose in this case.

3) Use of Appropriate Models based upon Site Characteristics

A waiver applicant proposed to use a one-dimensional model to demonstrate no migration of hazardous constituents into ground water. The hydrogeological and soil characteristics of the site displayed several non-uniformities and could be described as a fairly complex system.

A one-dimensional model, as proposed by the applicant, can be very limiting. The attributes of the model must reflect the conditions observed at the site. Also, data representative of the whole site should be collected for input into the chosen model. Given the complexities of the site, a more sophisticated model, such as a 2- or 3-D model, would be necessary to support a demonstration of a 'no migration'.

Landfill Design

1) Composed Bottom Liner Equivalency

A facility proposed to install a 60-ml high density polyethylene (HDPE) liner over a compacted clay layer with a permeability not exceeding 1 x 10-6 cm/sec as the lower liner for a new cell. The Assistance Branch was asked to determine if the proposed liner was equivalent to the current requirement under Section 264.301(c) for a 3 foot compacted clay-only liner with a permeability not greater than 1 x 10-7 centimeters per second.

The staff felt that a composite liner with a clay component of 1 x 10-6 cm/sec permeability was equivalent to a clay liner with lower permeability. Regulations proposed on March 28, 1986 (Reference 6), when they become effective, will be more restrictive. They will require a composite bottom liner consisting of a flexible membrane liner over a 3 foot clay layer with a permeability not more 1 x 10-7. Until then, the clay-only liner requirement is the standard applied to evaluate liner equivalency.

2) Evaluation of a Steep Slope Using the Universal Soil Loss Equation

A facility proposed to install a cover with a slope that significantly exceeds the recommended 3-5% grade. The owner maintains that the annual soil loss, based upon the Universal Soil Loss Equation, would be just less than the 2 tons/acre/year limit recommended by EPA. The Assistance Branch was asked to review the facility's calculations.

The five factors used in the soil loss equation are subjective and selected based upon the site engineer's best judgement. If slightly larger factors were applied than the ones selected by the applicant, the soil loss would be substantially greater (as much as 33 tons/acre/year). In order for the Assistance Branch to accept the applicant's predicted soil loss, the anticipated loss should be significantly less than 2 tons/acre/year so that any underestimation of the selected factors would not result in an actual loss of more than the soil loss limit. The Assistance Branch requested additional documentation from the applicant.

3) Demonstration of Material Durability

An applicant conducted a demonstration of material durability by using polyethylene tanks to perform the compatibility testing on their HDPE liner components. The polyethylene tank material absorbs the same kinds of chemicals as the HDPE samples, thereby reducing the constituent level in the test leachate. This could lead to an unrealistic strength data after immersion testing. The Assistance Branch recommends that glass vessels be used for immersion testing.

4) Minimum Technological Requirements for Secondary Soil Liner

A facility planned to construct a side slope liner by scarifying and remolding the exposed soils prior to placement of the synthetic membrane. Section 264.301(c) requires that this liner be constructed "with at least a 3 foot thick layer of recompacted clay or other natural material with a permeability of no more than 1 x 10-7 cm/sec." Scarifying and remolding alone do not meet the requirements for recompaction.

Permit Conditions

1) Specification of an Adequate Number of Emergency Coordinators

Assistance Branch review of a Part B application addressed the contingency plan for the facility. This facility had only one emergency coordinator designated in their plan.

The regulations in Section 264.55 require that an emergency coordinator be available at all times. At the minimum, one additional employee must be designated and trained as emergency coordinator to provide around-the-clock and vacation coverage. At this particular facility, the Assistance Branch recommended that two more emergency coordinators be designated in order to provide adequate coverage.

2) Requirement for Additional Testing as a Permit Condition

In a draft permit, a State required that all stabilized wastes that have passed the paint filter test also be subjected to an unconfined compressive strength test at 50 psi. While a Region can specify permit conditions for additional testing, the current Federal policy and the proposed rule on containerized liquids are less stringent than the draft State permit condition. The State is allowed, however, to be more stringent than the EPA. Note that under the Federal policy, the compressive strength test is necessary only if the Region is unsure that true chemical stabilization has occurred.

AVAILABILITY OF NEW GUIDANCE

Tank Systems

EPA guidance document, "Compliance of Persons Who Design, Test, Inspect, and Install Storage Tank Systems" (EPA/530-SW-88-019) is now available. The document provides a list of individuals and firms who provide the services of an independent, qualified, registered professional engineer, corrosion expert, or qualified installation inspector as required in the July 14, 1986 regulations for hazardous waste tank systems.

Attachment A

Assistance Branch Staff Reviews Included in this Summary

Facility Name	Region	Staff Coordinator	Review Date
Buckner Barrel	I	Chester Oszman	May 1987
Ciba-Geigy (Glen Falls, N.Y.)	II	Chris Rhyne	June 1987
Ciba-Geigy(Queensbury, N.Y.)	II	Chris Rhyne	March 1988
Fort Barton Industries	I	Sonya Stelmack	February 1987
General Dynamics	I	Sonya Stelmack	June 1987
General Electric (Waterford, N.Y.)	II	Chris Rhyne	February 1988
Eli Lilly and Company	V	Chester Oszman	June 1987
Envirosafe Services(Grand View, Idaho)	X	Amy Mills	February 1987
Memtek Corporation	I	Nestor Aviles	January 1987
Monsanto (Chocolate Bayou, TX)	VI	Dave Eberly	April 1987
Moore Business Forms	VI	Nestor Aviles	May 1987
National Institute of Health (NIH)	III	Nestor Aviles	February 1988
SCA Chemical Services	II	Chris Rhyne	December 1987
SOHIO	VI	Chris Rhyne	October 1987
Union Carbide Agriculture Products Company	III	Chris Rhyne	July 1987
U.S. Ecology	IX	Chris Rhyne	February 1988
USPCI	VIII	Dave Eberly	January 1988

Attachment B

List of Guidances Used in Preparing the Assistance Branch Reviews

1. "Acceptability of Thermal Relief Vents on Hazardous Waste Incinerators", OSWER Policy Directive #9488.00-3.

2. Compilation of Persons Who Design, Test, Inspect, and Install Storage Tank Systems, February 29, 1988, EPA/530-SW-88-019.

3. Guidance Manual for Research, Development, and Demonstration Permits under 40 CFR Section 270.65, July 1986, EPA/530 SW-86-008, OSWER Policy Directive #9527.00-1A.

4. Guidance on the Implementation of the Minimum Technological Requirements of HSWA of 1984, Respecting Liners and Leachate Collection Systems; EPA/530-SW-85-012.

5. "Hazardous Waste; Codification Rule for the 1984 RCRA Amendments" 52 FR 45788, July 15, 1985.

6. "Hazardous Waste Management System; Proposed Codification of Statutory Provisions", 50 FR 10706.

7. "Hazardous Waste Management System; Preamble to the Final Codification Rule", 50 FR 28706.

8. "Incinerator Eligibility for RD&D Permits" Memorandum from Susan Bromm, Action Director, Permits & States Programs Division, March 8, 1988.

9. "Predicting Emissions from the Thermal Processing of Hazardous Wastes", Hazardous Wastes and Hazardous Materials, June 30, 1986.

10. Questions and Answers Regarding the July 14, 1986 Hazardous Waste Tank System Regulatory Amendments, August 1987, EPA/530-SW-87-012.

11. "Summary of Permit Assistance Team Comments", 1988, OSWER Policy Directive #9523.00-15.

12. "Implementation Strategy for the Hazardous Waste Tank System Regulations". EPA/530-SW-87-018. May 1987.

WRR Environmental Services, Co, Inc.
Eau Claire, Wisconsin

Part 2

Section I – Tank Standards:
Ignitable, Reactive and Incompatible Wastes

WRR utilizes 41 waste tanks located in three dike systems for the management of hazardous waste; this includes 38 waste tanks and 3 overflow tanks.

2I-1 Waste no longer meets definition of ignitable or reactive waste NR 664.0198(1)(a)1

Reactive waste and incompatible waste is not stored in the hazardous waste tanks at the WRR facility. The hazardous waste stored in the tanks at the WRR facility is not treated or mixed to remove the characteristic of ignitibility.

2I-2 to 2I-8 Prevent reactions NR 664.0198(1)(a)2., NR 664.0017(2)(a) to NR 664.0017(2)(e) and NR 664.0017(3)

WRR takes precautions to safeguard the contents and tank system itself during the process of storing hazardous ignitable waste in the tank systems. These precautions include operating procedures, tank system and facility design. As an alternative to 2I-2 to 2I-8 requirements, WRR is providing a description of operating procedures and design to ensure that waste is stored in such a way that it is protected from any material or condition that may cause the waste to ignite. This information is detailed in 2I-9.[1]

2I-9 Protective conditions NR 664.0198(1)(b)[2]

While much of the waste processed at WRR exhibits the characteristic of ignitability, WRR has instituted a rigorous analytical program to provide information concerning a waste's reactive or incompatible nature prior to a transfer to bulk storage. Specifically, wastes are evaluated to discover applicable hazardous waste characteristics that may damage the structural integrity of the tank system and/or associated facilities/personnel.

During the profiling process, wastes may be subject to a compatibility evaluation. This evaluation makes use of the EPA Chemical Compatibility Chart (EPA-600/2-80-076 April 1980). This evaluation is used to classify wastes based on gross chemical composition for designation according to specific reactivity groups.

Per the procedures set forth in the WRR Waste Analysis Plan, incoming waste samples will be assessed through the use of process knowledge and laboratory compatibility screening with WRR streams for their potential reactivity characteristics. Any wastes identified as having a potential to liberate flammable or toxic gases, heat or undergo hazardous polymerization are segregated from all other wastes.

[1] Items 59-65
[2] Expansion on information for 2I-9.

The analytical steps taken by the WRR laboratory ensure that a potential reactive material will not be comingled with the hazardous waste stored in the tank systems.

The material of construction and grounding system in place on the tanks located in the WRR hazardous waste tank systems minimize the risk of static discharge. Tanks are either bottom filled or filled via submerged fill-pipes. No hot work (i.e. welding) is done in the vicinity of the tank system. Any tank or tank component requiring repair is emptied, inerted and removed from the tank system before repairs are initiated.

No smoking is allowed within the facility.

The tanks are equipped with a pressure/vacuum vents which operates at two ounces of pressure and one ounce of vacuum. The tanks are also painted white to reflect sunlight.

In addition to preventing migration of materials in and out of the tank systems, the dike walls provide structural protection to the tanks against collision.

2I-10 Tanks for emergency use only NR 664.0198(1)(c)

The hazardous waste tanks systems at the WRR facility are used for day-to-day operations and are not used solely for emergencies.

2I-11 Protective distances NR 664.0198(2)

The WRR hazardous waste tank systems are located at distances from the WRR property line and public ways in compliance with the minimum distances requirements set forth in NFPA's "Flammable and Combustible Liquid Code".

2I-12 Incompatible wastes placed in a tank NR 664.0199(1)

The WRR facility does not hold incompatible wastes in the hazardous waste tank systems.

2I-13 Tank last contained an incompatible waste NR 664.0199(2)

The WRR facility does not hold incompatible wastes in the hazardous waste tank systems. There is no need to decontaminate a waste tank due to incompatibility issues.

WRR Environmental Services, Co, Inc.
Eau Claire, Wisconsin

Part 2

Section J – Standards for Miscellaneous Units

Background to this section

WRR utilizes a thin film evaporator for wastewater treatment as well as solvent recovery. This unit, designated as the E-IV, is classified as a miscellaneous unit. Two other thin film evaporator systems at WRR are used solely for solvent recovery and therefore are treated as exempt units following the requirements found in s. NR 661.06(4) Wis. Admin. Code. The thin film evaporator units used solely for solvent recovery are designated as the E-I and E-23.

The location of the E-IV thin film evaporator within the WRR facility is noted on Drawing 2J-3 EIV Location.

WRR produces a hazardous waste derived fuel used by cement kilns. The high viscosity processing system (HVPS) equipment, used to produce some of this fuel, is located inside the Fuels Building. The location of the Fuel Building is called out on the Facility Site Plan – Figure A.1. Both hazardous and non-hazardous materials are handled in the Fuels Building.

Historically, WRR had a drycleaner filter processing unit and a rotary drum vacuum filtration unit in service and classified as miscellaneous units. The drycleaner filter processing unit was destroyed in a fire at the facility in June of 2007. The RDVF is inactive and is planned to have partial closure completed on it. Per s. NR 664.0112(4)(a) Wis. Admin. Code, WRR will inform the WDNR of the intent to undergo the partial closure of the RDVF.

2J-1 Description of unit NR 670.023(1)

2J-2 Physical characteristics of unit NR 670.023(1)(a)

E-IV Thin Film Evaporator:

The E-IV is an 88 square foot vertical thin film evaporator manufactured by LUWA. The thin film shell and rotor are constructed of Hastelloy C. The system is heated with steam (unit is designed to also use hot oil as a heating medium) and operates under vacuum down to 0.1 inch of Hg absolute. A schematic of the E-IV system can be found in Drawing 2J-EIV.

An identification name label has been applied to the unit.

HVPS Equipment in the Fuels Building:

Equipment in the Fuels Building that are part of the high viscosity processing system includes the hydrapulper; the barrel punch and pusher that transfers waste from barrels into the hydrapulper; pumps that transfer waste into the hydrapulper, the paint can press processing unit used to empty containers of paint; a barrel crusher; and an aerosol can processing unit that removes the contents from aerosol cans. The dimensions of the Fuels Building are shown on Figure 2B-2 Fuels Bldg. Drawing 2J-2 HVPS shows the current and proposed equipment layout locations in the Fuels Building. Changes in equipment locations might be made in the future so as to better expedite processing.

One plastic container grinder also known as the grinder muffin monster grinds up plastic containers and is located near the stairway, but has not yet been placed into use in the new Fuels Building. Identification name labels have been applied to the equipment.

2J-3 Operation, maintenance and monitoring NR 670.023(1)(b)

E-IV Thin Film Evaporator:

While considered a batch process, the waste to be treated is continuously fed into the E-IV from storage tanks or tankers. The waste enters the E-IV above the heating jacket and is dispersed to the heated jacket by a distribution ring.

The waste is then picked up by the rotor blades and immediately formed into a thin turbulent film on the heat jacket surface.

The volatile components of the feed are quickly evaporated and flow counter-currently with reference to the feed, up towards the top of the evaporator and into the entrainment system. Here, entrained droplets or foam are knocked out of the vapor steam and return as either feed to the E-IV, leave with the residue or is co-mingled with the product. The evaporated components (low boilers) then flow out of the entrainment system, into the condensers. The majority of the low boiler vapors are cooled to a liquid state in the main condenser. Cooling tower water is the cooling medium in the main condenser.

The secondary condenser and a liquid ring vacuum pump, both operating on chilled water, serve as the control devices for the E-IV. The operating range for the E-IV's secondary condenser is 43°F to 55°F. If the upper temperature limit of 60°F is exceeded the steam to the system is cutoff, allowing no more material to be evaporated. The condensed liquid can be transferred to storage tanks or tankers.

The non volatile components of the waste (high boilers) flow in a spiral path down the heated jacket surface to the bottom of the evaporator, arriving at the bottom part of the heated steam jacket in a single pass within a matter of seconds and leave the E-IV via a residue pump.

The E-IV is operated under vacuum for the duration of the batch.

Maintenance on the E-IV includes, but is not limited to, feed and residue pump replacement, cooling water maintenance, vacuum system maintenance and condenser system maintenance.

The control device on the E-IV is equipped with a continuous temperature monitoring system that is programmed to shut the steam off to the unit if the control device's temperature rises above 60°F. This shutdown parameter insures that the unit operates its air pollution control devise at 95% efficiency.

HVPS Equipment in the Fuels Building:

The paint can press is a devise used to extract residue from primarily one and five gallon containers of paint and then crushes the containers. A hood surrounds the unit so that air emissions can be vented to a carbon adsorption unit. The barrel crusher is used to crush barrels after solid residue has been removed and the barrel is RCRA empty.

The aerosol can processing unit is a recycling system that fits into the bung on top of a barrel. The can is placed into the unit which punctures the can. Pressure is released and liquids in the can collect inside the barrel. Emissions are captured in the carbon filter which is part of the unit. The carbon filter has a replaceable cartridge. The can is recycled with other scrap metal.

The barrel cutter removes lids from the barrels. The barrel press can consolidate rags or it can be used to crush plastic containers that contain residue. It can tip the barrel so the liquid residue extracted can be captured in another container.

The primary piece of equipment in the high viscosity processing system is the hydrapulper. The hydrapulper fuel blending treatment unit is used to grind up solids for inclusion in shipments for treatment at a cement kiln. Liquids can be pumped into the hydrapulper from drums with an air operated liquids pump located in the Fuels Building. Drums containing hazardous and nonhazardous waste are also pumped up from the E-II warehouse building. This pumpable material can be pumped into either waste storage tanks or over-the-road tankers.

Drums containing solids that cannot be pumped are brought to the barrel punch and pusher. The barrel punch and pusher is used to pump solids and semi-solids into the hydrapulper. A top open ended barrel containing this material is placed at the front of the punch and pusher which then picks up the barrel using a hydraulic powered barrel lift, and tips it upside down so that the open end is facing down on a grate. The barrel punch and pusher is then closed, and is then under an induced draft fan which is connected to a carbon canister. A hydraulic ram pushes the metal cutter through the top of the barrel, and forces the waste material to be pushed through the grate and into the slurry piston pump which then pushes the material into the hydrapulper. The seal of the pump is chemically compatible with the waste material, and the piston of the pump is made of aluminum for spark prevention. The slurry pump has a safety interlock to prevent it from operating when the hydrapulper is operating. The door to the barrel punch and pusher is then opened. The barrel and the end of the barrel are then removed. The barrel is then crushed in the barrel crusher. Both the crushed barrel and the end of the barrel are placed into the dumpster. The drum press leaves the drums RCRA empty. The empty drums are then crushed in the barrel crusher and placed into a dumpster with the lids.

The dumpster is located outside the Fuels Building. It is used to store scrap metal such as empty crushed containers, lids, and bottoms of barrels. The dumpster is vented to two carbon canisters. Contents of the dumpster are sent off-site for recycling as scrap metal. The dumpster and its cover are shown in 2J-3 Dumpster Cover.

The contents put into the slurry pump contain settled solids from inks, grease, and consolidated paints. Material from the aerosol can hydraulic press is transferred into 55-gallon drums. The aerosol can processing unit also transfers material into drums. These drums of consolidated material are then either emptied as described above into the slurry pump or are pumped directly into the hydrapulper using the liquids pump.

The hydrapulper is a closed batch operation process. The bottom fill lines for solids and liquids are located so as to direct incoming materials to the sides of the hydrapulper thus preventing splashing when filling. Waste slurry/solids filling is by pumping from the slurry pump. Pumpable materials are pumped into the hydrapulper. Nitrogen at up to 12 in. W.C. is applied to the hydrapulper prior to the start of mixing. There is no vacuum applied to the hydrapulper. All inlets on the hydrapulper are valved.

Details for the operation sequence of the hydrapulper are provided below and on Drawings 2J-3 Hydrapulper Purge, 2J-3 Hydrapulper Liquid Fill, 2J-3 Hydrapulper Semi-Solids Fill, 2J-3 Hydrapulper Blending and 2J-3 Hydrapulper Discharge. Table I-5 contains the hydrapulper and associated equipment inspection schedule.

A grinder is located inside the hydrapulper. WRR might potentially add a second grinder to the hydrapulper in the future. It could be a bottom grinder fitted to the 12" flange on the bottom of the vessel. As constructed, material can be recirculated out of and back through the hydrapulper using a pump and an enclosed inline grinder. Mixing is supplemented using pumpable material from the pump ups mentioned above.

Waste from the hydrapulper is discharged to either a straight tanker or a tanker equipped with a Roberoller agitation system to maintain a uniform mixture within the transport vessel. The Roberoller, a device within the vehicle, will continuously rotate the wastes that have been added to the tanker to promote homogeneity and discourage separation within the tanker. Waste added to this type of tanker will be added for the purpose of safe transport only. No waste will be blended or treated within the tank itself. WRR calls a tanker equipped with a Roberoller agitation system a Robbie Roller.

Once filled, the Robbie Roller or straight tanker truck is sampled and then analyzed by WRR's laboratory. After sampling, the tankers are closed. The agitation system within the Robbie Roller is started. If the material passes quality analysis, the material is scheduled for transport to the kiln. Transport can be directly for treatment at a cement kiln or to the rail yard where the waste is pumped into a rail car. Waste is not treated in the Robbie Roller or the straight tanker. Material pumped into the Robbie Roller or straight tanker is not brought back into the Fuels Building for further processing. The Robbie Roller is part of the transportation of the waste for treatment. When they are being filled, both the Robbie Roller and tanker truck is vented to the same carbon canister that is used by the hydrapulper.

The hydrapulper discharge scenario to a bulk transport, either a Robbie Roller or straight tanker, is shown on Drawings 2J-3 Hydrapulper Discharge. Bulk transports are bottom filled. The tanker fill pump is interlocked with the tanker grounding/bonding device to minimize the possibility of static electricity. If the bulk transport is not properly grounded the pump will not

operate. In addition, the 250 gpm pump fill rate for the prevention of static electricity build up is started at a velocity of 3 fps. After the fill line is submerged the rate can go up to 15 fps. Filling the tanker truck requires two workers. One person is located at the hydrapulper who controls the pump. The second person is with the bulk transport watching the filling operation to ensure there is not an overfill or equipment failure. They are in radio contact with each other. An emergency stop button is located in the south bay of the E-II Warehouse Tanker Pit that can be used to stop all hydrapulper operations.

All doors into the Fuels Building need to be kept closed whenever any of the equipment is being used to maintain the Fuels Building as a total enclosure. A spill kit is present in the building.

2J-4 Prevention of releases to the groundwater NR 664.0601(1) **to 2J-25 Potential for damage to domestic animals** NR 664.0601(2)(k)

2J-5 Physical, chemical characteristics of waste treated and unit capacity NR 664.0601(1)(a)

E-IV Thin Film Evaporator:

The E-IV processes liquid hazardous and nonhazardous wastes broadly classified as spent industrial solvents and wastewaters. The spent industrial solvents are typically characteristic wastes, including but not limited to, D001, D035 and D040 waste. These spent industrial solvents also may be listed wastes, typically F001, F002, F003 and F005. The wastewaters are typically characteristic wastes but in the future may also be listed waste.

The E-IV is a batch process unit which can process up to 825 gallons per hour.

HVPS Equipment in the Fuels Building:

The hydrapulper has a maximum treatment capacity of 14,750 gallons per day. This is less than the 28,000 gallons per day presented in the 2008 air construction permit application that was based on maximum possible hourly emission rates.

The gross capacity of the hydrapulper is 4,700 gallons. However the actual maximum processing or operating capacity is less because of the void space necessary for expansion during the grinding/mixing operation, and because of the heel that may or may not be present in the hydrapulper. The quantity of the heel is determined by how many and what type of solids are in the hydrapulper. The maximum processing capacity is 3,750 gallons per batch.

Protection of pathways to the environment

Both the E-IV and the HVPS process units are located within buildings. There are no adverse effects to human health or the environment because there are no release pathways to groundwater, the root zone of food crops or surface waters from buildings that contain this equipment.

Adequate containment storage has been provided on both levels of the fuels building in the event of a spill from either drums or the hydrapulper or ancillary units. In the lower level containment area, if liquid should reach a 3” depth on the floor, an alarm will sound and the valve from the

hydrapulper to the tanker truck will shut down. Tanker truck loading is done in the tanker pit of the E-II Warehouse Building.

WRR has been monitoring contaminants in numerous ground water monitoring wells since the 1970's. In addition, WRR has several ground water recovery wells and air sparge/soil vapor extraction systems in place. For surface water discharge monitoring, WRR has both Wisconsin Pollutant Discharge Elimination System and Storm Water Pollution Prevention Plan permits. The potential for health risks caused by human exposure to waste constituents from an unplanned release at WRR are addressed in the Contingency Plan found in Section J.

2J-26 to 2J-33 Prevention of releases to the air NR 664.0601(3)

E-IV Thin Film Evaporator:

The secondary condenser operates as a chilled water condenser and serves as the control device for the E-IV. The operating range for the E-IV's secondary condenser is 43°F to 55°F. If the upper temperature limit of 60°F is exceeded the steam to the system is cutoff, allowing no more material to be evaporated.

The E-IV is operated under vacuum for the duration of the batch.

The control device on the E-IV is equipped with a continuous temperature monitoring system that is programmed to shut the steam off to the unit if the control device's temperature rises above 60°F. This shutdown parameter insures that the unit operates its air pollution control devise at 95% efficiency.

HVPS Equipment in the Fuels Building:

Equipment in and near the Fuels Building that have emissions control devices include the hydrapulper; the bulk transport; the barrel punch and pusher; the paint can press processing unit; the barrel crusher; the aerosol can press; and the dumpster. There is also a vent hood near the barrel cutter. These systems use activated carbon to control volatile organic compound air emissions. The dumpster vents to two carbon canisters, CC-2 and CC-3. The barrel punch and pusher; paint can press; barrel crusher; vent hood; fugitive emissions from the Fuels Building; and the hydrapulper and bulk transport share a control device, CC-7. To minimize fugitive air emissions in the building, all containers are kept closed except when adding or removing waste from them.

The carbon absorption units for the hydrapulper/tanker truck, dumpster, barrel punch and pusher, paint can press, barrel crusher, and fugitive emissions are located north of the Fuels Building. The aerosol can processing unit with carbon canister, when in use, will be located inside the building.

Activated carbon adsorption systems control volatile organic compound emissions. Prevention of releases that may have adverse effects on human health or the environment due to migration of contaminants in the air is regulated under WRR's high viscosity processing system air pollution control construction permit number 08-SJZ-283. The high viscosity processing system

is identified in the permit as process P30. Air monitoring and reporting requirements are identified in the air permit. The carbon adsorption units associated with the system have a 95% control efficiency. The carbon adsorption system for the hydrapulper is only used during filling and emptying the unit. The hydrapulper is a closed vent system.

The hydrapulper closed-vent system operates with no detectable emissions. Leak detection monitoring will be conducted quarterly on the hydrapulper, barrel punch and pusher, barrel crusher, and the paint can press to determine if there is an instrument reading greater than 500 ppm; and weekly on their vent piping exhausts. A record will be kept of all checks and repairs to fix leaks. The instrument used to conduct the monitoring will be properly calibrated. This is described in Appendix C of WRR's current Malfunction Prevention and Abatement Plan (MPAP) which will be updated in accordance with the air construction permit.

Carbon adsorption unit CC-7 has the ability to regenerate the carbon. Other than CC-7, WRR replaces the carbon in the other units with fresh carbon when breakthrough is indicated. This is also a requirement of Section I.B.3.a.(1) of the air permit. During the startup phase WRR found that the colormetric tubes were not reliable indicators of carbon breakthrough and as such are not used. Breakthrough in CC-2 and CC-3 is determined either by using the theoretical expected life of the carbon as determined in the design analysis, from PID data collected on a regular basis, or a combination of these. The spent carbon is disposed in accordance with Section I.B.3.b.(4) of the air permit. WRR's spent carbon is shipped to a RCRA licensed hazardous waste incinerator or to a cement kiln. The carbon may be reused on-site in solvent decoloring operations before being sent off-site for treatment.

CC-2 and CC-3 are nonregenerative carbon units each containing 1,140 pounds of carbon. These two units operate in parallel controlling emissions from the dumpster. It has a measured fan speed of 2,550 cfm.

Carbon canister CC-6 is a part of the aerosol can processing unit. The material in the aerosol cans is recovered in a barrel located beneath the unit. VOCs are captured in a carbon filter cartridge. The manufacturer estimates that 1,200 aerosol cans can be processed prior to expending the carbon. There is also a color indicator on the carbon filter that shows when the cartridge should be replaced. The cartridge contains 1.25 pounds of activated carbon. The design analysis determined that the carbon filter should be replaced after approximately every two 55-gallon barrels of material has been recovered.

CC-7 is a regenerative carbon system that was manufactured by Baron Blakeslee. It is a two chamber system with each bed containing 2,700 pounds of activated carbon. The fan speed is 3,100 cfm. Carbon for this unit is specifically designed to be used with regenerative systems and thus is different carbon than what is used in CC-2 and CC-3. Steam is used in CC-7 to remove VOCs and HAPs collected on the spent carbon. It has a 300 liter tank used to contain the recovered material which is then pumped into the hydrapulper. The recovered material is then disposed of in the fuels process in the Fuels Building. An FID continuous monitoring system is used to determine the VOC content of the air leaving the carbon bed prior to discharge to the atmosphere. When the VOC content reaches 70 ppm on the FID, the system will automatically

switch over to the other carbon bed, and the regeneration process commences on the spent carbon bed. The carbon bed switch over can vary up to a couple of days.

WRR keeps records including the dates when carbon is monitored for breakthrough and when replaced, dates of leak monitoring and repairs, hours of operation, annual throughput, and estimated emissions of the hydrapulper and associated equipment.

Fugitive emissions from the transfer of waste and containers for the HVPS is controlled by using the Fuels Building as an enclosure. The building is ventilated through the use of CC-7. The requirements for meeting fugitive emission criteria will be meet per the "Criteria for and Verification of a Permanent or Temporary Total Enclosure" (aka "Procedure T") per 40 CFR 52.741, Appendix B. The evaluation for satisfying this criteria was prepared by SEH in a document dated December 22, 2009. CC-7 also removes VOCs from transfer operations of the hydrapulper and tanker truck filling.

Because of their location, the following valves are in difficult and unsafe locations to inspect and to monitor for air emissions: V-15, V-20, V-21, V-22, V-28, AV-2, AV-3, CV-5, CV-9, CV-10, RV-1, SV-1, SV-3, and SV-4. If valve V-23 had been installed it also would have been located in an unsafe location to inspect and to monitor. CV-9 is an internal valve and thus not accessible. SV-1, SV-3, SV-4 are located inside the control panel and are not accessible. Valves that cannot be checked will be looked at by operations staff whenever there is a need to access those locations, and any leaks noticed will be repaired. None of the equipment is considered difficult or unsafe to monitor. Because they are on nitrogen lines, there is no need to check or to monitor: V-1, V-2, AV-1, CV-1, CV-2, PRV-1, PRV-2, or RV-2.

2J-34 Inspection and monitoring procedures NR 664.0602

E-IV Thin Film Evaporator:

The closed-vent systems on the E-IV operates under vacuum to convey emissions to chilled water condensers, the system's control devices. The closed vent systems for the E-IV is visually inspected annually for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes or gaps in ductwork or piping or loose connections.

The chilled water condensers on the thin film evaporators have a continuous monitoring system to measure the temperature. The monitoring data, recorded on a computer and in the production data card, is inspected at least once each operating day as required by s. NR 664.1033(6)(c) Wis. Admin. Code to ensure that the chilled water condenser is operating in compliance.

Daily visual inspections are conducted on the E-IV system.

Monthly area monitoring is conducted in the building that houses the E-IV. If an instrument reading of greater than 50 ppm above background is detected, an investigation is started to determine if a leak has occurred in the building.

Repairs will be made if any defects are found. Any repairs needed will be started no later than 5 days after the leak has been detected, and the repair will be completed within 15 days after the leak is detected.

Records will be maintained in the WRR ESMS of leak repairs.

HVPS Equipment in the Fuels Building:

The vapor recovery system used to convey emissions generated within WRR's High Viscosity Process System (HVPS) to activated carbon system is considered a closed-vent system. Both regenerative and non-regenerative active carbon adsorption units are used as control devices for air pollutant emissions. The closed-vent system is visually inspected at least annually to check for defects that could result in air emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in ductwork or piping; loose connections; or broken or missing caps or other closure devices.

All accessible valves and pumps in the Fuels Building are monitored monthly for leaks. The definition of a leak is a PID reading of 500 ppm or greater. During the start up phase there were no leaks found from the valves and pumps. A list of items that are monitored with a PID or equivalent instrument is in Table F-7.

Most of the piping associated with the HVPS is welded with flanged joints. There is some 2-inch piping and smaller piping that is threaded. There is also some 2-inch piping that is welded. Leak repair requirements are also covered in Section I.ZZZ.2.b.(2) of the HVPS air pollution control construction permit number 08-SJZ-283.

Repairs will be made if any defects are found in accordance with NR 664.1084(11). Any repairs needed will be started no later than 5 days after the leak has been detected, and the repair will be completed within 15 days after the leak is detected.

Records will be kept of all leak repairs in the WRR ESMS database. Leak repair record keeping is also a requirement in Section I.ZZZ.2.b.(4) of the air permit.

2J-35 to 2J-37 Information on region surrounding the site NR 670.023(2) to NR 670.023(3)

Area Topography:

WRR is located at the eastern edge of an approximately ¾ mile-wide, relatively flat valley floor near the southern edge of the Chippewa River basin. The northward-flowing Lowes Creek is entrenched approximately 40 feet into the valley floor, about ½ mile west of the WRR facility. The valley is flanked by eroded sandstone hills with elevations over 1,000 feet above mean sea level (msl) with the valley floor at approximately 880 feet above msl to approximately 840 feet msl at Lowes Creek. The WRR site is approximately 900 feet above msl. Surface water in Lowes Creek drains northward to the Chippewa River.

Area Geology:

Generalized descriptions of the geology are provided in the United States Geological Survey (USGS) publication, "Water Resources of the Wisconsin-Chippewa River Basin" and the Wisconsin Geological and Natural History Survey (WGNHS) publication, "Field Trip Guidebook for Cambrian-Ordovician Geology of Western Wisconsin." Area geologic information was obtained from the WGNHS "WisLith" database. The Eau Claire or Mt. Simon Formation of the Elk Mound Group (Cambrian age) is the first bedrock unit encountered at the site and unconformably overlies the Precambrian basement rock in the region. A deep water supply well located approximately two miles from the site (St. Bede's Priory) indicates that the Eau Claire Formation is at least 50 feet in thickness and the underlying Mt. Simon Formation is approximately 255 feet in thickness. PreCambrian igneous and metamorphic rock was encountered at 310 feet below ground surface in the St. Bede's Priory well.

The Eau Claire Formation generally consists of moderately to poorly cemented sandstone, with some thin layers of shale. The Mt. Simon Formation is composed primarily of fine-coarse grained sandstone and is a major area municipal water supply aquifer.

Sands and silts derived from erosion of the Cambrian-age sandstones were deposited in the Lowes Creek pre-glacial bedrock valley. Lowes Creek is entrenched in these fine-grained deposits but is still estimated to be 40 to 60 feet above the Cambrian sandstone bedrock.

Surface Water Drainage Features:
Lowes Creek is entrenched approximately 40 feet into the valley floor, about ½ mile west of the WRR facility. Lowes Creek is approximately 840 feet above mean sea level (msl). The WRR site is approximately 900 feet above msl. Surface water in Lowes Creek drains northward to the Chippewa River.

Hydrogeologic Conditions:
Based on boring logs of the approximately 80 groundwater monitoring and recovery wells installed at and near the site since 1979, four hydro-stratigraphic units have been identified. These units include silty sand; a banded layer of sand, silt, and clay; a layer of silty sand; and, sandstone bedrock. The first unit, approximately 10 feet of silty sand, overlies the entire site and forms the unconfined zone.

The banded unit, also approximately 10 feet thick, acts as a confining layer and is continuous and present under almost the entire site. The confining unit appears to pinch out along the eastern edge of the site where sandstone outcrops just east of Highway 93 and to the west, where it grades into the silty sand unit.

A silty sand unit forms the mid-depth zone, is located under the confining layer, and fills most of the Lowes Creek preglacial valley. It is likely divided into several thin water bearing zones and confining layers and varies in thickness from less than 10 feet near the WRR site to more than 80 feet near Lowes Creek. Groundwater seeps have been identified in this unit along the east valley wall of Lowes Creek.

Cambrian sandstone, found at approximately 60 feet below ground surface (bgs) at the WRR site, makes up the fourth hydro-stratigraphic unit. Approximately 600 feet west of the site and near Lowes Creek, the sandstone drops off to approximately 100 feet bgs. A permeable, approximately 10 feet thick weathered sandstone interval overlies more cemented sandstone in

this area. The sandstone likely rises further to the west where it forms the west wall of the Lowes Creek valley.

Depth to groundwater in the unconfined, shallow zone at the WRR site ranges from 5 to 15 feet bgs. Groundwater in the shallow zone appears to flow to the west, but flows radially in the location of the 360,000-gallon reservoir due to a mounding effect.

Depth to groundwater in the confined, mid-depth zone ranges from 15 ft bgs at the WRR site to approximately 35 feet bgs near Lowes Creek. The mid-depth aquifer appears to flow to the west with a horizontal hydraulic gradient of 0.016 ft/ft.

Depth to groundwater in the sandstone bedrock aquifer ranges from 20-30 feet bgs at the WRR site depending on the ground surface elevation.

A comparison of the water levels recorded from nested wells across the site generally indicates a downward (recharge) vertical gradient between the shallow unconfined, mid-depth, and bedrock aquifers. However, near Lowes Creek, a significant upward (discharge) vertical gradient has been identified and likely reflects a boundary between recharge and discharge areas.

Air:
The Eau Claire area is not a non-attainment area for National Ambient Air Quality Standards (NAAQS) pollutants. The Air Quality Index (AQI) for Eau Claire is good to moderate.

Wetlands:
WRR is not located in a wetland.

Groundwater Quality:
Three groundwater aquifers lie below the WRR facility. The shallow groundwater aquifer and mid-depth aquifer contain non-potable water. The regional drinking water aquifer, Mount Simon Aquifer, flows below these two aquifers.

Performance of Hazardous Waste Units:

The facility is not operated in a manner in which the management of hazardous waste will have a reasonable probability of having a detrimental effect on groundwater quality or will cause a violation of groundwater standards under ch. NR 140. Miscellaneous treatment units are located inside a building. The equipment used in the fuel blending process is inside a building with containment.

2J-38 Treatment effectiveness NR 670.023(4)

E-IV Thin Film Evaporator:

The purpose of the E-IV is to recover solvent and to treat wastewater. The solvent product leaving the E-IV is not a hazardous waste. Treated wastewater leaving the E-IV meets the standards for discharge at a POTW.

Laboratory analysis is conducted on both the solvent product and wastewater to confirm that both materials are suitable for reuse as a solvent or treatment as a POTW influent.

Process residual leaving the process are handled as hazardous waste.

HVPS Equipment in the Fuels Building:

The purpose of the HVPS equipment is to make solids, semi-solids and the contents of small containers more amendable to be used as a hazardous waste derived fuel at a cement kiln.

Laboratory analysis is conducted on the bulked material to confirm that the material is suitable for use as a hazardous derived fuel at a cement kiln.

2J-39 Additional information NR 670.023(5)

WRR will supply additional information to the department if it is deemed necessary for the evaluation of compliance for these units with environmental performance standards.

2J-40 to 2J-41 100-year flood plain NR 664.0018(2)(a)2. and NR 670.014(2)(k)5.

WRR is not located within a 100-year flood plain so the requirements NR 664.0018(2)(a)2 and NR 670.014(2)(k)5 do not apply.

WRR Environmental Services, Co, Inc.
Eau Claire, Wisconsin

Part 3

Section K – Subch AA:
Air Emission Control Standards –
Process Vents

3K-1 Documentation of compliance with process vent standard NR 664.1032

WRR has process vents on operations that manage hazardous waste with organic concentrations of at least 10 ppmw (parts per million by weight).

Per the requirements of Subch. NR 664.1030(5) Wis. Admin. Code, WRR certifies that each of these process vents is equipped with an air emission control that operates under the provisions of current operating permits issued by the WDNR under NR 407. The current applicable operating permits are 618026530-P02, 07-SJZ-276 and 08-SJZ-283.

As long as WRR operates under the process vent provisions of these operating permits, the requirements of this subchapter do not apply. Documentation for process vent compliance is maintained at the facility and is part of its operation record.

Subpart AA – Process Vent Certification
WRR Environmental Services Co., Inc.
NR 664.1030 (5)

In accordance with subch. NR 664.1030 (5) Wis. Admin. Code, I certify that the process vents otherwise subject to this subchapter are equipped with control devices operating in compliance with the provisions of air operating permits issued by the Wisconsin Department of Natural Resources under NR 407.

James L. Hager
President/CEO

4/18/2013
Date

WRR Environmental Services, Co, Inc.
Eau Claire, Wisconsin

Part 3

Section L – Subch BB:
Air Emission Control Standards –
Equipment Leaks and Repair

Background to this section

NR 664 Subchapter BB provides the standards for leak detection and repair of equipment that comes into contact with hazardous waste with an organic concentration of at least 10%. The leak detection and repair (LDAR) standard applies to equipment associated with hazardous waste management or process units. NR 664 Subchapter BB applies to equipment associated with hazardous waste recycling units that previously were exempted under s. NR 661.06(3)(a).

The LDAR standard contains four main elements:

1. Identification
2. Inspection/monitoring
3. Leak repair
4. Recordkeeping

2L-1 Information for equipment subject to Subchapter BB NR 670.025(1)

Per the requirements of s. **NR 664.1064(13)** Wis. Admin. Code, WRR certifies it has established an LDAR program under the provisions of current operating permits issued by the WDNR under NR 407. The current applicable operating permits are 618026530-P02 and 07-SJZ-276.

As long as WRR operates under the LDAR provisions of these operating permits, the requirements of this subchapter do not apply. Documentation for LDAR program compliance is maintained in WRR's ESMS database and is part of its operation record.

WRR's operating permits follow the requirements of 40 CFR Part 63 Subpart DD—National Emission Standards for Hazardous Air Pollutants from Off-Site Waste and Recovery Operations. The standard for equipment leaks found in 40 CFR 63.691 requires WRR to control the Hazardous Air Pollutant (HAP) emitted from equipment leaks in accordance with 40 CFR 63.162 through § 63.182 in subpart H—National Emission Standards for Organic Hazardous Air Pollutants from Equipment Leaks.

The general requirements found in 40 CFR 63.162(b)(1), allows an owner or operator to request an alternative means of emission limitation. Once it is determined that the means of emission limitation is a permissible alternatives to the requirements found in Subpart H of 40 CFR Part 63, the owner or operator must comply with the alternative.

WRR utilizes an alternate means of emission limitations as allowed in 40 CFR 63.162(b)(1) and found to be a permissible alternative per the requirements of 40 CFR 63.162(b)(2).

The document, Standard Operating Procedures for Air Emissions Monitoring, containing WRR's alternative means of emission limitation can be found in Appendix L-1.

Appendix L-2 contains a listing of figures identifying the location of Subchapter BB equipment at the WRR facility.

Subpart BB – Equipment Leaks and Repair
WRR Environmental Services Co., Inc.
NR 664.1064(13)

In accordance with subch. NR 664.1064(13) Wis. Admin. Code, I certify that the leak detection and repair program, otherwise subject to this subchapter, is operating in compliance with the provisions of air operating permits issued by the Wisconsin Department of Natural Resources under NR 407.

James L. Hager
President/CEO

4/18/2013
Date

Part 3

Section L – Subch BB:
Air Emission Control Standards – Equipment Leaks and Repair

Appendix L-1
Standard Operating Procedures for Air Emissions Monitoring

Standard Operating Procedures for Air Emissions Monitoring

Original Prepared by: William H. Hable, P.E., & Steven P. Stokke

Management Review and Approval

Name	Title	Date	Signature
James Hager	President/CEO	4/18/2013	James S Hager

Revision History

Revision Level	Date	Description	Authorized Signature
A	/ /	Original issue	
B	1/28/2004	Update and additions	
C	2/5/2007	New monthly forms	
D	3/30/2009	New monthly forms	
G	6/28/2011	Omitted Management Review by VP Operations Support; updated for HVPS monitoring, misc. added throughout, and to address WDNR's June 6, 2011 recommendations	
H	5/15/2012	Updated section 2.03 (malodorous emissions monitoring frequency, per WDNR's August 25, 2011 guidance); updated section 4.0 (Responsibility); merged Appendices O and P.	
I	04/11/2013	New Monthly Form, Leak Detection Monitoring Location Maps and Clarified Text in Sections 1.0, 2.0, and10.0	James Hager

1.0 Purpose

The purpose of this procedure is to control Air Emissions due to leaks from equipment that contacts or has the potential to contact waste having an organic concentration of at least 10%

by weight (Wisconsin Administrative Code NR 664.1050 and Code of Federal Regulations (CFR) 40 CFR 264.1050). This procedure also applies to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Air Pollutants from Off-Site Waste and Recovery Operations. (40 CFR Part 63, Subpart DD; Sec. 63.691 Standards: Equipment Leaks; and Sec. 63.162 through Sec. 63.182 In Subpart H - National Emission Standards For Organic Air Pollutants From Equipment Leaks). This procedure also applies to Malodorous Emissions Monitoring at the facility per Wisconsin Administrative Code NR 429 and Reporting, Recordkeeping, Testing, Inspection and Determination of Compliance Requirements per Wisconsin Administrative Code NR 439.

2.0 Scope

2.01 The following hazardous waste management or processing units have been identified at WRR in respect to these standards.

A) Hazardous Wastes Processing Units

1) E-I Thin Film Evaporator

2) E-23 Thin Film Evaporator

3) E-IV Thin Film Evaporator

4) The High Viscosity Processing System (HVPS) in the Fuels Building

5) The Rotary Vacuum Filtration Unit

Note: The thin film evaporators operate under vacuum. The equipment associated with the thin film evaporator systems is exempt from the requirements of the applicable standards and has been identified as required in s. NR 664.1064 (7) (e) *Wis. Admin. Code.*

Note: The rotary vacuum filtration unit is operated less than 300 hours per year. The equipment associated with the rotary vacuum filtration unit is exempt from the requirements of the applicable standards and has been identified as required in s. NR 664.1064 (7) (f) *Wis. Admin. Code.*

A) Hazardous Wastes Management Units

1) Tanks contained within the EI Sludge Tank Farm
2) Tanks contained within the EI South Sludge Tank Farm
3) Tanks contained within the EII Sludge Tank Farm

2.02 The provisions of this procedure apply to pumps, open ended valves or lines, valves, sampling connections and connections used in light liquid service. WRR

does not have any compressors, control devices or pressure relief devices as listed in the regulation.

2.03 The basic procedures to be used to detect leaks is the following:

A) All piping extended to and from a building operates below the boiling temperature of the liquids contained in the piping. Liquid leaks will be detected by daily visual inspection on the days the facility is operating. Per s. NR 664.1057(2) Wis. Admin. Code, an instrument reading of 10,000 ppm defines a leak for a valve in contact with hazardous waste with an organic concentration of at least 10%. Per 40 CFR 63.168(b)(2)(iii) an instrument reading of 500 ppm defines a leak in valves subject to LDAR regulations. In addition to the daily visual inspections, leaks from equipment located outside buildings will be detected by monthly area monitoring with a Photo Ionization Detector (PID). An instrument reading of 50 ppm or greater will require a more detailed monitoring of the equipment to locate the source of the leak. This level is an order of magnitude below that of which is required by 40 CFR 63.168(b)(2)(iii) and two hundred times lower than that which is required in NR 664.1057(2).

B) All process and transfer pumps will be visually inspected for leaks on a daily basis when WRR is in operation. These pumps will also be monitored monthly with a PID.

C) The HVPS is located in the Fuels Building which operates as a total enclosure per Wisconsin Air Operating Permit 11-SJZ-179. Associated equipment in the Fuels Building has a visual inspection and monitoring schedule .

D) Leaks from equipment, other than that located in the fuels building, will be detected by monthly area monitoring with a PID as described in detail in this procedure. An instrument reading of 50 ppm or greater will require a more detailed monitoring of the equipment to locate the source of the leak. This level is an order of magnitude below that of which is required by the regulation and therefore more representative and protective of human health and the environment.

2.04 This procedure includes a basic description of the operation of the Mini Rae Photo Ionization Detector, calibration procedures and sampling methods.

2.05 This procedure also includes monitoring of building areas not included by the regulation. This monitoring is performed for the health and safety of our employees.

3.0 Authority

The President/CEO or his designee has the authority to approve and set procedure standards for Air Emission Monitoring and setup of the PID at WRR Environmental Services Company, Inc.

4.0 Responsibility

The following individuals are responsible for Air Emission Monitoring at WRR Environmental Services Company, Inc.

- Compliance Director
- Plant Manager
- Safety Department / Trained Designee
- Shift Foreman / Trained Personnel
- Production Operations Manager / Trained Designee

5.0 Terms and Definitions

5.01 "Calibration Gas" means the volatile organic compound (VOC) compound used to adjust the instrument meter reading to a known value. The calibration gas is usually the reference compound at a known concentration approximately equal to the leak definition concentration.

5.02 "Calibration Precision" means the degree of agreement between measurements of the same known value, expressed as the relative percentage of the average difference between the meter readings and the known concentration to the known concentration.

5.03 "Condenser" means a heat transfer device that reduces a thermodynamic fluid from its vapor phase to its liquid phase.

5.04 "Connector" means flanged, screwed, welded or other joined fittings used to connect 2 pipelines or a pipeline and a piece of equipment. For the purposes of reporting and record keeping, connector means flanged fittings that are not covered by insulation or other materials that prevent location of the fittings.

5.05 "Control Device Shutdown" means the cessation of operation of a control device for any purpose.

5.06 "Equipment" means each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, or flange, and any control devices or systems

5.07 "First Attempt At Repair" means to take rapid action for the purpose of stopping or reducing leakage of organic materials to the atmosphere using best practices.

5.08 "Hazardous Waste Management Unit Shutdown" means a work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit. An unscheduled work practice or operational procedure that stops operation of a hazardous waste management unit for less than 24 hours is not a hazardous waste management unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping operation are not hazardous waste management unit shutdowns.

5.09 "In Light Liquid Service" means that the piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the components in the stream is greater than 0.3 kilopascals (kPa) at 20 degrees C, the total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20 degrees C is equal to or greater than 20% by weight, and the fluid is a liquid at operating conditions. A vapor pressure of greater than 0.3 kPa is equivalent to 2.25 mmHg or 0.043 psi.

5.10 "Leak Definition Concentration" means the local VOC concentration at the surface of a leak source that indicates that a VOC emission (leak) is present. The leak definition is an instrument meter reading based on a reference compound.

5.11 "Malfunction" means any sudden failure of a control device or a hazardous waste management unit or failure of a hazardous waste management unit to operate in a normal or usual manner, so that organic emissions are increased.

5.12 "No detectable emission" A potential leak interface is determined to operate with no detectable organic emissions if the organic concentration value determined is less than 500 ppmv (40 CFR 63.694(k)(9)(i)).

5.13 "Open-ended Valve or Line" means any valve, except pressure relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

5.14 "PPMV" means parts per million by volume.

5.15 "PPMW" means parts per million by weight.

5.16 "Process Vent" means any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum - producing system, or through a tank, such as distillate receiver, condenser, bottoms receiver, surge control tank, separator tank or hot well, associated with hazardous waste distillation, fractionation, thin - film evaporation, solvent extraction, or air or steam stripping operations.

5.17 "Reference Compound" means the VOC species selected as the instrument calibration basis for specification of the leak definition concentration. (for example, if a leak definition concentration is 10,000 ppm as methane, then any source emission that results in a local concentration that yields a meter reading of 10,000 on an instrument meter calibrated with methane would be classified as a leak. In this example, the leak definition concentration is 10,000 ppm and the reference compound is methane.

5.18 "Repaired" means that equipment is adjusted, or otherwise altered, to eliminate a leak.

5.19 "Response Factor" means a ratio of the known concentration of a VOC compound to the observed meter reading when measured using an instrument calibrated with the reference compound specified in the applicable regulation.

5.20 "Response Time" means the time interval from a step change in VOC concentration at the input of the sampling system to the time at which 90 percent of the corresponding final value is reached as displayed on the instrument readout meter.

5.21 "Sensor" means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH, or liquid level.

5.22 "Startup" means the setting in operation of a hazardous waste management unit or control device for any purpose.

5.23 "Vapor Incinerator" means any enclosed combustion device that is used for destroying organic compounds and does not extract energy in the form of steam or process heat.

5.24 "Vented" means discharge through an opening, typically, an open-ended pipe or stack, allowing passage of a stream of liquids, gases or fumes into the atmosphere. The passage of liquids, gases or fumes is caused by mechanical means such as compressors or vacuum - producing systems or by process - related means such as evaporation produced by heating and not caused by working losses, such as tank loading and unloading, or by natural means such as diurnal temperature changes.

5.25 "Zero Air" means a hydrocarbon concentration of less than 10 ppm.

6.0 Safety

6.01 Disclaimer. This method may involve hazardous materials, operations, and equipment. This test method may not address all of the safety problems associated with its use. It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to performing this test method.

6.02 Hazardous Pollutants. Several of the compounds, leaks of which may be determined by this method, may be irritating or corrosive to tissues (e.g. heptane) or may be toxic (e.g. Benzene, methyl alcohol). Nearly all are fire hazards. Compounds in emissions should be determined through familiarity with the source. Appropriate precautions can be found in reference documents or Material Safety Data Sheets (MSDS).

7.0 Equipment and Supplies

A VOC monitoring instrument meeting the following specifications is required:

7.01 The VOC instrument detector shall respond to the compounds being processed. Detector types that meet this requirement include, but are not limited to, catalytic oxidation, flame ionization, infrared absorption, and photoionization. Presently, WRR employs a Mini-RAE® Photoioization Detector (S/N 110-005659)

7.02 The instrument shall be capable of measuring the leak definition concentration specified in the regulation.

7.03 The scale of the instrument meter shall be readable to ±2.5 percent of the specified leak definition concentration.

7.04 The instrument shall be equipped with an electrically driven pump to ensure that a sample is provided to the detector at a constant flow rate. The nominal sample flow rate, as measured at the sample probe tip, shall be 0.10 to 3.0 l/min (0.004 to 0.1 ft^3/min) when the probe is fitted with a glass wool plug or filter that may be used to prevent plugging of the instrument.

7.05 The instrument shall be equipped with a probe or probe extension for sampling not to exceed 6.4 mm (1/4 in.) inside diameter, with a single end opening for admission of the sample.

7.06 The instrument shall be intrinsically safe for operation in explosive atmospheres as defined by the National Electrical Code by the National Fire Prevention Association or other applicable regulatory code for operation in any explosive atmospheres that may be encountered in its use. The instrument shall, at a minimum, be intrinsically safe for Class 1, Division 1 Conditions, and/or Class 2, Division 1 conditions, as appropriate, as defined by the example code. The instrument shall not be operated with any safety device, such as an exhaust arrestor removed.

8.0 Reagents and Standards

8.01 Two Gas mixtures are required for instrument calibration and performance evaluation:

8.011 Zero Gas. Air, less than 10 parts per million by volume (ppmv) VOC.

8.012 Calibration Gas. For each organic species that is to be measured during individual sources surveys, obtain or prepare known standard in air at a concentration approximately equal to the applicable leak definition specified in the regulation.

8.02 Cylinder Gases. If cylinder calibration gas mixtures are used, they must be analyzed and certified by the manufacturer to be within 2 percent accuracy, and a shelf life must be specified. Cylinder standards must be either reanalyzed or replaced at the end of the specified shelf life.

8.03 Prepared Gases. Calibration gases may be prepared by the user according to any accepted gaseous preparation procedure that will yield a mixture accurate to within 2 percent. Prepared standards must be replaced each day of use unless it is demonstrated that degradation does not occur during storage.

8.04 Mixtures with non-Reference Compound Gases. Calibrations may be performed using a compound other than the reference compound. In this case, a conversion factor must be determined for the alternative compound such that the resulting meter readings during source surveys can be converted to reference compound results.

9.0 Standards

9.01 Pumps in light liquid service. Weekly visual inspections shall be conducted as well as monthly PID monitoring to detect leaks. These methods are in compliance with 40 CFR Part 60 Method 21. First attempt at repair must be made within 5 days of noticing a leak (first attempt at repair includes tightening the packing gland). A leak is detected by an instrument reading of greater than or equal to the calibration gas or if there are indications of liquids dripping from the pump. A leak will be repaired as soon as practical, but no later than 15 calendar days after it is detected, except in exemption 9.08.

9.02 First attempts at repair shall be made no later than 5 calendar days after detection (i.e., a first attempt at repair includes tightening the packing gland).

9.03 Sampling connection systems means an assembly of equipment within a process unit used during periods of representative operation to take samples of the process fluid (NR 664.1031(30)). Each sampling connection system shall be equipped with a closed-purge, closed-loop, or closed-vent system. This system shall collect the sample purge for return to the process or for routing to the appropriate treatment system. Gases displaced

during filling of the sample container are not required to be collected or captured (40 CFR 264.1055 (a)). Closed-purge system means a system or combination of systems and portable containers to capture purged liquids. Containers must be covered or closed when not being filled or emptied (40 CFR 63.161).

9.04 Open ended valves or lines. Each open - ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve.

9.05 The **cap, blind flange, plug, or second valve** shall seal the open end at all times except during operations requiring hazardous waste stream flow through the open - ended valve or line. Each open - ended valve or line equipped with a second valve shall be operated in such a manner that the hazardous waste stream end is closed before the second valve is closed.

9.06 Valves are to be monitored monthly using a PID to detect leaks per the area monitoring procedure.

9.07 Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every succeeding quarter, beginning with the next quarter until a leak is detected. If a leak is detected the valve shall be monitored monthly until a leak is not detected for 2 months successive.

9.08 Delay of repairs may be allowed for leaks if the repair is technically unfeasible without a hazardous waste management unit shutdown. Delay of repair may be allowed if the equipment is isolated from the hazardous waste management unit and doesn't continue to contact hazardous waste with organic concentrations at least 10% by weight. Delay may be allowed if the operator determines that emissions of purged materials resulting from immediate repair are greater than the emissions likely to result from delay of repair. When repair procedures are affected, the purged material is to be collected and recovered in a control device. Pumps may be delayed if repair is completed as soon as practicable, but no later than six months after the leak was detected. Delay of repair of valves may be allowed if the hazardous waste management unit shutdown reveals that the supply of valves in stock are depleted, and there is sufficient evidence that the supplies had been stocked before they had been depleted. Delay shall not be allowed if the next shutdown is six months or sooner after the first hazardous waste management unit shutdown.

9.09 Leak Discovered. When a leak is detected a weatherproof and readily visible identification tag, marked with the equipment identification number, the date evidence of a potential leak was found in accordance with 9.02 and the date the leak was detected, shall be attached to the leaking equipment, valve, or flange. After the repair has been made, the tag may be removed on equipment, but on a valve it must stay in place for 2 successive months until air monitoring shows no leak exists.

9.10 Record Keeping. When a leak is discovered, the following information must be recorded in an inspection log and shall be kept in the facility operating record.

1) The instrument and operator identification numbers and the equipment identification number.
2) The date evidence of a potential leak was detected and the dates of each attempt to repair the leak.
3) Repair methods applied in each attempt to repair the leak.
4) If the maximum instrument reading measured by the methods specified reaches its highest readings.
5) Repair delayed and the reason for the delay if a leak is not repaired within 15 calendar days after the leak is discovered.
6) Documentation supporting the delay of repair of a valve.
7) The signature of the operator or designee whose decision it was that repair could not be affected without hazardous waste management unit shutdown.
8) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.
9) The date of successful repair of the leak.

9.101 The findings of weekly visual inspection for pumps in light liquid service, inspected according to the standards in 9.01, must be recorded in an inspection log and shall be kept in the facility operating records.

9.102 The following information pertaining to all equipment in each process unit subject to the leak detection and monitoring requirements in Subpart H must be recorded.

1) A list of identification numbers for individual equipment, except those connectors identified as a group or area, is provided in Appendix O.
2) A schedule of the monitoring frequency for each process is included in Appendix O.
3) Equipment is identified on a plant site plan and included in Appendix O. Additional equipment subject to these requirements has been affixed with physical tags or labels.

10.0 Procedure

10.01 Liquid Leak Detection - External to buildings. Any piping leak will show up as liquid on the outside of the pipe, pipe flanges, unions, valves, hoses, hose connections or other fittings.

All of the piping listed above shall be inspected daily by the equipment operators. The equipment operators shall inspect the hose connection gaskets and end cap gaskets before making connections. Any sign of a damaged or deformed gasket requires replacement of the gasket prior to making the necessary connection.

Should a leak be detected visually, the operator shall attempt to correct the leak by tightening flange bolts, unions, packing nuts or fittings. If this corrects the leak, no further action is required. If the operator cannot correct the leak, the accompanying Leak Tagging Procedure, Item 12.0, shall be implemented.

10.02 Liquid Leak Detection - Internal to buildings. Leaks internal to buildings shall be inspected and repaired as listed in section 9.09. Any liquid leak that cannot be stopped will be tagged utilizing the procedure listed under Section 12.0.

10.03 Open Ended Lines, Valves and Hoses. All open ended lines, if not equipped with a blind flange, plug or second valve shall be equipped with a cam lock hose connection. These hose connections shall be capped or plugged at all times that a hose is not connected. Open ended hoses shall either be capped or connected end to end when not in service.

10.04 Vapor Leak Detection. Piping and other equipment containing or transporting hazardous waste with at least 10% organic concentration is located within various buildings. These buildings are not forced ventilated so any leaking vapor is partially contained within the structure.

Any time a suspected vapor leak is observed, a PID will be utilized to determine if a vapor leak is present and if it is, the approximate location of the leak. A continuous reading portable PID Vapor Detector will traverse the room to find the approximate source of the leak. If a leak is detected but the exact leak location cannot be found because of a lack of safe access to the equipment, special safety equipment such as lifts, hoists, safety harnesses, etc., as required shall be used by the Maintenance Department to find the exact location of the leak.

If it is determined that the vapor leak is a safety hazard, the process equipment shall be immediately secured and shutdown. Because, all operations governed by this procedure are batch type operations and if the leak is not a safety hazard, the process equipment will be allowed to operate with a slight vapor leak until the batch is completed. In any case, the process equipment shall not operate over five days with a slight vapor leak. Any leak found that is not immediately stopped shall be tagged utilizing the procedure outlined in Section 12.0.

On a monthly basis, area leak detection monitoring shall be conducted. The procedure for calibrating the PID Instrument and the testing procedure to be used is outlined in Section 11.0 of this procedure. If a PID reading exceeds 50 ppm or if a reading indicates a suspected leak, additional monitoring as outlined above shall be used to find the source of the vapor. If an actual equipment leak is found, it shall be tagged using the procedure listed in Section 12.0.

10.05 Pumps. All motor operated pumps associated with the hazardous waste management and process units covered by this procedure including light liquid transfer pumps shall be inspected when started for packing gland liquid leaks. If the pump is

operating continuously, the pump shaft seal on the packing gland shall be visibly inspected daily for liquid leaks.

Any leaking packing gland shall be adjusted to stop the leak. If the leak cannot be stopped, the leak shall be tagged utilizing the Tagging procedure outlined in Section 12.0.

Once each month, all operating pumps shall be monitored for leaks using the PID Instrument. If a leak is detected, the leak shall be tagged utilizing the tagging procedure under Section 12.0.

10.06 Piping to and from hazardous waste management and process units. On a monthly basis, area vapor leak detection monitoring shall be conducted for the following hazardous waste management units.

- **Waste storage tanks located in the E-I Sludge Tank Farm to the E-I building**
- **Waste storage tanks located in the E-I South Tank Farm to the E-I Building**
- **Waste storage tanks located in the E-II Sludge Tank Farm to the E-II Building.**

10.061 An instrument reading of 50 ppm above background will initiate an investigation into the possiblitiy of a leak. But, if a leak is not detected for two consecutive months, monitoring may be cut back to quarterly until a leak is detected. WRR currently conducts monthly area monitoring of these areas.

10.062 Valves that are designated as unsafe-to-monitor are exempt from the requirement for monthly monitoring if:

- The valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger.
- A written monitoring plan is followed that requires monitoring as is reasonably practicable during safe-to-monitor times.

10.063 Valves that are designated as difficult-to-monitor are exempt from monthly monitoring requirements if:

- The valve cannot be monitored without elevating the monitoring personnel more than two (2) meters above a support surface.
- The hazardous waste management unit within which the valve is located was in operation before June 21, 1990.
- A written monitoring plan is followed that requires the monitoring of the valve at least once per calendar year.

10.064 Piping that is designated as unsafe-to-monitor is exempt from the requirement for monthly monitoring if:

- The piping is unsafe to monitor because monitoring personnel would be exposed to an immediate danger.

- A written monitoring plan is followed that requires monitoring as is reasonably practicable during safe-to-monitor times.

10.065 Piping that is designated as difficult-to-monitor are exempt from monthly monitoring requirements if:

- The piping cannot be monitored without elevating the monitoring personnel more than two (2) meters above a support surface.
- The hazardous waste management unit within which the piping is located was in operation before June 21, 1990.
- A written monitoring plan is followed that requires the monitoring of the piping at least once per calendar year.

11.0 PID Procedure

11.01 Type I - Leak Definition Based on Concentration. Place the probe inlet at the surface of the component interface where leakage could occur. Move the probe along the interface periphery while observing the instrument readout. If an increased meter reading is observed, slowly sample the interface where leakage is indicated until the maximum meter reading is obtained. Leave the probe inlet at this maximum reading location for approximately two times the instrument response time. If the maximum observed meter reading is greater than the leak definition in the applicable regulation, record and report the results as specified in the regulation reporting requirements. Examples of items to be tested are as follows - Valves, Flanges, Pumps, and Open-ended lines.
Valves - Commonly leak at seal between the stem and housing, sample by placing the probe at interface where the stem exits the packing gland and sample the stem circumference. Also place the probe at the interface of the packing gland take-up flange seat and sample the periphery. Survey the valve housings of multipart assembly at the surface of all interfaces where a leak could occur.
Flanges and other connections - for welded flanges, place the probe at the outer edge of the flange gasket interface and sample the circumference of the flange. Sample other types of non permanent joints, such as threaded connections with a similar traverse.
Pumps - Conduct a circumferential traverse at the outer surface of the pump or compressor shaft and seal interface. If the source is a rotating shaft, position the probe inlet within 1 cm of the shaft seal interface for the survey. If the housing configuration prevents a complete traverse of the shaft periphery, sample all accessible portions. Sample all other joints on the pump or compressor housing where leakage could occur.

11.02 Type II - No detectable Emission. Determine the local ambient concentration around the source by moving the probe inlet randomly upwind and downwind at a distance of one to two meters from the source. If an interference exists with this determination due to a nearby emission or leak, the local ambient concentration may be determined at distances closer to the source, but in no case shall the distance be less than 25 centimeters. Then move the probe inlet to the surface of the source and determine the concentration described in Type I leak definitions (11.01). The difference between these

concentrations determines whether there are no detectable emissions. Record and report the results as specified by the regulation.

For those cases where the regulation requires a specific device installation, or that specified vents be ducted or piped to a control device, existence of these conditions shall be visually confirmed. When the regulation also requires that no detectable emissions exist, visual observation and sampling surveys are required.

11.03 Alternative Screening Procedures. A procedure based on the formation of bubbles in a soap solution that is sprayed on a potential leak source may be used for those sources that do not have continuously moving parts, that don't have surface temperatures greater than the boiling point or less than the freezing point of the soap solution, that don't have open areas to the atmosphere that the soap solution cannot bridge, or that exhibit evidence of liquid leakage. Sources that have these conditions present must be surveyed using the instrument techniques.

11.04 Instrument Evaluation Procedures. At the beginning of the instrument performance evaluation test, assemble and start up the instrument according to the manufacturer's instructions for recommended warm-up period and preliminary adjustments.

11.05 Response Factor. Calibrate the instrument with the reference compound as specified in the applicable regulation. For each organic species that is to be measured during individual source surveys, obtain or prepare a known standard in air at a concentration of approximately 80 percent of the applicable leak definition unless limited by volatility or explosivity. In these cases, prepare a standard at 90 percent of the saturation concentration, or 70 percent of the lower explosive limit, respectively. Introduce this mixture to the analyzer and record the observed meter reading. Introduce zero air until a stable reading is obtained. Make a total of three measurements by alternating between the known mixture and zero air. Calculate the response factor for each repetition and average the response factor.

11.06 Calibration Precision. Make a total of three measurements by alternately using zero gas and the specified calibration gas. Record the meter readings. Calculate the average algebraic difference between the meter readings and the known value. Divide this average difference by the known calibration value and multiply by 100 to express the resulting calibration precision as a percentage.

11.07 Response Time. Introduce zero gas into the instrument sample probe. When the meter reading has stabilized, switch quickly to the specified calibration gas. Measure the time from switching to when 90 percent of the final stable reading is attained. Perform this test sequence three times and record the results. Calculate the average response time.

12.0 Leak Identification (Tagging) Procedure

12.01 Tag Description. WRR utilizes a commercially produced, waterproof tag with an attached string which can be fastened to the piping, valve, etc., to alert the Maintenance department to the location of the leak. The tags are individually numbered for tracking purposes.

12.02 Filling Out The Tags. The person identifying or locating the leak shall completely fill the tag out with the Equipment Identification, the Problem and then sign and date the upper portion of the tag. The lower portion of the tag will be filled out and torn (separated) at the perforation.

12.03 Reporting Leaks Using The Tag Stubs. The lower portion of the tag will be turned into the maintenance supervisor, Plant Superintendent or the Plant Manager for appropriate action.

12.04 Completion of Repair. Upon completion of repair of the leak, the maintenance mechanic shall complete the bottom portion of the tag which was previously attached to the leak source with their name and date of completion. The tag will remain in place until the leak location is checked with the PID to ensure conformance.

The repair will be noted in the ESMS database.

12.05 Confirmation of Leak Repair. Upon confirmation of repair, the Tag will be removed, and reattached (stapled) to the lower portion of the tag which has been maintained in the maintenance office. The completed tags will remain on file by the Maintenance Foreman in the Maintenance Office.

13.0 Notes

13.01 A leak is detected if an instrument reading of 10,000 ppm or greater is measured. But, if a leak is not detected for two consecutive months, monitoring may be cut back to quarterly until a leak is detected.

13.02 Valves that are designated for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, do not have to be monitored monthly if all apply:

- The valve has no external actuating mechanism in contact with the hazardous waste stream and
- The valve is operated with emission less than 500 ppm above background and
- The valve is tested initially upon designation annually and by the request of the regulatory agency.

13.03 Valves that are designated as unsafe-to-monitor are exempt from the requirement for monthly monitoring if all apply:

- The valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger and
- A written monitoring plan is followed that requires monitoring as is reasonably practicable during safe-to-monitor times.

13.04 Valves that are designated as difficult-to-monitor are exempt from monthly monitoring requirements if any apply:

- The valve cannot be monitored without elevating the monitoring personnel more than two (2) meters above a support surface.
- The hazardous waste management unit within which the valve is located was in operation before June 21, 1990.
- A written monitoring plan is followed that requires the monitoring of the valve at least once per calendar year

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13.05 Piping that is designated as unsafe-to-monitor is exempt from the requirement for monthly monitoring if all apply:

- The piping is unsafe to monitor because monitoring personnel would be exposed to an immediate danger.
- A written monitoring plan is followed that requires monitoring as is reasonably practicable during safe-to-monitor times.

13.06 Piping that is designated as difficult-to-monitor are exempt from monthly monitoring requirements if any apply:

- The piping cannot be monitored without elevating the monitoring personnel more than two (2) meters above a support surface.
- The hazardous waste management unit within which the piping is located was in operation before June 21, 1990.
- A written monitoring plan is followed that requires the monitoring of the piping at least once per calendar year.

13.07 The TSDF may elect to have all valves within a hazardous waste management unit comply with an alternative standard of no greater than 2 percent of the valves to leak.

13.08 The following are alternatives to the prescribed monitoring schedule which can be used until the percentage of valves leaking is greater than 2 percent:

- After 2 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip one of the quarterly leak detection periods for the valves.
- After 5 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip 3 of the quarterly leak detection periods.

13.09 If a leak is detected, the first attempt at repair must be made within five calendar days after detection, and leak repair must be completed within 15 calendar days after detection.

13.10 First attempts at repair include, but are not limited to:

- Tightening of bonnet bolts.
- Replacement of bonnet bolts.
- Tightening of packing gland nuts.
- Injection of lubricant into lubricated packing.

14.0 Reporting Requirements

14.01 Semiannual Report. A semiannual report is to be submitted to the WDNR which shall include the following information

1) EPA Identification Number, Name and Address of Facility
2) The total number of valves, pumps, compressors, agitators, and connectors monitored; the number leaks detected for each type of component; the percent of total components in each category found to be leaking; the number of leaks not repaired, if any; and an explanation of any delays of repairs.
3) The equipment identification number of each valve, compressor, or pump for which a leak was not repaired as required in 9.0 Standards.
4) Findings from weekly visual inspections of pumps in light liquid service.
5) Dates for which the hazardous waste management unit shutdowns occurred within the semiannual reporting period.
6) For each month of the semiannual report, dates when the control device exceeded or operated outside of the design specifications and reasoning why it was not corrected within 24 hours, the duration and cause for each exceedance and any corrective measures taken.
7) If leaks from valves, pumps, and compressors are repaired as required in 9.0 Standards, and any applicable control device did not exceed outside of the design specifications as stated in a daily operation check list, a report to the department is not required.
8) A log and/or other records, such as a site plan, demonstrating affected units subject to monitoring.

Reference Documents

- Method 21 - Determination of Volatile Organic Compound Leaks
  Wisconsin Administrative Code NR 664, NR 429, NR 439
- Code of Federal Regulations (CFR) 40 CFR 264.1057, 264.1061, 264.1081, 265.1057, 265.1061
- National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Air Pollutants from Off-Site Waste and Recovery Operations. (40 CFR Part 63, Subpart DD; Sec. 63.691 Standards: Equipment Leaks; and Sec. 63.162 through Sec. 63.182 in Subpart H - National Emission Standards For Organic Air Pollutants From Equipment Leaks)
- Standard Operation Procedures – Leak Detection Monitoring Location Maps
- WRR Monthly Emissions Monitoring Summary of Actions

MiniRae 2000 EPA Method 21 Compliant

Method 21 Standard	**MiniRae 2000 Specification**
3.1.1a Detects Compound	Responds to a broad range of Organic Compounds
3.1.1b Encompasses leak definition	0-10,000 ppmv
3.1.1c Instrument scale (Resolution) = ± 2.5% of leak definition	0.1 ppmv (0-999.9 ppmv) 1 ppmv (1000-10,000 ppmv)
3.1.1d Pump Flow Rate = 0.1-3.0 L/min	0.4 - 0.6 L/min
3.1.1e Intrinsic Safety = Class 1 & 2, Division 1	Cl.1 Div. 1 Approved Cl.2 Div. 1 Pending
3.1.1f Probe Dimensions = < ¼ inch o.d.	3/16 inch o.d.
3.1.2a Response Factor Value =<10	<10 for most compounds, using isobutylene cal. gas
3.1.2b Response Time = < 30 seconds to 90%	< 2 seconds to 90%
3.1.2c Calibration Precision = ±10 % of Cal. gas value	±2% of Cal. Gas value
3.1.3a Response Factors Available	Available for > 100 Compounds
3.1.3b Cal. Precision Test = initial and every three months	Simple Daily Calibration
3.1.3c Response Time Test = Initial	Manufacturing flow test ensures short response time
3.2 Cal. Gas Certification	±2%

Part 3

Section L – Subch BB:
Air Emission Control Standards – Equipment Leaks and Repair

Appendix L-2
Listing of Drawings for Subchapter BB Equipment at WRR

Figure Name	Figure Number
EI Evaporator Subch. BB Equipment	2L-2 EI P&ID
EIV Evaporator Subch. BB Equipment	2L-2 EIV P&ID
E23 Evaporator Subch. BB Equipment	2L-2 E23 P&ID
HVPS Subch. BB Equipment	2L-2 HVPS P&ID
E2 Storage Area Subch. BB Equipment	2L-2 E2 Storage
Tanker Pit Subch. BB Equipment	2L-2 Tanker Pit
Fuels Building Subch. BB Equipment	2L-2 Fuel Bldg
EII Sludge Dike Subch. BB Equipment - Pump Up	2L-2 EII Pump Up
EII Sludge Dike Subch. BB Equipment - Feed Lines	2L-2 EII Feed
EII Sludge Dike Subch. BB Equipment - Residue	2L-2 EII Residue
EI Sludge Dike Subch. BB Equipment - Pump Up	2L-2 EI Pump Up
EI Sludge Dike Subch. BB Equipment - Feed Lines	2L-2 EI Feed
EI Sludge Dike Subch. BB Equipment - Residue Lines	2L-2 EI Residue

Figure Name	Figure Number
EI Sludge Dike Subch. BB Equipment - Overflow Pipe	2L-2 EI Overflow
EI South Sludge Dike Subch. BB Equipment - Pump Up	2L-2 EI South Pump Up
EI South Sludge Dike Subch. BB Equipment - Feed Lines	2L-2 EI South Feed
EI South Sludge Dike Subch. BB Equipment - Overflow Pipe	2L-2 EI South Overflow
F2 Fractionation Equipment Subch. BB Equipment	2L-2 F2 P&ID
F3 Fractionation Equipment Subch. BB Equipment	2L-2 F3 P&ID

WRR Environmental Services, Co, Inc.
Eau Claire, Wisconsin

Part 3

Section M – Subch CC:
Air Emission Control Standards –
Container and Tanks

2M-1 Documentation of compliance with air emission standards for tanks and containers NR 664.1080

WRR manages hazardous waste in tanks and containers and is required to control the air pollutant emissions from these hazardous waste management units.

Per the requirements of Subch. **NR 664.1080(2)(g)** Wis. Admin. Code, WRR certifies that each tank managing hazardous waste is equipped with an air emission control device that operates under the provisions of current operating permits issued by the WDNR under NR 407. The current applicable operating permits are 618026530-P02 and 07-SJZ-276.

As long as WRR operates under the tank provisions of these operating permits, the requirements of this subchapter do not apply. Documentation for tank air emission control device compliance is maintained at the facility and is part of its operation record.

2M-2 to 2M-7 Identification of each container area subject to Subpart CC NR 670.027(1)(b) to NR 670.027(1)(f)[1]

WRR manages hazardous waste in the following container types subject to s. NR 664.1086 Wis. Admin. Code:

1. Containers with a design capacity of greater than 0.1 m3 (26 gallons) but less than 0.46 m3 (121 gallons) requiring level 1 emission control.
2. Containers with a design capacity of greater than 0.46 m3 (121 gallons) that are in light liquid service requiring level 2 emission control.

All containers used for the storage of hazardous waste and subject to s. NR664.1086 Wis. Admin. Code meet DOT requirements for shipping hazardous materials. In addition to container types subject to s. NR664.1086 Wis. Admin. Code, WRR does manage hazardous waste in varying sized containers including small cans.

None of the containers managed at the WRR facility require level 3 controls that vent to a control device or a container enclosure venting to a control device.

WRR's fuels building is designed and operated according to the criteria for a permanent total enclosure in Method 204—"Criteria for and Verification of a Permanent or Temporary Total Enclosure" in appendix M of 40 CFR part 51. The fuels building also has two hazardous waste container storage areas; one located on the upper level and one located on the lower level.

[1] Items 66 to 71

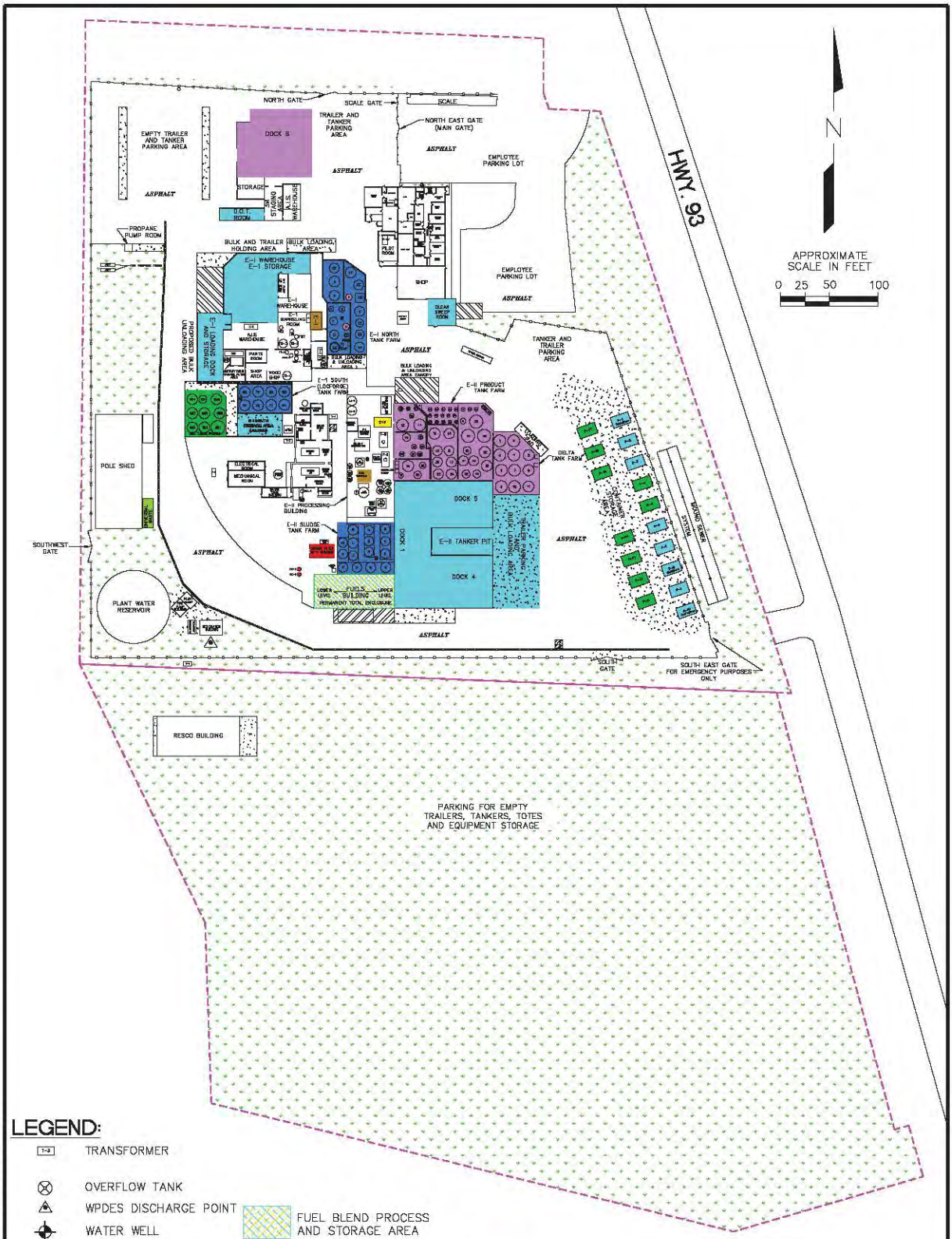
The containers stored and managed within the fuels building operate to the standard for containers requiring level 1 control. Therefore the requirements for the design, installation and operation of a container enclosure area found in NR 670.027(1) are not applicable.

Subpart CC –Tank Certification
WRR Environmental Services Co., Inc.
NR 664.1080(2)(g)

In accordance with subch. NR 664.1080(2)(g) Wis. Admin. Code, I certify that the emission control devices on hazardous waste tanks, otherwise subject to this subchapter are operating in compliance with the provisions of air operating permits issued by the Wisconsin Department of Natural Resources under NR 407.

James L. Hager
President/CEO

4/18/2013
Date



LEGEND:

- TRANSFORMER
- OVERFLOW TANK
- WPDES DISCHARGE POINT
- WATER WELL
- FIRE EXTINGUISHER
- PROPERTY LINE
- FENCE LINE
- RAINWATER COLLECTION
- PERVIOUS SURFACE
- CONCRETE SURFACE
- CANOPY
- FUEL BLEND PROCESS AND STORAGE AREA
- PRODUCT STORAGE AREA
- HAZARDOUS WASTE TREATMENT AREA
- HAZARDOUS WASTE TANK STORAGE AREA
- HAZARDOUS WASTE CONTAINER STORAGE AREA
- UNIVERSAL WASTE STORAGE AREA
- EXEMPT PROCESS UNITS
- NON-RCRA WASTE AND PRODUCT STORAGE AREA
- FUEL BLEND POLLUTION CONTROL DEVICE

NOTES:

1) E-I SOUTH STORAGE AREA IS CURRENTLY NOT USED AS A HAZARDOUS WASTE CONTAINER STOR AREA.

2) FUELS BUILDING IS CLASSIFIED AS BOTH A HAZARDOUS WASTE TREATMENT AREA AND A HAZARDOUS WASTE CONTAINER STORAGE AREA.

3) BASEMAP DEVELOPED AND MAINTAINED BY WR ENVIRONMENTAL, MODIFIED BY SEH INC. (01/13)

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		FIELD REVIEW		QC CHECK	
2	01/12/13		RJH	01/13	TT	01/13			BA	01/13
3	07/23/2013	Moved CC-2 & 3, added Tank 4, added NFPA 497	MNG	07/13	MNG	07/13				
4	02/27/2014	MODIFIED COLOR CODING, UPDATED TITLE BLOCK	MNG	02/14	MNG	02/14				

WRR

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

FIGURE A.1
FACILITY SITE PLAN

PROJ. NO. WRRES118488
DATE 02/27/2014
001149

WRR DIRECTORY: V:\PART B\2013 SUBMITTAL\DRAWINGS\SITE PLANS AND MAPS\FIGURE A1 - FACILITY SITE PLAN
DRAWING DIRECTORY:P:\UZ\W\WRRES\118488\FIGURES\FIGURE A.1 - FACILITY SITE PLAN

Legend

- WRR Property Boundary*
- Quarter Mile Buffer

DATA SOURCES:

*Source: Eau Claire County Land Information Office

Map Projection: WISCRS-Eau Claire County (Feet)
Produced by: RJH

N
W E
S

0 100200 400 600 800
Feet

SEH
421 Frenette Drive,
Chippewa Falls, WI 54729
PHONE: (715) 720-6200
FAX: (715) 720-6300
WATTS: 800-325-2055
www.sehinc.com

Project Number
WRRES118488

DATE
04/12/13

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT

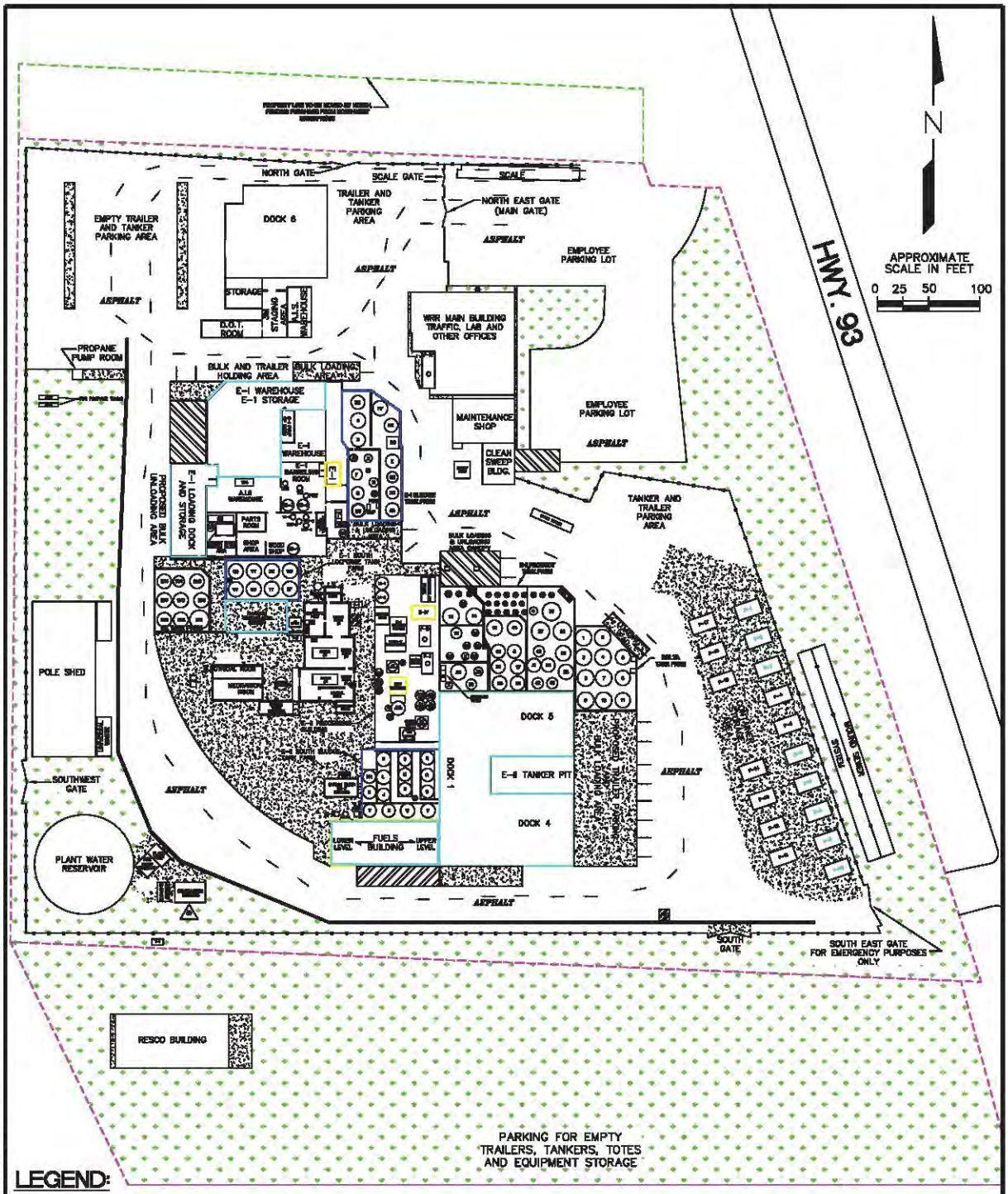
Eau Claire, Wisconsin
EPA ID No. WID990829475

TRAFFIC PATTERNS TO WRR ENVIRONMENTAL SERVICES

Map

A.17

001150



LEGEND:

- = TRANSFORMER
- = FIRE HOSE HOOKUP
- = OVERFLOW TANK
- = WPDES DISCHARGE POINT
- = WATER WELL
- = FIRE EXTINGUISHER
- = PROPERTY LINE
- = FENCE LINE
- = RAIN WATER COLLECTION SYSTEM
- = PERVIOUS SURFACE
- = CONCRETE SURFACE
- = CANOPY
- = TRAFFIC FLOW DIRECTION
- = HAZARDOUS WASTE TREATMENT AREA
- = HAZARDOUS WASTE TANK STORAGE AREA
- = HAZARDOUS WASTE CONTAINER STORAGE AREA

NOTES:

1) E-1 SOUTH STORAGE AREA IS CURRENTLY NOT USED AS A HAZARDOUS WASTE CONTAINER STORAGE AREA.

2) FUELS BUILDING IS CLASSIFIED AS BOTH A HAZARDOUS WASTE TREATMENT AREA AND A HAZARDOUS WASTE CONTAINER STORAGE AREA.

3) BASEMAP DEVELOPED AND MAINTAINED BY WRR ENVIRONMENTAL, MODIFIED BY SEH INC.(01/13)

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		FIELD REVIEW		QC CHECK	
1	12/13/12		TT	12/12	TT	12/12			BA	12/12
2	01/12/13		RJH	01/13	TT	01/13			BA	01/13
3	04/17/2013		MNG	04/13	MNG	04/13				

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

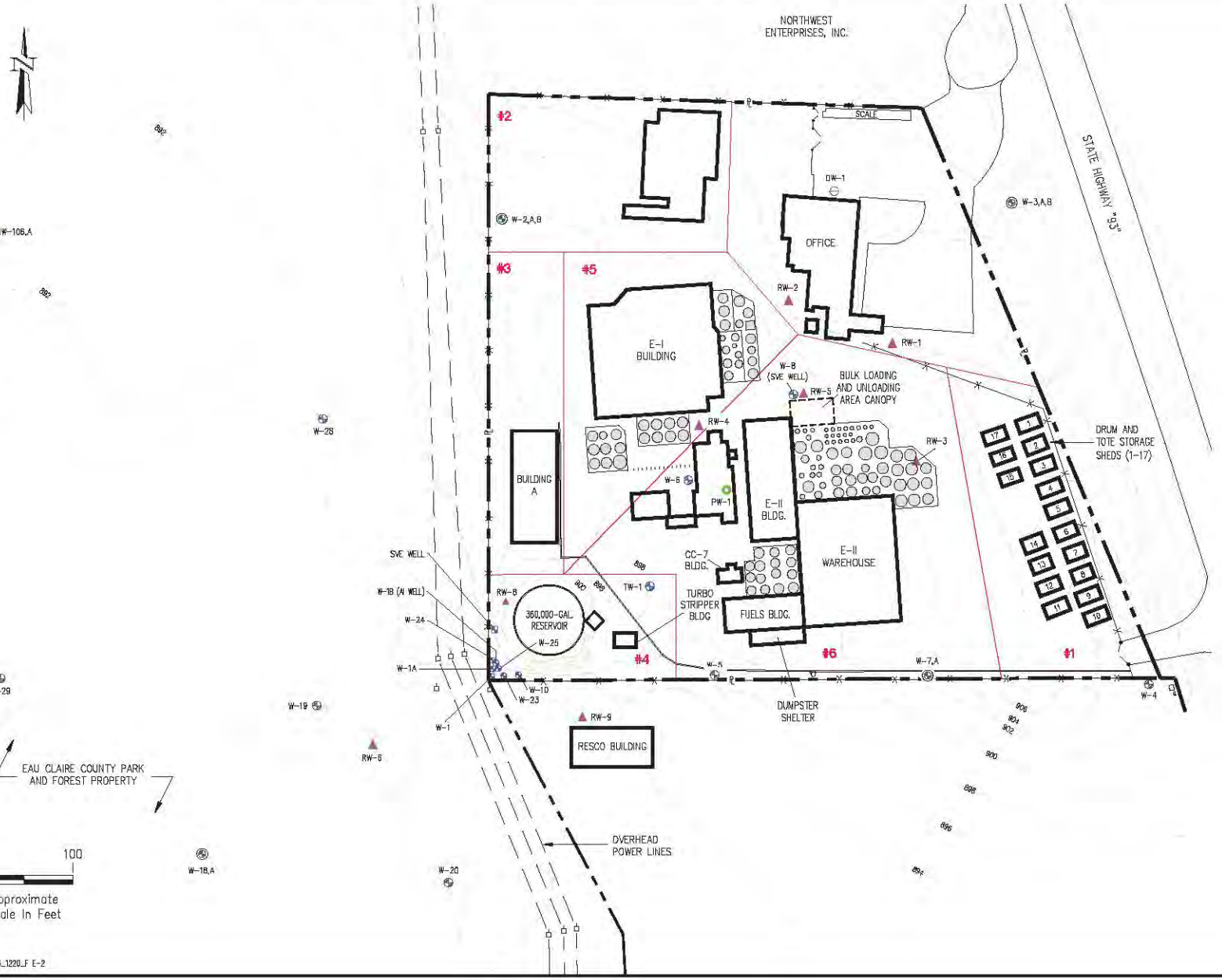
FIGURE A.17
INTERIOR TRAFFIC PATTERNS

PROJ. NO. WRRES118488
DATE 04/17/2013

WRR DRAWING DIRECTORY: V:\PART B\2013 SUBMITTAL\DRAWINGS\SITE PLANS AND MAPS\FIGURE A.17 - INTERIOR TRAFFIC PATTERNS
SEH DRAWING DIRECTORY: P:\UZ\W\WRRES\118488\FIGURES\FIGURE A.1 - FACILITY SITE PLAN

Gannett Fleming

FIGURE E-2



LEGEND

- MONITORING WELL
- MONITORING WELL NEST
- RECOVERY WELL
- SVE WELL
- PRODUCTION WELL
- DRINKING WATER WELL
- ABOVEGROUND STORAGE TANK (APPROXIMATE LOCATION)
- POWER POLE
- LIGHT POLE
- FENCE
- TREE LINE
- GRADE CONTOUR
- #2 SOLID WASTE MANAGEMENT UNITS
- RETAINING WALL
- APPROXIMATE PROPERTY BOUNDARY

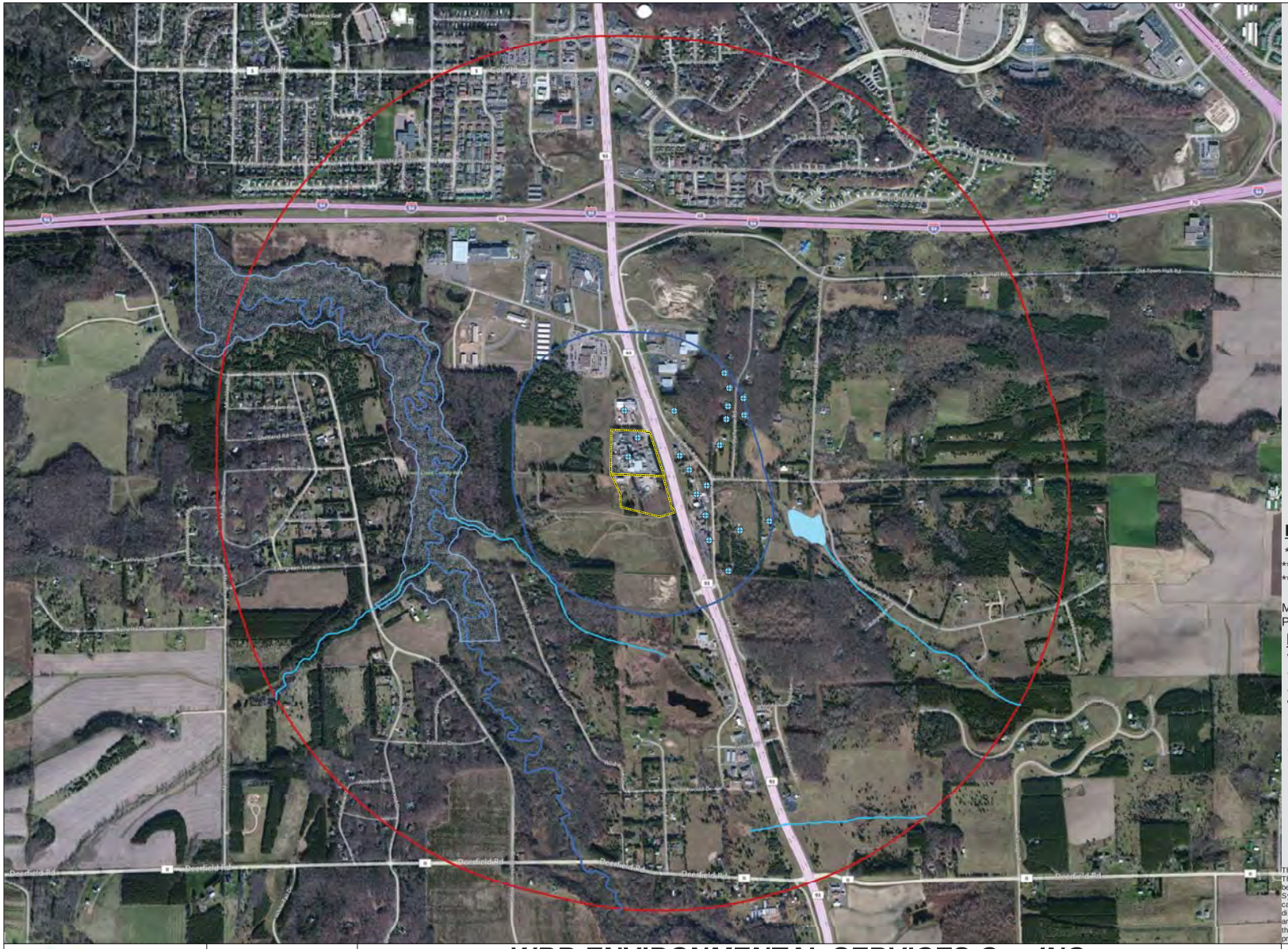
NOTES

1. THIS DRAWING IS BASED ON ARCMAP FILES PROVIDED BY SHORT, ELLIOT, AND HENDRICKSON; ESRI AERIAL PHOTOGRAPHY AND SURVEY DATA FROM ECG INC. DATED 6-16-94.
2. SITE FEATURES ARE APPROXIMATE.
3. THE LOCATIONS OF TANKS ARE APPROXIMATE AND THE SURVEYED LOCATIONS ARE SHOWN ON THE DRAWINGS IN THE FEASIBILITY AND PLAN OF OPERATION REPORT.

SITE PLAN SHOWING SOLID WASTE MANAGEMENT UNITS AND GROUND SURFACE CONTOURS

WRR ENVIRONMENTAL SERVICES, INC.
EAU CLAIRE, WISCONSIN

122013
own_55929-002_2013_1220_F E-2



Legend

- WRR Property Boundary*
- Wells**
- 1 Mile Buffer
- Quarter Mile Buffer
- Waterbodies***
- 100 Yr Floodplain

Creeks***

- Lowes Creek
- Unnamed Creeks

DATA SOURCES:

*Source: Eau Claire County Land Information Office
**Source: WIDNR - Bureau of Drinking Water & Groundwater
***Source: WIDNR - Hydrology GIS Dataset

Map Projection: WISCRS-Eau Claire County (Feet)
Produced by: RJH

NOTE:

Well locations are based off well logs and Eau Claire County parcel data obtained from Wisconsin DNR and Eau Claire County. In the event that a well log was not submitted to the County, there would not be a record of such well. This information has not been field verified and is complete to the best of SEH's knowledge.

N
W E
S

0 0.125 0.25 0.5 Miles

SEH
421 Frenette Drive,
Chippewa Falls, WI 54729
PHONE: (715) 720-6200
FAX: (715) 720-6300
WATTS: 800-325-2055
www.sehinc.com

Project Number
WRRES118488

DATE
03/11/13

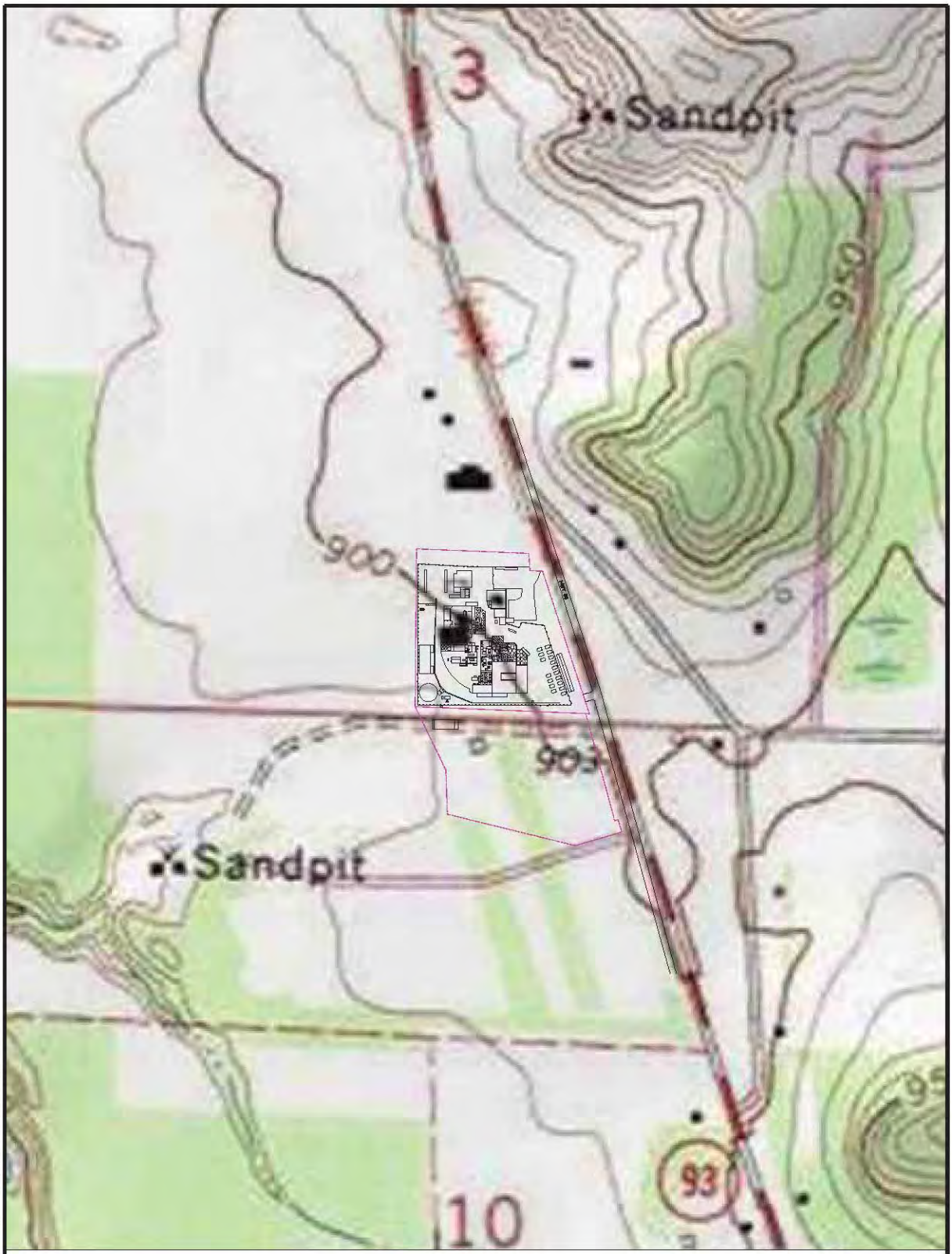
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT

Eau Claire, Wisconsin
EPA ID No. WID990829475

SITE LOCATION MAP FLOODPLAIN

Map
F-1
A.1

001153



LEGEND:

- PROPERTY LINE
- FENCE LINE
- RAIN WATER COLLECTION SYSTEM

*EAU CLAIRE EAST USGS TOPOGRAPHIC QUADRANGLE (1982)

N

APPROXIMATE SCALE IN FEET

0 100 200

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		FIELD REVIEW		QC CHECK	
1	12/13/12		TT	12/12	TT	12/12			BA	12/12
2	01/12/13		RJH	01/13	TT	01/13			BA	01/13

WRR

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

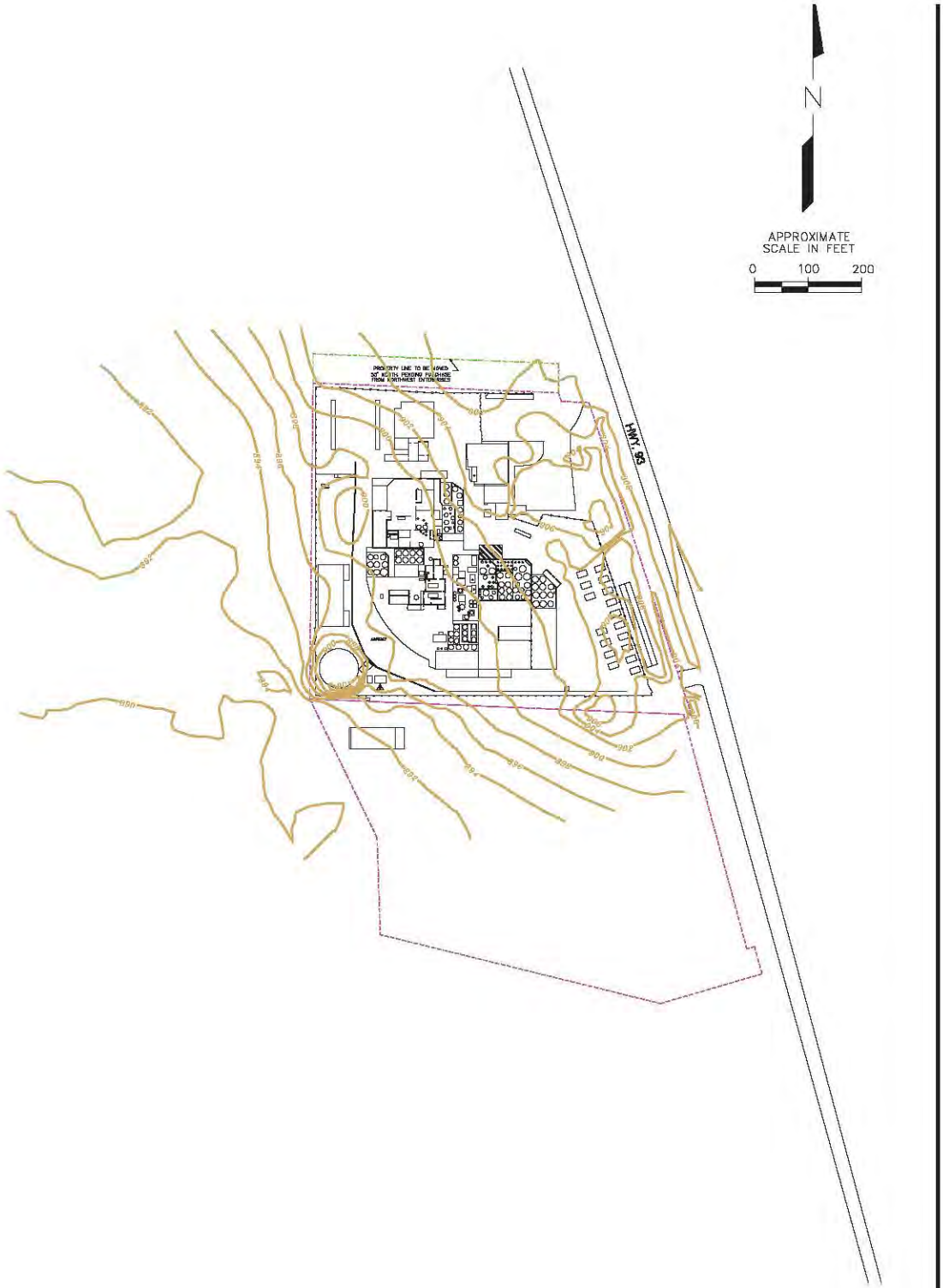
FIGURE F.9a
WRR SITE TOPOGRAPHIC MAP USGS

PROJ. NO. WRRES118488

DATE 02/19/14

DRAWING DIRECTORY: P:\UZ\W\WRRES\118488\FIGURES\FIGURE F.9b – WRR SITE TOPOGRAPHIC MAP

001154



LEGEND:

- = PROPERTY LINE
- = FENCE LINE
- = RAIN WATER COLLECTION SYSTEM
- = GROUND CONTOURS (2' CONTOUR INTERVAL) CONTOURS PROVIDED BY ECG, INC. (05/2/96)

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	FIELD REVIEW	QC CHECK
1	12/13/12		TT 12/12	TT 12/12		BA 12/12
2	01/12/13		RJH 01/13	TT 01/13		BA 01/13

WRR

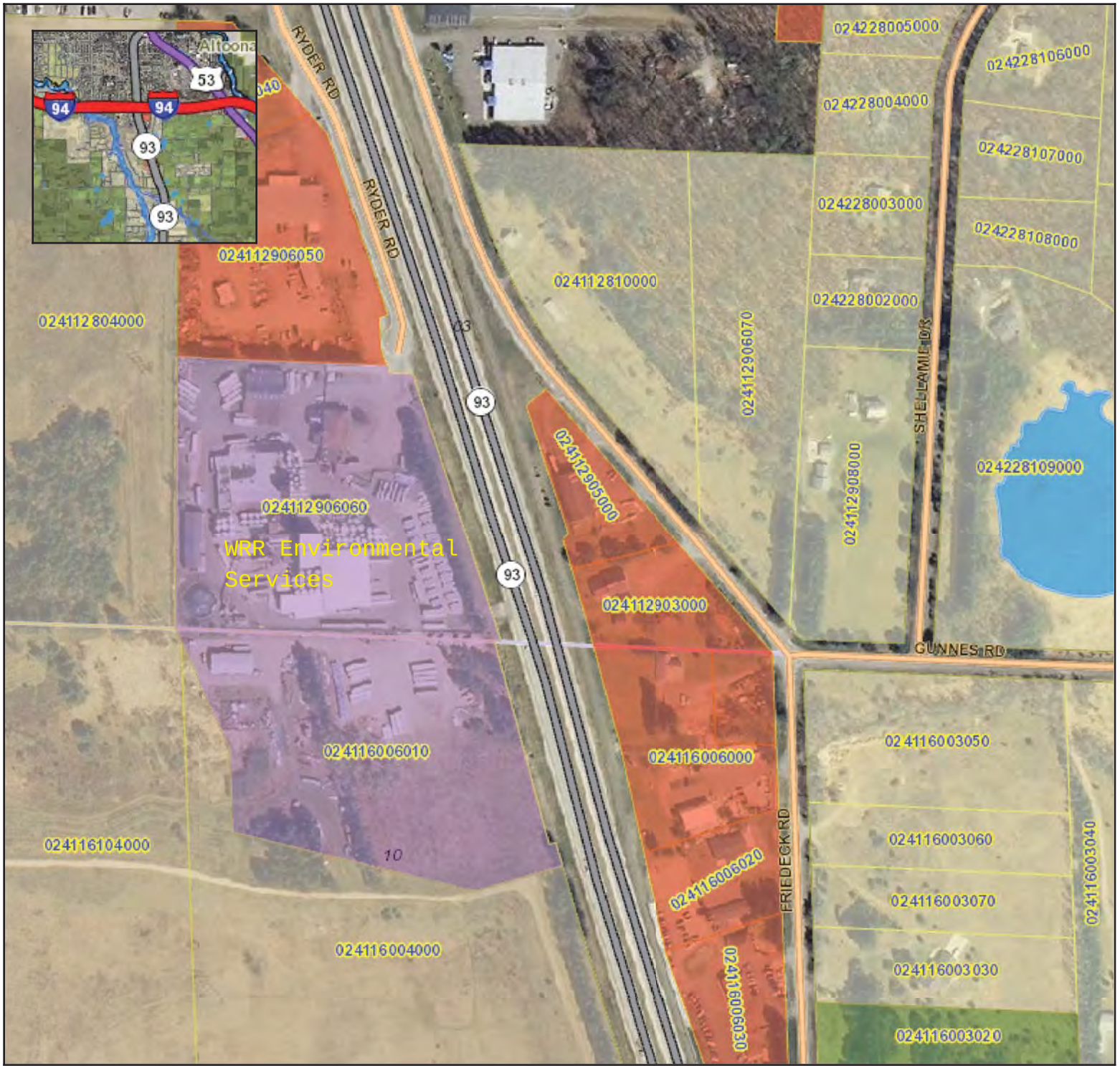
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

FIGURE F.9b
WRR SITE TOPOGRAPHIC MAP

PROJ. NO. WRRES118488

DATE 02/19/14

DRAWING DIRECTORY: P:\UZ\W\WRRES\118488\FIGURES\FIGURE F.9b - WRR SITE TOPOGRAPHIC MAP



Eau Claire County, WI

Legend

- Parcels
- Parcel Labels
- County Zoning
- Sections
- Rivers and Streams
- Lakes and Rivers
- Flood Hazard Areas
- Interstate
- US Highways
- State Highways
- County Highways
- Town Roads
- City and Village Streets
- Ramps
- Railroads
- WROC 18 Inch 2010 (Color)

Map C.1 Zoning Map

DISCLAIMER: This map is not guaranteed to be accurate, correct, current, or complete and conclusions drawn are the responsibility of the user.

WRR Environmental Services

Author: RLA	
Date Printed: 05/21/12 2:16 PM	
Sources:	

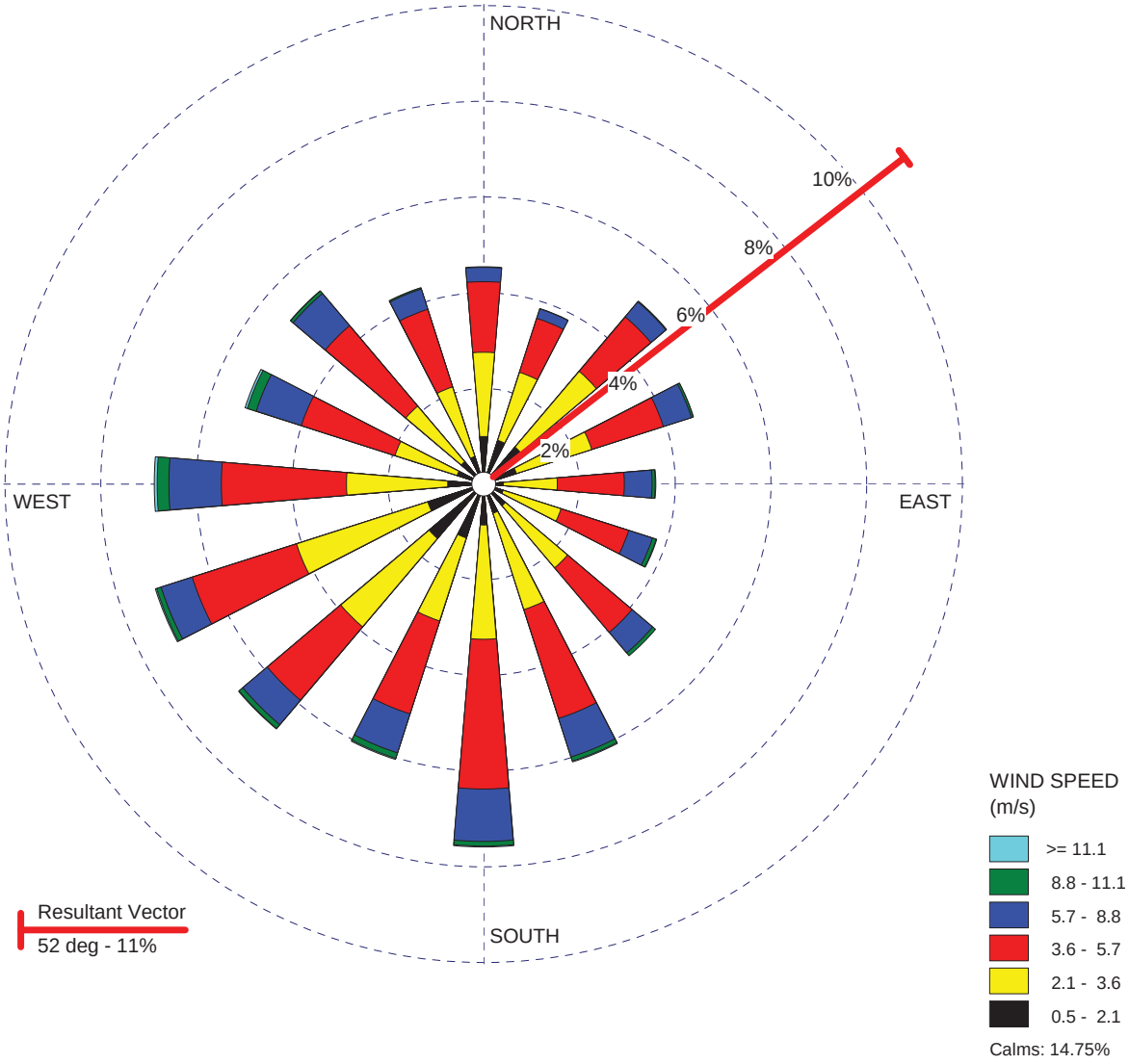
001156

WIND ROSE PLOT:

Wind Rose for Eau Claire County Airport (1998-2002)

DISPLAY:

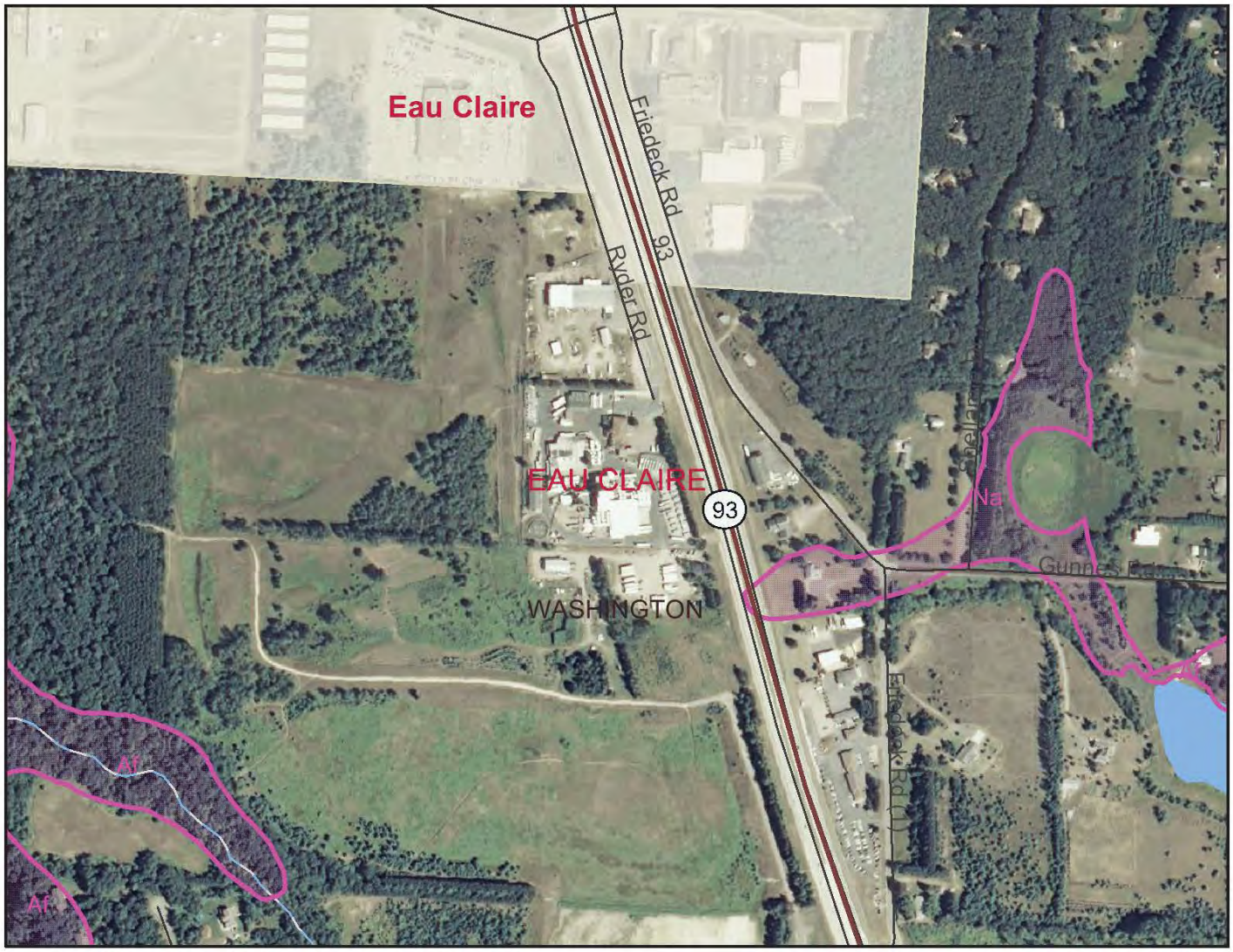
Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **1998 1999 2000 2001 2002** **Jan 1 - Dec 31** **00:00 - 23:00**	COMPANY NAME:	
		MODELER:	
	CALM WINDS: **14.75%**	TOTAL COUNT: **43804 hrs.**	
	AVG. WIND SPEED: **3.50 m/s**	DATE: **6/15/2009**	PROJECT NO.: F.14 Wind Rose

WRPLOT View - Lakes Environmental Software

Map Created on May 18, 2012



0 700 1400 2100 ft.

Map created on May 18, 2012

Legend

Major Highways
- Interstate
- State Highway
- U.S. Highways

County Roads

Local Roads

24K County Boundaries

Civil Towns
- Civil Town

USDA Wetspots

DNR Wetland Points
- Excavated Pond
- Dammed Pond
- Wetland Too Small to Delineate
- Filled Excavated Pond
- Filled Dammed Pond
- Filled Wetland Too Small to Delineate
- Filled or Drained Wetland

DNR Wetland Areas
- Upland
- Wetland
- Filled or Drained Wetland

Wetland Indicator Soils

24K Open Water

24K Rivers and Shorelines
- Intermittent
- Fluctuating
- Perennial

Cities and Villages
- Village
- City

N

Scale: 1:7,433

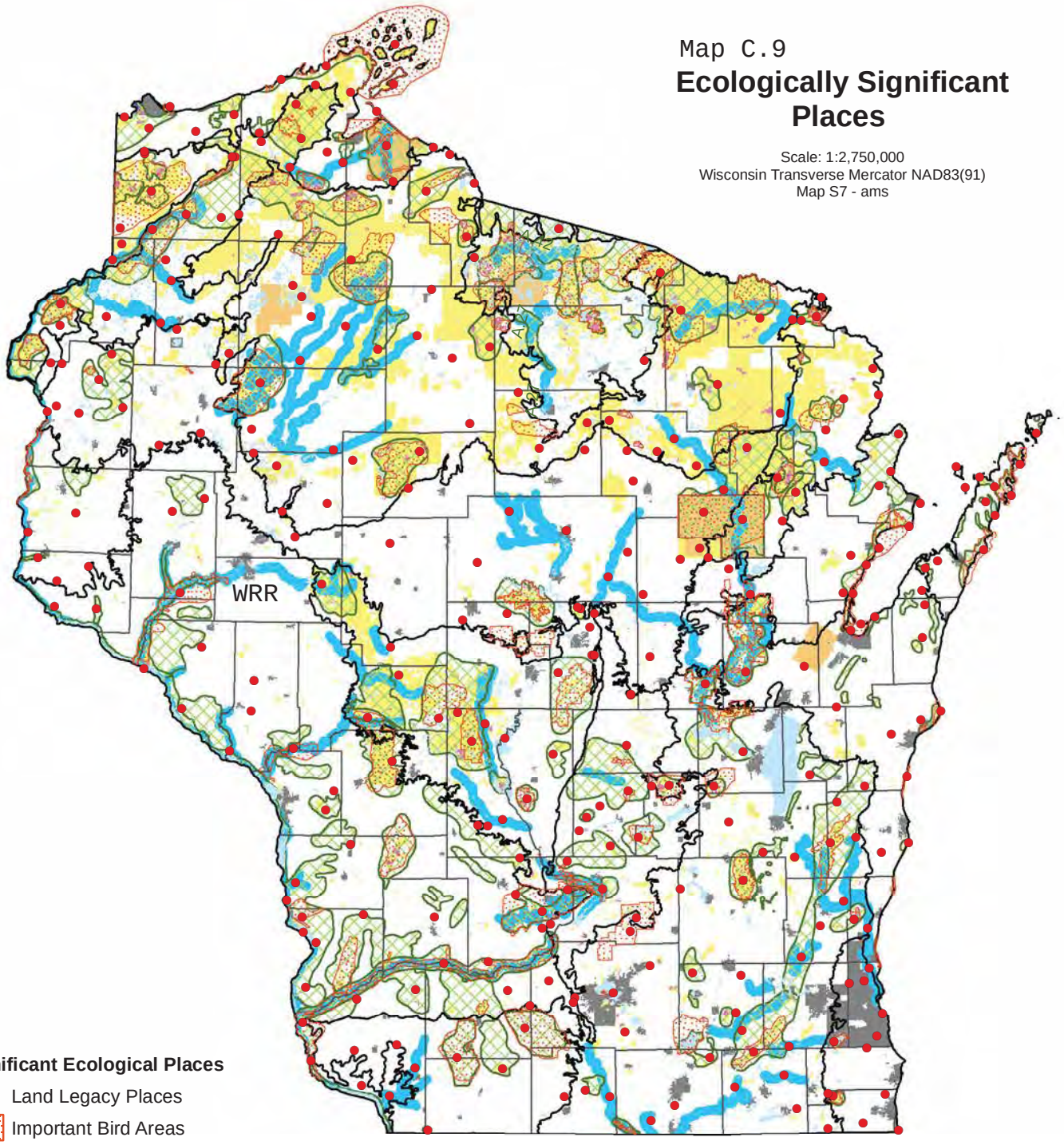
Wisconsin Wetland Inventory (WWI) maps show graphic representations of the type, size and location of wetlands in Wisconsin. These maps have been prepared from the analysis of high altitude imagery in conjunction with soil surveys, topographic maps, previous wetland inventories and field work. State statutes define a wetland as "an area where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions." The principal focus of the WWI is to produce wetland maps that are graphic representations of the type, size and location of wetlands in Wisconsin. Within this context, the objective of the WWI is to produce reconnaissance level information on the location, type, size of these habitats such that they are accurate at the nominal scale of the 1:24,000 (1 inch = 2000 feet) base map. The DNR recognizes the limitations of using remotely sensed information as the primary data source. They are to be used as a guide for planning purposes. There is no attempt, in either the design or products of this inventory, to define the limits of jurisdiction of any Federal, State, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, State, or local agencies concerning specified agency regulatory programs and jurisdictions that may affect such activities. The most accurate method of determining the legal extent of a wetland for federal or state regulations is a field delineation of the wetland boundary by a professional trained in wetland delineation techniques.

Notes: WRR Environmental Services location in respect to WIDNR Wetlands classification.

Map C.9

Ecologically Significant Places

Scale: 1:2,750,000
Wisconsin Transverse Mercator NAD83(91)
Map S7 - ams



Significant Ecological Places

- Land Legacy Places
- Important Bird Areas
- State Natural Areas

Conservation Opportunity Areas

- Terrestrial
- River Systems
- Lakes
- Ecological Landscape
- County Boundaries
- Protected Land
- Native American Land
- Cities or Villages
- Open Water

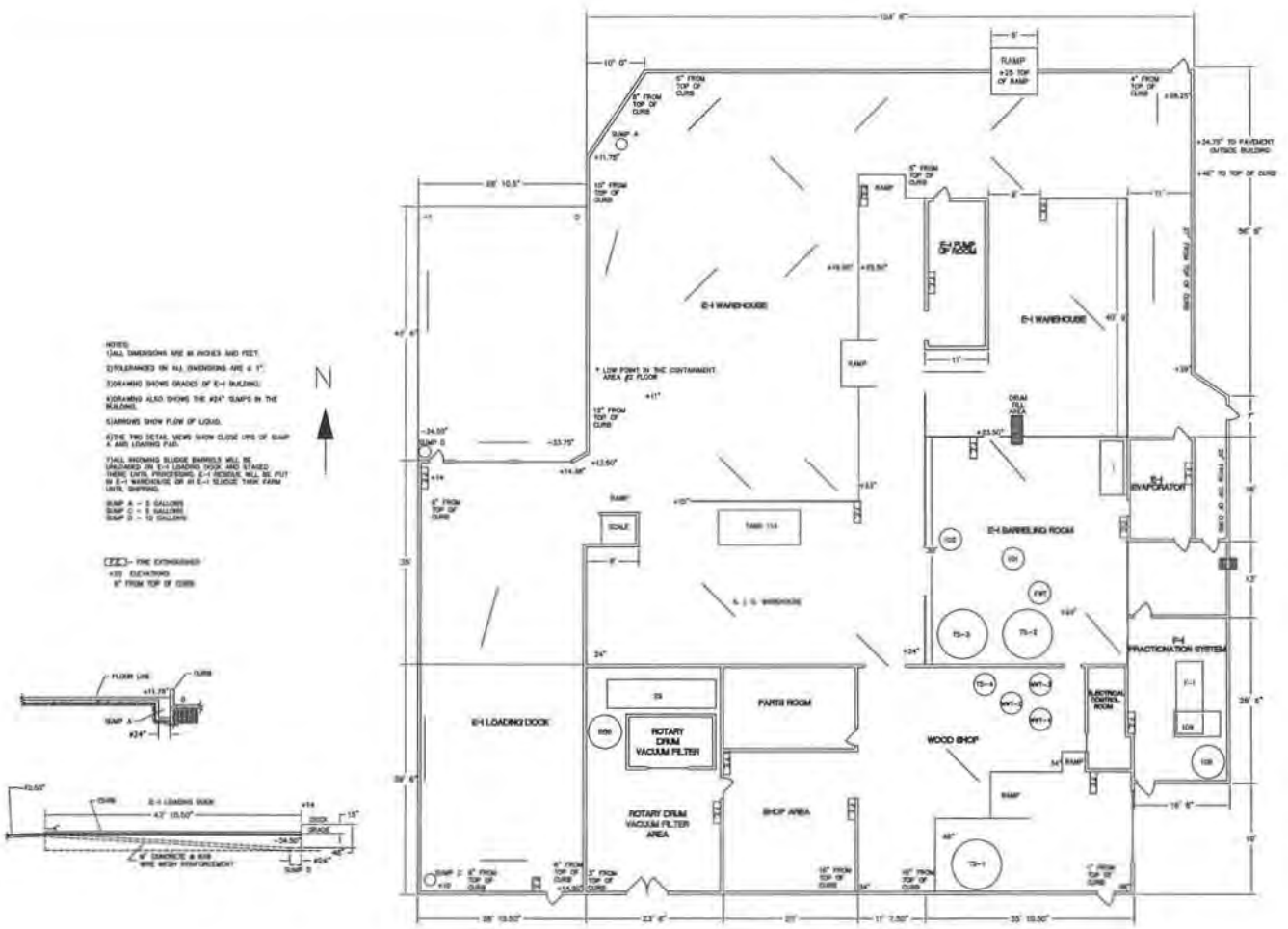
The significant ecological places depicted on this map originate from several different plans that identify areas of the state that are ecologically important based on criteria described in those plans.
'Land Legacy Places' were identified in the Wisconsin Land Legacy Report (2006): http://dnr.wi.gov/master_planning/land_legacy/
'Conservation Opportunity Areas' were identified in Wisconsin's Wildlife Action Plan Implementation Report (2008): http://dnr.wi.gov/org/land/er/wwap/
'Important Bird Areas' were identified in Important Bird Areas of Wisconsin (2007): http://www.wisconsinbirds.org/iba/IBA-book.htm
'Protected Lands' include most State, Federal and County ownership or easments as well as lands owned or managed by land trusts and NGOs such as The Nature Conservancy and others.

0 12.5 25 50 75 100
Miles

0 20 40 80 120 160
Kilometers

N
W E
S

WRR Environmental Services



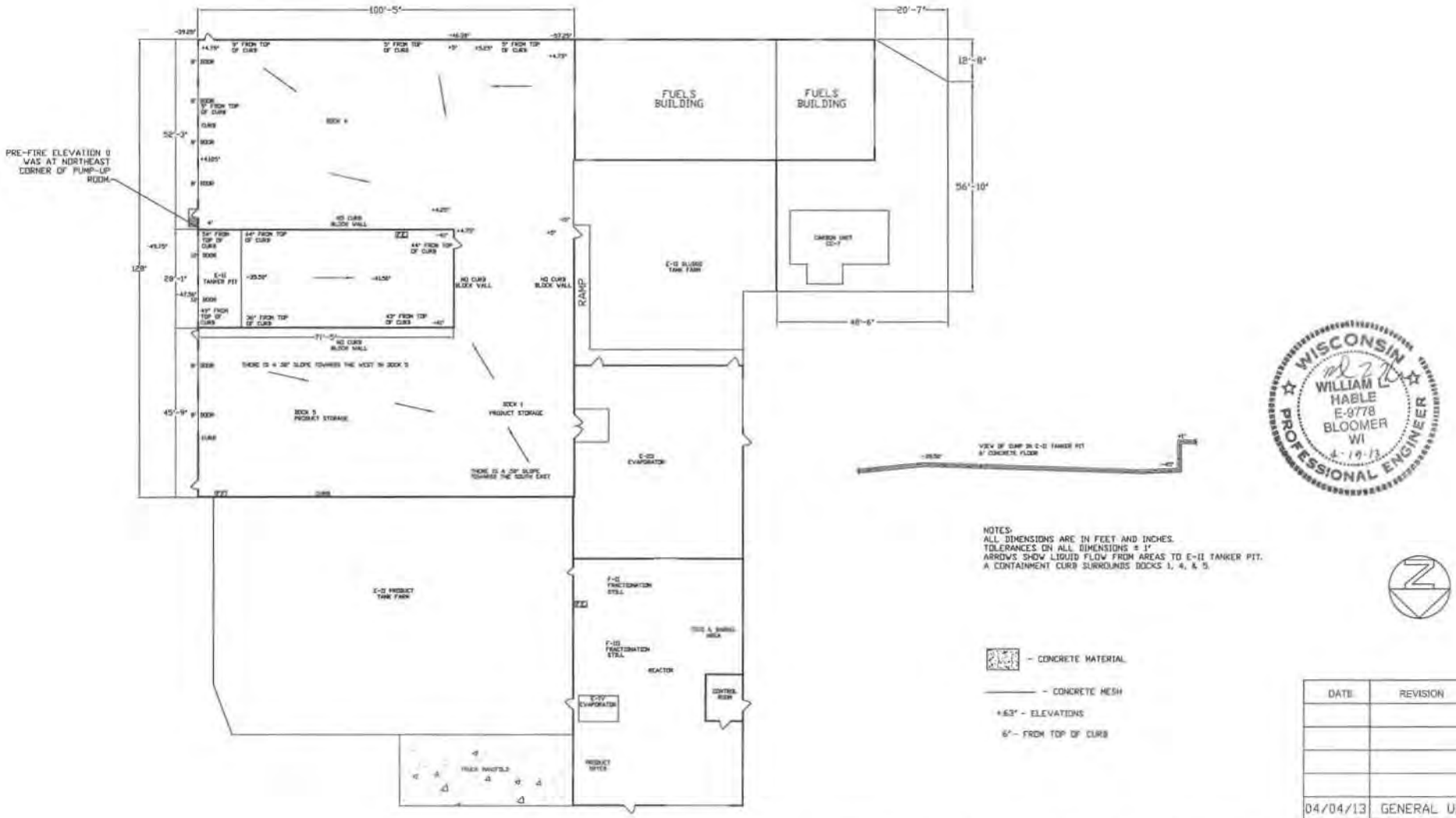
NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	03/11/13	FPOR SUBMITTAL	RJH 03/13	TT 03/13	BA 03/13

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

FLOOR ELEVATIONS - E1 BUILDING

PROJ. NO. 118486
DATE 03/28/13
FIGURE 2B-2 E1 STORAGE AREA

DRAWING DIRECTORY: P:\2012\WORKFILES\118486\FIGURES\118486_2B-2 E1 STORAGE AREA



NOTES:
ALL DIMENSIONS ARE IN FEET AND INCHES.
TOLERANCES ON ALL DIMENSIONS ± 1"
ARROWS SHOW LIQUID FLOW FROM AREAS TO E-II TANKER PIT.
A CONTAINMENT CURB SURROUNDS DOCKS 1, 4, & 5.

WISCONSIN
WILLIAM L HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

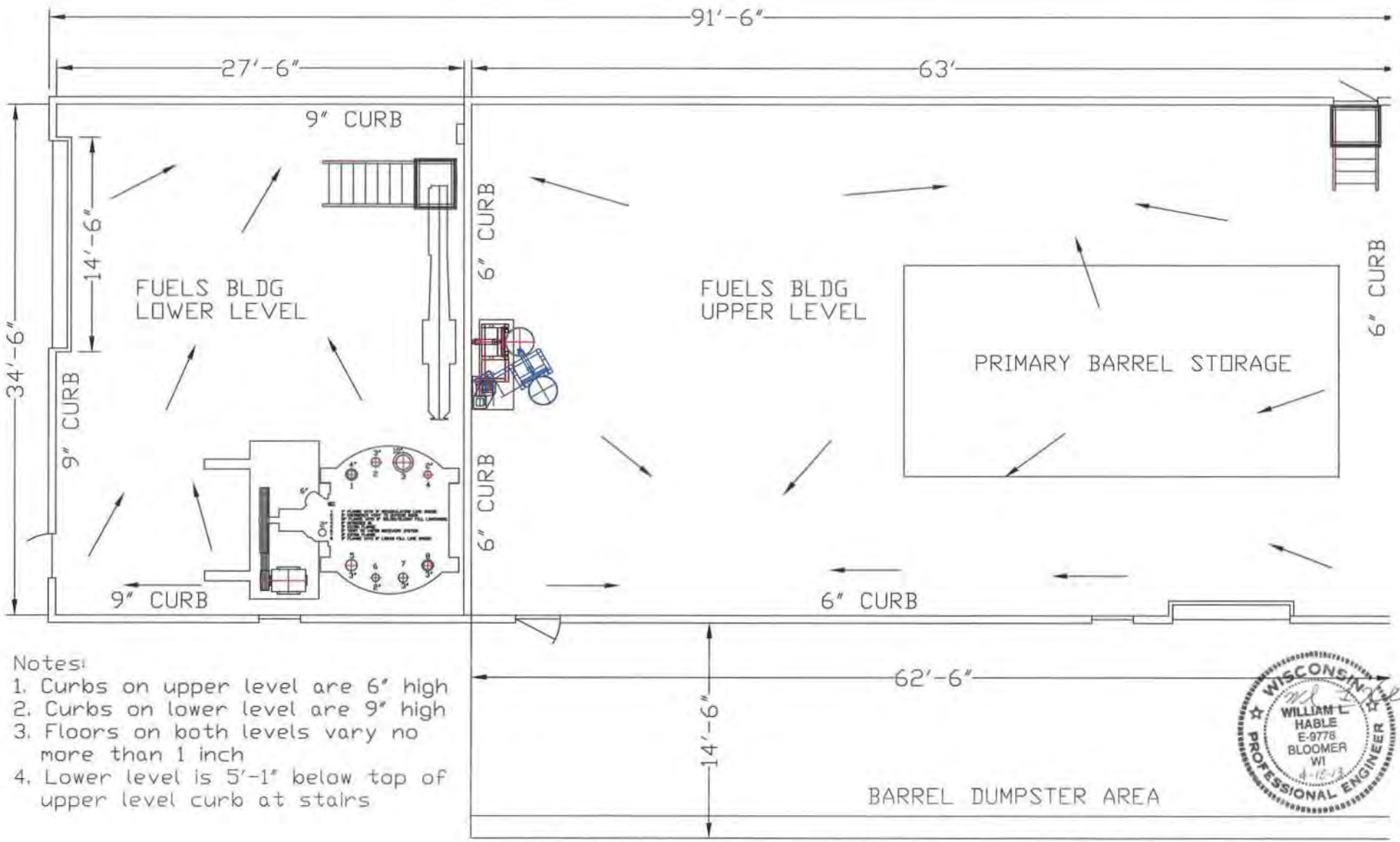
– CONCRETE MATERIAL
———— – CONCRETE MESH
+63" – ELEVATIONS
6" – FROM TOP OF CURB

DATE	REVISION
04/04/13	GENERAL UPDATE
11-11-10	ADDED CC-7

WRR Environmental Services Co., Inc. 5200 Ryder Road, Eau Claire, WI 54701 715-834-9624

WRR

Date	REVISED 04/04/2013	Title	E-II STORAGE AREA (FLOOR ELEVATIONS)					
Dwg. No.	Figure 28-2 EII Storage Area	By	TVT	Scale	NTS	Page #	EII Storage Area	



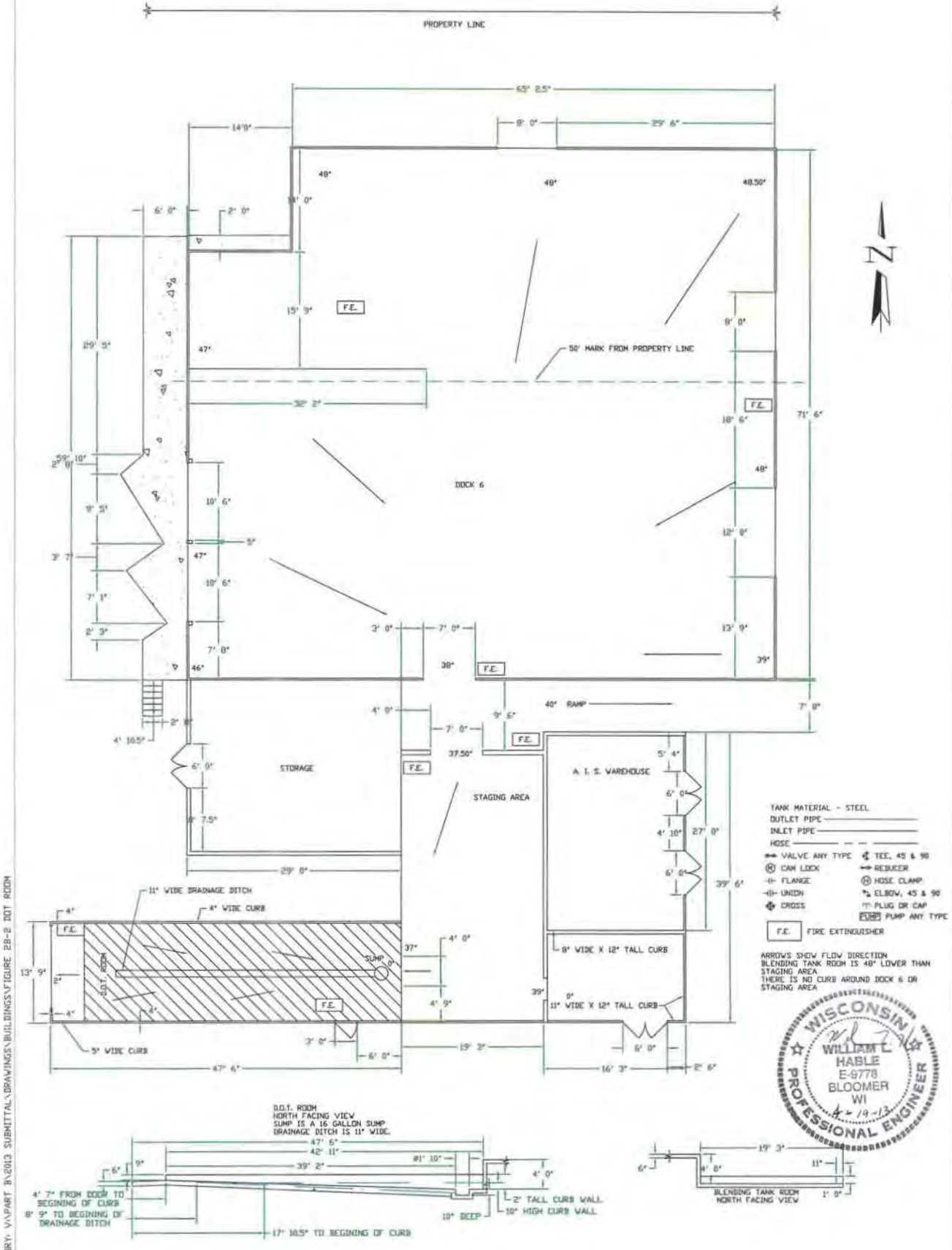
Notes:
1. Curbs on upper level are 6" high
2. Curbs on lower level are 9" high
3. Floors on both levels vary no more than 1 inch
4. Lower level is 5'-1" below top of upper level curb at stairs

WISCONSIN
WILLIAM L HABLE
E-9778
BLOOMER
WI
4-12-13
PROFESSIONAL ENGINEER

WRR Environmental Services Co., Inc. 5200 Ryder Road, Eau Claire, WI 54701 (715)834-96

Date	04/12/2013	Title	FUELS BUILDING FLOOR ELEVATIONS		
By	MNG	DWG No	FIGURE 2B-2 FUELS BLDG		REV

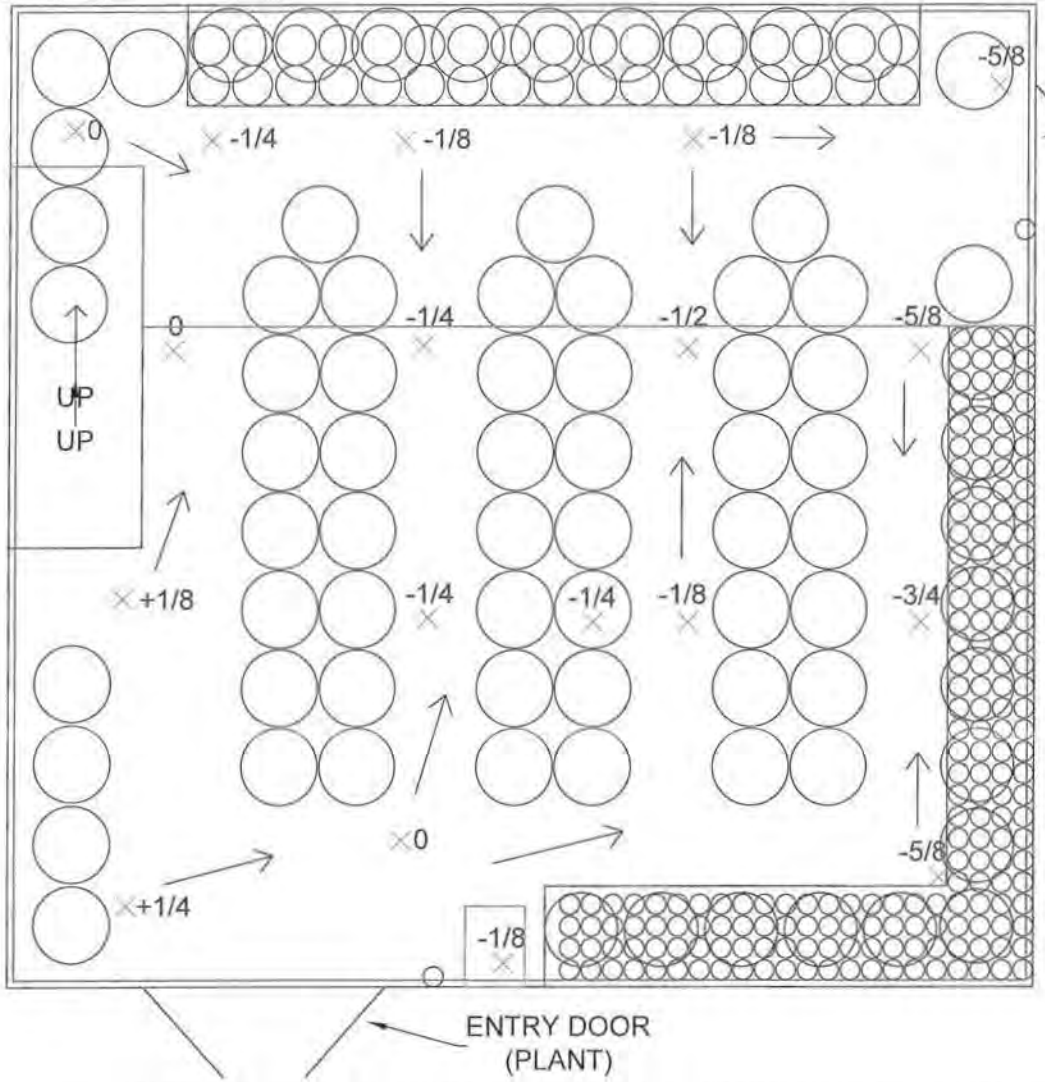
001162



WRR DRAWING DIRECTORY: V:\PART B\2013 SUBMITTAL\DRAWINGS\BUILDINGS\FIGURE 2B-2 DOT ROOM

WRR ENVIRONMENTAL SERVICES CO., INC. 5200 RYDER RD, EAU CLAIRE, WI 54701 715-834-9624

DATE	REVISED 04/16/2013	TITLE	FLOOR ELEVATIONS - DOT ROOM				
DWG. NO.	2B - 2 DOT ROOM		BY	MNG	SCALE	NTS	PAGE # DOT ROOM



WASTE STORAGE CONTAINER
CONTAINMENT WALL (PROPOSED)
TOP LEVEL BOUNDARY
FAN COVER
-1/4 FLOOR ELEVATIONS IN INCHES

WISCONSIN
WILLIAM L. HABLE
E-9778
BLOOMER
WI
4-23-14
PROFESSIONAL ENGINEER

NOTES:

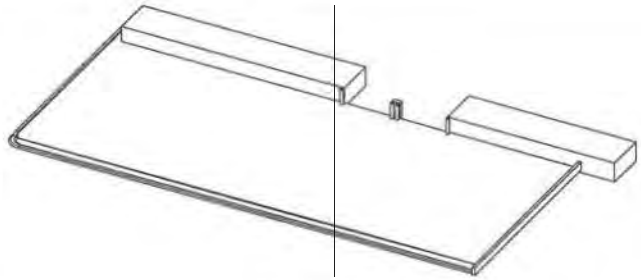
1. CURB IS $\frac{1}{4}$" 2x3 ANGLE IRON
2. AISLES ARE 2' MINIMUM
3. BARRELS CANNOT BE STACKED
4. NO HAZARDOUS LIQUIDS ARE STORED ON THE UPPER LEVEL
5. ARRANGEMENT YIELDS 57 BARRELS, 34 5 GALLON BUCKETS, 22 HALF BARRELS, AND 384 GALLON PAINT CANS IN STORAGE. THIS IS *NOT* AN ATTEMPT TO DEPICT ACTUAL CONDITIONS, BUT TO SHOW MAXIMUM STORAGE CAPACITY
6. APPROXIMATE VOLUME STORED: 4,129 GAL

WRR Environmental Services Co., Inc. 5200 Ryder Road, Eau Claire, WI 54701 (715)834-9624

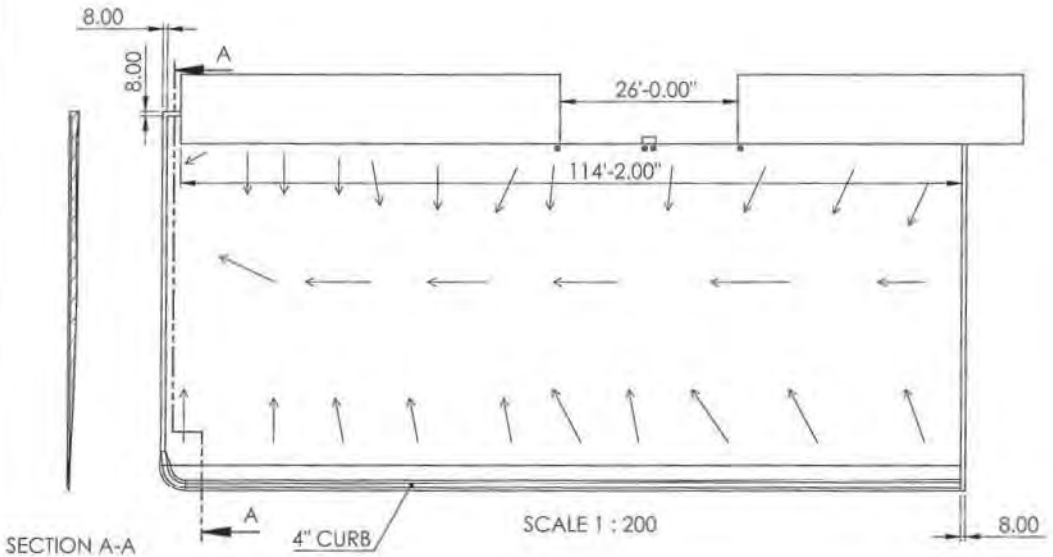
WRR

Date	04/17/2014	Title	Figure 2B-2 HHW Room		
By	MNG	DWG No		REV	00

001164

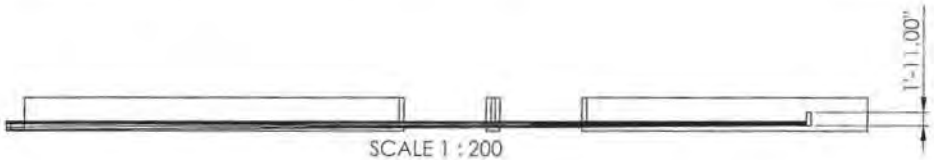


SCALE 1 : 300



SECTION A-A

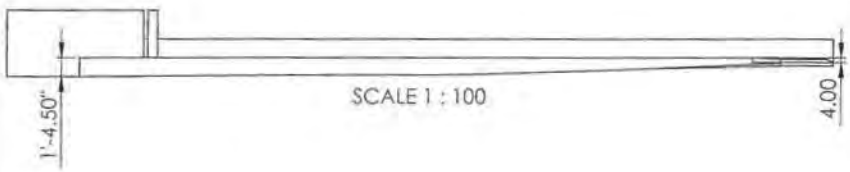
SCALE 1 : 200



SCALE 1 : 200

APPROXIMATE CONTAINMENT VOLUME: 32,000 US GALLONS

TANKER PIT NOT INCLUDED IN VOLUME.
LIQUID WILL ENTER TANKER PIT AFTER APPROXIMATELY 6,300 US GALLONS HAVE COLLECTED.



SCALE 1 : 100

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	MATERIAL: CONCRETE SEALED AND COATED	DO NOT SCALE DRAWING	REVISION

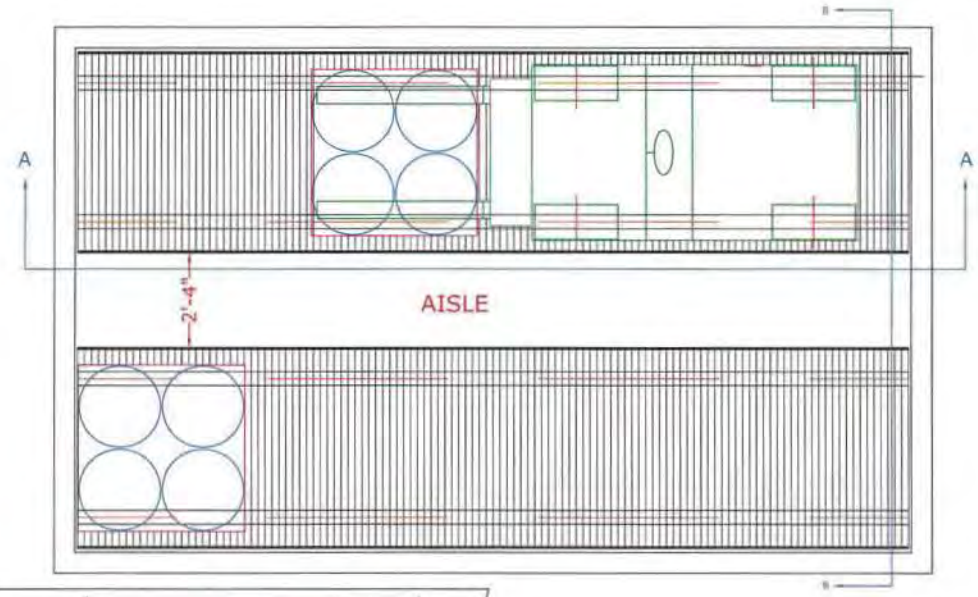
	NAME	SIGNATURE	DATE
DRAWN	MGASSER		4/17/2014
CHK'D			
APPV'D			
MFG			
Q.A.			

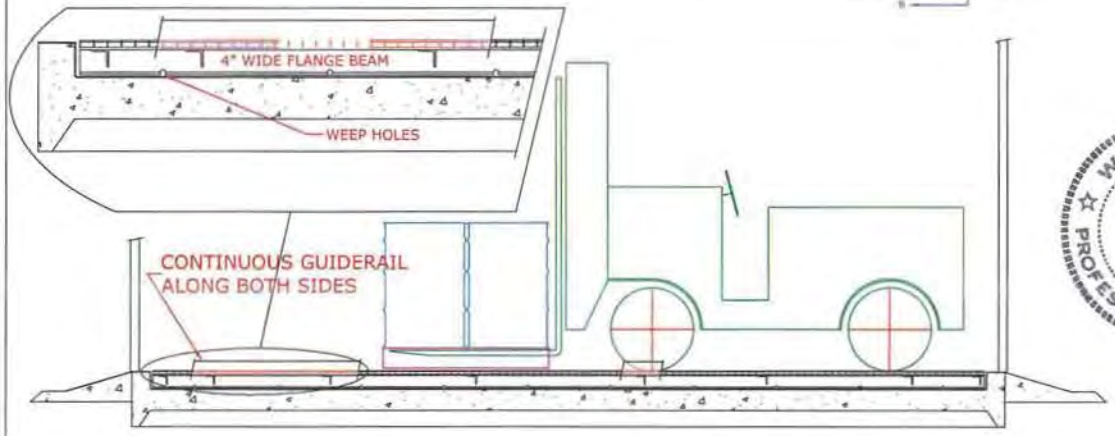
FIGURE 2B-2

TANKER STORAGE AREA

DWG NO.		SIZE
FIGURE 2B-2 TANKER STORAGE AREA		A3
SCALE:1:200	SHEET 1 OF 1	

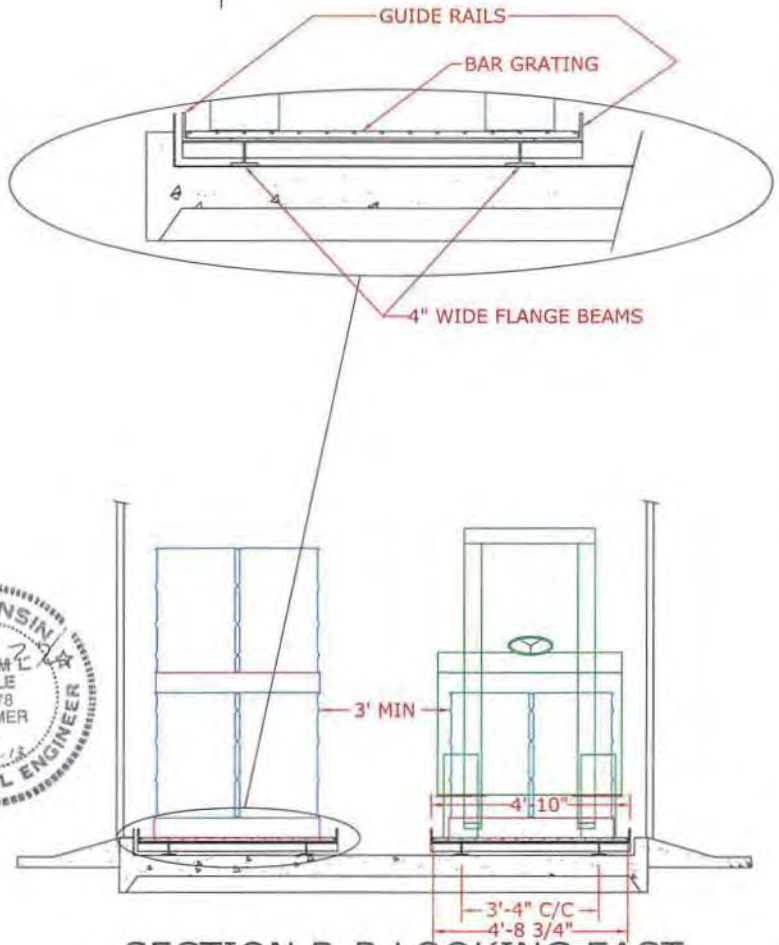
REV. NO.	DATE	REVISION
01	5-9-12	GENERAL
02	4/4/13	GENERAL





SECTION A-A LOOKING SOUTH

N



SECTION B-B LOOKING EAST

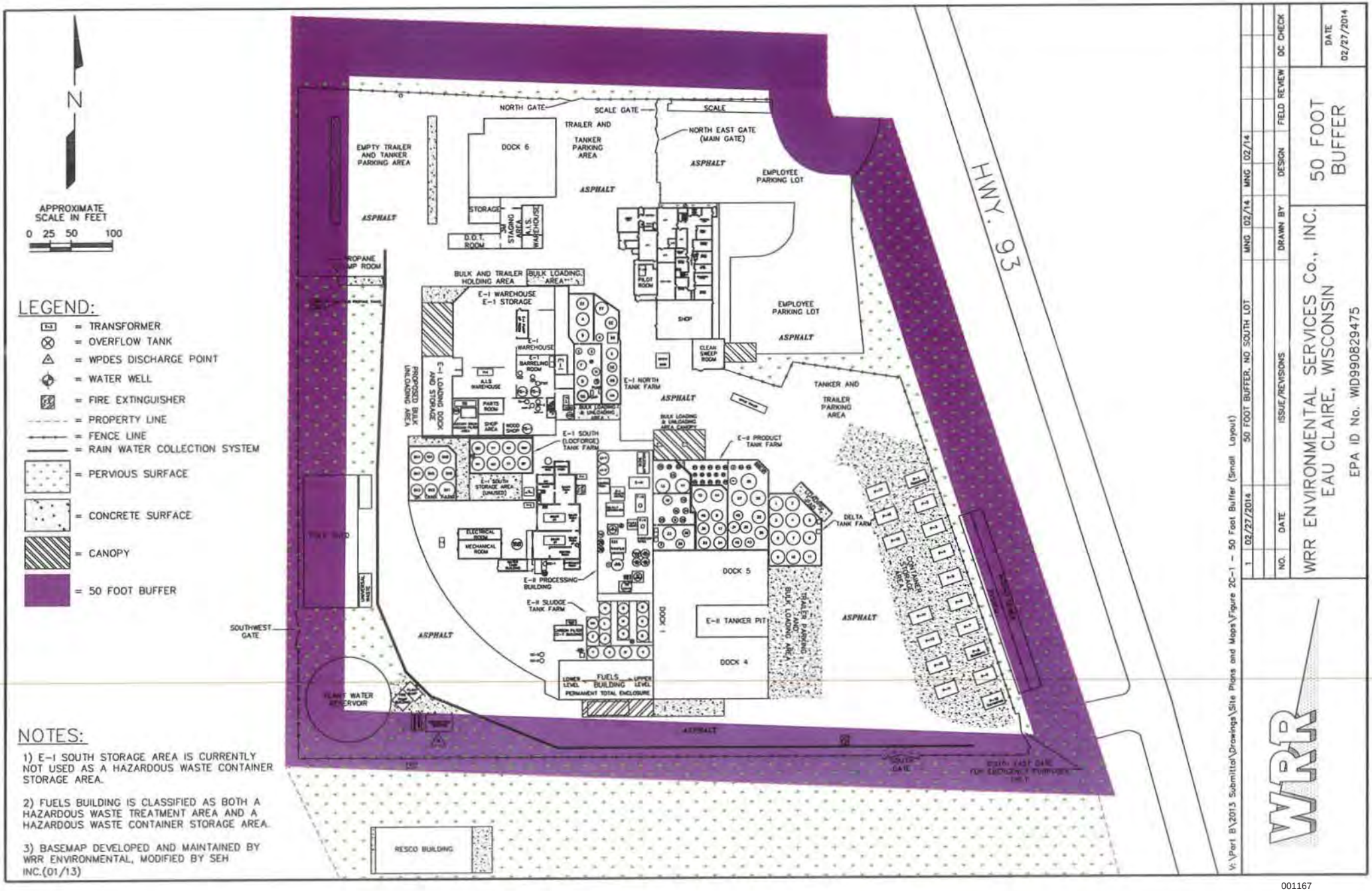
WISCONSIN
WILLIAM C
HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

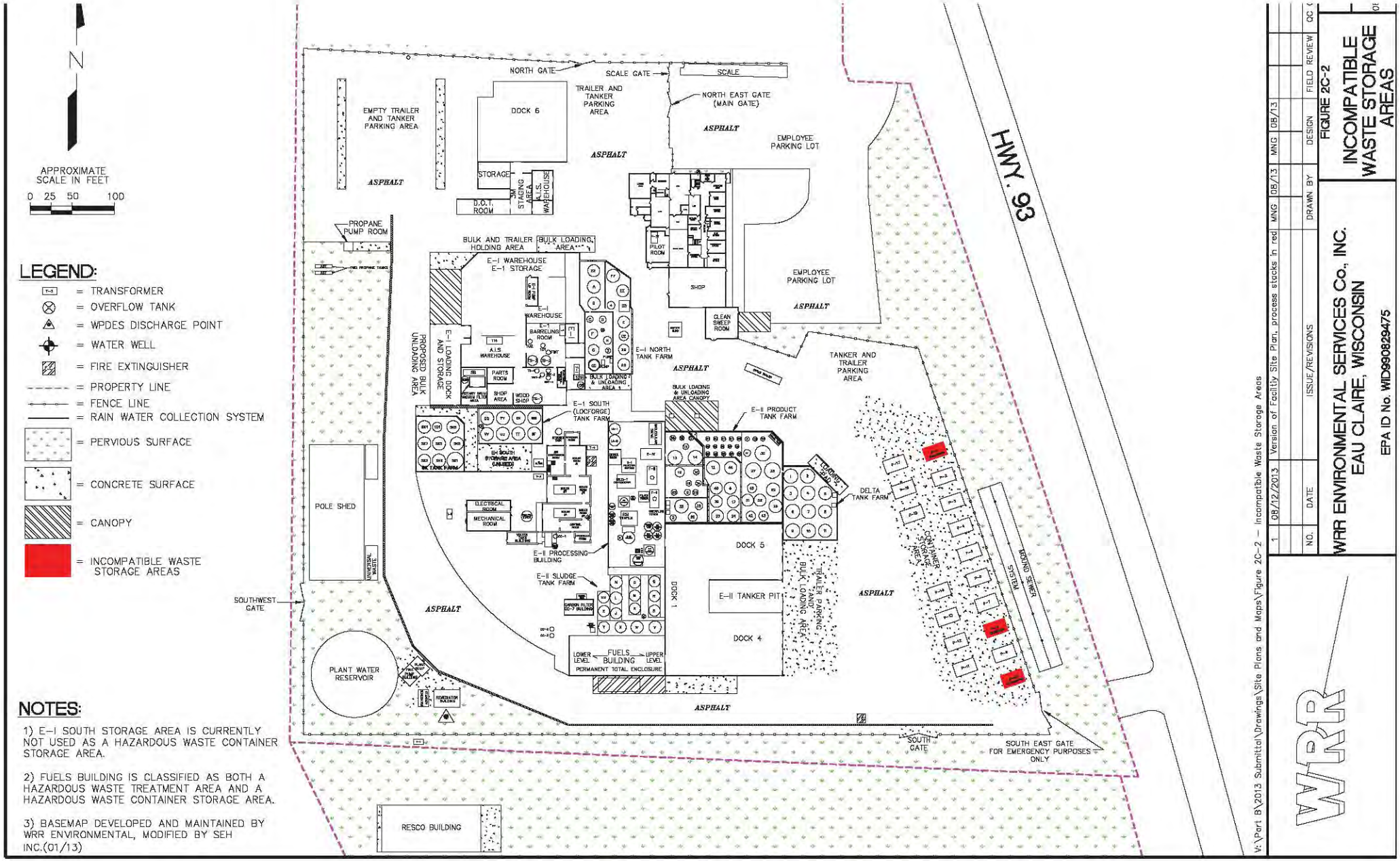
WRR

WRR Environmental Services Co., Inc. 5200 Ryder Road, Eau Claire, WI 54701 715-834-9624

Date	3-29-12	Title	BARREL STORAGE SHEDS P1, P2, P3, P6, P7, P8, P9, P10				
Dwg.No.	2B-7 BARREL SHEDS A	By	TVT	Scale	NTS	Page #	BARREL SHEDS A

001166


N
APPROXIMATE SCALE IN FEET
0 25 50 100
LEGEND:
= TRANSFORMER
= OVERFLOW TANK
= WPDES DISCHARGE POINT
= WATER WELL
= FIRE EXTINGUISHER
= PROPERTY LINE
= FENCE LINE
= RAIN WATER COLLECTION SYSTEM
= PERVIOUS SURFACE
= CONCRETE SURFACE
= CANOPY
= 50 FOOT BUFFER
NOTES:
1) E-1 SOUTH STORAGE AREA IS CURRENTLY NOT USED AS A HAZARDOUS WASTE CONTAINER STORAGE AREA.
2) FUELS BUILDING IS CLASSIFIED AS BOTH A HAZARDOUS WASTE TREATMENT AREA AND A HAZARDOUS WASTE CONTAINER STORAGE AREA.
3) BASEMAP DEVELOPED AND MAINTAINED BY WRR ENVIRONMENTAL, MODIFIED BY SEH INC.(01/13)
NORTH GATE
SCALE GATE
SCALE
NORTH EAST GATE (MAIN GATE)
HWY. 93
EMPTY TRAILER AND TANKER PARKING AREA
DOCK 6
TRAILER AND TANKER PARKING AREA
EMPLOYEE PARKING LOT
ASPHALT
STORAGE
STAGING AREA
A.L.S. WAREHOUSE
D.O.T. ROOM
PROPANE TANK ROOM
BULK AND TRAILER HOLDING AREA
BULK LOADING AREA
E-1 WAREHOUSE
E-1 STORAGE
E-1 WAREHOUSE
E-1 BARRELING ROOM
E-1 LOADING DOCK AND STORAGE
PROPOSED BULK UNLOADING AREA
A.L.S. WAREHOUSE
PARTS ROOM
SHOP AREA
WOOD SHOP
E-1 NORTH TANK FARM
PILOT ROOM
SHOP
CLEAN SWEEP ROOM
EMPLOYEE PARKING LOT
TANKER AND TRAILER PARKING AREA
BULK LOADING & UNLOADING AREA CANOPY
E-1 SOUTH (LOOTFORGED) TANK FARM
E-1 SOUTH STORAGE AREA (UNUSED)
E-II PRODUCT TANK FARM
DELTA TANK FARM
ELECTRICAL ROOM
MECHANICAL ROOM
E-II PROCESSING BUILDING
E-II SLUDGE TANK FARM
DOCK 5
DOCK 1
DOCK 4
E-II TANKER PIT
BULK LOADING AND TRAILER PARKING AREA
CONTAINER STORAGE AREA
FUELS BUILDING
LOWER LEVEL
UPPER LEVEL
PERMANENT TOTAL ENCLOSURE
UNIVERSAL WASTE
SOUTHWEST GATE
PLANT WATER RESERVOIR
SOUTH GATE
RESCO BUILDING
V:\Part B\2013 Submittal\Drawings\Site Plans and Maps\Figure 2C-1 - 50 Foot Buffer (Small Layout)
1 02/27/2014 50 FOOT BUFFER, NO SOUTH LOT MNG 02/14
NO. DATE ISSUE/REVISIONS DRAWN BY DESIGN FIELD REVIEW QC CHECK
WRR ENVIRONMENTAL SERVICES Co., INC.
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475
50 FOOT BUFFER
DATE 02/27/2014
WRR



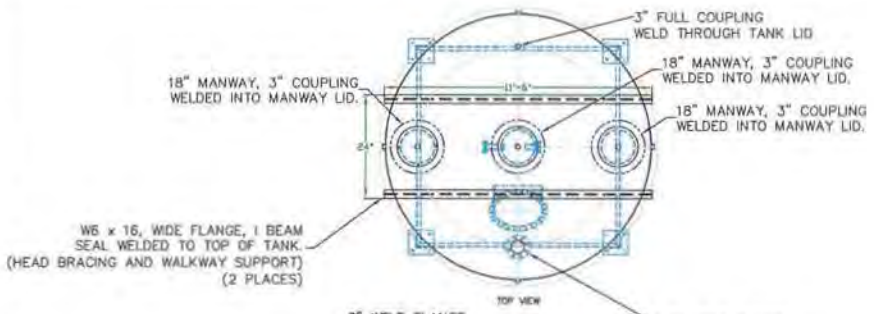
NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	FIELD REVIEW	QC
1	08/12/2013	Version of Facility Site Plan, process stacks in red	MNG 05/13	MNG 05/13		

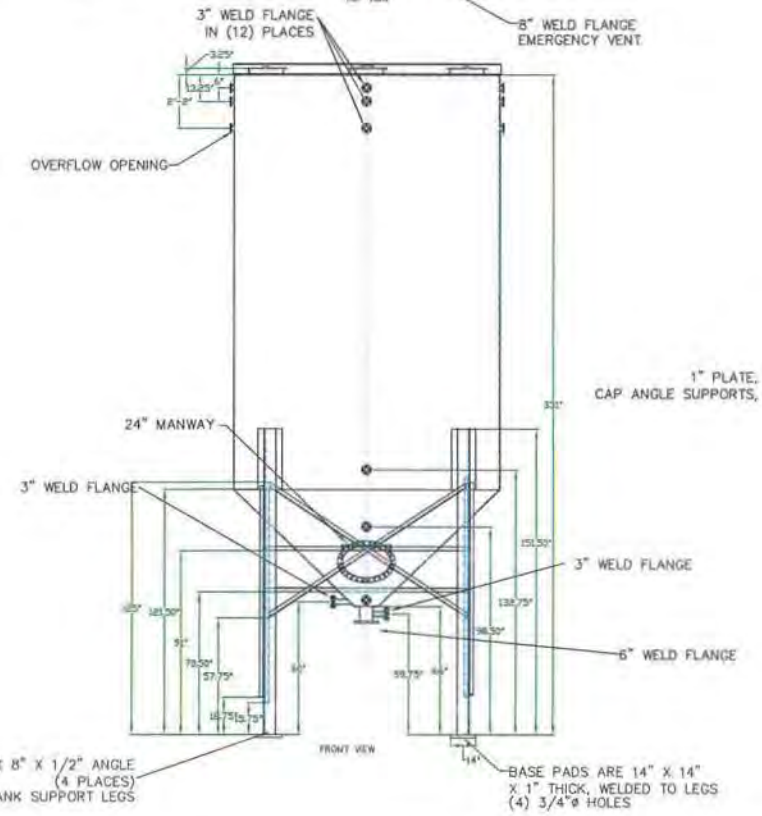
V:\Part B\2013 Submittal\Drawings\Site Plans and Maps\Figure 2C-2 – Incompatible Waste Storage Areas

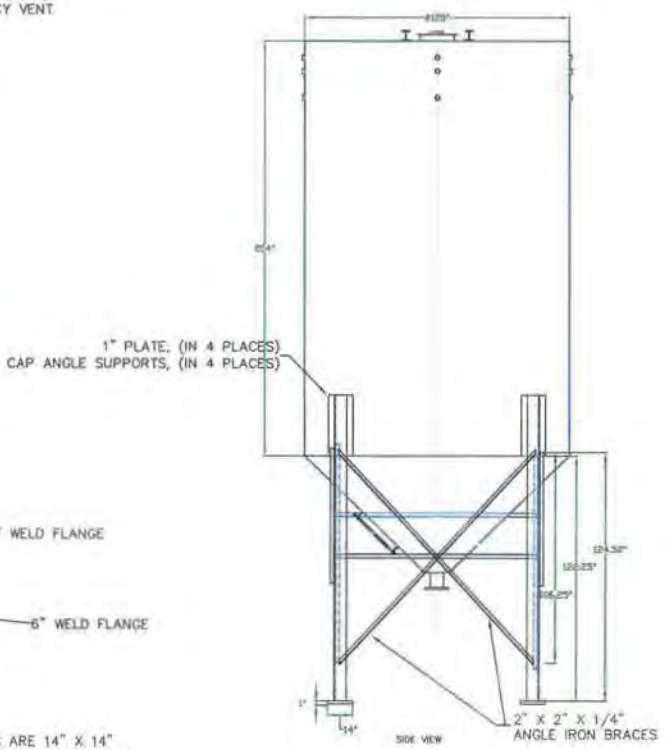
WRR ENVIRONMENTAL SERVICES Co., INC.
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

FIGURE 2C-2
INCOMPATIBLE WASTE STORAGE AREAS

001168







WISCONSIN
WILLIAM C. HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

NOTE:
1. MAT'L IS A-36 CARBON STEEL.
2. VERIFY ALL LEGS ARE SQUARE AND LEVEL BEFORE WELDING.
3. BUILT TO U.L. 142 SPECIFICATIONS.
4. GRIND ALL SHARP EDGES.
5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. PRIME, PAINT – WHITE–.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 11,000 GALLONS.
10. CAPACITY, NET 10,2600 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/29/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

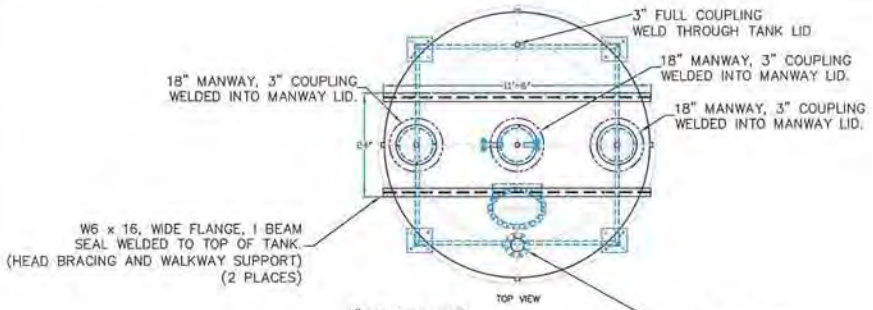
WRR

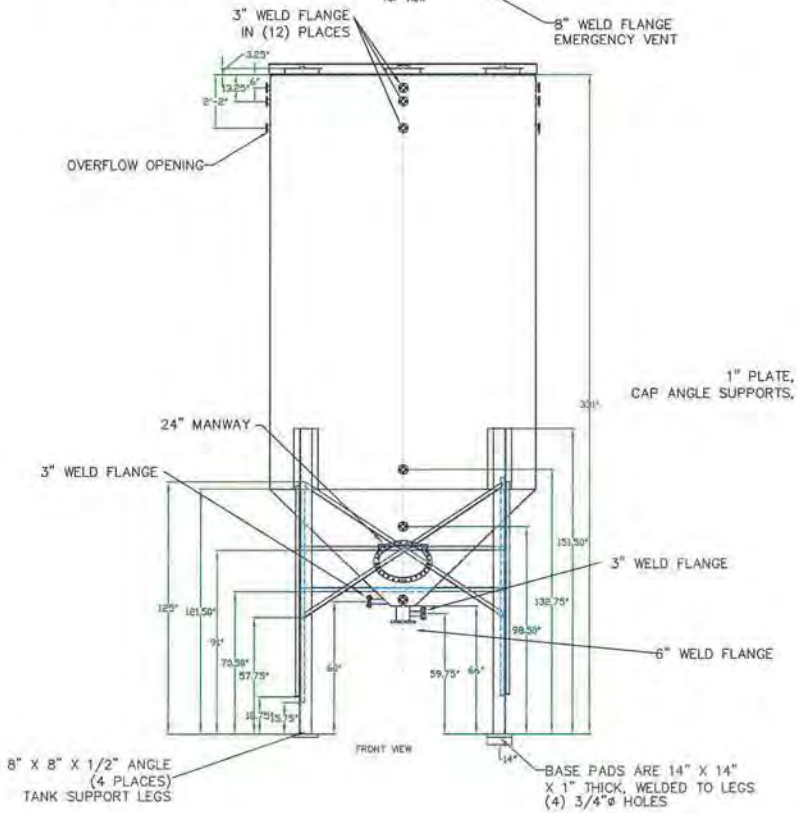
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WD090629475

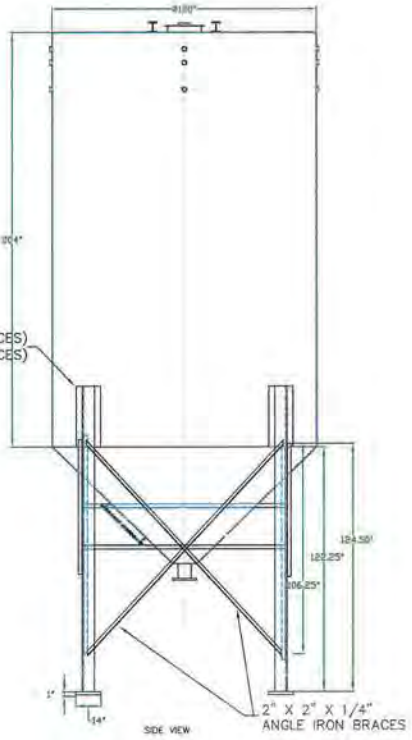
TANK J

PROJ. NO. 118488
DATE 1/29/13
FIGURE 2D-1J

DRAWING DIRECTORY: P:\2CAD\WORKS\118488\FIGURES\FIGURE 2D-1J







WISCONSIN
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BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

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10. CAPACITY, NET 10,2600 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/29/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

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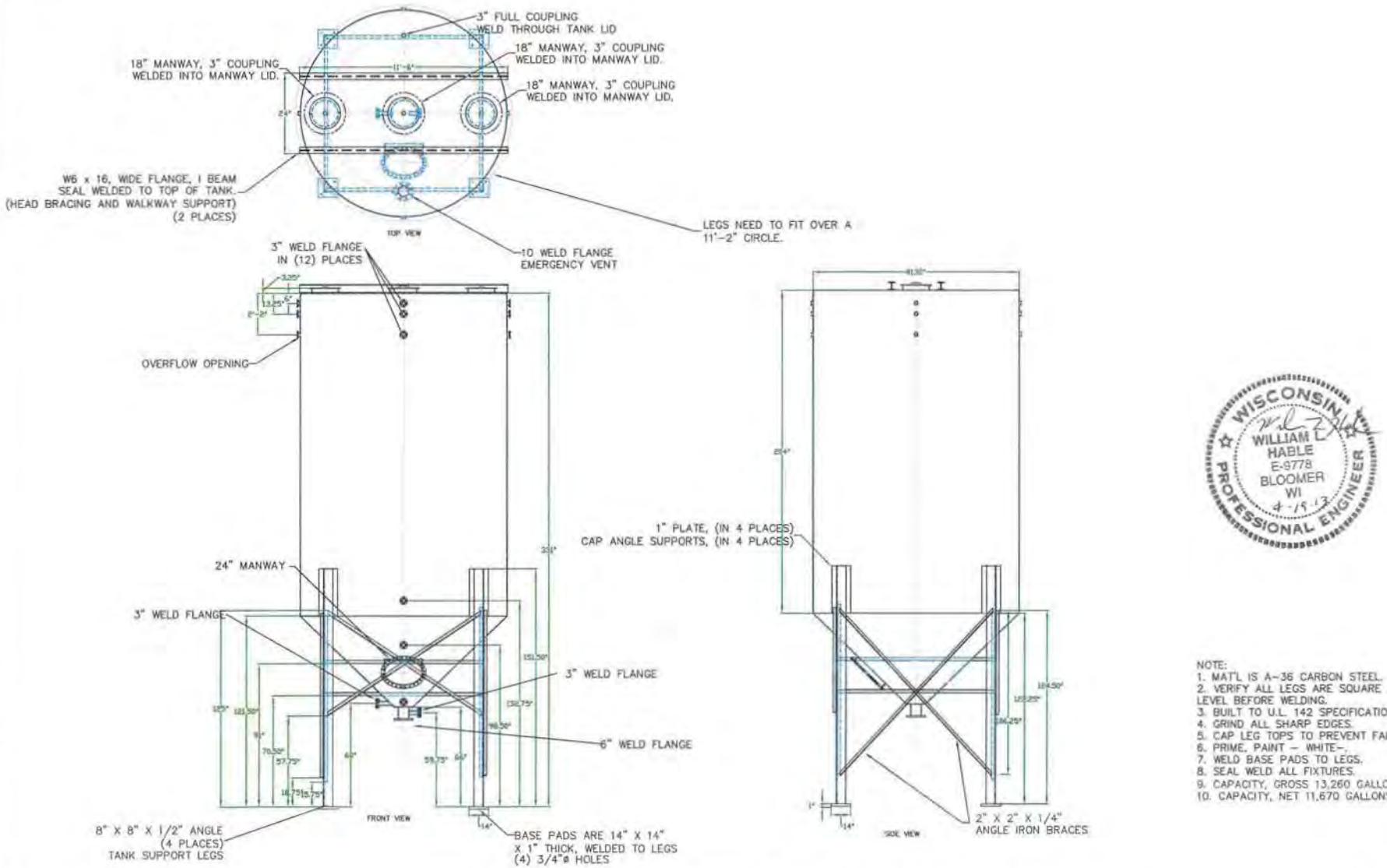
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK K

PROJ. NO. 118488
DATE 1/29/13
FIGURE 2D-1K

DRAWING DIRECTORY: P:\...\CAD\PLANNING\118488\FIGURES\FIGURE 2D-1K



WISCONSIN
WILLIAM L
HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

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5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. PRIME, PAINT – WHITE–.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 13,260 GALLONS.
10. CAPACITY, NET 11,670 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	01/24/13	TPDR SUBMITTAL	RJH	01/13	TT	01/13	BA	01/13

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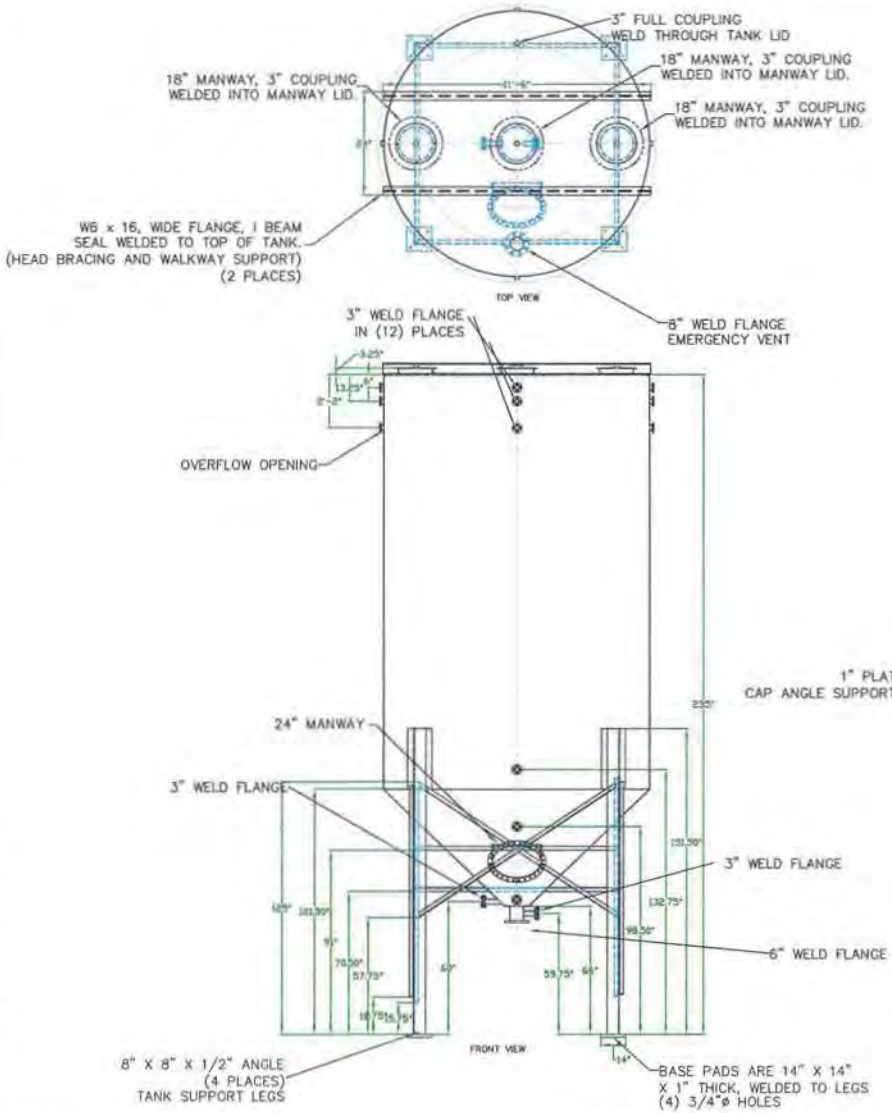
EAU CLAIRE, WISCONSIN
EPA ID No. WID990629475

TANK L

PROJ. NO. 11848B
DATE 1/24/13
FIGURE 2D-1L



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6. PRIME, PAINT – WHITE–.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 6,180 GALLONS.
10. CAPACITY, NET 4,972 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/24/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

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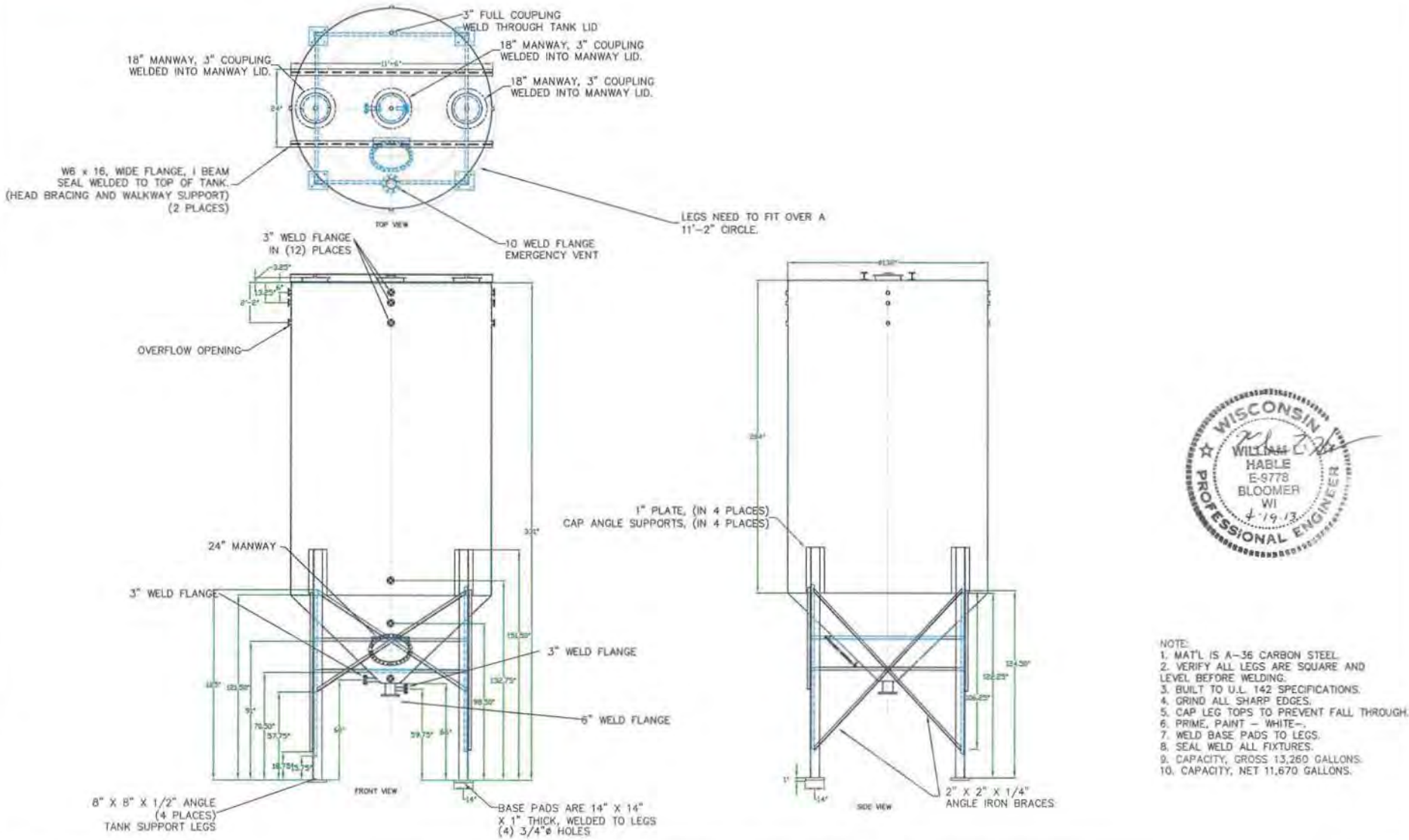
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK M

PROJ. NO. 118468
DATE 1/24/13
FIGURE 2D-1M



WISCONSIN
WILLIAM L. HABLE
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BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

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NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/24/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

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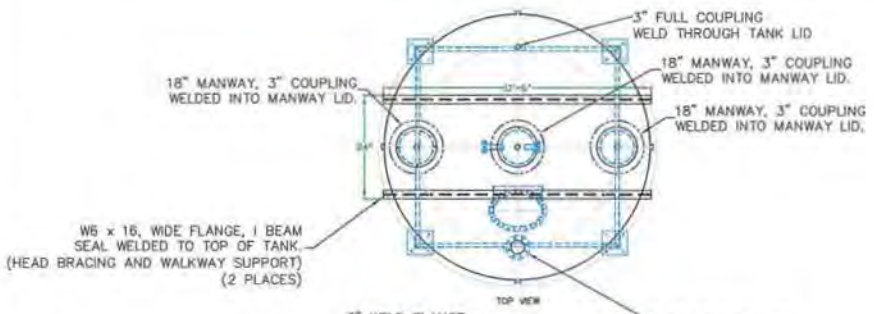
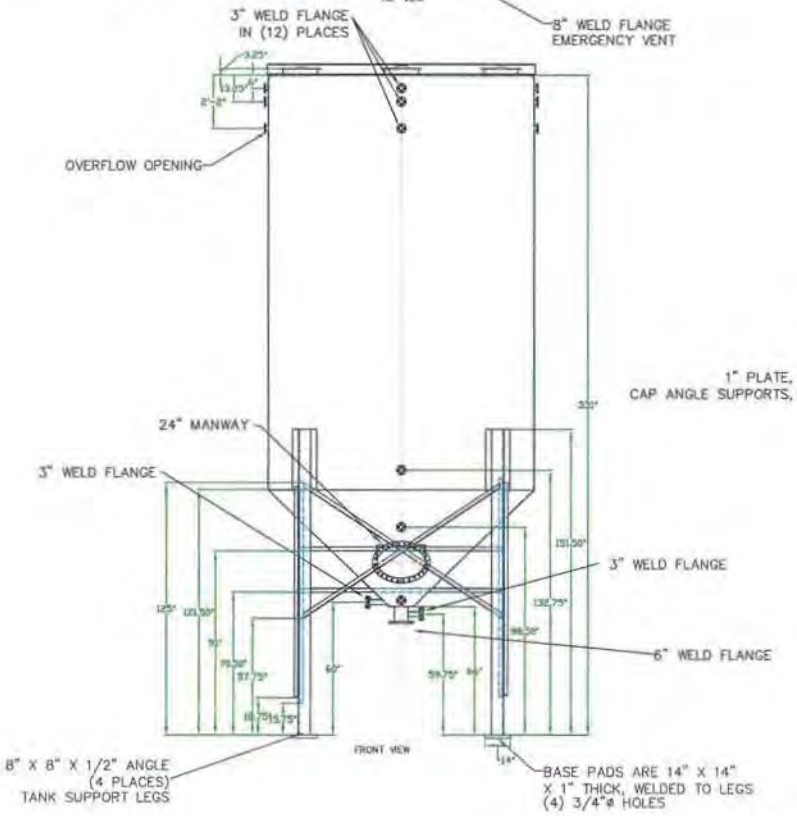
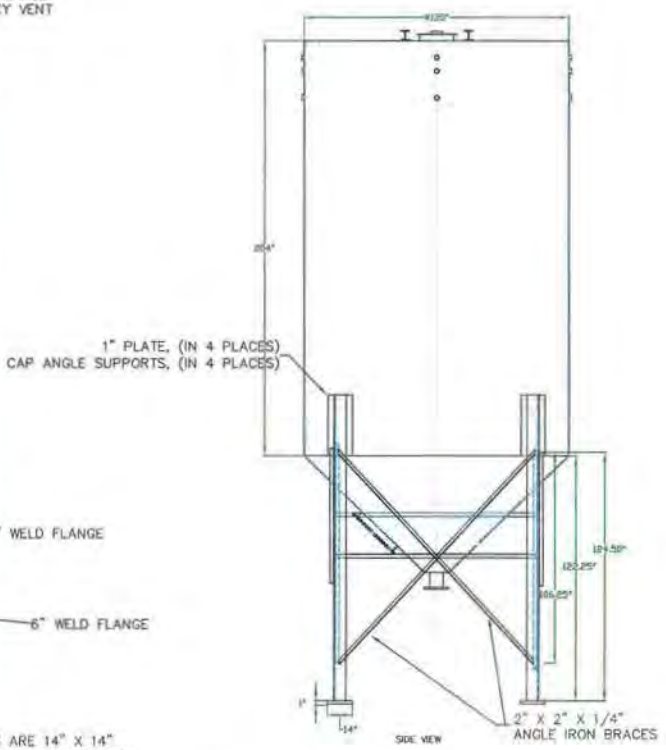
EAU CLAIRE, WISCONSIN
EPA ID No. WID990629475

TANK N

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1N







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10. CAPACITY, NET 10,2600 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/29/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

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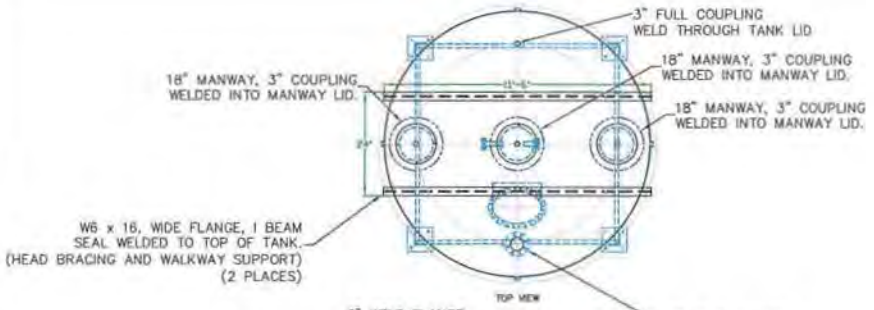
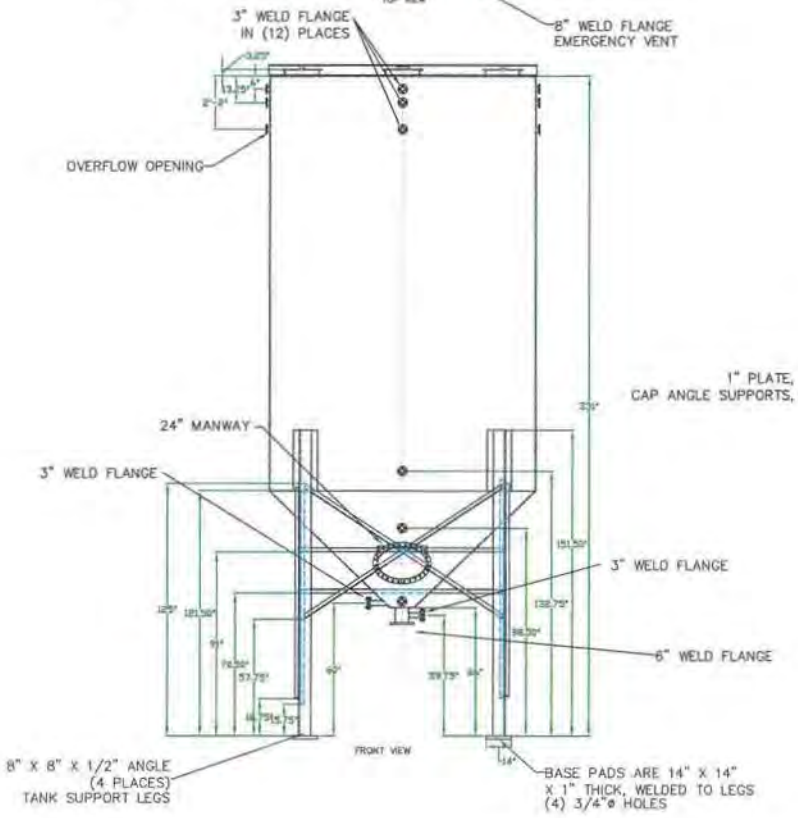
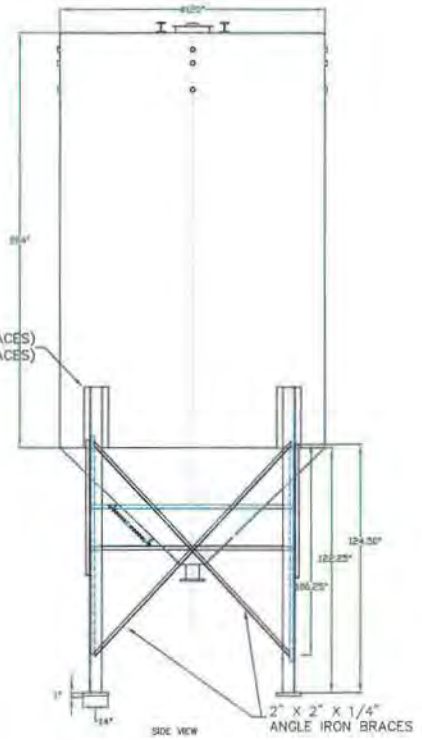
EAU CLAIRE, WISCONSIN
EPA ID No. WID990629475

TANK O

PROJ. NO. 118488
DATE 1/29/13
FIGURE 2D-10







WISCONSIN
WILLIAM L
HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

NOTE:
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NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/29/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	RA 01/13

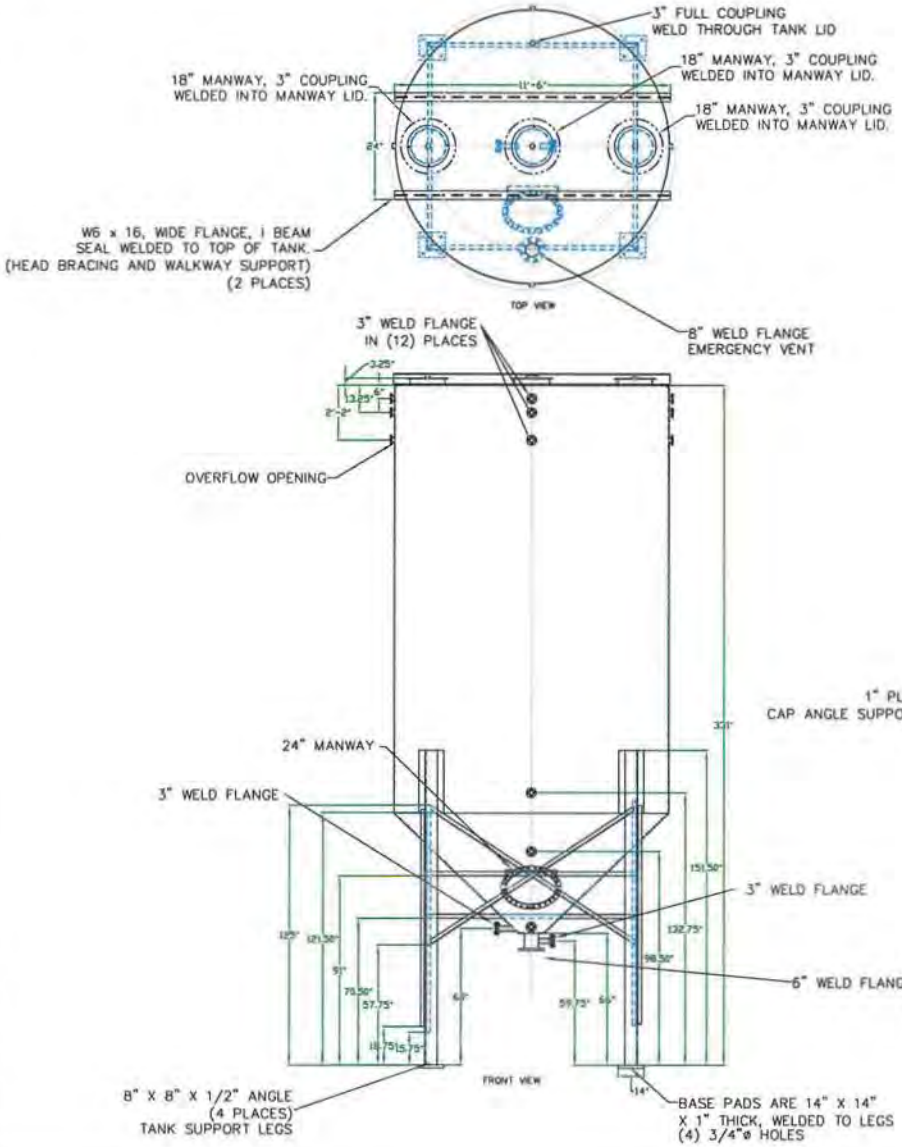
WRR

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK O

PROJ. NO. 115488
DATE 1/29/13
FIGURE 2D-10

DRAWING DIRECTORY: P:\UCT\APWRES\115488\FIGURES\FIGURE 2D-10



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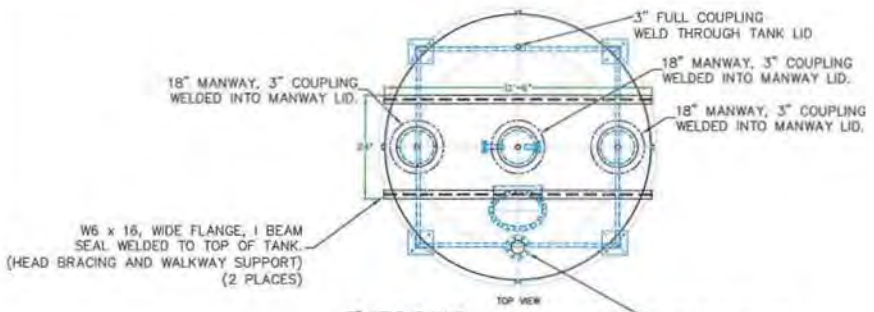
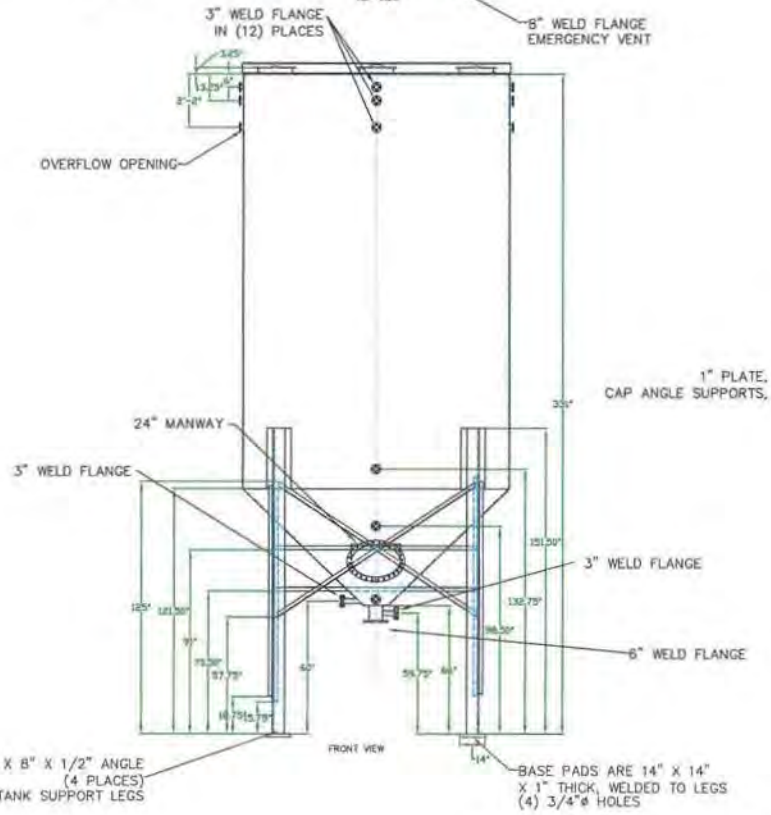
NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/29/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

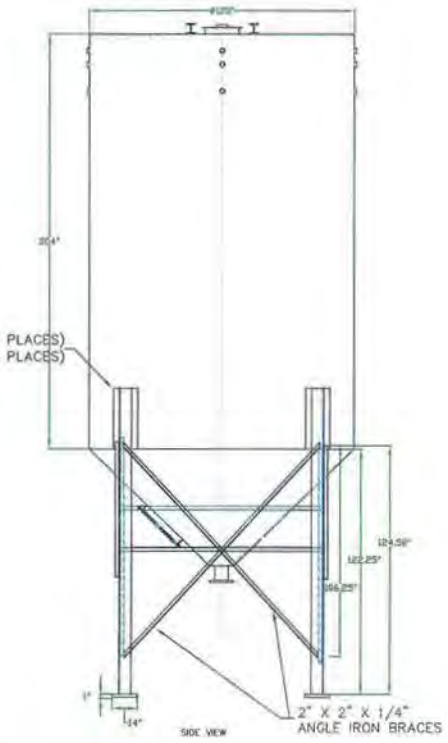
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK R

PROJ NO. 118488
DATE 1/29/13
FIGURE 2D-1R







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6. PRIME, PAINT – WHITE–.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 11,000 GALLONS.
10. CAPACITY, NET 10,2600 GALLONS.

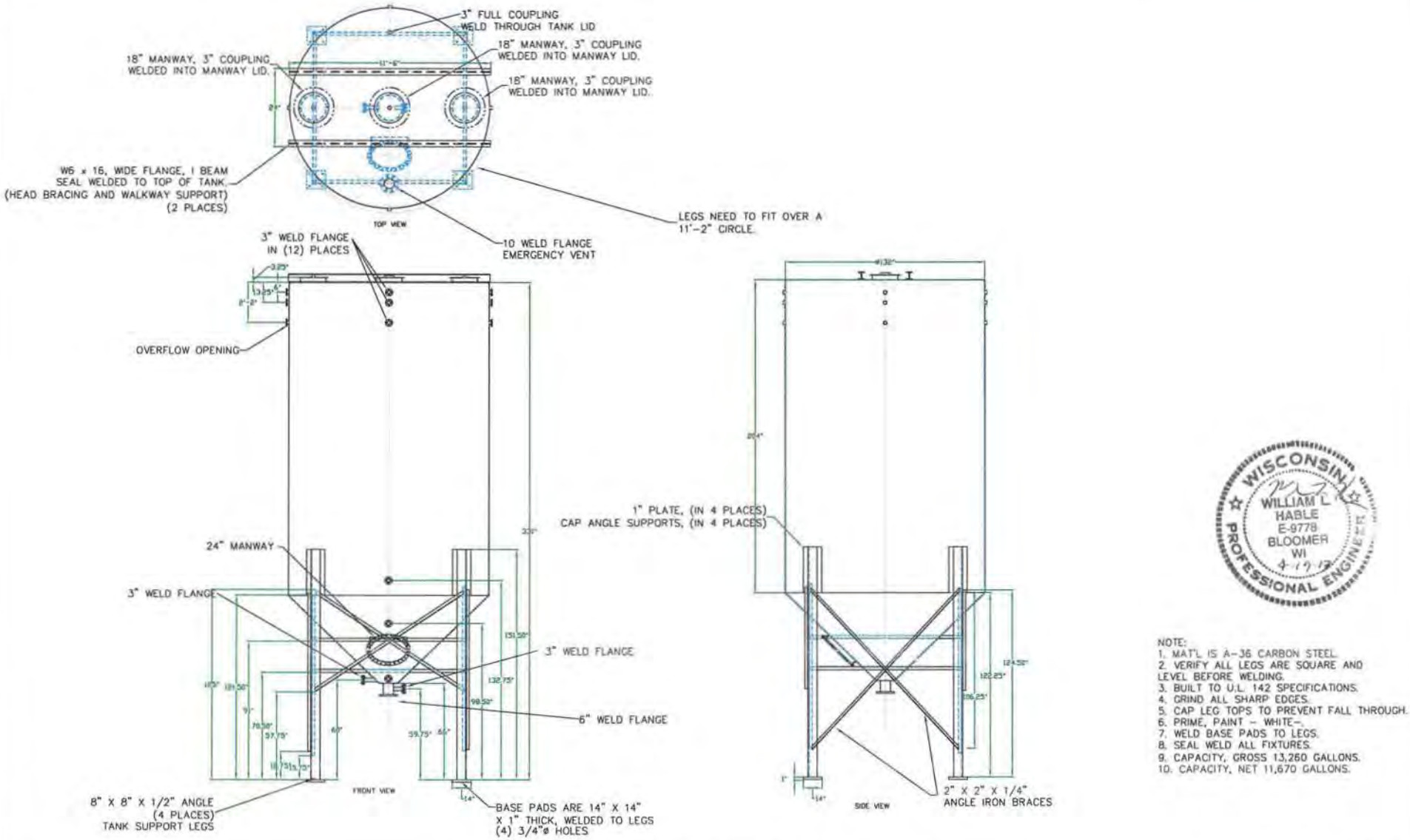
NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/29/13	PROR SUBMITTAL	RJH 01/13	TT 01/13	WA 01/13

WRR

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990629475

TANK S

PROJ. NO. 116488
DATE 1/29/13
FIGURE 2D-1S



WISCONSIN
WILLIAM L
HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

NOTE:
1. MAT'L IS A-36 CARBON STEEL.
2. VERIFY ALL LEGS ARE SQUARE AND LEVEL BEFORE WELDING.
3. BUILT TO U.L. 142 SPECIFICATIONS.
4. GRIND ALL SHARP EDGES.
5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. PRIME, PAINT – WHITE–.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 13,260 GALLONS.
10. CAPACITY, NET 11,670 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/24/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

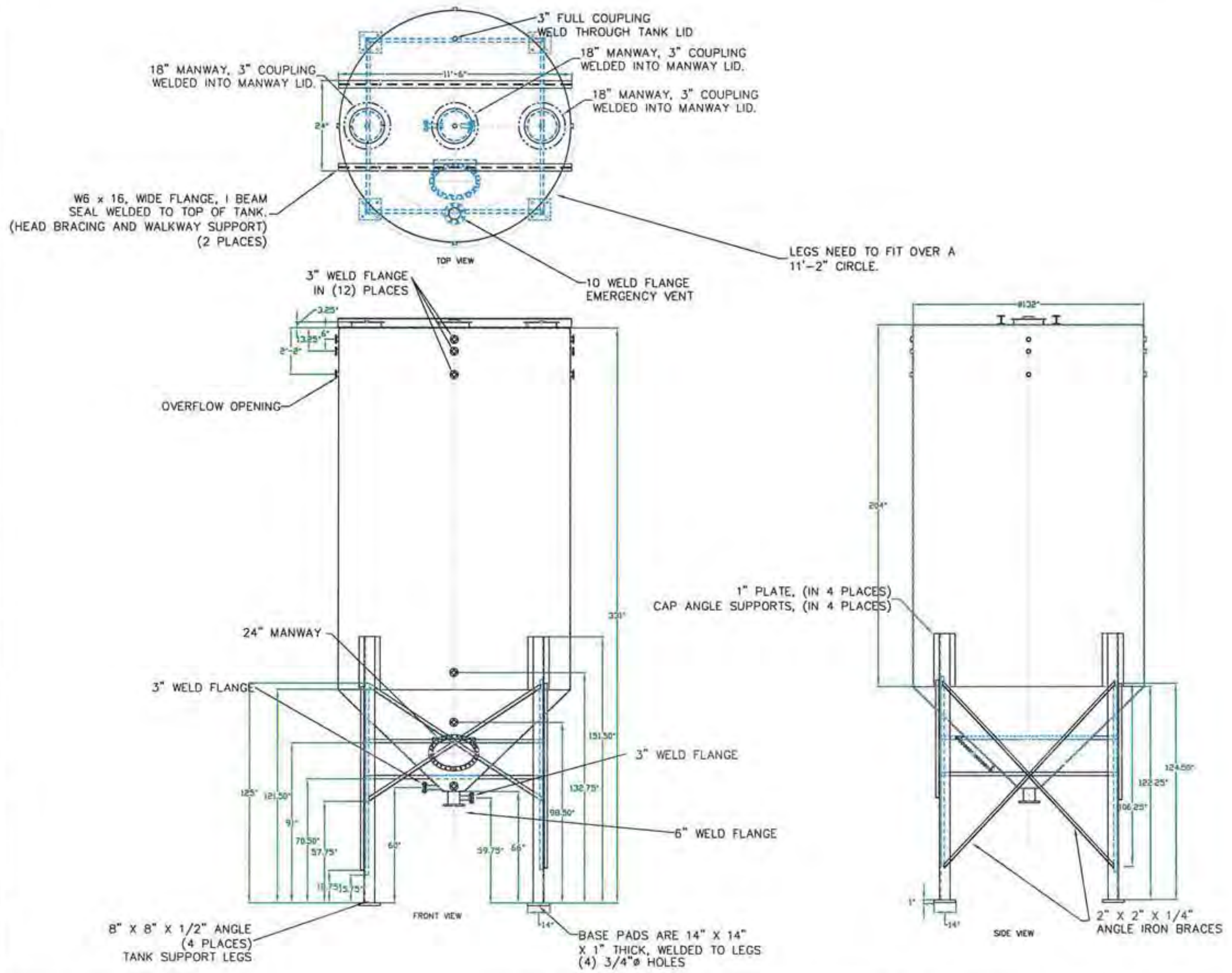
WRR

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK V

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1V

DRAWING DIRECTORY: P:\UST\WRRES\118488\FIGURES\FIGURE 2D-1V



WISCONSIN
WILLIAM L. HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

NOTE:
1. MAT'L IS A-36 CARBON STEEL.
2. VERIFY ALL LEGS ARE SQUARE AND LEVEL BEFORE WELDING.
3. BUILT TO U.L. 142 SPECIFICATIONS.
4. GRIND ALL SHARP EDGES.
5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. PRIME, PAINT – WHITE–.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 13,260 GALLONS.
10. CAPACITY, NET 11,670 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	01/24/13	FPOR SUBMITTAL	RJH	01/13	TT	01/13	BA	01/13

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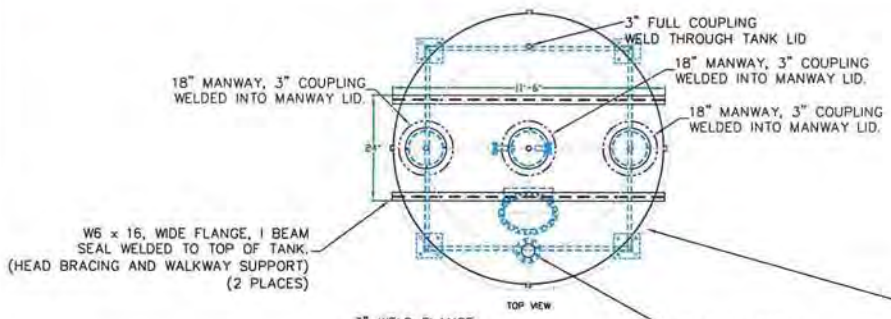
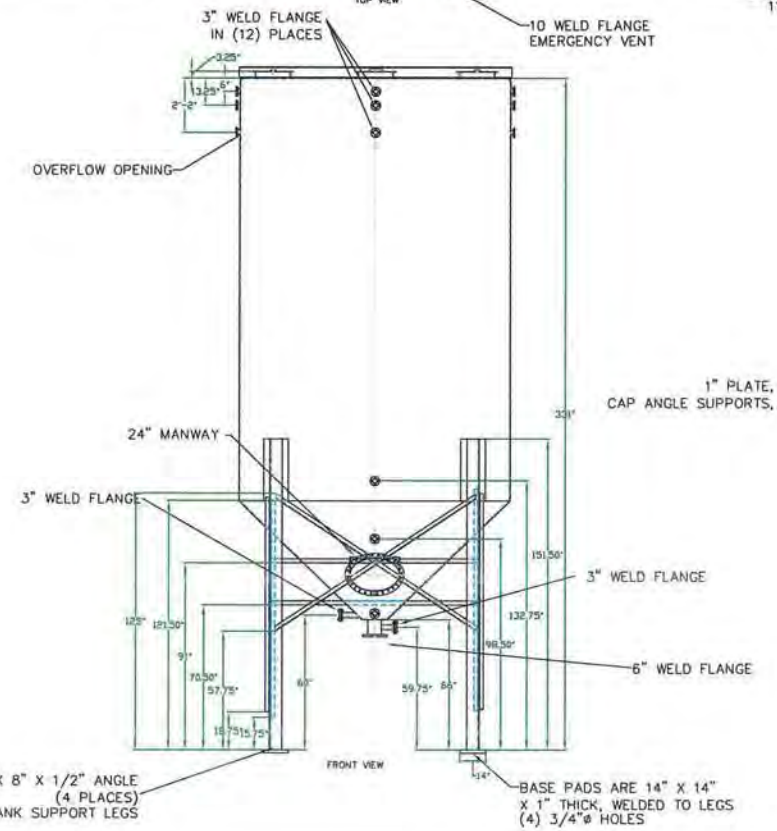
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

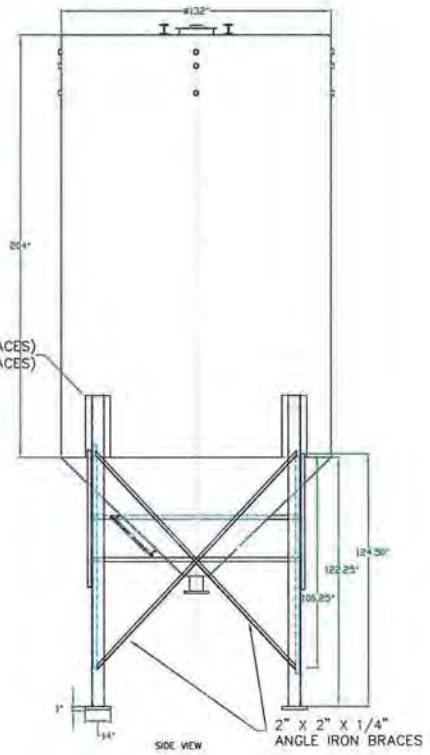
TANK W

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1W

001179







WISCONSIN
WILLIAM L
HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

NOTE:
1. MAT'L IS A-36 CARBON STEEL.
2. VERIFY ALL LEGS ARE SQUARE AND LEVEL BEFORE WELDING.
3. BUILT TO U.L. 142 SPECIFICATIONS.
4. GRIND ALL SHARP EDGES.
5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. PRIME, PAINT – WHITE–.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 13,260 GALLONS.
10. CAPACITY, NET 11,670 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
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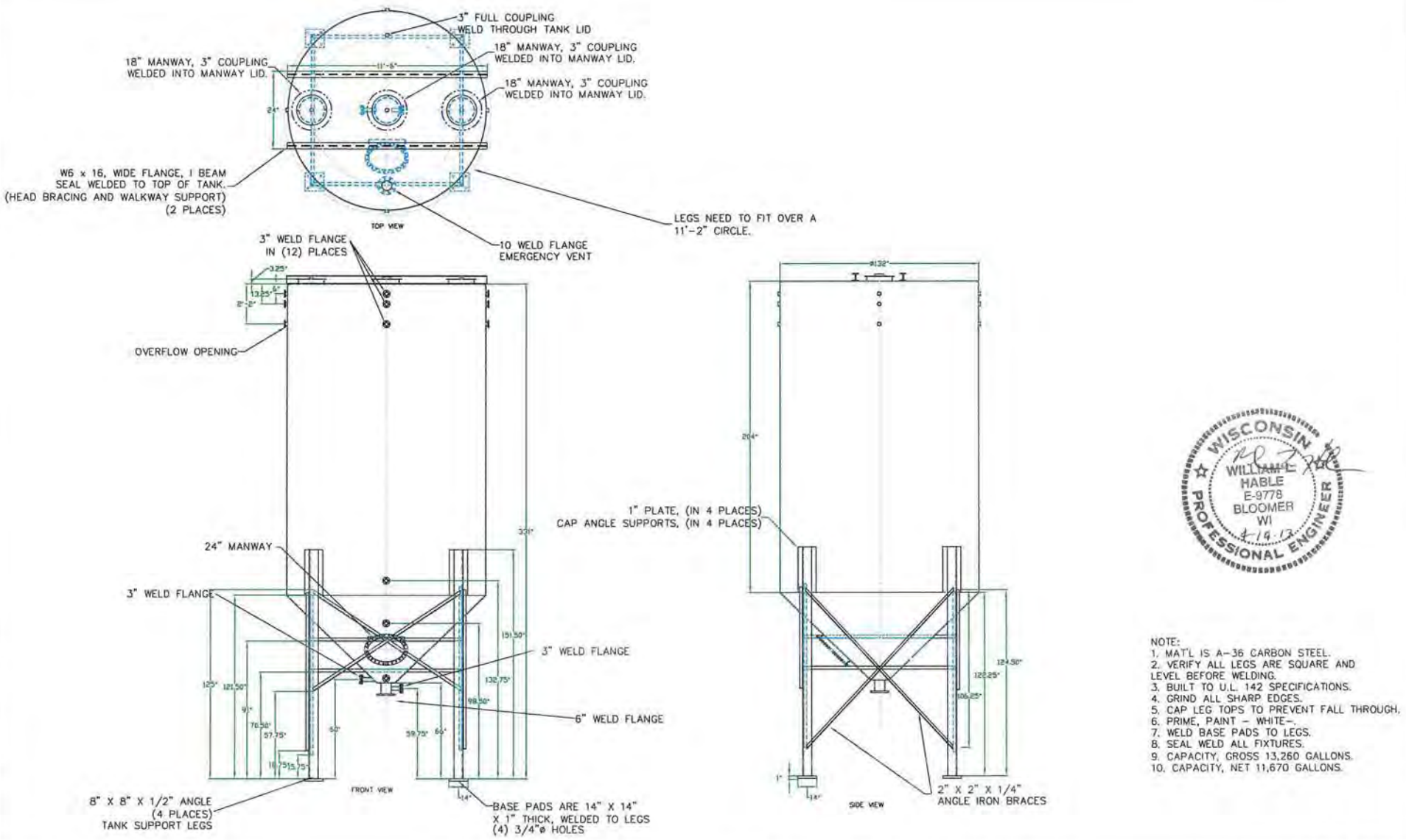
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK X

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1X

DRAWING DIRECTORY: P:\ACAD\WRR\ES\118488\FIGURES\FIGURE 2D-1X



WISCONSIN
WILLIAM L
HABLE
E-9778
BLOOMER
WI
1/24/13
PROFESSIONAL ENGINEER

NOTE:
1. MAT'L IS A-36 CARBON STEEL.
2. VERIFY ALL LEGS ARE SQUARE AND LEVEL BEFORE WELDING.
3. BUILT TO U.L. 142 SPECIFICATIONS.
4. GRIND ALL SHARP EDGES.
5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. PRIME, PAINT - WHITE-.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 13,260 GALLONS.
10. CAPACITY, NET 11,670 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
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WRR ENVIRONMENTAL SERVICES Co., INC.
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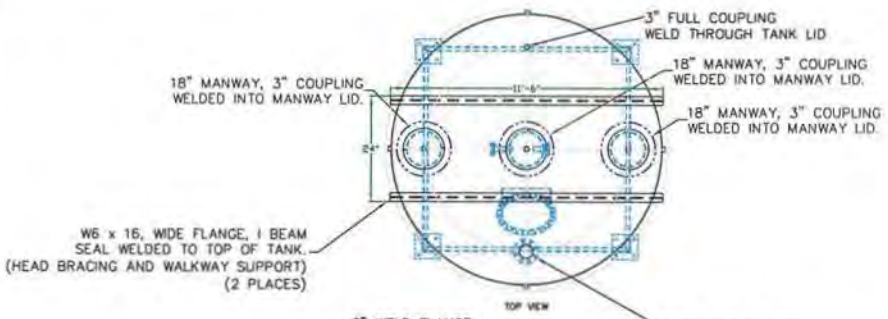
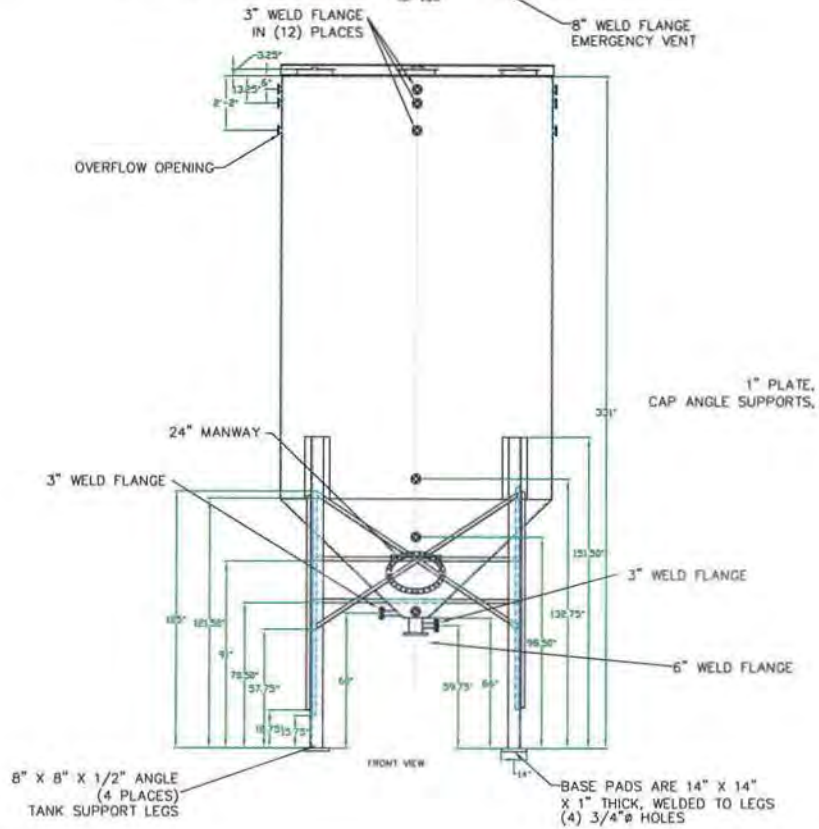
EAU CLAIRE, WISCONSIN
EPA ID No. WD990829475

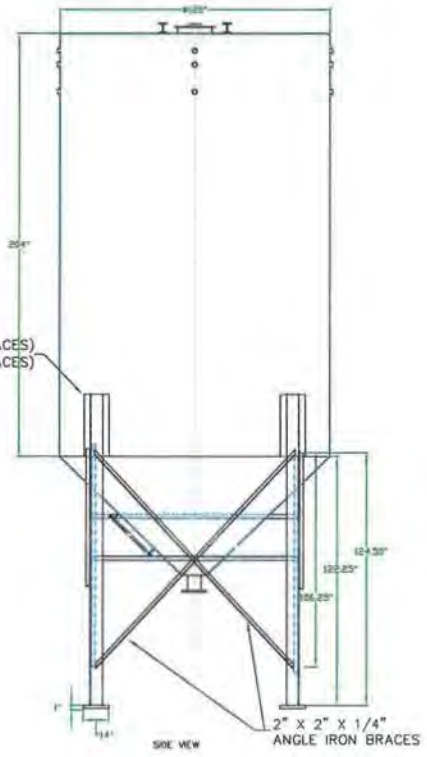
TANK Y

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1Y

DRAWING DIRECTORY: P:\LCV\WRRES\118488\FIGURES\FIGURE 2D-1Y







WISCONSIN
WILLIAM L
HABLE
E-9778
BLOOMER
WI
4-15-13
PROFESSIONAL ENGINEER

NOTE:
1. MAT'L IS A-36 CARBON STEEL.
2. VERIFY ALL LEGS ARE SQUARE AND LEVEL BEFORE WELDING.
3. BUILT TO U.L. 142 SPECIFICATIONS.
4. GRIND ALL SHARP EDGES.
5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. PRIME, PAINT - WHITE-.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 11,000 GALLONS.
10. CAPACITY, NET 10,2600 GALLONS.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
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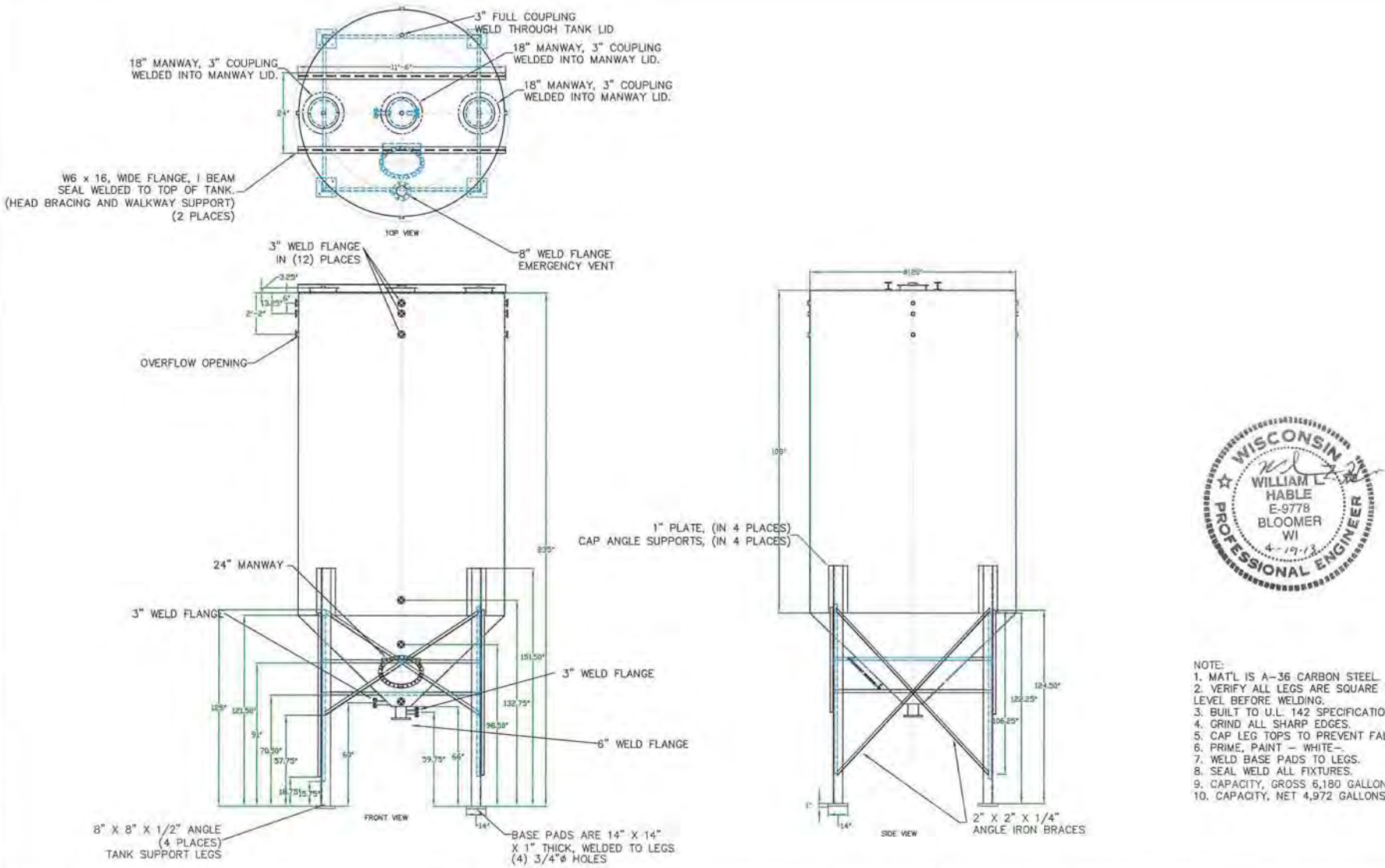
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK Z

PROJ. NO. 118488
DATE 1/29/13
FIGURE 2D-1Z

DRAWING DIRECTORY: N:\ACAD\WRR\ECS\118488\FIGURES\FIGURE 2D-1Z



NOTE:
1. MAT'L IS A-36 CARBON STEEL.
2. VERIFY ALL LEGS ARE SQUARE AND LEVEL BEFORE WELDING.
3. BUILT TO U.L. 142 SPECIFICATIONS.
4. GRIND ALL SHARP EDGES.
5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. PRIME, PAINT – WHITE–.
7. WELD BASE PADS TO LEGS.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 6,180 GALLONS.
10. CAPACITY, NET 4,972 GALLONS.

WISCONSIN
WILLIAM L. HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

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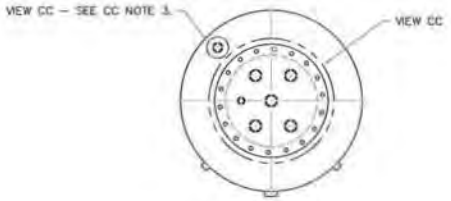
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WD990829475

TANK HH

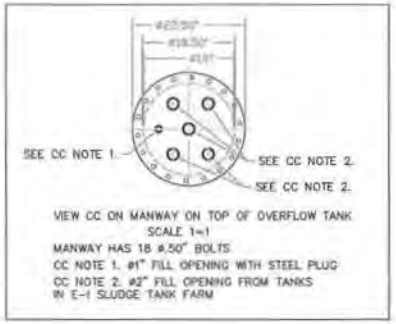
PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1HH

DRAWING DIRECTORY=P:\UTLW\MXDS\118488\FIGURES\FIGURE 2D-1H

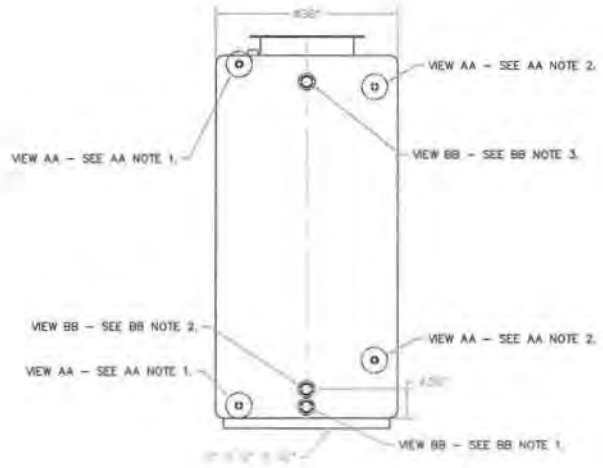


TOP VIEW

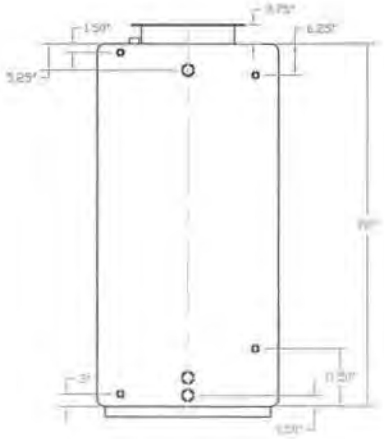
VIEW AA OF OPENINGS ON OVERFLOW TANK
SCALE 8=1
AA NOTE 1. OPENING IS A SIGHT LINE WITH BRASS GATE VALVES.
AA NOTE 2. OPENING WITH STEEL PLUG OR NUT.



VIEW CC ON MANWAY ON TOP OF OVERFLOW TANK
SCALE 1=1
MANWAY HAS 18 ø.50" BOLTS
CC NOTE 1. ø1" FILL OPENING WITH STEEL PLUG
CC NOTE 2. ø2" FILL OPENING FROM TANKS IN E-I SLUDGE TANK FARM



SOUTH EAST FACING VIEW



SOUTH EAST FACING VIEW

VIEW BB OF OPENINGS ON OVERFLOW TANK
SCALE 4=1
BB NOTE 1. DISCHARGE LINE WITH BRASS GATE VALVE
BB NOTE 2. DISCHARGE LINE WITH A LEVEL SENSOR
BB NOTE 3. OPENING WITH STEEL PLUG OR NUT

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL 2" X 6" X 32" WOOD
3. TANK INSTALLED 1995
4. TANK CAPACITY 300 GALLONS
5. ALL FILLETS AND ROUNDS HAVE A RADII .13"
6. TANK AND OPENINGS HAVE A THICKNESS .25"
7. ALL DIMENSIONS ARE IN INCHES
8. TOLERANCES ON ALL DIMENSIONS ARE ± .13"

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
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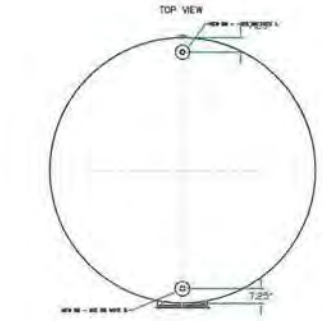
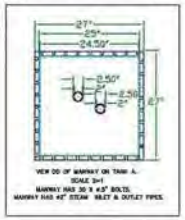
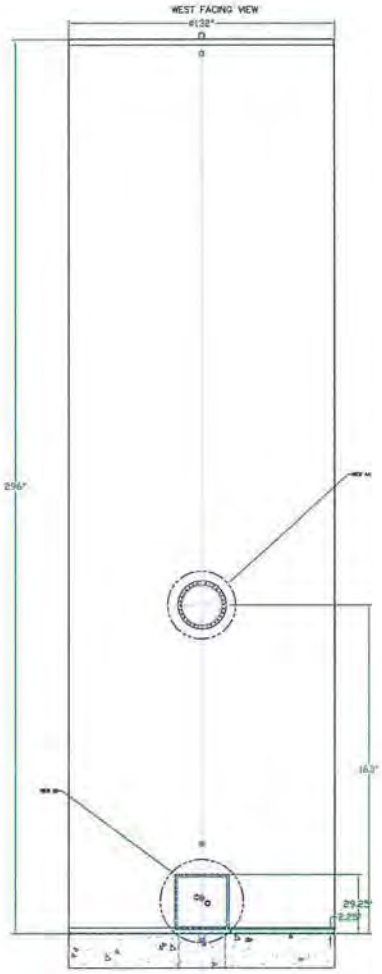
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

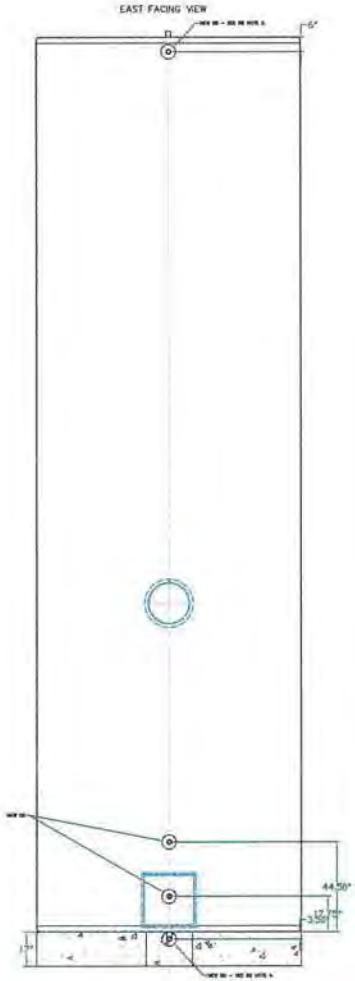
EII OVERFLOW

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-10F1









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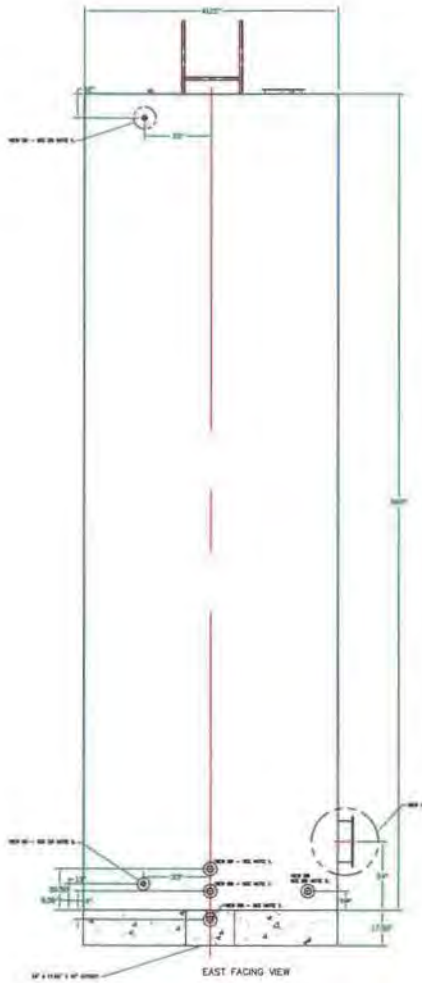
WRR

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

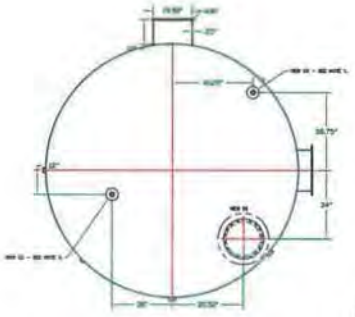
TANK A

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1A

DRAWING DIRECTORY: P:\...\VOL VI\...\FIGURES\FIGURE 2D-1A



EAST FACING VIEW



TOP VIEW

NOTES:
1. TANK MATERIAL STEEL
2. FOUNDATION MATERIAL CONCRETE
3. TANK INSTALLED 1979
4. CAPACITY, GROSS 10,000 GALLONS
5. CAPACITY, NET 9,300 GALLONS
6. ALL FILLETS AND ROUNDS HAVE RADII OF .13"
7. TANK & ALL OPENINGS MATERIAL THICKNESS .25"
8. ALL DIMENSIONS ARE IN INCHES
9. ALL DIMENSIONS HAVE A TOLERANCE OF ± .13"

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1	01/24/13	PRIOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

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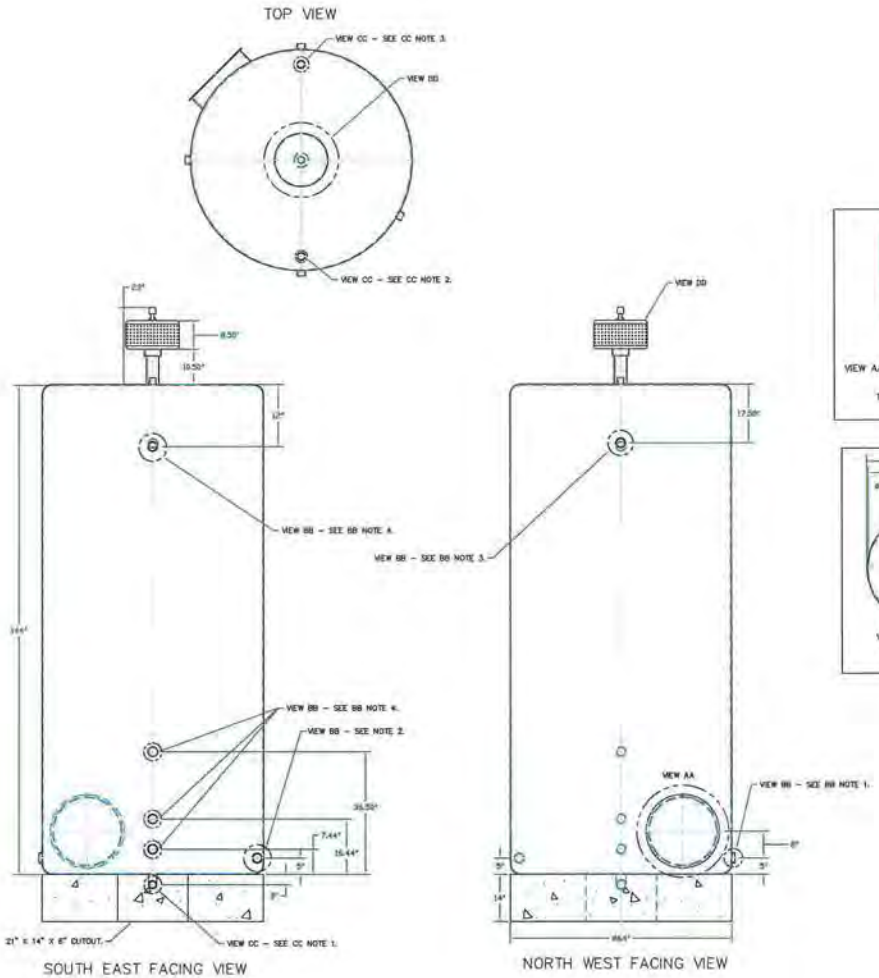
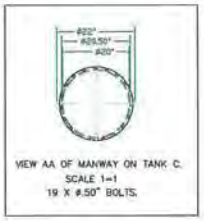
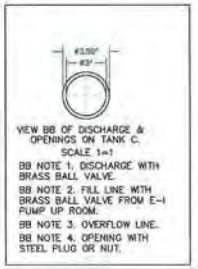
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

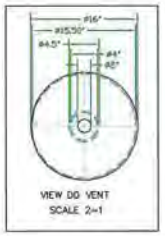
TANK B

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1B









NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. TANK INSTALLED 1979
4. CAPACITY, GROSS 1,990 GALLONS
5. CAPACITY, NET 1,810 GALLONS.
6. ALL FILLETS AND ROUNDS HAVE A RADII OF .13"
7. TANK & ALL OPENINGS MATERIAL THICKNESS .25"
8. ALL DIMENSIONS ARE IN INCHES.
9. TOLERANCES ON ALL DIMENSIONS ± .13"

WISCONSIN PROFESSIONAL ENGINEER
WILLIAM L. HABLE
E-9778
BLOOMER
WI
4-19-13

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	01/24/13	FPOR SUBMITTAL	RJH	01/13	TT	01/13	BA	01/13

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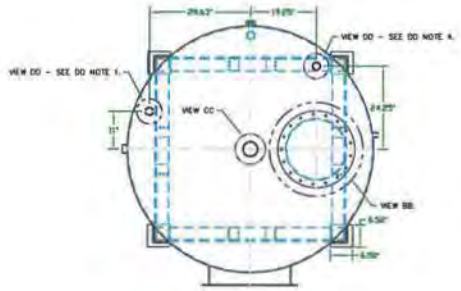
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK C

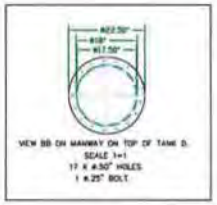
PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1C

DRAWING DIRECTORY: P:\EAU\WRR\ES\118488\FIGURES\FIGURE 2D-1C



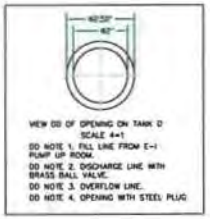
TOP VIEW

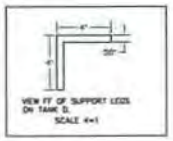

VIEW AA OF MANWAY ON TANK D.
SCALE 1=1
29 X Ø.50" BOLTS.

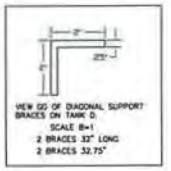

VIEW BB ON MANWAY ON TOP OF TANK D.
SCALE 1=1
17 X Ø.50" HOLES
1 X Ø.25" BOLT

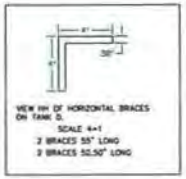

VIEW EE OF OPENINGS ON TANK D.
SCALE 6=1
EE NOTE 1. DISCHARGE LINE WITH BRASS BALL VALVE.
EE NOTE 2. FILL OPENING WITH STEEL NUT OR PLUG.

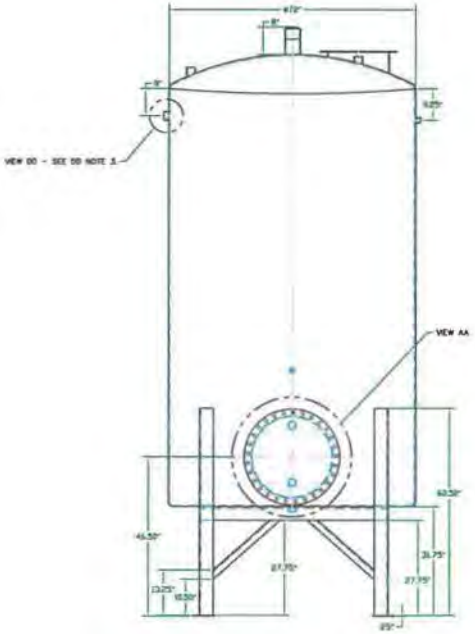

VIEW CC OF VENT ON TOP OF TANK D.
SCALE 4=1


VIEW DD OF OPENING ON TANK D
SCALE 4=1
DD NOTE 1. FILL LINE FROM E-1 PUMP UP ROOM.
DD NOTE 2. DISCHARGE LINE WITH BRASS BALL VALVE.
DD NOTE 3. OVERFLOW LINE.
DD NOTE 4. OPENING WITH STEEL PLUG

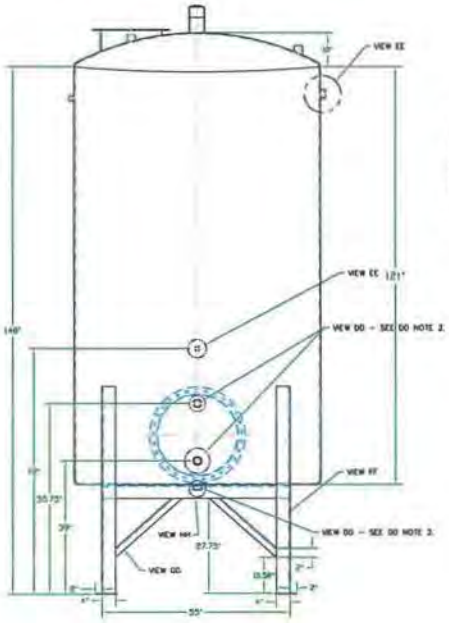

VIEW FF OF SUPPORT LEGS ON TANK D.
SCALE 4=1


VIEW GG OF DIAGONAL SUPPORT BRACES ON TANK D.
SCALE 8=1
2 BRACES 32" LONG
2 BRACES 32.75"


VIEW HH OF HORIZONTAL BRACES ON TANK D.
SCALE 4=1
2 BRACES 55" LONG
2 BRACES 52.50" LONG



NORTH FACING VIEW



SOUTH FACING VIEW

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL STEEL
3. TANK INSTALLED 1995
4. CAPACITY, GROSS 1,990 GALLONS.
5. CAPACITY, NET 1,840 GALLONS.
6. ALL FILLETS AND ROUNDS HAVE RADII OF .13"
7. TANK & ALL OPENINGS MATERIAL THICKNESS .25"
8. ALL DIMENSIONS ARE IN INCHES.
9. TOLERANCES ON ALL DIMENSIONS ARE ± .13"

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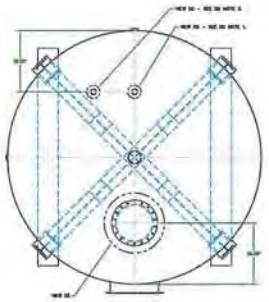
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WD990829475

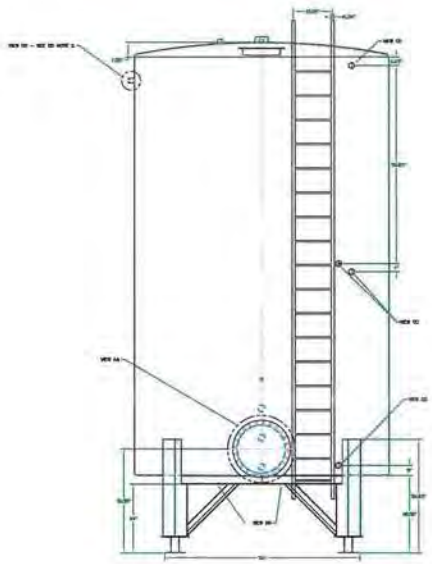
TANK D

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1D

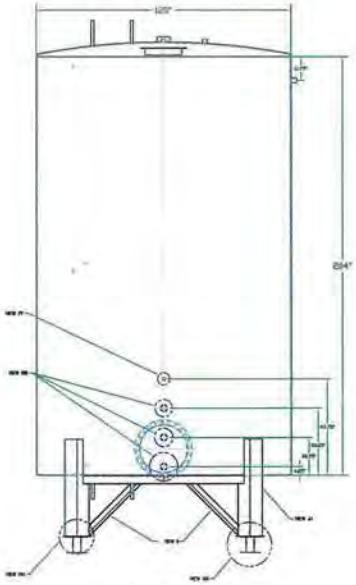
DRAWING DIRECTORY: P:\GIS\MYWORKS\1\118488\FIGURES\FIGURE 2D-1D



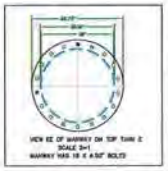
TOP VIEW

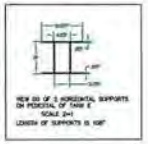


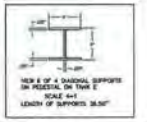
WEST FACING VIEW

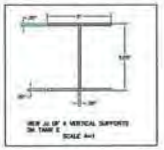


EAST FACING VIEW









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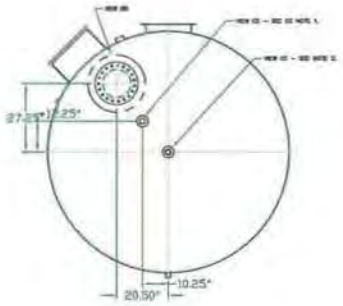
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK E

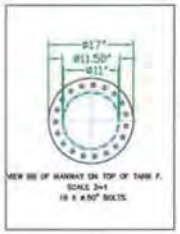
PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1E

DRAWING DIRECTORY: P:\JOTV\PWRRES\118488\FIGURES\FIGURE 2D-1E



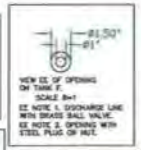
TOP VIEW

VIEW AA OF MANWAY ON TANK F.
SCALE 3=1
16 X Ø.50" BOLTS.

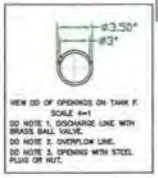


VIEW BB OF MANWAY ON TOP OF TANK F.
SCALE 3=1
16 X Ø.50" BOLTS.

VIEW CC OF OPENINGS ON TANK F.
SCALE 4=1
CC NOTE 1. FILL LINE FROM E-1 PUMP UP ROOM.
CC NOTE 2. VENT

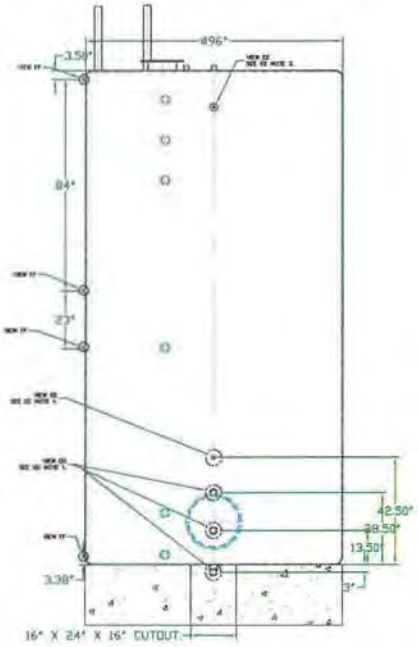


VIEW EE OF OPENING ON TANK F.
SCALE 8=1
EE NOTE 1. DISCHARGE LINE WITH BRASS BALL VALVE.
EE NOTE 2. OPENING WITH STEEL PLUG OR NUT.

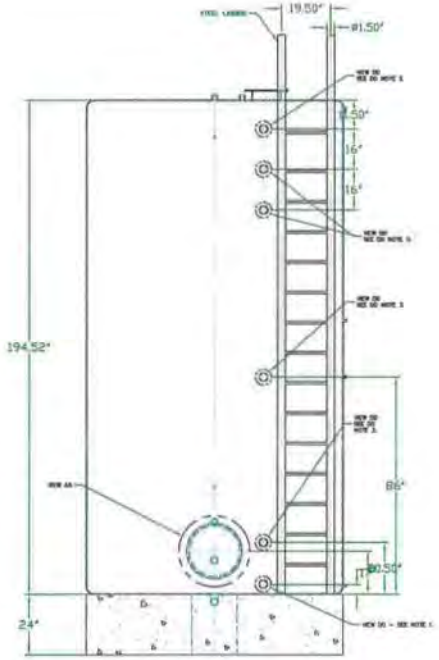


VIEW DD OF OPENINGS ON TANK F.
SCALE 4=1
DD NOTE 1. DISCHARGE LINE WITH BRASS BALL VALVE.
DD NOTE 2. OVERFLOW LINE.
DD NOTE 3. OPENING WITH STEEL PLUG OR NUT.

VIEW FF OF SIGHT OPENINGS ON TANK F.
SCALE 8=1
OPENINGS WITH BRASS GATE VALVES.



EAST FACING VIEW



WEST FACING VIEW

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. TANK INSTALLED 1979
4. CAPACITY, GROSS 6,030 GALLONS.
5. CAPACITY, NET 5,810 GALLONS.
6. ALL FILLETS AND ROUNDS HAVE A RADII OF .12"
7. TANK & ALL OPENINGS MATERIAL THICKNESS .25"
8. ALL DIMENSIONS ARE IN INCHES.
9. TOLERANCES ON ALL DIMENSIONS ARE ± .13"

WISCONSIN
WILLIAM L HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

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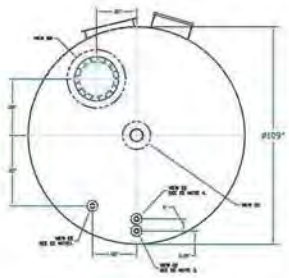
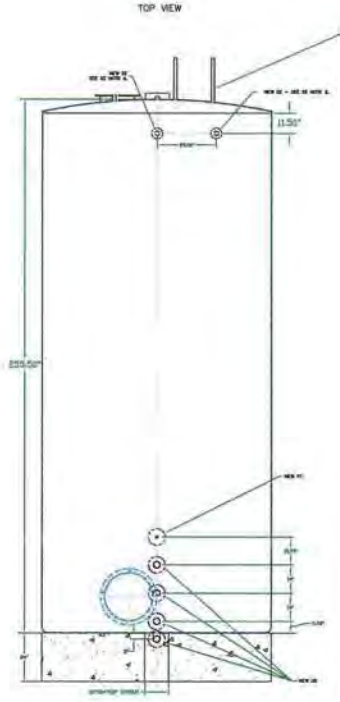
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

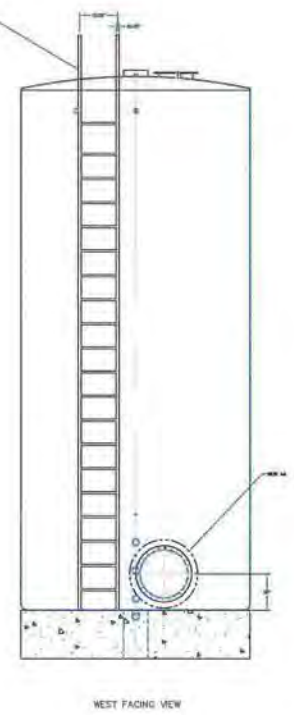
TANK F

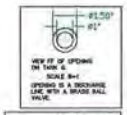
PROJ. NO. 116488
DATE 1/24/13
FIGURE 2D-1F

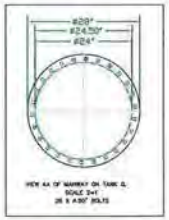
DRAWING DIRECTORY: P:\JOBS\WRR\ENVIRONMENTAL\116488\FIGURES\FIGURE 2D-1F

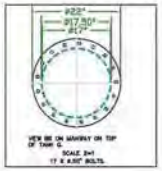


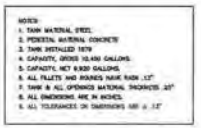












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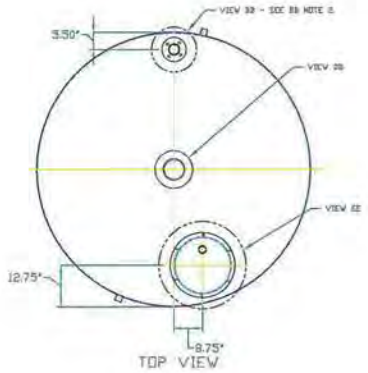
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

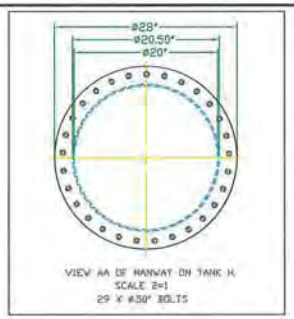
TANK G

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1G

DRAWING DIRECTORY: P:\JCF\WRR\ES\118488\FIGURES\FIGURE 2D-1G

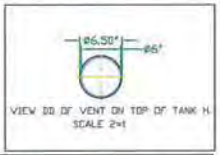


TOP VIEW

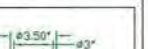


VIEW AA OF MANWAY ON TANK H.
SCALE 2=1
29 X ø.50" BOLTS

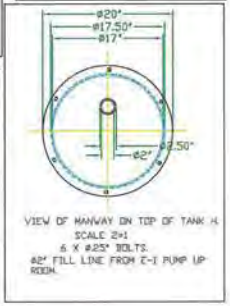
VIEW BB OF OPENING ON TANK H.
SCALE 2=1
BB NOTE 1. DISCHARGE LINE WITH BRASS BALL VALVE.
BB NOTE 2. FILL LINE WITH BRASS CHECK VALVE.
4 X ø.50" BOLTS.



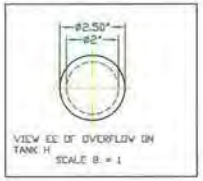
VIEW DD OF VENT ON TOP OF TANK H.
SCALE 2=1



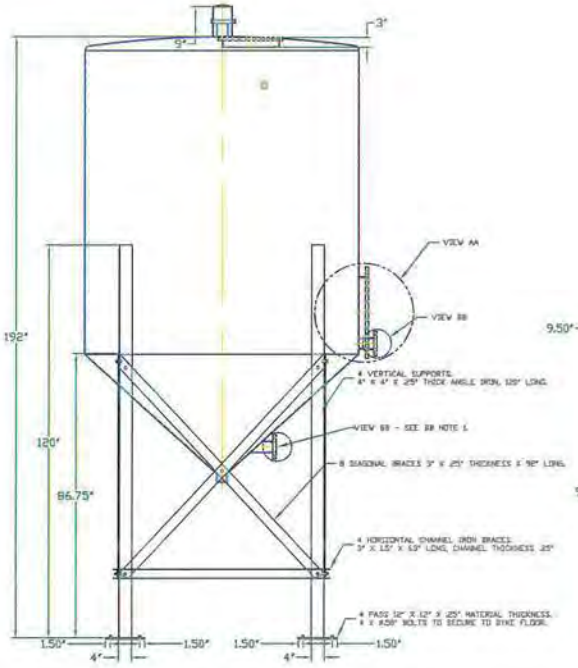
VIEW CC OF OPENING ON TANK H.
SCALE 4=1
DISCHARGE LINE WITH A BRASS BALL VALVE.



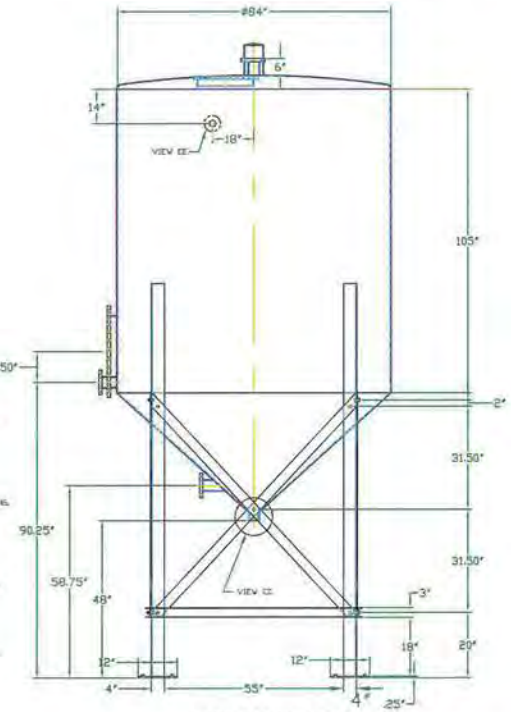
VIEW OF MANWAY ON TOP OF TANK H.
SCALE 2=1
6 X ø.25" BOLTS.
ø2" FILL LINE FROM E-1 PUMP UP RISER.



VIEW EE OF OVERFLOW ON TANK H
SCALE 8. = 1



EAST FACING VIEW



WEST FACING VIEW

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL STEEL
3. TANK INSTALLED 1997
4. CAPACITY, GROSS 2,770 GALLONS.
5. CAPACITY, NET 2,680 GALLONS.
6. ALL FILLETS AND ROUNDS HAVE RADII OF .13"
7. TANK & ALL OPENINGS MATERIAL THICKNESS .25"
8. ALL DIMENSIONS ARE IN INCHES.
9. ALL TOLERANCES ON DIMENSIONS ARE ± .13"

WISCONSIN
WILLIAM L. HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

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WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN

TANK H

PROJ. NO. 118488
DATE 04/18/13
FIGURE 2D-1H

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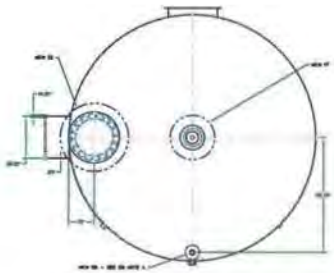
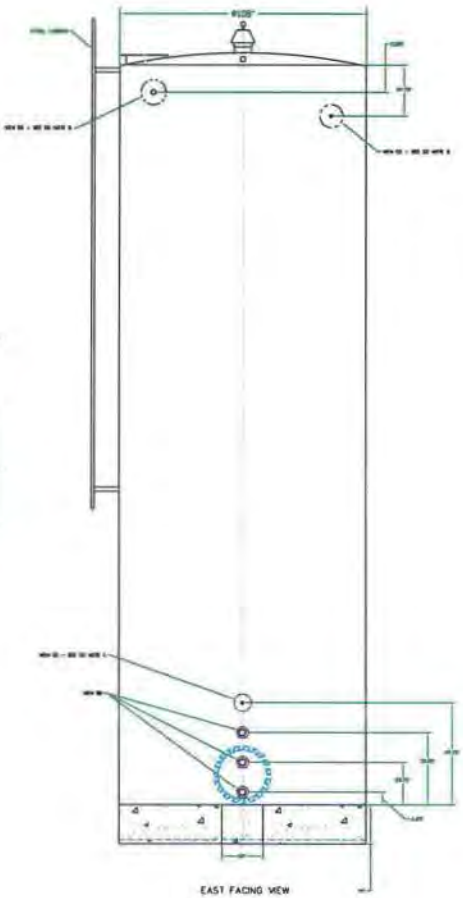
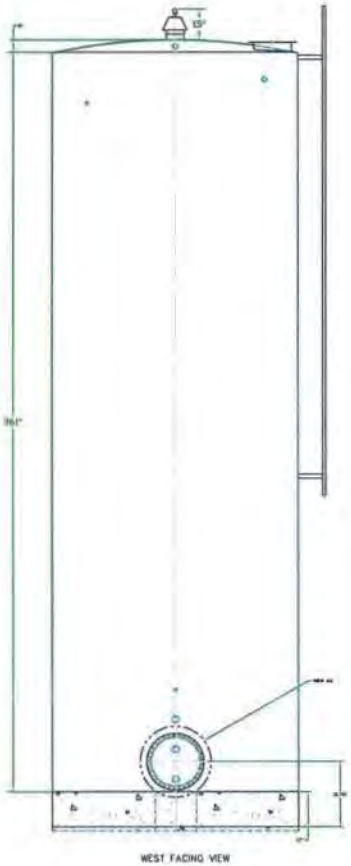


TOP VIEW



EAST FACING VIEW



WEST FACING VIEW

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE WITH A 20" x 15" x 12" DEEP CUT ANNEX.
3. TANK INSTALLED 1995
4. CAPACITY, GROSS 17,530 GALLONS
5. CAPACITY, NET 16,840 GALLONS
6. ALL FILLETS AND ROUNDS HAVE RADII OF .12" THICKNESS .25"
7. ALL DIMENSIONS ARE IN INCHES
8. TOLERANCES ON ALL DIMENSIONS .13"
9. VIEWS OF INDIVIDUAL OPENINGS HAVE BEEN ENLARGED FOR BETTER VIEWING

WISCONSIN
WILLIAM E. HABLE
E-9778
BLOOMER
WI
PROFESSIONAL ENGINEER
1/24/13

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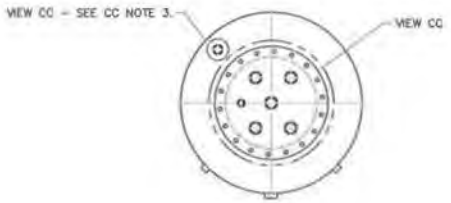
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK ZZ

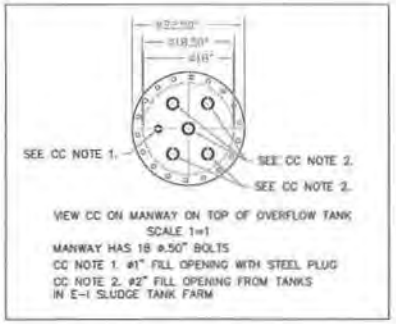
PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1ZZ

DRAWING DIRECTORY: P:\JOBS\WRRES\118488\FIGURES\FIGURE 2D-1ZZ

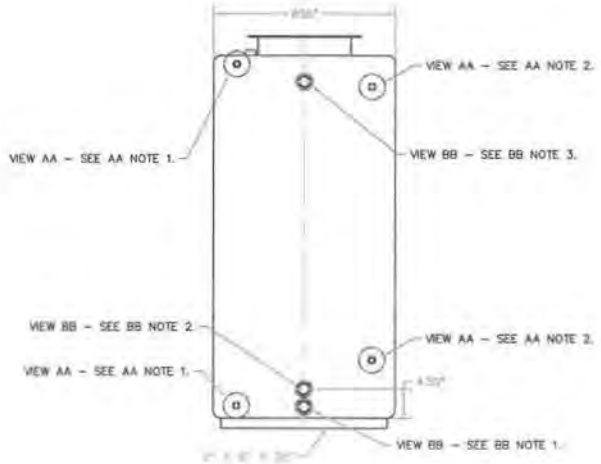


TOP VIEW

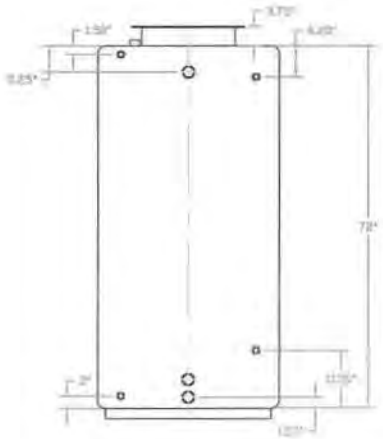
VIEW AA OF OPENINGS ON OVERFLOW TANK
SCALE 8=1
AA NOTE 1. OPENING IS A SIGHT LINE WITH BRASS GATE VALVES.
AA NOTE 2. OPENING WITH STEEL PLUG OR NUT.



VIEW CC ON MANWAY ON TOP OF OVERFLOW TANK
SCALE 1=1
MANWAY HAS 18 Ø.50" BOLTS
CC NOTE 1. Ø1" FILL OPENING WITH STEEL PLUG
CC NOTE 2. Ø2" FILL OPENING FROM TANKS IN E-I SLUDGE TANK FARM

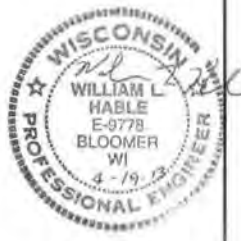


SOUTH EAST FACING VIEW



SOUTH EAST FACING VIEW

VIEW BB OF OPENINGS ON OVERFLOW TANK
SCALE 4=1
BB NOTE 1. DISCHARGE LINE WITH BRASS GATE VALVE
BB NOTE 2. DISCHARGE LINE WITH A LEVEL SENSOR
BB NOTE 3. OPENING WITH STEEL PLUG OR NUT



NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL 2" X 6" X 32" WOOD
3. TANK INSTALLED 1995
4. TANK CAPACITY 300 GALLONS
5. ALL FILLETS AND ROUNDS HAVE A RADII .13"
6. TANK AND OPENINGS HAVE A THICKNESS .25"
7. ALL DIMENSIONS ARE IN INCHES
8. TOLERANCES ON ALL DIMENSIONS ARE ± .13"

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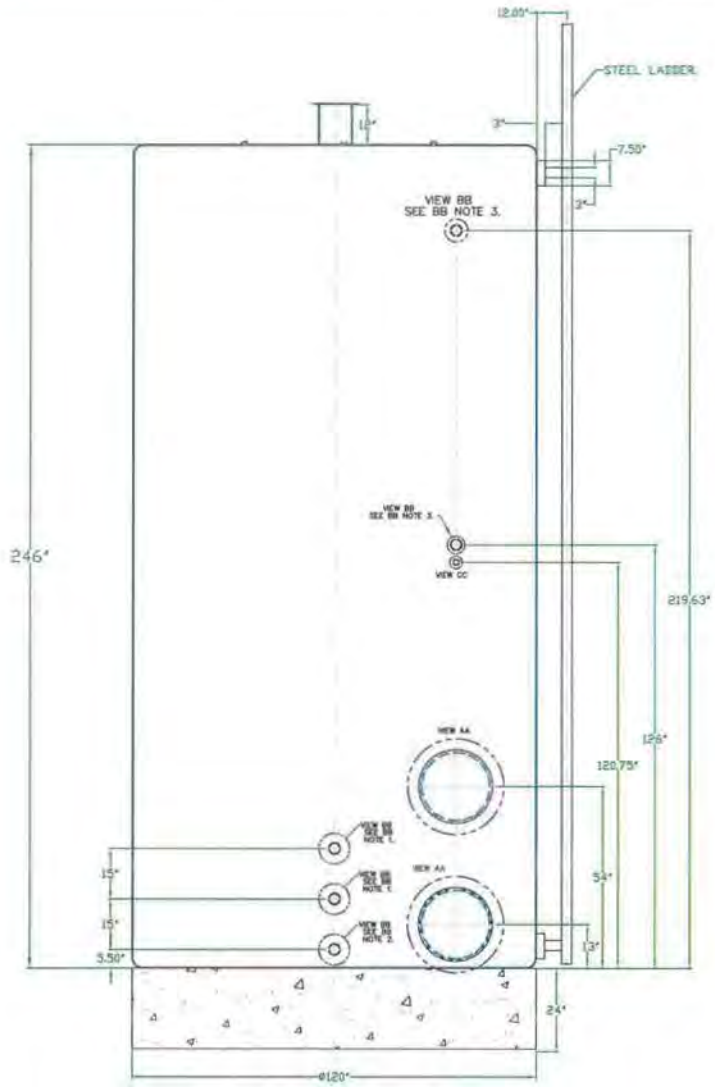
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

EI OVERFLOW

PROJ. NO. 118468
DATE 1/24/13
FIGURE 2D-10F2

DRAWING DIRECTORY: P:\JOBS\118468\FIGURES\FIGURE 2D-10F2



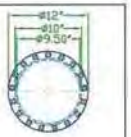
EAST FACING VIEW

VIEW AA OF BOTH MANWAYS ON TANK AA
25 X ø.50" BOLTS
SCALE 2=1

VIEW BB OF DISCHARGE LINES ON TANK AA.
SCALE 4=1

BB NOTE 1. DISCHARGE OPENING WITH BRASS GATE VALVE.
BB NOTE 2. DISCHARGE OPENING WITH BRASS BALL VALVE.
BB NOTE 3. DISCHARGE OPENING WITH STEEL PLUG OR NUT.

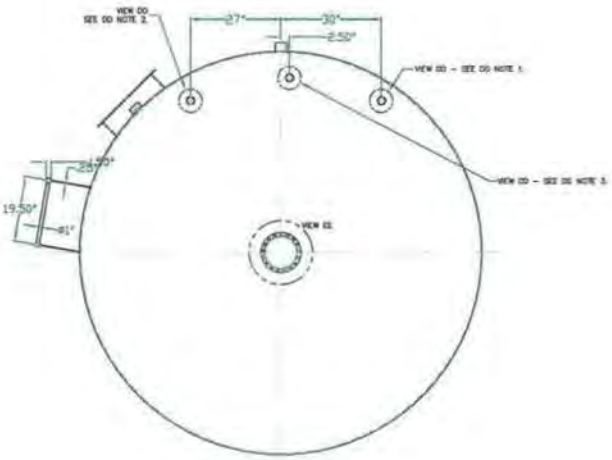
VIEW CC OF OPENING ON TANK AA.
OPENING HAS A STEEL PLUG OR NUT.
SCALE 4=1



VIEW EE OF VENT ON TOP OF TANK AA.
SCALE 2=1
MANWAY HAS 17 X ø.50" BOLTS

VIEW DD OF FILL LINES ON TANK AA.
SCALE 4=1

DD NOTE 1. FILL LINE WITH BRASS GATE VALVE & CAM LOCK.
DD NOTE 2. OVERFLOW LINE.
DD NOTE 3. FILL LINE WITH STEEL PLUG OR NUT.



TOP VIEW

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. TANK INSTALLED 1979
4. CAPACITY, GROSS 11,980 GALLONS.
5. CAPACITY, NET 11,980 GALLONS.
6. ALL FILLETS AND ROUNDS HAVE RADII .13"
7. TANK & ALL OPENINGS MATERIAL THICKNESS .25"
8. ALL DIMENSIONS ARE IN INCHES.
9. ALL TOLERANCES ± .13"

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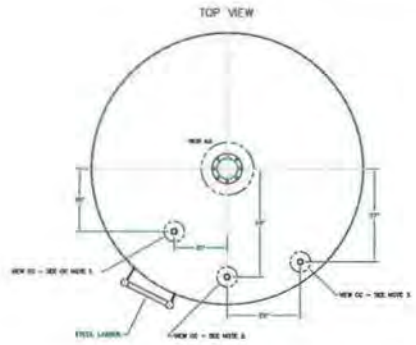
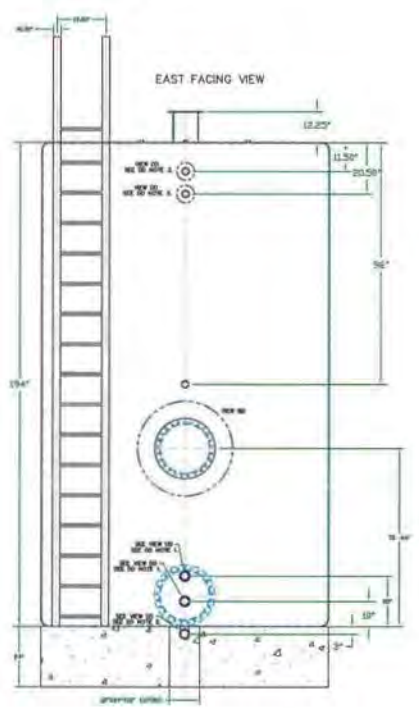
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK AA

PROJ NO. 118458
DATE 1/24/13
FIGURE 2D-1AA

DRAWING DIRECTORY=P:\JOBS\WRRES\118458\FIGURES\FIGURE 2D-1AA





NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. TANK INSTALLED 1979
4. CAPACITY, GROSS 7,620 GALLONS.
5. CAPACITY, NET 7,620 GALLONS.
6. ALL DIMENSIONS ARE IN INCHES
7. TOLERANCES ON DIMENSIONS ARE ± .25"
8. ALL FILETS AND ROUNDS HAVE RADII OF 1.5"
9. TANK AND OPENINGS HAVE MATERIAL THICKNESS OF .25"

WISCONSIN
WILLIAM T HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

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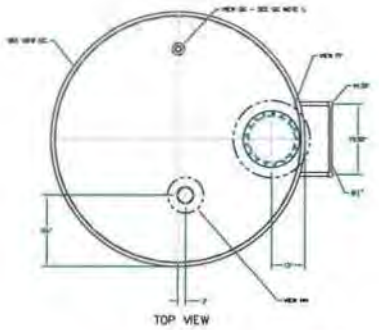
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

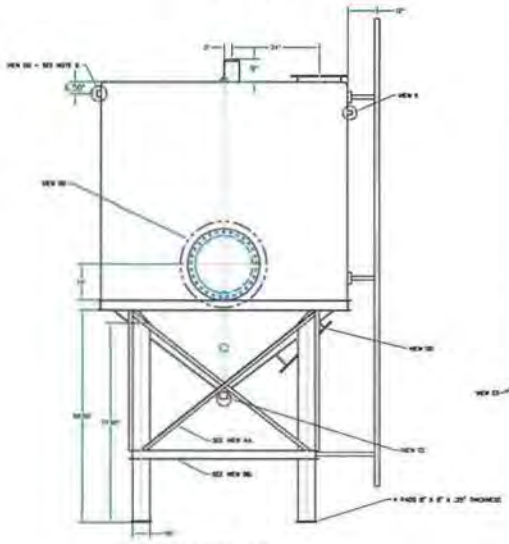
TANK BB

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-18B

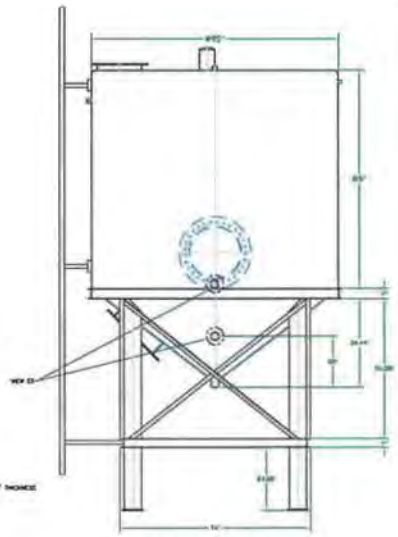
DRAWING DIRECTORY: P:\UCW\WRES\118488\FIGURES\FIGURE 2D-18B



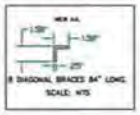
TOP VIEW



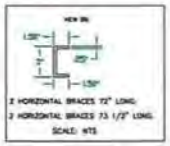
WEST FACING VIEW



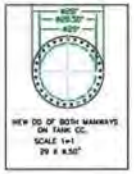
EAST FACING VIEW



8 DIAGONAL BRACES 84" LONG.
SCALE: NTS.



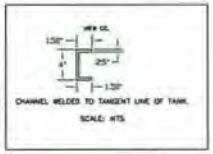
2 HORIZONTAL BRACES 72" LONG.
2 HORIZONTAL BRACES 73 1/2" LONG.
SCALE: NTS.



VIEW DD OF BOTH MANWAYS ON TANK CC.
SCALE 1=1
29 X 4.50"

VIEW EE OF DISCHARGE LINES ON TANK CC.
SCALE 6=1
DISCHARGE LINES WITH BRASS BALL VALVES.

VIEW FF OF MANWAY ON TOP OF TANK CC.
SCALE 1=1
17 X 4.05" BOLTS



CHANNEL WELDED TO TANGENT LINE OF TANK.
SCALE: NTS.

VIEW HH OF VENT ON TOP OF TANK CC.
SCALE 4=1

VIEW GG OF OPENINGS ON TANK CC.
SCALE 4=1
GG NOTE 1. FILL LINE FROM E-1 PUMP UP ROOM.
GG NOTE 2. OVERFLOW LINE.

VIEW II OF FILL LINE WITH STEEL PLUG ON TANK CC.
SCALE 8=1

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL STEEL
3. TANK INSTALLED 1995
4. CAPACITY, GROSS 3,060 GALLONS.
5. CAPACITY, NET 2,740 GALLONS.
6. ALL FILLETS AND ROUNDS HAVE RADII OF .13"
7. TANK & ALL OPENINGS MATERIAL THICKNESS .25"
8. ALL DIMENSIONS ARE IN INCHES.
9. ALL TOLERANCES ON DIMENSIONS ARE ± .13"

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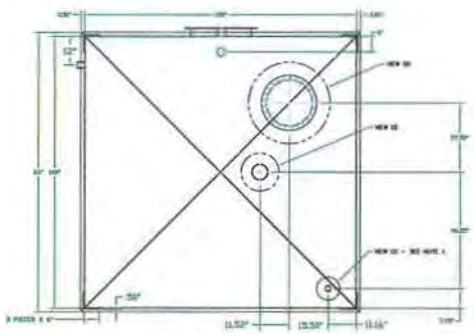
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WI0990829475

TANK CC

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1CC

DRAWING DIRECTORY: P:\LTC\WRR\PROJECTS\118488\FIGURES\FIGURE 2D-1CC

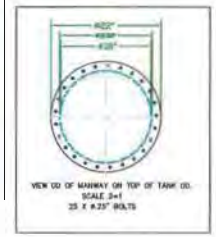


TOP VIEW

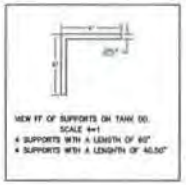
VIEW CC OF OPENING ON TANK DD.
SCALE 4=1
CC NOTE 1. FILL LINE FROM E-1 PUMP UP ROOM.
CC NOTE 2. OVERFLOW LINE.

VIEW BB OF OPENINGS ON TANK DD.
SCALE 4=1
OPENINGS ARE DISCHARGE LINES WITH BRASS BALL VALVES.

VIEW AA OF MANWAY ON TANK DD.
SCALE 2=1
28 X 6.50" BOLTS.

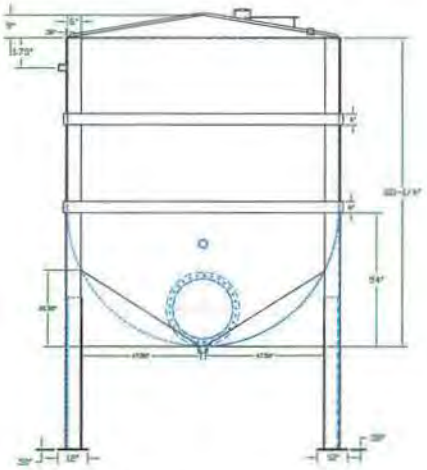


VIEW DD OF MANWAY ON TOP OF TANK DD.
SCALE 2=1
25 X 8.25" BOLTS

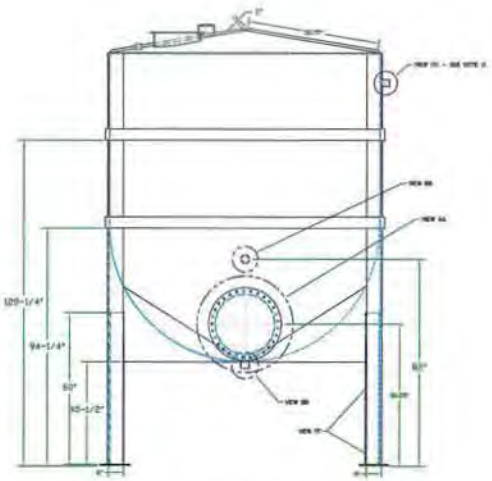


VIEW FF OF SUPPORTS ON TANK DD.
SCALE 4=1
4 SUPPORTS WITH A LENGTH OF 60"
4 SUPPORTS WITH A LENGTH OF 40.50"

VIEW EE OF VENT ON TOP OF TANK DD.
SCALE 4=1



WEST FACING VIEW



EAST FACING VIEW

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL STEEL
3. TANK INSTALLED 1995
4. CAPACITY, GROSS 5,440 GALLONS.
5. CAPACITY, NET 4,740 GALLONS.
6. ALL FILLETS AND ROUNDS HAVE RADII OF .13"
7. ALL DIMENSIONS ARE IN INCHES.
8. TOLERANCES ON ALL DIMENSIONS HAVE ± .13"

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WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK DD

PROJ. NO. 115455
DATE 1/24/13

FIGURE 2D-1DD

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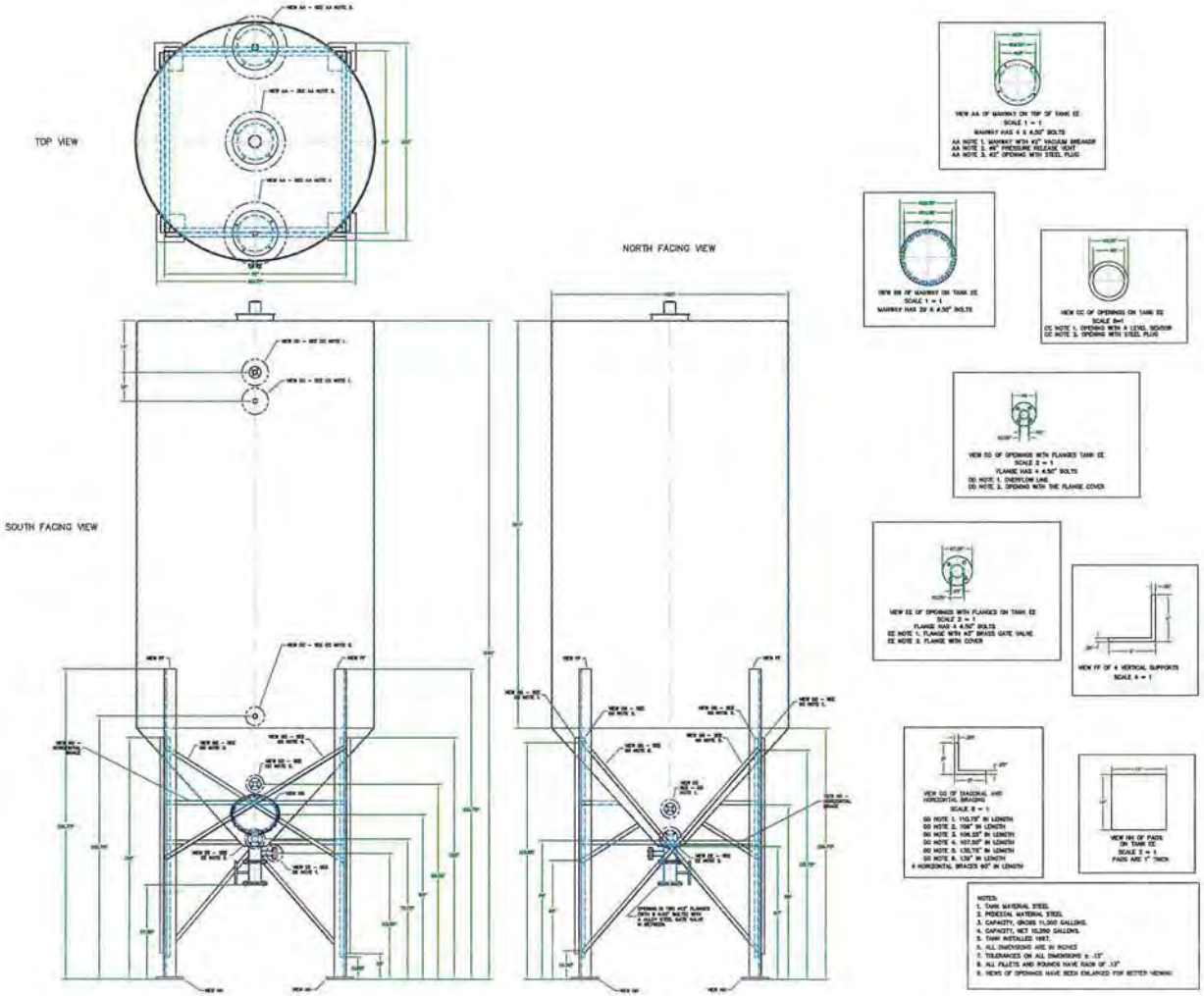

WISCONSIN
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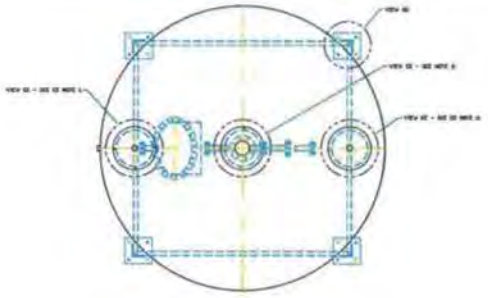
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

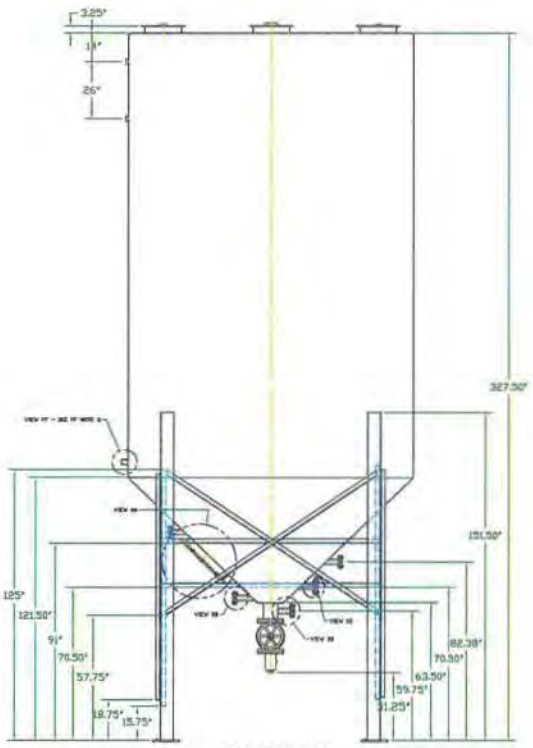
TANK EE

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1EE

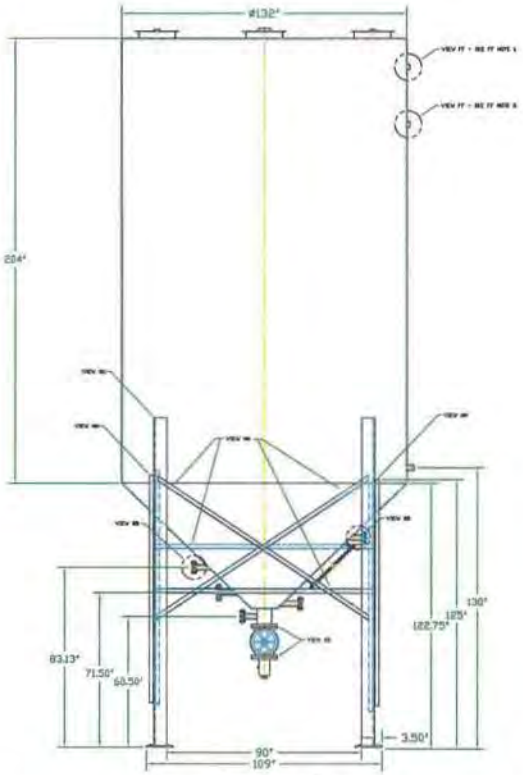
DRAWING DIRECTORY: P:\UCVM\WRSES\118488\FIGURES\FIGURE 2D-1EE



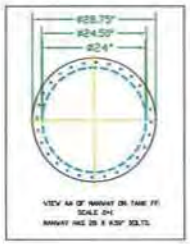
TOP VIEW



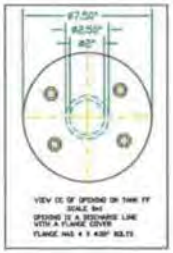
NORTH FACING VIEW



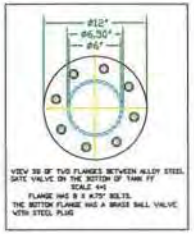
SOUTH FACING VIEW



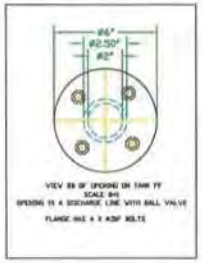
VIEW AA OF MANWAY ON TANK FF
SCALE 3/4"
MANWAY HAS 20 X #.50" BOLTS



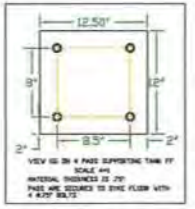
VIEW CC OF OPENING ON TANK FF
SCALE 3/4"
OPENING IS A DISCHARGE LINE
WITH A FLANGE COVER
FLANGE HAS 4 X #.50" BOLTS



VIEW DD OF TWO FLANGES BETWEEN ALLOY STEEL GATE VALVE ON THE BOTTOM OF TANK FF
SCALE 4=1
FLANGE HAS 8 X #.75" BOLTS.
THE BOTTOM FLANGE HAS A BRASS BALL VALVE WITH STEEL PLUG

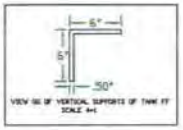


VIEW EE OF OPENING ON TANK FF
SCALE 3/4"
OPENING IS A DISCHARGE LINE WITH BALL VALVE
FLANGE HAS 4 X #.50" BOLTS

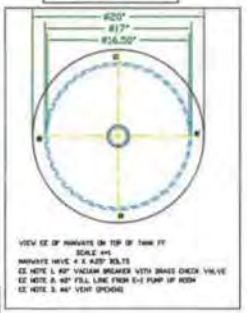


VIEW GG OF 4 PADS SUPPORTING TANK FF
SCALE 4=1
MATERIAL THICKNESS IS .375"
PADS ARE WELDED TO SHELL FLUSH WITH 4 #.375" BOLTS

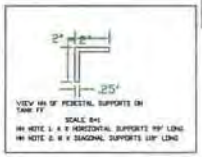
VIEW FF OF OPENING ON TANK FF
SCALE 3/4"
FF NOTE 1. OVERFLOW LINE
FF NOTE 2. STEEL PLUG
FF NOTE 3. PIPE TO HOSE CONNECT



VIEW HH OF VERTICAL SUPPORTS OF TANK FF
SCALE 4=1



VIEW EE OF MANWAYS ON TOP OF TANK FF
SCALE 4=1
MANWAYS HAVE 4 X #.25" BOLTS
EE NOTE 1. #.25" VACUUM BREAKER WITH BRASS CHECK VALVE
EE NOTE 2. #.50" FILL LINE FROM G-1 PUMP UP ROOM
EE NOTE 3. #.50" VENT OPENING



VIEW KK OF PEDESTAL SUPPORTS ON TANK FF
SCALE 8=1
KK NOTE 1. 4 X HORIZONTAL SUPPORTS 98" LONG
KK NOTE 2. 8 X DIAGONAL SUPPORTS 109" LONG

NOTES:
1. TANK MATERIAL STEEL.
2. PEDESTAL MATERIAL STEEL.
3. TANK INSTALLED 1997.
CAPACITY, GROSS 13,260 GALLONS.
4. CAPACITY, NET 12,430 GALLONS.
5. ALL FILLETS AND ROUNDS HAVE RADII OF .25"
7. ALL DIMENSIONS ARE IN INCHES
8. TOLERANCES OF ALL DIMENSIONS ± .25"
9. BOTTOM OUTLET IS TO 3" PIPE.

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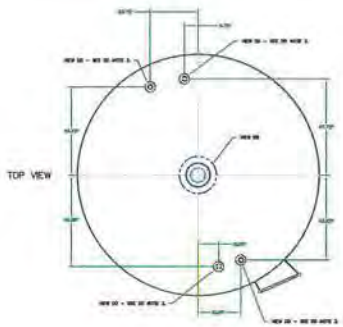
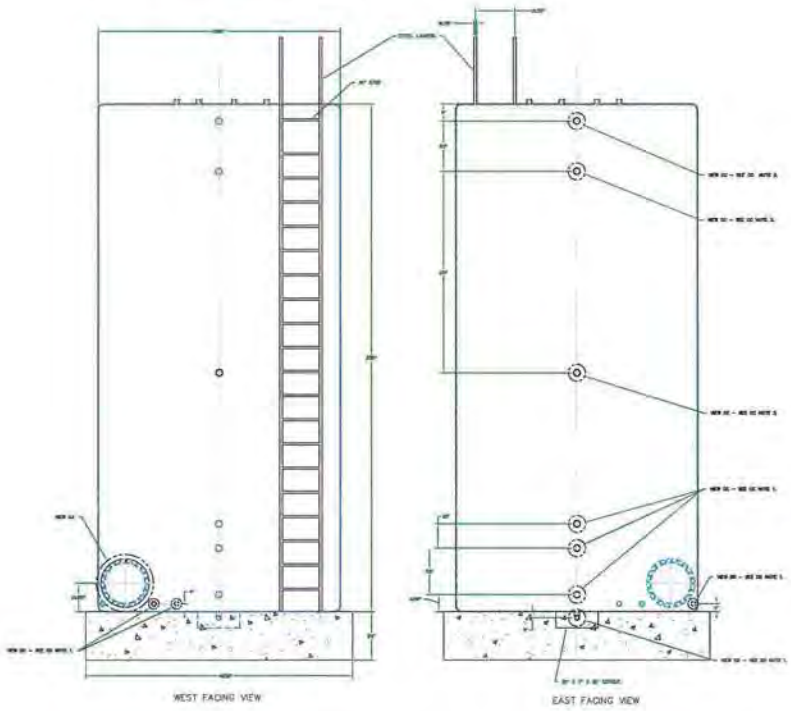
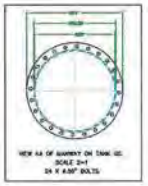
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990629475

TANK FF

PROJ. NO. 118468
DATE 04/18/13
FIGURE 2D-1FF







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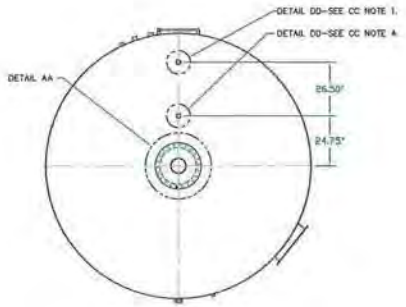
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

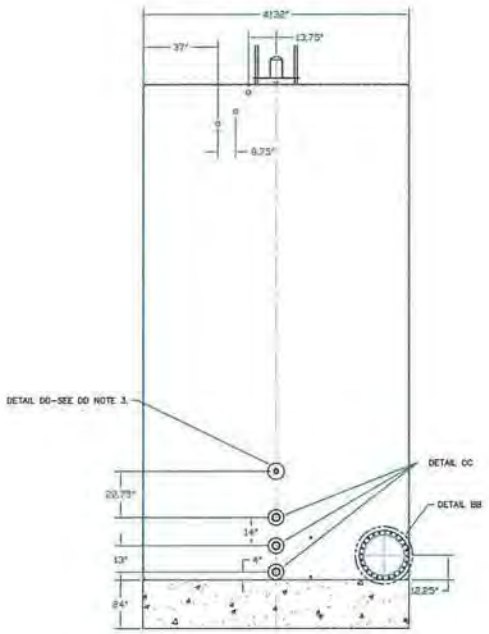
TANK GG

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1GG

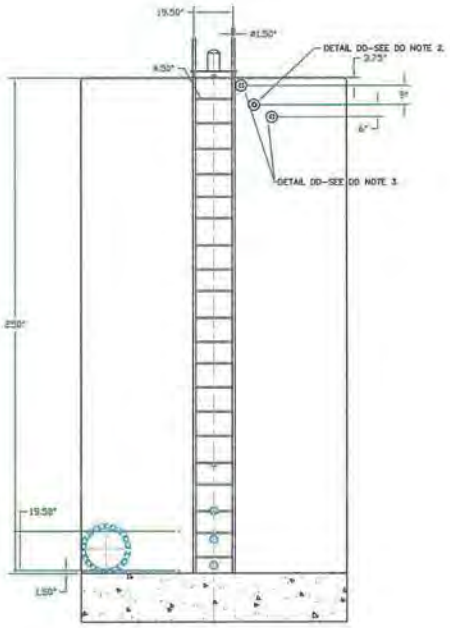
DRAWING DIRECTORY=P:\JOB\WORKS\118488\FIGURES\FIGURE 2D-1GG



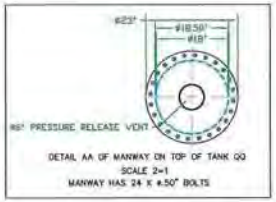
TOP VIEW



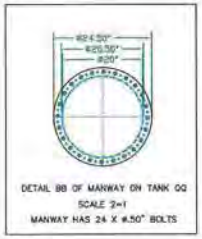
NORTH FACING VIEW



SOUTH FACING VIEW

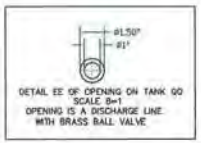


DETAIL AA OF MANWAY ON TOP OF TANK QQ
SCALE 2=1
MANWAY HAS 24 X Ø.50" BOLTS

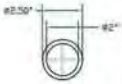


DETAIL BB OF MANWAY ON TANK QQ
SCALE 2=1
MANWAY HAS 24 X Ø.50" BOLTS

DETAIL CC OF OPENINGS ON TANK QQ
SCALE 4=1
OPENINGS ARE DISCHARGE LINES
WITH BRASS GATE VALVES



DETAIL EE OF OPENING ON TANK QQ
SCALE 8=1
OPENING IS A DISCHARGE LINE
WITH BRASS BALL VALVE



DETAIL DD OF OPENINGS ON TANK QQ
SCALE 8=1
DD NOTE 1. OPENING IS A FILL LINE FROM EITHER E-I BUILDING, E-II PIT, OR A CAM LOCK
DD NOTE 2. OVERFLOW LINE
DD NOTE 3. OPENING WITH STEEL PLUG
DD NOTE 4. OPENING WITH A BRASS VACUUM BREAKER

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. CAPACITY, GROSS 14,770 GALLONS.
4. CAPACITY, NET 13,550 GALLONS.
5. ALL FILLETS AND ROUNDS HAVE RADII .13"
6. ALL DIMENSIONS ARE IN INCHES
7. TOLERANCES ON ALL DIMENSIONS ± .13"
8. TANK INSTALLED 1980.

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WILLIAM L. HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

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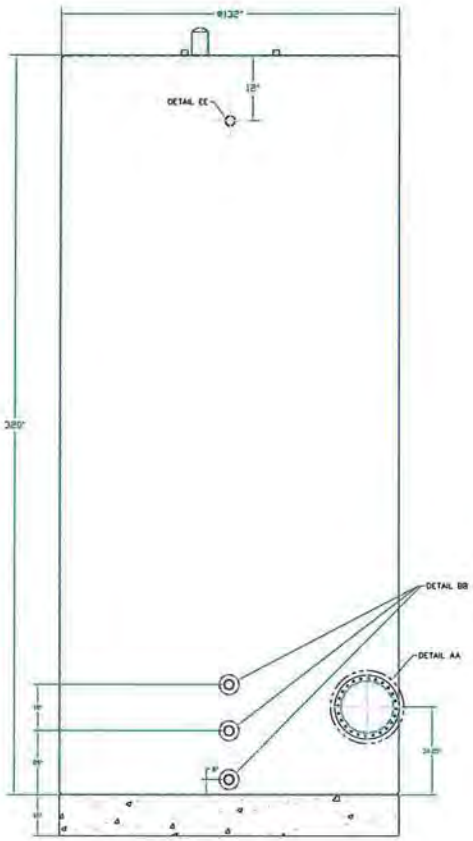
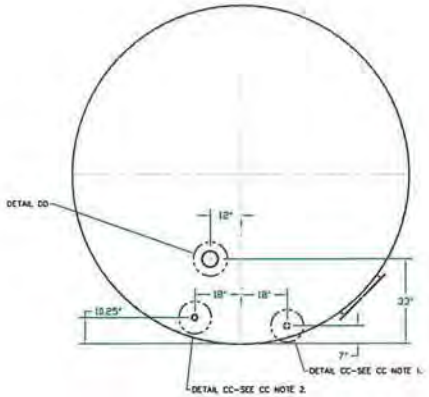
WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WD990829475

TANK QQ

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-100

DRAWING DIRECTORY: P:\JOBS\WORKFILES\HABF\FIGURES\FIGURE 2D-100



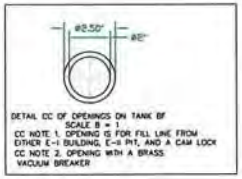


DETAIL EE OF OPENINGS ON TANK BF
SCALE 4 = 1
OPENINGS ARE OVERFILL LINE

DETAIL AA OF MANWAY ON TANK BF
SCALE 2 = 1
MANWAY HAS 24 X Ø.50" BOLTS

DETAIL BB OF OPENINGS ON TANK BF
SCALE 4 = 1
OPENINGS ARE DISCHARGE LINES
WITH BRASS BALL VALVES

DETAIL DD ON OPENING ON TANK BF
SCALE 2 = 1
OPENING IS A PRESSURE
RELEASE VENT



DETAIL CC OF OPENINGS ON TANK BF
SCALE 8 = 1
CC NOTE 1. OPENING IS FOR FILL LINE FROM
EITHER E-1 BUILDING, E-4 PIT, AND A CAM LOCK
CC NOTE 2. OPENING WITH A BRASS
VACUUM BREAKER

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. CAPACITY, GROSS 18,570 GALLONS.
4. CAPACITY, NET 17,890 GALLONS.
5. ALL FILLETS AND ROUNDS HAVE RADII .13"
6. ALL DIMENSIONS ARE IN INCHES
7. TOLERANCES ON ALL DIMENSIONS ± .13"
8. TANK INSTALLED 1980.
9. VIEWS OF INDIVIDUAL OPENINGS ARE ENLARGED FOR BETTER VIEWING.

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EAU CLAIRE, WISCONSIN
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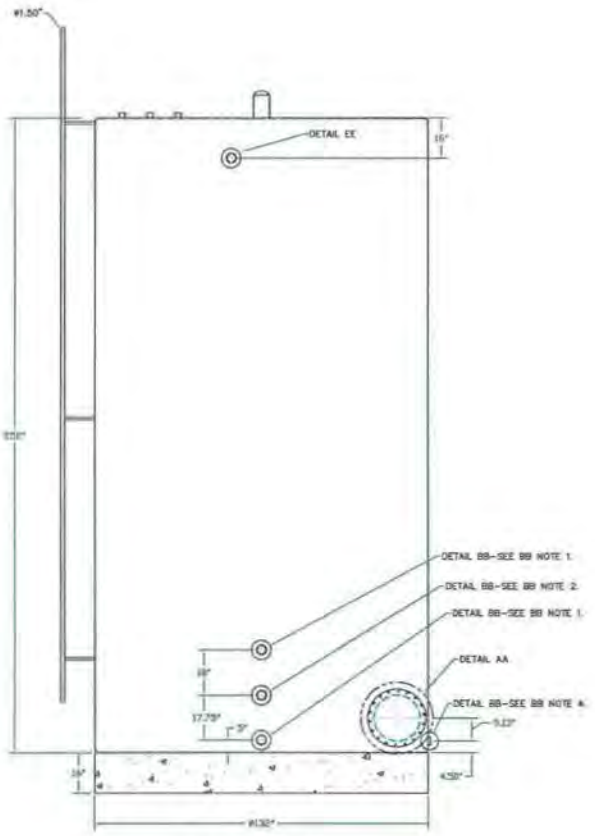
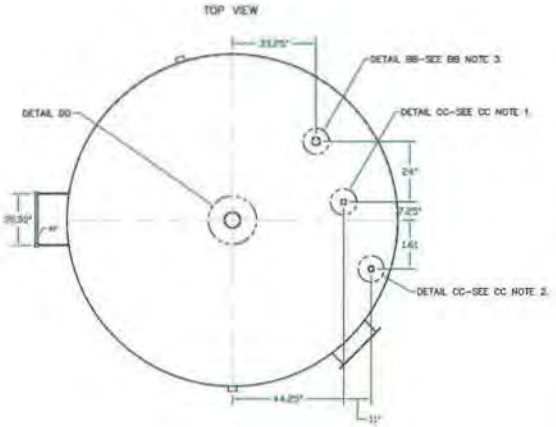
TANK BF

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1BF

DRAWING DIRECTORY: P:\WR\MARKES\118488\FIGURES\FIGURE 2D-1BF



NORTH FACING VIEW

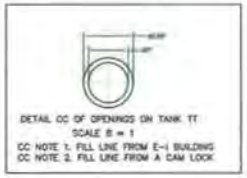


DETAIL EE OF OPENINGS ON TANK TT
SCALE 4 = 1
OVERFILL OPENING

DETAIL EE OF OPENING ON TANK TT
SCALE 8 = 1
OPENING WITH A BRASS BALL VALVE

DETAIL AA OF MANWAY ON TANK TT
SCALE 2 = 1
MANWAY HAS 18 X 4.50" BOLTS

DETAIL BB OF OPENINGS ON TANK TT
SCALE 8 = 1
BB NOTE 1. DISCHARGE LINE WITH BRASS GATE VALVES
BB NOTE 2. DISCHARGE LINE WITH BRASS BALL VALVES
BB NOTE 3. OPENING IS A BRASS VACUUM BREAKER
BB NOTE 4. OPENING WITH A STEEL PLUG



DETAIL CC OF OPENINGS ON TANK TT
SCALE 8 = 1
CC NOTE 1. FILL LINE FROM E-I BUILDING
CC NOTE 2. FILL LINE FROM A CAM LOCK

DETAIL DD OF OPENING ON TANK TT
SCALE 2 = 1
OPENING IS A PRESSURE RELEASE VENT

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. CAPACITY, GROSS 14,830 GALLONS.
4. CAPACITY, NET 14,010 GALLONS.
5. ALL FILLETS AND ROUNDS HAVE RADII .13"
6. ALL DIMENSIONS ARE IN INCHES
7. TOLERANCES ON ALL DIMENSIONS ± .13"
8. TANK INSTALLED 1980.
9. VIEWS OF INDIVIDUAL OPENINGS ARE ENLARGED FOR BETTER VIEWING

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WI
4-19-13
PROFESSIONAL ENGINEER

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EAU CLAIRE, WISCONSIN
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TANK TT

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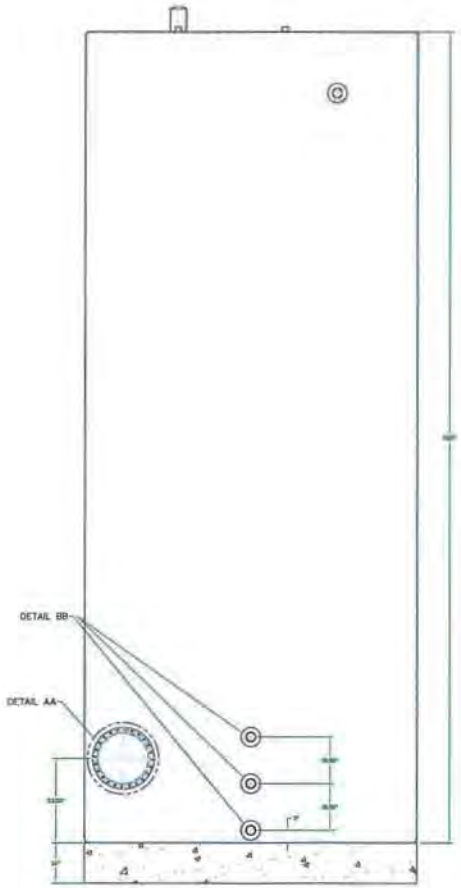
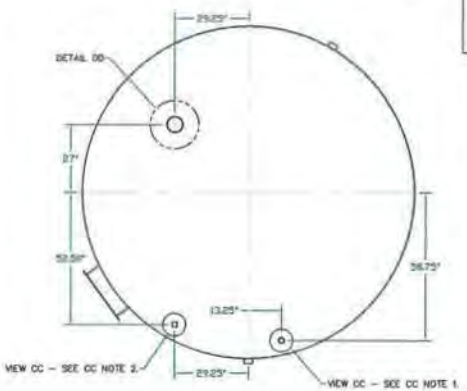
DATE 1/24/13
FIGURE 2D-ITT

DRAWING DIRECTORY: P:\127\WP\WPRES\USABLE\FIGURES\FIGURE 2D-ITT



NORTH FACING VIEW



TOP VIEW

DETAIL EE OF OPENINGS ON TANK UU
SCALE 4 = 1
OPENING IS OVERFILL LINE

DETAIL AA OF MANWAY ON TANK UU
SCALE 2 = 1
MANWAY HAS 24 X 8.50" BOLTS

DETAIL BB OF OPENINGS ON TANK UU
SCALE 4 = 1
OPENINGS ARE DISCHARGE LINES
WITH BRASS GATE VALVES

DETAIL DD OF OPENING ON TANK UU
SCALE 2 = 1
OPENING IS A PRESSURE
RELEASE VENT

DETAIL CC OF OPENINGS ON TANK UU
SCALE 8 = 1
CC NOTE 1. OPENING WITH A BRASS CHECK VALVE
IS A FILL LINE FROM EITHER THE
E-1 BUILDING, E-6 PIT, OR A CAM LOCK
CC NOTE 2. OPENING WITH BRASS VACUUM BREAKER

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. CAPACITY, GROSS 18,130 GALLONS.
4. CAPACITY, NET 17,320 GALLONS.
5. ALL FILLETS AND ROUNDS HAVE RADII .13"
6. ALL DIMENSIONS ARE IN INCHES
7. TOLERANCES ON ALL DIMENSIONS ± .13"
8. TANK INSTALLED 1980.
9. VIEWS OF INDIVIDUAL OPENINGS ARE ENLARGED FOR BETTER VIEWING.

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TANK UU

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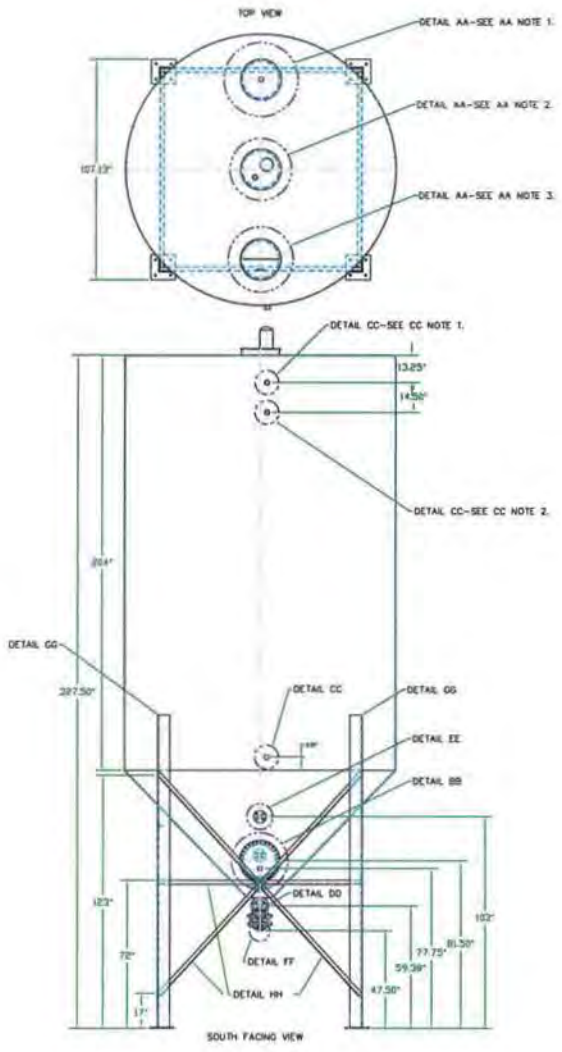
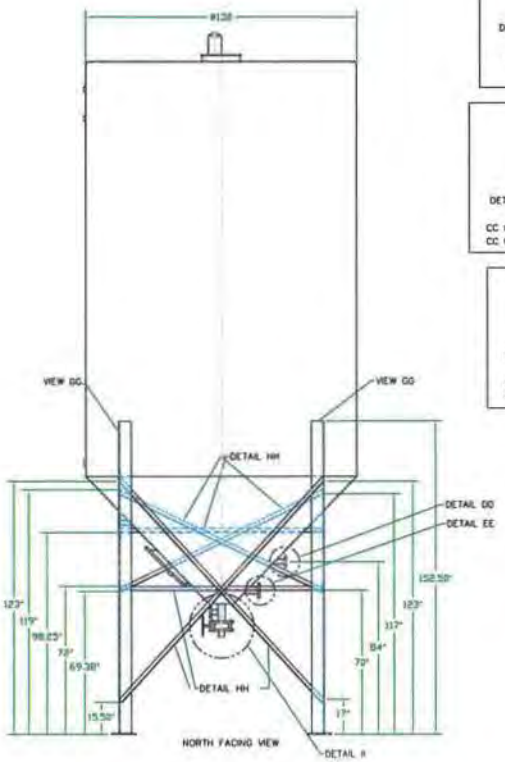
DATE 1/24/13
FIGURE 2D-1UU





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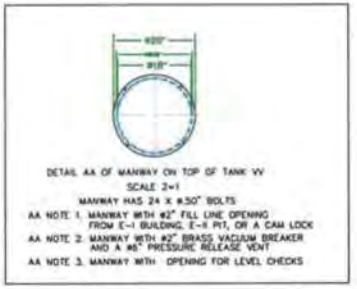
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

DETAIL BB OF MANWAY ON TANK VV
SCALE 1 = 1
MANWAY HAS 28 X ø.50" BOLTS
MANWAY HAS ø2" DISCHARGE LINE WITH BRASS BALL VALVE



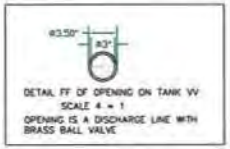
DETAIL AA OF MANWAY ON TOP OF TANK VV
SCALE 2=1
MANWAY HAS 24 X ø.50" BOLTS
AA NOTE 1. MANWAY WITH ø2" FILL LINE OPENING FROM E-1 BUILDING, E-5 PIT, OR A CAM LOCK
AA NOTE 2. MANWAY WITH ø2" BRASS VACUUM BREAKER AND A ø6" PRESSURE RELEASE VENT
AA NOTE 3. MANWAY WITH OPENING FOR LEVEL CHECKS

DETAIL DD OF FLANGE TANK VV
SCALE 2 = 1
FLANGE HAS 4 ø.50" BOLTS

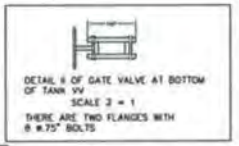
DETAIL EE OF FLANGE ON TANK VV
SCALE 2 = 1
FLANGE HAS 4 ø.50" BOLTS

DETAIL CC OF OPENINGS ON TANK VV
SCALE 8=1
CC NOTE 1. OVERFLOW LINE
CC NOTE 2. OPENINGS HAVE STEEL PLUGS

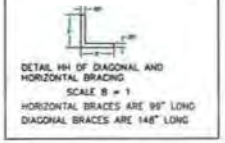
DETAIL GG OF 6 VERTICAL SUPPORTS
SCALE 4 = 1



DETAIL FF OF OPENING ON TANK VV
SCALE 4 = 1
OPENING IS A DISCHARGE LINE WITH BRASS BALL VALVE



DETAIL II OF GATE VALVE AT BOTTOM OF TANK VV
SCALE 2 = 1
THERE ARE TWO FLANGES WITH 8 ø.75" BOLTS



DETAIL HH OF DIAGONAL AND HORIZONTAL BRACING
SCALE 8 = 1
HORIZONTAL BRACES ARE 99" LONG
DIAGONAL BRACES ARE 148" LONG

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL STEEL
3. CAPACITY, GROSS 13,260 GALLONS.
4. CAPACITY, NET 12,420 GALLONS.
5. ALL FILLETS AND ROUNDS HAVE RADII .13"
6. ALL DIMENSIONS ARE IN INCHES
7. TOLERANCES ON ALL DIMENSIONS ± .13"
8. TANK INSTALLED 1997.
9. DETAILS OF OPENINGS HAVE BEEN ENLARGED FOR BETTER VIEWING

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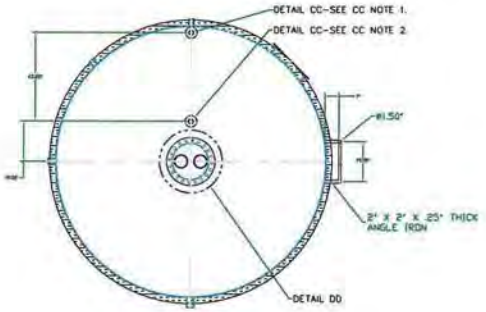
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

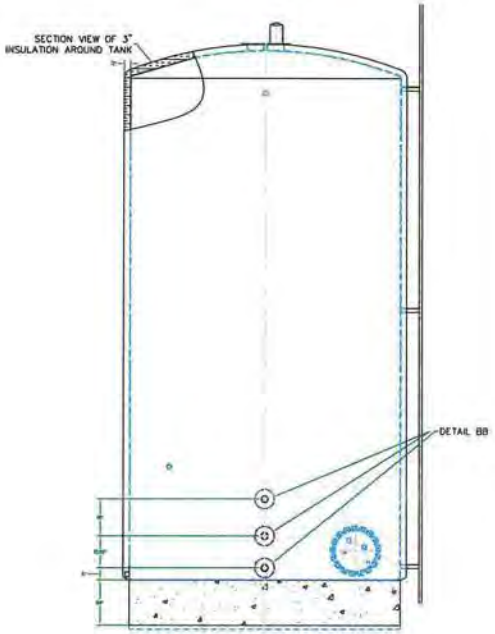
TANK VV

PROJ. NO. 118485
DATE 1/24/13
FIGURE 2D-1VV

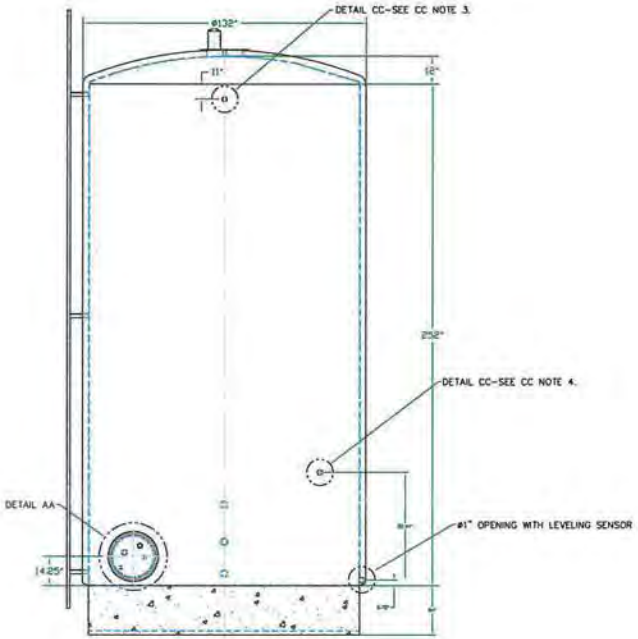
DRAWING DIRECTORY: P:\ACTIVE\WRRES\11848\FIGURES\FIGURE 2D-1VV



TOP VIEW

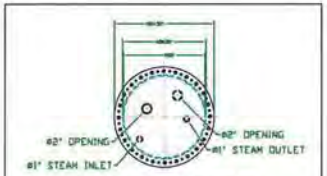


NORTH FACING VIEW



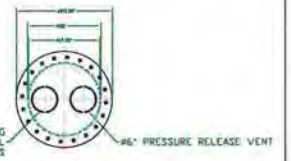
SOUTH FACING VIEW

DETAIL BB OF OPENING ON TANK WW
SCALE 4=1
OPENING IS A DISCHARGE LINE WITH BRASS GATE VALVE



DETAIL AA OF MANWAY ON TANK WW
SCALE 2=1
MANWAY HAS 24 X Ø.50" BOLTS

DETAIL CC OF OPENINGS ON TANK WW
SCALE 8=1
CC NOTE 1. FILL LINE WITH BRASS BALL VALVE FROM EITHER THE E-1 BUILDING, E-11 PIT, OR A CAM LOCK
CC NOTE 2. OPENING WITH BRASS VACUUM BREAKER
CC NOTE 3. OVERFLOW LINE
CC NOTE 4. OPENING WITH STEEL PLUG



DETAIL DD OF MANWAY ON TOP OF TANK WW
SCALE 2=1
24 X Ø.50" BOLTS

NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL CONCRETE
3. CAPACITY, GROSS 14,850 GALLONS.
4. CAPACITY, NET 14,150 GALLONS.
5. ALL FILLETS AND ROUNDS HAVE RADII .13"
6. ALL DIMENSIONS ARE IN INCHES
7. TOLERANCES ON ALL DIMENSIONS ± .13"
8. TANK INSTALLED 1980.

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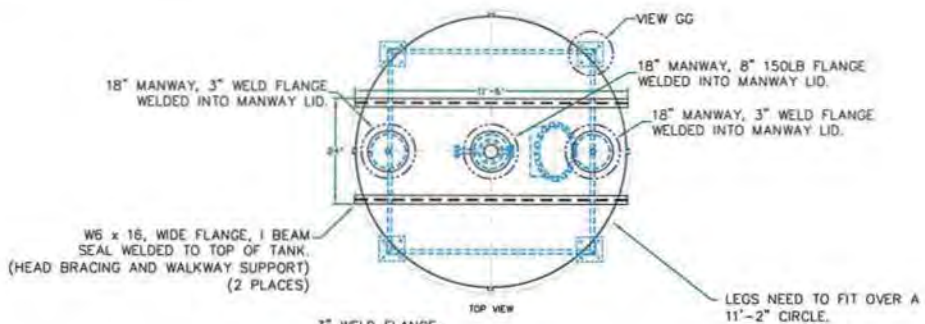
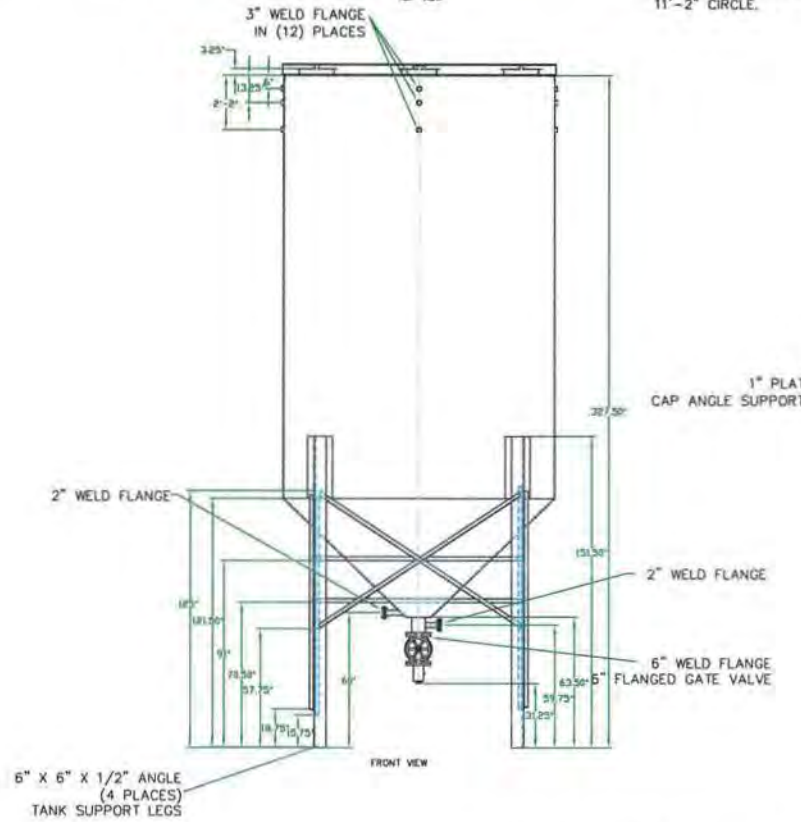
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

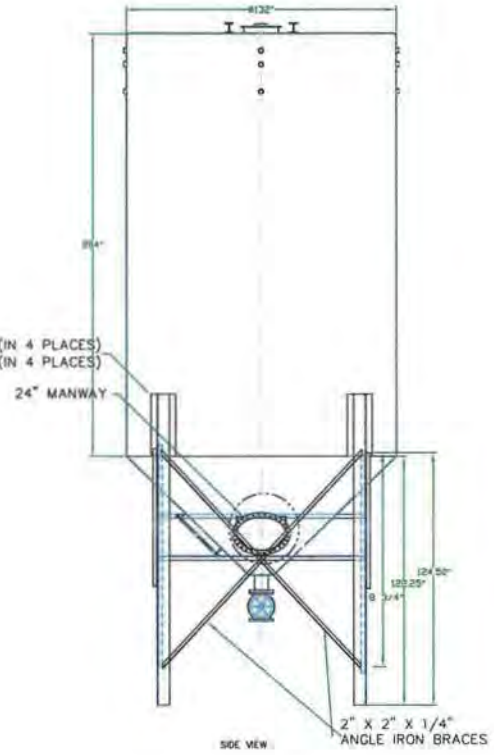
TANK WW

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1WW

DRAWING DIRECTORY: P:\WPC\WRRES\118488\FIGURES\FIGURE 2D-1WW







WILLIAM L. HABLE E-9778 BLOOMER WI 4-19-13
WISCONSIN PROFESSIONAL ENGINEER

NOTE:
1. MAT'L IS A-36 CARBON STEEL.
2. LEGS NEED TO BE POSITIONED TO FIT OVER A 11'-2" PAD.
3. BUILT TO U.L. 142 SPECIFICATIONS.
4. GRIND ALL SHARP EDGES.
5. CAP LEG TOPS TO PREVENT FALL THROUGH.
6. NO PRIME, NO PAINT.
7. DO NOT WELD BASE PADS TO LEGS, THIS WILL BE DONE ON SITE.
8. SEAL WELD ALL FIXTURES.
9. CAPACITY, GROSS 13,260 GALLONS.
10. CAPACITY, NET 12,420 GALLONS.

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EAU CLAIRE, WISCONSIN
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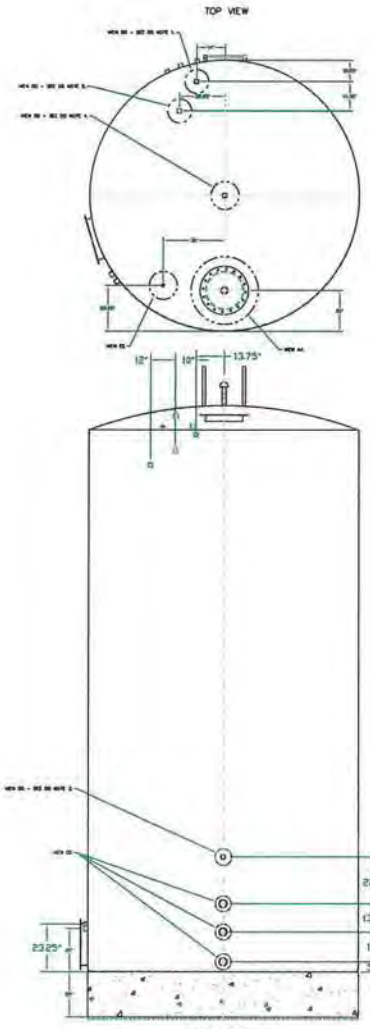
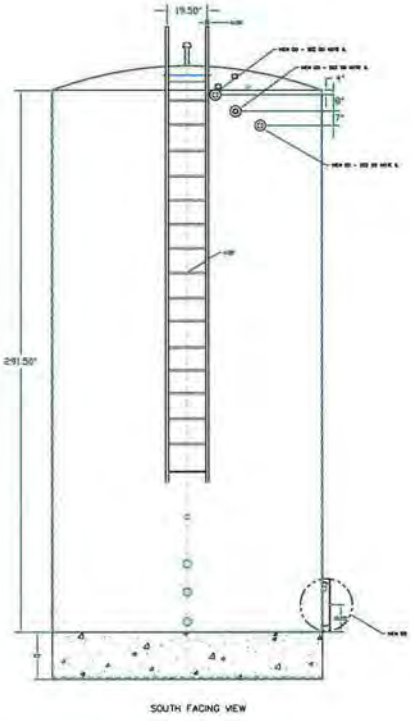
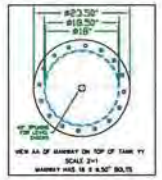
TANK XX

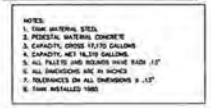
PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1XX

DRAWING DIRECTORY: N:\ut\PWIRRES\118488\FIGURES\FIGURE 2D-1XX









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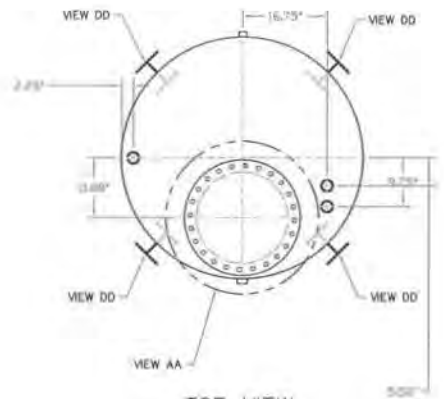
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANK YY

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-1YY

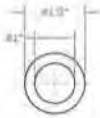
DRAWING DIRECTORY: P:\JOBS\WRRESI\118488\FIGURES\FIGURE 2D-1YY



TOP VIEW

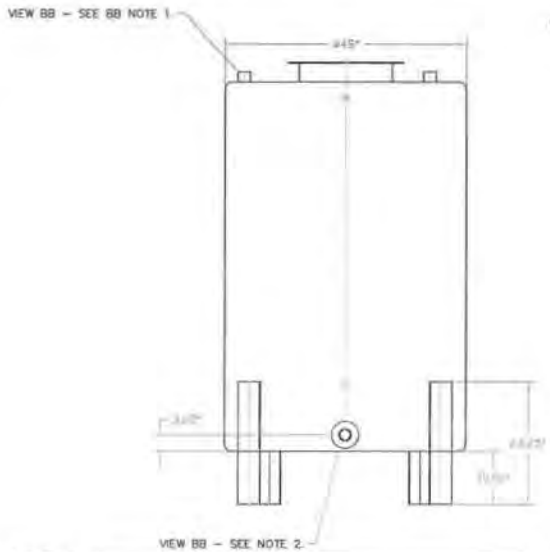
DETAIL AA OF MANWAY ON OVERFLOW TANK
SCALE 1 = 1
MANWAY HAS 24 X ø.50" BOLTS

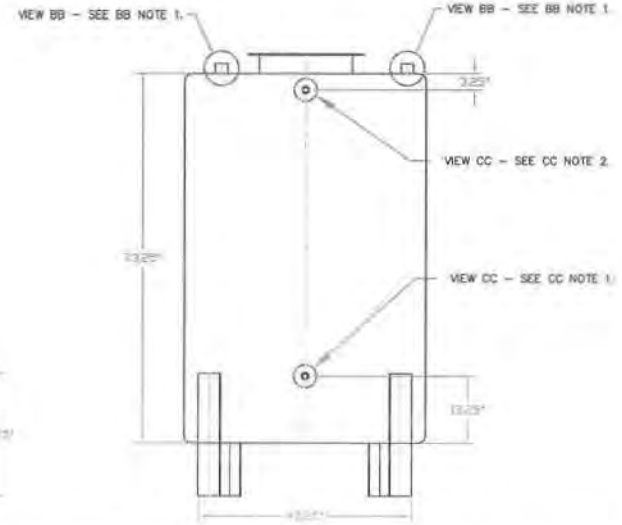
DETAIL BB OF OPENINGS ON OVERFLOW TANK
SCALE 8 = 1
CC NOTE 1. FILL LINE FROM TANKS IN (LOCFORGE)
CC NOTE 2. DISCHARGE LINE WITH STEEL PLUG



VIEW CC OF OPENINGS ON OVERFLOW TANK
SCALE 4 = 1
CC NOTE 1. OPENING WITH LEVEL SENSOR
CC NOTE 2. OPENING WITH STEEL PLUG

DETAIL DD
PEDESTAL LEGS ON OVERFLOW TANK
SCALE 2 = 1
THERE ARE 4 LEGS





NOTES:
1. TANK MATERIAL STEEL
2. PEDESTAL MATERIAL STEEL
3. TANK CAPACITY 500 GALLONS
4. TANK INSTALLED 1980
5. ALL FILLETS AND ROUNDS HAVE RADII .13"
6. ALL DIMENSIONS ARE IN INCHES
7. TOLERANCES ON ALL DIMENSIONS ± .13"
8. TANK AND ALL OPENINGS HAVE THICKNESS OF .25"
9. VIEWS OF INDIVIDUAL OPENINGS ARE ENLARGED FOR BETTER VIEWING

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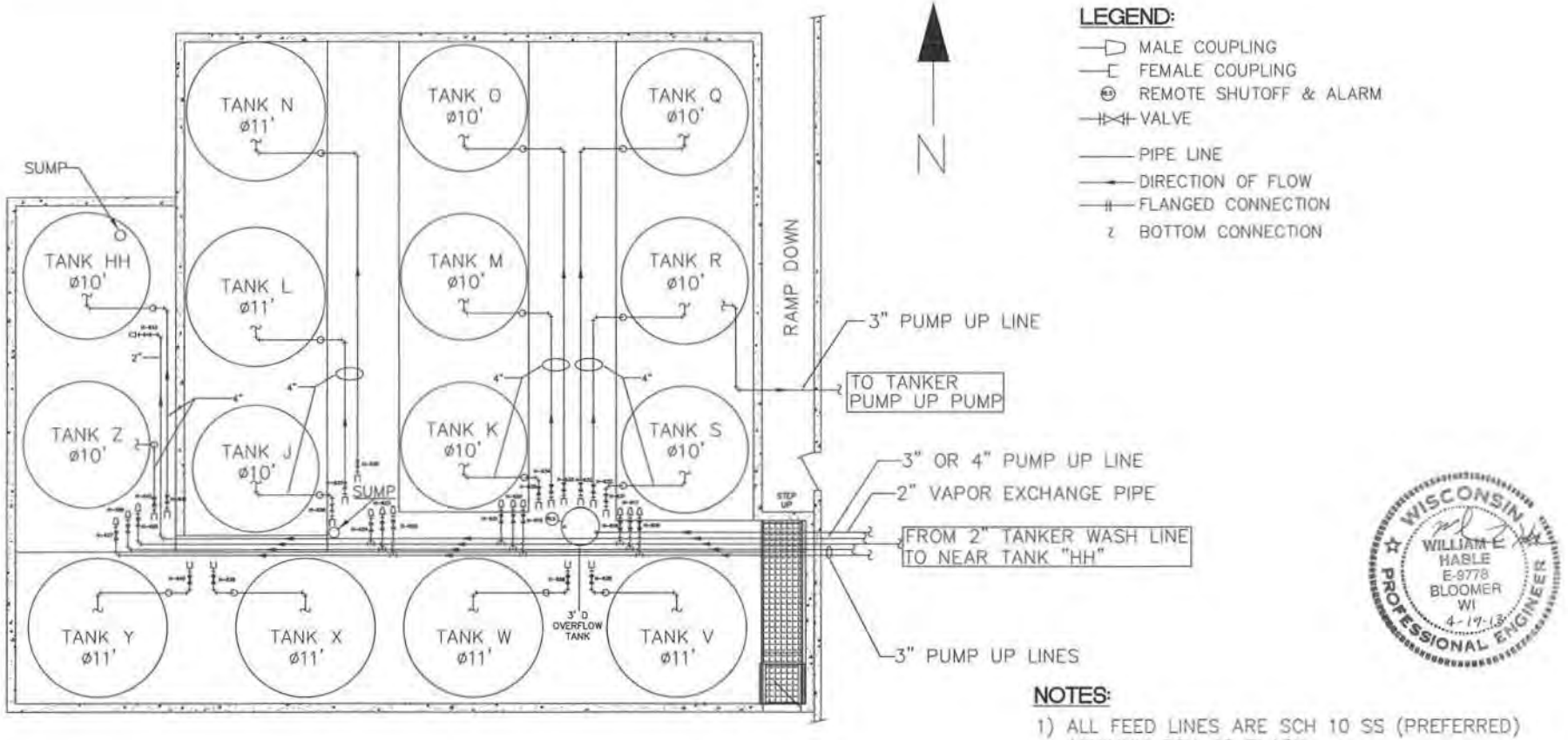
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

EI SOUTH OVERFLOW

PROJ. NO. 118488
DATE 1/24/13
FIGURE 2D-10F3



LEGEND:

- MALE COUPLING
- FEMALE COUPLING
- REMOTE SHUTOFF & ALARM
- VALVE
- PIPE LINE
- DIRECTION OF FLOW
- FLANGED CONNECTION
- BOTTOM CONNECTION

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NOTES:

1) ALL FEED LINES ARE SCH 10 SS (PREFERRED) MINIMUM SCH 40 BLACK

2) CONE BOTTOM TANKS WILL BE BOTTOM FILLED AND BOTTOM EMPTIED USING 3" FLEXIBLE PIPE CONNECTED TO WELDED BLACK STEEL PIPING RUNS

3) SEE DWG 2D-4 FOR DETAILS OF BOTTOM CONNECTIONS

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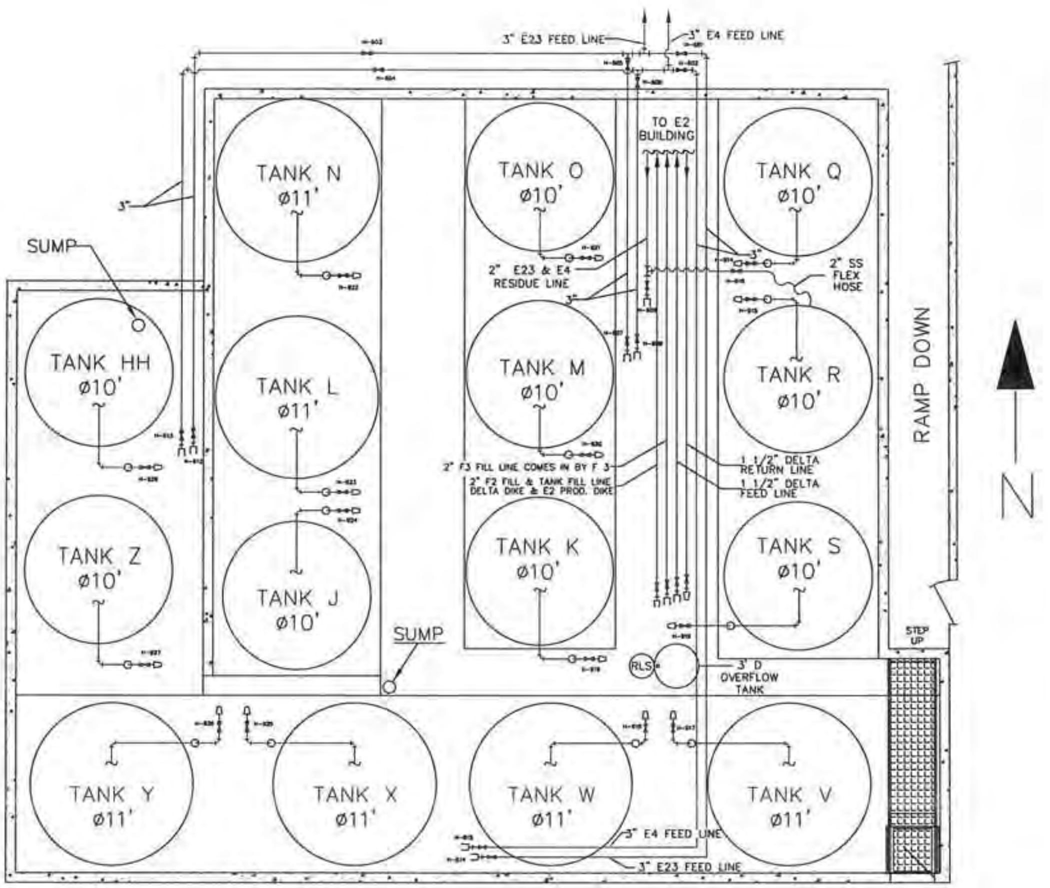
EII SLUDGE TANKS PUMP UP PIPING #2

PROJ. NO. 118468
DATE 2/18/13

FIGURE
2D-3 EII PUMP UP



LEGEND:

- MALE COUPLING
- FEMALE COUPLING
- REMOTE SHUTOFF & ALARM
- VALVE
- PIPE LINE
- DIRECTION OF FLOW
- FLANGED CONNECTION
- BOTTOM CONNECTION

NOTES:

1) ALL FEED LINES ARE SCH 10 SS (PREFERRED) MINIMUM SCH 40 BLACK

2) ALL PIPES ARE SCH 10 SS. THE ENDS OF ALL PIPES ARE EQUIPPED WITH VALVES AND HOSE FITTINGS.

3) SEE DWG 2D-4 FOR DETAILS OF BOTTOM CONNECTIONS

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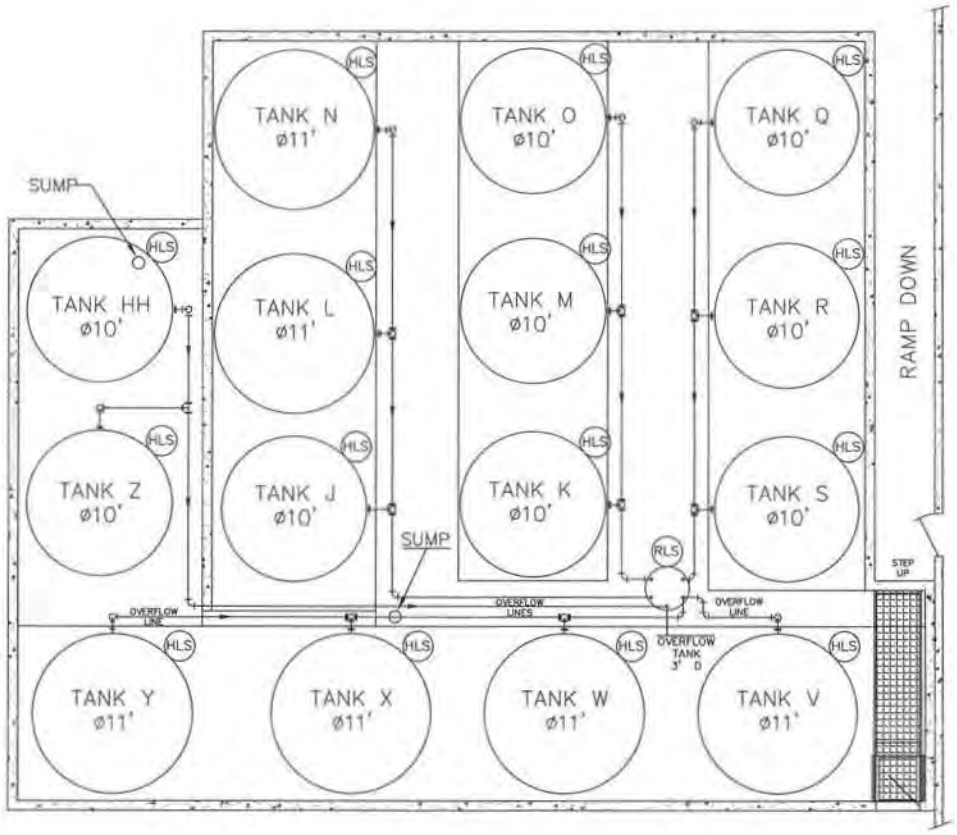
EII SLUDGE TANKS FEED PIPING

PROJ. NO. 118488
DATE 2/18/13
FIGURE 2D-3
E II FEED



LEGEND:

- (HLS) HIGH LEVEL SHUTOFF & ALARM
- (RLS) REMOTE SHUTOFF & ALARM
- PIPE LINE
- DIRECTION OF FLOW
- FLANGED CONNECTION

NOTES:

1) ALL SLUDGE TANK OVERFLOW LINES ARE 2" SCH 10 SS (PREFERRED), MINIMUM SCH 40 BLACK
2) THE OVERFLOW PIPES ON ALL 11' DIA TANKS, AND TANKS M AND HH ARE 1' FROM THE TOP
3) THE OVERFLOW PIPES ON ALL OTHER TANKS ARE 2" FROM THE TOP

N

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EPA ID No. WID990629475

OVERFLOW PIPING DIAGRAM

PROJ. NO. 118458
DATE 2/18/13

FIGURE 2D-3 OF 1 PIPING

Legend

N

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

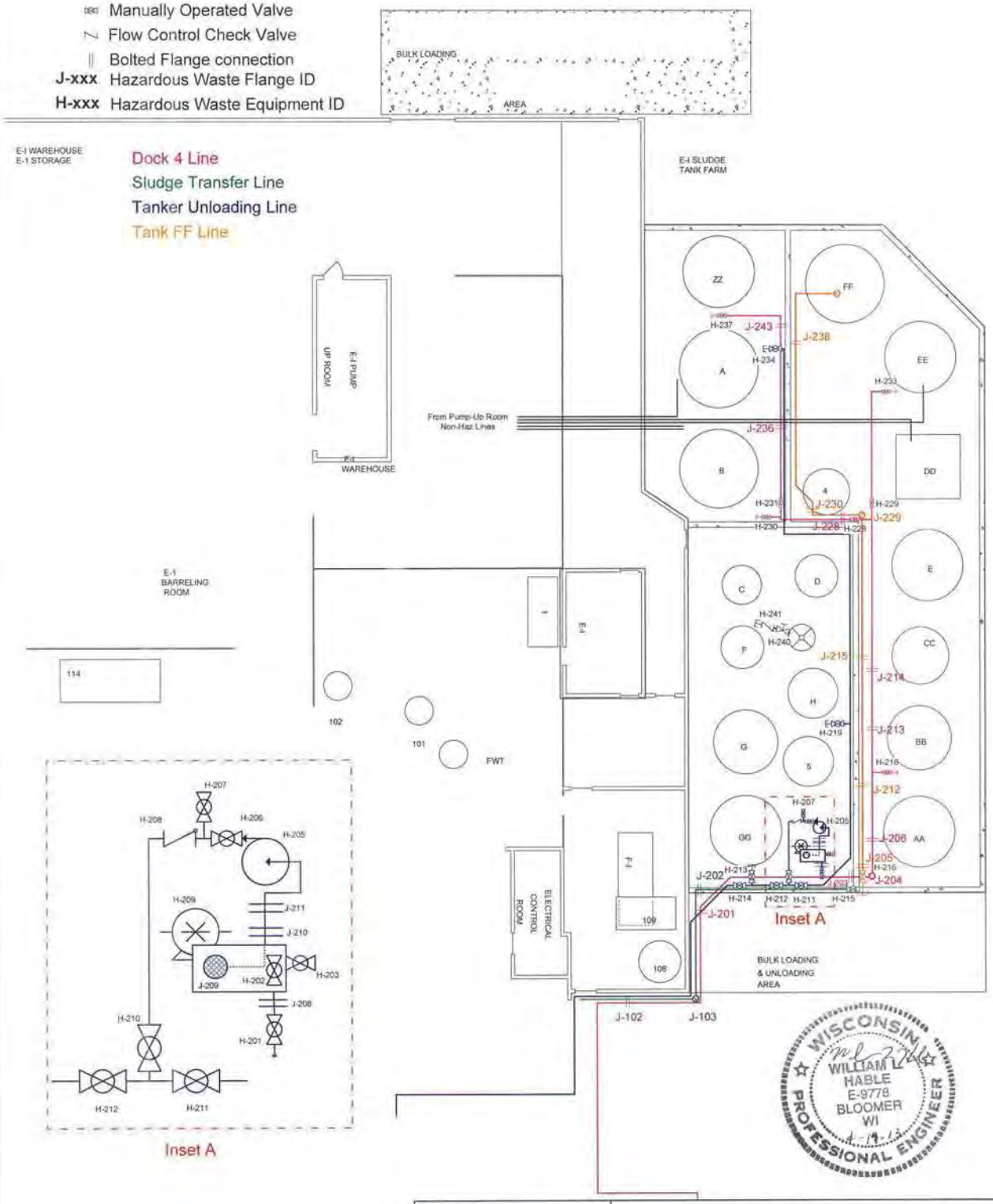
H-xxx Hazardous Waste Equipment ID

Dock 4 Line

Sludge Transfer Line

Tanker Unloading Line

Tank FF Line



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Pump Up Line Diagram

2D-3 EI Pump Up

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1

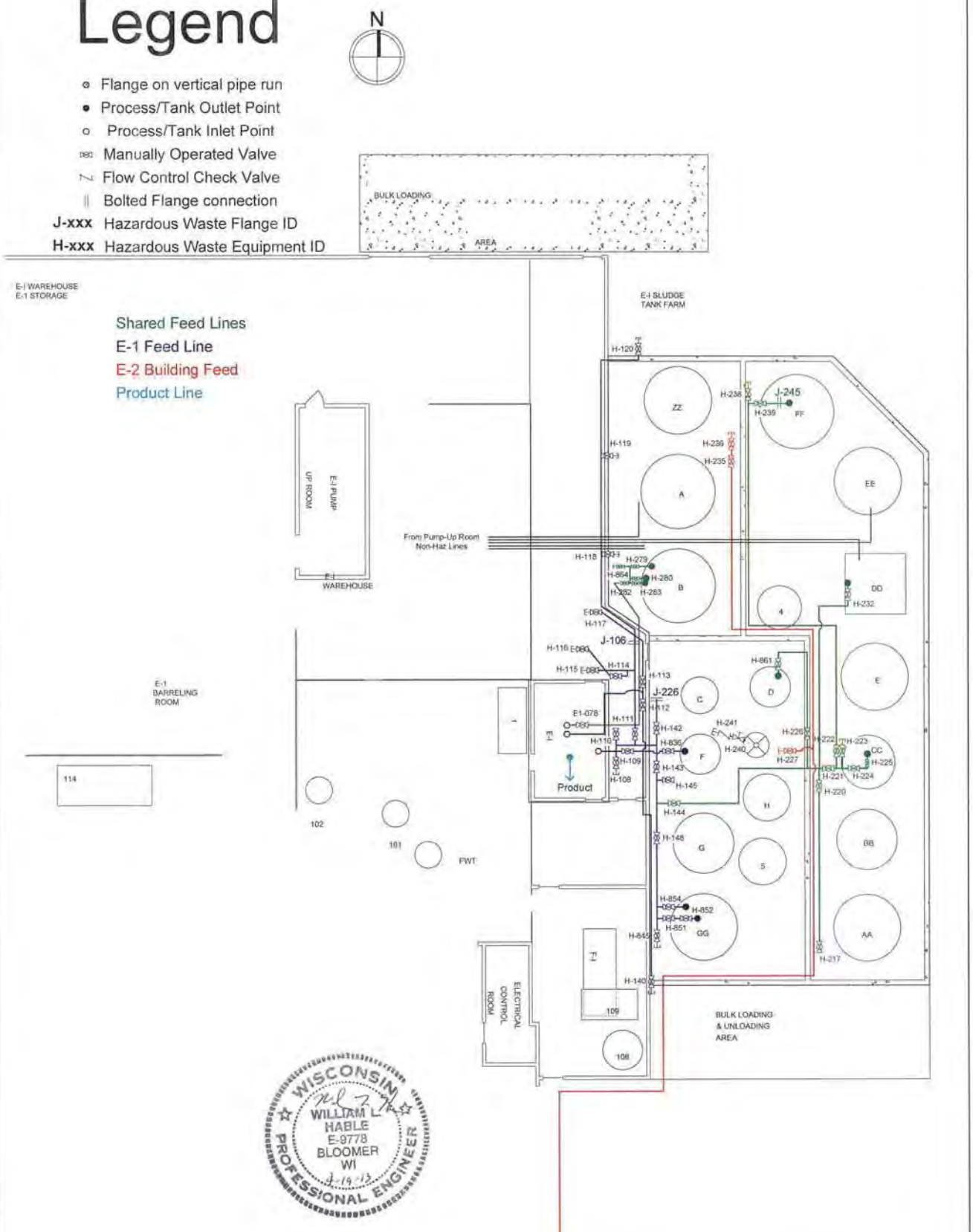
SCALE			
None	4/18/2013	SHEET	4 OF 11

REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

Legend

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection
- **J-xxx** Hazardous Waste Flange ID
- **H-xxx** Hazardous Waste Equipment ID

Shared Feed Lines
E-1 Feed Line
E-2 Building Feed
Product Line



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Feed Line Diagram

2D-3 EI Feed

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1
SCALE	None	4/18/2013	SHEET 5 OF 11

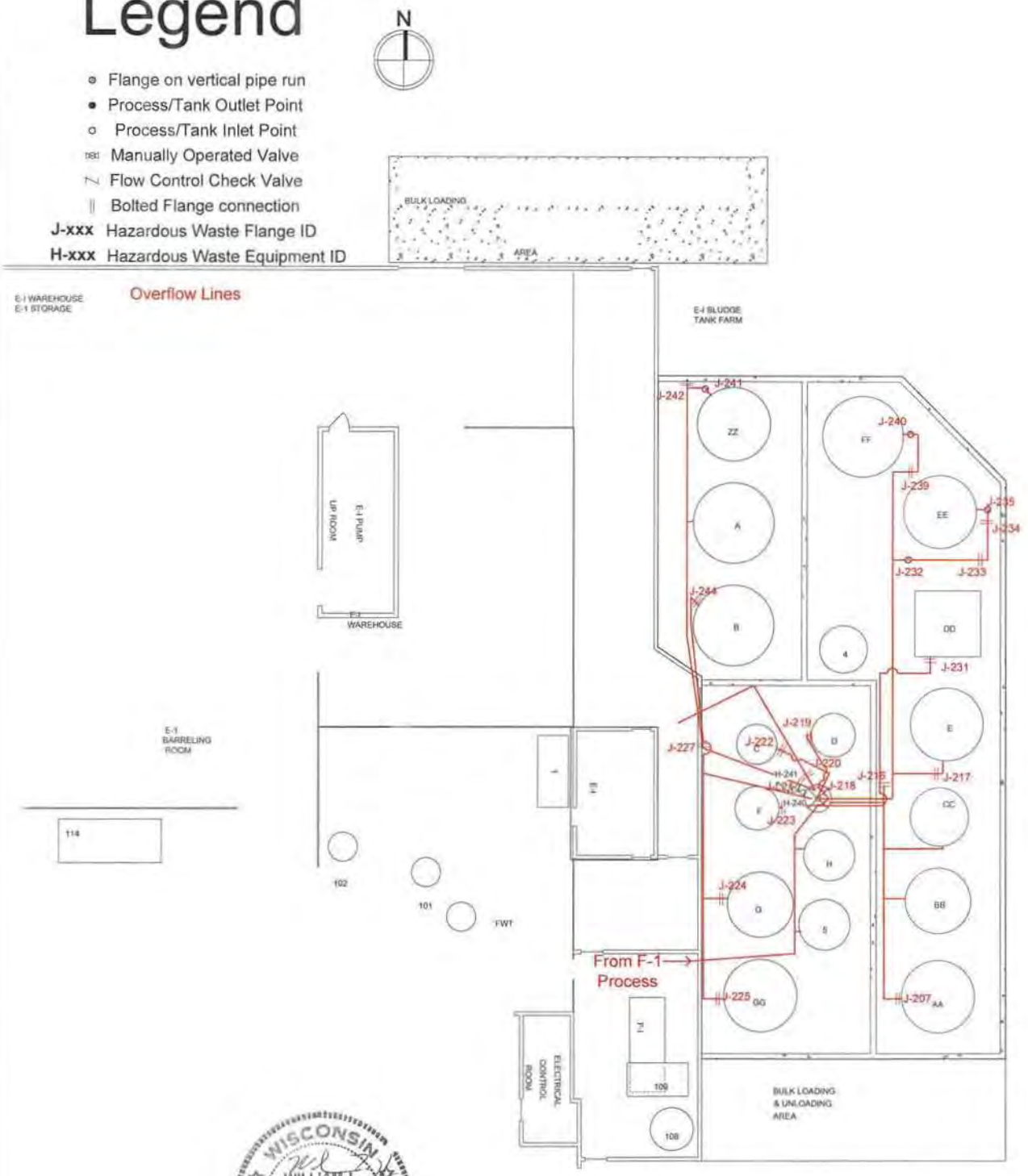
REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

Legend

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

H-xxx Hazardous Waste Equipment ID



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REV.	DESCRIPTION	DATE	BY
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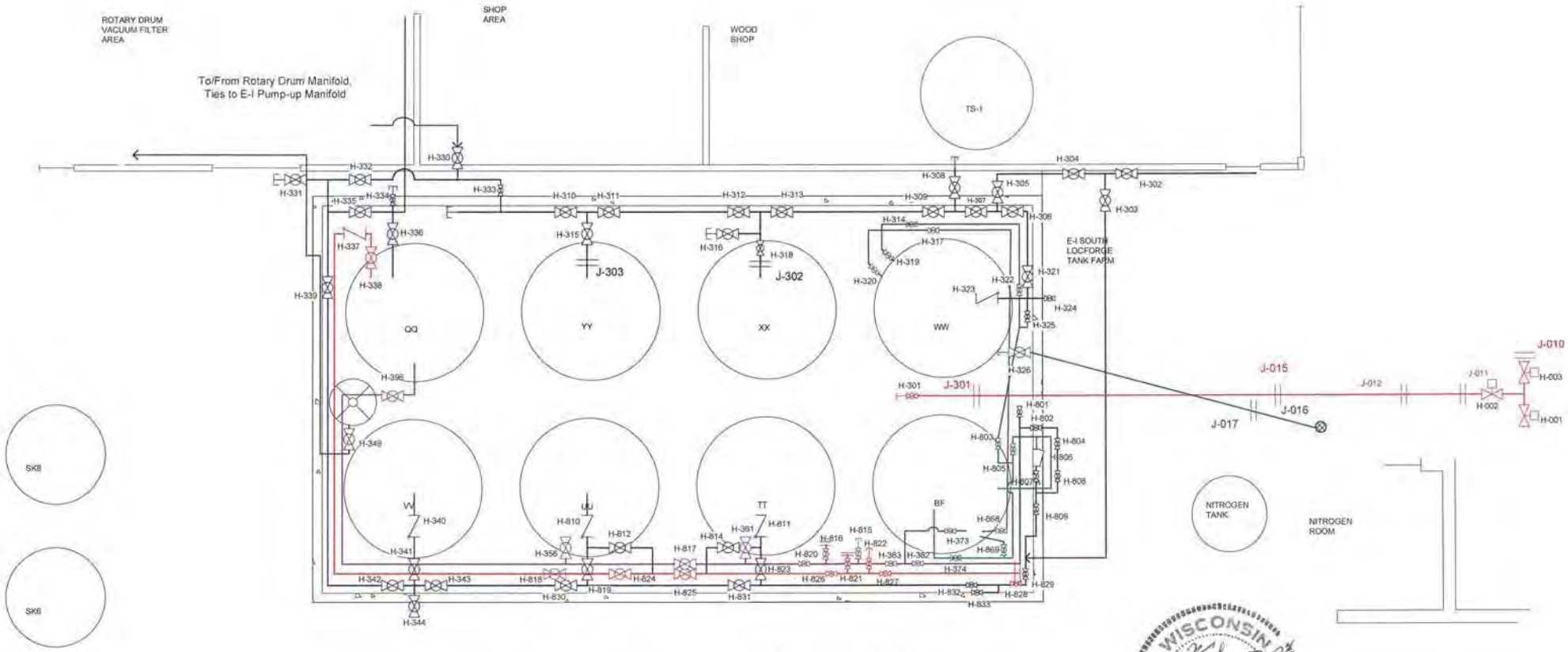
Overflow Piping Diagram

2D-3 OF2 Piping

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1

SCALE			SHEET
None	4/18/2013		6 OF 11



Legend

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

H-xxx Hazardous Waste Equipment ID

Dock 4 Line

Sludge Transfer Line

Tanker Unloading Line

Auxiliary Unloading Line

Auxiliary Unloading Line

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REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

WRR Environmental Services

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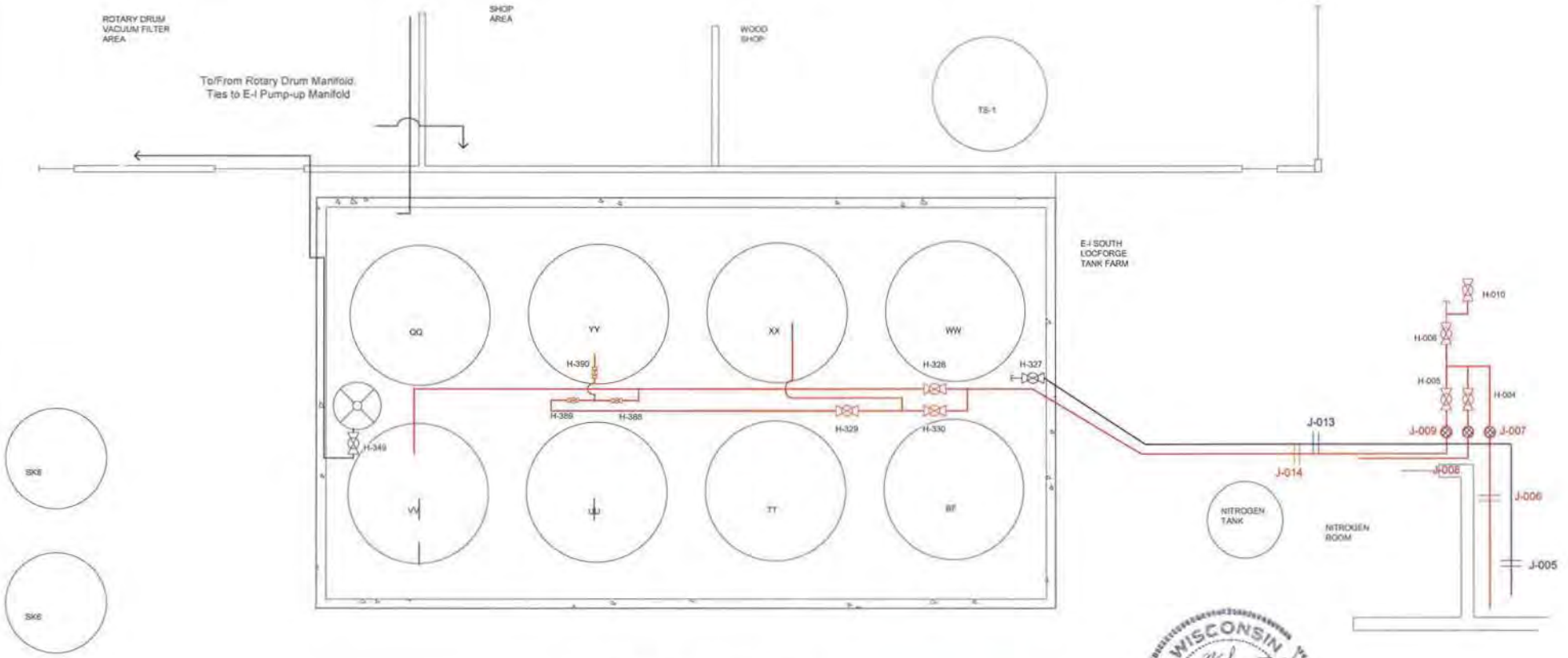
PUMP UP LINE DIAGRAM

2D-3 EI South Pump Up

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1
SCALE: None	4/18/2013	SHEET: 9 OF 11	

001217



Legend

Shared E-2 Feed Line

XX Line

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

H-xxx Hazardous Waste Equipment ID

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REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

WRR Environmental Services

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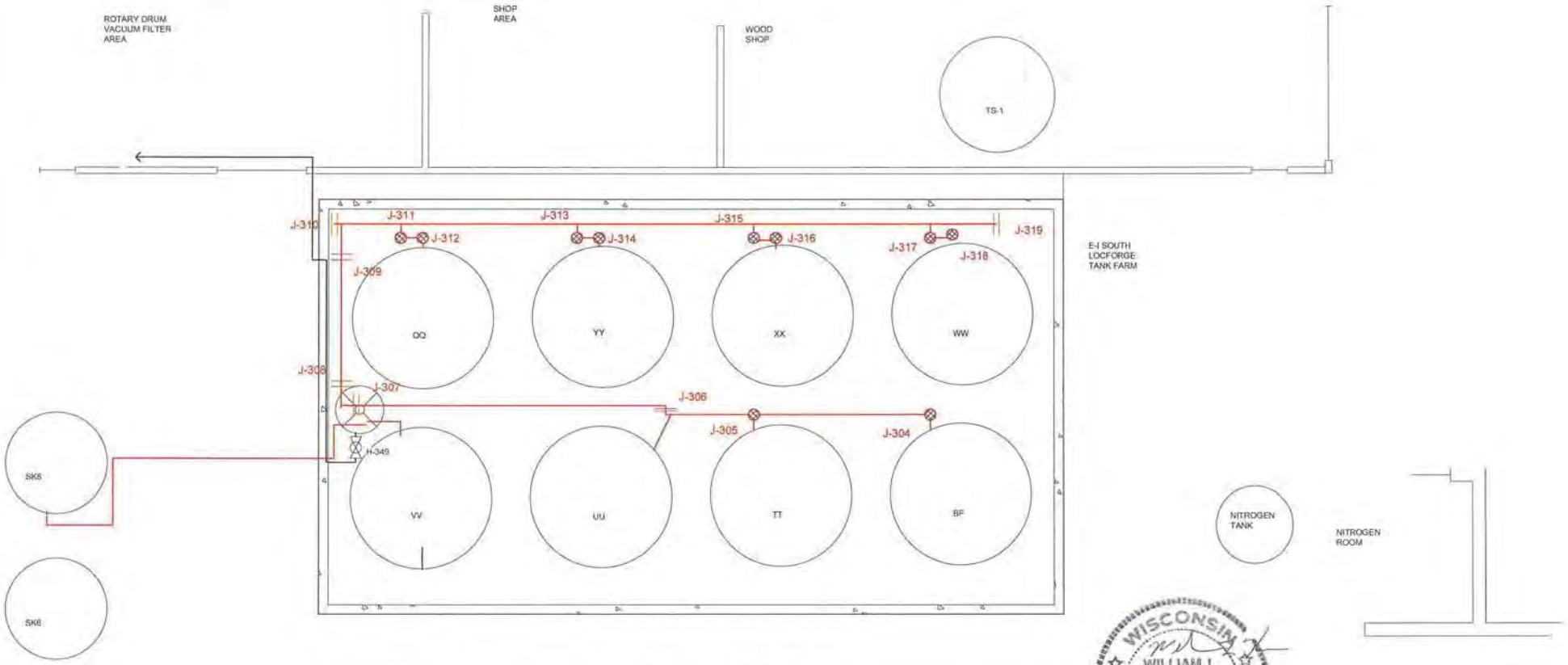
FEED LINE DIAGRAM

2D-3 EI South Feed

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1

SCALE			SHEET
None	4/18/2013		11 OF 11

001218



Legend

Overflow Lines

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

H-xxx Hazardous Waste Equipment ID

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REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

WRR Environmental Services

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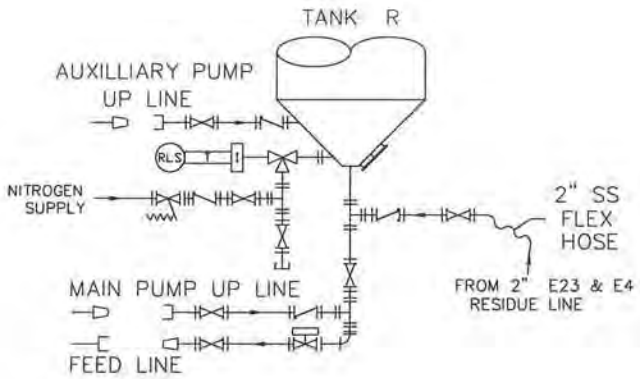
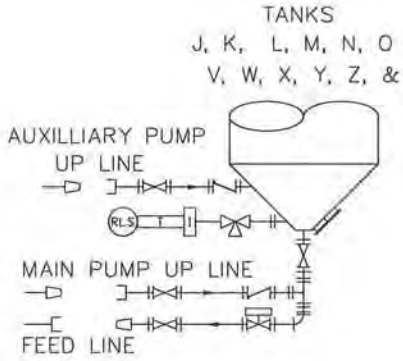
OVERFLOW PIPING DIAGRAM

2D-3 OF3 Piping

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1
SCALE: None	4/18/2013	SHEET: 10 OF 11	

001219





LEGEND:

- MALE COUPLING
- FEMALE COUPLING
- RLS REMOTE LEVEL SENSER
- VALVE
- SPRING LOADED VALVE
- CHECK VALVE
- AIR OR NITROGEN OPERATED VALVE
- THREE-WAY VALVE
- I ISOLATOR
- TRANSDUCER
- PIPE LINE
- DIRECTION OF FLOW
- FLANGED CONNECTION

NOTES:

1) ALL FEED LINES ARE SCH 10 SS (PREFERRED) MINIMUM SCH 40 BLACK

2) ALL PIPES ARE SCH 10 SS. THE ENDS OF ALL PIPES ARE EQUIPPED WITH VALVES AND HOSE FITTINGS.

3) SEE DWGS 2D-3 EII PUMP UP AND 2D-3 EII FEED FOR CROSS CONNECTIONS.

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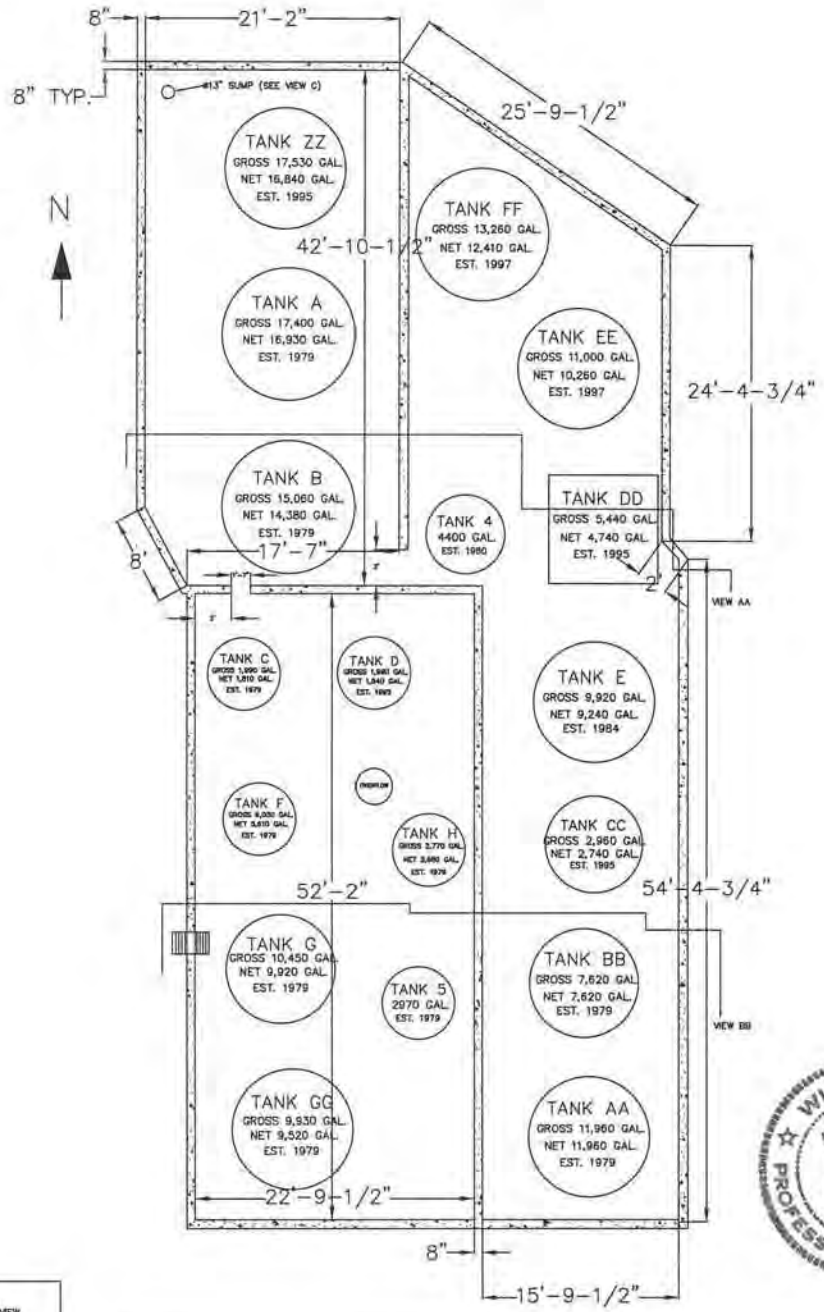
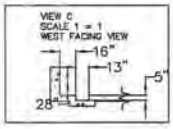
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

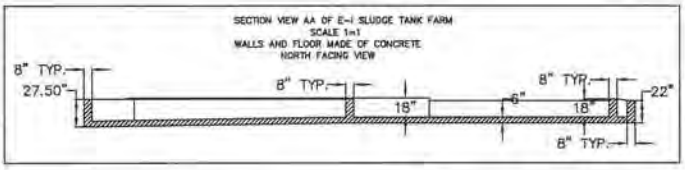
EII SLUDGE TANK VALVE CONFIGURATION

PROJ. NO. 118488
DATE 2/18/13
FIGURE 2D-4

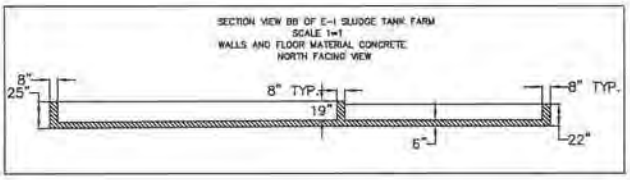
DRAWING DIRECTORY: N:\ZY\WRR\PROJECTS\118488\FIGURES\FIGURE 2D-4







NOTES:
1. ALL DIMENSIONS ARE IN FOOT, INCHES
2. TOLERANCES ON ALL DIMENSIONS ARE ± 1"
3. DIKE WALLS AND FLOOR ARE CONCRETE



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1	04/15/13		RJH 04/13	MG 04/13		BA 04/13
2	04/16/13	CHANGED TO NORTH FACING VIEWS	MNG 04/13	MG 04/13		

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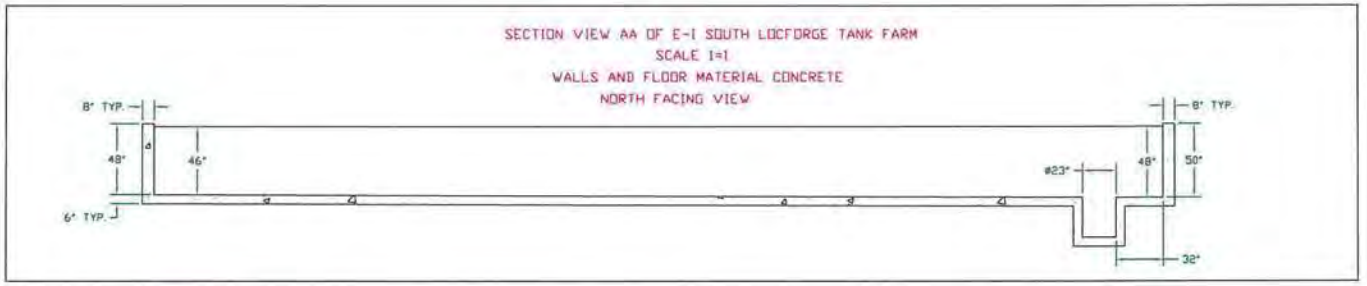
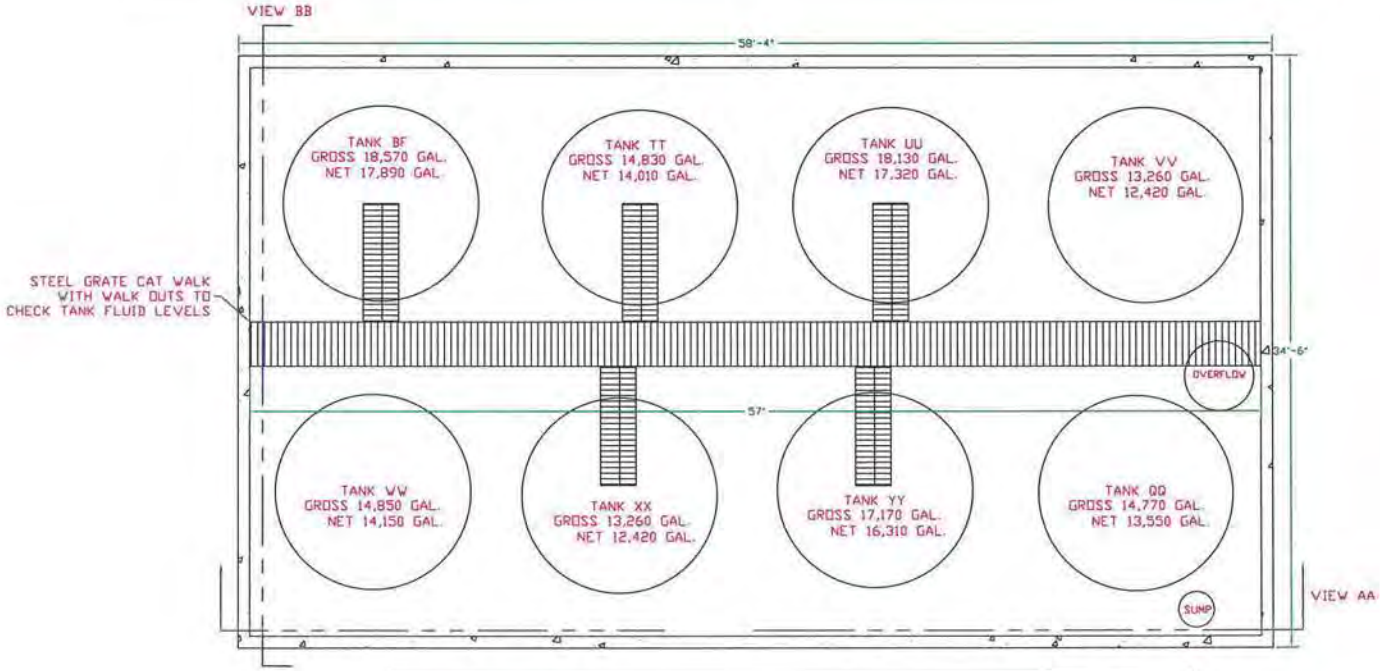
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

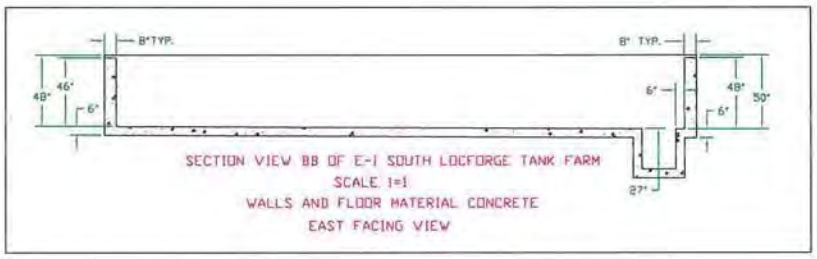
FIGURE 2H-8
EI SLUDGE DIKE CONTAINMENT

PROJ. NO. WRRES118488
DATE 04/15/13

WRR DRAWING DIRECTORY: V:\PART B\2013 SUBMITTAL\DRAWINGS\SLUDGE DIKES\FIGURE 2H-8 EI SLUDGE DIKE CONTAINMENT
SEH DRAWING DIRECTORY: P:\UZ\W\WRRES\118488\FIGURES\FIGURE 2H-8 EI SLUDGE DIKE CONTAINMENT







NOTES:
1. ALL DIMENSIONS ARE IN FOOT, INCHES.
2. TOLERANCES ON ALL DIMENSIONS ± 1"
3. WALLS AND FLOOR MATERIAL ARE CONCRETE

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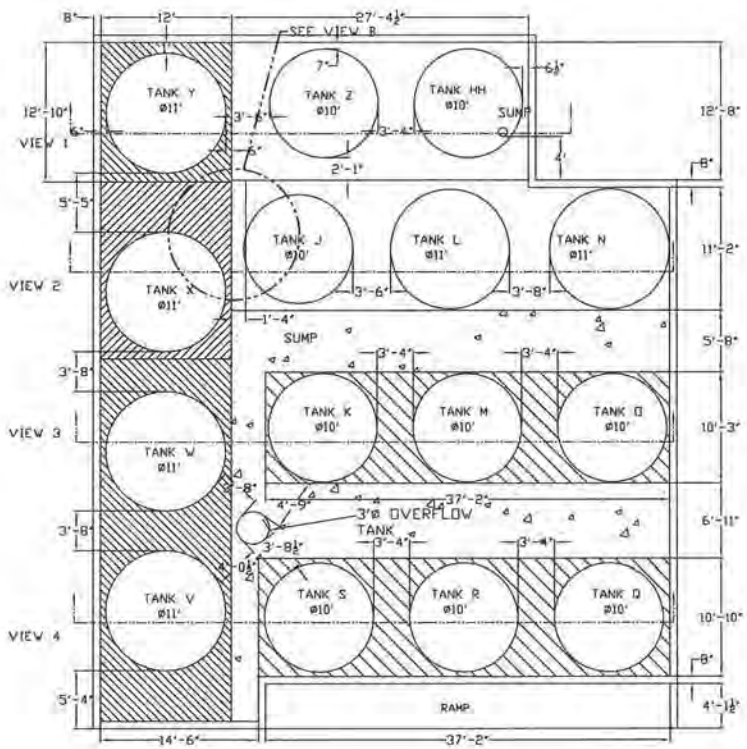
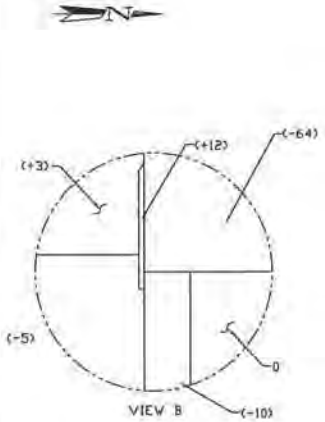
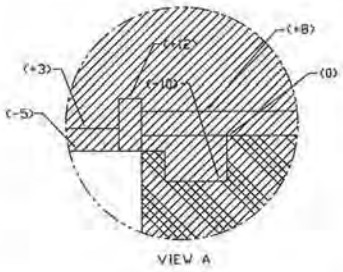
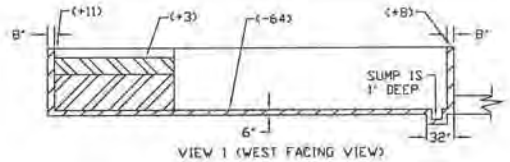
DATE	REVISED 04/04/2013	TITLE	E-I SOUTH SLUDGE DIKE CONTAINMENT				
DWG. NO.	2H-8 E1 SOUTH SLUDGE DIKE CONTAINMENT	BY	MNG	SCALE	NTS	PAGE #	E1 SOUTH CONTAINMENT

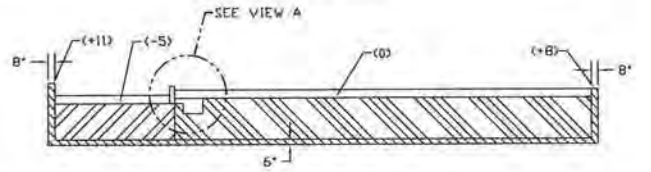




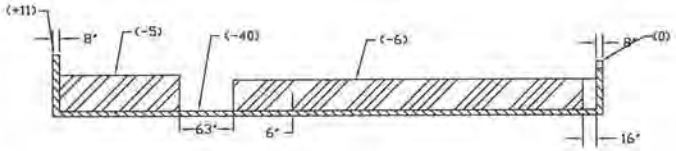




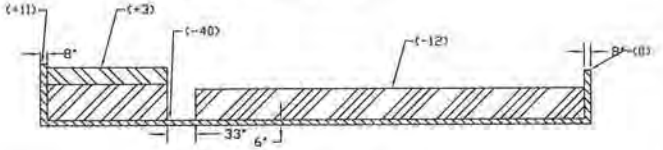
VIEW 1 (WEST FACING VIEW)



VIEW 2 (WEST FACING VIEW)



VIEW 3 (WEST FACING VIEW)



VIEW 4 (WEST FACING VIEW)

TANK LETTER	GROSS GALLONS	NET GALLONS	TANK LETTER	GROSS GALLONS	NET GALLONS
J	10,730	9,528	V	13,280	12,532
K	10,730	9,528	W	13,280	12,532
L	13,280	12,532	X	13,280	12,532
M	6,180	5,561	Y	13,280	12,532
N	13,280	12,532	Z	10,730	9,528
O	10,730	9,528	HH	6,180	5,561
Q	10,730	9,528			
R	10,730	9,528			
S	10,730	9,528			

NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
2. TOLERANCES ON ALL DIMENSIONS ± .13"
3. DYKE WALL & PEDESTAL MATERIAL CONCRETE
4. ALL SECTION VIEWS SCALES ARE 1 = 1
5. (0) IS THE ELEVATION OF THE LOWEST DIKE WALL.
6. (#) = ELEVATION FROM 0.

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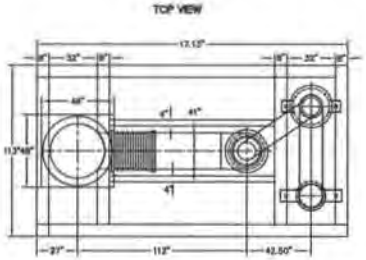
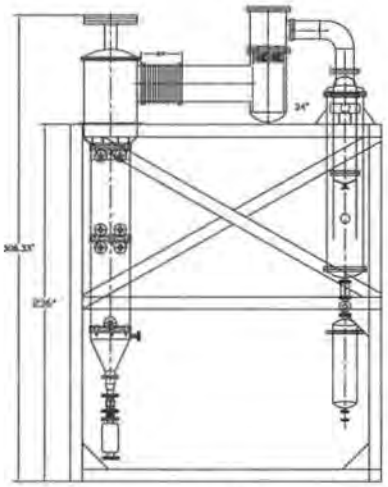
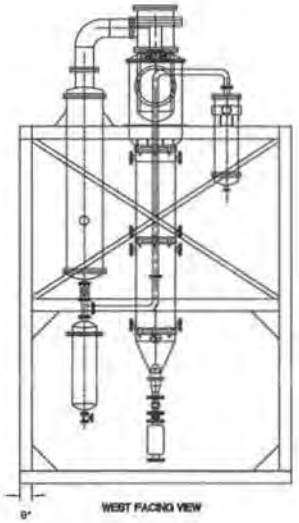
Date	REVISED 04/04/2013	Title	E-II SOUTH SLUDGE TANK FARM CONTAINMENT				
Dwg. No.	2H & EII SLUDGE DIKE CONTAINMENT	By	MNG	Scale	NTS	PAGE #	EII SLUDGE DIKE CONTAINMENT

E-IV THIN FILM EVAPORATOR
ALSO CALLED 88 LUWA

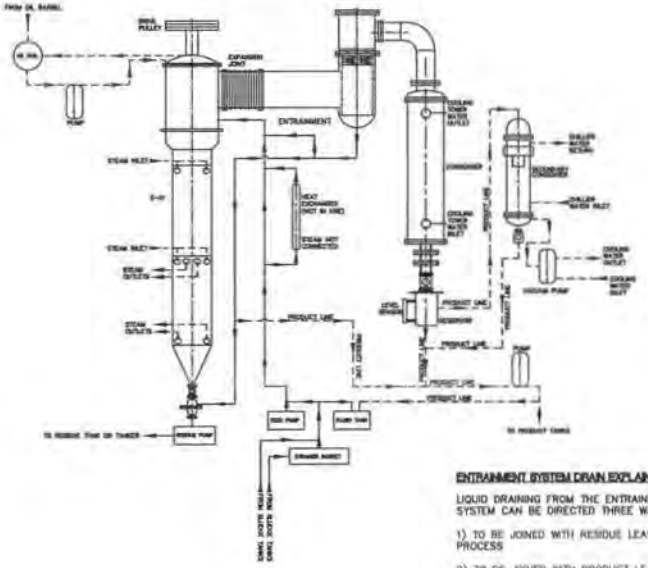




NORTH FACING VIEW



WEST FACING VIEW



ENTRAINMENT SYSTEM DRAIN EXPLANATION

LIQUID DRAINING FROM THE ENTRAINMENT SYSTEM CAN BE DIRECTED THREE WAYS:

1) TO BE JOINED WITH RESIDUE LEAVING THE PROCESS

2) TO BE JOINED WITH PRODUCT LEAVING THE PROCESS

3) OR TO BE JOINED WITH FEED ENTERING THE PROCESS

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	03/11/13	FPOR SUBMITTAL	MNG	03/13	MNG	03/13	BA	03/13

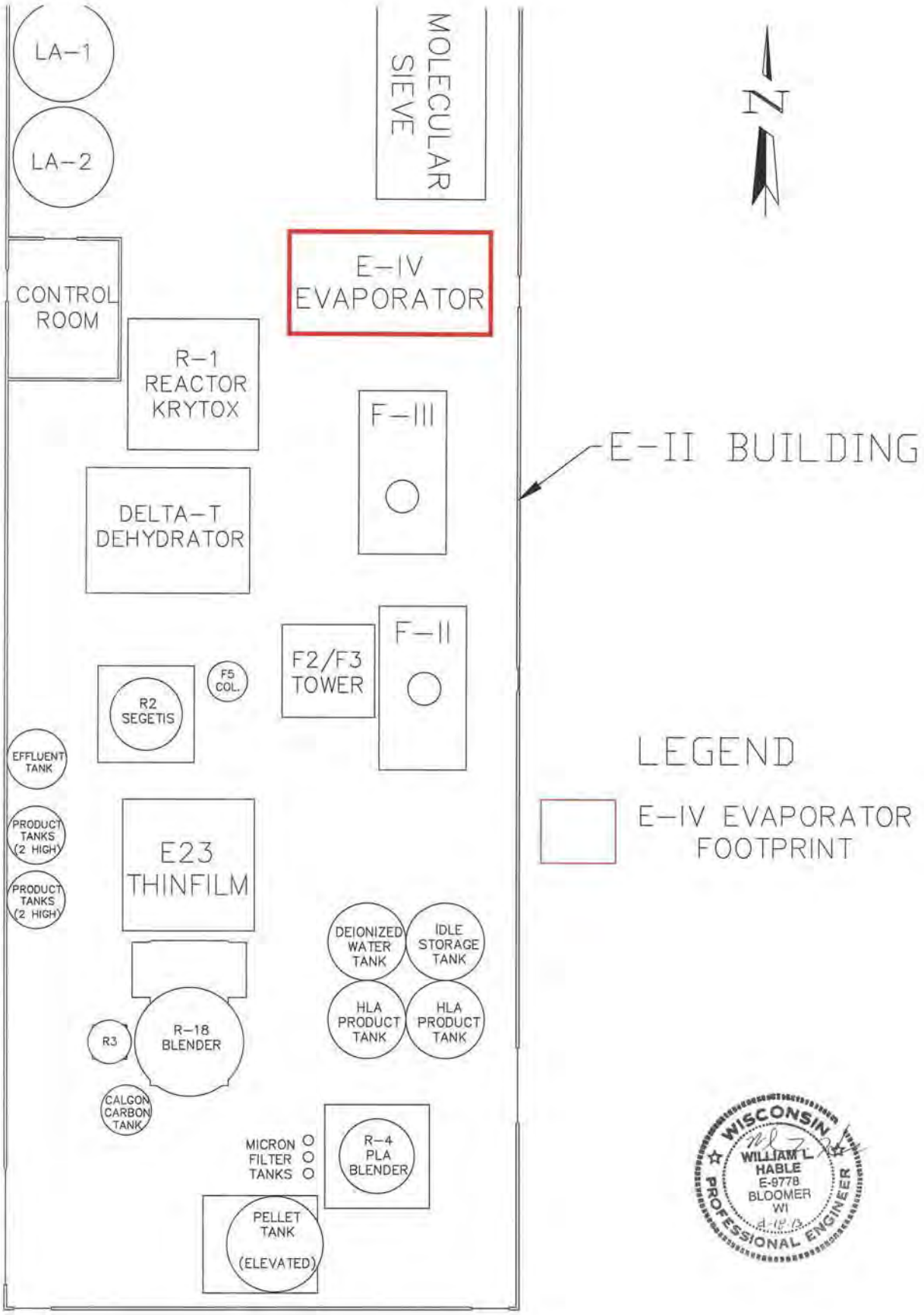
WRR

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990629475

E-IV EVAPORATOR UNIT SCHEMATIC

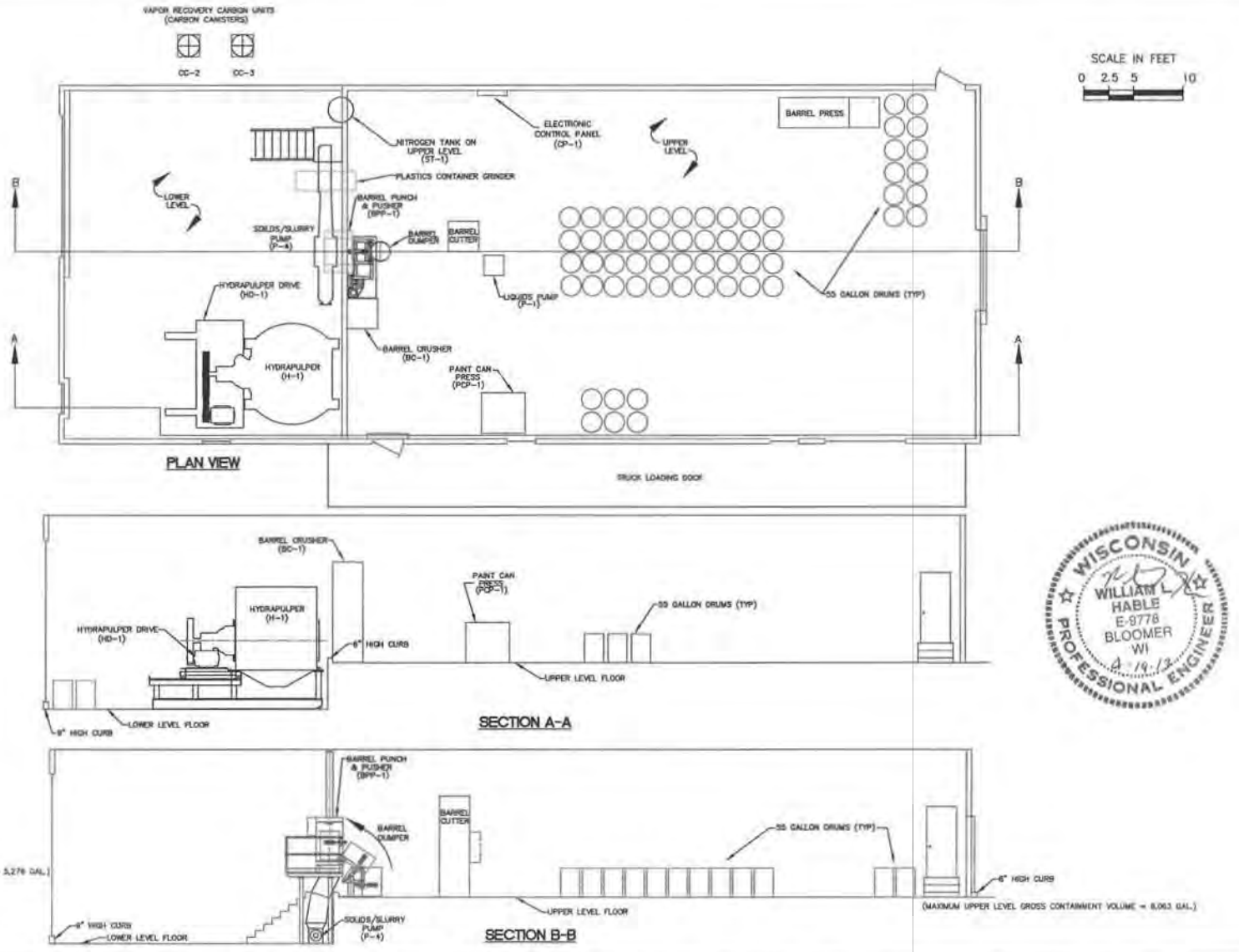
PROJ. NO. 116488
DATE 03/20/13
FIGURE 2J- 2EIV

DRAWING DIRECTORY:P:\2012\WRR\GIS\116488\FIGURES\FIGURE 2J-2 EIV



WRR Environmental Services Co., Inc. 5200 Ryder Road, Eau Claire, WI 54701 (715)834-9624

Date	04/15/2013	Title	E-IV Evaporator Unit Location		
By	MNG	DWG No	2J-3 EIV Location	REV	00



NOTE:

WISCONSIN
WILLIAM L. HABLE
E-9778
BLOOMER
WI
4-19-13
PROFESSIONAL ENGINEER

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	08/27/09	ORIGINAL PREPARED BY WRR ENVIRONMENTAL SERVICES	TVT	08/09	WH	08/09	JLH	08/09
2	10/09/09	MODIFIED BY SEH INC	RJH	10/09	WH	08/09	BKO	10/09
3	04/15/13	UPDATED BY WRR	MNG	04/13	WH	08/09		

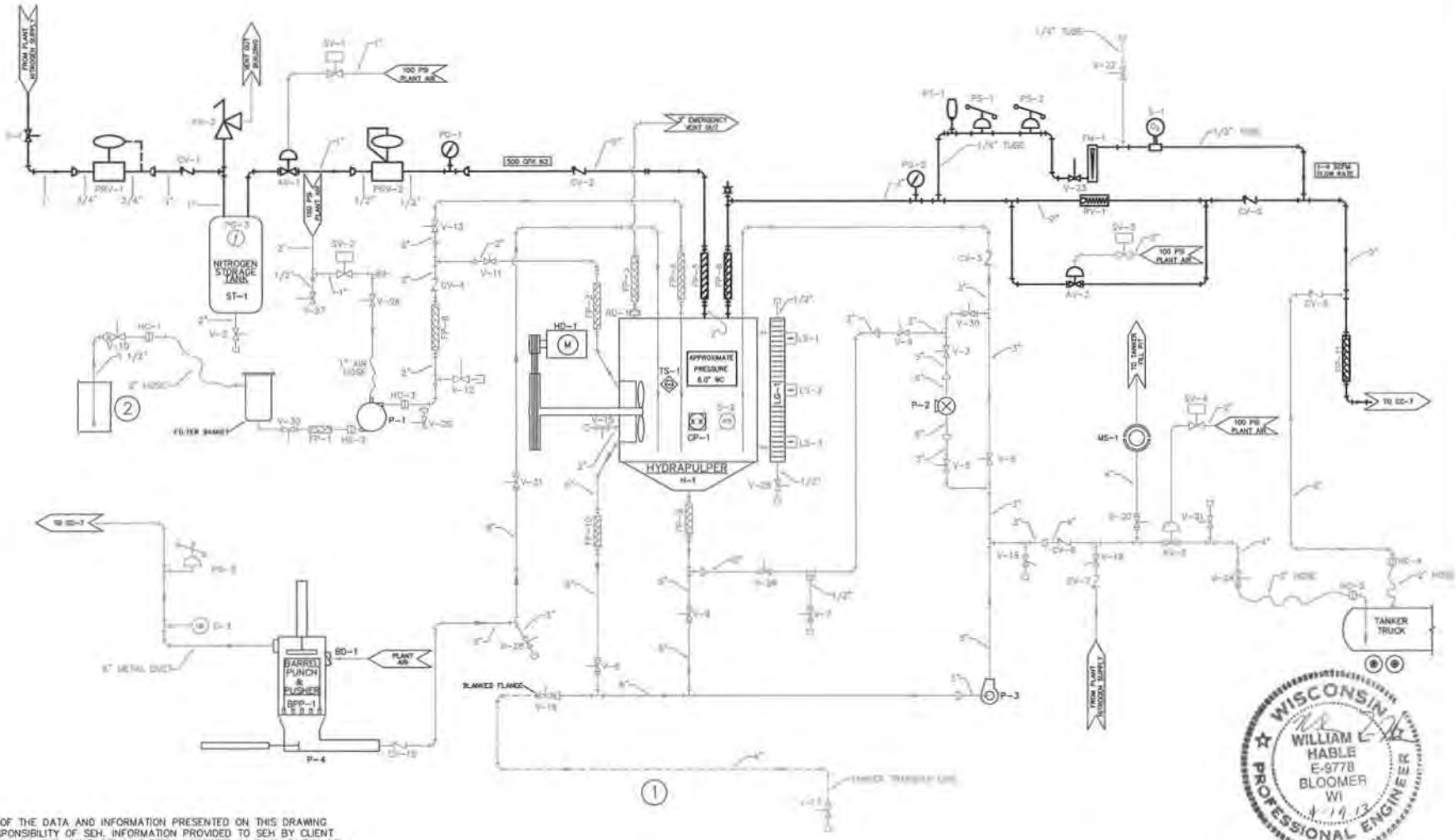
HIGH VISCOSITY PROCESSING SYSTEM
WRR ENVIRONMENTAL SERVICES CO., INC.
EAU CLAIRE, WISCONSIN

SHEET TITLE:
HVPS EQUIPMENT LAYOUT

DATE: 04/15/13

DRAWING NO:
2J-2 HVPS

WRR DRAWING DIRECTORY: W:\PART 1\2013 SUBMITTAL\DRAWINGS\PROCESS UNITS\FIGURE 2J-2 HVPS - HVPS EQUIPMENT LAYOUT
SEH DRAWING DIRECTORY: P:\127\WORKFILES\10027\PWD DRAWINGS\2J-2\FIGURE BUILDING EQUIPMENT LOCATIONS



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WILLIAM L. HABLE
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BLOOMER
WI
4/19/13
PROFESSIONAL ENGINEER

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2) PURGE REQUIRED ON INITIAL STARTUP AND ANY TIME OXYGEN LEVEL IS ABOVE 5% OXYGEN. NO OPERATION IS ALLOWED WITH OXYGEN CONTENT ABOVE 5%.
3) THIS FIGURE IS A SIMPLIFIED FLOW DIAGRAM SHOWING STEP #1 IN THE HIGH VISCOSITY PROCESSING SYSTEM. FOR COMPLETE DETAILS PLEASE REFER TO FIGURE 2L-2 HVPS P&ID.

DRAWING NOTATION:

(1) = FUTURE TANKER UNLOADING LINE

(2) = LOCATION OF LIQUIDS/SLURRY 55-GAL DRUM

STEP #1: HYDRAPULPER PURGE

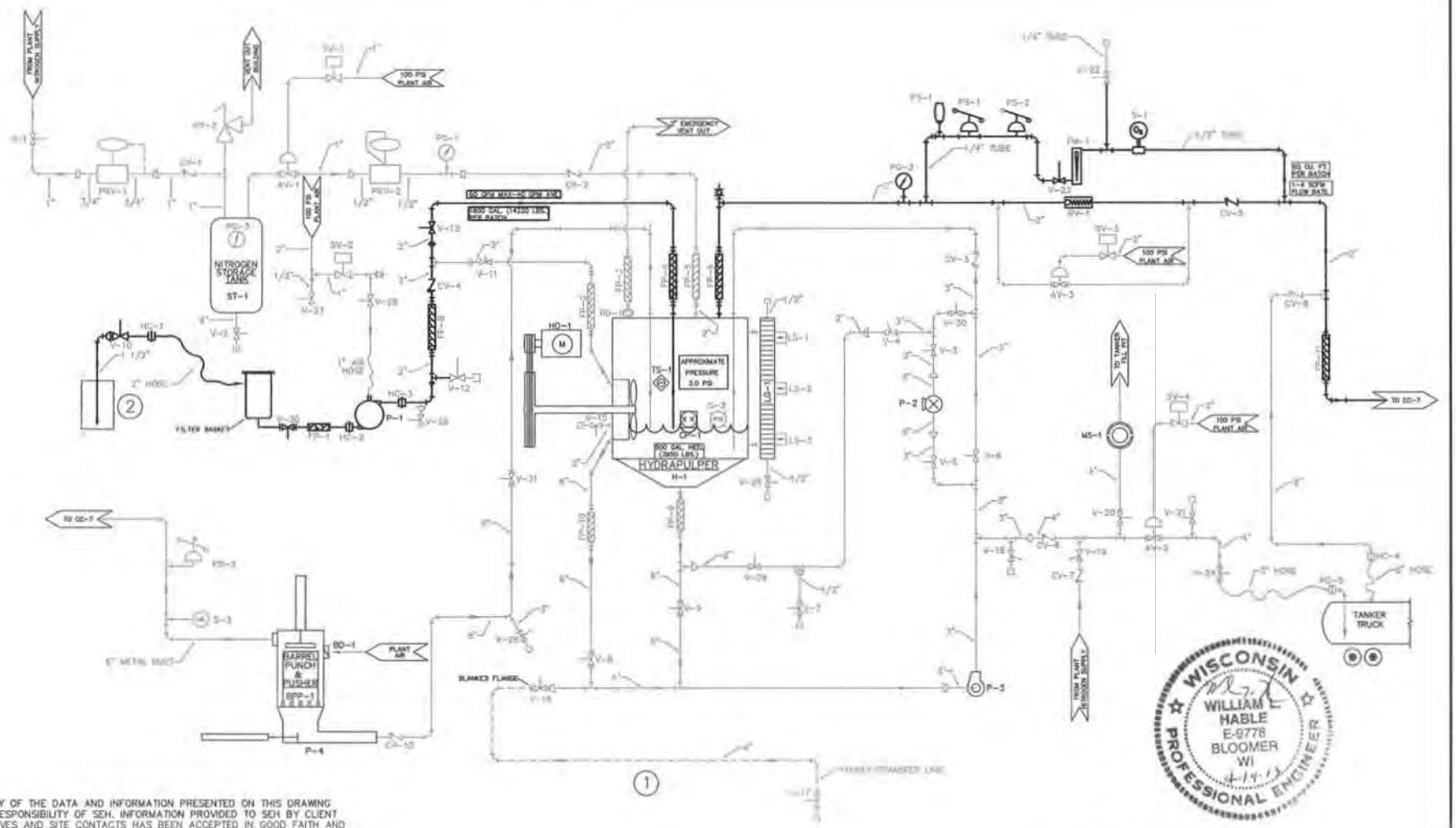
NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	08/27/09	ORIGINAL PREPARED BY WRR ENVIRONMENTAL SERVICES	TVT	08/09	WH	08/09	JJH	08/09
2	10/09/09	MODIFIED BY SEH INC.	BJH	10/09	WH	08/09	BKQ	10/09
3	04/18/13	UPDATED BY WRR ENVIRONMENTAL SERVICES	MNG	04/13	WH	08/09		

HIGH VISCOSITY PROCESSING SYSTEM
WRR ENVIRONMENTAL SERVICES CO., INC.
EAU CLAIRE, WISCONSIN

SHEET TITLE: STEP #1: HYDRAPULPER PURGE

DRAWING NO: 2J-3 HYDRAPULPER PURGE
DATE: 04/18/2013
PROJ. NO.: WRRES110021

WRR DRAWING DIRECTORY: N:\CAD\WRRES\110021\SUBMITTAL\DRAWINGS\PROCESS UNIT\FIGURE 2J-3 HYDRAPULPER PURGE
SEH DRAWING DIRECTORY: P:\PI\CAD\WRRES\110021\CAD DRAWINGS\2C-1 PROCESS AND INSTRUMENTATION DIAGRAM



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2) AVERAGE DENSITY OF LIQUID IS 7.9 LBS. PER GALLON OR 59 LBS. PER CU. FT. FLOW RATES PER BATCH SHOWN ON THIS DRAWING ARE FOR STEP 2 ONLY.
3) THIS FIGURE IS A SIMPLIFIED FLOW DIAGRAM SHOWING STEP #2 IN THE HIGH VISCOSITY PROCESSING SYSTEM. FOR COMPLETE DETAILS PLEASE REFER TO FIGURE 2L-2 HVPS P&ID TITLED "HVPS SUBCH BB EQUIPMENT".

STEP #2: HYDRAPULPER THIN LIQUID FILL

DRAWING NOTATION:

(1) = FUTURE TANKER UNLOADING LINE

(2) = LOCATION OF LIQUIDS/SLURRY 55-GAL DRUM

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	08/27/09	ORIGINAL PREPARED BY WRR ENVIRONMENTAL SERVICES	TVT	08/09	WH	08/09	JJH	08/09
2	10/09/09	MODIFIED BY SEH INC.	RJH	10/09	WH	08/09	BKO	10/09
3	04/18/13	UPDATED BY WRR ENVIRONMENTAL SERVICES	MNG	04/13	MNG	04/13		

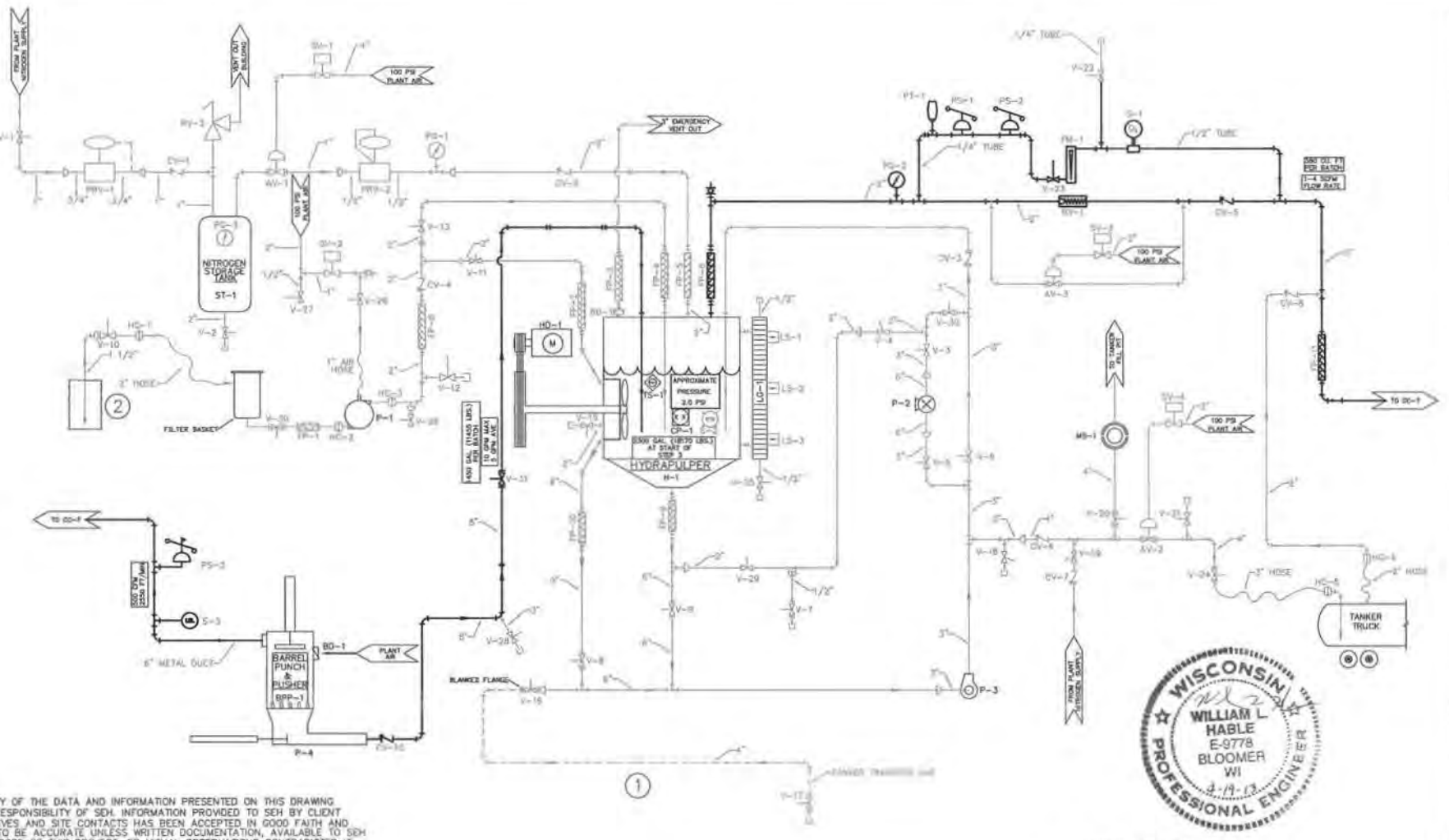
HIGH VISCOSITY PROCESSING SYSTEM
WRR ENVIRONMENTAL SERVICES CO., INC.
EAU CLAIRE, WISCONSIN

SHEET TITLE: STEP #2: HYDRAPULPER THIN LIQUID FILL

DRAWING NO: 2J-3 HYDRAPULPER THIN LIQUID FILL

DATE: 04/18/2013

PROJ. NO.: WRRES10021



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2) FLOW RATES PER BATCH SHOWN ON THIS DRAWING ARE FOR STEP 3 ONLY.

3) THIS FIGURE IS A SIMPLIFIED FLOW DIAGRAM SHOWING STEP #3 IN THE HIGH VISCOSITY PROCESSING SYSTEM. FOR COMPLETE DETAILS PLEASE REFER TO FIGURE 2L-2 HVPS P&ID TITLED "HVPS SUBCH. BB EQUIPMENT".

STEP #3: HYDRAPULPER SEMI-SOLIDS FILL

WILLIAM L HABLE E-9778 BLOOMER WI 3-19-13

WISCONSIN PROFESSIONAL ENGINEER

DRAWING NOTATION:

(1) = FUTURE TANKER UNLOADING LINE

(2) = LOCATION OF LIQUIDS/SLURRY 55-GAL DRUM

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	08/27/09	ORIGINAL PREPARED BY WRR ENVIRONMENTAL SERVICES	TVT 08/09	WH 08/09	JLH 08/09
2	10/09/09	MODIFIED BY SEH INC.	RJH 10/09	WH 08/09	BKO 10/09
3	04/18/13	UPDATED BY WRR ENVIRONMENTAL SERVICES	MNG 04/13	WH 08/09	

HIGH VISCOSITY PROCESSING SYSTEM
WRR ENVIRONMENTAL SERVICES CO., INC.
EAU CLAIRE, WISCONSIN

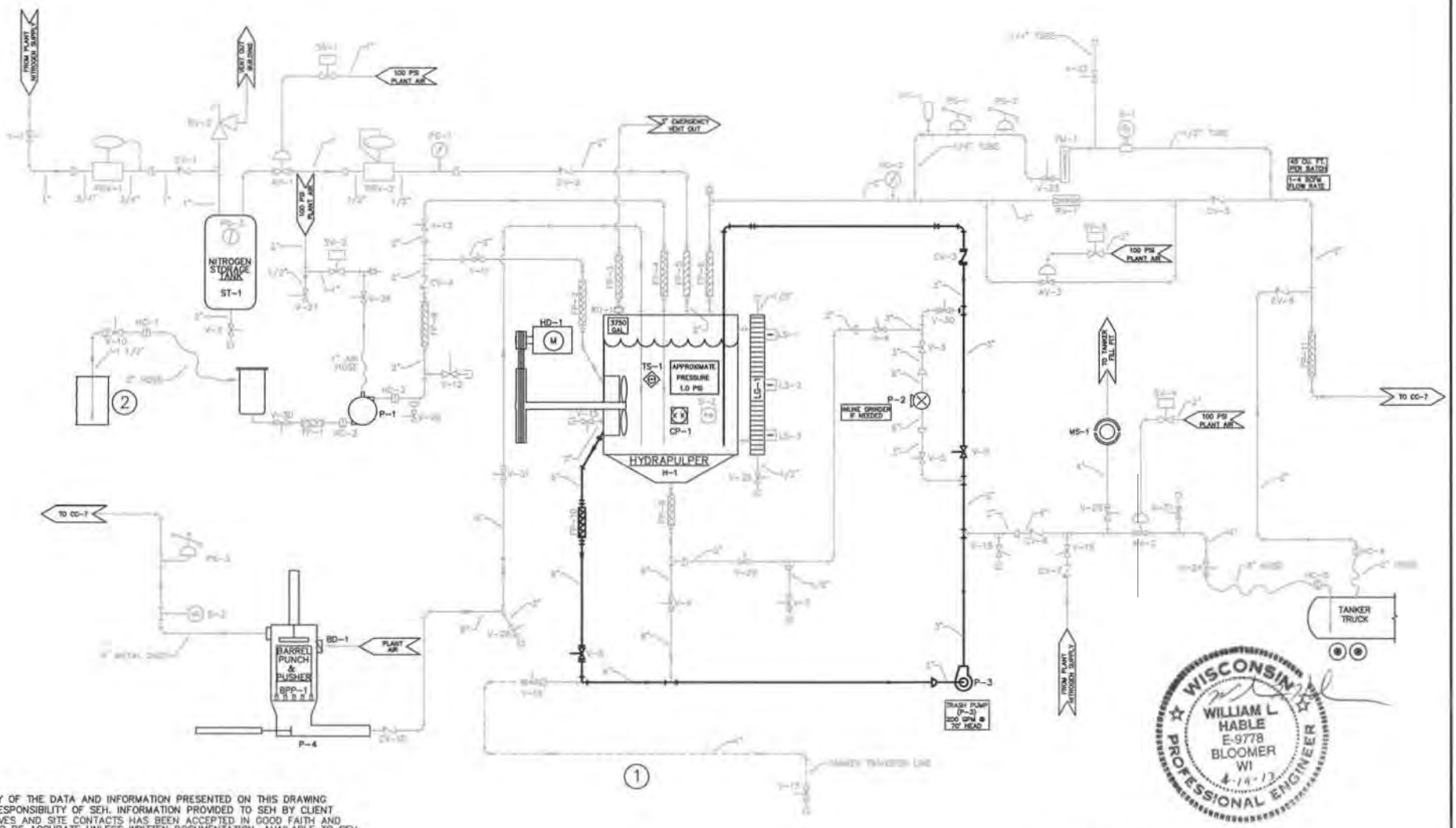
SHEET TITLE: STEP #3: HYDRAPULPER SEMI-SOLIDS FILL

DRAWING NO: 2J-3 HYDRAPULPER SEMI-SOLIDS FILL

DATE: 04/18/2013

PROJ. NO. WRRES110021

WRR DRAWING DIRECTORY: V:\PART B\2013 SUBMITTAL\DRAWINGS\PROCESS UNIT\FIGURE 2J-3 HYDRAPULPER SEMI-SOLIDS FILL
SEH DRAWING DIRECTORY: N:\CIVIL\WRRES\110021\PAID DRAWINGS\2J-3 PROCESS AND INSTRUMENTATION DIAGRAM



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2) ESTIMATED BLENDING TIME IS 45 MIN. FLOW RATES PER BATCH SHOWN ON THIS DRAWING ARE FOR STEP 4 ONLY.

3) THIS FIGURE IS A SIMPLIFIED FLOW DIAGRAM SHOWING STEP #4 IN THE HIGH VISCOSITY PROCESSING SYSTEM. FOR COMPLETE DETAILS PLEASE REFER TO SHEET 2L-2 HVPS P&ID TITLED "HVPS SUBCH. BB EQUIPMENT".

STEP #4: HYDRAPULPER BLENDING

DRAWING NOTATION:

① = FUTURE TANKER UNLOADING LINE

② = LOCATION OF LIQUIDS/SLURRY 55-GAL DRUM

WISCONSIN PROFESSIONAL ENGINEER
WILLIAM L HABLE
E-9778
BLOOMER
WI
4-14-13

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	08/27/09	ORIGINAL PREPARED BY WRR ENVIRONMENTAL SERVICES	TVT	08/09	WH	08/09	JJH	08/09
2	10/09/09	MODIFIED BY SEH INC.	RJH	10/09	WH	08/09	BKO	10/09
3	04/18/13	UPDATED BY WRR ENVIRONMENTAL SERVICES	MNG	04/13	MNG	04/13		

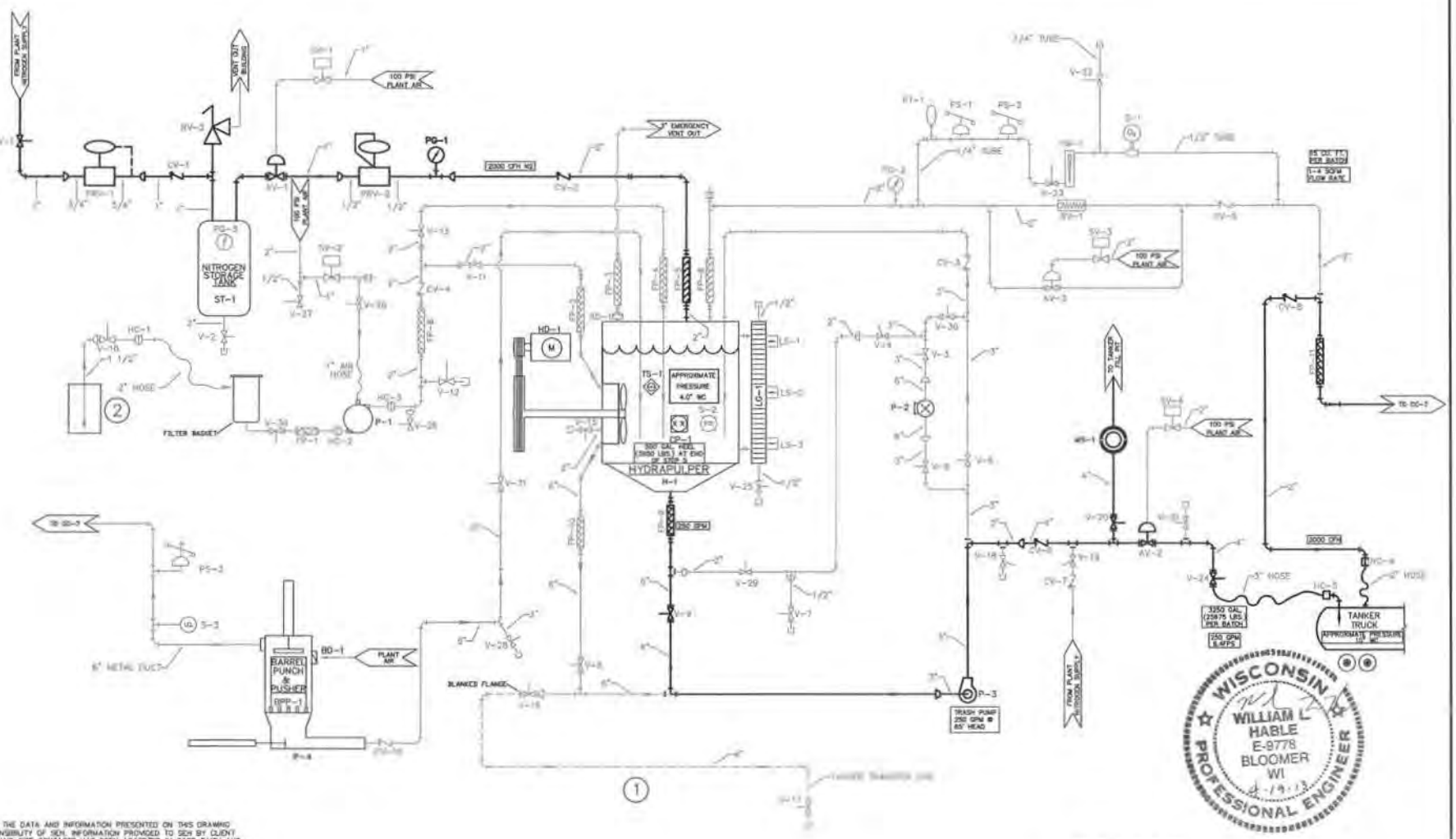
HIGH VISCOSITY PROCESSING SYSTEM
WRR ENVIRONMENTAL SERVICES CO., INC.
EAU CLAIRE, WISCONSIN

SHEET TITLE: STEP #4 HYDRAPULPER BLENDING DIAGRAM

DRAWING NO: 2J-3 HYDRAPULPER BLENDING

DATE: 04/18/13

PROJ. NO.: WRRES110021



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2) FLOW RATES PER BATCH SHOWN ON THIS DRAWING ARE FOR STEP 5 ONLY.

3) THIS FIGURE IS A SIMPLIFIED FLOW DIAGRAM SHOWING STEP #5 IN THE HIGH VISCOSITY PROCESSING SYSTEM. FOR COMPLETE DETAILS PLEASE REFER TO SHEET C-4 TITLED "PROCESS AND INSTRUMENTATION DIAGRAM".

STEP #5: HYDRAPULPER DISCHARGE TO TANKER

DRAWING NOTATION:

(1) = FUTURE TANKER UNLOADING LINE

(2) = LOCATION OF LIQUIDS/SLURRY 55-GAL DRUM

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	08/27/09	ORIGINAL PREPARED BY WRR ENVIRONMENTAL SERVICES	TVT	08/09	WH	08/09	JJH	08/09
2	10/09/09	MODIFIED BY SEH INC.	RJH	10/09	WH	08/09	BHO	10/09
3	04/18/13	UPDATED BY WRR ENVIRONMENTAL SERVICES	MNG	04/13	MNG	04/13		

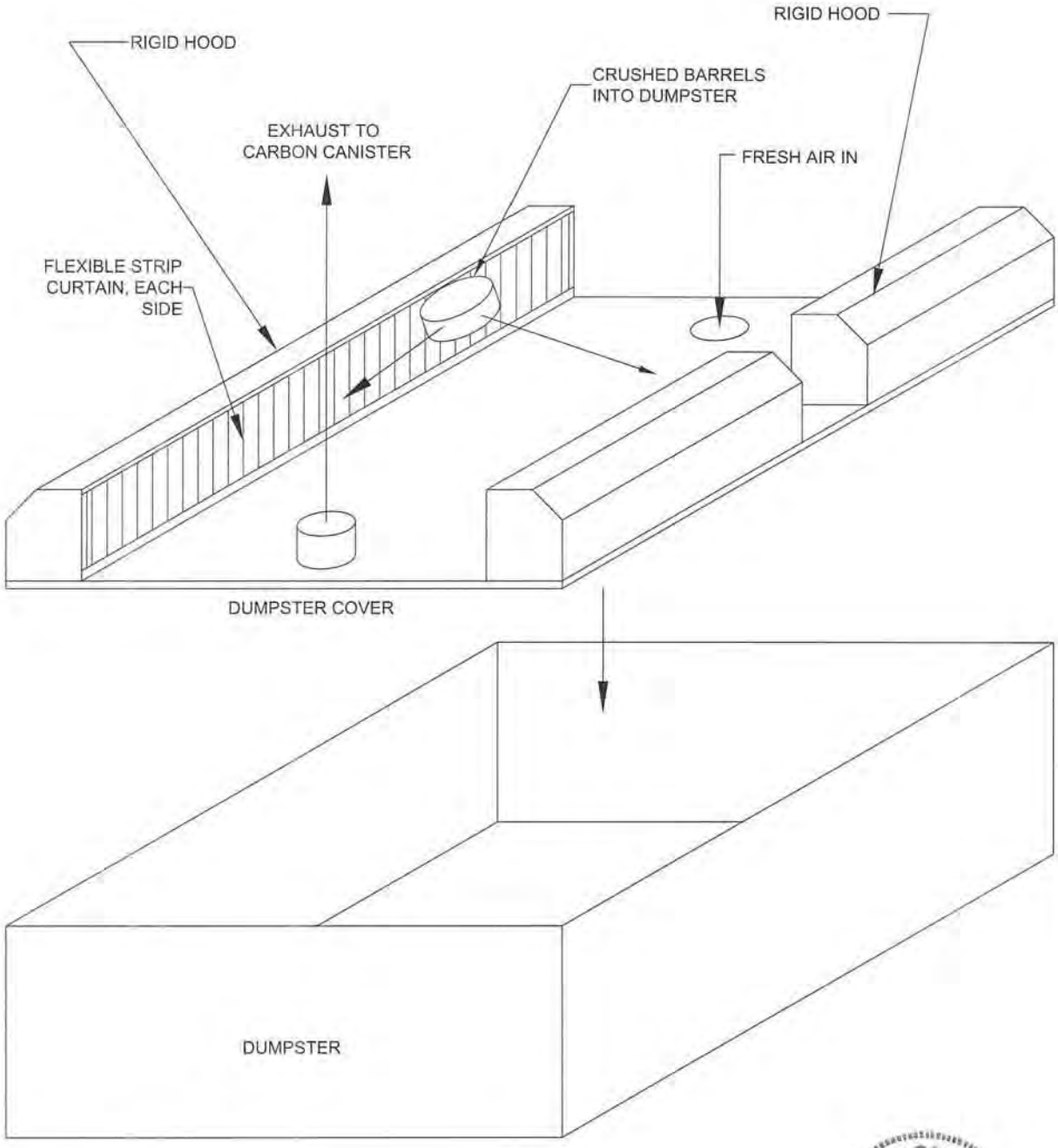
HIGH VISCOSITY PROCESSING SYSTEM
WRR ENVIRONMENTAL SERVICES CO., INC.
EAU CLAIRE, WISCONSIN

SHEET TITLE: STEP #5: HYDRAPULPER DISCHARGE TO TANKER

DRAWING NO: 2J-3 HYDRAPULPER DISCHARGE

DATE: 04/18/13

PROJ NO: WRRES110023



WISCONSIN
WILLIAM C. HABLE
E-9778
BLOOMER
WI
4-19-12
PROFESSIONAL ENGINEER

ITEM	DRAWING	DESCRIPTION	MTL	REQ	REMARKS
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

DATE	REV.	REVISION	BY	APP.

DRAWING PROPERTY OF WRR ENVIRONMENTAL SERVICES CO., INC.

NOTE: CHANGES MAY NOT BE MADE IN SHOPS WITHOUT CONSULTING ENGINEERING DEPARTMENT.
TOLERANCES UNLESS SPECIFIED:
FRACTIONS ± 1/64", 2 DECIMALS ± .01"
3 DECIMALS ± .005", ANGULAR ± 30'.

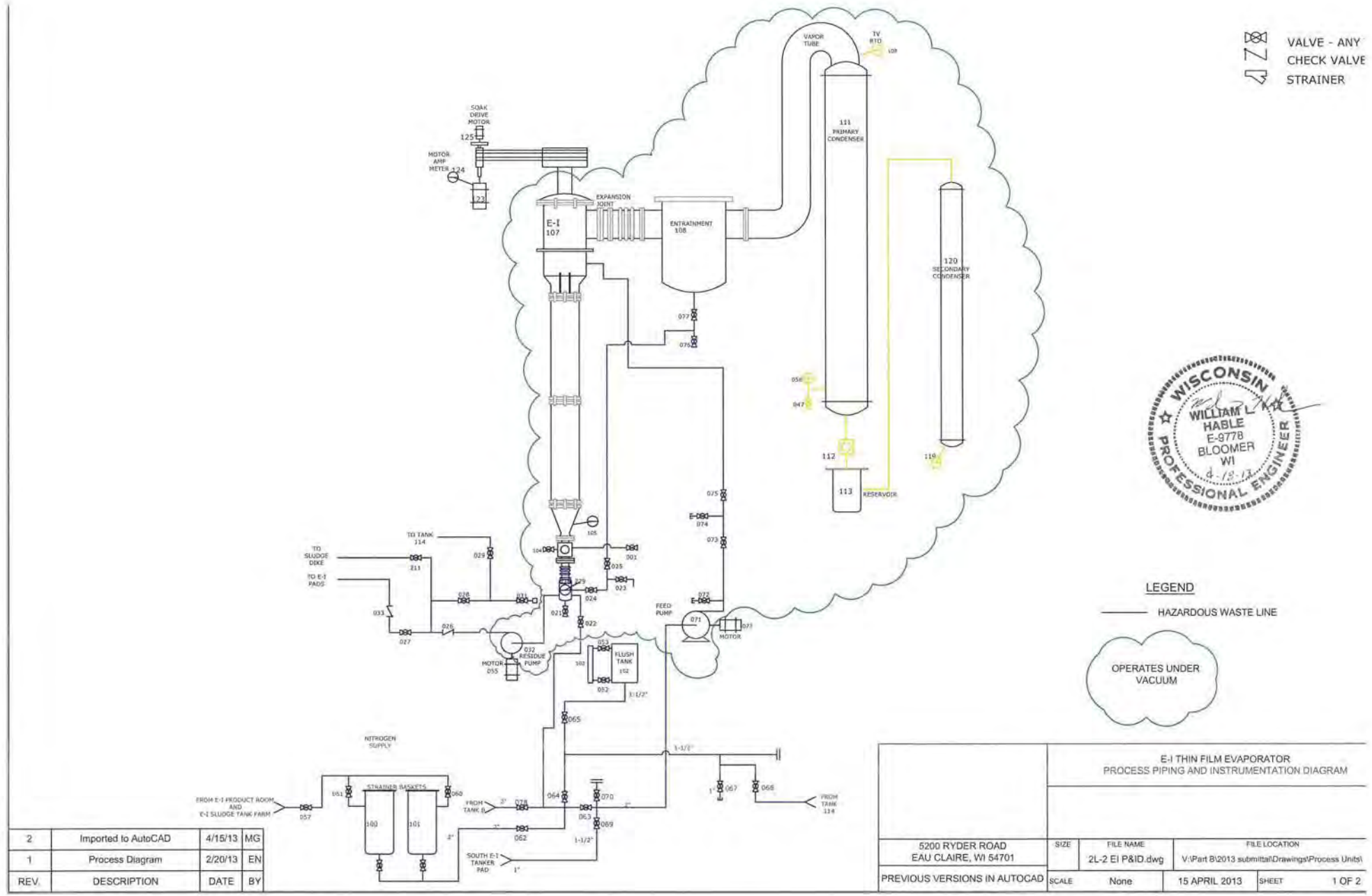
WRR
ENVIRONMENTAL SERVICES CO., INC.
1(10) RYDER RD.
EAU CLAIRE, WI

FUEL BLENDING
DUMPSTER COVER
SCHEMATIC

T.V. TERMAN | DATE 5-11-09
FLOPPY DISK #

SCALE NTS:
DRAWING NUMBER
2J-3 DUMPSTER COVER

WRR
ENVIRONMENTAL SERVICES CO., INC.
1(10) RYDER RD.
EAU CLAIRE, WI
FUEL BLENDING
DUMPSTER COVER
SCHEMATIC
T.V. TERMAN | DATE 5-11-09
FLOPPY DISK #
SCALE NTS
DRAWING NUMBER
2J-3 DUMPSTER COVER



REV.	DESCRIPTION	DATE	BY
2	Imported to AutoCAD	4/15/13	MG
1	Process Diagram	2/20/13	EN

E-I THIN FILM EVAPORATOR
PROCESS PIPING AND INSTRUMENTATION DIAGRAM

5200 RYDER ROAD
EAU CLAIRE, WI 54701

PREVIOUS VERSIONS IN AUTOCAD

SIZE	FILE NAME	FILE LOCATION
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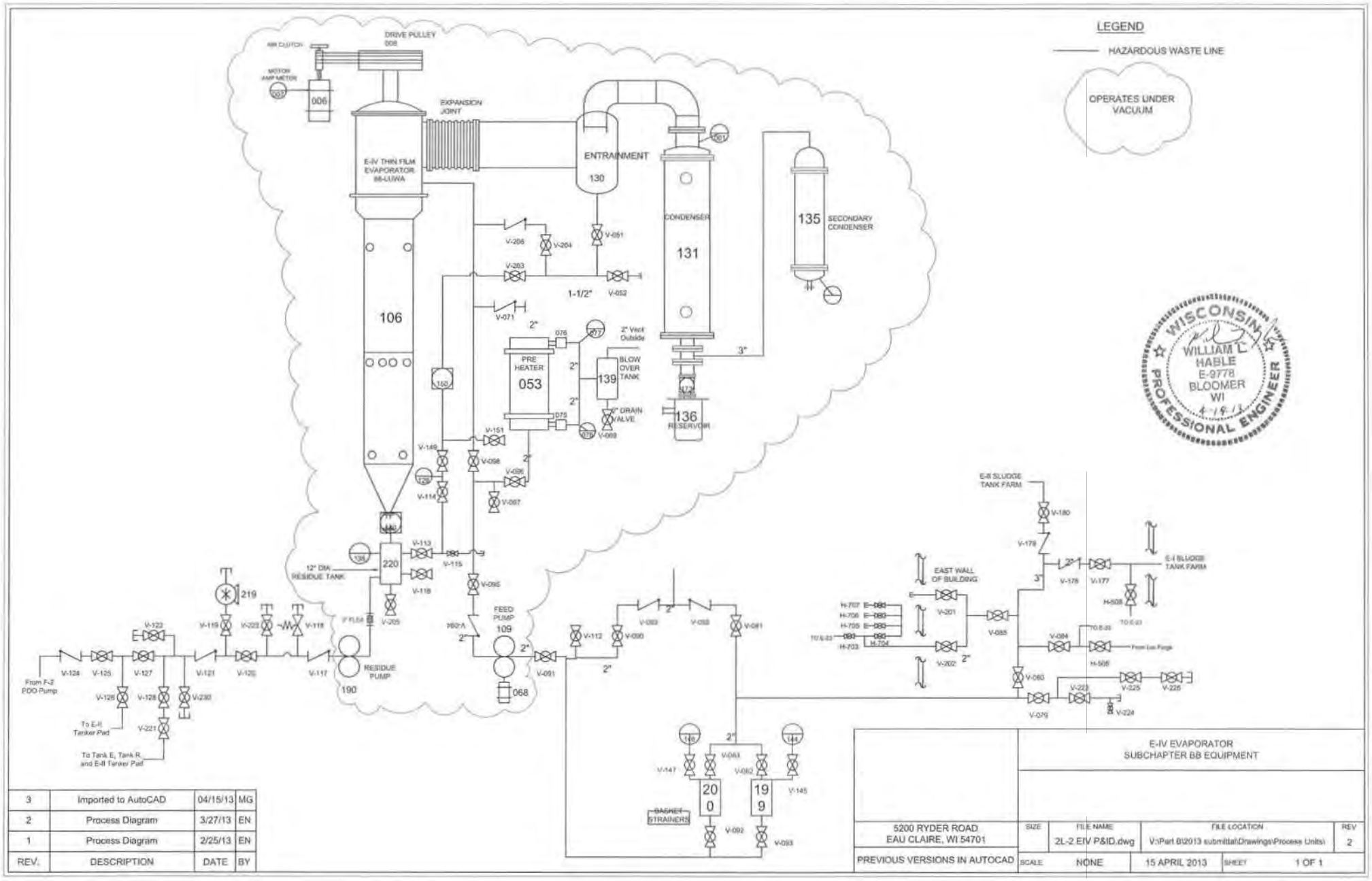
SCALE	None	15 APRIL 2013
SHEET	1 OF 2	



REV.	DESCRIPTION	DATE	BY
3	Imported to AutoCAD	04/15/13	MG
2	Process Diagram	3/27/13	EN
1	Process Diagram	2/25/13	EN

E-IV EVAPORATOR
SUBCHAPTER BB EQUIPMENT

5200 RYDER ROAD
EAU CLAIRE, WI 54701

PREVIOUS VERSIONS IN AUTOCAD

SIZE	FILE NAME	FILE LOCATION	REV
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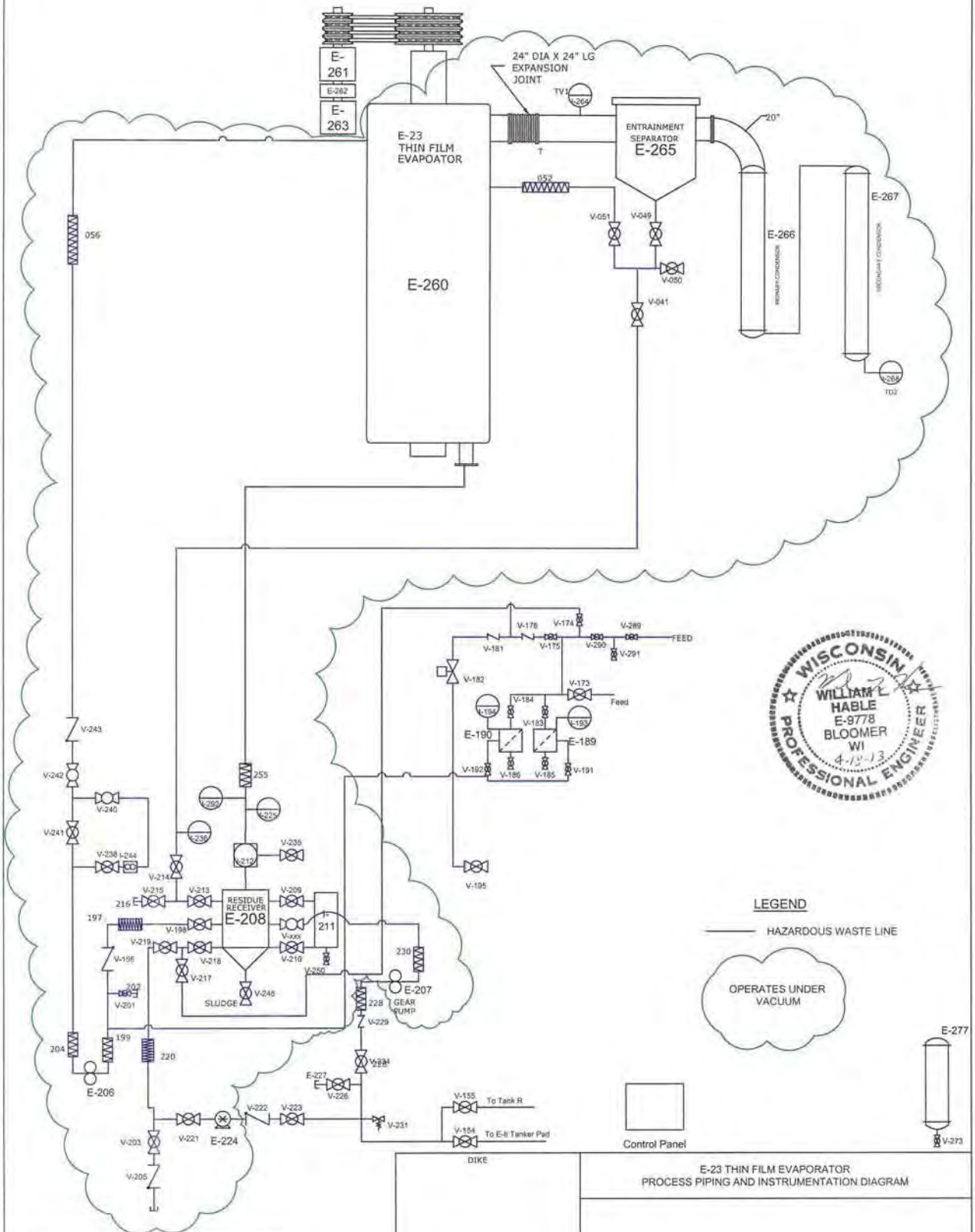
SCALE NONE | 15 APRIL 2013 | SHEET 1 OF 1



REV.	DESCRIPTION	DATE	BY
2	Imported to AutoCAD	04/15/13	MG
1	Process Diagram	2/20/13	EN

5200 RYDER ROAD
EAU CLAIRE, WI 54701

PREVIOUS VERSIONS IN AUTOCAD

E-23 THIN FILM EVAPORATOR
PROCESS PIPING AND INSTRUMENTATION DIAGRAM

SIZE	FILE NAME	FILE LOCATION	REV
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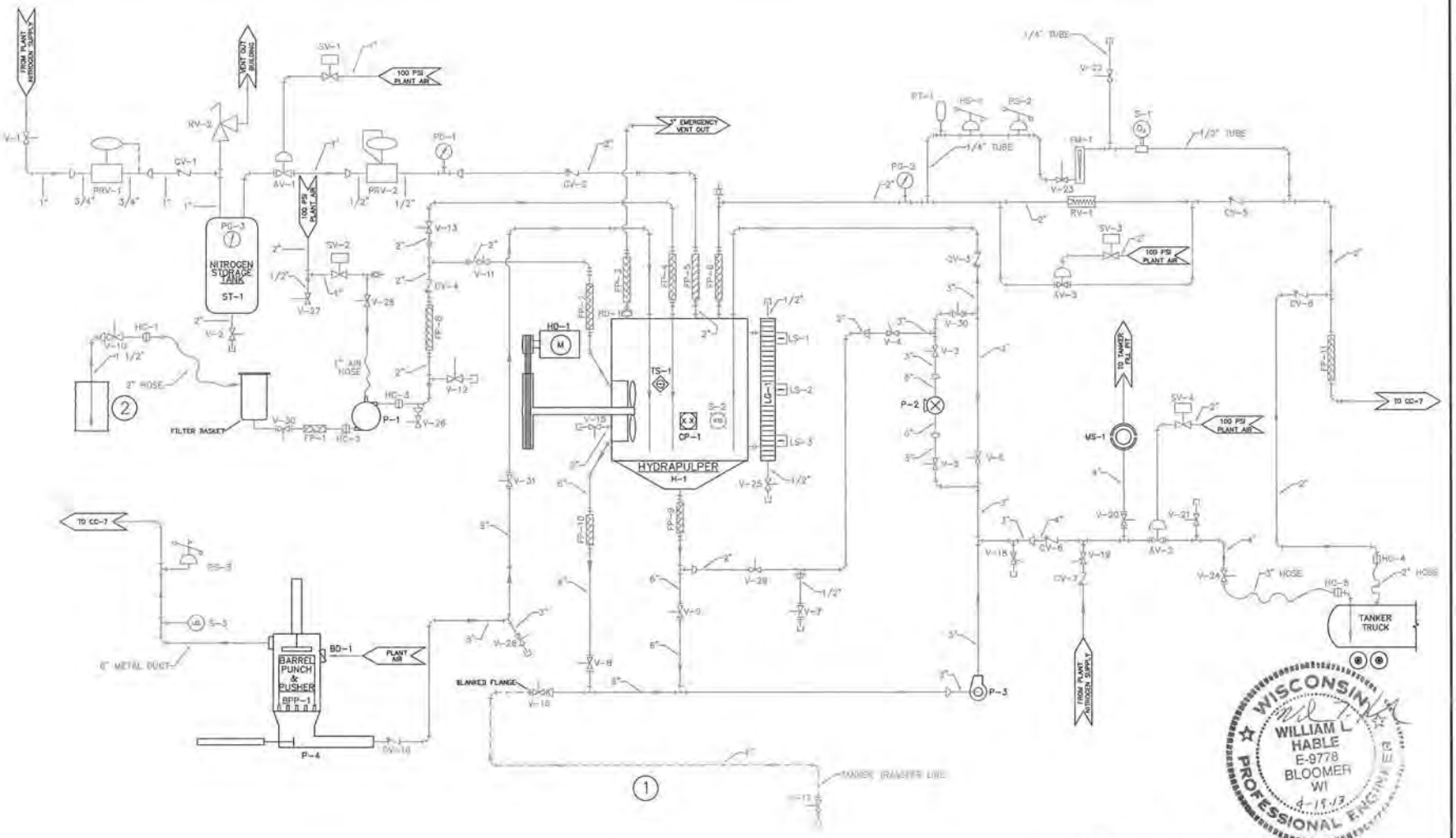
SCALE: None | 15 APRIL 2013 | SHEET: 1 OF 1



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DRAWING NOTATION:

(1) = FUTURE TANKER UNLOADING LINE

(2) = LOCATION OF LIQUIDS/SLURRY 55-GAL DRUM

PROCESS AND INSTRUMENTATION DIAGRAM

NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	08/27/09	ORIGINAL PREPARED BY WRR ENVIRONMENTAL SERVICES	TVT	08/09	WH	08/09	JJH	08/09
2	10/09/09	MODIFIED BY SEH INC.	RJH	10/09	WH	08/09	BKO	10/09
3	04/18/13	UPDATED BY WRR ENVIRONMENTAL SERVICES	MNG	04/13	WH	08/09		

HIGH VISCOSITY PROCESSING SYSTEM
WRR ENVIRONMENTAL SERVICES CO., INC.
EAU CLAIRE, WISCONSIN

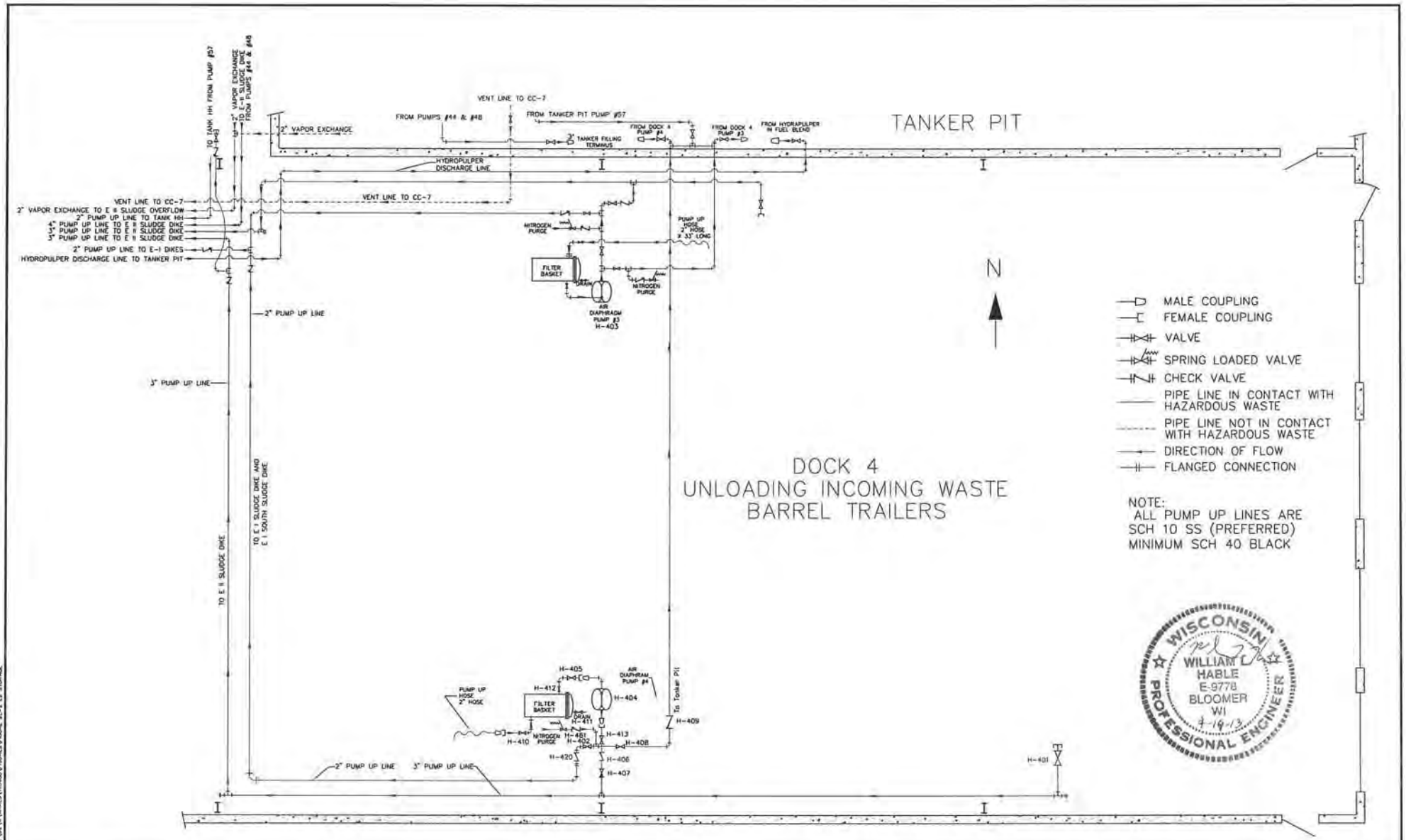
SHEET TITLE: HVPS SUBCHAPTER BB EQUIPMENT

DRAWING NO: 2L-2 HVPS P-HD

DATE: 04/18/2013

PROJ. NO.: WRRES110021

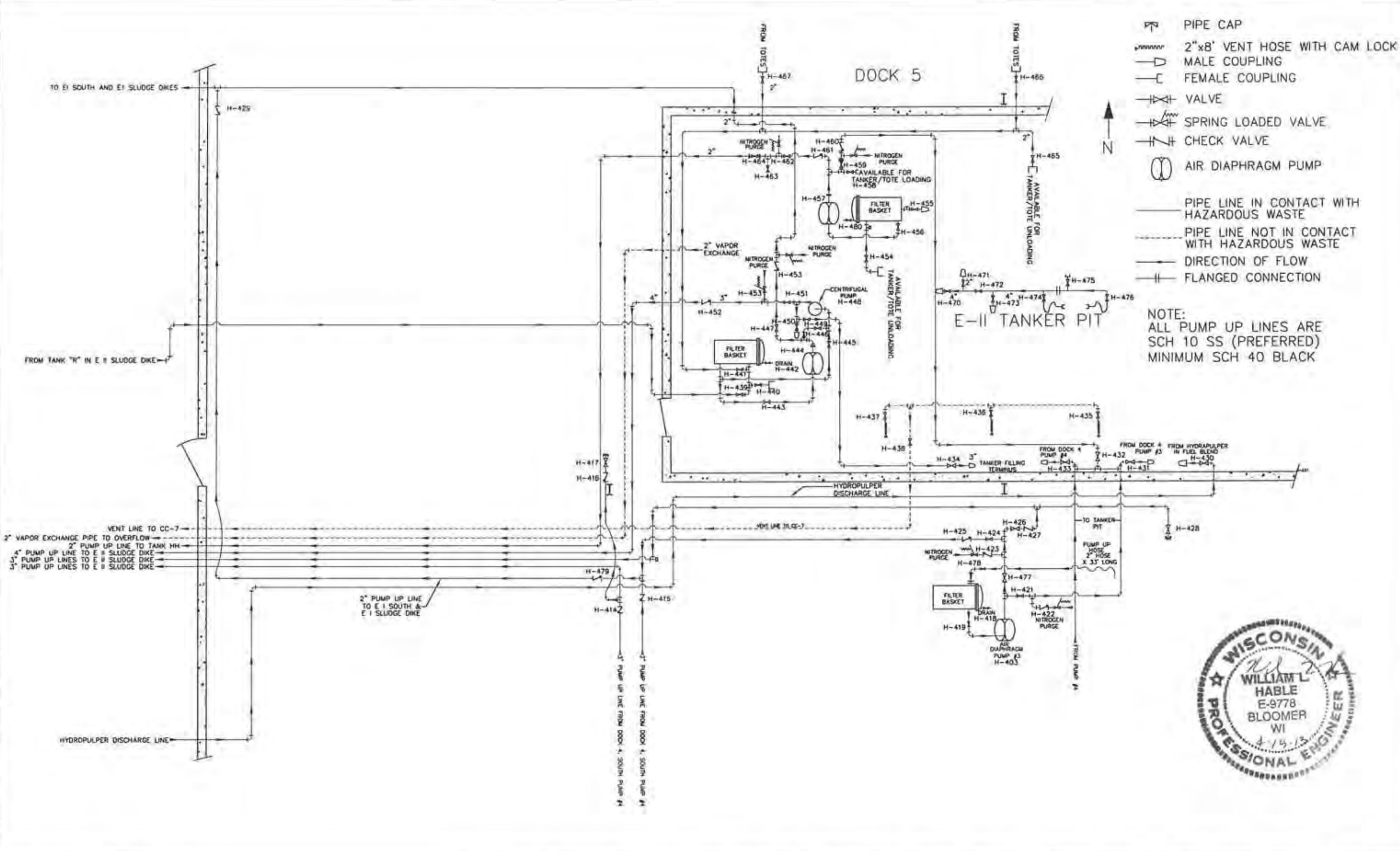
DRAWING DIRECTORY: P:\ACTIVE\WRRES\110021\DWG DRAWINGS\2L-2 PROCESS AND INSTRUMENTATION DIAGRAM



NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	03/11/13	FPOR SUBMITTAL	RJH 03/13	TT 03/13	BA 03/13

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT E2 STORAGE AREA SUBCH. BB EQUIPMENT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

PROJ. NO. 118488
DATE 03/11/13
FIGURE 2L-2 E2 STORAGE



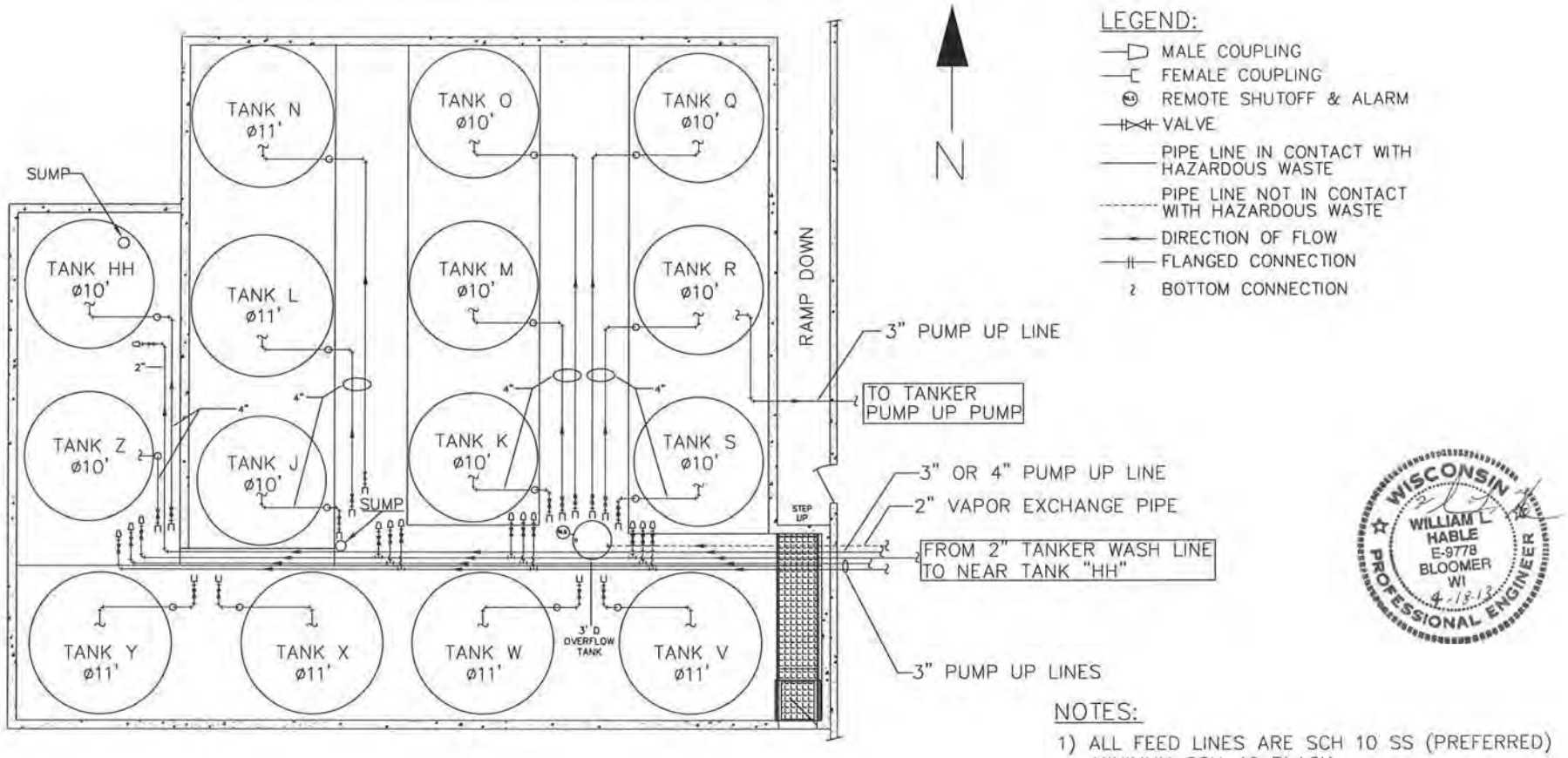
NO.	DATE	ISSUE/REVISIONS	DRAWN BY		DESIGN		QC CHECK	
1	03/11/13	FPOR SUBMITTAL	RJH	03/13	TT	03/13	BA	03/13

WRR

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

TANKER PIT SUBCH. BB EQUIPMENT

PROJ. NO. 118488
DATE 03/11/13
FIGURE 2L-2
TANKER PIT



LEGEND:

- MALE COUPLING
- FEMALE COUPLING
- REMOTE SHUTOFF & ALARM
- VALVE
- PIPE LINE IN CONTACT WITH HAZARDOUS WASTE
- PIPE LINE NOT IN CONTACT WITH HAZARDOUS WASTE
- DIRECTION OF FLOW
- FLANGED CONNECTION
- BOTTOM CONNECTION

WISCONSIN
WILLIAM L
HABLE
E-9778
BLOOMER
WI
4-18-13
PROFESSIONAL ENGINEER

NOTES:

1) ALL FEED LINES ARE SCH 10 SS (PREFERRED) MINIMUM SCH 40 BLACK

2) CONE BOTTOM TANKS WILL BE BOTTOM FILLED AND BOTTOM EMPTIED USING 3" FLEXIBLE PIPE CONNECTED TO WELDED BLACK STEEL PIPING RUNS

3) FLANGES, VALVES AND OTHER CONNECTORS, ON A PIPE LINE IN CONTACT WITH HAZARDOUS WASTE, ARE SUBJECT TO THE SUBCH. BB STANDARD.

NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	QC CHECK
1	01/24/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

EII SLUDGE DIKE SUBCH. BB EQUIPMENT – PUMP UP

PROJ. NO. 118458
DATE 2/18/13
FIGURE 2L-2 EII PUMP UP

DRAWING DIRECTORY: N:\ACTIVE\WRRES\1\BABY\FIGURES\FIGURE 2L-2 EII PUMP UP

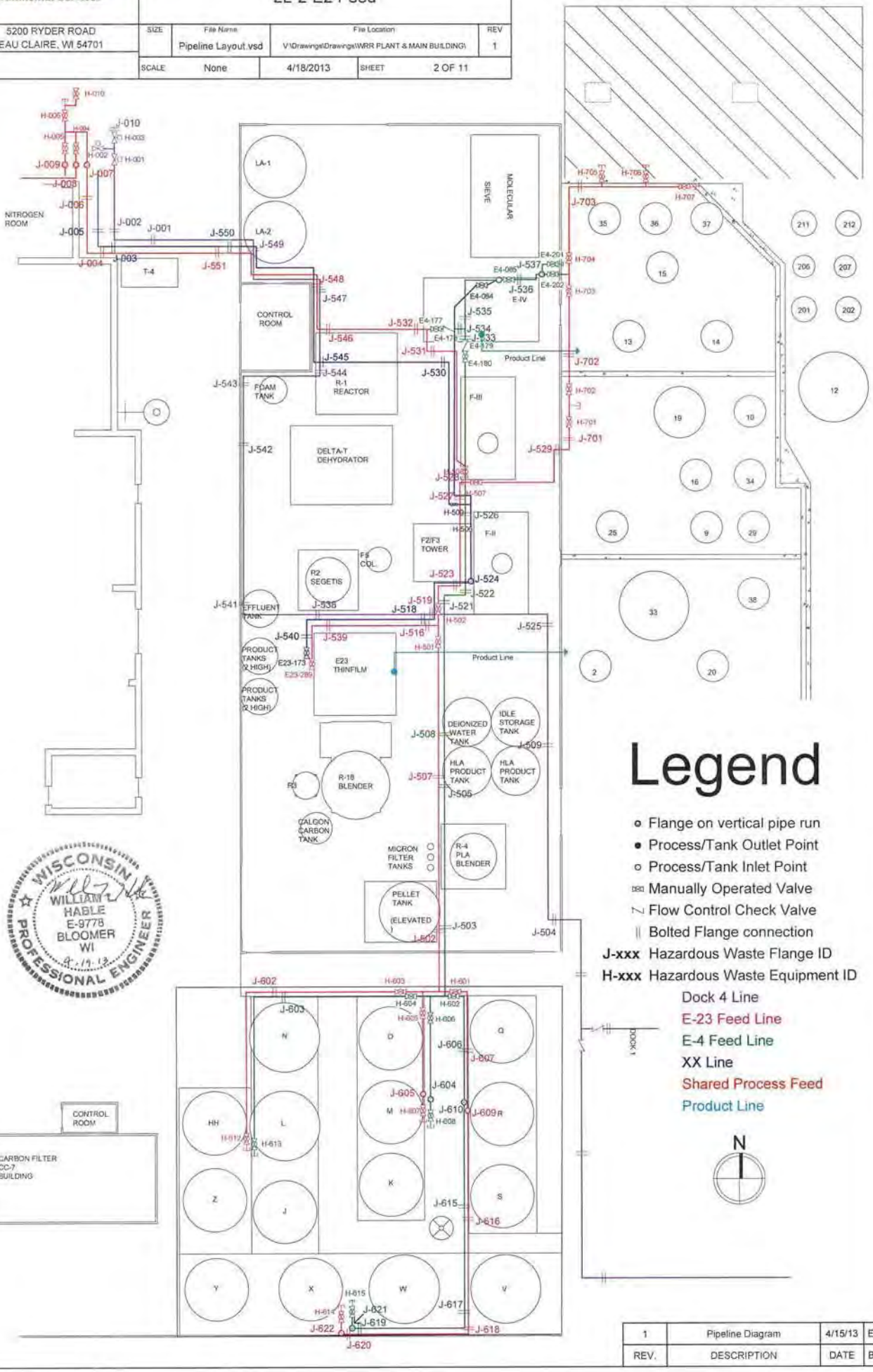
WRR Environmental Services

5200 RYDER ROAD
EAU CLAIRE, WI 54701

EII Sludge Dike Subch. BB Equipment - Feed Lines

2L-2 E2 Feed

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1
SCALE: None	4/18/2013	SHEET: 2 OF 11	



Legend

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection
- **J-xxx** Hazardous Waste Flange ID
- **H-xxx** Hazardous Waste Equipment ID
- Dock 4 Line
- E-23 Feed Line
- E-4 Feed Line
- XX Line
- Shared Process Feed
- Product Line

N

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E-9778
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WI
PROFESSIONAL ENGINEER
4-19-13

REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

WRR Environmental Services

5200 RYDER ROAD
EAU CLAIRE, WI 54701

EII Sludge Dike Subch. BB Equipment - Residue Lines

2L-2 E2 Residue

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1

SCALE			SHEET	
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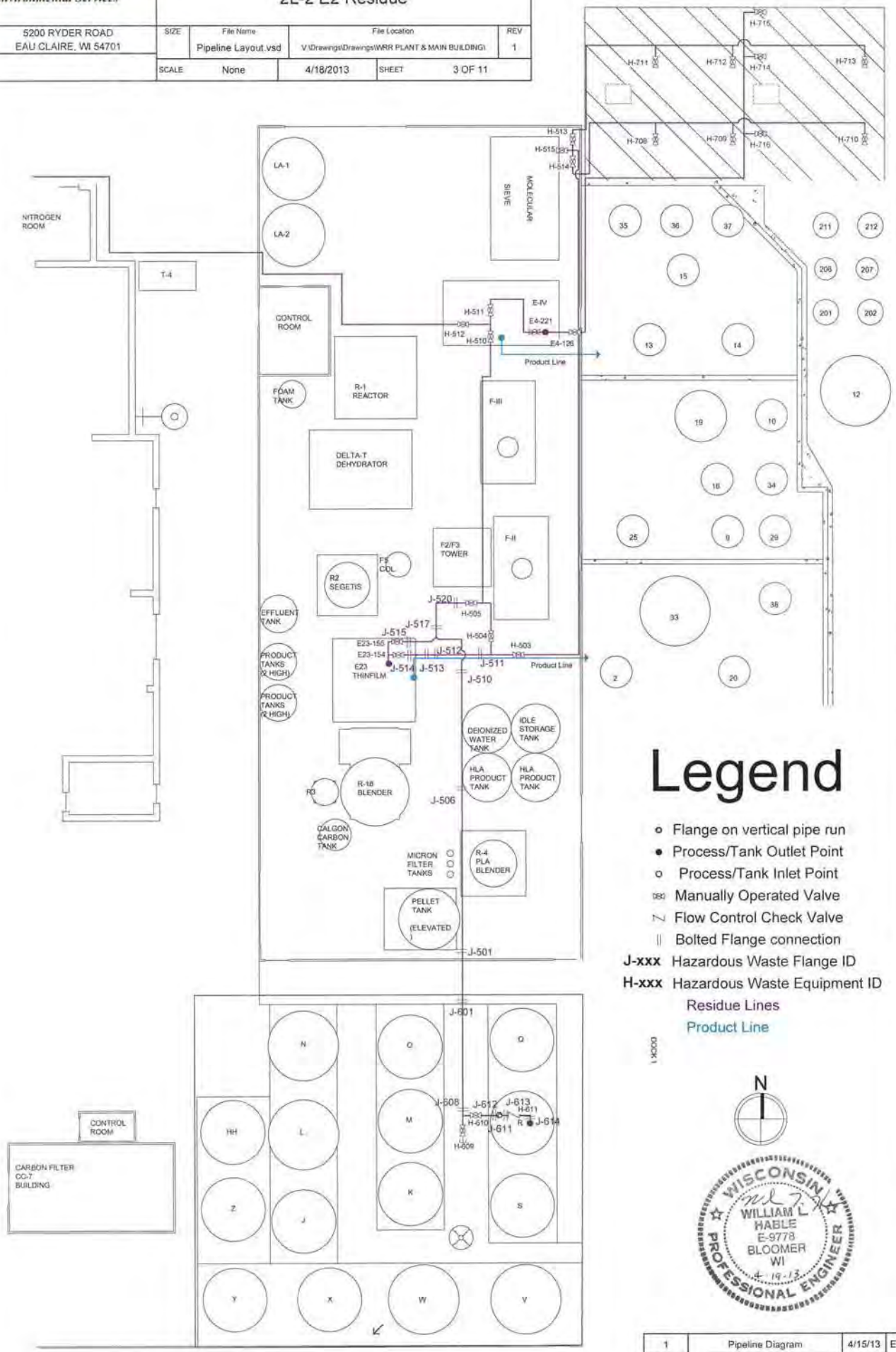

Legend

- o Flange on vertical pipe run
- ● Process/Tank Outlet Point
- o Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- || Bolted Flange connection
- **J-xxx** Hazardous Waste Flange ID
- **H-xxx** Hazardous Waste Equipment ID
- Residue Lines
- Product Line

BOOK 1

N

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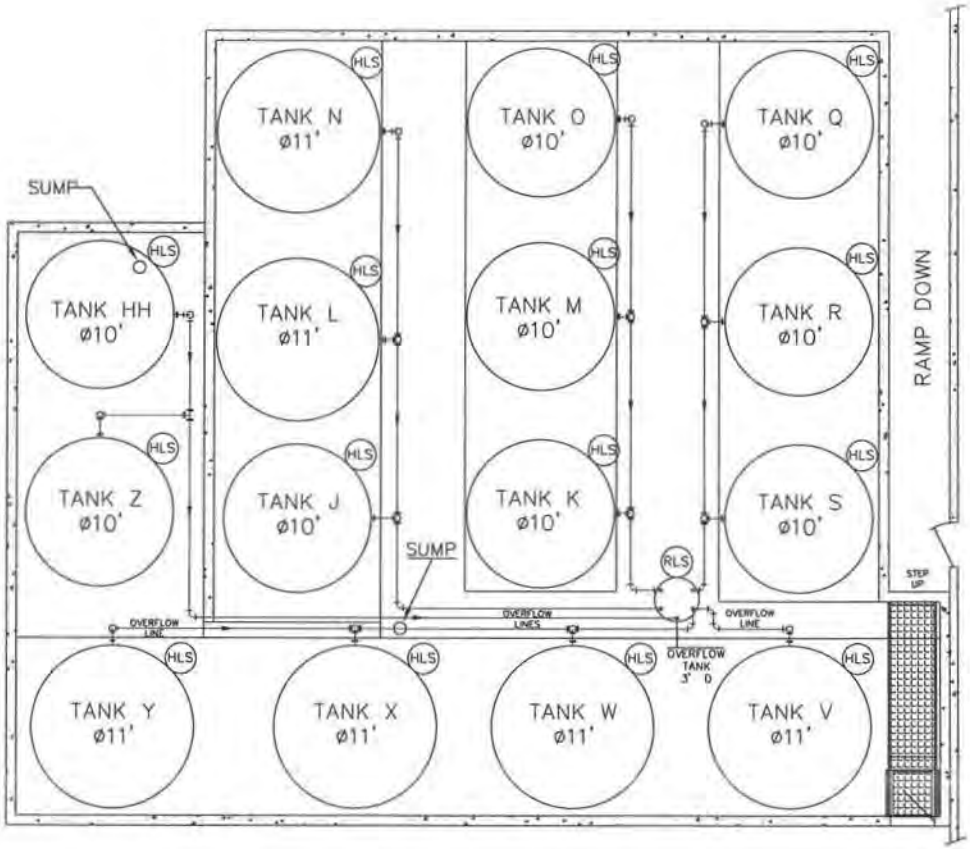
REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN



LEGEND:

- (HLS) HIGH LEVEL SHUTOFF & ALARM
- (RLS) REMOTE SHUTOFF & ALARM
- PIPE LINE IN CONTACT WITH HAZARDOUS WASTE
- DIRECTION OF FLOW
- FLANGED CONNECTION

NOTES:

1) ALL SLUDGE TANK OVERFLOW LINES ARE 2" SCH 10 SS (PREFERRED), MINIMUM SCH 40 BLACK
2) THE OVERFLOW PIPES ON ALL 11' DIA TANKS, AND TANKS M AND HH ARE 1' FROM THE TOP
3) THE OVERFLOW PIPES ON ALL OTHER TANKS ARE 2" FROM THE TOP

N

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1	01/24/13	FPOR SUBMITTAL	RJH 01/13	TT 01/13	BA 01/13

WRR ENVIRONMENTAL SERVICES Co., INC.
FEASIBILITY AND PLAN OF OPERATION REPORT
EAU CLAIRE, WISCONSIN
EPA ID No. WID990829475

EII SLUDGE DIKE SUBCH. BB
EQUIPMENT – OVERFLOW PIPING

PROJ. NO. 118488
DATE 2/18/13
FIGURE 2L-2 EII OF

Legend

N

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

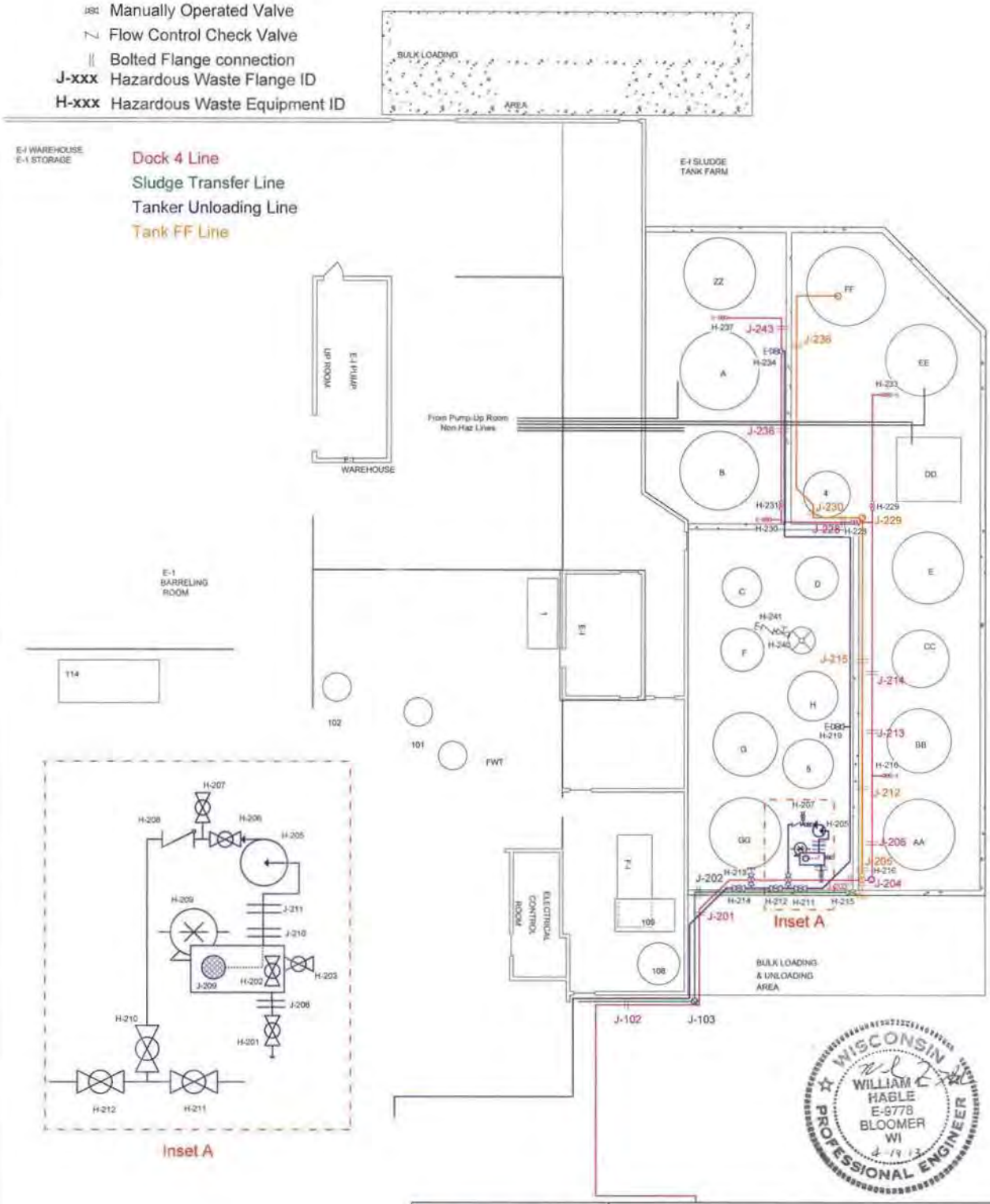
H-xxx Hazardous Waste Equipment ID

Dock 4 Line

Sludge Transfer Line

Tanker Unloading Line

Tank FF Line



Inset A

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EI Sludge Dike Subch. BB Equipment - Pump Up

2L-2 EI Pump Up

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1

SCALE			SHEET
None	4/18/2013		4 OF 11

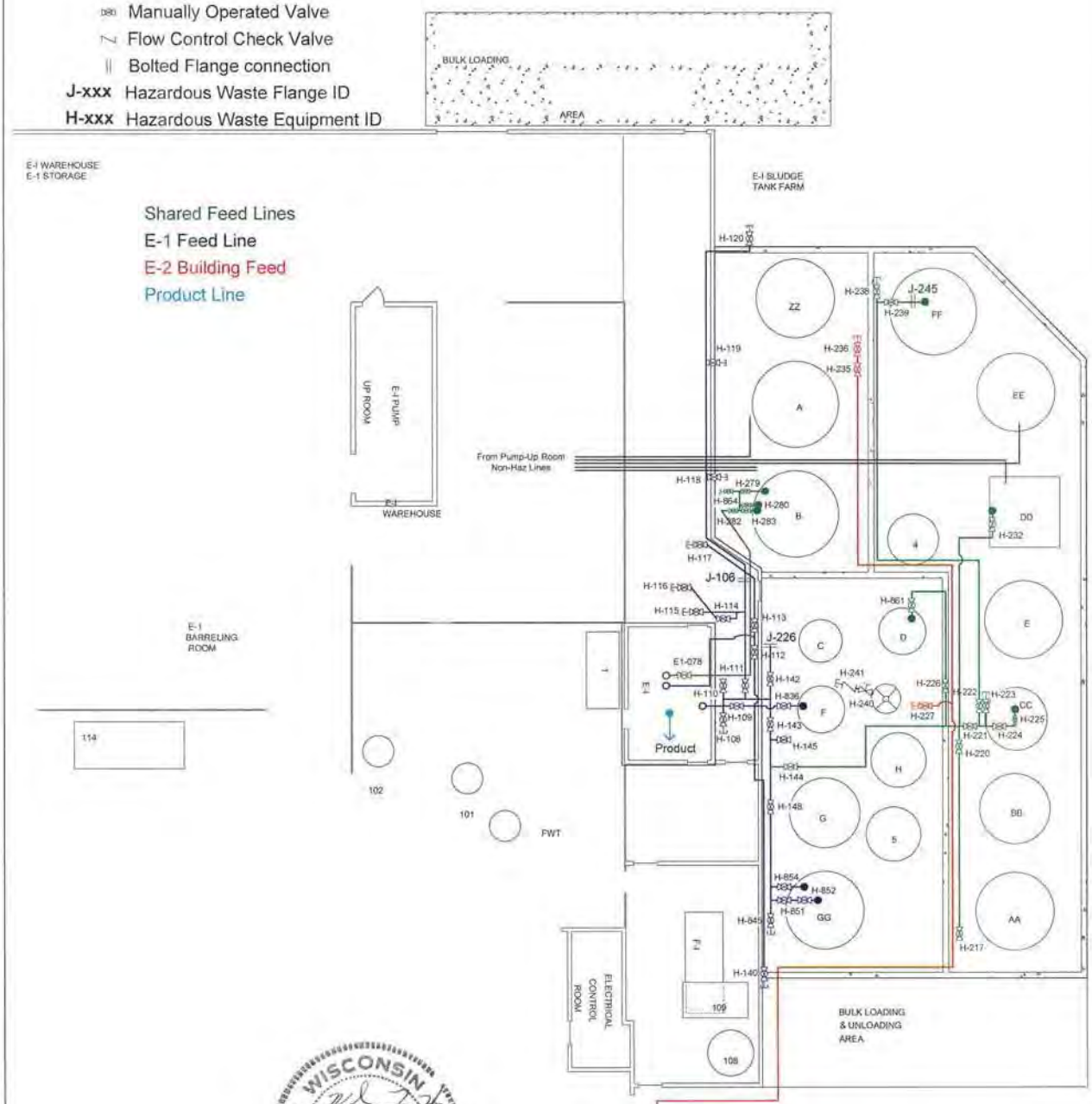
REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

Legend

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

H-xxx Hazardous Waste Equipment ID



REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

WRR Environmental Services

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EI Sludge Dike Subch. BB Equipment - Feed Lines

2L-2 EI Feed

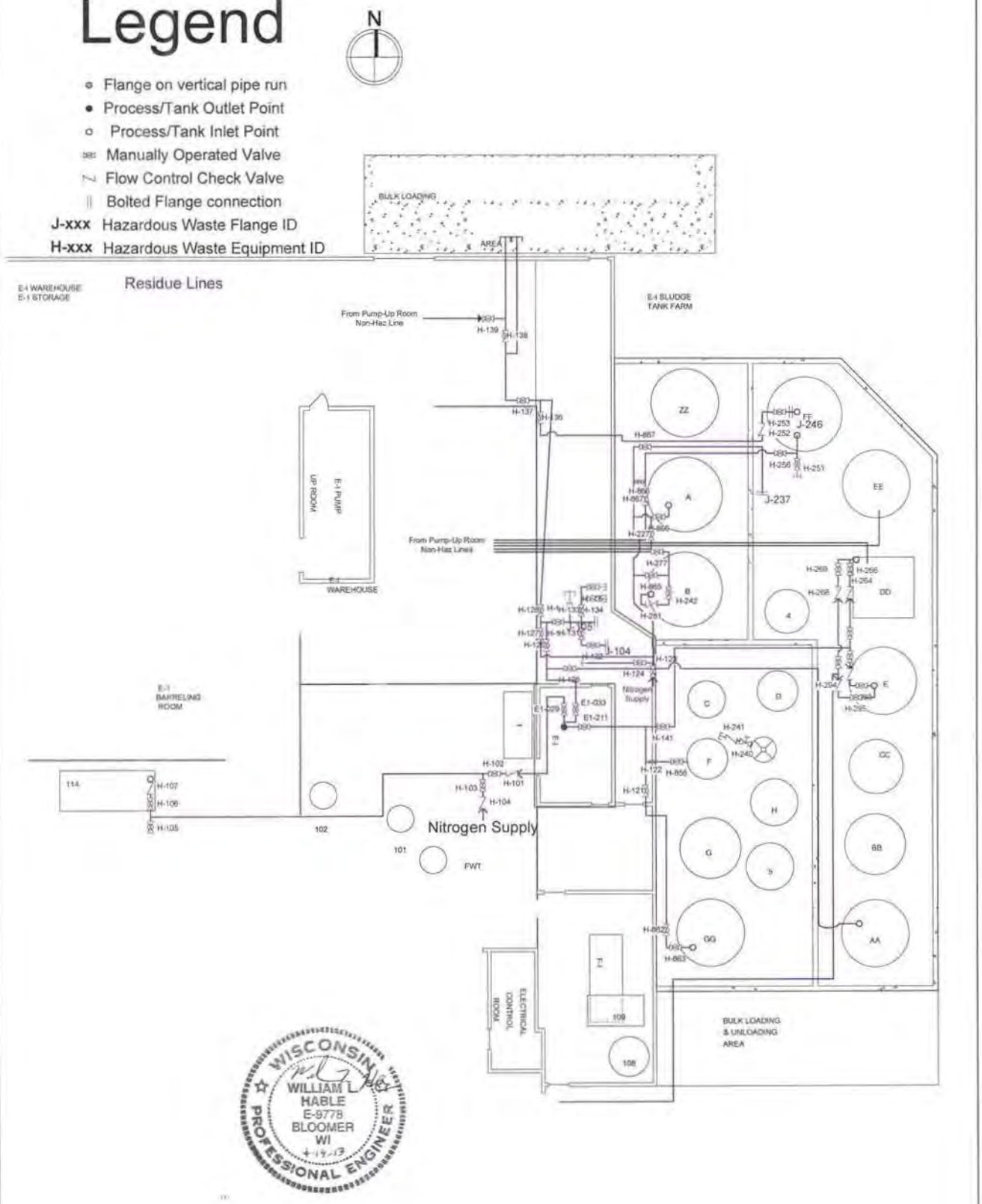
SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1
SCALE	None	4/18/2013	SHEET 7 OF 11

Legend

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

H-xxx Hazardous Waste Equipment ID



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REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

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EI Sludge Dike Subch. BB Equipment - Residue Lines

2L-2 EI Residue

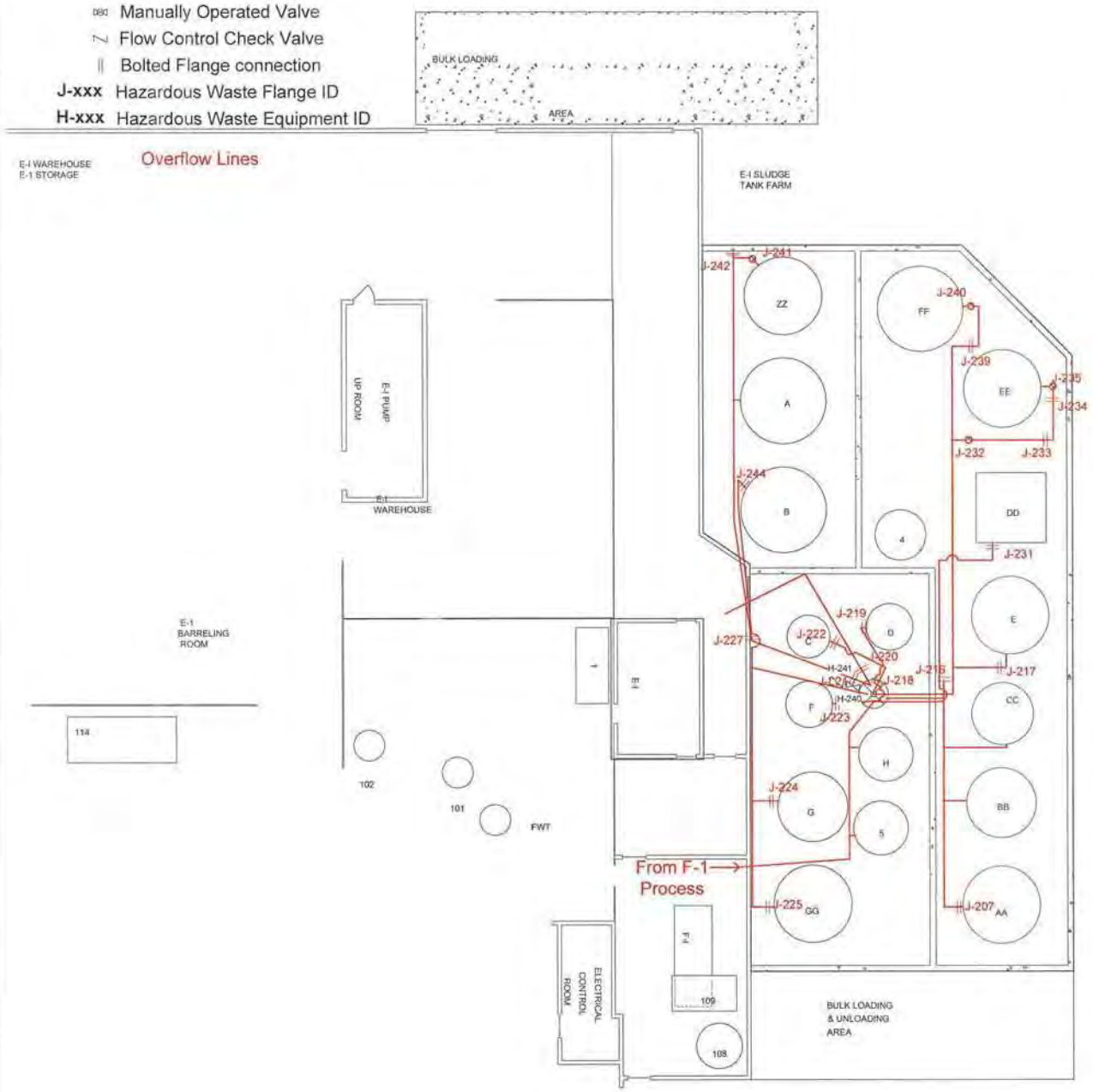
SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1
SCALE	None	4/18/2013	SHEET 8 OF 11

Legend

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

H-xxx Hazardous Waste Equipment ID



REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

WRR Environmental Services

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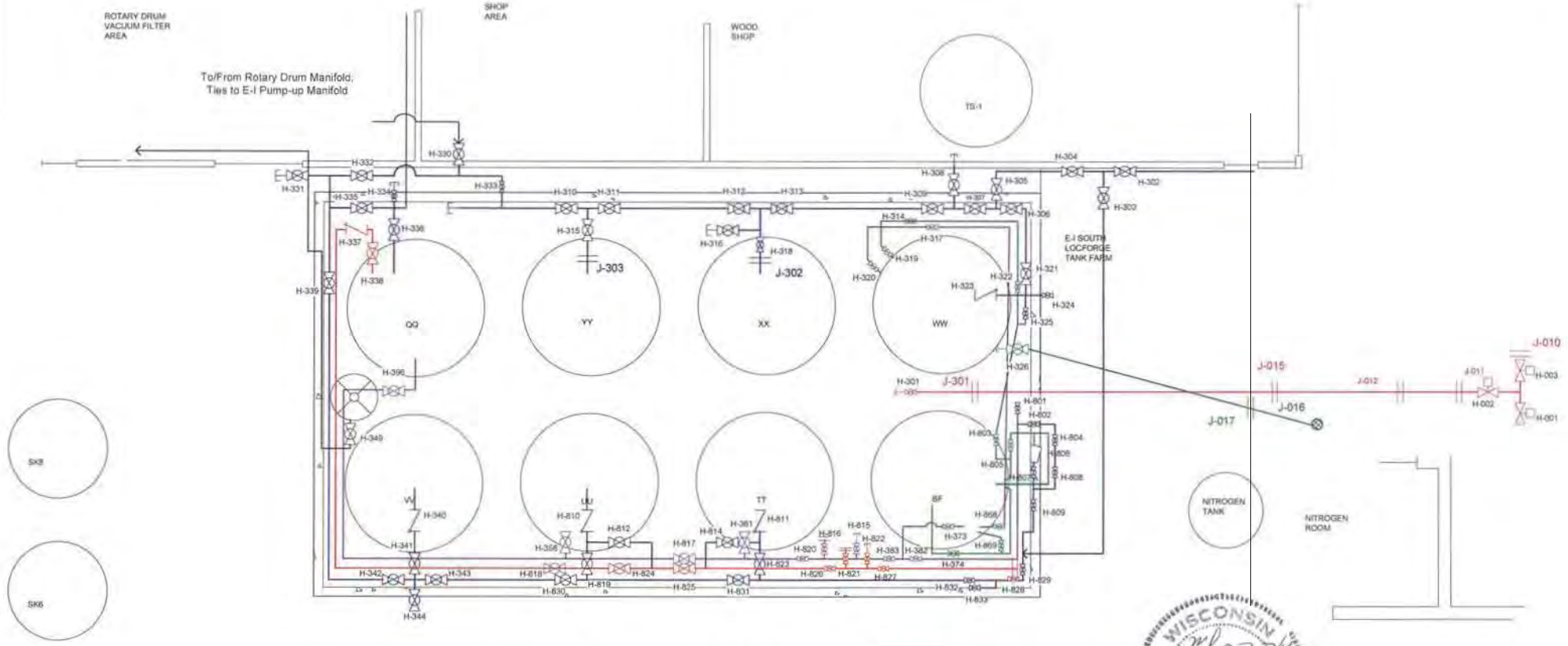
EI Sludge Dike Subch. BB Equipment – Overflow Pipe

2L-2 EI Overflow

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1
SCALE	None	4/18/2013	SHEET 6 OF 11



Legend

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection
- **J-xxx** Hazardous Waste Flange ID
- **H-xxx** Hazardous Waste Equipment ID

Dock 4 Line
Sludge Transfer Line
Tanker Unloading Line
Auxiliary Unloading Line
Auxiliary Unloading Line

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REV	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

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EI South Sludge Dike Subch. BB Equipment - Pump Up

2L-2 EI South Pump Up

SIZE	File Name	File Location	REV
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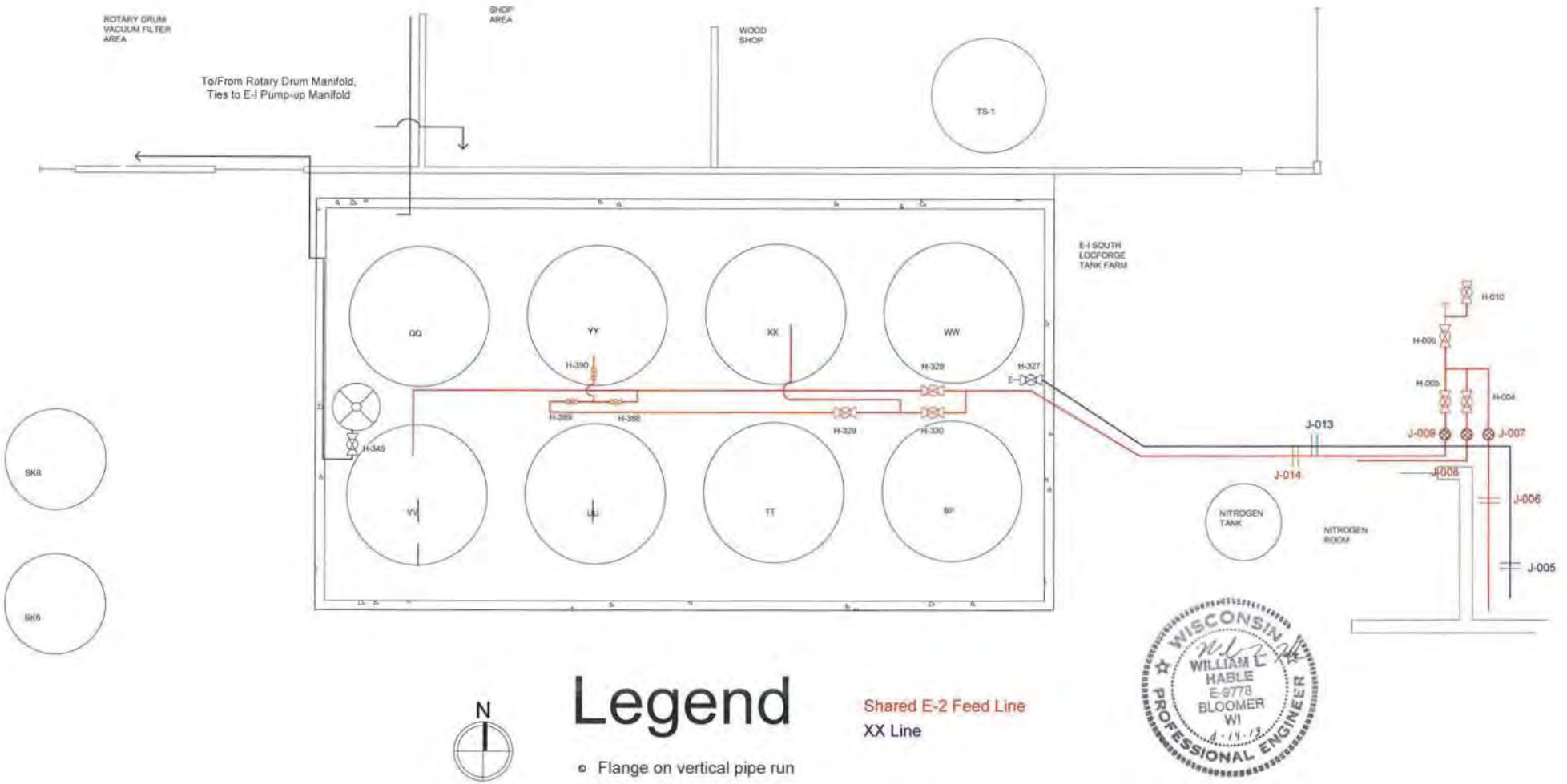

REV.	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

WRR Environmental Services

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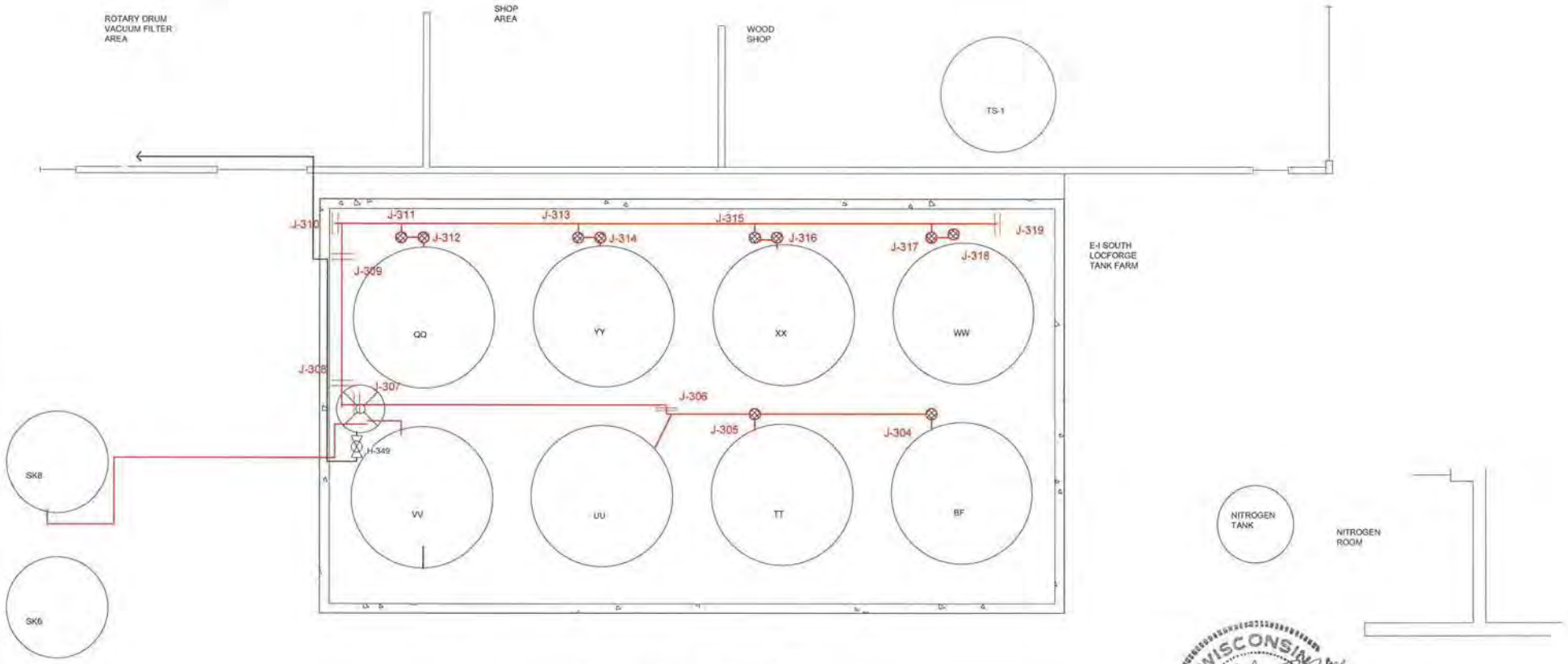
EAU CLAIRE, WI 54701

EI South Sludge Dike Subch. BB Equipment - Feed Lines

2L-2 EI South Feed

SIZE	File Name	File Location	REV
	Pipeline Layout.vsd	V:\Drawings\Drawings\WRR PLANT & MAIN BUILDING\	1
SCALE: None	4/18/2013	SHEET: 11 OF 11	



Legend

Overflow Lines

- Flange on vertical pipe run
- Process/Tank Outlet Point
- Process/Tank Inlet Point
- Manually Operated Valve
- Flow Control Check Valve
- Bolted Flange connection

J-xxx Hazardous Waste Flange ID

H-xxx Hazardous Waste Equipment ID

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REV	DESCRIPTION	DATE	BY
1	Pipeline Diagram	4/15/13	EN

WRR Environmental Services

5200 RYDER ROAD
EAU CLAIRE, WI 54701

EI South Sludge Dike Subch. BB Equipment – Overflow Pipe

2L-2 EI South Overflow

SIZE	File Name	File Location	REV
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SCALE			
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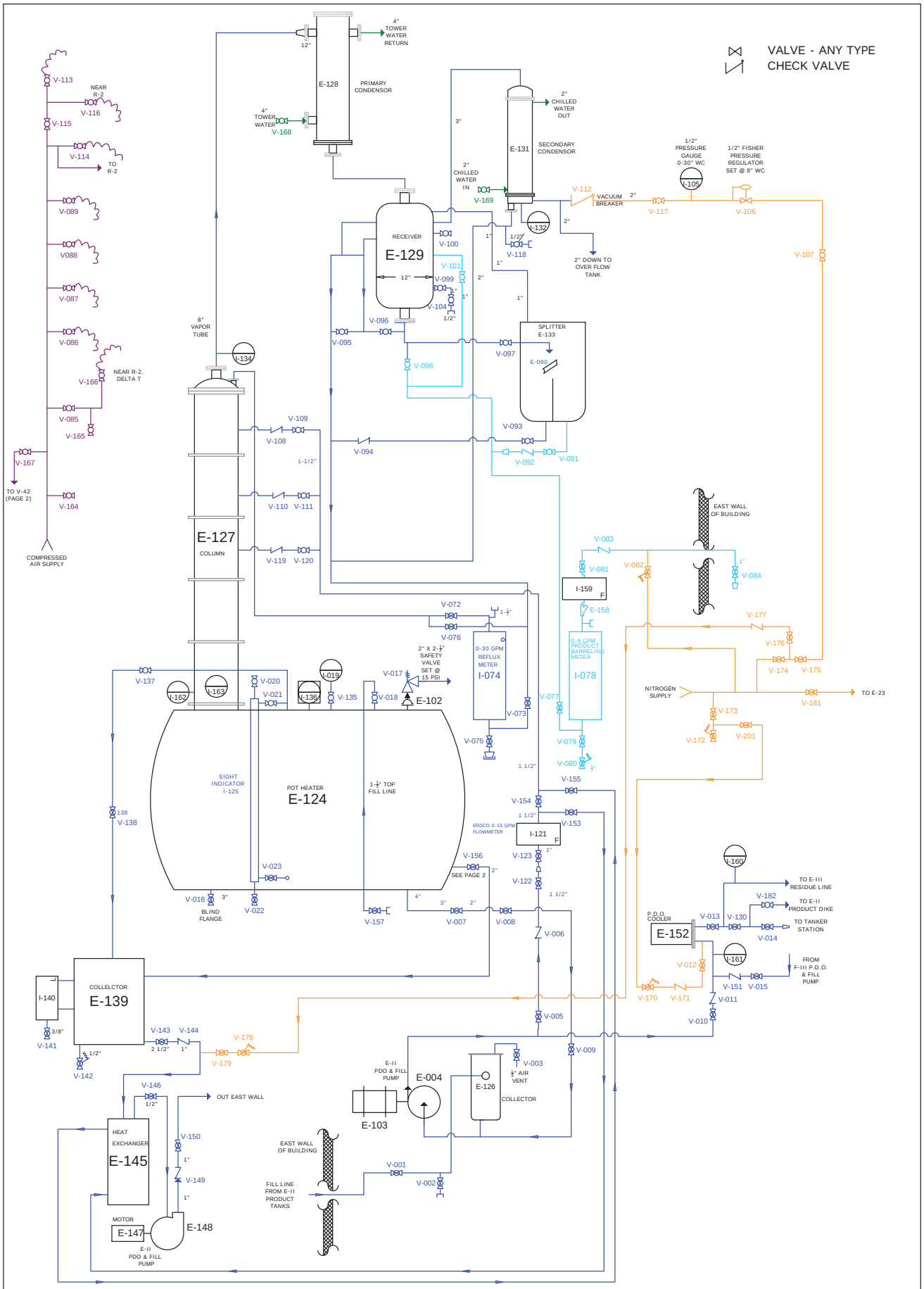

REV.	DESCRIPTION	DATE	BY
1	Process Diagram	4/26/13	EN

WRR Environmental Services

5200 RYDER ROAD
EAU CLAIRE, WI 54701

F-2 FRACTIONATION STILL
PROCESS PIPING AND INSTRUMENTATION DIAGRAM

F2 Fractionation Equipment Subch. BB Equipment

SCALE	FILENAME	FILE LOCATION
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REV	BY	REVISED	PRINTED	PAGE
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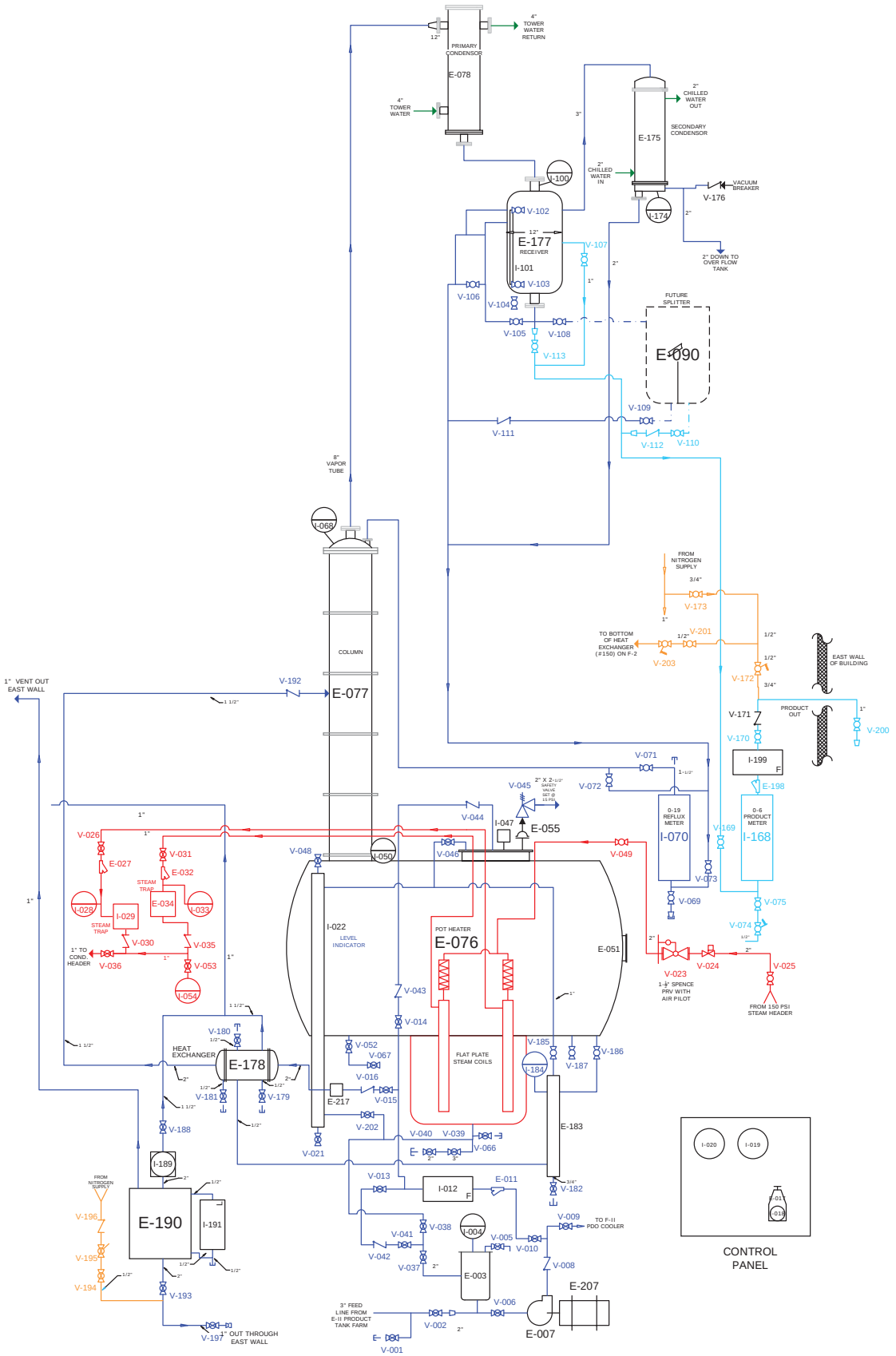
001250



REV.	DESCRIPTION	DATE	BY
1	Process Diagram	4/26/13	EN

WRR Environmental Services

5200 RYDER ROAD
EAU CLAIRE, WI 54701

F-3 FRACTIONATION STILL
PROCESS PIPING AND INSTRUMENTATION DIAGRAM

F3 Fractionation Equipment Subch. BB Equipment

SCALE	FILENAME	FILE LOCATION
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REV	BY	REVISED	PRINTED	PAGE
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