ChemE Consulting, LLC
9021 Willow Grove Rd
Longview, WA 98632
David@Chemeconsulting.com / 360-355-5513

September 10, 2021

David Drake
Fire Inspector
City of Puyallup
333 S Meridian, 2nd Floor
Puyallup, WA 98731

Re: Fire Construction Permit Application
CUP Modification
Reuse of Storage Tank 3 for Used Oil

Dear Mr. Drake;

Ecolube Recovery has petitioned for a minor modification under Conditional Use Permit No. P-18-0154 to allow for the repurposing of Tank 3 at the Ecolube Recovery terminal. Tank 3 will be used in Used Motor Oil storage in an identical fashion as Tanks 1, 2 & 4. The modification is being requested to allow for segregation of oil to differentiate blends according to product specifications and reduce overall transportation. ChemE Consulting (ChemE) is pleased to present this information on behalf of Ecolube Recovery in support of the Application for Fire Code - Construction Permit for repurposing Tank 3 for liquid storage and transfer operations located at 213 10th Street SE; Puyallup, WA 98731.

Summary of Work

The proposed modification will add Tank 3 to the existing tanks located at the proposed site. Tank 3 was evaluated by a third party tank inspection firm Mistras to evaluate the condition of the tanks and found to be in satisfactory condition pending correction of mandatory recommendations.

Tank 3 anchoring design was further evaluated by a structural engineer (Conlee Engineers) to verify the anchoring is consistent with the building code at the time of installation. The structural engineer's report shows that the anchoring was consistent with building code with the addition of one missing 1-1/4" anchor bolt with 1-1/4" HIT-RE-500V3 with 13" embedment.

Tank inspection report for Tank 3 and structural engineer's calculations are attached at the end of this letter.

Detailed Scope of Work for Tank 3

The following scope of work is intended for the development for Tank 3.

1. Tank Inspection and Mechanical Upgrades & Maintenance per Mistras Report

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- Install new 10” Emergency vent assembly on top of tank
- Replace existing 3” conservation vent with 3” gooseneck pipe vent
- Install one missing anchor bolt per recommendation (Hilti 1-1/4” HIT-RE-500V3) with Special Inspection
- Install level transmitter on existing 3” flange nozzle per dwg. P-101.
- Install Float High Level Switch (LSHH) on existing 3” flange nozzle per dwg. P-101.
- Change out all flange gaskets
- Hydraulic fill test to verify that tank is liquid tight
- Install 3” pipe from unloading manifold pipe to top of Tank 3
- Install 4” pipe from Tank 3 to loading manifold pipe
- Repair coating wear on caged ladder rungs

(Note: Internal lining referenced in Mistras Inspection report is NOT required for Used Oil Service.)

2. Electrical
   - Install level monitoring, controls and interlocks for overfill protection

Reference Documentation

The scope of work is supported by the following documentation located in attached appendices.

App 1: Tank Inspection
App 2: Tank Foundation Evaluations
App 3: Drawings

If you have any questions or comments with the permit application documentation, please contact me at 360-355-5513.

Sincerely,

David R. Ravander, P.E.
Principal Engineer

ChemE Consulting, LLC
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Appendix 1

Tank Inspection Report – Mistras

STEEL TANK INSTITUTE
AST Certification Report
Per STI SP001, 6th Edition, January 2018

Ecolube LLC
Tank No. 3
Out of Service Inspection
Located at: Puyallup, WA

Inspected on: 6-26-2019

Report No. 40677049-1

Prepared By:

MISTRAS A World of NDT Solutions Services Division

7820 South 210th Street, Suite 110
Kent, WA 90032
(206) 764-8123

Table of Contents

1.0 Job Information

Job Location :	EcoLube LLC 213 10th St SE Puyallup, WA 98372 USA
Customer Representative :	Eric Spencer
Customer Phone Number :	1-503-893-1933
Job Charge Number :	921793-2019-06-21
Report Number :	40677049-1
Mistras Work Order Number :	T61180-40677049
Inspection Personnel Provided :	Zach Libby API 653 Certified Inspector API 653 (46293)/API 510 (42713)/API 570 (41560)/UTT
	Brandon Gonzalez Level II Technician UTT/PT/MFL

2.0 Tank Inspection Data Sheet

General :

Tank Number	3
Owner	EcoLube LLC
Design Standard	Unknown
Tank Location	Puyallup, WA
Product	Deicer
Specific Gravity	1.28
Manufacturer	Unknown
Manufacture Date	1988
Cathodic Protection	No
Data Plate Present	No
Data Plate Condition	N/A

Dimensions :

Diameter (ft)	11.0
Height (ft)	36.0
Capacity Nominal (bbls)	609.34

Geometry :

Foundation	Raised Concrete Pad
Bottom	Butt Welded Double Bottom
Shell	Full Lap Welded
Roof	Self-Supporting Cone

Access :

Top	From Cage Ladder
Internal	Shell Manway

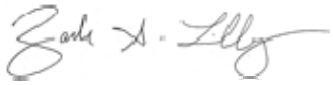
Coatings :

Shell	Insulated
Roof	Insulated
Bottom	Internal Thin Film Epoxy

3.0 Suitability for Service

The Ecolube tank 3 was inspected and tested in accordance with all applicable requirements of STI SP001 January 2018 6th Edition.

Per STI SP001 the tank is classified as a Category 1 and should be inspected monthly and annually by the owner's inspector as required by Section 6.0 of STI SP001. Formal External Inspections shall be performed as required by the owner's future SPCC plan and established schedule. This tank is considered suitable for service provided that all venting and level monitoring equipment is reinstalled and that any mandatory recommendations are completed before commissioning the tank.



Inspectors Signature: _____

STI SP001 Certification No. AC 44164

4.0 Summarized Recommendations

Based on the inspection completed this tank is a Category 1 in accordance with STI SP001, 6th Edition. The following section summarizes the recommendations which are based on the findings in the preceding checklists.

Note: Recommendations in bold underline are to be considered mandatory recommendations. Those NOT in bold underline are to be considered optional repairs/recommendations to be performed at the discretion of the client.

Foundation and Containment

1) There are some minor cracks in the containment area walls and floor. The client should consider sealing these cracks in the future to prevent further degradation.

2) The containment floor joints are not sealed and have small scattered areas of foliage growth. The client should seal this joint to prevent water damage and foliage growth in the future.

3) There are large areas of foliage growing around the base of the tank. The client should consider removal at the next opportunity. Foliage can continue to expand and trap moisture against the tank.

4) The tank rests on a 6” raised concrete pad. The viewable areas contained some moderate spalling and erosion. The customer should repair these areas in the future to mitigate further degradation.

5) This tank contains seismic anchoring details. Inspection noted that there is currently 1 missing long bolt out of a total of 8. Due to the tank’s dimensions, it is likely that all bolts are required. The customer should replace the missing bolt before recommissioning the tank.

Bottom

6) The dead space between the double floor has 3 visible 3” x 3” cutouts in the shell. The space appears to have been filled with a type of spray foam in effort to seal the area from any potential bottom leaks. This configuration is not ideal for typical leak detection. These cutouts should be closed up by welded inserts. The customer should also install a threaded coupling with a bull plug in the lower region of the space so that periodic leak monitoring can be performed. Note: There are likely more of these cutouts behind the insulation sheeting which aren’t readily visible.

7) The primary bottom is sloped to the east and consists of 2 butt welded plate. Inspection noted that an area 6” to 12” west of the weld was bulged approximately 1” to 2”, across the entire diameter of the tank floor. The client should prep the weld by needle gunning or power buffing and perform magnetic particle testing on the weld to determine if any stress cracking has occurred.

8) There is currently no visible grounding component installed. The customer should install a new electrical ground near the base of the tank to allow static discharge and to protect against lightning.

9) There are areas of heavy internal coating degradation present with scale buildup and non-measurable corrosion forming. The client should prep and recoat the affected area at the next opportunity. **Note: If an internal liner is required for the new intended service, this recommendation would be mandatory.**

10) There are 2, 1.5” diameter stainless steel tube banks installed which were used for heating purposes. Visual inspection noted that many of the U-bolts which secure the piping to the supports, were broken or missing. If this component is to be used again in future service, all faulty hardware should be replaced.

Shell

11) There were many suspect CUI (corrosion under insulation) areas throughout the exterior of the shell due to various openings and damage within the jacketing. Internal UT testing was performed on the shell interior of course 1 and 2 confirming that external metal loss up 0.06” has occurred in some locations. The external shell was also visible through UT ports that were installed during this inspection, and there appears to be a heavily degraded coating present in the upper courses of the tank. If the tank is to be re-used, the client should highly consider stripping sample areas of insulation at strategic locations to better evaluate the exterior condition of the tank shell.

12) There are areas of heavy internal coating degradation present with scale buildup and non-measurable corrosion forming. The client should prep and recoat the affected area at the next opportunity. **Note: If an internal liner is required for the new intended service, this recommendation would be mandatory.**

Shell Nozzles and Appurtenances

13) **The nozzle and manway gaskets appear to be original and show evidence of deterioration. The customer should change out all existing gaskets and ensure compatibility with the newly intended service.**

14) There internal nozzle bores, couplings and manway neck and areas of heavy internal coating degradation present with scale buildup and non-measurable corrosion forming. The client should prep and recoat the affected area at the next opportunity. **Note: If an internal liner is required for the new intended service, this recommendation would be mandatory.**

15) There is no data plate installed on the tank. The customer should locate historical records and purchase a new plate to be installed in conspicuous location.

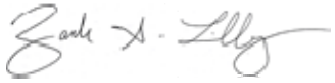
Fixed Roof

16) The roof exterior has been sealed in a spray foam insulation. Ports were installed for UT testing and visible, black scale corrosion was noted which indicates the likelihood of CUI occurring. The customer should remove the foam insulation to better evaluate the exterior condition of the tank roof.

17) **There is currently a 3” atmospheric vent installed and what is assumed to be a 20” emergency vent that has been enclosed by spray foam insulation. If the tank is to be used again, these vents should be serviced and the 20” vent made operational. Note that per STI SP001, for normal venting the minimum size required is 3” and for emergency venting the minimum size required is 10”, so the existing vents meet the size requirements.**

Access Structures

18) The cage ladder rungs had notable coating wear and failure throughout. The client should clean and recoat the affected areas in the future.



Inspectors Signature: _____

STI SP001 Certification No. AC 44164

5.0 Remaining Life Calculations

The following details the calculated corrosion rates and remaining life based on the findings from this inspection. The following items have been calculated:

$$C_r = \frac{t_{previous} - t_{actual}}{\text{Years between } t_{previous} \text{ and } t_{actual}} \text{ in inches per year}$$

$$R_L = \frac{t_{actual} - t_{min}}{C_r} \text{ in years}$$

C_r = Corrosion Rate in inches per years
R_L = The Remaining Life of a tank component in years.
$t_{previous}$ = Thickness at the same location as t_{actual} measured during a previous inspection or nominal thickness, in inches.
t_{actual} = The thickness measured at the time of inspection for a given location or component used to determine the minimum allowable thickness, in inches.
t_{min} = The minimum allowable thickness for a given location or component, in inches.

5.1 Shell Plates Remaining Life

Reference: API 653, 4th Edition, Add. 1, Aug. 2010, Paragraph 4.3.3.1

Course	$t_{previous}$ Previous Thickness (in)	Year Obtained	t_{actual} Actual Thickness (in)	Year Obtained	C_r Corrosion Rate (in/yr.)	t_{min} Minimum Allowable Thickness (in)	R_L Remaining Life (yr.)
6	0.188	1988	0.180	26-Jun-19	0.00026	0.100	305.65
5	0.188	1988	0.180	26-Jun-19	0.00026	0.100	305.65
4	0.188	1988	0.184	26-Jun-19	0.00013	0.100	641.87
3	0.188	1988	0.184	26-Jun-19	0.00013	0.100	641.87
2	0.188	1988	0.126	26-Jun-19	0.00203	0.100	12.82
1	0.250	1988	0.201	26-Jun-19	0.00160	0.100	63.00

5.2 Floor Plate Remaining Life

$t_{previous}$ Previous Thickness (in)	Year Obtained	t_{actual} Actual Thickness (in)	Year Obtained	C_r Corrosion Rate (in/yr.)	t_{min} Minimum Allowable Thickness (in)	R_L Remaining Life (yr.)
0.250	1988	0.233	26-Jun-19	0.00056	0.100	239.13

6.1 Shell Plate UT

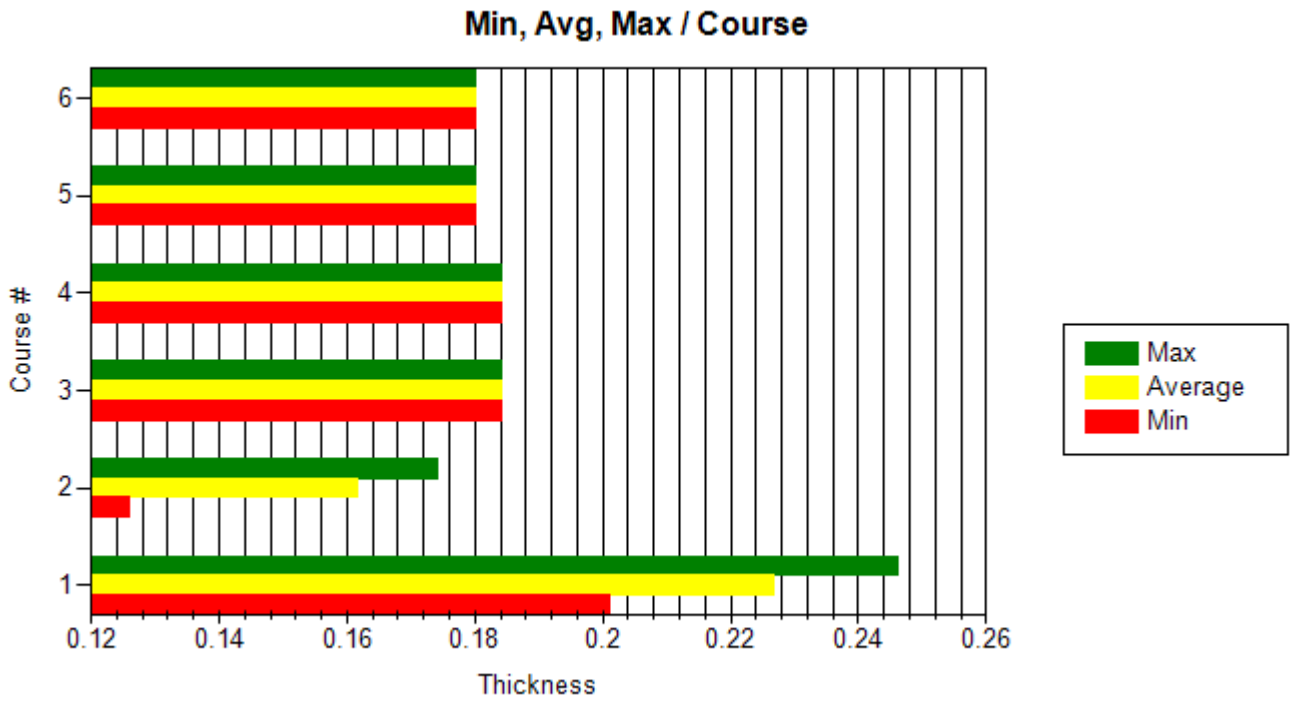
The following table details all readings (in) from the shell UT survey. All scan drops were equally spaced at 8.635 ft.

Data and Statistics		1	2	3	4	*Readings Line Average*
Course 6	**4**	-	-	-	-	
	3	-	-	-	-	
	2	-	-	-	-	
	1	0.180	-	-	-	0.180
Course 5	**4**	-	-	-	-	
	3	-	-	-	-	
	2	-	-	-	-	
	1	0.180	-	-	-	0.180
Course 4	**4**	-	-	-	-	
	3	-	-	-	-	
	2	-	-	-	-	
	1	0.184	-	-	-	0.184
Course 3	**4**	-	-	-	-	
	3	-	-	-	-	
	2	-	-	-	-	
	1	0.184	-	-	-	0.184
Course 2	**4**	0.160	0.163	0.165	0.126	0.154
	3	0.170	0.149	0.163	0.168	0.163
	2	0.167	0.157	0.155	0.165	0.161
	1	0.170	0.165	0.174	0.170	0.170
Course 1	**4**	0.246	0.213	0.242	0.241	0.236
	3	0.242	0.222	0.241	0.222	0.232
	2	0.205	0.215	0.216	0.201	0.209
	1	0.239	0.220	0.222	0.240	0.230
Scan Line Average		0.194	0.188	0.197	0.192	0.193

The tables below present the statistics of the thickness readings (in) obtained on the Shell plates.

Course #	Min	Avg	Max
6	0.180	0.180	0.180
5	0.180	0.180	0.180
4	0.184	0.184	0.184
3	0.184	0.184	0.184
2	0.126	0.162	0.174
1	0.201	0.227	0.246
Global	0.126	0.193	0.246

The following chart depicts the average thickness reading (in) on the shell plates versus the course number.



6.2 Floor Plate UT

The following table details all readings (in) obtained on the floor plates. Typically, one reading was obtained in the corner of each plate and one in the center. Readings were taken from center in the 4 cardinal directions. There are 2 total plates installed.

Plate ID \ Reading ID	1	2	3	4	5	*Avg*
1	0.234	0.234	0.233	0.233	0.235	0.234
2	0.239	0.241	0.240	0.241	0.238	0.240
3	0.236	0.237	0.236	0.235	0.235	0.236
4	0.242	0.238	0.239	0.242	0.238	0.240
Avg	0.238	0.238	0.237	0.238	0.237	0.237

The table below presents the statistics of the thickness readings obtained on the floor plates.

UT Summary	
Maximum	0.242
Average	0.237
Minimum	0.233

6.3 Shell Nozzle UT

Item	Type	Service	Pipe Size (in)	Top (in)	Bottom (in)	Right (in)	Left (in)	Repad Thickness (in)	Flange Thickness (in)	Cover Thickness (in)	Comments
A	Manway	Internal Access	24	0.279	0.257	0.259	0.258	N/A	0.253	0.229	
B	Coupling	Open	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Threaded
C	Coupling	Sensor	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Threaded
D	Nozzle	Suction	4	0.207		0.209	0.2	N/A	N/A	N/A	
E	Nozzle	Fill	4	0.226	0.227	0.227	N/A	N/A	0.806	N/A	
F	Cage Ladder	Roof Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
G	Nozzle	Blinded	8	0.252	0.242	0.253	0.243	N/A	1.112	N/A	
H	Nozzle	Open	1.5	0.145	0.14	0.135	0.15	N/A	0.777	N/A	
I	Nozzle	Steam	1.5	0.143	0.148	0.142	N/A	N/A	0.648	N/A	
J	Coupling	Sample	.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Threaded

6.4 Fixed Roof Nozzle UT

Item	Type	Service	Pipe Size (in)	North (in)	South (in)	East (in)	West (in)	Repad Thickness (in)	Repad Shape	Comments
AA	Nozzle	Blinded	3	N/A	N/A	N/A	N/A	N/A	N/A	All components obstructed by insulation.
AB	Pipe	Anchor	1.5	N/A	N/A	N/A	N/A	N/A	N/A	
AC	Pipe	Tape Guide	1.5	N/A	N/A	N/A	N/A	N/A	N/A	
AD	Pipe	Anchor	1.5	N/A	N/A	N/A	N/A	N/A	N/A	
AE	Nozzle	Blinded	3	N/A	N/A	N/A	N/A	N/A	N/A	
AF	Manway	Emergency Vent	20	N/A	N/A	N/A	N/A	N/A	N/A	
AG	Nozzle	Vent	3	N/A	N/A	N/A	N/A	N/A	N/A	

7.0 STI SP001 Checklists

STI SP001 AST RECORD

Owner Information	Facility Information	Installer Information
Name: **EcoLube LLC**	Name: ***Same as owner**	Name: Unknown
Number and Street: 213 10th St SE	Number and Street:	Number and Street:
City, State, Zip Code: Puyallup, WA, 98372	City, State, Zip Code:	City, State, Zip Code:

Tank ID: 3

Specification:

Design: ☐ UL_____ ☐ SWRI_____ ☐ Horizontal ☒ Vertical ☐ Rectangular

☐ API_____ ☐ Other

☒ Unknown

Manufacturer: Unknown **Contents:** Deicer

Construction Date: 1988 **Last Repair/ Reconstruction Date:** Unknown

Dimensions: 11' D x 36' H **Capacity:** 685.44 bbls **Last Change Of Service Date:** Unknown

Construction: ☐ Bare Steel ☐ Cathodically Protected (Check one: A.☐ Galvanic or B.☐ Impressed Current) Date Installed:

☒ Coated Steel ☐ Concrete ☐ Plastic/ Fiberglass ☒ Other

☒ Double Bottom ☐ Double Wall ☒ Lined Date Installed:

Containment: ☐ Earthen Dike ☐ Steel Dike ☒ Concrete ☐ Synthetic Liner ☒ Other

CRDM: ☒ Date Installed: 1988 Type: Raised Concrete Pad

Release Prevention Barrier: ☒ Date Installed: 1988 Type: Double Floor Design

STI SP001 MONTHLY INSPECTION CHECKLIST

General Inspection Information:

Inspection Date: 6-26-2019	**Retain Until Date: (36 months from inspection date)**
Prior Inspection Date: Unknown	**Inspector Name: Zach Libby**
Tank Inspected (ID #): 3	

Inspection Guidance:

- **For equipment not included in this standard, follow the manufacturer recommended inspection/testing schedules and procedures.**
- **The periodic AST inspection is intended for monitoring the external AST condition and its containment structure. This visual inspection does not require a certified inspector. It shall be performed by an owner's inspector who is familiar with the site and can identify changes and developing problems.**
- **Upon discovery of water in the primary tank, secondary containment area, interstice, or spill container, remove promptly or take other corrective action. Before discharge to the environment, inspect the liquid for regulated products or other contaminants and dispose of it properly.**
- **(*) designates an item in a non-conformance status. This indicates that action is required to address a problem.**
- **Non-conforming items important to tank or containment integrity require evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer who will determine the corrective action. Note the non-conformance and corresponding corrective action in the comment section.**
- **Retain the completed checklists for 36 months.**
- **In the event of severe weather (snow, ice, wind storms) or maintenance (such as painting) that could affect the operation of critical components (normal and emergency vents, valves), and inspection of these components is required immediately following the event.**

Item	Task	Status	Comments
1.0 Tank Containment			
1.1 Containment Structure	**Check for water, debris, cracks or fire hazard**	☒ **Yes*** ☐ **No** ☐ **N/A**	Gaps at floor joints noted. Some minor cracks in walls and floor also observed.
1.2 Primary Tank	**Check for water**	☐ **Yes*** ☒ **No** ☐ **N/A**	No water in primary tank.
1.3 Containment drain valves	**Operable and in a closed position**	☐ **Yes** ☐ **No*** ☒ **N/A**	None installed or located. Drain tiles present.
1.4 Pathways and entry	**Clear and gates/doors operable**	☒ **Yes** ☐ **No*** ☐ **N/A**	Access points acceptable.
2.0 Leak Detection			
2.1 Tank	**Visible signs of leakage**	☐ **Yes*** ☒ **No**	No leak detection devices.
2.2 Secondary Containment	**Visible signs of leakage from tank into secondary containment**	☐ **Yes*** ☒ **No**	No product leaks present.

2.3 Surrounding Soil	**Visible signs of leakage**	☐ Yes* ☒ No ☐ N/A	No signs of leaks.
2.4 Interstice	**Visible signs of leakage**	☐ Yes* ☒ No ☐ N/A	No way to confirm. No leak detection ports.

Item	Task	Status	Comments
3.0 Tank Equipment			
3.1 Valves	**a. Check for leaks**	☐ Yes* ☒ No ☐ N/A	No leaks discovered.
	b. Tank drain valves must be kept locked.	☐ Yes* ☐ No ☒ N/A	
3.2 Spill containment boxes on fill pipe	**a. Inspect for debris, residue and water in the box and remove**	☐ Yes* ☐ No ☒ N/A	None.
	b. Drain valves must be operable and closed	☐ Yes* ☐ No ☒ N/A	
3.3 Liquid level equipment	**a. Both visual and mechanical devices must be inspected for physical damage.**	☐ Yes ☐ No* ☒ N/A	Equipment removed or offline at time of inspection.
	b. Check the device is easily readable	☐ Yes ☐ No* ☒ N/A	

Item	Task	Status	Comments
3.4 Overfill equipment	**a. If equipped with a "test" button, activate the audible horn or light to confirm operation. This could be battery powered. Replace the battery if needed.**	☐ Yes ☐ No* ☒ N/A	None.
	b. If overfill valve is equipped with mechanical test mechanism, actuate the mechanism to confirm operation	☐ Yes ☐ No* ☒ N/A	None.
3.5 Piping connections	**Check for leaks, corrosion and**	☐ Yes* ☒ No	No leaks or corrosion from the exterior.

	damage		
4.0 Tank Attachments and Appurtenances			
4.1 Ladder and platform structure	**Secure with no sign of severe corrosion or damage?**	☒ **Yes** ☐ **No*** ☐ **N/A**	Ladder Cage and Handrails have minor areas of coating wear.
5.0 Other Conditions			
5.1 Are there other conditions that should be addressed for continued safe operation or that may affect the site spill prevention plan?		☒ **Yes*** ☐ **No**	See recommendations.

Additional Comments: Tank has not been in operation since 2012.

STI SP001 Annual Inspection Checklist

General Inspection Information:

Inspection Date: 6-26-2018	**Retain Until Date: (36 months from inspection date)**
Prior Inspection Date: Unknown	**Inspector Name: Zach Libby**
Tank Inspected (ID #): 3	

Inspection Guidance:

- **For equipment not included in this standard, follow the manufacturer recommended inspection/testing schedules and procedures.**
- **The periodic AST inspection is intended for monitoring the external AST condition and its containment structure. This visual inspection does not require a certified inspector. It shall be performed by an owner's inspector who is familiar with the site and can identify changes and developing problems.**
- **Remove promptly upon discovery of standing water or liquid in the primary tank, secondary containment area, interstice or spill container. Before discharge to the environment, inspect the liquid for regulated products or other contaminants and dispose of it properly.**
- **In order to comply with EPA SPCC (Spill Prevention, Control and Countermeasure) rules, a facility must regularly test liquid level sensing devices to ensure proper operation (40 CFR 112.8(c)(8)(v)).**
- **(*) designates an item in a non-conformance status. This indicates that action is required to address a problem.**
- **Non-conforming items important to tank or containment integrity require evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer who will determine the corrective action. Note the non-conformance and corresponding corrective action in the comment section.**
- **Retain the completed checklists for 36 months.**
- **Complete this checklist on an annual basis supplemental to the owner monthly-performed inspection checklists.**
- **Note: If a change has occurred to the tank system or containment that may affect the SPCC plan, the condition should be evaluated against the current plan requirement by a Professional Engineer knowledgeable in SPCC development and implementation.**

Item	Task	Status	Comments
1.0 Tank Containment			
1.1 Containment structure	**Check for:** • **Holes or cracks in containment wall or floor** • **Washout** • **Liner degradation** • **Corrosion** • **Leakage**	☒ **Yes*** ☐ **No** ☐ **N/A**	There are some tight cracks in the containment area walls and floor. The containment floor joints are not sealed and have small scattered areas of foliage growth.

	• Paint failure • Tank Settling		
2.0 Tank Foundation and Supports			
2.1 Foundation	**Settlement or foundation washout?**	☐ Yes* ☒ No	No washout or erosion of concrete floor observed.
2.2 Concrete pad or ring wall?	**Cracking or spalling**	☒ Yes* ☐ No ☐ N/A	The viewable areas contained some moderate spalling and erosion.
2.3 Supports	**Check for corrosion, paint failure, etc.**	☒ Yes* ☐ No ☐ N/A	This tank contains seismic anchoring. There was 1 missing bolt noted.
2.4 Water drainage	**Water drains away from the tank?**	☒ Yes ☐ No* ☐ N/A	Drainage seems ok.
2.5 Tank grounding	**Strap secured and in good condition?**	☐ Yes ☒ No* ☐ N/A	There is currently no electrical ground installed.

Item	Task	Status	Comments
3.0 Cathodic Protection			
3.1 Galvanic cathodic protection system	**Confirm system is functional, includes the wire connections for galvanic systems**	☐ Yes ☐ No* ☒ N/A	There are no CP systems in place.
3.2 Impressed current system	**a. Inspect the operational components (power switch, meters and alarms).**	☐ Yes ☐ No* ☒ N/A	
	b. Record hour meter, ammeter and voltmeter readings.	☐ Yes ☐ No* ☒ N/A	
4.0 Tank Shell, Heads & Roof			
4.1 Coating	**Check for coating failure**	☒ Yes* ☐ No	The exterior is insulated. Deteriorated coating could be seen at damaged areas.
4.2 Steel condition	**Check for:** • **Dents** • **Buckling** • **Bulging** • **Corrosion** • **Cracking**	☒ Yes* ☒ No	There were some minor dents observed from the interior. There were areas of CUI noted.
4.3 Roof slope	**Check for low points**	☐ Yes* ☐ No ☒ N/A	Unable to assess due to spray foam

	and standing water		insulation.

Item	Task	Status	Comments
5.0 Tank Equipment			
5.1 Vents	**Verify that components are moving freely, and vent passageways are not obstructed for:** • **Emergency vent covers** • **Pressure/vacuum vent poppets** • **Other moving vent components**	☒ **Yes*** ☐ **No**	Emergency vent is covered in spray foam. The 3" atmospheric vent is dated.
5.2 Valves	**Check the condition of all valves for leaks, corrosion and damage.**	☐ **Yes*** ☒ **No**	Valves appear dated but functional.
5.2.1 Anti-siphon check and gate valves	**Cycle the valve open and closed and check for proper operation**	☐ **Yes** ☐ **No*** ☒ **N/A**	None.
5.2.2 Pressure regulator valve	**Check for proper operation. (Note that there may be small, 1/4-inch drain plugs in the bottom of the valve that are not visible by looking from above only)**	☐ **Yes** ☐ **No*** ☒ **N/A**	None.
5.2.3 Expansion relief valve	**Check that the valve is in the proper orientation. (Note that fuel must be discharged back to the tank via a separate pipe or tubing.)**	☐ **Yes** ☐ **No*** ☒ **N/A**	None.
5.2.4 Solenoid valves	**Cycle power to valve to check operation. (Electrical solenoids can be verified by listening to the plunger opening and closing. If no audible confirmation, the valve should be inspected for the presence and operation of the plunger.)**	☐ **Yes** ☐ **No*** ☒ **N/A**	None.

Item	Task	Status	Comments
5.2.5 Fire and shear valves	**a. Manually cycle the valve to ensure components are moving freely and that the valve handle or lever has clearance to allow valve to**	☐ **Yes** ☐ **No*** ☒ **N/A**	None.

	close completely.		
	b. Valves must not be wired in open position	☐ Yes ☐ No* ☒ N/A	None.
	c. Make sure fusible element is in place and correctly positioned	☐ Yes ☐ No* ☒ N/A	None.
	d. Be sure test ports are sealed with plug after testing is complete and no temporary test fixture or component remains connected to valve.	☐ Yes ☐ No* ☒ N/A	None.
5.3 Interstitial leak detection equipment	Check condition of equipment, including: • The window is clean and clear in sight leak gauges. • The wire connections of electronic gauges for tightness and corrosion • Activate the test button, if applicable.	☐ Yes ☐ No* ☒ N/A	Single wall AST.

Item	Task	Status	Comments
5.4 Spill containment boxes on fill pipe	a. If corrosion, damage, or wear has compromised the ability of the unit to perform spill containment functions, replace the unit.	☐ Yes* ☐ No ☒ N/A	None.
	b. Inspect the connections to the AST for tightness, as well as the bolts, nuts, washers for condition and replace if necessary.	☐ Yes* ☐ No ☒ N/A	None.
	c. Drain valves must be operable and closed	☐ Yes* ☐ No ☒ N/A	None.
5.5 Strainer	a. Check that the strainer is clean and in good condition	☐ Yes ☐ No* ☒ N/A	None.
	b. Access strainer basket and check cap and gasket seal as well as bolts.	☐ Yes ☐ No* ☒ N/A	None.
5.6 Filter	a. Check that the filter is in good condition and is within the manufacturer's expected	☐ Yes ☐ No* ☒ N/A	None.

	service life. Replace, if necessary.		
	b. Check for leaks and decreased fuel flow.	☐ Yes ☐ No* ☒ N/A	None.
5.7 Flame arrestors	Follow manufacturer's instructions. Check for corrosion and blockage of air passages.	☐ Yes* ☐ No ☒ N/A	None.
5.8 Leak detector for submersible pump systems	Test according to manufacturer's instructions and authority having jurisdiction (AHJ). Verify leak detectors are suited and properly installed for aboveground use.	☐ Yes ☐ No* ☒ N/A	None.

Item	Task	Status	Comments
5.9 Liquid level equipment	a. Has equipment been tested to ensure proper operation	☐ Yes ☐ No* ☒ N/A	All related components and device appear removed or offline.
	b. Does equipment operate as required?	☐ Yes ☐ No* ☒ N/A	
	c. Follow manufacturer's instructions	☐ Yes ☐ No* ☒ N/A	
5.10 Overfill equipment	a. Follow manufacturer's instructions and regulatory requirements for inspection and functionality verification.	☐ Yes ☐ No* ☒ N/A	No overfill alarms observed.
	b. Confirm device is suited for above ground use by the manufacturer	☐ Yes ☐ No* ☒ N/A	
6.0 Insulated Tanks			
6.1 Insulation	Check condition of insulation for: • Missing sections • Areas of moisture • Mold • Damage	☒ Yes* ☐ No ☐ N/A	There were many suspect CUI (corrosion under insulation) areas throughout the exterior of the shell due to various openings and damage within the jacketing. Internal UT testing was performed on the shell interior of course 1 and 2 confirming that external metal loss up 0.06" has occurred in some locations. The external shell was also visible through UT ports that were installed during this inspection, and there appears to be a heavily degraded coating present in the upper courses of the tank.
6.2 Insulation cover or jacket	Check for damage that will allow water intrusion	☒ Yes* ☐ No ☐ N/A	See above.
7.0 Miscellaneous			
7.1 Electrical wiring and boxes	Are they in good condition?	☒ Yes ☐ No* ☐ N/A	Intact wiring appeared satisfactory.

7.2 Labels and tags	**Ensure that all labels and tags are intact and readable.**	☒ **Yes** ☐ **No*** ☐ **N/A**	Labels were legible. There is no data plate installed.

Additional Comments: See recommendations in section 4.0. This tank qualifies as a category 1 since it has spill control, continuous release detection and a release prevention barrier due to the double bottom design, raised foundation and secondary containment.

8.0 Photographs

Tank Base	Tank Overview
	
Manway A	**Data Placard**
	

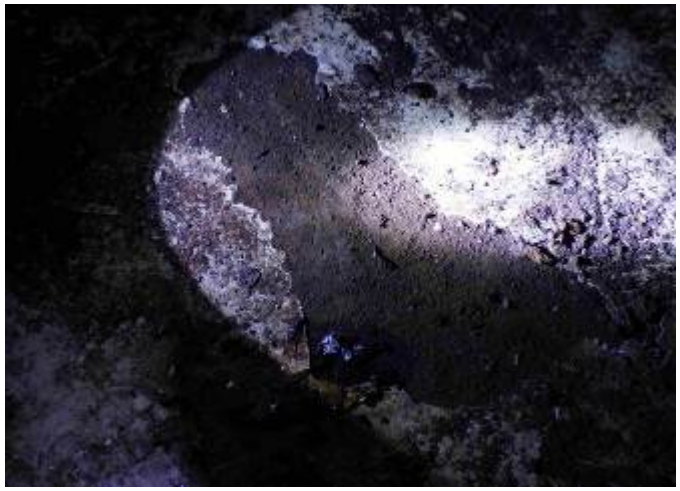
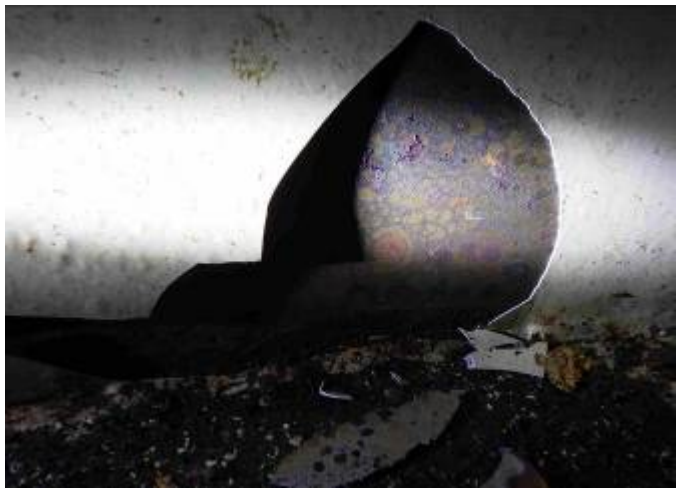
Coupling B	Coupling C
	
Suction Nozzle D	**Sample Point J**
	

Transfer Nozzle E	Deteriorated Insulation at Nozzle Penetration.
	
Missing Anchor Bolt	**Ladder Base**
	

Dead Space Cut Out	Shell Jacket Hole
	
Edge of Foundation Pad	**Nozzle G**
	

Nozzle H	Shell Insulation Bands
	
Nozzle I	**Sensor Control Station**
	

Floor Overview	Roof Interior View
	
Manway A Neck	**Internal 3 Way Lap**
	

Floor Coating Failure	Shell Internal Coating Failure
	
Lower Shell Large Coating Failure	**Shell Patch**
	

Steam Nozzle I	Temp Quill B
	
Coupling C	**Suction Nozzle D Interior**
	

Coupling J Interior	Nozzle G Interior. Note Coating Degradation
	
Shell Jacketing Hole	**Broken U Bolt**
	

Emergency Vent AF and Roof Overview	Shell Top Angle. Note Opening.
	
Old Autogauge Details	**Roof Overview**
	

Emergency Vent	Vent AG
	
Vent Stem	**Nozzle AA**
	

9.0 NDE Equipment Used

The equipment utilized for the inspection of the tank included of the following :

Pit Gauge

Manufacturer	Model	Serial No
W.R. Thorpe	1	1.979.912

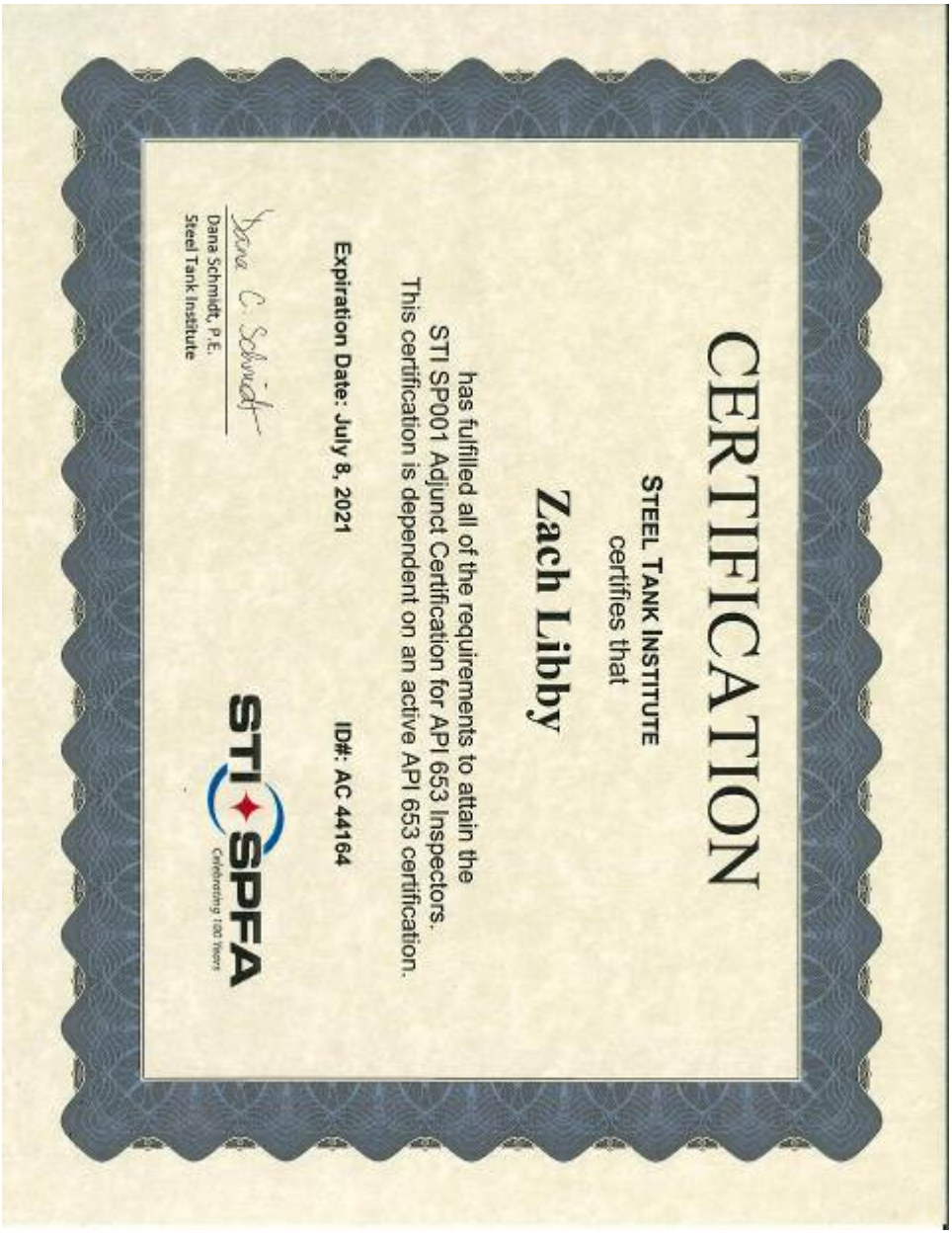
Ultrasonic Transducers

Manufacturer	Model	Serial No	MHz	Diameter
Olympus	D790-SM	865199	5	0.375

UT Equipment

Manufacturer	Model	Serial No
Olympus	38DL Plus	130573601
CS Cal. Block	0.100-0.500	96-7601

10.0 Inspector Certifications



CERTIFICATION

STEEL TANK INSTITUTE
certifies that

Zach Libby

has fulfilled all of the requirements to attain the
STI SP001 Adjunct Certification for API 653 Inspectors.
This certification is dependent on an active API 653 certification.

Expiration Date: July 8, 2021 **ID#: AC 44164**

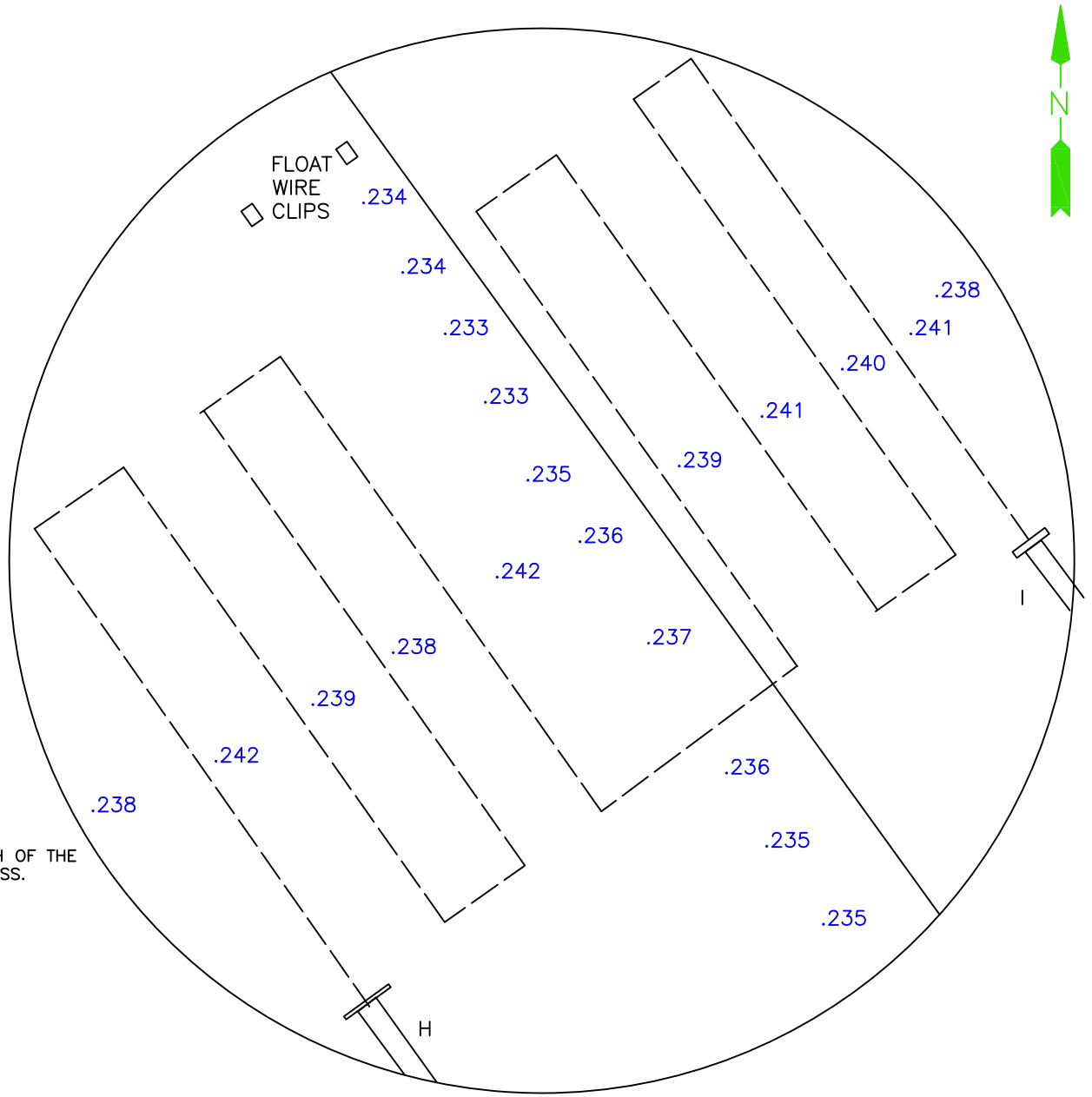
Dana C. Schmidt

Dana Schmidt, P.E.
Steel Tank Institute

STI SPFA
Celebrating 100 Years

11.0 Drawings

TANK 3 FLOOR DRAWING

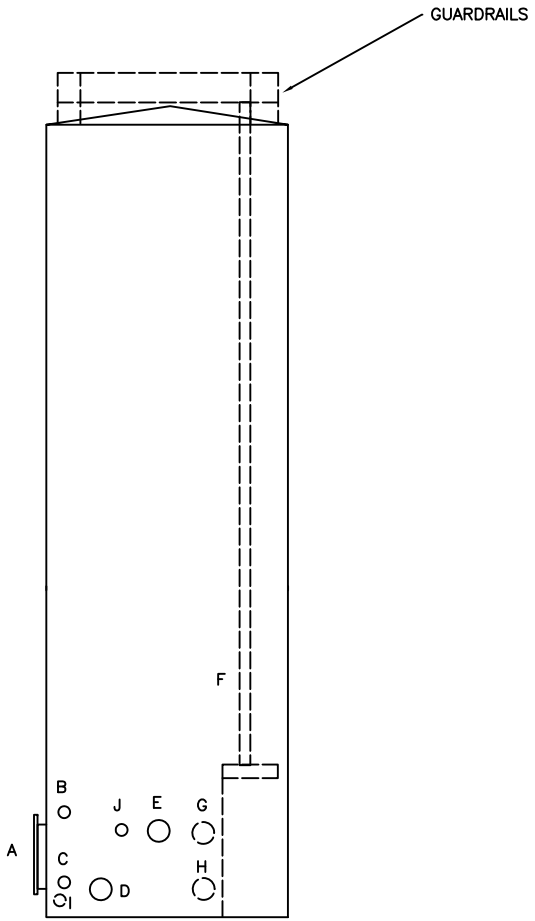


LEGEND & NOTES

xxx ULTRASONIC THICKNESS READING IN THOUSANDTHS OF AN INCH OF THE PLATE. IT DOES NOT INCLUDE ANY PAINT OR COATING THICKNESS.

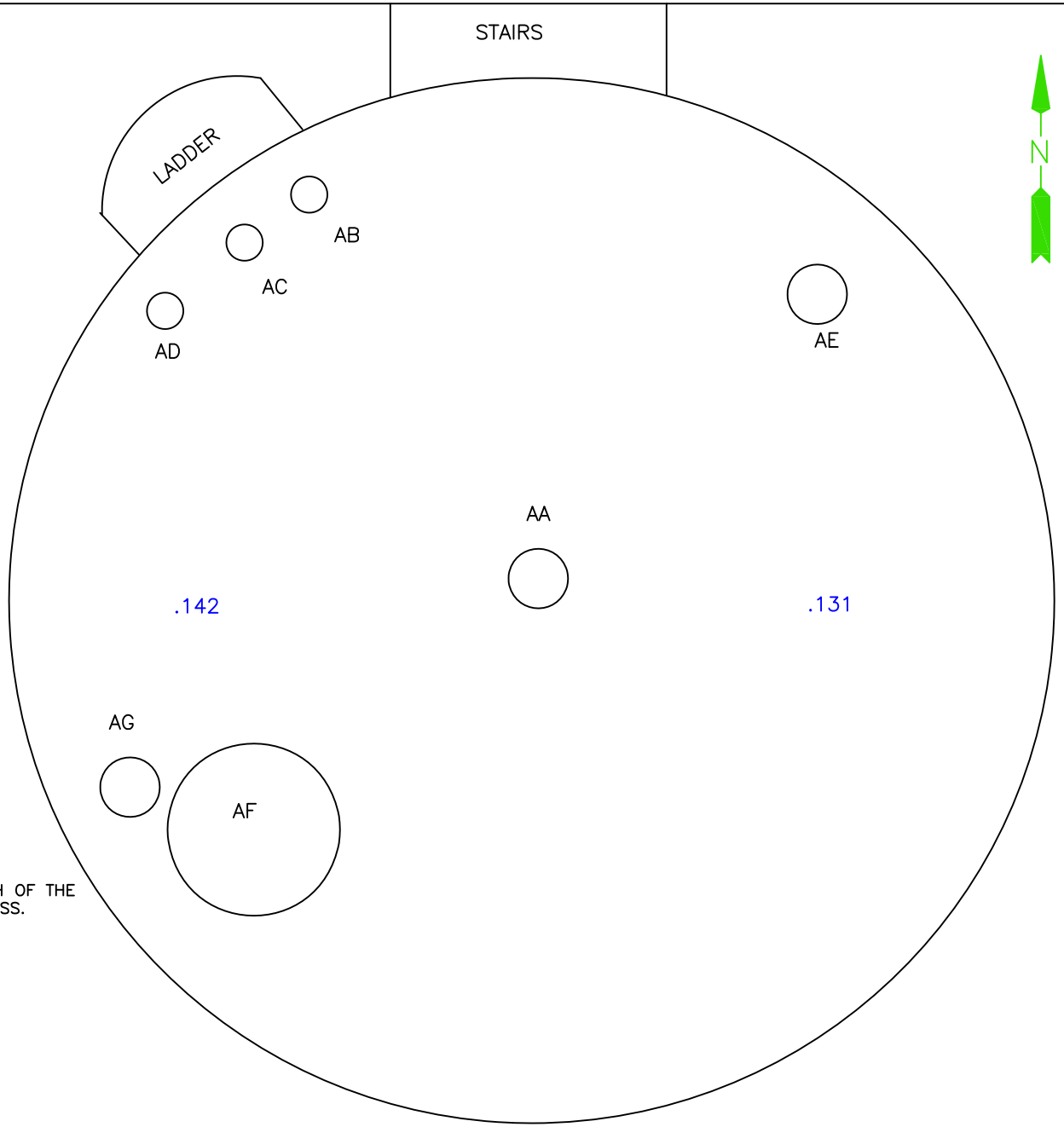
CUSTOMER: ECOLUBE	SHELL HEIGHT:36' DIAMETER: 10'	INSPECTION DATE: 06-26-19	MISTRAS A World of NDT Solutions
LOCATION: PUYALLUP, WA	INSPECTOR: ZACH LIBBY	DRAWING NUMBER: TANK 3 FLOOR	
TANK NUMBER: 3	TECHNICIAN: BRANDON GONZALEZ	CAD DRAFTSMAN: B. GONZALEZ	7820 S 210th Street, Building C, Suite 110 KENT, WA 98032

TANK 3 ELEVATION NORTH DRAWING



CUSTOMER: ECOLUBE	SHELL HEIGHT: 36' DIAMETER: 10'	INSPECTION DATE: 06/26/19	MISTRAS A World of NDT Solutions
LOCATION: PUYALLUP	INSPECTOR: ZACH LIBBY	DRAWING NUMBER: TANK 3 ELEV.	7820 S 210th Street, Building C, Suite 110 KENT, WA 98032
TANK NUMBER: TANK 3	TECHNICIAN: BRANDON GONZALEZ	CAD DRAFTSMAN: B. GONZALEZ	

TANK 3 ROOF DRAWING



LEGEND & NOTES

XXX ULTRASONIC THICKNESS READING IN THOUSANDTHS OF AN INCH OF THE PLATE. IT DOES NOT INCLUDE ANY PAINT OR COATING THICKNESS.

CUSTOMER: ECOLUBE	SHELL HEIGHT:36' DIAMETER: 10'	INSPECTION DATE: 06-29-19	MISTRAS A World of NDT Solutions
LOCATION: PUYALLUP, WA	INSPECTOR: ZACH LIBBY	DRAWING NUMBER: TANK 3 ROOF	7820 S 210th Street, Building C, Suite 110 KENT, WA 98032
TANK NUMBER: 3	TECHNICIAN: BRANDON GONZALEZ	CAD DRAFTSMAN: B. GONZALEZ	

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9021 Willow Grove Rd
Longview, WA 98632
David@Chemeconsulting.com / 360-355-5513

Appendix 2

Structural Anchor Review – Conlee Engineers

CONLEE ENGINEERS, INC.	Client CES	Sheet T3.1
	Project PUYALLUP TANK REV.	Date 9.12.21
	Subject TANK 3	By CJC

TANK 4, 77'Φ × 36', 25,580 GAL, 8-1¼"Φ A.B.

TANK

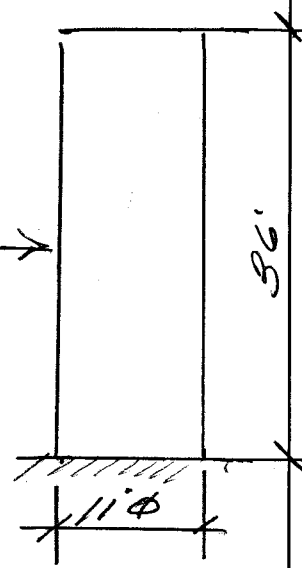
T&B @ $\frac{\pi(11)^2}{4}$ 10.2 (2) = 1.94^k

WALL @ π(11) 36 (10.2) = 12.69^k

W_{TANK} = 14.63^k

CONTENTS 25,580 GAL OIL

W_{OIL} = 25,580 (7.3 #/GAL) = 186.7^k



SEISMIC W/ C_S = .20

E = .28(14.63 + 186.7) = 56.37^k

M = 56.37^k(18') = 1015 $^{1-k}$

SECTION W/ D_1 = 132", D_2 = 130"

$A = \frac{\pi}{4}(132^2 - 130^2)$ = 411.6 in^2

$S = \frac{\pi}{32}\left(\frac{132^4 - 130^4}{132}\right)$ = 13,377 in^3

LOADS W/ .9D + E

$f_a = \frac{.9(14.63 + 186.7)}{411.6}$ = .44 KSI

$f_b = \frac{1015(12)}{13,377}$ = .91 KSI

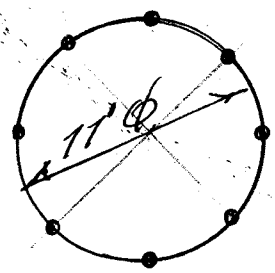
f_T = .44 − .91 = −.47 KSI

W/ 8-BOLTS, TRIB = $\frac{\pi(11)12}{8}$ = 51.8"

$V_E = \frac{56.37^k}{8}$ = 7.05 ^{k}/BOLT

T = .47 KSI (51.8") = 24.33^k/B

ASSUME 9½" EMBED.

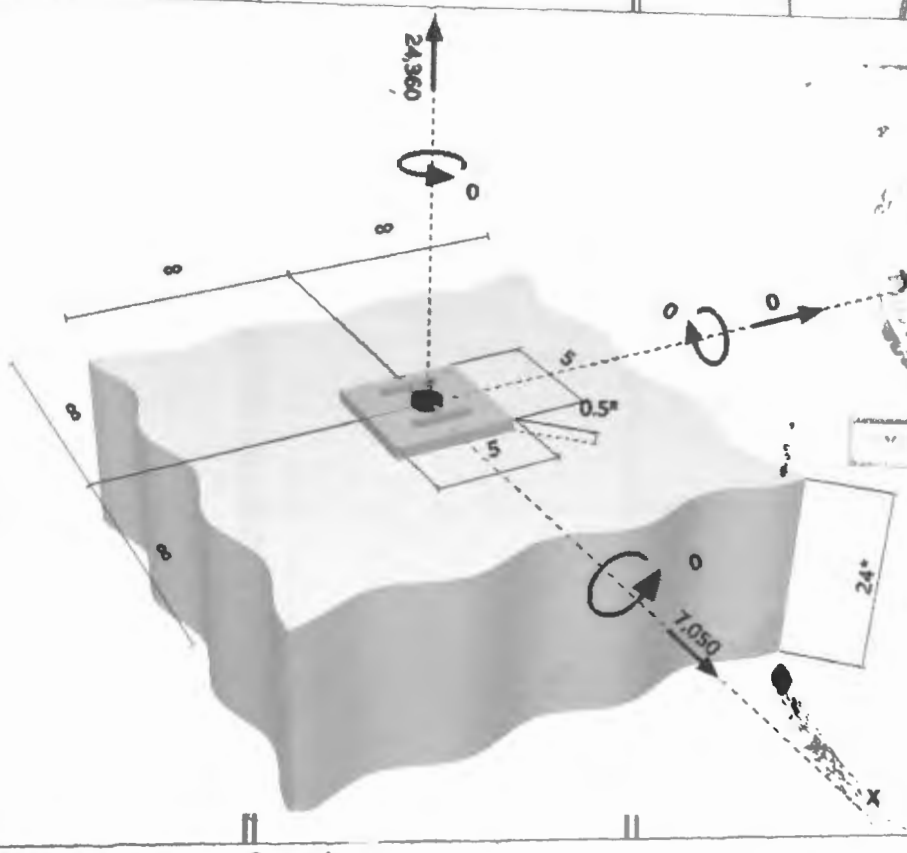


CONLEE ENGINEERS, INC.	Client CES	Sheet T3.2
	Project ROYALLUP TANK REV	Date 7.12.21
	Subject TANK 3	By JC

C.L EXIST. ANCHORS (CONT)

1 Input data

Anchor type and diameter:	**Heavy Hex Head ASTM F 1554 GR. 36 1 1/4**
Effective embedment depth:	h_{ef} = 9.500 in.
Material:	ASTM F 1554
Proof:	Design method ACI 318-08 / CIP
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate:	l_x x l_y x t = 5.000 in. x 5.000 in. x 0.500 in.; (Recommended plate thickness: not calculated
Profile:	S shape (AISC), S3X5.7; (L x W x T x FT) = 3.000 in. x 2.330 in. x 0.170 in. x 0.260 in.
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 24.000 in.
Reinforcement:	tension: condition B, shear: condition B;
	edge reinforcement: none or < No. 4 bar



S.J. CONLEE ... PROFESSIONAL ENGINEER

9-19-21

2 Proof I Utilization (Governing Cases)

Loading	Proof	Design values [lb] Load	Capacity	Utilization β_N / β_V [%]	Status
Tension	Concrete Breakout Strength	24,360	26,944	91 / -	OK
Shear	Steel Strength	7,050	21,919	- / 33	OK

Loading	β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.904	0.322	5/3	100	OK

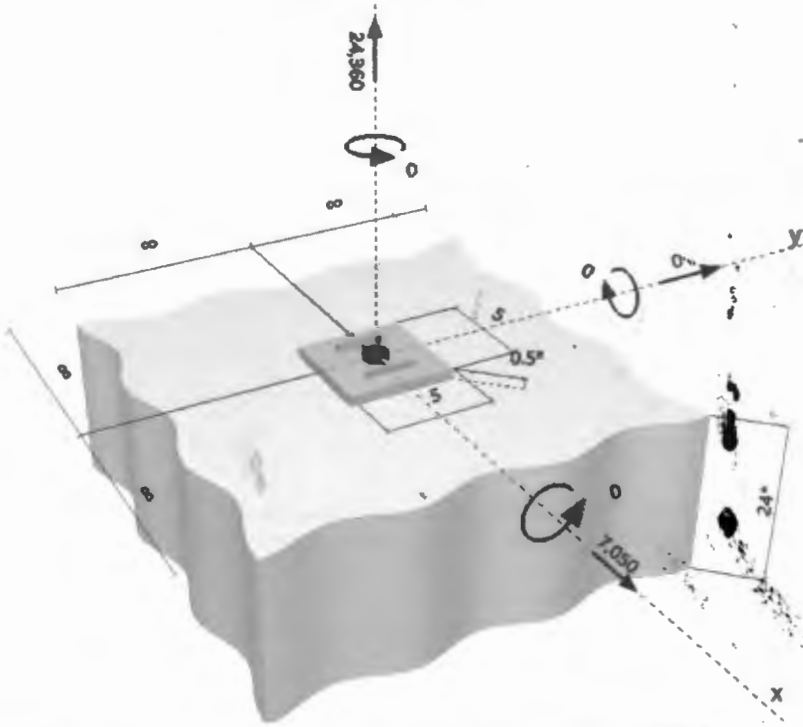
I.R. = 100% ∴ EXIST. ANCH. OK

CONLEE ENGINEERS, INC.	Client CES Project PUYALLUP TANK REV. Subject TANK 3	Sheet T3.3. Date 7.12.21 By CJ.

CK. REPLACEMENT ANCH
1¼"Ø THRD. ROD IN ALONG ANCH. 13" EMBED

1 Input data

Anchor type and diameter:	**HIT-RE 500 V3 + HAS-V-36 (ASTM F1554 Gr.36) 1 1/4**
Effective embedment depth:	$h_{ef,act}$ = 13.000 in. ($h_{ef,limit}$ = - in.)
Material:	ASTM A 1554 Grade 36
Evaluation Service Report:	ESR-3814
Issued I Valid:	1/1/2020 | 1/1/2021
Proof:	Design method ACI 318-08 / Chem
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate:	l_x x l_y x t = 5.000 in. x 5.000 in. x 0.500 in.; (Recommended plate thickness: not calculated
Profile:	S shape (AISC), S3X5.7; (L x W x T x FT) = 3.000 in. x 2.330 in. x 0.170 in. x 0.260 in.
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 24.000 in., Temp. short/long: 32/32 °F
Installation:	**hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: condition B, shear: condition B; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar



9-19-21

2 Proof I Utilization (Governing Cases)

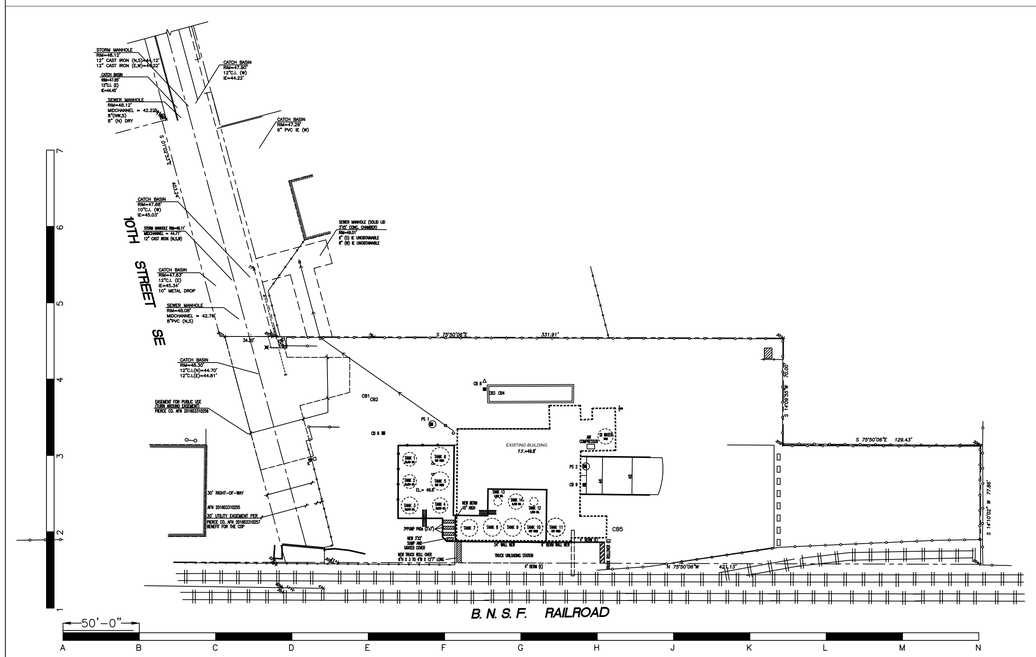
Loading	Proof	Design values [lb] Load	Capacity	Utilization β_N / β_V [%]	Status
Tension	Concrete Breakout Strength	24,360	28,369	86 / -	OK
Shear	Steel Strength	7,050	21,921	- / 33	OK

Loading	β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.859	0.322	5/3	93	OK

ChemE Consulting, LLC
9021 Willow Grove Rd
Longview, WA 98632
David@Chemeconsulting.com / 360-355-5513

Appendix 3

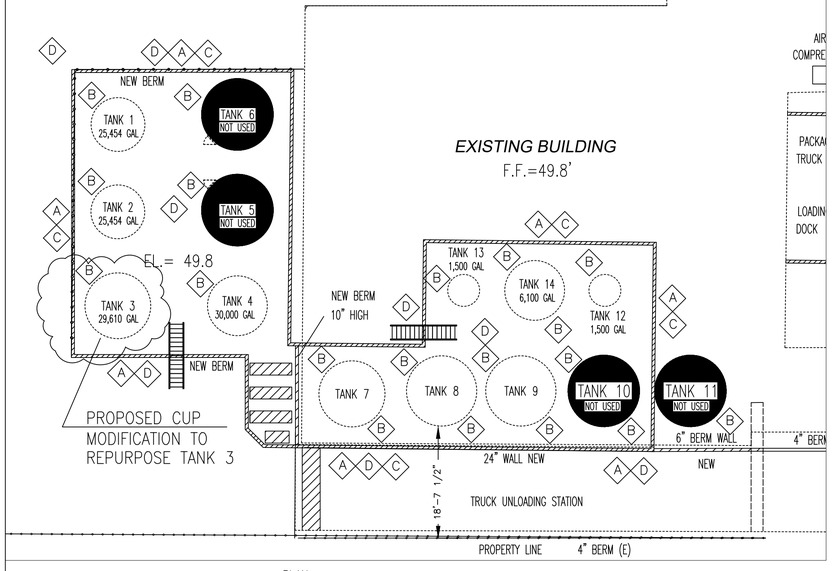
Drawings



PLAN NORTH

OVERALL SITE PLAN

NOT-TO-SCALE



PLAN NORTH

TANK AREA PLAN

NOT-TO-SCALE

Project Description

An additional existing carbon steel single-wall tank is proposed to be repurposed for service under minor modification to the CUP to be added to the 6 other metal tanks previously repurposed and three HDPE tanks for storage of Class III-B combustible materials as part of CUP project. There will be 4 tanks outdoors instead of 3 used for storage of Used Motor Oil (UMO) and three tanks indoors will be used for the storage of concentrated antifreeze or spent antifreeze. The smaller HDPE tanks will be used for 50% antifreeze blend tanks used to fill containers. Tank 3 will be upgraded to address all deficiencies listed by Mistras Group for compliance with UL 142 combustible liquid storage including anchoring, level monitoring and overfill protection and containment. New piping will connect existing unloading and loading manifolds to Tank 3.

Reference Permits

City of Puyallup Conditional Use Permit No. P-18-0154
City of Puyallup Civil Permit - E-20-0114
City of Puyallup Fire Construction Permit Sprinklers - F-20-0039
City of Puyallup Fire Construction Permit Fire Alarm System - Under Review
City of Puyallup - Tenant Improvement - Bdg Permit B-15-0254

Applicable Codes and Standards

International Fire Code - 2018
International Building Code - 2018
International Mechanical Code - 2018
NFPA 30 -Flammable and Combustible Liquid Code
ASME B31.3 - Process Piping Code

LOCATION DESIGNATORS

A	LOCATION OF "NO SMOKING SIGNAGE"
B	LOCATION OF TANK SIGNAGE
C	LOCATION OF CONCRETE WALLS
D	LOCATION OF FIRE EXTINGUISHERS

APPLICABLE FIRE CODE REQUIREMENTS

Chapter 50 - Hazardous Materials Classification for Base Oil & Antifreeze	
Combustible Liquid - Class IIIB	
Use - Storage	
Base Oil (Lubricating Motor Oil CAS # - 64742-58-1)	Combustible Liquid - Class IIIB - Storage
Antifreeze 50% & 100% (Ethylene Glycol CAS# 107-21-1)	Combustible Liquid - Class IIIB - Storage
Wiper Fluid 8% Methanol CAS# 67-56-1 in DI Water	Not Applicable: Solutions with <20% liquid in water and Flash Point >95F (IFC 5701.2.8) are exempt
Maximum allowable quantity (MAQ) per control area - Table 5003.1.1(3)	
MAQ - Class IIIB Combustible Liquid = 13,200 gal	Storage tank volume above MAQ
Requirements for Chapter 50 - Hazardous Materials	
Safety Data Sheet	SDS for N100 Base Oil, Antifreeze, Wiper Fluid attached
Spill Mitigation	Spill containment system provided
Ignition of Hazards	Area to be kept clear of ignition hazards
Protection of hazardous materials	The tank are located with concrete containment area with walls
Exposure hazards from fire	Containment area is kept free of flammable materials
Detection of Gas Release	No hazardous gas potential associated with base oil
Reliable power	Power will be installed under electrical permit
Ventilation	Oil and antifreeze do not have vent fumes due to vapor pressure which would require additional ventillation.
Operating and emergency plans	Operating, safety and emergency plans will be developed for the plant
Design of tanks	Existing carbon steel tank inspected and modified to meet UL-142
Protection of tanks	Tanks are located within concrete containment and berm walls
Tank Marking	Tanks are labelled with NFPA or HMIS labels
Tank Venting	Each tank will be provided one 3-inch tank vent provided for normal venting with 10" emergency vent for existing tanks. HDPE tanks will be provided 3" vent for combined normal and emergency venting.
Tank Seismic protection	Existing tanks have seismic anchors and additional anchoring will be added per inspection reports. HDPE tank anchors per manufacturer designs will be installed with tanks.
Design of piping	Piping installed to ASME B31.3
Design of piping	Carbon steel and stainless connections are welded.
Liquid - level indication	Tanks will be equipped with level transmitter for display of tank level and gauges for new HDPE tanks
Liquid - level limit control	Tanks will be equipped with high-high level pump shutoff with auto closure valves on flow to HDPE tanks.
Maintenance Testing	Equipment will be inspected and tested on routine frequency
Instrument Testing	Liquid level control will be tested annually
Signage	
Tanks shall have hazard identification signage	Tank to be labelled with NFPA 704 or HMIS labels
Tanks shall be labeled	Tank markings include Tank ID and Contents
"No Smoking Signs" are required within 25 feet of outdoor storage	Signage is provided on containment wall
Pipe labelling	Pipe labelling to include material and line number designation
Personnel training is required	Operating personnel will be trained on procedures
Security is provided against unauthorized entry	Site is fenced and gated
Protection from vehicle damage	Tank is located within concrete walled containment
Electrical Wiring	Wiring is being installed to electrical code under permit per NFPA 70
Separation of Incompatible materials	Incompatible materials are not stored in common containment areas
Control Area in free of weeds for 15 feet	Area outside of containment area is kept clear of weeds
Spill control and containment is required for Class IIIB Combustible Liquids exceeding 13,200 gallons.	Concrete containment with sumps is provided. Some containment concrete upgrades to seal cracks will be completed.
Containment volume must be larger than tank plus 25-yr/24-hr storm	Maximum Tank Volume = 30,000 gal (Tank 4)
	Required Rain Volume 3.8" Source NOAA 100yr - 24 Hour Event = 4,321 gal outside
	Total Required Volume = 34,321 gal
	Actual Containment Volume = 35,409 gal
Monitoring sump	Sumps are pumped to wastewater treatment (POTW Permit application pending)
Limit Controls	Tank is stored at ambient temperature and pressure in vented tanks without heating
Lighting	Indoor/Outdoor Lighting is provided for detection of leaks and operability
Siphon Protection	Base oil tanks are top loaded to prevent siphon potential. Check valves are used in Antifreeze transfer piping.
Additional Requirements for Chapter 57 - Combustible Materials	NFPA 30 incorporated by reference.
See secondary containment above	
See Signage above	
See Piping Systems above	
Pressure testing of piping	Oil piping is pnuematically tested to 110% of design pressure or hydraulically tested to 150%
See Protection from vehicles above	
Protection from Corrosion	Exterior carbon steel components will be painted to protect equipment from corrosion
Providing sufficient number of valves	Sufficient number of manual and automated valves are provided to control the process
See sources of ignition above	
See separation of incompatible materials above	
Design tanks to comply with NFPA 30 for materials	NFPA 30 allows use of metal or non-metal tanks for Class IIIB. The tank is designed to UL-142
Design tanks to comply with NFPA 30 for marking	Tanks have embedded designation of serial number, manufacture date, and capacity.
Design tanks to comply with NFPA 30 for venting	See tank venting requirements above.
See Overfill Protection above	
Tank Anchoring	See tank anchoring requirements above.
Setback from property line or public way is >10 feet (NFPA 30- Table 22.4.1.6)	Setback requirement for largest tank of 30,000 gal at atmospheric pressure - Setback is 17'-6"

Ecolube Tank #	Volume (Gallons)	Dimensions	Material	Product
1	25,454	10'-7" Dia x 40' H	Carbon Steel	Motor Oil (sg=0.875)
2	25,454	10'-7" Dia x 40' H	Carbon Steel	Motor Oil (sg=0.875)
3	29,610	11'-0" Dia x 36'H	Carbon Steel	Motor Oil (sg=0.875)
4	30,000	10'-0" Dia x 49.5' H	Carbon Steel	Motor Oil (sg=0.875)
7	24,881	11'-0" Dia x 36' H	Carbon Steel	Spent Antifreeze (sg=1.11)
8	19,430	10'-7" Dia x 30' H	Stainless Steel	Antifreeze (sg=1.11)
9	19,430	10'-7" Dia x 30' H	Stainless Steel	Antifreeze (sg=1.11)
12	1,500	5'-4" Dia x 9'-8" H	poly	50% Antifreeze (sg=1.07)
13	1,500	5'-4" Dia x 9'-8" H	poly	50% Antifreeze (sg=1.07)
14	6,100	9'-11" Dia x 11'-8" H	poly	50% Antifreeze (sg=1.07)

No.	DRAWING	REFERENCE	No.	DRAWING	REFERENCE	No.	DRAWING	REFERENCE	No.	DATE	REVISION	DR.	CH.	AP.	No.	DATE	REVISION	DR.	CH.	AP.	No.	DATE	REVISION	DR.	CH.	AP.
																					0	09/11/21	ISSUED FOR FIRE PERMIT REVIEW	DR	BB	DR

CHEME CONSULTING

ECOLUBE RECOVERY
213 10TH ST SE
PUYALLUP, WA 98731

USED OIL AND ANTIFREEZE TANKS
FIRE CODE REVIEW
TANK 3 CUP MINOR MODIFICATION

DRAWN: DR	SCALE: AS SHOWN	UNI: .	DWG. No.	REV.
CHECKED: BB	APPROVED:	DATE: 11/09/20	FS – 001	0

CITY WATER SUPPLY

MAIN SWITCHGEAR / MCC

120V PANEL

EXISTING BUILDING

F.F.=49.8'

DI TANK
XXXX GAL

RELOCATED
AIR COMPRESSOR
(5 HP 240V/22A)

PACKAGE
TRUCK

LOADING
DOCK

SUPPORT WITH PIPE
HANGERS FROM CEILING

10" EMERGENCY
VENT TYPICAL

10" EMERGENCY
VENT

NEW
3" VENT

LSHH-11
LT-11
TANK 1
25,454 GAL
3" VENT
PS 2
14'-1 1/2"

TANK 6
NOT USED

PUMP 13

LSHH-12
LT-12
TANK 2
25,454 GAL
3" VENT
PS 2

TANK 5
NOT USED

NEW 3"
FILL LINE

NEW 4"
PUMP
SUCTION

PS 2
18'

LSHH-13
LT-13
TANK 3
25,580

30 GPM

O/W SEPARATOR

LSHH-14
LT-14
TANK 4
28,788 GAL
3" VENT
PS 3

15'-6"

SLOPE 1/8" PER FOOT
DO NOT POCKET

NEW 10"
EMERGENCY VENT

LOCATION OF TANK 3
AND TIE-IN PIPING

PS 3

PUMP 11

PS 3

SUMP PUMP

LT-27
LSHH-27
TANK 7
24,881 GAL
3" VENT

UPPER
120V PANELS

UPPER MCC

NEW PLC
PANEL

WALL MOUNTED UNISTRUT
PIPE SUPPORT TYP.

LSHH-213
TANK 13
6,100 GAL
4" VENT

LSHH-214
TANK 14
6,100 GAL

LSHH-212
TANK 12
1,500 GAL
3" VENT

HOSE
REEL
STATIONS

PUMP 28

PUMP 29

ABANDON
CONTAINMENT
MCC PANEL

CONTAINMENT
120V PANEL

LSHH-28
LT-28
TANK 8
25,523 GAL
PVRV

LT-29
LSHH-29
TANK 9
25,523 GAL
PVRV

TANK 10
NOT USED

SILO
NOT USED

PS 1

PS 1

PS 1

42'-10 5/8"

ANTIFREEZE
MANIFOLD

USED OIL
MANIFOLD

LEGEND

TANK 3

RELOCATED / REUSED EQUIPMENT

TRUCK LOADING STATION

PLAN NORTH

PIPING_PLAN

NOT_TO_SCALE

No.	DRAWING	REFERENCE	No.	DRAWING	REFERENCE	No.	DRAWING	REFERENCE	No.	DATE	REVISION	DR.	CH.	AP.	No.	DATE	REVISION	DR.	CH.	AP.	No.	DATE	REVISION	DR.	CH.	AP.
																					A	06/10/21	ISSUED FOR FIRE PERMIT REVIEW	DR	BB	DR

CHEME CONSULTING

ECOLUBE RECOVERY
213 10TH ST SE
PUYALLUP, WA 98731

USED OIL AND ANTIFREEZE TANKS
PIPING LAYOUT DRAWING
TANK 3

DRAWN: DR	SCALE: AS SHOWN	UNI: .	DWG. No.	REV.
CHECKED: BB	APPROVED:	DATE: 11/09/20	P – 106	A