



Diving & Marine Services, Inc.

**Report of Procedures and Findings
From the Cleaning and Inspection of the**

**On Grade
City of Monroe
Monroe, OR**



**By
Midco Diving & Marine Services, Inc.**

800.479.1558

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June 25, 2018

City of Monroe
Attn: Dave Claborn
P.O. box 486
Monroe, OR 97456

INTRODUCTION

Following is a summary of a visual and video inspection of the On Grade Reservoir for the City of Monroe. This inspection was undertaken on May 14, 2018 by Midco Diving & Marine Services, Inc., of Rapid City, SD. The findings of this inspection report are a supplement to the inspection video and worksheets, which are found under the same cover.

The Reservoir, which is the subject of this report, appears to be of conventional design and construction.

METHODOLOGY

The reservoir was inspected by a surface-supplied commercial air diver. The diver was equipped with real-time high-definition color video and a LED lighting system as well as live voice communication between the inspecting diver and the surface team. All procedures were carried-out in accordance with Midco Diving's *Standards and Procedures*. Prior to entering your reservoir the diver and equipment were disinfected with a 200 parts per million chlorine solution per ANSI/AWWA C652-11 standards.

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ON GRADE RESERVOIR FINDINGS

EXTERIOR FINDINGS

Upon visual inspection of the exterior of the structure, the reservoir appears to be in good condition, with the following findings noted:

1. Roof vent screen is not #24 corrosion resistant mesh.



INTERIOR FINDINGS

Upon visual inspection of the structure above and below the water line, the overall condition of the tank appears to be in good condition, with the following findings noted:

1. Up to 3 1/2" of sediment noted.
2. Sacrificial anodes noted at 0%.
3. Leak noted along seam bolt at 9 o'clock position.



DISCLAIMER

Midco Diving & Marine Services, Inc. does not provide consulting engineering services, nor do we employ licensed Professional Engineers. The findings contained herein were neither prepared or reviewed by a licensed engineer, but are based on the visual examination, experience, and training of the inspecting diver and dive support crew.

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City of Monroe

JOB NUMBER: P2018025
UTILITY: City of Monroe
DATE: May 14, 2018
MANAGER: Dave Claborn
ADDRESS: P.O. box 486
Monroe, OR 97456

DIVE TEAM LEADER: Derek Wilt

Reservoir: On Grade
Gallons: 1 MG
Diameter: 72'
Height: 33'
Water Depth: 30'
Construction: Steel welded
Last Cleaned: 2014
Last Inspected: 2014

Recommendations:

1. Install #24 corrosion resistant mesh on roof vent.
2. Replace sacrificial anodes.
3. Repair noted leak along seam joint at 9 o'clock position.
4. Have Midco Diving & Marine Services, Inc. clean and inspect every 2-3 years.

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N/A - Not applicable
 Excellent (Ex) - Like new condition, no maintenance needed.
 Good - Cosmetic only problems, maintenance if wanted.
 Fair - Minor problems, maintenance needed, not immediate.
 Poor - Major problems, structural or like, immediate maintenance needed.

Component	Condition					Comments
	NA	Ex.	Good	Fair	Poor	
<i>Site Security</i>			X			
Gate			X			
Fence			X			
Locks			X			
Alarm	X					
<i>Reservoir Exterior</i>			X			
Coating			X			
Foundation			X			
Cleanliness			X			
Seams/Joints			X			Leak along seam bolt at 9 o'clock position noted
<i>Exterior Roof</i>			X			
Coating	X					
Cleanliness			X			
Seams/Joints			X			
<i>Exterior Ladder</i>			X			Width: 19"
Coating	X					
Caged			X			
Safety Climb	X					
<i>Roof Vents</i>			X			Size: 18" Height: 9"
Coating	X					
Screen				X		Missing #24 screen
<i>Side Vents</i>	X					
Coating	X					
Screen	X					
<i>Exterior Telemetry</i>	X					
Coating	X					
Functioning	X					

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Component	Condition					Comments
	NA	Ex.	Good	Fair	Poor	
<i>Manual Level Indicator</i>			X			
Tag			X			
Cable			X			
Indicator			X			
Pulleys			X			
Base			X			
<i>Man Entries</i>			X			Size: 30"
Coating	X					
Gasket			X			
<i>Exterior Inlet</i>			X			Size: 10"
Coating	X					
Valve	X					
<i>Exterior Outlet</i>	X					
Coating	X					
Valve	X					
<i>Exterior Drain/Scour</i>	X					
Coating	X					
Valve	X					
<i>Exterior Water Tap</i>	X					
Coating	X					
Valve	X					
<i>Exterior Overflow</i>			X			Size: 10"
Coating	X					
Stand-offs			X			
Screen			X			Type: Duckbill Valve
<i>Access Hatch</i>			X			Size: 30 1/4" X 30 1/4"
Weather Stripping			X			
Coating	X					
Hinges			X			
Lock			X			
Safety Railing			X			Size: 41"

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Component	Condition					Comments
	NA	Ex.	Good	Fair	Poor	
<i>Interior Ladder</i>			X			Width: 22"
Caged	X					
Safety Climb	X					
<i>Telemetry Sensor</i>	X					
Functioning	X					
<i>Float</i>			X			Size: 17 1/2"
Guide Wires			X			
<i>Interior Floor</i>			X			
Coating			X			
Sediment			X			Depth: Up to 3 1/2" of sediment noted
Seams/Joints			X			
<i>Interior Walls</i>			X			
Coating			X			Staining noted
Seams/Joints			X			
<i>Interior Ceiling</i>			X			
Coating	X					
Rafters	X					
<i>Interior Man Entries</i>			X			Size: 24"
Coating	X					
Gasket			X			
<i>Support Columns</i>	X					
Coating	X					
Base	X					
Top	X					
<i>Cathodic Protection</i>			X			
Anodes	X					
Wires	X					
Sacrificial Anodes				X		% Left: 0

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Component	Condition					Comments
	NA	Ex.	Good	Fair	Poor	
<i>Interior Overflow Pipe</i>			X			
Coating	X					
Top/Cap	X					
Connections/Flange	X					
<i>Interior Inlet</i>			X			Size: 10"
Coating	X					Corrosion noted
Riser			X			
<i>Interior Outlet</i>			X			Size: 9 3/4"
Coating	X					Corrosion noted
Riser			X			Measurement: 13 1/4"
<i>Interior Drain/Scour</i>	X					
Coating	X					
Riser	X					
<i>Interior Water Tap</i>	X					
Coating	X					
Valve	X					

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Cleaning Reservoir



Cleaning Reservoir

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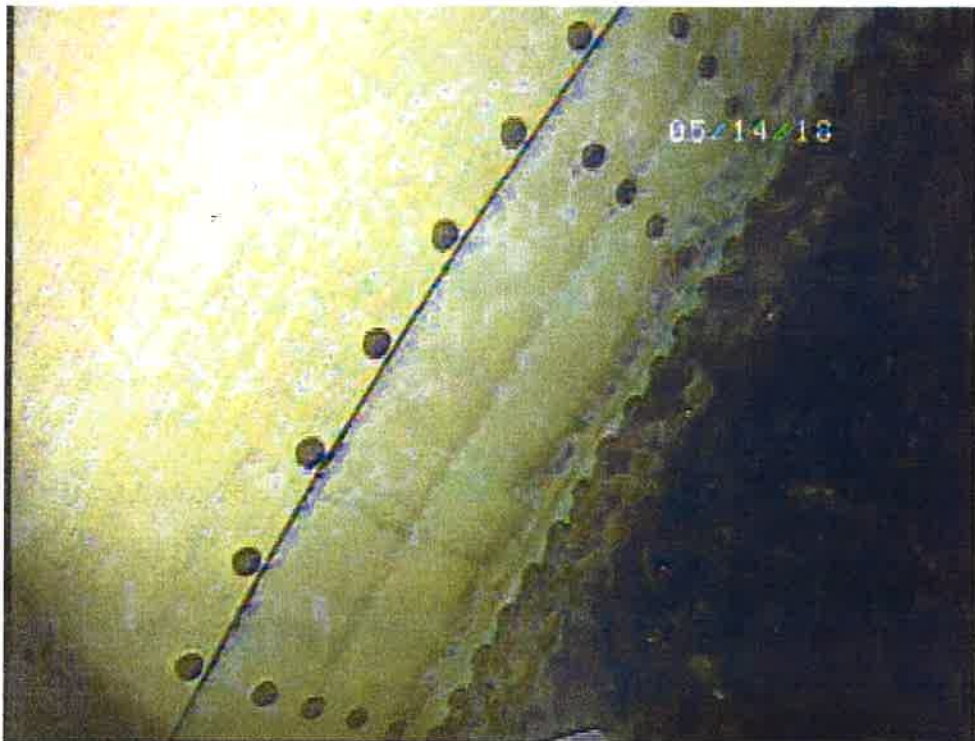
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Typical Floor



Floor to Wall Seam

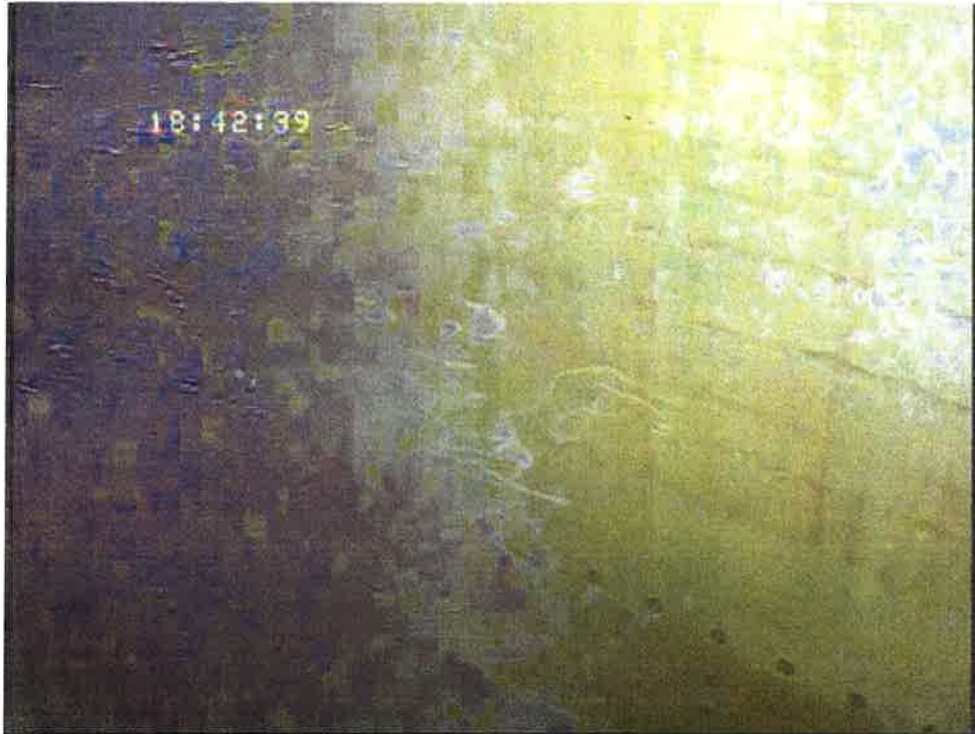
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Typical Wall



Typical Roof, Vent, and Overflow

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Wall to Roof Seam



Interior Ladder and Access Hatch

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Outlet Plumbing



Inlet Plumbing

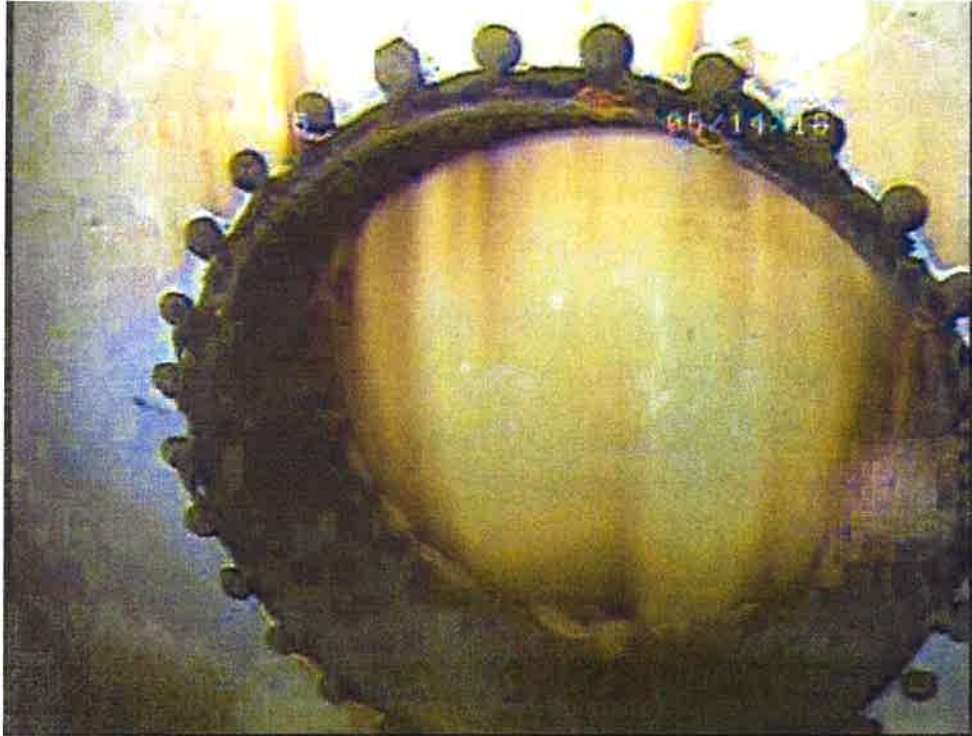
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Man Entry Way



Interior Float

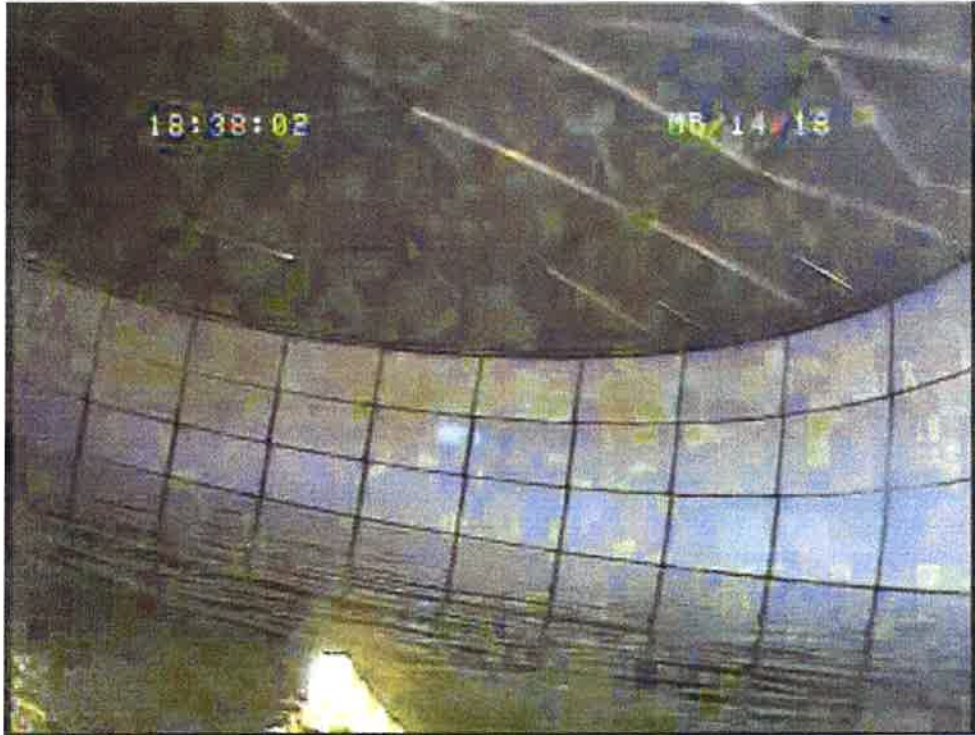
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Typical Roof



Access Hatch

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Safety Rail



Roof Vent

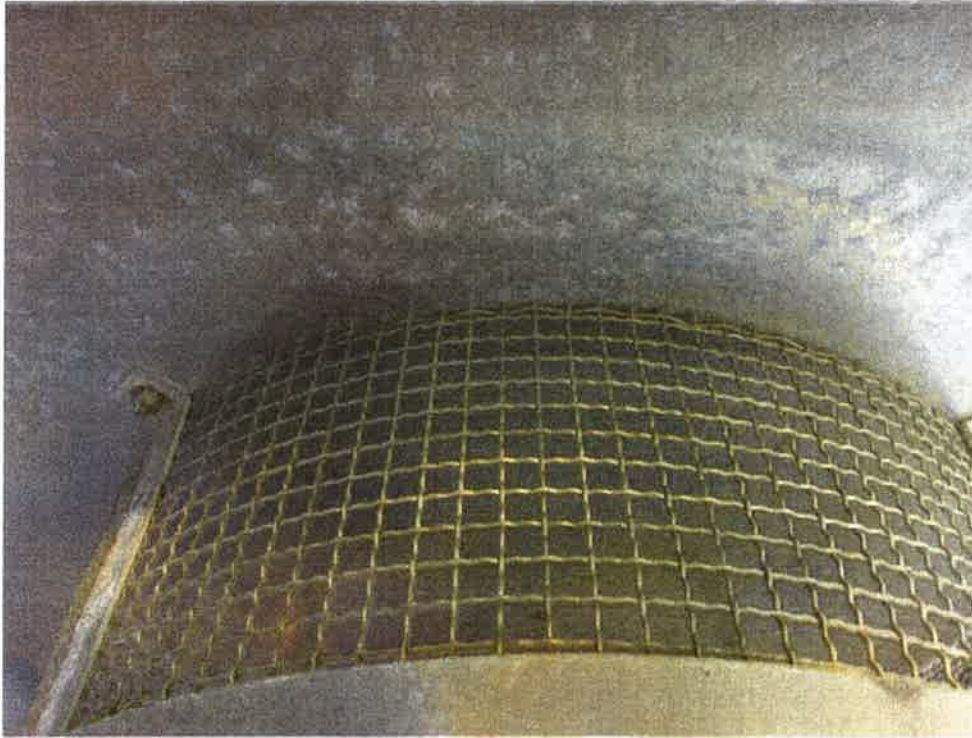
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Roof Vent Screen



Exterior Ladder

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Overflow Plumbing



Overflow Plumbing

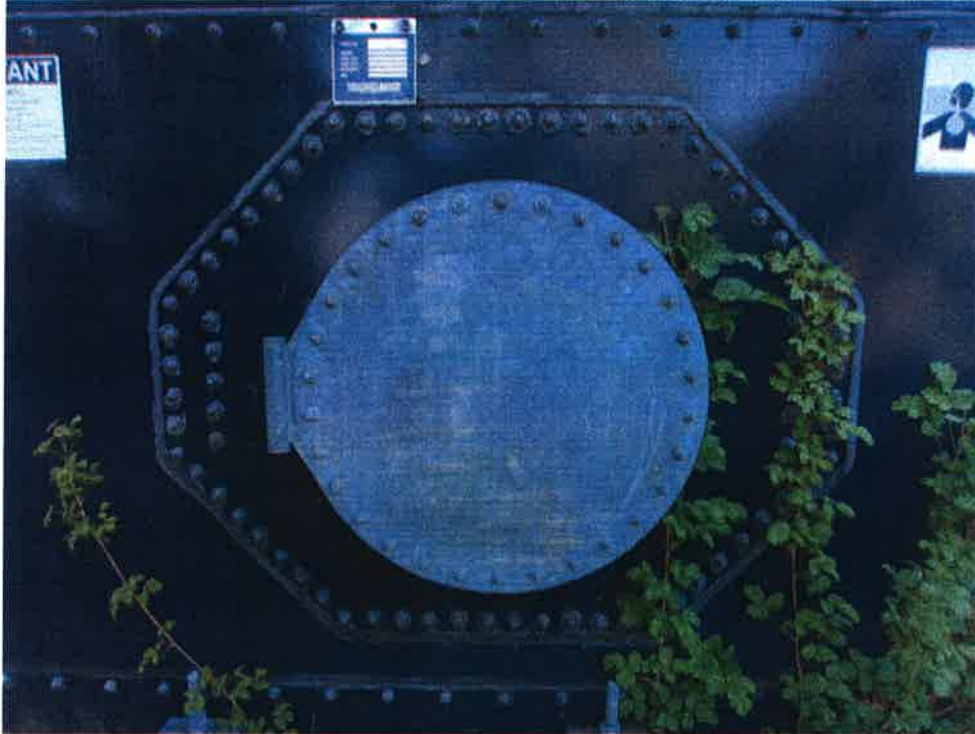
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Man Entry Way



Exterior Inlet, and Overflow with Duckbill Valve

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**EPA Region 8 Drinking Water Unit
Finished Water Storage Tank Inspection/ Cleaning Checklist**

Fill out one checklist per storage tank & submit labeled photos of each tank component with this form

Public Water System Name: City of Monroe	Public Water System ID:
Reservoir Name: On Grade	Reservoir ID:
Proposed Inspection Date: May 14, 2018	Actual Inspection Date: May 14, 2018
Name of Person Filling Out Form: Valaree Munro	Title of Person Filling Out Form: Office Assistant
I certify that this information is complete and accurate: Yes <i>Valaree Munro</i> Date: June 25, 2018	

Inspector Qualifications (answer to all questions must be "yes")

Name and contact information of inspector or inspection company: Midco Diving & Marine Services, Inc.	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Has the inspector completed confined space training?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Did the inspector have a confined space entry permit?

Overall Tank Condition

Significant Deficiency	Required Correction	Proposed Completion Date	Proposed Completion Date
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Does the tank appear to be structurally sound?	If no, what repairs are suggested by the tank inspector?		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Are there any unprotected openings in the tank (breaches, leaks, daylight coming through tank in spots, etc.)	If yes, indicate type of breach and how it should be repaired.		

Air Vent

Significant Deficiency	Required Correction	Proposed Completion Date	Proposed Completion Date
Above Ground Tanks (Ground Level or Elevated) <input type="checkbox"/> Check if NA			
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <u>Downturned vent:</u> Is the vent at least 24" or 3 pipe diameters above the roof?	If no reconfigure vent to provide proper air gap.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <u>Non-downturned vent:</u> Is there a solid cover down to the bottom of the vent screen?	If no, indicate deficiency and proposed correction:		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <u>Non-downturned vent:</u> Is the screen at least 8" above the roof surface? What is the height of the start of the screening above the tank? "	If no, indicate deficiency and proposed correction:		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Is the vent covered with #24 mesh corrosion resistant screening (some exceptions apply)? Mesh Size:	If no, indicate deficiency and proposed correction:		

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Buried or Partially Buried Tanks <input checked="" type="checkbox"/> Check if NA				
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is the vent covered with #24 mesh corrosion resistant screening?	If no, install proper #24 mesh corrosion resistant screening.		
<input type="checkbox"/> Yes <input type="checkbox"/> No	Does the air vent terminate downward?	If no, re-configure the vent so that it terminates downward.		
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is the air vent at least 24" above the tank roof or ground surface (whichever is higher)? What is the height of the vent above the roof or ground surface?	If no, raise air vent to provide for an appropriate air gap.		

Access Hatch				
Significant Deficiency		Required Correction	Proposed Completion Date	Proposed Completion Date
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the hatch raised at least 4" above the roof (for ground level or elevated tanks) or at least 24 inches above the roof or ground, whichever is higher (for buried or partially buried tanks)? What is the height of the access hatch above the roof or ground surface? 4"	If no, the hatch should be raised to the appropriate height above the tank roof or ground.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Does the hatch have a shoe box lid?	If no, a properly designed shoe box type lid should be installed.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the lid water tight and sealed with a rubber gasket?	If no, the reason for the lack of a seal should be investigated and repaired.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the hatch locked?	If no, the hatch should be equipped with a lock.		

Overflow <input type="checkbox"/> Check if NA				
Significant Deficiency		Required Correction	Proposed Completion Date	Proposed Completion Date
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Discharge has #24 mesh corrosion resistant screen OR a duckbill valve OR a properly sealed flapper valve with a screen inside (EPA recommends #24 mesh screen)?	If no, indicate proposed correction:		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Overflow terminates between 12 and 24 inches above the ground surface? At what height does the overflow discharge?	If no, modify overflow to provide for an appropriate air gap.		

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<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Overflow discharges over an inlet structure, splash plate, or engineered rip-rap?	If no, indicate proposed correction:		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the overflow directly connected to a sanitary sewer or storm drain?	If yes, indicate proposed correction:		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is there blockage in the overflow, an inadequately sized overflow, a malfunction of the level control system, or other issue that is causing the tank to overflow through the hatch or vent?	If yes, indicate what is causing the problem and how it should be repaired:		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is the overflow discharge point visible? If no, it is recommended that the discharge point be moved to a location that is visible.		Not Required	

Drain <input checked="" type="checkbox"/> Check if NA				
Significant Deficiency		Required Correction	Proposed Completion Date	Proposed Completion Date
<input type="checkbox"/> Yes <input type="checkbox"/> No	Does the drain pipe have an air gap of 3 or more pipe diameters above the entrance to any storm or sanitary sewers?	If no, indicate proposed correction:		
<input type="checkbox"/> Yes <input type="checkbox"/> No	Does the discharge have a #24 mesh corrosion resistant screen OR a duckbill valve OR a properly sealed flapper valve with a screen inside? If no, EPA recommends that a #24 mesh screen be installed.		Not Required	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Does the drain terminate between 12 and 24 inches above the ground surface and discharges over an inlet structure or splash plate? If no, it is recommended that the discharge point be modified to provide for the appropriate air gap.		Not Required	

Cleaning and Other Items				
Significant Deficiency		Required Correction	Proposed Completion Date	Proposed Completion Date
Describe any other items noted by the inspector that have the potential to cause contamination of the finished drinking water:		What repairs are suggested to prevent or eliminate the source of contamination?		
Depth of sediment found in the tank before cleaning (inches): Up to 3 1/2" of sediment noted How was the storage tank cleaned? Diver with vacuum/hand nozzle system How was the storage tank disinfected after cleaning? N/A List any objects found inside the tank during cleaning that may have introduced contamination into the water system (examples: debris, animals, etc.): N/A Please attach tank as-built drawings (if available) or a sketch of the tank's configuration and dimensions including the location, layout and dimensions of all major components (i.e. access hatch, vent, overflow, drain)				

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