21670 E Geddes Place
Centennial, CO 80016
Office Phone: 800-637-1322
Office Fax: 303-309-0097

Inspection Report for San Bernardino County

4/26/2023

80’ Diameter x 32’ High Steel Welded On-Grade

1MG CSA 64 Pebble Beach Tank

Victorville, CA

Diver: Tyler Steinmark

Tender: Paul Madden

Stand-by: Ryan Osborn

Utility: San Bernardino County Date: 4/26/2023

Inspection Details

This is an inspection report completed on April 26th, 2023, for San Bernardino County by Marine Diving Solutions, LLC. Marine Diving Solutions employs commercial divers to provide thorough exterior and interior inspections. We do not employ engineering consultants. This report was produced from the divers' visual inspection findings and our HD quality videos.

Diving Procedures

All of Marine Diving Solution's divers have graduated from accredited dive programs and have undergone further company training on water tank and reservoir operations. Work is completed per OSHA, AWWA and ANSI standards.

MDS's potable dive equipment is dedicated to only diving in potable water as to not cause any cross contamination. Our divers are sealed in a dry suit and dive helmet to ensure no part of their body comes in contact with the water. They are then disinfected with a 200ppm chlorine solution to meet AWWA and state standards. The diver is then free to go into the confined space inside the water storage tanks. Underwater, the diver can do a more detailed inspection or clean the loose sediment from the floor of the tank. Diving operations are conducted to meet AWWA, OSHA and Navy Diving standards. MDS's dive crew uses a 3" trash pump with a vacuum attachment to remove the sediment at a rate of 200-300gpm. The dive crew is able to perform all of the cleaning and inspections while the tank is left online and without disturbing any of the distribution. MDS's dive crew is trained in many aspects in a wide variety of tanks and are also capable of doing in water repairs that are within AWWA, OSHA and NSF standards.

EXTERIOR

Wall Panels

Coating Conditions Overall: Good.

De-lamination of the coating: ☒ Yes ☐ No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1%.

De-alloying present: ☐ Yes ☒ No

Percent of De-alloying: N/A.

Dents Present: ☐ Yes ☒ No

Summary: The exterior wall panels have good coating conditions overall. Minor de-lamination of the coating occurring and leading to surface corrosion. Graffiti has been covered.

EXTERIOR

Ladder

Coating Conditions Overall: Good.

De-lamination of the coating: ☒ Yes ☐ No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1%.

De-alloying present: ☐ Yes ☒ No

Percent of De-alloying: N/A.

Safety Climb Present: ☒ Yes ☐ No

Type of safety climb and deficiencies noted: Cage.

Support Condition: Good.

Handrails Present Around Openings: No.

Summary: The exterior ladder has good coating conditions overall. Minor de-lamination of the coating occurring on the safety cage door. Surface corrosion noted on the side rails and cage. The ladder rungs are ¾". The ladder width is 15" and the distance between the tank and ladder is 7.75".

EXTERIOR

Manway (s)

Coating Conditions Overall: Good.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1%.

De-alloying present: ☐ Yes ☒ No

Percent of De-alloying: N/A.

Bolts missing: ☐ Yes ☒ No

Leakage Present: ☐ Yes ☒ No

Summary: The manway has good coating conditions overall. Minor surface corrosion noted on the back brace and on the outer lip.

EXTERIOR

Foundation

Foundation Present: ☒ Yes ☐ No

Concrete Foundation: ☐ Yes ☒ No

Cracking Present: ☐ Yes ☒ No

Type of Cracking: N/A.

Spalling Present: ☐ Yes ☒ No

Depth of Spalling: N/A.

Anchor Bolts Exposed: ☐ Yes ☒ No

Undermining of Foundation Present: ☐ Yes ☒ No

Summary: The foundation consists of a metal foundation ring with gravel fill. De-lamination of the coating and surface corrosion noted on the ring.

EXTERIOR

Overflow

Coating Conditions Overall: Good.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1-2%.

De-alloying present: ☐ Yes ☒ No

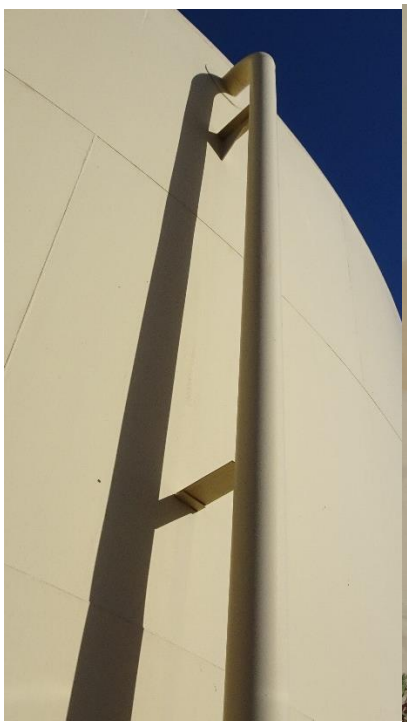
Percent of De-alloying: N/A.

End Cap Present: ☒ Yes ☐ No

Fine Mesh Screen Present: ☐ Yes ☒ No

Support Condition: Good.

Summary: The overflow has good coating conditions overall. Surface corrosion noted on the supports. There is concrete missing from the concrete pad where the overflow pipe terminates.



EXTERIOR

Roof Panels

Coating Conditions Overall: Good.

De-lamination of the coating: ☒ Yes ☐ No

Percent of De-lamination: Less than 1%.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: Less than 1%.

De-alloying present: ☐ Yes ☒ No

Percent of De-alloying: N/A.

Cathodic protection plates present: ☐ Yes ☒ No

Cathodic protection plates missing: ☐ Yes ☒ No

Low Spots Present: ☒ Yes ☐ No

Summary: The roof panels have good coating conditions overall. Minor low spot occurring near the 8:00 position. Minor surface corrosion noted on the post at the center of the roof. Minor de-lamination of the coating present on the seams.

EXTERIOR

Hatch

Coating Conditions Overall: Good.

De-lamination of the coating: ☒ Yes ☐ No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1%.

De-alloying present: ☐ Yes ☒ No

Percent of De-alloying: N/A.

Hatch Found Locked: ☒ Yes ☐ No

Gasket Present: ☐ Yes ☒ No

Gasket Condition: N/A.

Size of Hatch: 24” x 24”.

Summary: The hatch has good coating conditions overall. De-lamination of the coating noted on the inner walls of the hatch and on inner lid. Surface corrosion present on the hinge hardware. Recommend installing a gasket to create a seal to prevent bugs/insects from entering the tank.

EXTERIOR

Vent

Coating Conditions Overall: Good.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1-2%.

De-alloying present: ☐ Yes ☒ No

Percent of De-alloying: N/A.

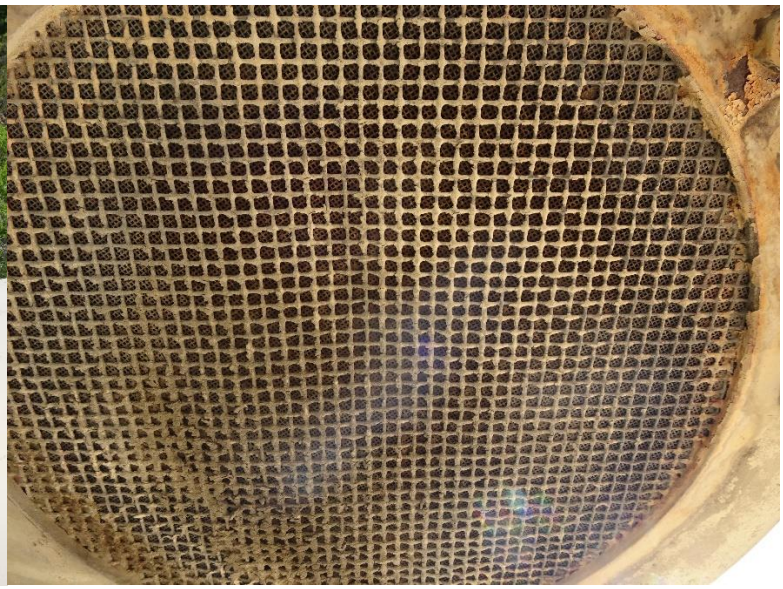
Fine Mesh Screen Present: ☒ Yes ☐ No

Vent Cap Condition: No vent cap.

Size of Vent: 3’4”.

Frost Proof Vent: ☐ Yes ☒ No

Summary: The 2 vents have good coating conditions overall. Surface corrosion noted on the hardware. A fine mesh screen is present and intact.



INTERIOR

Ladder

Coating Conditions Overall: Poor.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 5-7%.

De-alloying present: ☒ Yes ☐ No

Percent of De-alloying: 3%.

Blistering Present: ☐ Yes ☒ No

Percent of Blistering: N/A.

Safety Climb Present: ☐ Yes ☒ No

Type of safety climb and deficiencies noted: N/A.

Support Condition: Fair.

Summary: The internal ladder has poor coating conditions overall. The coating is cracking. Surface corrosion and corrosion nodules forming mainly on the siderails and stand offs. Some de-alloying of the metal occurring.

INTERIOR

Wall Panels

Coating Conditions Overall: Poor.

De-lamination of the coating: ☒ Yes ☐ No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 15-20%.

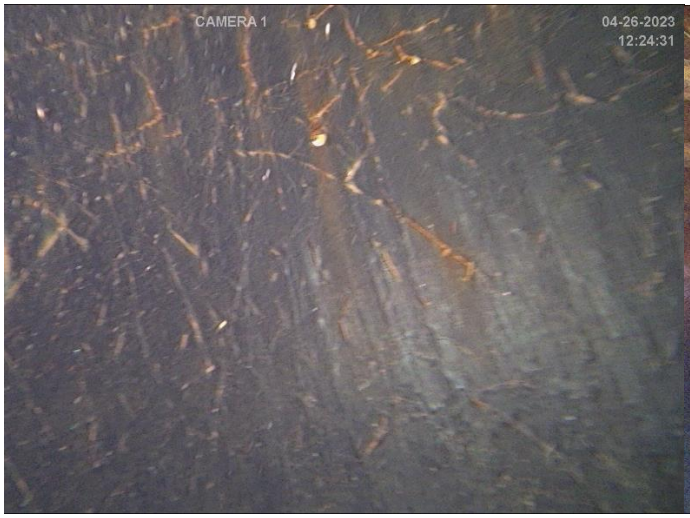
De-alloying present: ☐ Yes ☒ No

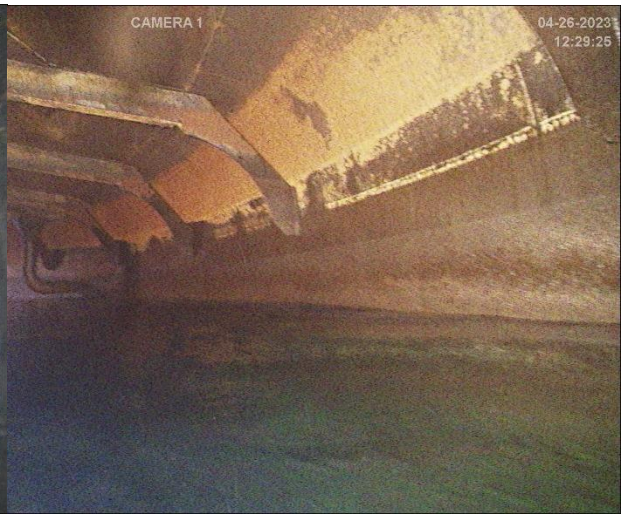
Percent of De-alloying: N/A.

Blistering Present: ☐ Yes ☒ No

Percent of Blistering: N/A.

Summary: The wall panels have poor coating conditions overall. Cracking of the coating occurring at the waterline and leading to surface corrosion and corrosion nodules. Corrosion nodules also forming at the wall to floor seam.





INTERIOR

Floor Panels

Coating Conditions Overall: Fair.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1-2%.

De-alloying present: ☒ Yes ☐ No

Percent of De-alloying: 1-2%.

Blistering Present: ☐ Yes ☒ No

Percent of Blistering: N/A.

Abnormal Sediment: ☐ Yes ☒ No

Summary: The floor panels have fair coating conditions overall. The floor is uneven. Minor cracking of the coating present. Large corrosion nodules forming with de-alloying and pitting of the metal visible.

INTERIOR

Manway (s)

Position of Manway(s): 12:00.

Coating Conditions Overall: Poor.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 5-10%.

Blistering Present: ☒ Yes ☐ No

Percent of Blistering: 30%.

Gasket Condition: Poor.

Summary: The manway has poor coating conditions overall. Surface corrosion built up on the gasket. Heavy blistering of the coating noted.

INTERIOR

Roof Panels

Coating Conditions Overall: Fair/Poor.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 30-40%.

De-alloying present: ☐ Yes ☒ No

Percent of De-alloying: N/A.

Seam Condition: Fair.

Daylighting Visible: ☐ Yes ☒ No

Summary: The roof panels have fair to poor coating conditions overall. Surface corrosion noted on the supports, panels and at the roof to wall seam. Condensation built up around the center of the tank. The coating appears to be thin on the roof panels.

INTERIOR

Support Column

Coating Conditions Overall: Poor.

De-lamination of the coating: ☒ Yes ☐ No

Percent of De-lamination: 2%.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 30%.

De-alloying present: ☒ Yes ☐ No

Percent of De-alloying: 1-2%.

Blistering Present: ☒ Yes ☐ No

Percent of Blistering: 2%.

Summary: The support column has poor coating conditions overall. The coating is cracking. Blistering of the coating and corrosion nodules present around the base and on the column. De-alloying noted on the base seams.

INTERIOR

Inlet

Position of Inlet: 1:00.

Coating Condition Overall: Fair.

Common Inlet/Outlet: ☐ Yes ☒ No

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1-2%.

Blistering Present: ☐ Yes ☒ No

Percent of Blistering: N/A.

Summary: The inlet has fair coating conditions overall. Surface corrosion and corrosion nodules forming. Cracking of the coating occurring on the interior.

INTERIOR

Outlet

Position of Outlet: 10:00.

Coating Condition Overall: Good/Fair.

Common Inlet/Outlet: ☐ Yes ☒ No

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1%.

Blistering Present: ☐ Yes ☒ No

Percent of Blistering: N/A.

Summary: The outlet has good to fair coating conditions overall. Heavy staining occurring. Surface corrosion present on the bottom of the pipe.

INTERIOR

Drain

Position of Drain: 1:00.

Coating Condition Overall: Good.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 1-2%.

Blistering Present: ☒ Yes ☐ No

Percent of Blistering: 2%.

Summary: The drain has good coating conditions overall. Surface corrosion noted along the weld seam and outer lip. Some blistering of the coating present.

INTERIOR

Overflow

Position on Overflow: 1:00.

Coating Conditions Overall: Fair.

De-lamination of the coating: ☐ Yes ☒ No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: ☒ Yes ☐ No

Percent of USC: 5-10%.

De-alloying present: ☐ Yes ☒ No

Percent of De-alloying: N/A.

Blistering Present: ☐ Yes ☒ No

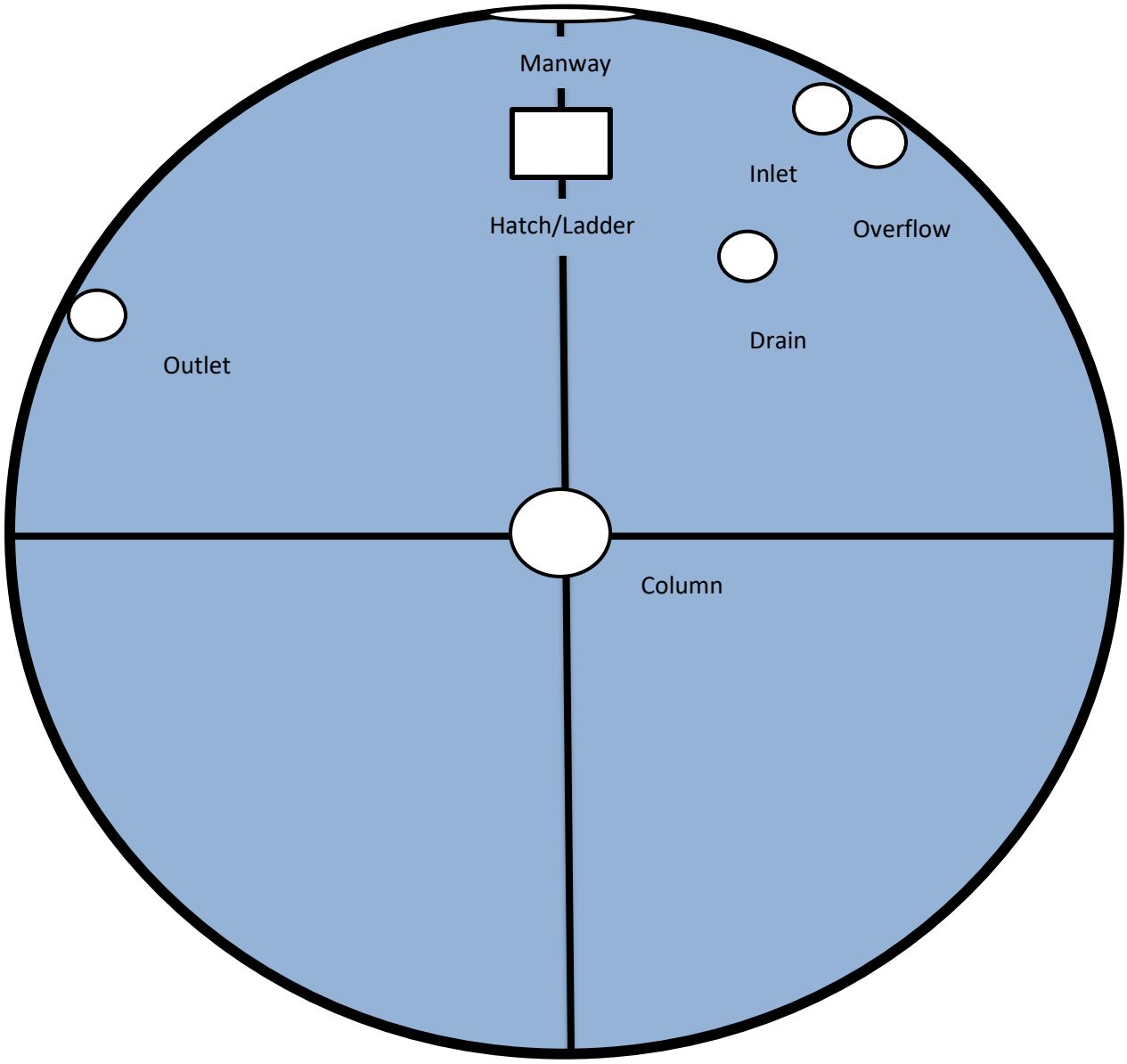
Percent of Blistering: N/A.

Standoff support condition: N/A.

Summary: The overflow has fair coating conditions overall. Surface corrosion noted on the drain funnel. Some cracking of the coating visible.

Round Tank

Victorville, CA
80’ Diameter x 32’ High
Steel Welded On-grade- 1MG Pebble Beach Tank



Post Inspection Recommendations

Tank Description

Tank Type:

Steel Welded On-grade

Dimensions:

80’ Diameter x 32’ High

Volume (g):

1MG- Pebble Beach Tank

Type of discrepancies noted

☒ De-lamination	☒ U.S.C.	☒ Blistering	☒ Pitting
☒ De-alloying	☐ C.C.C.	☒ Corrosion Nodules	☐ Abnormal Sediment

Summary

- Recommend installing a gasket to create a seal to prevent bugs/insects from entering the tank.

-Condensation built up on the center of the interior roof.

-The interior ladder has fair/ poor coating. Corrosion and corrosion nodules forming mainly on the siderails and stand offs. Some de-alloying of the metal occurring.

-Corrosion nodules forming on the interior walls and floor.

-Recommend an interior blast and recoat to an SSPC SP10 between now and the next 2-3 years. It does not appear that the rate of pitting in the tank is progressing that fast.

-Recommend cleaning and inspecting every 3-5 years.

Contact our office at 1-800-637-1322 for repair quotes.