



SARASOTA COUNTY

"Dedicated to Quality Service"

December 31, 2015

Solid Waste Section
Department of Environmental Protection
South District Office
2295 Victoria Avenue, Suite 364
Ft. Myers, Florida 33902

Re: Sarasota County
Central County Solid Waste Disposal Complex
Permit No. 0130542-022-S0/01 (Mod# 0130542-023-SO/IM)
WACS No. 51614
Above-Ground Leachate Storage Tank

To Whom It May Concern:

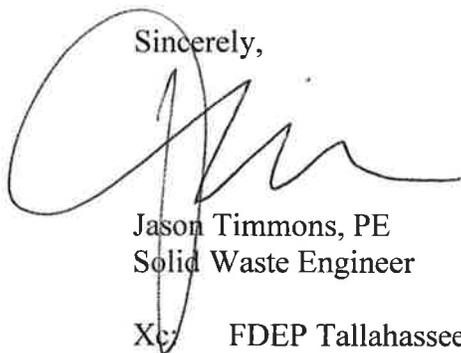
Sarasota County is pleased to submit the attached storage tank inspection report for the 1.8 million gallon capacity pre-stressed concrete leachate storage tank located at the Central County Solid Waste Disposal Complex in Nokomis, FL. The inspection was performed in accordance with Permit No. 130542-022-S0/01 and the Operations Plan Section K.8.b.(4). The inspection was due to be completed by April 2016; however, in order to coincide with the dry season, the County has opted to complete the inspection ahead of schedule. Therefore, on December 14 and 15, 2015, the Precon Corporation emptied and cleaned the storage tank and performed the inspection in accordance with the applicable standards. The inspection was supervised by and the report signed and sealed by a Professional Engineer licensed in the State of Florida. As detailed in the inspection report, the inspector found the tank to be in good structural condition, with no signs of leakage or hollows in the concrete over coat. All appurtenances including stairs, piping, and the level gauge were found in good condition and operational. The suggestions provided by the inspector in the report are considered to be minor in nature and have no structural impact on the tank.

In accordance with the requirements of Rule 62-701, Permit No. 130542-022-S0/01, and the facility's Operations Plan, the County will schedule the next inspection to be completed no later than April 15, 2019. In the next inspection, the items the inspector listed in the report to re-inspect will be specifically included in the inspection requirements.

Please note that the County intends to address the exterior cracking of the outer shell of the tanks before the next inspection. At this time, the County plans to have the larger cracks that were noted in the inspection report repaired as recommended. However, since repairing the cracks are not considered critical for the integrity or operation of the tank, the County does not have a schedule at this time, but plans to address these items before the next inspection.

Please contact me anytime at 941-861-1572 if you have any questions or require additional information regarding this inspection report and attached documents.

Sincerely,

A handwritten signature in black ink, appearing to read 'J Timmons', written over a large, light-colored oval scribble.

Jason Timmons, PE
Solid Waste Engineer

Xc: FDEP Tallahassee Solid Waste
Lois Rose, Sarasota County

Attachments (1)

Precon Tank Inspection Report dated December 22, 2015



Prestressed Concrete Tanks

PRECON CORPORATION

115 S.W. 140th Terrace
Newberry, Florida 32669
(352) 332-1200 Fax 332-1199

TRANSMITTAL

To: Sarasota County, FL
Central County Solid Waste
Disposal Complex
4000 Knights Trail Road
Nokomis, FL 34275

DATE: 12/22/15	JOB NO: 1590
ATTENTION: Jason Timmons	
RE: Sarasota Central Landfill Leachate Storage Tank Inspection and Cleaning Services PO 161396	

COPIES	DATE	DESCRIPTION
4	12/22/15	Tank Inspection Report

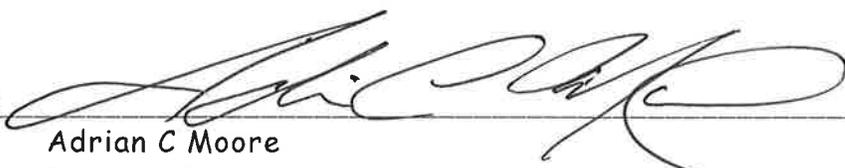
RECEIVED
DEC 23 2015
BY: _____

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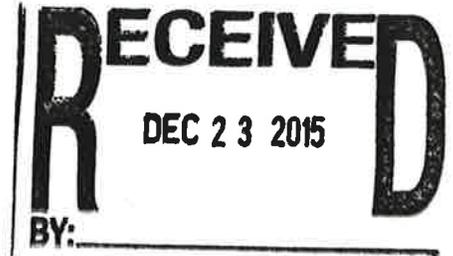
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REMARKS:

Please let me know if you have any questions

Signed: 
 Adrian C Moore
 Project Manager

USPS UPS-OVERNIGHT UPS-GROUND FED EX FAX



TANK INSPECTION REPORT

Sarasota County, FL
1.8 MG Leachate Storage Tank
4000 Knights Trail Road
Nokomis, Florida

December 22, 2015



Adrian C. Moore
Special Projects Manager

Richard G. Moore, PE
President

PRECON CORPORATION
115 S.W. 140TH TERRACE, GAINESVILLE, FL 32669 • 352-332-1200 • FAX: 332-1199

Tank Inspection Report

1. Summary

Precon Corporation conducted an inspection of the prestressed concrete storage tank consisting of a primary inner tank and a secondary containment outer tank in Nokomis, FL on December 15, 2015. The purpose of this inspection was to do a visual analysis of the structural integrity of the tank and to determine what items, if any, need to be brought to the owner's attention to ensure the tank is up to the current codes and standards and to ensure the maximum life of the tank.

Adrian Moore, Project Manager, performed the inspection, assisted by Steven Crews, under the review of Richard G Moore, P.E.

The tank was found to be in good structural condition, and had no signs of leakage or hollows in the covercoat. All suggestions for repairs contained in this report are considered minor in nature and have no structural impact on the tank.

The repairs recommended as a result of this inspection are:

1. Sealing the main crack on the exterior wall of the inner tank to prevent future water migration through the crack.
2. Seal the larger floor cracks on the outer tank to prevent future leaks.

The findings of this inspection are detailed in sections 4 and 5.

2. Scope of Inspection

This inspection was aimed at investigating the structural integrity of the tank. The inspector investigated the walls, the floor, and the tank accessories. The inspection was a visual survey of the tank with no invasive procedures employed. The tank was inspected in accordance with AWWA D110 and ACI 350 standards to determine the structural integrity of the tank.

The inspector looked for any evidence of leakage, cracks, imperfections and all other abnormalities. These areas were examined closely to try to determine the cause and extent of the problem.

The walls of the tank were checked for cracks, spalls, efflorescence, leaks, staining, coating integrity and deterioration. They were also sound tested to uncover any hollow areas within the concrete shell, which are caused by two layers of concrete separating from one another. If any of the above were observed, they were noted by the inspector.

The tank was drained and the interior of the tank was inspected. The walls were checked for cracks, efflorescence, stains, and spalls. The floor was checked for cracks, stains, spalls and coating integrity. The interior piping was inspected for condition and coating integrity and the accessories were inspected to ensure they were functioning properly and were properly anchored.

The field record of this inspection can be found in section 4

3. Tank Description

The tank being inspected is a prestressed concrete tank, built in 1997 by The Crom Corporation. The primary (inner) tank has an inside diameter of 100'-0" and a wall height of 30'-8". The secondary (outer) tank has an inside diameter of 130'-0" and a side wall depth of 21'-2". The tank was built for Sarasota County, FL.

The tank consists of a reinforced concrete membrane floor, which is joined to the walls using a PVC waterstop. The tank has a wall constructed of a 26 gauge steel shell diaphragm encased in shotcrete. The joints in between sheets of the diaphragm were sealed with watertight epoxy. The walls were circumferentially prestressed by wrapping them with pre-tensioned high tensile steel which was encased in the wall to permanently remain and to resist the internal hydraulic load of the water inside the tank and to provide residual compression in the wall. The walls also contain steel reinforcement to counteract the bending moments caused by prestressing and the difference between the internal and external temperatures of the tank.

Four pipe penetrations were found through the outer wall: two six inch wall pipes as well as two eight inch wall pipes.

One pipe penetration was found through the inner floor: a DIP outlet.

The tank was built in accordance with The American Water Works Association (AWWA) Standard D110

4. Field Investigation

See attached inspection report

5. Observations and Recommendations

The inspection of the tank did not reveal any apparent problems that cause concern for the structural integrity of the tank. Several recommendations are made below to fix some problems and to help maximize the life of the tank.

1. Tank Foundation: The tank is backfilled approximately one foot. No defects were found in the tank foundation.
2. Exterior Tank Wall (Outer Tank): The exterior of the wall was in good condition. The bottom 10' of the wall was sounded and no hollows were found. Approximately 2,800 LF of cracks were noted on the exterior of the tank. (Photos 3-4) These are hairline cracks and appear to be caused by the prestressing forces on the tank that are not offset by water pressure inside the tank. The exterior wall is not coated and no signs of leakage were noted.

3. Interior Tank Wall (Outer Tank): The interior wall of the outer tank is in good condition. The bottom 10' of the wall was sounded and no hollows were found. The tank wall is painted and the coating is in good condition. (Photo 5) Minor cracking was noted over the entire surface of the wall and this is common on a tank wall in which the tank always remains empty. (Photos 6-7) These cracks appear superficial in nature and pose no structural concerns for the tank wall.
4. Exterior Tank Wall (Inner Tank): The exterior wall of the inner tank was found to be in good condition and no hollows were found when the bottom 10' of the wall was sounded. The tank wall was painted and the coatings are in good condition. Minor cracking was noted all over the wall, (Photos 8-9) and one main crack was noted that spanned the length of the wall approximately 15' up the wall. (Photo 10) Several areas, approximately 10' long, of efflorescence were noted along this crack. The efflorescence appears to be from rain getting into the crack and leaching out. This does not appear to pose a structural problem. (Photo 11)

Precon recommends that this crack be sealed either by injecting epoxy into the crack or applying a coating to the surface. At this time it is not essential that the crack be addressed. If it is not sealed, it should be monitored.

5. Interior Tank Wall (Inner Tank): The interior wall was found to be in good condition. It appears to have a coal tar epoxy coating on the wall just above the monolithic floor wall connection which is also in good condition. During the last inspection, Precon noted a bubbling in the elastomeric urethane coating that was installed at the floor wall connection. These bubbles are found along the perimeter of the tank and appear to be between the top coat and the coating beneath it. Since the last inspection, several of these bubbles have popped and the overall size of the bubbles has gotten larger. (Photos 12-15) The coating underneath the bubbles seems to be in good condition, and it appears that the waterstop and diaphragm are also working as intended, as no signs of leaks were noted coming into the outer containment tank. Precon does not think any repair on this area is necessary since the tank is not showing signs of leakage. However, if the County wishes, a surface mounted waterstop could be applied over the entire tank floor wall joint.
6. Tank Floor (Outer Tank): The tank floor was found to be in good structural condition. Several minor cracks were noted at the base of the wall and along the floor. (Photo 16) Five larger cracks were also noted. These cracks are wider and, if not addressed, could be a cause of leaks in the future. (Photos 17-19)

Precon recommends addressing the larger cracks by routing them out, pressure washing the cracks, filling the routed sections with epoxy and applying surface mounted waterstops over the cracks. This will provide a flexible watertight seal.

7. Tank Floor (Inner Tank): The tank floor was cleaned and found to be in good condition. No cracking or failures in the coatings were detected. (Photo 20) The coal tar coating was in good condition.
8. Tank Accessories and Piping (Outer Tank): The tank accessories and piping were observed and noted.
 - a. Exterior Staircases: The three aluminum staircases on the exterior of the outer tank were all found to be in good condition. All hardware was checked and no loose or missing pieces were found. (Photos 21-23)
 - b. Exterior Ladder: A short exterior ladder was located at the top of one of the platforms and leads to the interior ladder. It was found to be in good condition. (Photo 24)
 - c. Interior Ladder: The interior stainless steel ladder was found to be in good condition. The safety climb and hardware were found to be in good working order. (Photo 25)
 - d. Tank Piping: The outer tank had four wall pipes, two 6" pipes and two 8" pipes. All were found to be in good condition and no signs of leakage or cracking were noted around where they joined the wall. (Photos 26-28) The sump was found to be in good condition as well. (Photo 29)
 - e. The Manhole: The stainless steel manhole frame and cover were inspected and found to be in good condition. (Photo 30)
9. Tank Accessories and Piping (Inner Tank):
 - a. Exterior Ladder (inner tank): The exterior stainless steel ladder on the inner tank was found to be in good condition. The safety climb and the hardware were all found to be in good working order. (Photo 31)
 - b. Liquid Level Indicator (inner tank): The LLI was found to be functioning properly. The float and cables were in good working order. (Photo 32)
 - c. Tank Piping: The piping coming over the wall was inspected and found to be in good condition. All pipe brackets were secure. (Photo 33)

Precon's inspection was a visual survey of the structure of the tank without any invasive or destructive procedures or tests, therefore Precon cannot give an opinion on the conditions of the covered and hidden aspects of the structure which are not visible from the surface.

Should you have any questions, comments or concerns about the above report, we would be happy to address them. Please do not hesitate to contact us.

Very truly yours;


Adrian C Moore
Special Projects Manager





PHOTO 1



Leachate storage tank in Nokomis, FL

PHOTO 2



Tank was built in 1997 by Crom

PHOTO 3



Minor cracking in exterior wall of outer tank

PHOTO 4



Minor cracking in exterior wall of outer tank

PHOTO 5



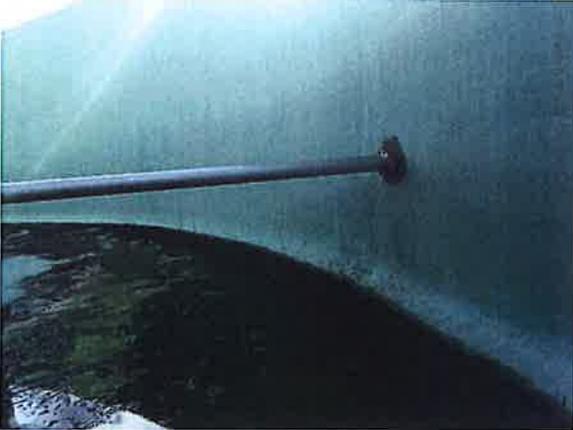
Coatings on interior wall of outer tank

PHOTO 6



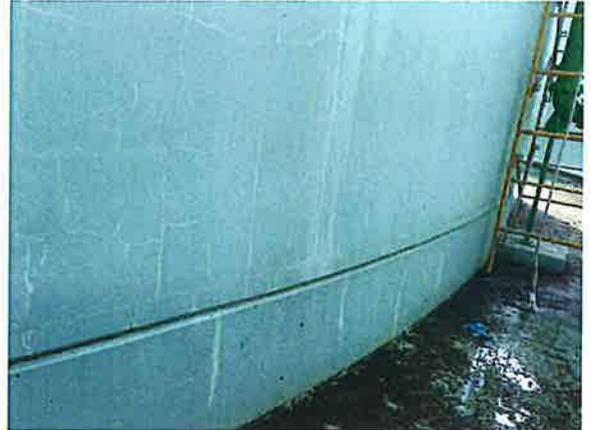
Cracking on interior wall of outer tank

PHOTO 7



Cracking on the interior wall of the outer tank

PHOTO 8



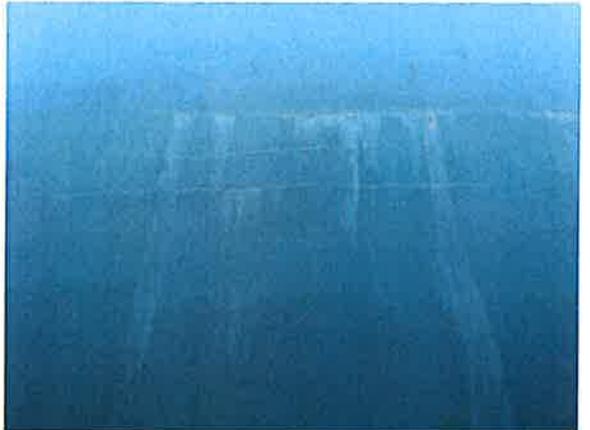
Hairline cracking on the exterior wall of the inner tank

PHOTO 9



Hairline cracking on the exterior wall of the inner tank

PHOTO 10



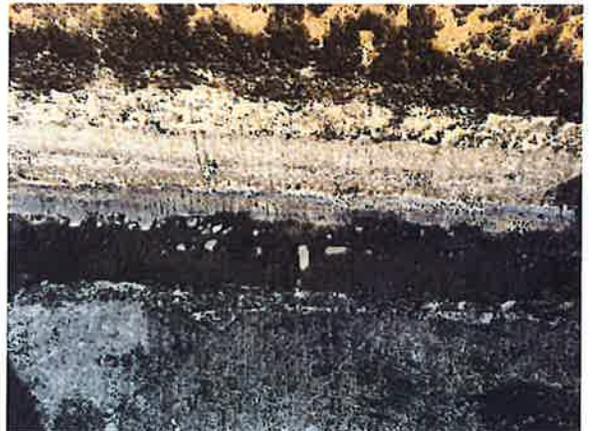
Large crack on exterior wall of inner tank

PHOTO 11



Large crack on exterior wall of inner tank

PHOTO 12



Bubbling of the elastomeric urethane coating at floor wall joint of the interior wall of inner tank

PHOTO 13



Bubbling of the elastomeric urethane coating at floor wall joint of the interior wall of inner tank
PHOTO 15



Burst bubbles of elastomeric urethane coating

PHOTO 17



Large cracks in floor of outer tank

PHOTO 14



Burst bubbles of elastomeric urethane coating

PHOTO 16



Cracking at the floor wall joint of the interior wall of outer tank
PHOTO 18



Large cracks in floor of outer tank

PHOTO 19



Large cracks in floor of outer tank

PHOTO 20



Floor of inner tank was in good condition

PHOTO 21



Aluminum stairway and handrail

PHOTO 22



Aluminum stairway and handrail

PHOTO 23



Aluminum stairway and handrail

PHOTO 24



Exterior ladder on outer tank

PHOTO 25



Interior ladder on outer tank

PHOTO 26



6" DIP wall pipe

PHOTO 27



6" stainless steel wall pipe

PHOTO 28



2 – 8" DIP wall pipes

PHOTO 29



Sump on floor of outer tank

PHOTO 30



Stainless steel manholes and covers in good condition

PHOTO 31



Exterior ladder on inner tank

PHOTO 32



Liquid Level Indicator (LLI) on inner tank

PHOTO 33



Piping and pipe brackets on inner tank



PRECON CORPORATION

Prestressed Concrete Tanks 115 S.W. 140th Terrace
Newberry, Florida 32669
(352) 332-1200 Fax 332-1199

Date: December 22, 2015

1. TANK DETAILS

- 1. Owner Sarasota County, Florida
- 2. Location Nokomis, FL
- 3. Capacity 2.1 MG (Outer Tank)
- 4. Dimensions: 130'-0"ID x 21'-2"WD
- 5. Description: Secondary Containment Tank
- 6. Tank Builder: Crom Year: 1997

2. EXTERIOR WALL

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
1. Painted		X	
2. Leakage		X	No signs of leakage
3. Cracks	X		Cracking was noted on the North, East and West sides
4. Hollows		X	No hollows were found
5. Stains	X		Minor staining was noted

ADDITIONAL COMMENTS:
Approximately 2,800 LF of minor prestressing cracks

4. EXTERIOR FOOTING

1. Backfill	X		Tank had approximately 1 foot of backfill
2. Settlement		X	

ADDITIONAL COMMENTS:

5. EXTERIOR ACCESSORIES

1. Ladder	X		At top of one staircase, in good shape.
2. Dome hatch		X	
3. Vent		X	
4. Overflows		X	
5. Level indicator		X	
6. Dome probes		X	
7. Handrail	X		On staircases and platforms only
8. Aerator		X	
9. Wall Manhole	X		In very good condition
10. Staircases	X		3 – Aluminum with handrail and platforms

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
6. INTERIOR FLOOR			
1. Cracks	X		lots of minor cracking, a few larger cracks
2. Settlement		X	
3. Leakage		X	
4. Sump	X		
5. Exposed reinforcing		X	
ADDITIONAL COMMENTS:			
7. INTERIOR WALL			
1. Hollows		X	No hollows were found Minor prestressing cracks around entire tank
2. Cracks	X		
3. Stains		X	Coatings were in good shape
4. Paint	X		
5. Deterioration		X	
ADDITIONAL COMMENTS:			
9. INTERIOR ACCESSORIES			
1. Ladder	X		Stainless with safety climb
2. Baffle Wall		X	
3. Pipe Brackets	X		Brackets were in good shape Pipe was in good condition
4. Wall Pipes	X		
5. Level Indicator		X	All pipe penetrations were in good condition
6. Pipes	X		
ADDITIONAL COMMENTS:			
2 – 6" wall pipes, 2 – 8" wall pipes			



PRECON CORPORATION

Prestressed Concrete Tanks 115 S.W. 140th Terrace
Newberry, Florida 32669
(352) 332-1200 Fax 332-1199

Date: December 22, 2015

1. TANK DETAILS

- 1. Owner Sarasota County, Florida
- 2. Location Nokomis, FL
- 3. Capacity 1.8 MG (Inner Tank)
- 4. Dimensions: 100'-0"ID x 30'-8"WD
- 5. Description: Leachate Storage Tank
- 6. Tank Builder: Crom Year: 1997

2. EXTERIOR WALL

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
1. Painted	X		Bottom two-thirds painted, in good condition
2. Leakage		X	No leaks were visible
3. Cracks	X		Cracking was noted around entire tank
4. Hollows		X	No hollows were found
5. Stains	X		Efflorescence and staining were noted

ADDITIONAL COMMENTS:

4. EXTERIOR FOOTING

1. Backfill	X		Tank had approximately 1 foot of backfill
2. Settlement		X	

ADDITIONAL COMMENTS:

5. EXTERIOR ACCESSORIES

1. Ladder	X		Stainless steel ladder with safety climb
2. Dome hatch		X	
3. Vent		X	
4. Overflows		X	
5. Level indicator	X		Fully functional
6. Dome probes		X	
7. Handrail		X	
8. Aerator		X	
9. Wall Manhole	X		In very good condition
10. Under drain pipes	X		All seemed to be in good condition

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
6. INTERIOR FLOOR			
1. Cracks		X	
2. Settlement		X	
3. Leakage		X	
4. Sump	X		
5. Exposed reinforcing		X	

ADDITIONAL COMMENTS:

7. INTERIOR WALL			
1. Hollows		X	No hollows were found
2. Cracks		X	
3. Stains		X	
4. Paint	X		Coatings on wall and floor
5. Deterioration		X	

ADDITIONAL COMMENTS: Coatings over waterstop are blistering

9. INTERIOR ACCESSORIES			
1. Ladder		X	
2. Baffle Wall		X	
3. Pipe Brackets	X		Brackets were in good shape
4. Wall Pipes	X		Pipe was in good condition
5. Level Indicator	X		Functioning properly
6. Pipes	X		