

Published May 4th, 2016

Corroded Culvert is to Blame for Sinkhole

By Sophie Braccini



Sunday, March 13: The initial emergence of sinkhole.

The presentation showed a 17.5-inch joint offset running all along the side of the culvert, caused by the shape alteration. When the rains started pouring last month, pressure increased on top of the pipe and large quantities of dirt were dragged from under the sidewalk into the pipe through the offset joint. After a while the road collapsed.

Repair alternatives were presented to the council. All agreed that removing the failed corrugated metal and replacing it with reinforced concrete was the way to proceed. "Daylighting" - bringing the culvert above ground - is too expensive; not doing anything is unsafe; and fitting a smaller pipe into the existing conduit would reduce the culvert capacity too much.

The culvert that carries Laguna Creek underground paralleling Moraga Road is made of different portions. There are about 600 feet of corrugated pipe that run in between concrete sections to the north and to the south. The metal section runs under town property and private property. The town plans to replace 125 feet of metal pipe.

Mayor Mike Metcalf asked the consultant if they found the condition of the corrugated pipe after the sinkhole to be in as bad a shape as the failed portion. They indicated that it was not in as bad a shape. However, when that same consultant did a storm drain study for the town two years ago, the portion that failed last month had been listed as in need of repair, but no sign of complete failing was present at the time.

Metcalf, followed by Council member Phil Arth, said that not replacing the corrugated portion of the pipe in its entirety, including what is under the Rheem shopping center, does not make any sense since it is going to fail someday.

But funding is a major issue. The State has declared an emergency in Contra Costa for storm-related damage to roads and highways after the March heavy rains. It means that Moraga will be able to apply for reimbursement of the expense to fix the problem created by the storm. But other council members had serious doubts that the portions under private property that had not failed could be covered as well.

Interim Town Manager Bob Priebe asked the council to focus on repairing the present damage and restoring the intersection, which cost will be in the area of \$3.3 million.

Metcalf insisted that options to mitigate potential failure and extend the life of the pipe in other sections of the corrugated conduit be looked at. At the same time, Public Works Director Edric

The Town of Moraga established with certainty that the cause of the recent sinkhole is the failing of the 96-inch corrugated metal culvert that runs under the Rheem Boulevard-Moraga Road intersection.

The town will replace the failed portion of the metal pipe with a concrete conduit. It will not fix the entirety of the corrugated section, because state funding might not be available for improvements beyond the immediately affected area.

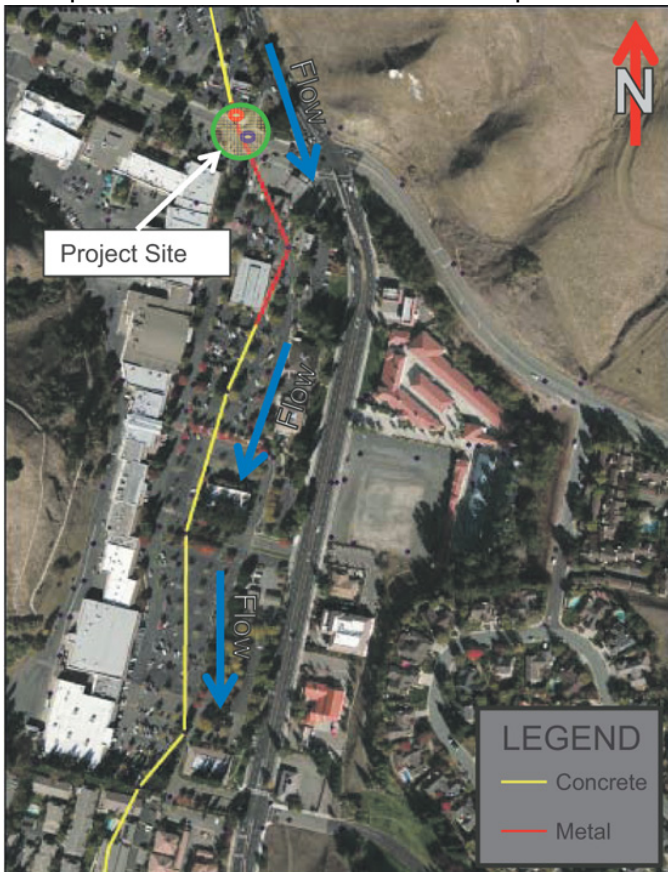
Glen Anderson from consultants Schaaf & Wheeler made a presentation to the town council on April 27 of the forensic work that has been done in the sinkhole over the past weeks. Images of the film taken inside the culvert were enough to bring their point home. It showed a pipe where corrosion was everywhere, to the point that the bottom was gone in some places, not supporting the top of the pipe, and resulting in its deformation. The

Kwan will meet with state agencies to define procedures and what can be included in the repairs; the town attorney will look into rights of way and maintenance responsibility for the portions of the pipe located under private property.

Kwan plans to expedite the requests for proposal and the bidding process to be able to start work as soon as possible. All repair work is scheduled to be completed by the start of the rainy season, mid October.



Monday, March 14: A traffic signal pole, a PG&E electrical switch vault and portions of the sidewalk collapsed into the sinkhole. Photos provided



Project site and culvert location

Existing Pipe Condition

- Joint offsets of up to 17.5 inches
- Joint openings were visibly obstructed by debris from the sinkhole including concrete, irrigation piping and electrical conduit.
- Water flowing into the CMP through joint offsets at a rate of 1 to 2 gallons per minute following a dry period of approximately 10 days.



Figure 8: Joint Offset with Debris Intrusion
4/27/16



Figure 9: Joint Offset of CMP at Sinkhole Location

Apparent Mode of Failure

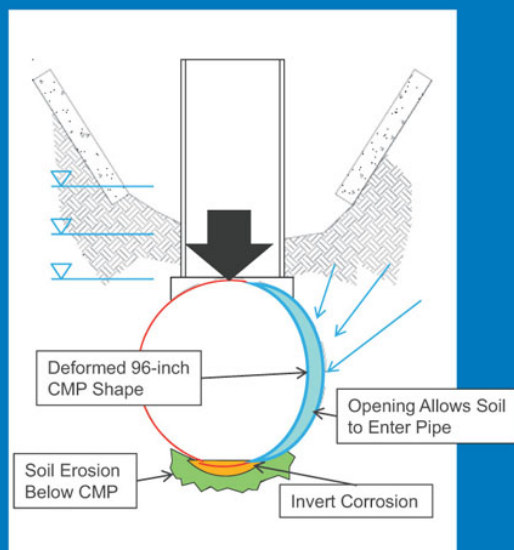


Figure 5: Animation of CMP Failure



Reach the reporter at: sophie@lamorindaweekly.com

[back](#)

Copyright © Lamorinda Weekly, Moraga CA