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## MEMORANDUM

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To: **Steve Landau, Cotter Corporation, Englewood**  
Copy: **Patrick Mutz, Cotter Corporation, Canon City**  
From: **Mike McDermid** *MM*  
Date: **December 26, 2002**  
Subject: **Preliminary Observations - Canon City Mill Site Visit**

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At your request, I visited the Canon City Mill on December 19, 2002. The purpose of the visit was to review the condition of the CCD Tanks in order to assist Cotter Corporation to respond to the Colorado Department of Public Health and Environment (CDPHE) letter dated December 12, 2002. During the visit, I met with the Canon City Mill staff, reviewed construction documents related to the tanks and toured the CCD Tank area to observe the general condition of the tanks.

There are nine CCD Tanks; No. 1 is 100 feet in diameter and Nos. 2 through 9 are 90 feet in diameter. Based on the construction drawings, all the tanks are 15 feet high and constructed of 4-inch nominal thickness wood staves and wood plank bottoms. The wood staves are restrained by 1-inch diameter steel hoops and the tanks are supported on 10" x 12" chine joists resting on 3" x 10" sole plates. All wood is No. 1 Structural Douglas Fir. The sole plates rest on 12" x 8" x 16" concrete masonry unit (CMU) foundation pier walls. The CMUs have vertical and horizontal reinforcement and each cell is grouted. The pier walls rest on reinforced 2-foot wide 10-inch deep reinforced concrete footings on controlled cut and fill. The design drawings are dated late 1977, indicating the tank and foundations were probably constructed in 1977 or 1978.

The tanks have launders to collect overflow from the thickening process. The launder rim is only 8 1/2 inches below the top of the tanks. Therefore, under mill operating conditions, the tanks could be full with acidic or caustic solutions to near the top. Prevailing winds are from the west. High wind conditions impinging upon these large diameter tanks could cause waves that would splash overflow on the easterly side of the tanks.

Tank No. 1 showed signs of leakage on the east/southeast side. It appears the leakage may be caused by leaks between wood staves or may result from spills caused by wave action from depressed areas in the tank rim. The tank is currently used for storage of process water. This water is neither highly acidic nor alkaline and is not considered to be dangerous.

Preliminary Observations – Canon City Mill Site Visit

The outside end of one of the CMU foundation pier walls supporting Tank No. 8 was severely corroded. Other ends were less severely corroded. The corroded end is located on the easterly side of the tank, suggesting that wave-induced splash/overflow of acidic or caustic liquid may have caused the corrosion. The area of corrosion is primarily outside the tank circumference and is not directly load bearing. There were no visible signs of extensive foundation damage or settlement based on observation of the passageways between the pier wall foundations.

In summary, although some of the tanks exhibited signs of wood and CMU corrosion, there was no evidence of imminent collapse. There were no obvious bulges or out of plumb areas on the tanks or foundation distress that would imply short-term failure. The severe corrosion damage appeared to be limited to the outside non-load bearing ends of the pier walls.

To answer the question of the tank safety, life expectancy and repair replacement requirements, a detailed quantitative inspection of corrosion in the tank walls, bottom and foundation is required. An assessment of the operational condition of the tank system and structural components can then be conducted. Of all the tanks, Tank No. 8 has the most severe corrosion on the outside end of the CMU pier wall, and is reportedly the tank with the history of containing the most corrosive fluids over the years. I recommend conducting a detailed inspection of Tank No. 8, to include the condition of the staves, bottom, hoops and CMU pier wall. The condition of tank No. 8 should be the "worst case" and therefore indicate that the other tanks are in better condition. If the condition of Tank No. 8 and the subsequent system assessment indicates that a detailed inspection of the other tanks is warranted, the inspections can be scheduled at a later date.

This recommended inspection requires the assistance of the mill staff. The staff is not available during the holidays; therefore the inspection cannot be scheduled until the week of January 6, 2003, or later depending on operational considerations and staff availability.

*of January 6, 2003, or later depending on operational considerations and staff availability.*

Correction: of January 6, 2003, or later depending on operational consideration and staff availability.