

**Robertson GeoConsultants Inc.**

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**Memorandum**

**DATE:** July 17, 2006  
**TO:** Valerie Chort, Deloitte & Touche  
**CC:** Wes Treleaven, Deloitte & Touche  
**FROM:** Christoph Wels, Robertson GeoConsultants Inc.  
**RE:** **Final Inspection of Decommissioned "Leaky Wells", Rose Creek Tailings Facility**

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Between September 30 and October 1, 2005, a total of 17 "leaky" monitoring wells of the P01 series had been sealed by pumping a bentonite slurry into the PVC casing (Robertson GeoConsultants Inc., 2006). In the decommissioning report it was recommended that these wells be inspected after spring thaw to check on the conditions of the decommissioned wells.


On July 13, 2006, the author inspected all 17 decommissioned wells. During the visit, the wells were photographed and the conditions of the bentonite seal were noted. The field notes from this site visit are reproduced in Appendix 1. The photographs of the 17 decommissioned wells are summarized in the photo log.

In short, no settlement of the bentonite seal was observed in any of the decommissioned wells suggesting no significant losses of the bentonite placed in the PVC casing. Furthermore, the bentonite seal exhibited a putty-like consistency within 4 to 6 cm depth below the top of the PVC casing. These observations suggest that the bentonite seal remains hydrated (all the way to surface) providing a proper seal throughout the entire PVC casing.

No further inspections of the decommissioned wells are required at this stage. However, we recommend that the water quality monitoring data for the multi-level piezometer P03-03, located immediately downgradient of the decommissioned wells P01-09A/B/C/D, be reviewed to assess the effectiveness of the well sealing and to provide some insight into the degree of sorption/desorption of zinc within the aquifer.

Please contact the undersigned if you have any questions regarding this memorandum.

ROBERTSON GEOCONSULTANTS INC.

A handwritten signature in black ink, appearing to read "Christoph Wels".

Christoph Wels, Ph.D.  
Senior Hydrogeologist

Att

Photo Log

Appendix 1. Field Notes for site visit of July 13, 2006

## PHOTO LOG





Photo 1 - bentonite seal at P01-09A



Photo 2 - bentonite seal at P01-09B



Photo 3 - bentonite seal at P01-09C/D



Photo 4 - putty-like seal at 7 cm bTOC at P01-09C



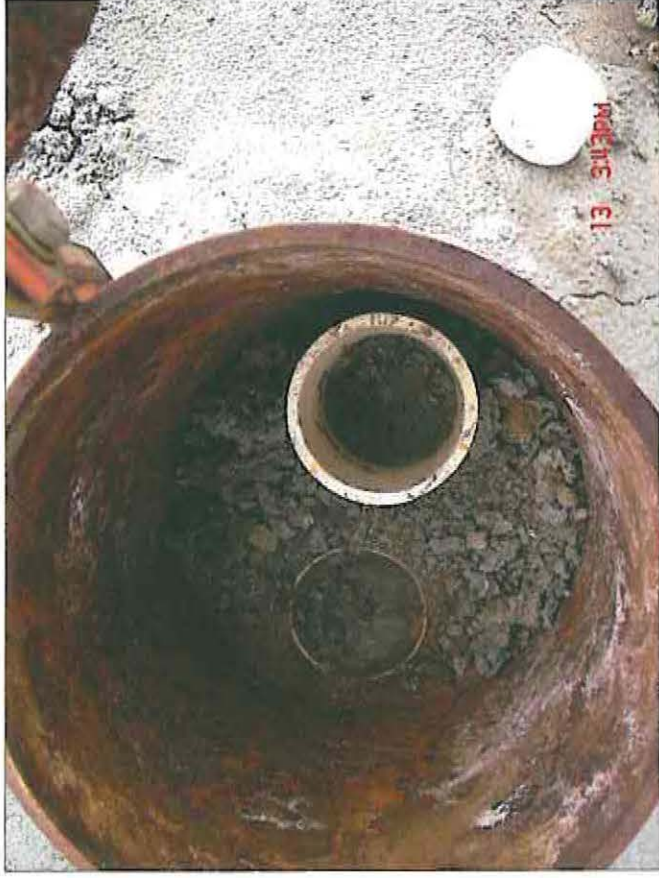


Photo 5 - putty-like seal at TOC at P01-09D

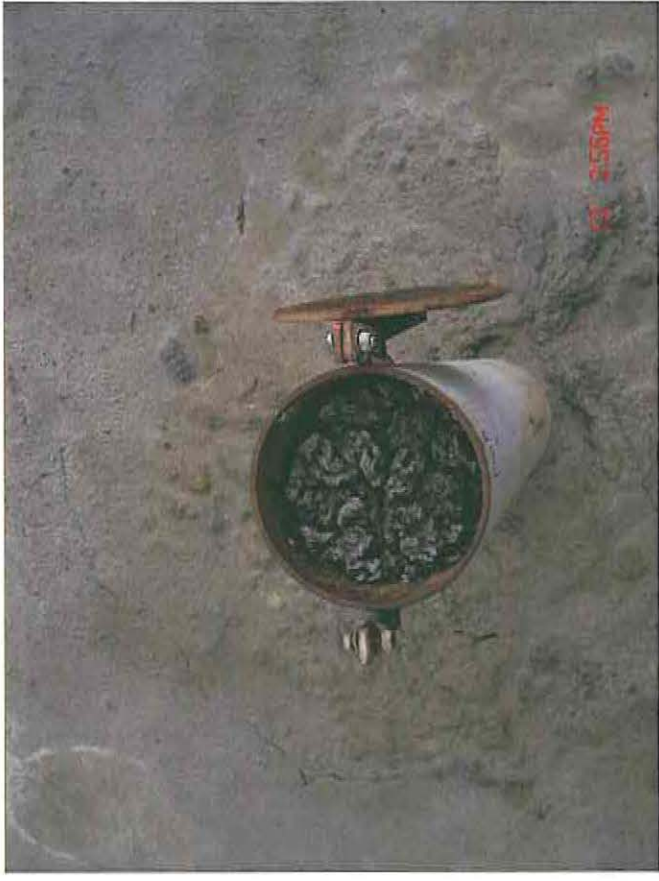


Photo 6 - bentonite seal at P01-08A

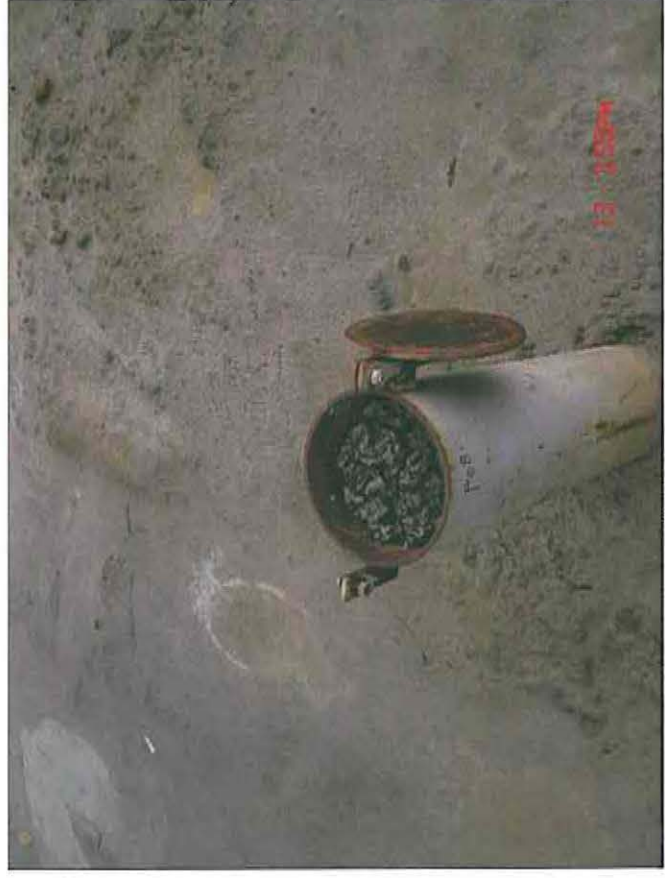


Photo 7 - bentonite seal at P01-08A

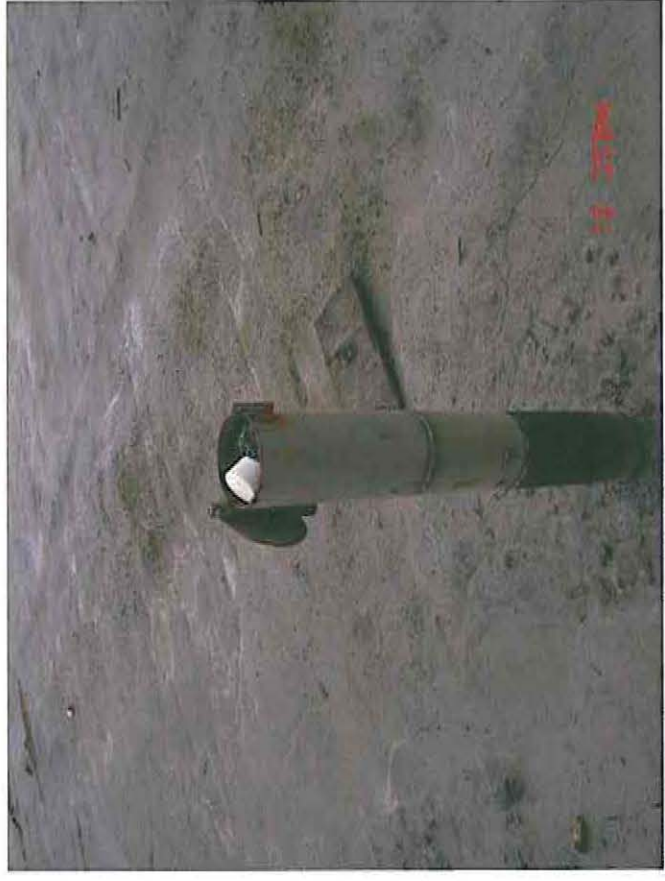


Photo 8 - bentonite seal at P01-08B





Photo 9 - bentonite seal at P01-08C



Photo 10 - bentonite seal at P01-08A



Photo 11 - putty-like seal at 6 cm bTOC at P01-08C

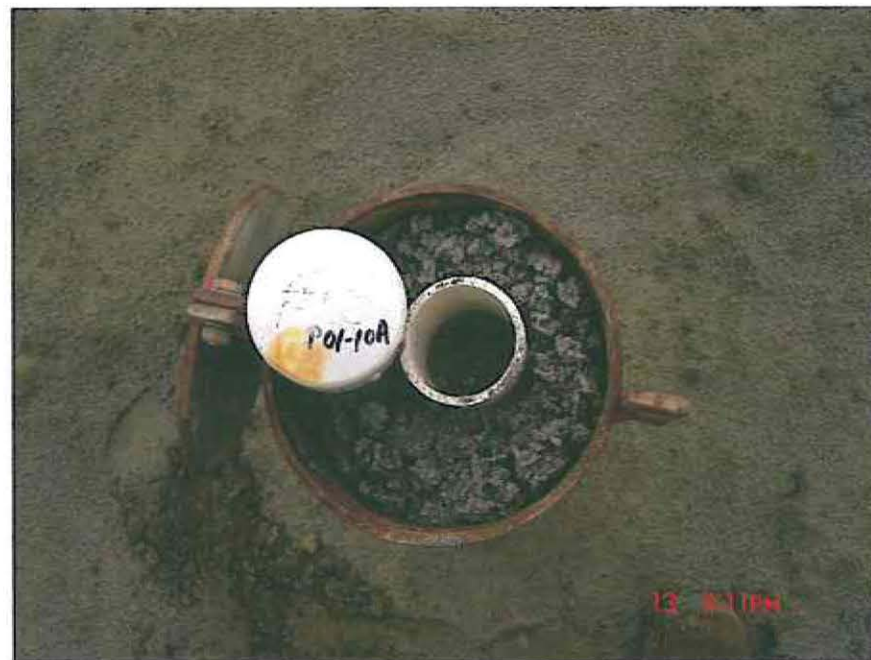


Photo 12 - putty-like seal at 6 cm bTOC at P01-08B





Photo 13 - putty-like seal at 7cm bTOC at P01-10A



Photo 14 - bentonite seal at P01-10B



Photo 15 - bentonite seal at P01-07A



Photo 16 - bentonite seal at P01-07B





Photo 17 - bentonite seal at P01-07D/E



Photo 18 - bentonite seal at P01-06A

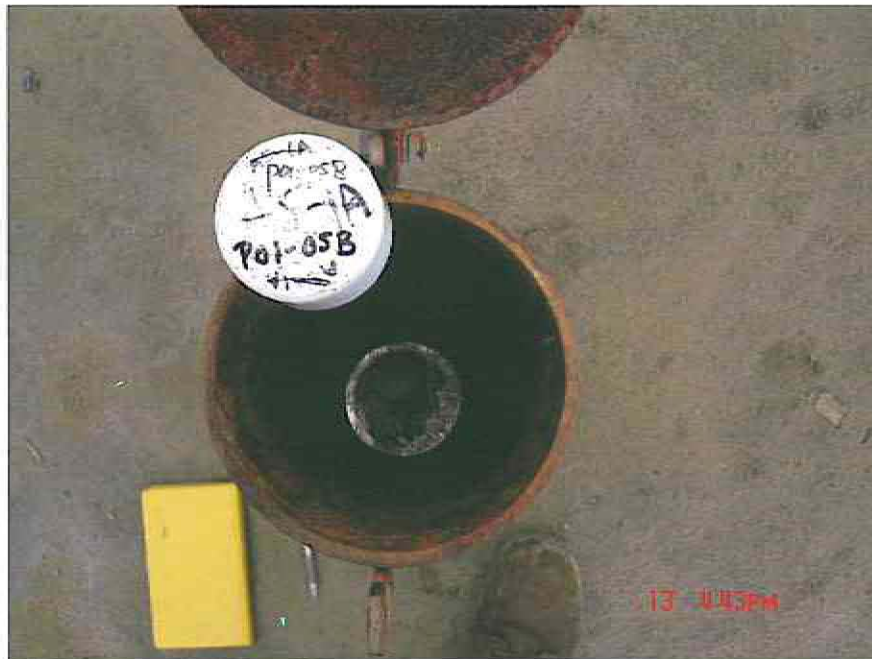


Photo 19 - bentonite seal at P01-05B



Photo 20 - bentonite seal at P01-05A

## **APPENDIX 1**

### **FIELD NOTES**



July 13 16:45

2006

check sealed P-01 wells

P01-09A photo 1

handwritten to top of casing  
putty like, outside of  
PVC dried up

P01-09B dried at top of powder

casing  
putty like, inside PVC  
to top, no shrinkage

P01-09C putty-like ~ 7m to top  
09D " at top of PVC  
no sign of shrinkage/shrinkage

P01-08 17:01

P01-08C dry at top  
putty-like at ~ 6m to top  
no loss/shrinkage (2 plates)

P01-08B a> above  
putty-like at ~ 6m to top

P01-08A dry, shrinkage at steel casing  
putty-like at top of  
PVC casing

P01-10A

putty-like at 7cm

P01-10B

putty-like at 4cm

massive slumps of slurry over weather

P01-07 17:25

P01-07A putty-like to top of PVC casing

B " at 4.5m to top

C " at 4.5m to top

D/E both putty-like to top of PVC  
cleaned out to place top of well

P01-06A 17:39

handwritten ~ 6cm to top of PVC casing  
slur putty-like just below  
dry surface

no change from last year

P01-05 17:46

P01-05B putty-like at 5cm to top of PVC casing

P01-05A " at top (wet)  
no change from last year

Leave site 18:00