Elizabeth Mine

Site Update

November 2012

Elizabeth Mine
Public Update - November 28, 2012

- Status of cleanup work
- Remaining activities
- Photo Update
- Monitoring data update
- Questions

Elizabeth Mine
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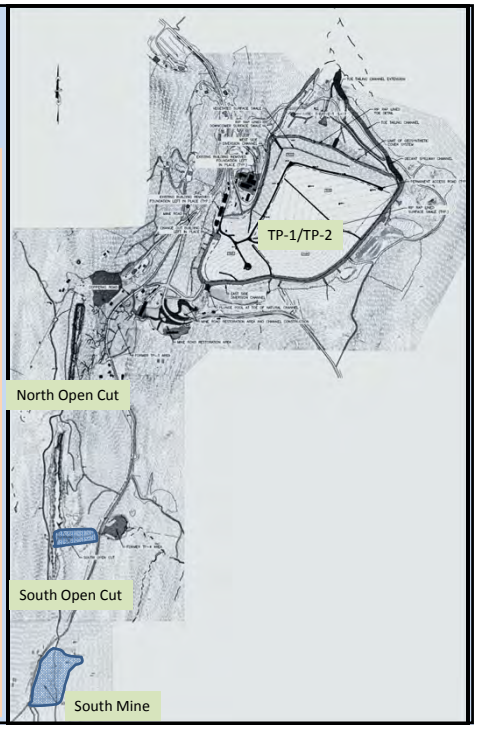
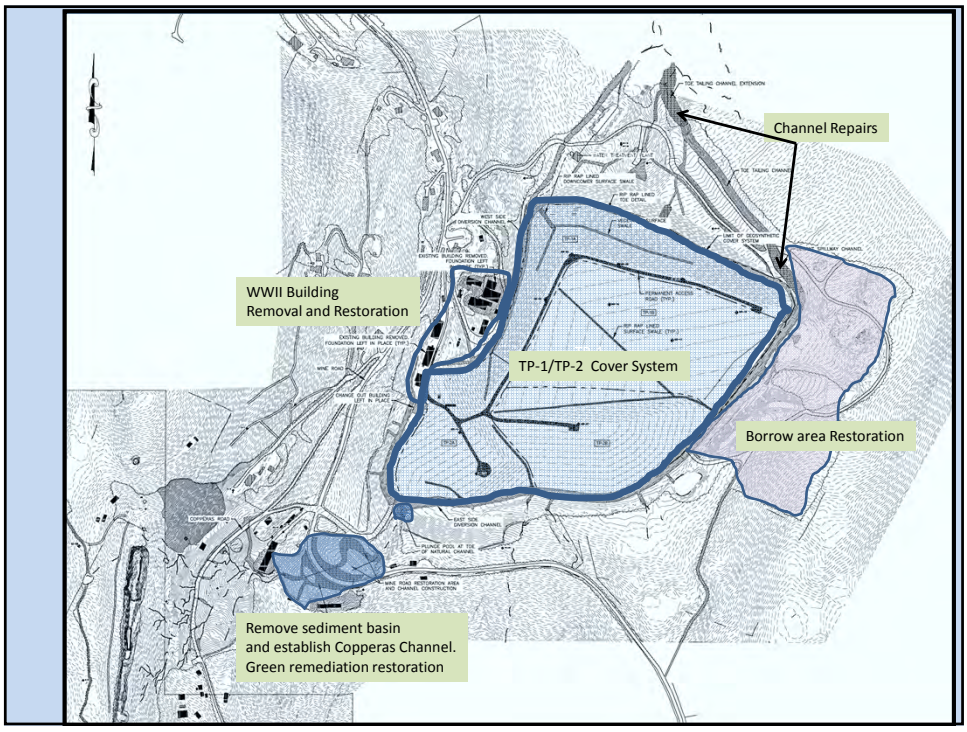
- 2011/2012 Completed Cleanup Work
  - Cover system for TP-1 and TP-2
  - Bulk removal of mine waste at South Mine and SOC haul road
  - WWII Building area waste removed and area restored
  - Copperas channel repaired
  - Borrow area restored
  - Mine Road sediment basin restored
  - Continued operation of Water Treatment Plant
  - Continued long-term monitoring of surface water and groundwater





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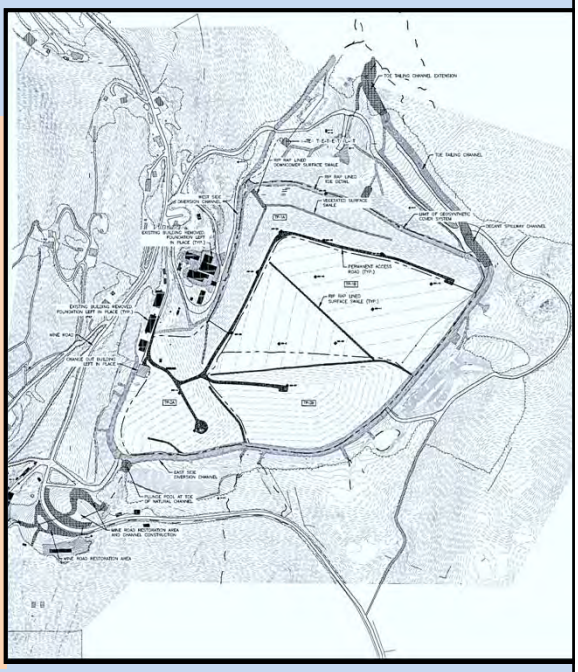
- Remaining NTCRA Activities
  - Interim treatment system operation
  - Passive treatment system construction
  - Continued restoration of disturbed areas
  - Punch List items
    - Establish good vegetative cover and stabilize any areas experiencing soil erosion
    - Complete stabilization and establish vegetation for off-cap areas



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- Water treatment plant
  - Began operation in July 2008
  - Gallons of leachate treated through 2012 – 29,966,573 gallons (approx 30 million gallons)
  - Estimated iron removed from WBOR – 180,000 lbs or 90 tons
  - Lime used – 182 tons of quick lime
  - EPA expect to operate the WTP through 2015 assume passive treatment system can be operational in 2016

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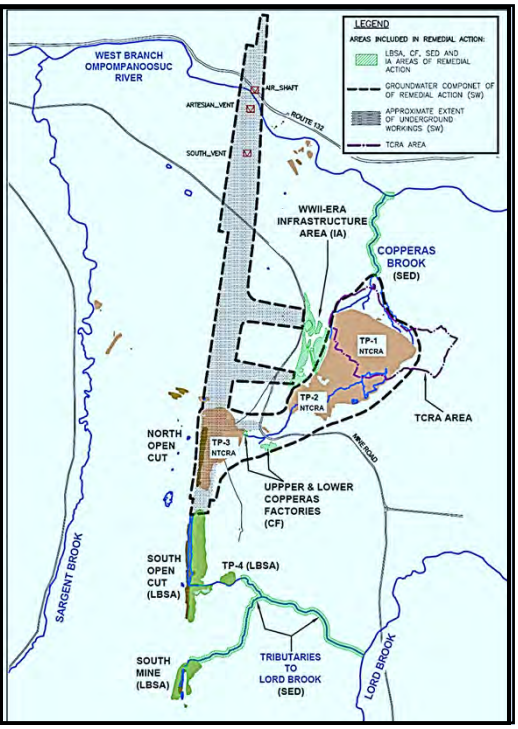
Remaining Remedial Action Activities

- Lord Brook Source Areas Remedial Design
  - Diversion of clean water around South Open Cut and South Mine
  - Additional source control actions for remaining waste rock
  - Treatment of water discharging from South Mine and South Open Cut
  - Restoration of disturbed areas
- Other Remedial Design activities
  - Groundwater use restrictions
  - Long-term monitoring plan
  - Long-term maintenance plan
  - Baseline monitoring
- Transition to VTDEC maintenance and monitoring



Photographs of Site

TP-1 and TP-2 from Mine Road (School bus turnaround)

TP-1 and TP-2 from Mine Road (School bus turnaround)

WWII Building Foundations from Mine Road (School bus turnaround)

WWII Building Foundations from TP-1

WWII Building Foundations from Site Access Road

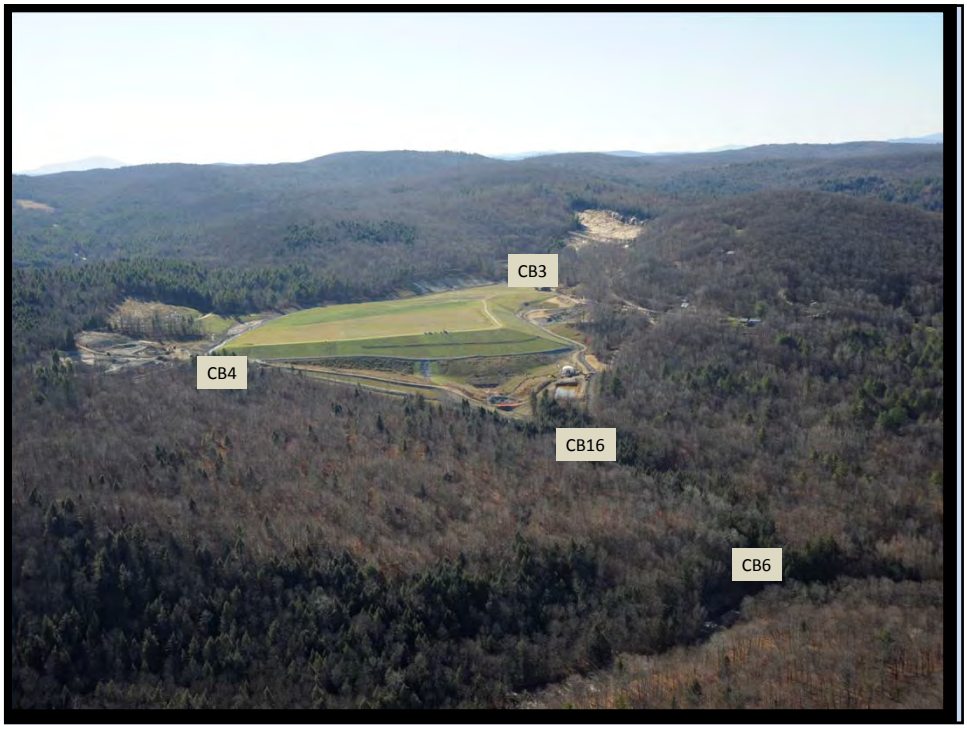
TP-3 From Copperas Road

TP-3 From Copperas Road

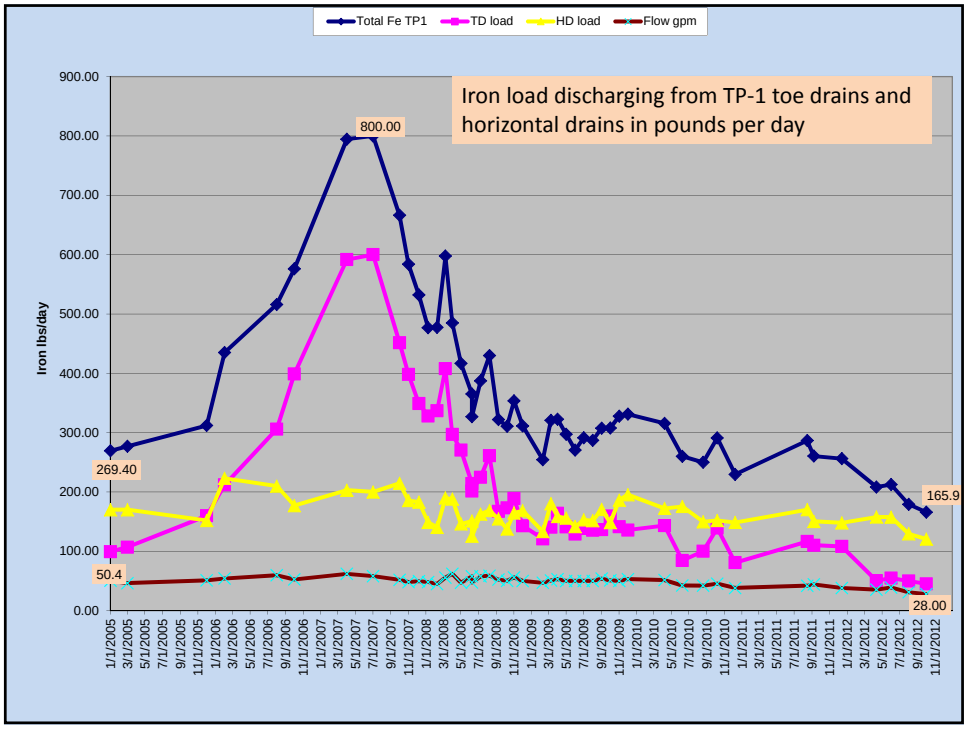
TP-3 From Copperas Road

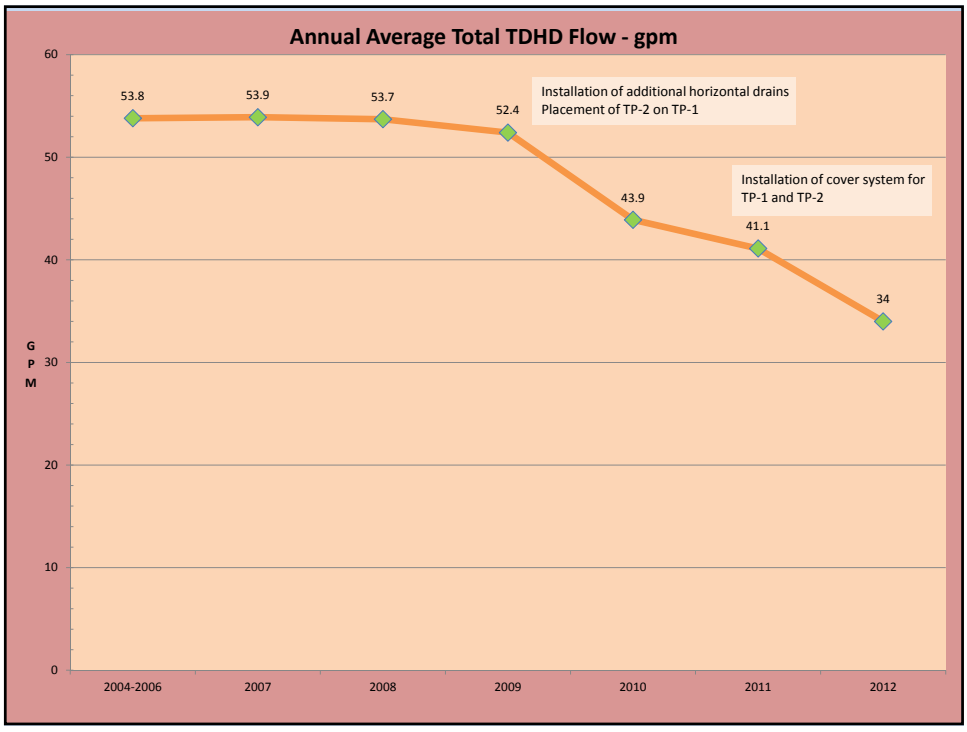
South Mine From Copperas Road

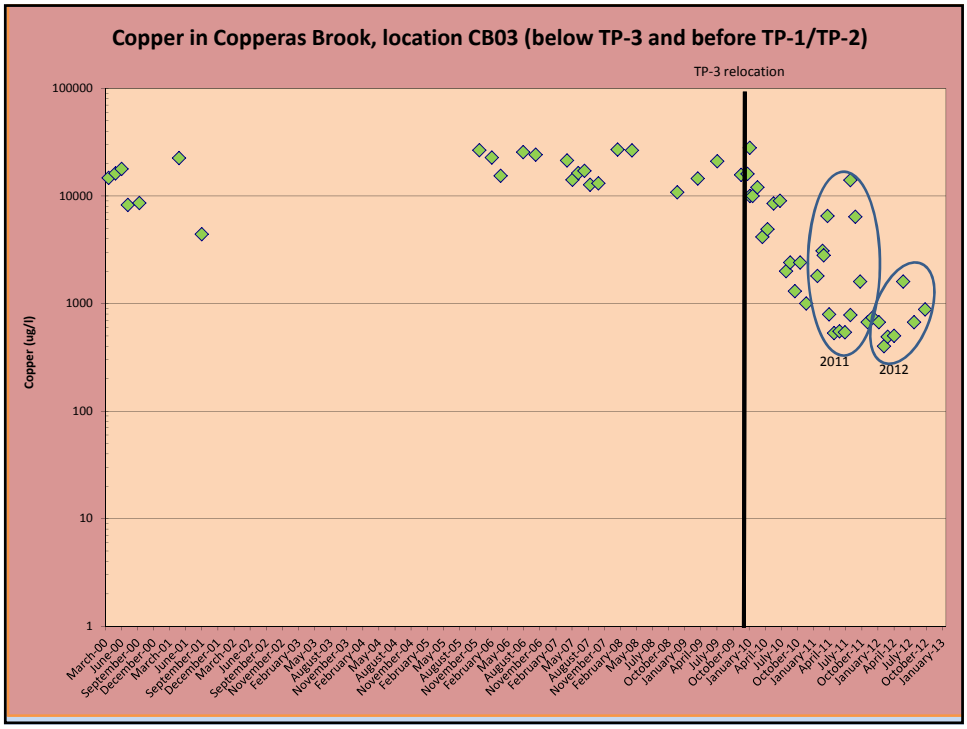
South Mine from Copperas Road



Monitoring Data


Total Fe TP1
TD load
HD load
Flow gpm
Iron load discharging from TP-1 toe drains and horizontal drains in pounds per day
Iron lbs/day
800.00
269.40
165.9
50.4
28.00


Annual Average Total TDHD Flow - gpm
GPM
53.8
53.9
53.7
52.4
43.9
41.1
34
Installation of additional horizontal drains
Placement of TP-2 on TP-1
Installation of cover system for TP-1 and TP-2
2004-2006
2007
2008
2009
2010
2011
2012


Copper in Copperas Brook, location CB03 (below TP-3 and before TP-1/TP-2)
TP-3 relocation
Copper (ug/l)
100000
10000
1000
100
10
1
2011
2012
March-00
June-00
September-00
December-00
March-01
June-01
September-01
December-01
March-02
June-02
September-02
November-02
February-03
May-03
August-03
November-03
February-04
May-04
August-04
November-04
February-05
May-05
August-05
November-05
February-06
May-06
August-06
November-06
February-07
May-07
August-07
November-07
February-08
May-08
July-08
October-08
January-09
April-09
July-09
October-09
January-10
April-10
July-10
October-10
January-11
April-11
July-11
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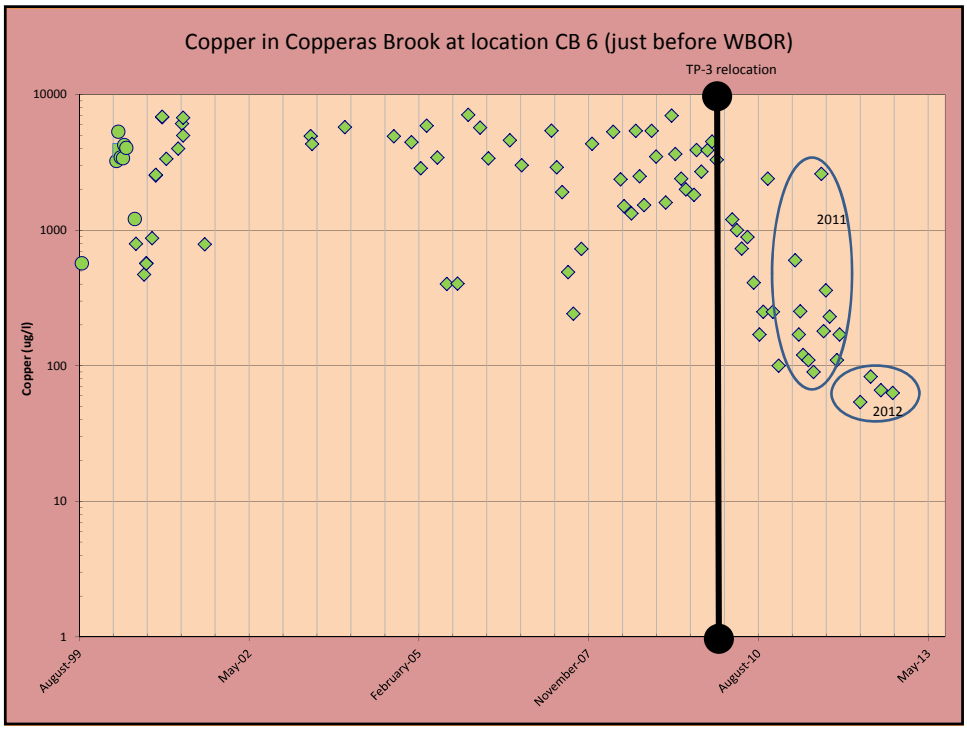
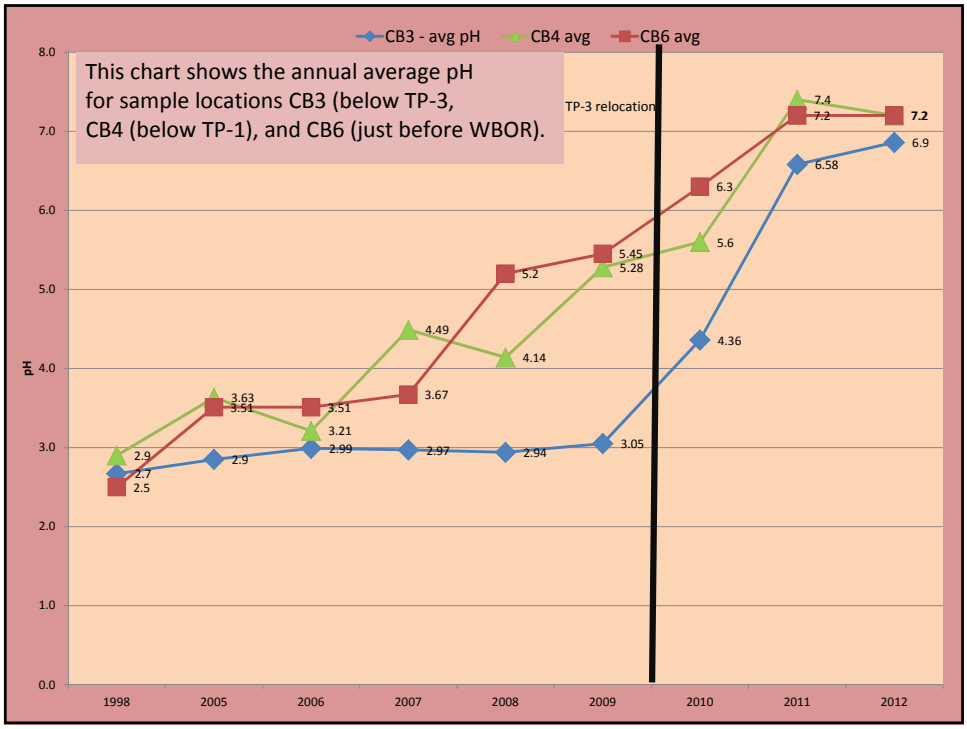
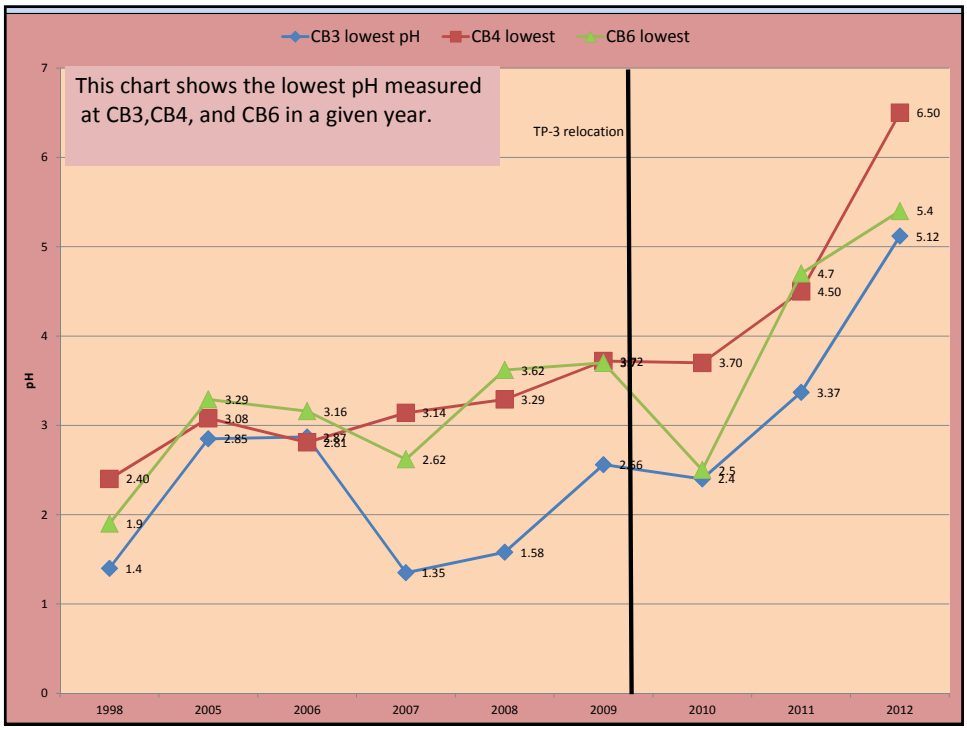
January-12
April-12
July-12
October-12
January-13


Copper in Copperas Brook at location CB 6 (just before WBOR)
TP-3 relocation
Copper (ug/l)
10000
1000
100
10
1
2011
2012
August-99
May-02
February-05
November-07
August-10
May-13


CB3 - avg pH
CB4 avg
CB6 avg
This chart shows the annual average pH for sample locations CB3 (below TP-3, CB4 (below TP-1), and CB6 (just before WBOR).
TP-3 relocation
pH
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1998
2005
2006
2007
2008
2009
2010
2011
2012
2.9
2.7
2.5
2.9
3.63
3.51
3.51
3.21
2.99
4.49
3.67
2.97
5.2
4.14
2.94
5.45
5.28
3.05
6.3
5.6
4.36
7.4
7.2
7.2
6.58
6.9


CB3 lowest pH
CB4 lowest
CB6 lowest
This chart shows the lowest pH measured at CB3,CB4, and CB6 in a given year.
TP-3 relocation
pH
7
6
5
4
3
2
1
0
1998
2005
2006
2007
2008
2009
2010
2011
2012
2.40
1.9
1.4
3.29
3.08
2.85
3.16
2.81
1.35
3.14
2.62
3.29
3.62
1.58
3.72
2.56
3.70
2.5
2.4
3.37
4.50
4.7
5.4
5.12
6.50

Questions