Mtg w/ Reg 8/17

Mtg w/ Dave Ostrander & Laura Williams

Contractor Document / Pol Regs

ER Contractor has worked with Region for some time

Sunnyside WT Plant @ Gladstone.

Court Order to stop WT to Todd Hennes

- Plug American Tunnel raised 7 gpm to 300 gpm.

Investigate Gold King to determine impact of Plug of Red Bonita

- Animas River WG working w/ USGS to map out mines

- Red Bonita cleaned up to 700 feet.

CD of American Tunnel & Shale which were objected by EPA

3 ~~Tunnels~~ Plugs in American Tunnel

ASRG - Community Group for over 20 yrs

Mostly Tailings - Community Support

1995 - WT Plant shutdown - WQ degrading

Since Shutdown of WT Plant

(2)

- Chose Red Bonita because it was orphan to build trust
- Remedial working
- Build community support.

Who owns what drainage / water?

~~[illegible]~~

Can't say there is no threat on Gold King -

100 gpm Presumption drawing from adit.
Digging at 8 ft above the adit top

Track hoe.

Steve Way's Work Plan.
Assumptions about pipes

Seen 200 - 300 gpm in past
Pipe only allowed 100 gpm so back up.

- Assessing whether plug could be put in to reduce / stop flow out of this tunnel.

DRMS was @ Site 10 minutes before collapse
Based on agreement on Work Plan - R8 decided to proceed
DRMS did not object or raise concerns on work @ site

Steve Way:

Background on Hays & Steve Way - * Get Resumé

Red Bonita 500 ft below Gold King

Mogul Mine is also draining and contributing to WQ exceedances

Hays is ~~Ex~~ Geologist - with over 25 yrs of Mining Experience

4 Mines focused on (Draining adits)

American Tunnel, Red Bonita, Mogul, Gold King 7 level - Part of Gold King Mine Complex

Combined Flow - 608 gpm

American - 100

Gold King - 250 ~ 70 ish

Red Bonita - 300

Mogul ~ 150 - 200 gpm!

(4)

Studies focused on Drainage from these 4 sites.

3 bulkheads in American Tunnel
1 bulkhead in Mogul

- State person was very knowledgable of work in adits

Member of ARSG knowledgable about Gold King Bend Forfeiture of 2008/ –
Safety work – Maintain/install drainage pipe

* Red Bonita – Synoptic event 2012 (Oct)
USGS (Rob Runkel)
- Major Zn load (18%) @ A72 in Animas (Baseflow)

Mayflower Tailings. Large load.

BLM, ~~UR~~ URMS – WS Group, BLM, County, Mining Companies – ARSG

(5)

Who is going to pay for long term WT was
Issue and Source control preferred approach
* Source Control to minimize LT WT. *

Red Bonita - 1898 for 2 yrs. (Limited Source)
Mill down there to Mill Mogul
DMG - 3500 Linear ft. mine.

Red Bonita Removed Assessment in 2011
Punch Drill hole behind blockage
Geophysics was not accurate
- Hit the adit w/ bore hole -

Prince Stringer - Pushed behind blockage
Manage drawdown of level of floor.

DRMS - Alan Sorenson, Bruce Stover (35 yrs underground exp.)
2
25 yrs

Specialist / Expertise to get well
thought methodologic approach.

ASRG involved in all work plan efforts

0.5 gpm Red Bonita in 1995 1995 to 02 flow was @
300 gpm

Inter connection w/ American Tunnel is believe thru fractures and or faults.

* Get Gold King Portal Stabalized prior to plugging Red Bonita - The Plan of Action

- Baseline @ Gold King to stabalize the tunnel

American Tunnel increase Gold King flow rate from <5 gpm to 250 gpm
70 gpm from Gold King to spill was the average prior

- 250 gpm capacity from Gold King in planning

* - No guarantee of funding this yr

- Coordinate schedule of Red Bonita & Gold King (work). - To optimize/coordinate contractor work

Red Bonita - 300 ft clean - to back of tunnel
Gold King pH - 3.5

Lined up BOR to come back on Aug ~~#4~~ 14th
Not in hurry to get to Gold King @ the two
Equipment idle

(7)

1995 - Collapse of Gold King - no drainage

Looking for outcrop (for competent rock)

Discuss multiple times on doing / not doing it (work)

* Never did we consider this condition was under pressure - All ARSG, Mining experts agreed ? thought

As much water not anticipated

Find the Brow - go back @ angle behind the blockage w/ stinger was the approach

* Did not dig face of portal.

Lower water before removing dam blockage.

→ BOR was going to be pulled into project.

Wanted BOR involved earlier but IAG sluggishness - not timely

Lessons learned:

* Not even envision get drill rig up there (slope + stability concerns)

$500K - $1M.

Should we drill - Risk / Harm.

- Guideline on tools to evaluate other than Drill Rig

Come from Side of Adit?
Remote Sensing Geophysical Techniques
High pressure investigation
(Mine Specialists, Geotech, Hydro geologist)
- Independent Assessment

Checklist? List - for other sites:
Get up to upper level and find ways to get info
- Contingency for this type of spill was in place to get word out.
  - Sheriff / County knew
- Response System - NDEQ was in place to NRT.

Reasons for Proceeding @ Gold King
- Info visual observation (~ 70 gpm)
- No Seepage high (no evidence of seepage on top of tunnel)
- No Pressure evidence
DMRS, (Drd observation) prior to collapse
- Variability of flow did not cause any flags.

If not direct observation explore other options to make determination.

Flow reduced and can't figure out why & no observations in mine.

Evaluated the data/Figures and talked with miners to help us make a judement call - ~~[illegible]~~ Gathered all information consulted with experts, developed WP and proceeded forward.

Hays Griswold

Tunnel covered w/ dirt - In a slope.
Bring Hays & State Guys to find the blockage
Approach was assuming if there was water
Cleared Rubble away could see cave - No water
Historical info maybe backed up 4-5ft
1st day Stopped - Hays, Alan Sorensen, ER Manager
What the next day for Bruce Stover
Build ramp to get to area to ~~block~~ get dirt down - Looking for hard rock surface to

find competant rock & stop to think further.

Multiple dirt piles moved

Lower end of rock face crumbled away - Spurt of water - looked like a spring going out & up.

Water spurting up.

Red water started coming out & not clear

How did it become red & not clear

Vibration may have knocked something back in the workings.

Safe distance above blockage - Came up relatively slowly

Water came out about 4-5 ft above what was / may have been anticipated or thought to be above the top of adit - Horizontal beam.

15 ft - or 4 to 5 above what was thought as top

The grate was gone - that was installed last year

- How long did the spurt turn into the ~~spill~~? red color?
  3-4 minutes
  Machine backed out
  It was dangerous - 2 mins
  Total 5-6 minutes.
  Whole thing took about an hour to burst

Who was there - Bruce Stover, Alan Storenson, Hays
ERM & Equipment operator
Bedrock surface was covered w/ loose dirt

Bruce & Alan went to look @ another mine
1/2 hour before the spill

Hays - Drill from above (Bad Ground)?
Running ground
Could have caved in chunks
Could have caved in Drill Rig
~~Would~~ Dump tells story no good
Competent material in tunnel
- Not sure how could get in w/o release from front
- Drill directionally w/ gate valve??

Hays - Drilling or something happened to cause event to occur?

How did clear become orange without being stirred up?

More to know once we can get in

Red water coming out puzzling?

- Bad Rocks, Caused by unconsolidated dirt

- Might have another blockage in tunnel.

* OSWER Memo ??

Story:

Red Bonita / Gold King back to 1960s water level -

American Tunnel plugged full back up

Mogul, Red Bonita, Gold King, American tunnel drainage Chemistry degraded and A72 after plug and

WT plant decommissioned

1700 gpm halted w/ tunnel

Try to meet stream std @ A72

Tunnel done full back Gold King | RB - Fractured flow

Site Visit (Cont)

Multiple faults - fracture systems
Sister faults - fault zones

American Tunnel 12X12 portal -
7 levels composite map -
Gold King Prospect map.
Gold King & Sunnyside connection?
Alex has details on Water level @ each bulkhead
→ Bulkhead #1 head is 1200 ft @ Sunnyside

1995 - Bulkhead #1 900 gpm
2001 - After equalization Bulkhead #2 400-500 gpm
Fracture #2 Start filling Red & Bonita

Bulkhead #3 - 2002 - leaks/drips (100 gpm)

40K Bond for Exploration

2007 small discharge event
→ & Safety closures
JMLs - in 2009 Reclamation Project Summary

Stinger effort in 2009
Not Buttress on tunnel

Site Visit

2009 @ 200 gpm - Flow over the top
Flow rate fluctuate between 70 - 200 gpm
2007 Knew impounded water
Safety closure
30 ft in blockage - 5 to 6 feet of
Standing water - lake in portal
No clear site
2009 ~~Portal~~ collapse evidence
Come at angle for stringer
More ~~time~~ & Money - Called in R8
Time

Saints John Mine -
Angle Drilling
Capt Jack Similar situation