



Annual Activity and Monitoring Report Meeting

March 21, 2014

Fairbanks, Alaska

Discussion Summary



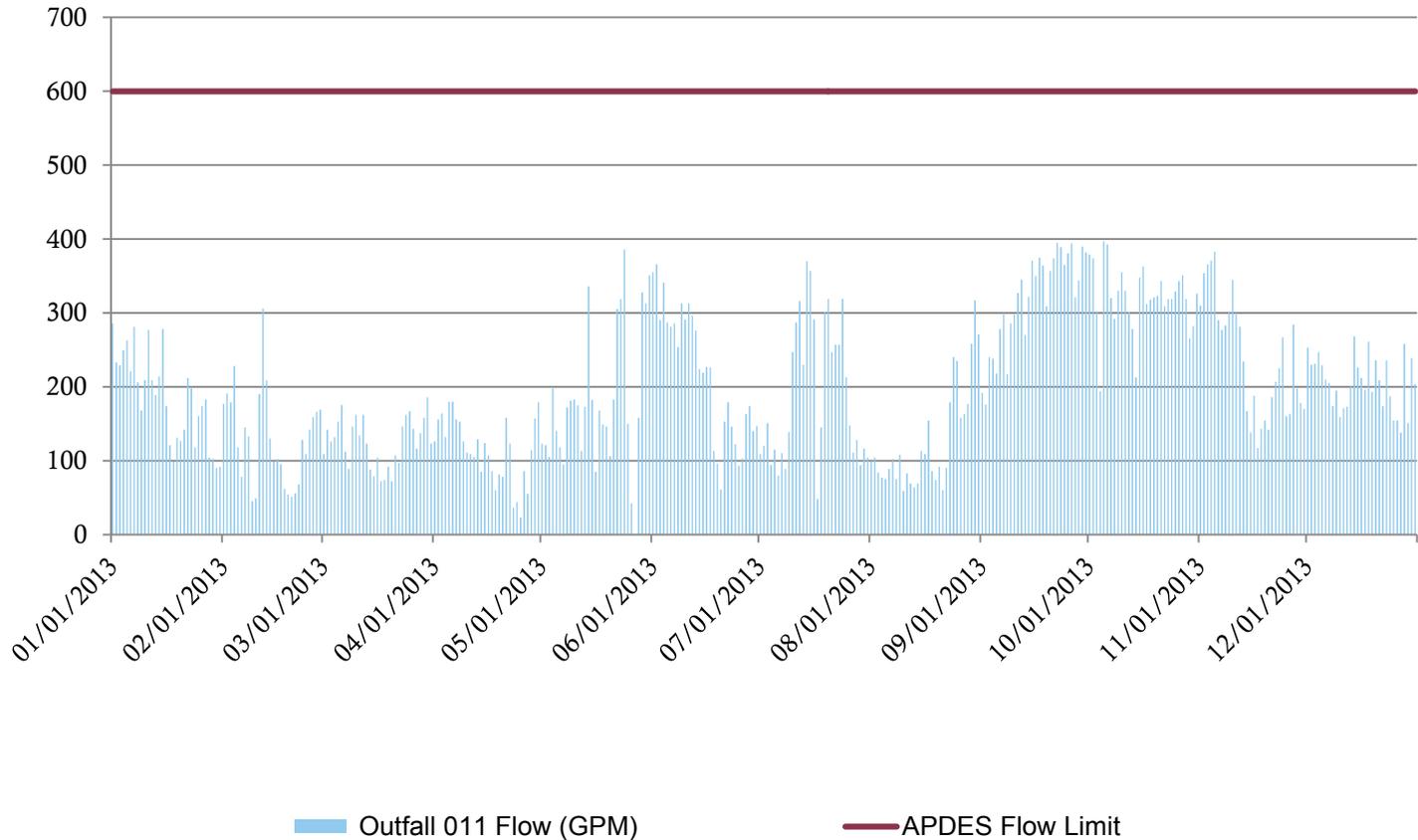
- Monitoring Results
- Compliance Discussion
- Permitting Update
- Significant Achievements
- Other Activities

Monitoring Results



109.5 Million Gallons Treated and Discharged

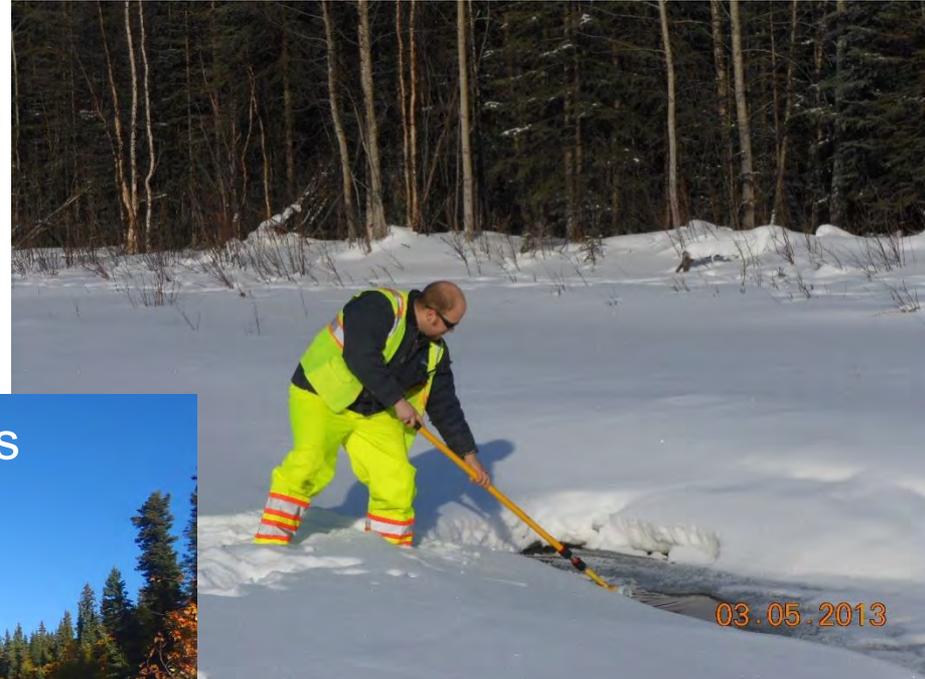
2013 Outfall 011 Flow (GPM)



Goodpaster River Monitoring

- Four surface water stations are monitored on the Goodpaster River

2013 results were all within permit limits



Whole Effluent Toxicity Testing

Annual Whole Effluent Toxicity Testing took place in June. Water being discharged into the Goodpaster River was sent to the lab for biological assay.



Ceriodaphnia dubia

Water fleas and Fat Head minnows were grown in different concentrations of effluent to see how it affected growth and death rates.

All results were within permit limits.



Pimephales promelas

Fish Tissue Sampling in Late September 2013

- Chinook salmon fry are collected annually and analyzed for metals content
- 15 fish are collected in minnow traps upstream and 15 downstream of the mine
- 5 to composite test
- 10 individual tests



Salmon Fry are also Measured

- Salmon Fry are also measured and genetic samples are taken for the Fish & Game Department
- Extra salmon fry are released back into the river



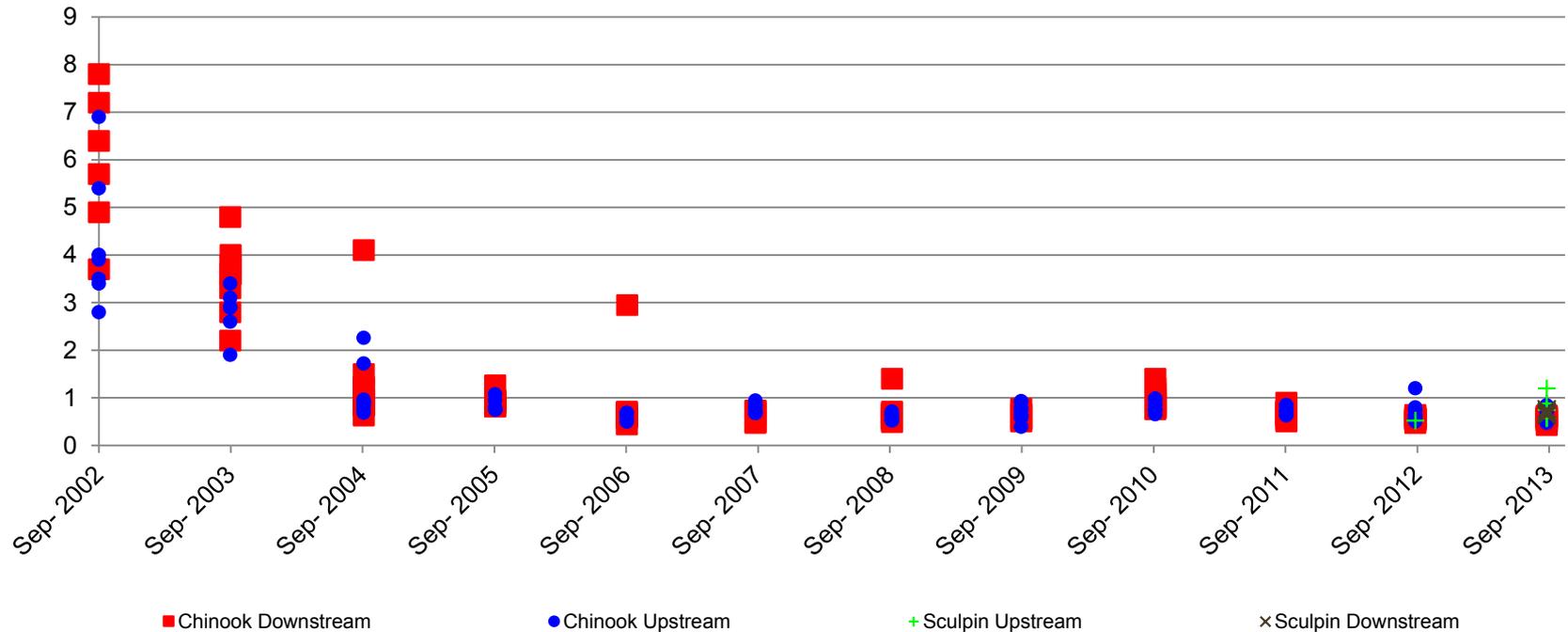
To better assess long term trends Pogo also collected Slimy Sculpin



5 upstream and 5 downstream.

Fish Tissue Sampling Results

Fish Tissue Values over time for Copper (mg/kg)



● Upstream

■ Downstream

Mill began production in 2006.
Pogo did not start discharging until 2007.



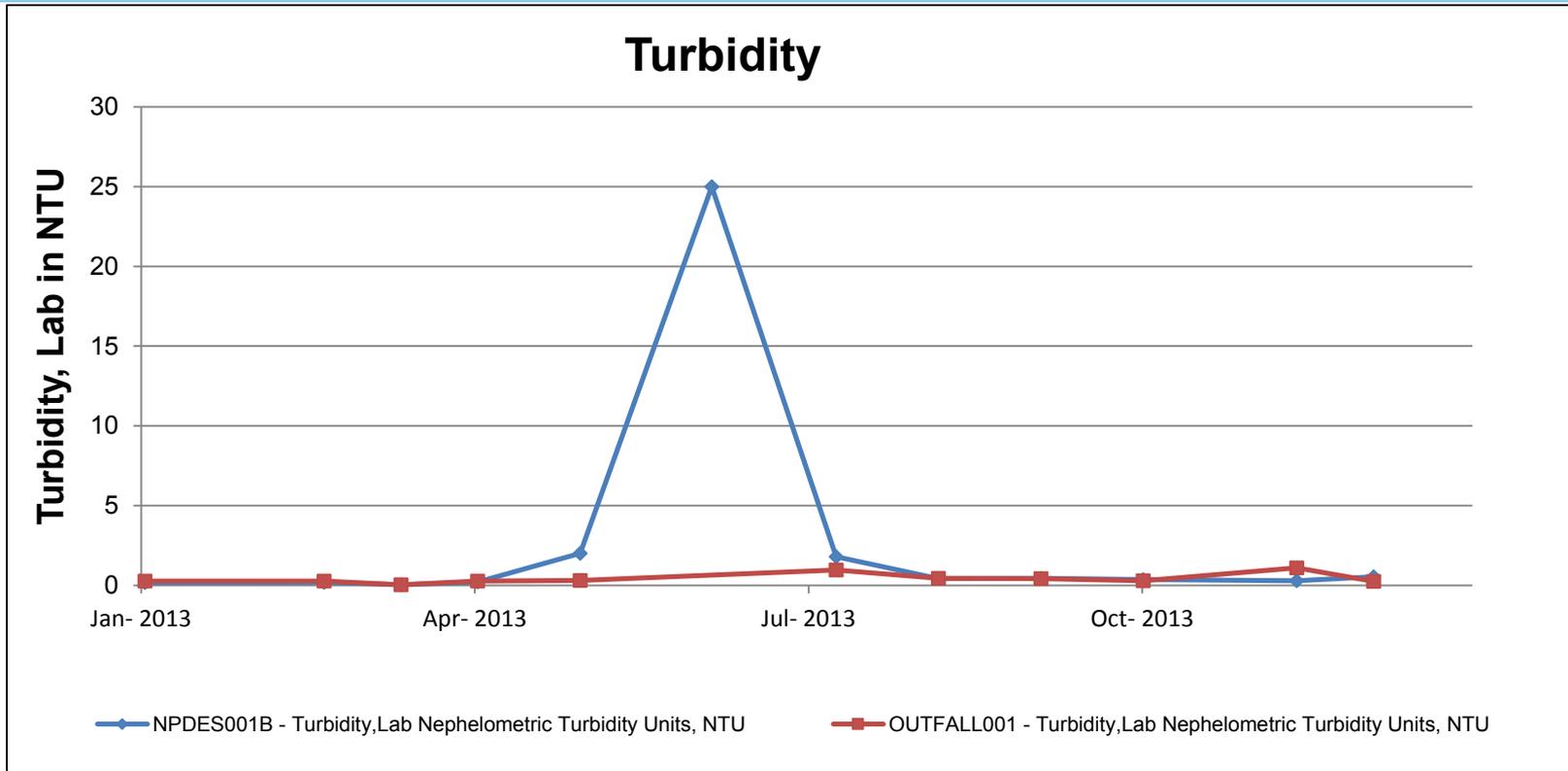


Luke and Brandy measuring Chinook Salmon and Slimy Sculpin

Compliance Discussion



Outfall 001 Monitoring – High Turbidity



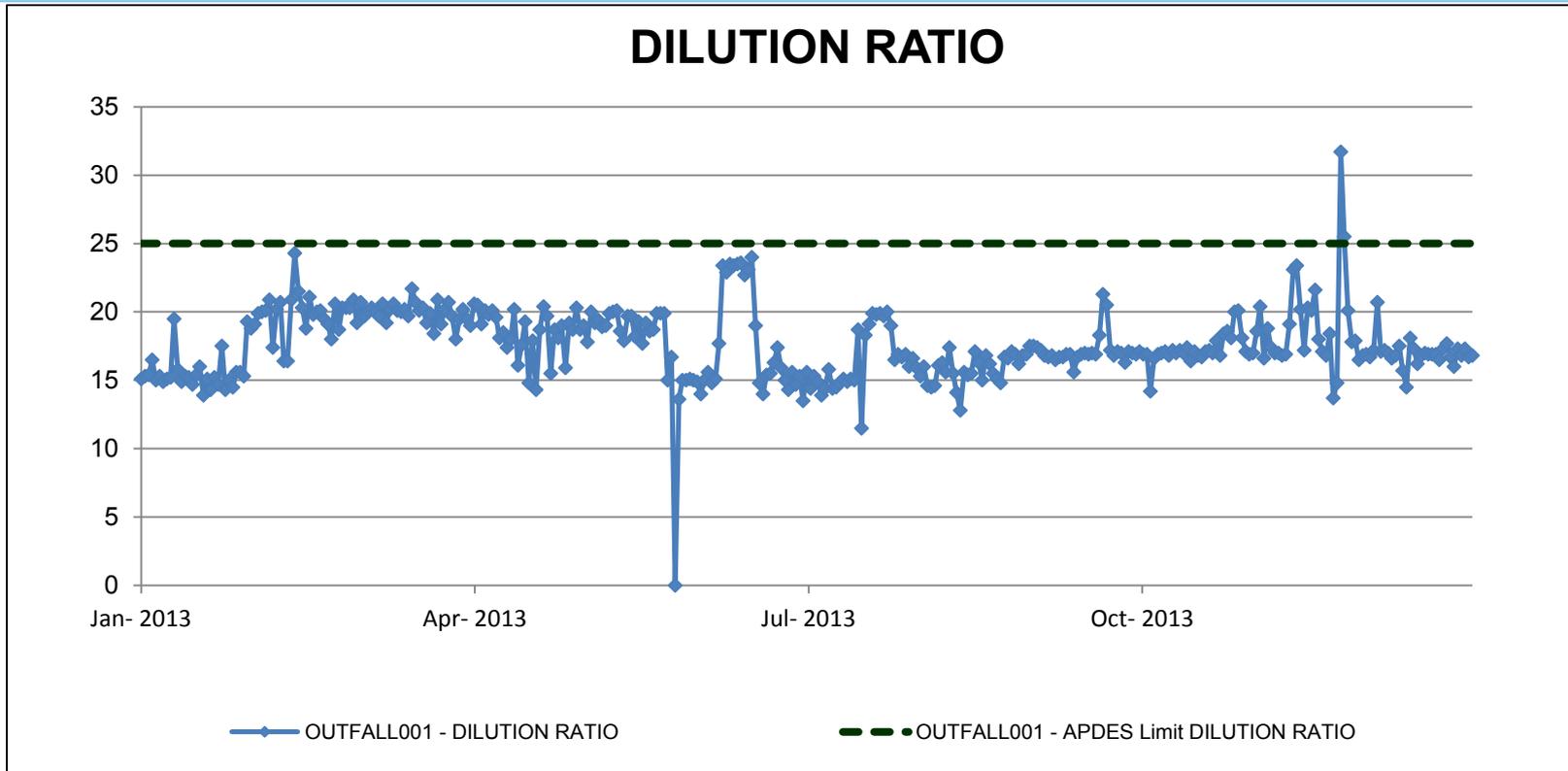
Goodpaster River flooded May 25-28 impacting the ORTW by depositing rivers sediments in ponds



June Flood Event



Outfall 001 Monitoring – Dilution Ratio



Goodpaster River flooded May 25-28 (Pogo stopped discharging briefly). On November 25 accidentally cut DCS fiber optics cable (lost auto control).



Compliance Order By Consent

- No New Notices of Violation were received by Pogo in 2013
- 2012 Compliance Order By Consent all corrective action complete except for one item
- RTP Dam grouting project was completed in April 2013
- On October 18, ADEC granted an extension for one year to add MWTP#3



RTP Dam Grouting Project



On March 4
grouting began to
plug the flow path
discovered during
the Willowstick
Survey.

Grout Curtain Remediation



- 10 Primary
 - 8 Secondary
 - 3 Tertiary
- Grout holes were completed

ADNR Site Visit on April 2, 2013

Inside Grout Tent
reviewing mixes
with ADNR

Used a total of
five grout mixes
(A-E) with
varying amounts
of cement, water,
and additives



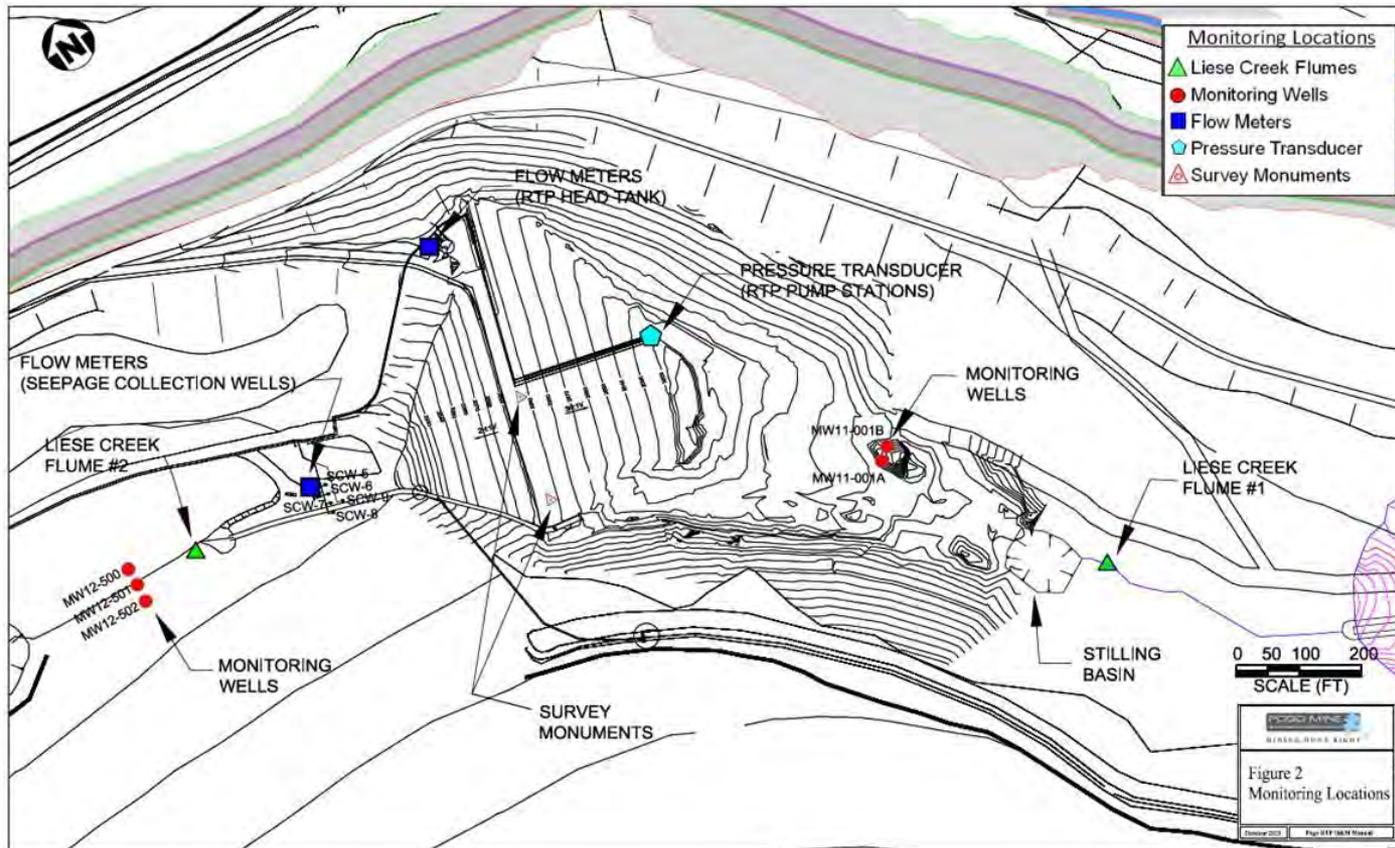
RTP Dam Grouting

Monitoring these sites downstream of RTP will determine success of grouting project:

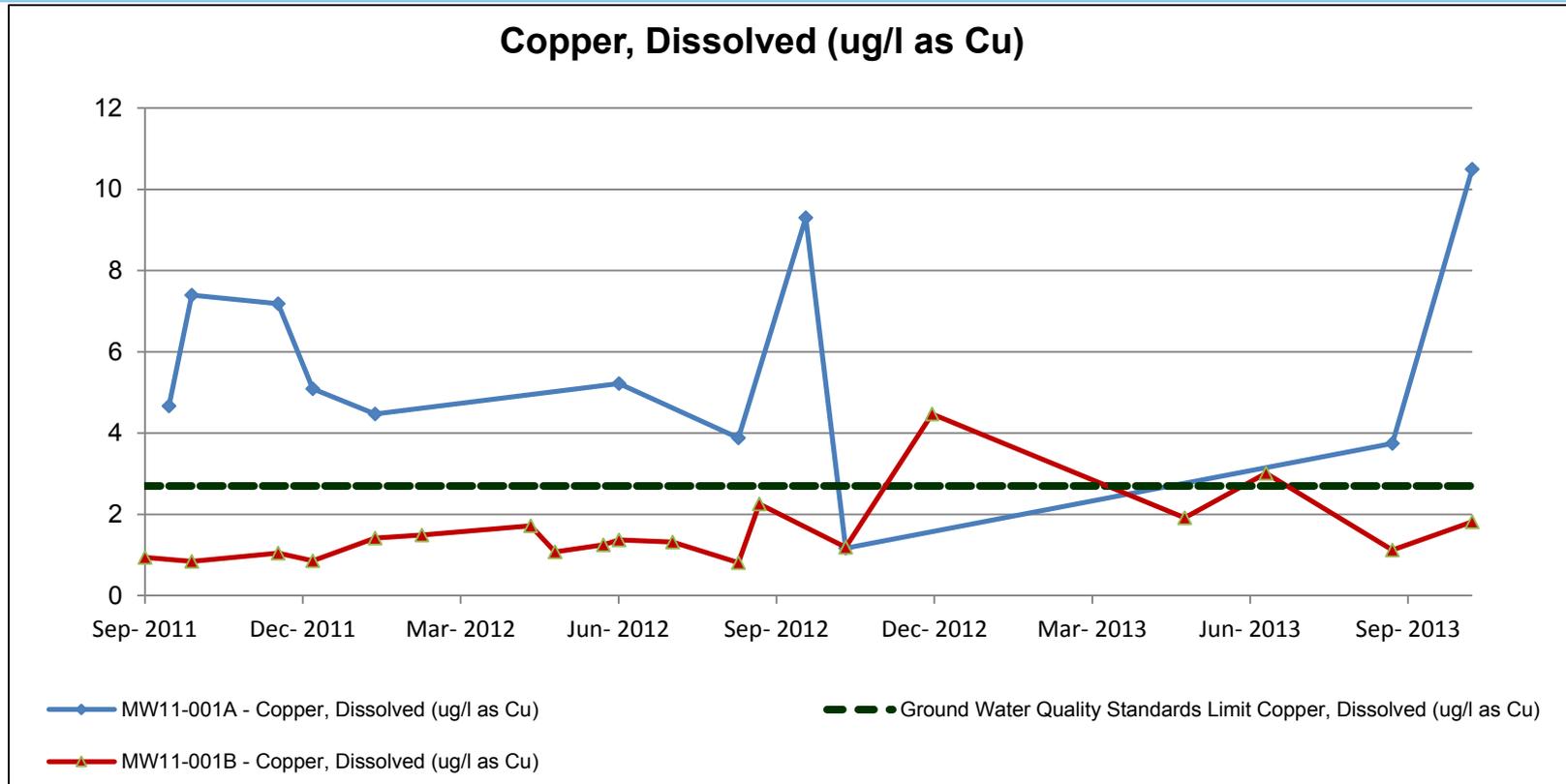
- Seepage Collection Wells
- RTP Pond Level
- Flume #2
- MW12-500 wells
- MW04-213 well



RTP Monitoring Locations



2011 Series Wells – Below DSTF



Wells constructed in Fall 2011. Sampled monthly for first year. Alluvial well dry second winter.



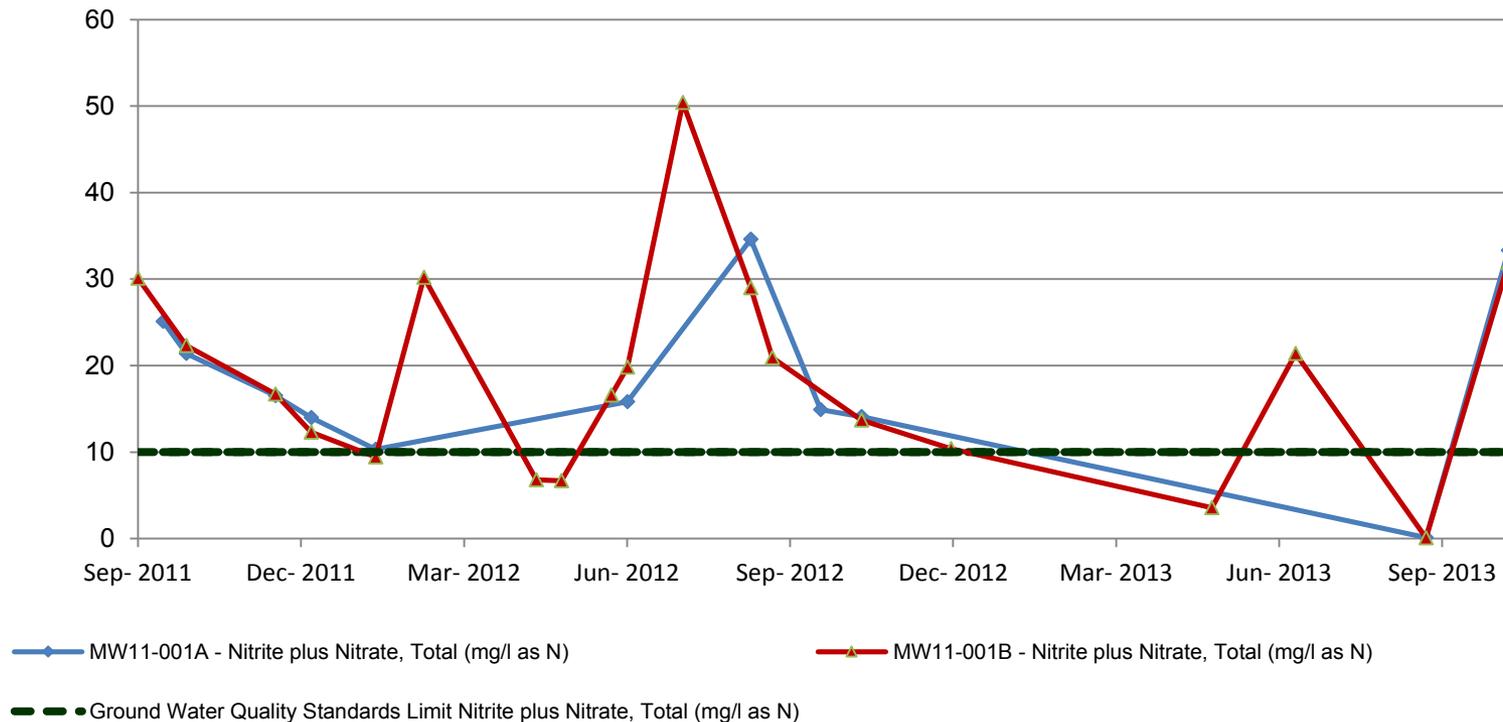
Evaluate for a Statistically Significant Increase

The water in compliance monitoring wells must not demonstrate a statistically significant increase in constituent concentrations above background groundwater quality and exceed WQS [as per 18 AAC60.830(h)]. Pogo's Waste Management Permit No 20111DB0012



2011 Series Wells – Below DSTF

Nitrite plus Nitrate, Total (mg/l as N)

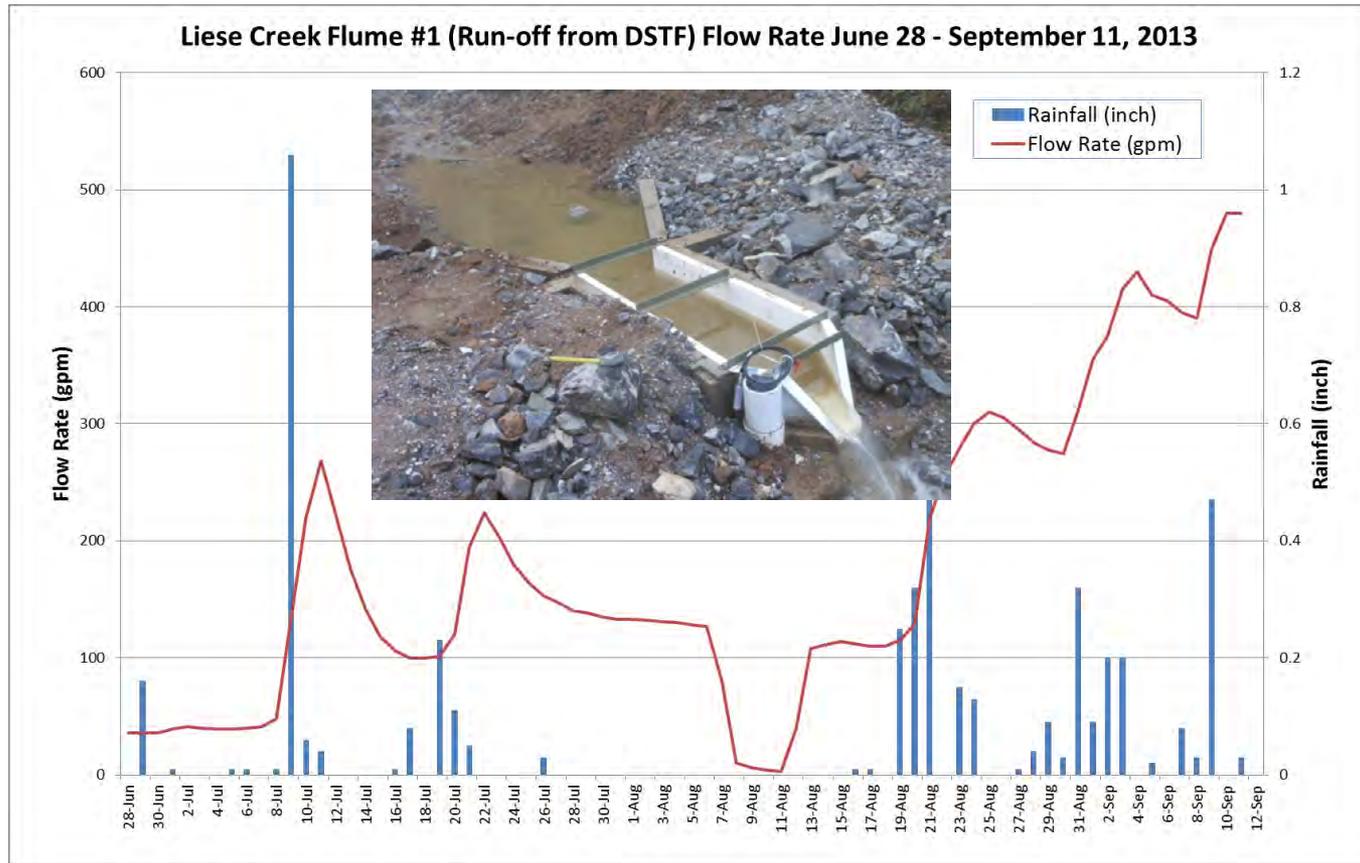


Wells constructed in Fall 2011. Sampled monthly for first year. Alluvial well dry second winter.



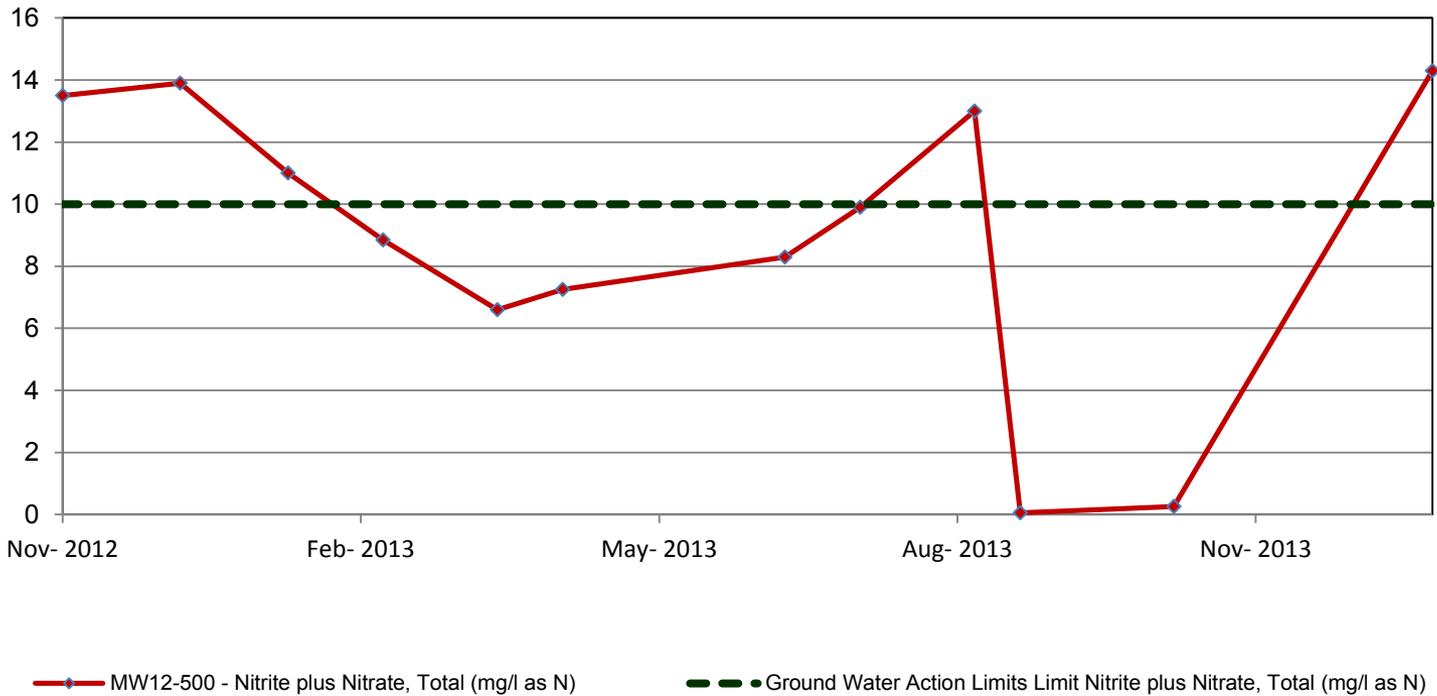
Liese Creek Flumes – Flume #1

Flume #1
Flow
vs
Rainfall



500 Series Wells – Below RTP

Nitrite plus Nitrate, Total (mg/l as N)



New alluvial well constructed in Fall 2012
Sampled monthly for first year



Permitting Update



DSTF Expansion Completed Sept 2013



2012-2013 DSTF Closure Study

Main components of Study are:

1. Field Investigation
2. Slope Stability Update
3. Hydraulic Design
4. Cover Design
5. Long Term WQ Estimate

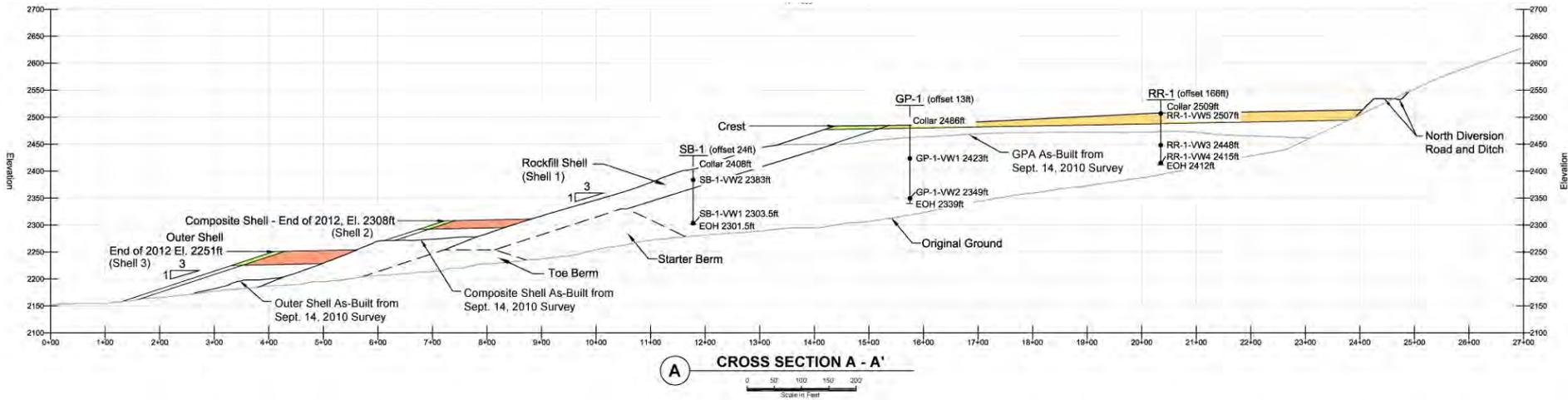


Results were presented to Agencies on December 19

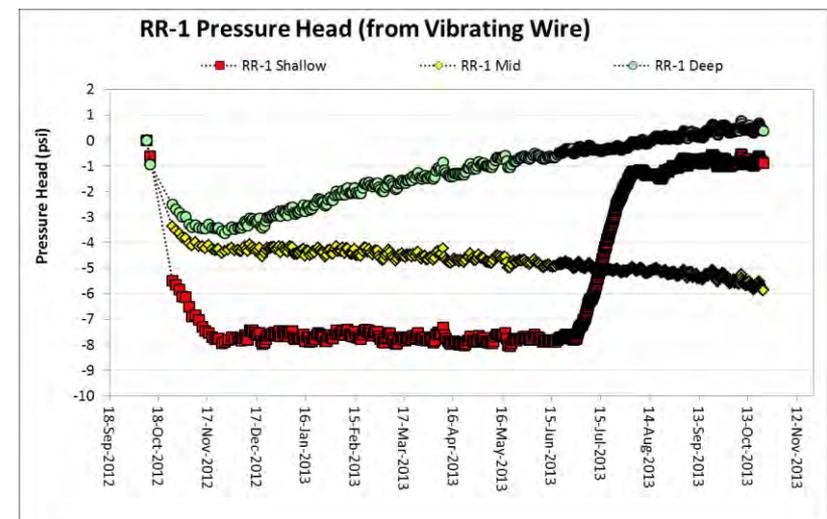
Final Report is due March 31, 2014



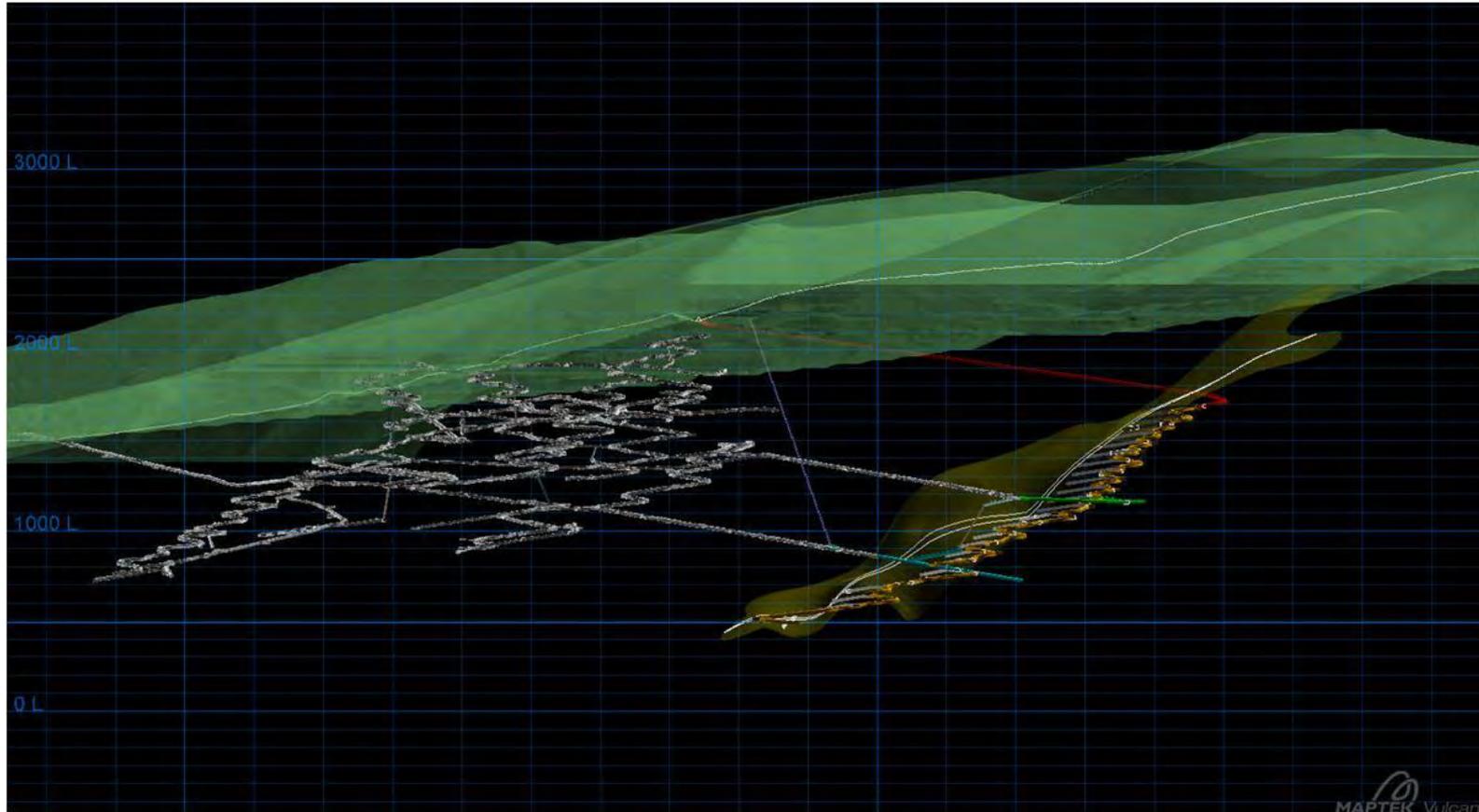
DSTF Closure Study – Field Investigation



- Three sonic drill holes
- Geotechnical logging
- Geotechnical sampling
- Collection of geochemical data
- Installation of seven VWP



East Deep Expansion



MAPTEK Vulcan

POGO MINE
SUMITOMO METAL MINING POGO LLC



2012-2013 Hydrogeologic Study

- Supports Plan of Ops Revision 6 to allow Pogo to begin mining East Deep Expansion
- Preliminary Groundwater Model Report submitted June 27
- In 2013 Pogo added six surface and eight UG piezometers



Results were presented to Agencies on December 19

Final Report is due March 31, 2014



New 2150 Portal for East Deep Expansion



Power Distribution System

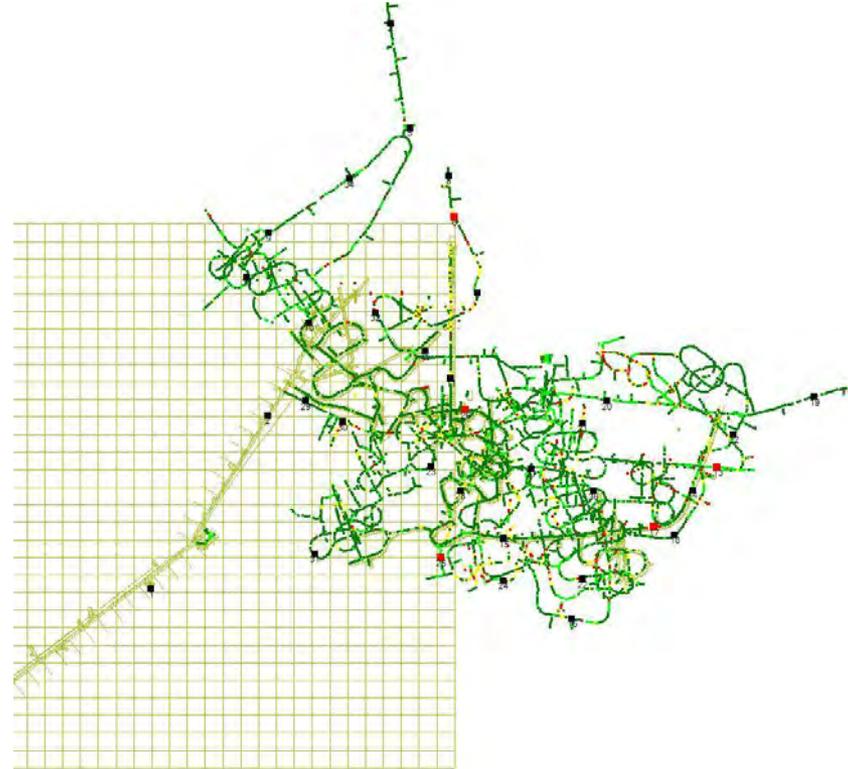


POGO MINE
SUMITOMO METAL MINING POGO LLC



2013 Underground Closure Study

- Supports Plan of Ops Revision 6 to allow Pogo to begin mining East Deep Expansion
- Study has three main components:
 1. Geochemical
 2. Hydrogeologic
 3. Geotechnical



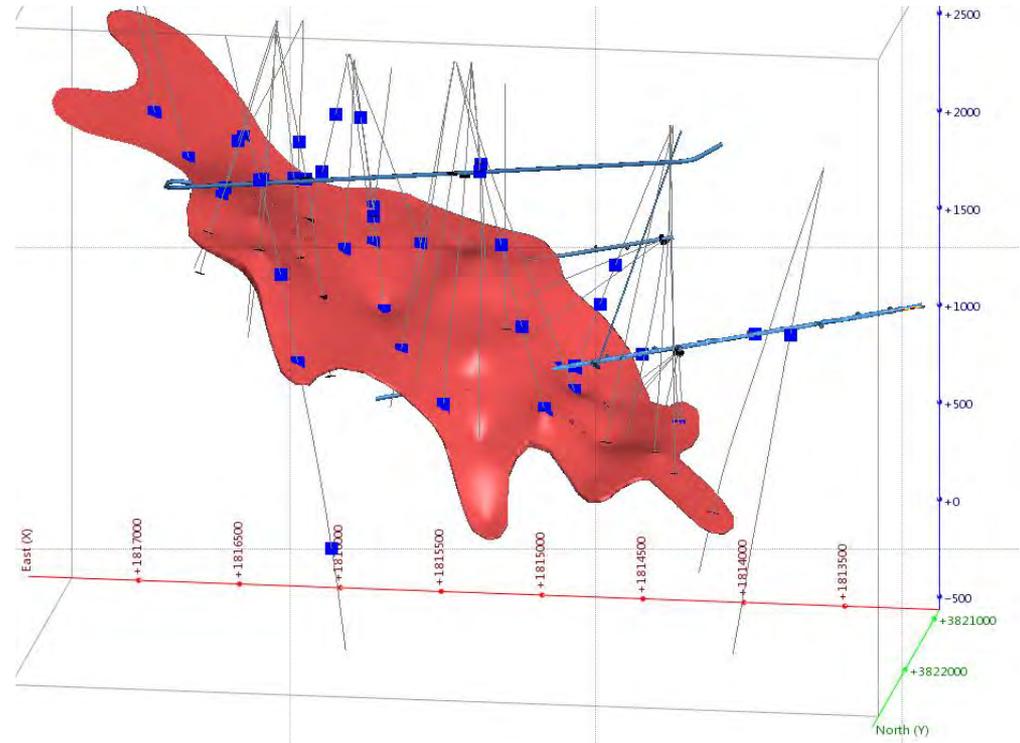
Results will be presented to Agencies on March 27

Final Report is due March 31, 2014



2013 Rock Characterization Study

- Supports Plan of Ops Revision 6 to allow Pogo to begin mining East Deep Expansion
- Study has two main components:
 1. East Deep rock samples (85)
 2. East Deep paste backfill and drystack tailings samples



Final Report is due June 30, 2014





Significant Achievements



CISWI Rule for Small Remote Incinerators



CISWI Rule Background

- **Clean Air Act § 129 requires EPA to promulgate rules regarding solid waste incineration units**
 - “Solid waste incineration unit” means a distinct operating unit of any facility which combusts any solid waste material from commercial or industrial establishments or the general public.” (CAA § 129(g)(1))
 - “Solid waste” is defined by reference to RCRA
- **EPA’s Rules must:**
 - establish performance standards and other requirements for each category of solid waste incineration units
 - **include emissions limitations applicable to new units and guidelines applicable to existing units**
 - set emissions standards for nine pollutants
 - Cadmium, Carbon Monoxide, Dioxins/Furans, Hydrogen Chloride, Lead, Mercury, Nitrogen Oxides, Particulate Matter, and Sulfur Dioxide
 - **be reviewed and revised as necessary every 5 years**

Why Does Pogo Need an Incinerator?



**To minimize
impact on Wildlife!**

Pogo's Incinerator was Ordered in December 2010 and Pogo started operating it in February 2012



Definition of a Small Remote Incinerator



- Combusts solid waste
- Combusts 3 tons per day or less solid waste
- Is more than 25 miles driving distance to the nearest municipal solid waste landfill (40 CFR 60.2265)

Pogo's Small, Remote Incinerator

- Emission Unit 412 – ACS Inc. Model PC0400
 - Combusts solid waste
 - 85% municipal solid waste
 - 10% non-hazardous secondary materials
 - 5% sewage treatment plant sludge
 - Combusts < 3 tons per day
 - Located > 25 miles from nearest MSW landfill
 - Fairbanks landfill is 135 miles from Pogo



History of Pogo's Small, Remote Incinerator

Date	Action	Regulatory Authority
December 8, 2010	Unit 412 construction commenced	N/A
May 12, 2011	Unit 412 covered under ADEC Air Quality Control Minor Source Permit	AS 46.14; 18 AAC 50
February 19, 2012	Incinerator startup date	N/A
January 4, 2013	Initial notification letter to EPA	40 CFR § § 60.2190; 60.2230
May 14, 2013	Submitted petition for site-specific operating limits to EPA	40 CFR § 60.2115
Sep 29-Oct 1, 2013	Completed initial performance test	40 CFR § 60.2125
Sept 27, 2013	EPA Approved Pogo's petition	40 CFR § 60.2115



2013 Initial Performance Test



Other Activities



Future Permit Activities

- Submit Plan of Operations Revision 8 for Rest of ORTW Line
- Submit Plan of Operations Revision 9 for new CIP Stock Tank
- Submit Update to Pogo's Preliminary Jurisdictional Determination for Wetlands
- Submit Standardized Reclamation Cost Estimator Model for Pogo
- Submit Title V Permit Application for Pogo



Pogo's 2014 Environmental Goals

- ISO 14001 Certification
- Less than 6 Reportable Spills
- Permit New Exploration Roads
- Zero Notices of Violation



ISO 14001 Certification



ISO 14001 Certification Process Goals for 2013 were:

- Site wide awareness training
- Internal auditor training
- First internal audit

Proposed Schedule for 2014:

- Second Internal Audit in May 2014
- Phase 1 Certification Audit in June 2014
- Phase 2 Certification Audit in July of 2014
- **Certification by the end of 2014**



New Hazardous Materials Storage Yard



2013 Pogo Environmental Department



Sally McLeod

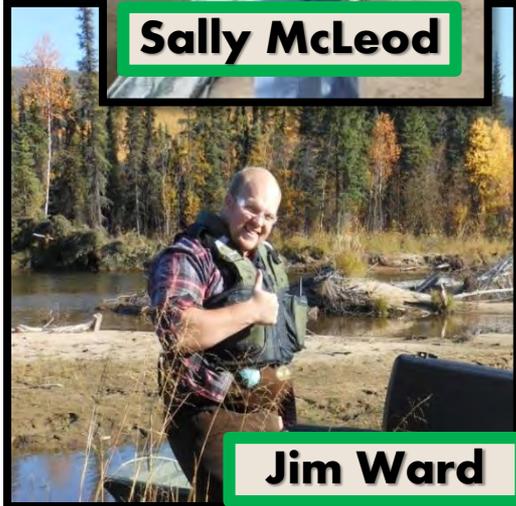


Luke Walker

Leonard Hanson



Ben Farnham



Jim Ward



Stacy Staley



Makoto Umedera

Questions?





MINING IN HARMONY WITH ENVIRONMENT