

## **LUPIN MINES INCORPORATED**

**2AM-LUP0914 Water Licence Renewal Application**

**Public Hearing**

**Kugluktuk, Nunavut**

**February 4-5, 2015**

# LUPIN GOLD MINE – *Outline*

1. Introduction to the Company and Representatives
2. Overview of Site History and LMI
3. Basis for LMI's Water Licence Renewal/Amendment Application
4. Current Status of Site Assets
5. Current Status of Waste Management
6. Technical Environmental Concerns
7. Social and Community Concerns
8. Licence Requirements and Commitments
9. Financial Security

# LUPIN GOLD MINE – *Representatives*

## Company Representatives:

- Patrick Downey, P.Eng.

Mr. Downey has over 30 years of international experience in the resource industry. He has been President and CEO for Elgin Mining Inc., Aura Minerals Inc., Viceroy Exploration and Consolidated Trillion. Prior to this he was the founder of Rescan Engineering, a world renowned Company in the area of environmental and mine plant engineering with particular emphasis on Northern Canadian projects. He has held numerous senior engineering positions at several large-scale gold mining operations and has also held operating positions at several mining projects for Anglo American Corporation in South Africa. Mr. Downey is a member of the board to a number of resource companies in the mining sector, and he holds a Bachelor of Science (Hon.) degree in Engineering from Queen's University.

- Karyn Lewis

Ms. Lewis has worked in the corporate and administrative areas of the resource industry for over 20 years. Most recently she has been involved in community relations programs in mining related projects in North and South America.

- George Friesen, P.Eng. – via telephone

Mr. Friesen is a Professional Mining Engineer, registered in the Northwest Territories and Nunavut, with 26 years of experience in the mining industry. Majority of his experience is in the Canada's Arctic in various projects and operations with latest being the Lupin Mine project where he held the position of Manager of Technical Services and the Hope Bay project where he was the Chief Engineer. Mr. Friesen holds a Bachelor of Applied Science Degree from the University of British Columbia.

# LUPIN GOLD MINE – *Representatives*

## Consultants:

- Arlene Laudrum, P.Geo., FGC – SRK Consulting

Arlene Laudrum has been registered as a Professional Geologist in Nunavut since 2002. For the past 16 years, she has focused on the environmental management of mining projects from exploration through to post-closure. Much of this work has involved providing environmental support for the operation and closure of mines in the arctic. Arlene's earlier experience includes mine geology, resource evaluation, mine planning and environmental monitoring at an underground copper nickel mine and an open pit heap leach gold mine; along with gold, base metal and diamond exploration.

- Stephen Lines, P.Biol. – Tunaley, Lines & Associates

Stephen Lines has over 14 years of professional practice in the areas of impact assessment, permitting and regulatory affairs related to mineral exploration and mining. Stephen has an undergraduate degree in and M.Sc. in Environmental Impact Assessment. Stephen has worked as a technical advisor for the NWB and NIRB. During his tenure as Superintendent with De Beers Stephen developed monitoring and management strategies for the Gahcho Kué Diamond Mine and oversaw environmental management for the site. Stephen has also worked for NICO and Polaris.

- Christine Kowbel – Lawson Lundell LLP

Christine practices environmental and aboriginal law, providing advice in respect of major project development, environmental assessment, permitting, operational matters and acquisition and sale of industrial projects. She provides specialized mining industry advice, representing clients with respect to permitting and regulatory aspects of exploration, development, operation and closure of mining projects.

- Kelly Sexsmith, P.Geo. – via telephone – SRK Consulting

Kelly Sexsmith's areas of specialization include characterization of acid rock drainage and metal leaching potential of mine wastes, monitoring, water quality predictions, development of waste management plans, permitting, and mine remediation.

# MANDALAY RESOURCES – *Who are we?*

- Formed in 1997 – Restructured under current management in 2009
- Three operating mines in safe jurisdictions
  - Cerro Bayo, Chile – Ag/Au/Zn
  - Costerfield, Australia – Au
  - Bjorkdal, Sweden – Au
- Chilean development Project
- Strong international management team
- Strong balance sheet and positive cash flow
- Market Capitalization = \$388 million
- Cash and cash equivalent = \$45 million

# LUPIN GOLD MINE – *Corporate Responsibility*

**Mandalay Resources' goal is to build a long-lived, values-based and value creating organization that is founded on:**

- Safe, efficient, and environmentally acceptable work practices.
- Technical excellence.
- Continuous improvement.
- Effective business, government, and community relationships.
- Fiscal responsibility.
- These principles represent our values and are visibly demonstrated by strong local management at the point of impact, and coordinated across the Company for maximum effect.

# LUPIN GOLD MINE – *Environmental & Social Responsibility*

- Mandalay Resources have an exemplary record in mine site closure and reclamation.
- The key members of the team responsible for the LMI operations have a long and successful track record in mine closure and reclamation.

# LUPIN GOLD MINE – *Overview of Site History*

- The Lupin deposit was discovered in 1960 and mine development commenced in 1980
- Lupin Gold Mine was in production from 1982 to 2005.
- Expansions and Operational Changes
- Temporary closures
- Changes of ownership
- Current Status



# LUPIN GOLD MINE – *LMI Overview*

- Lupin Mines Incorporated (LMI) owns 100% of the past producing Lupin mine.
- In 2011 LMI commenced work to determine cost, feasibility and timeline to put the Lupin mine back into production.
- Over \$54 million expended over period 2011 to 2013, as part of planned re-start.
- Staffing at LMI during this period also commensurate with planned re-start of operations.
- Sharp decline in gold price precipitated curtailment of operations.

# LUPIN GOLD MINE – 2011

- Raised \$9 million to execute drill program to test several newly identified and historic targets.
- Completed detailed engineering study on underground resources at the Lupin mine to determine:
  - Mineable tonnes
  - Grade and mining width
  - Infrastructure requirements
  - Mining rate
  - Capex
  - Opex
- Hired experienced geological/exploration/enviromental team

# LUPIN GOLD MINE – 2011 *cont.*

- Total expenditures in 2011:
  - \$29.5 million in cash as acquisition cost
  - \$4.3 million in capital stock of Eglin
  - \$1.6 million in expenditures

**Total 2011 = \$35.4 million**

# LUPIN GOLD MINE – 2012

- Commenced drill program
- Hired additional technical/environmental staff with mining, processing and logistics experience.
- Completed detailed review of the following:
  - Mill and infrastructure
  - Fuel systems and power generation capacity
  - Tailings storage facilities
  - Logistics

# LUPIN GOLD MINE – 2012 *cont.*

- Completed in-house design of new mine plan for existing underground resources.
- Continued drilling near-surface targets.
- Purchased first phase mining fleet.
- Reached agreement on ice road costs and logistics for 2013 season and placed orders on bulk items for 2013 season.
- Completed significant upgrades on existing camp and office - see photos on pages 28-30.
- Completed significant upgrades on mill and associated infrastructure-see photos on pages 22-27.
- Commenced negotiations and entered into agreement in principal on \$50 million loan term sheet for re-start of operations.
- **Expenditures on Lupin in 2012 totalled \$11.6 million**

# LUPIN GOLD MINE – 2013

- Gold price decreased precipitously from +\$1,800 to below \$1,200 (see below)
- Lenders withdrew funding
- Cashflow reduced from Company owned mining operations
- LMI made decision to postpone activities for re-start of operations and reduce site activity to pre-2011 levels



# LUPIN GOLD MINE – 2014

- Scope of work significantly reduced due to lack of permits

# LUPIN GOLD MINE – *Basis for Water Licence Renewal*

- Water Licence 2AM-LUP0914, issued on February 25, 2009 and amended May 25, 2009, authorizes LMI to conduct mining, milling and associated activities at the Lupin Mine.
- Activities authorized under the licence include following key components:
  - Use of water for mining and milling
  - Deposition and treatment of tailings and sewage and discharge of effluent
  - Progressive reclamation
  - Care and maintenance activities
  - Monitoring
  - Operation of site infrastructure
- The nature and overall scope of these undertakings, as described in the renewal/amendment application, are fundamentally the same as those authorized through the 2009 licence
- The proposed amendment seeks to stage the amount of water use and monitoring commensurate of site activities, establish a landfill and a landfarm
- Proposed 10-year licence renewal



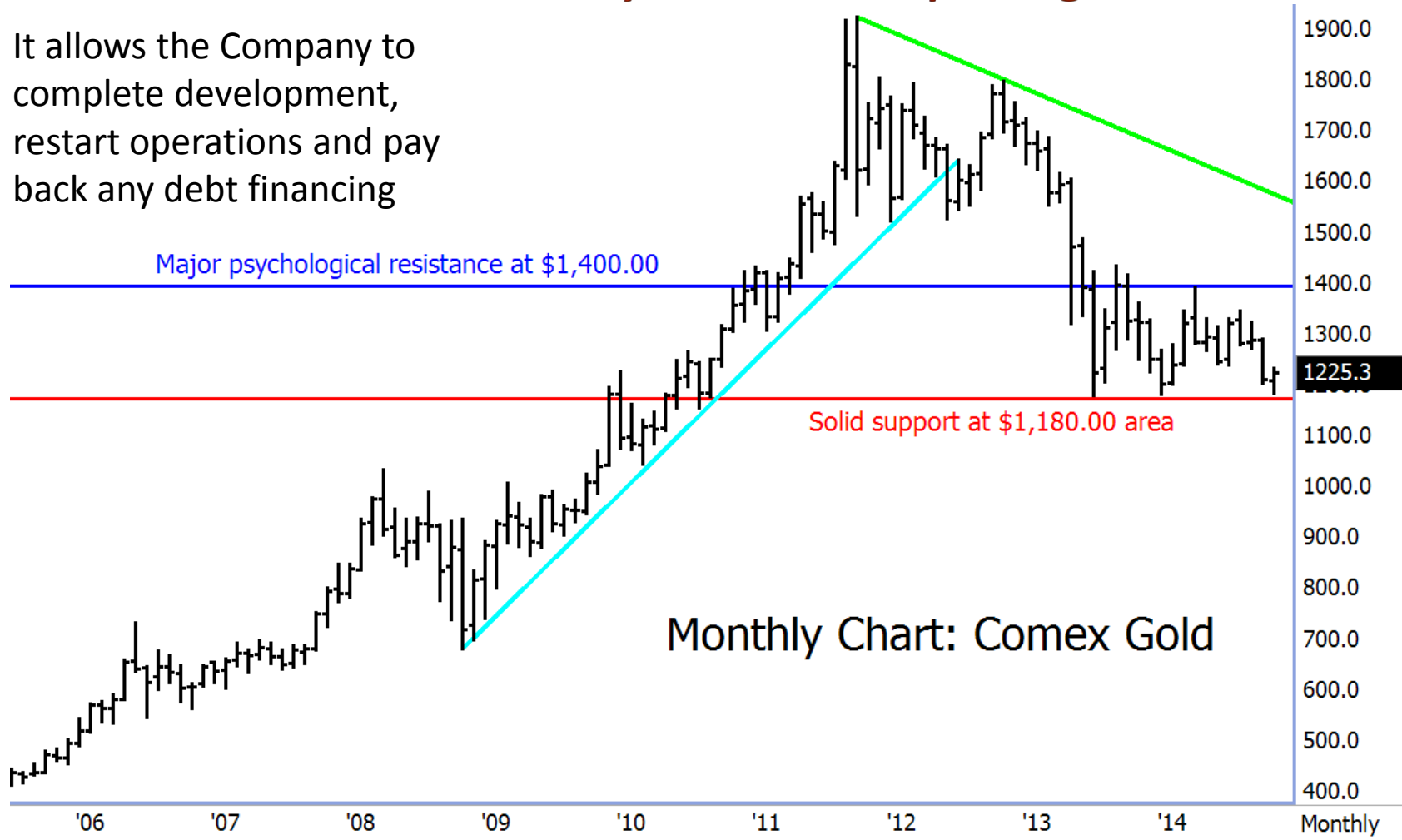
# LUPIN GOLD MINE – *License Renewal*

Why are we applying for a water licence renewal for mining and care and maintenance for a 10 years period!

- Lupin is located in a very remote location in Northern Canada and this means that logistics, costs, time lines are negatively effected. Things take longer and cost more.
- Lupin is very gold price sensitive due to its location and limited mineable ore. If the gold price begins a recovery, the time line to re-start needs to re-commence almost immediately. We would not have the time to re-apply
- Lupin has a limited amount of currently identified mineable ore remaining – it is not a large ore-body that can support a large capital cost and time line – it is a re-start.
- If Lupin does not have a licence for mining and care and maintenance the ability to attract any financing will be lost – **that is without question!**
- The prior licence for mining and care and maintenance was critical in:
  - Elgin Mining purchased LMI for \$33.8 million
  - Investing over \$20 million in re-development capital
  - Attract lending institutions to provide necessary capital for re-start of operations

# LUPIN GOLD MINE – 10 Year Licence Renewal Provides Reasonable Window to Participate in Any Gold Price Upswing

It allows the Company to complete development, restart operations and pay back any debt financing



# LUPIN GOLD MINE – *Licence Renewal*

- LMI requests a 10-year licence term to provide an opportunity to re-open the mine during favourable market conditions.
- This is a very viable mine as a re-start operation.
  - Logistics are known
  - Ice road is still in existence to the diamond operations
  - Mine, mill and all associated infrastructure in-place and in well maintained condition
  - It would be permitted
- Work can continue on maintenance upgrade of facilities in all areas such as:
  - Tailings Management
  - Waste Management
  - Fuel Systems
  - Hydrocarbon impacted soil clean-up at Satellite Tank Farm
  - Any necessary identified studies

# LUPIN GOLD MINE – *Licence Renewal*

- Opportunities for job creation will remain.
- Opportunities to explore and identify additional sources of ore will remain both at Lupin and on nearby concessions, thereby creating additional job opportunities and income.
- Facilities will remain in use for other third parties, who continue to use the Lupin airstrip and facilities, such as:
  - Caribou count – Environment and Natural Resources, Govt. of Nunavut
  - AANDC
  - Environment Canada
  - Third party exploration companies

# LUPIN GOLD MINE – *Current Status of Site Assets*

- Reserves and Resources
- Mine Infrastructure
- Mill Infrastructure
- Power Supply
- Mobile Equipment
- Offices and Accommodations
- Fuel Facilities and Fuel
- Tailings Management Infrastructure

# LUPIN GOLD MINE – *Lupin Mine Site*





# LUPIN GOLD MINE – *Ramp to Underground – Ready for access*



# LUPIN GOLD MINE – *Mill Infrastructure – Excellent condition*





# LUPIN GOLD MINE – *Powerhouse* – *Ready for re-commissioning*



# LUPIN GOLD MINE –*Camp Power House*





# LUPIN GOLD MINE – *Workshop & Equipment – All equipment and maintenance facilities up and running*



# LUPIN GOLD MINE – *Office Infrastructure –* *Completely cleaned and re-vamped*

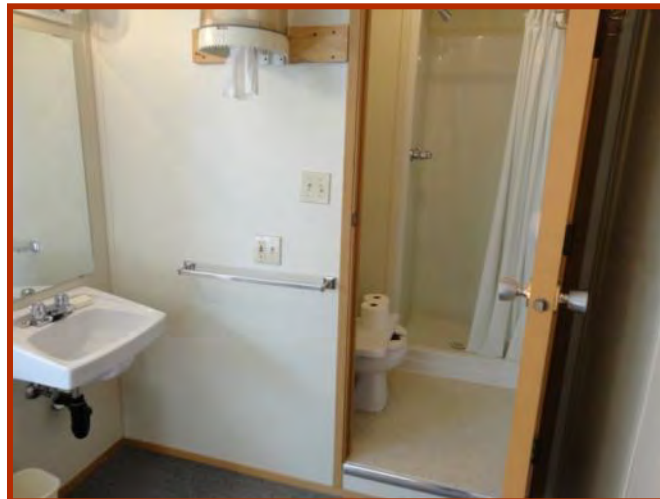


# LUPIN GOLD MINE – *Geologist Office/House & Kitchen*





# LUPIN GOLD MINE – *Camp Accommodations & First Aid*



# LUPIN GOLD MINE – *Fuel Facilities - Recently upgraded to EC standards*





# LUPIN GOLD MINE – *Tailings Infrastructure*





# LUPIN GOLD MINE – *Current Status of Waste Management*

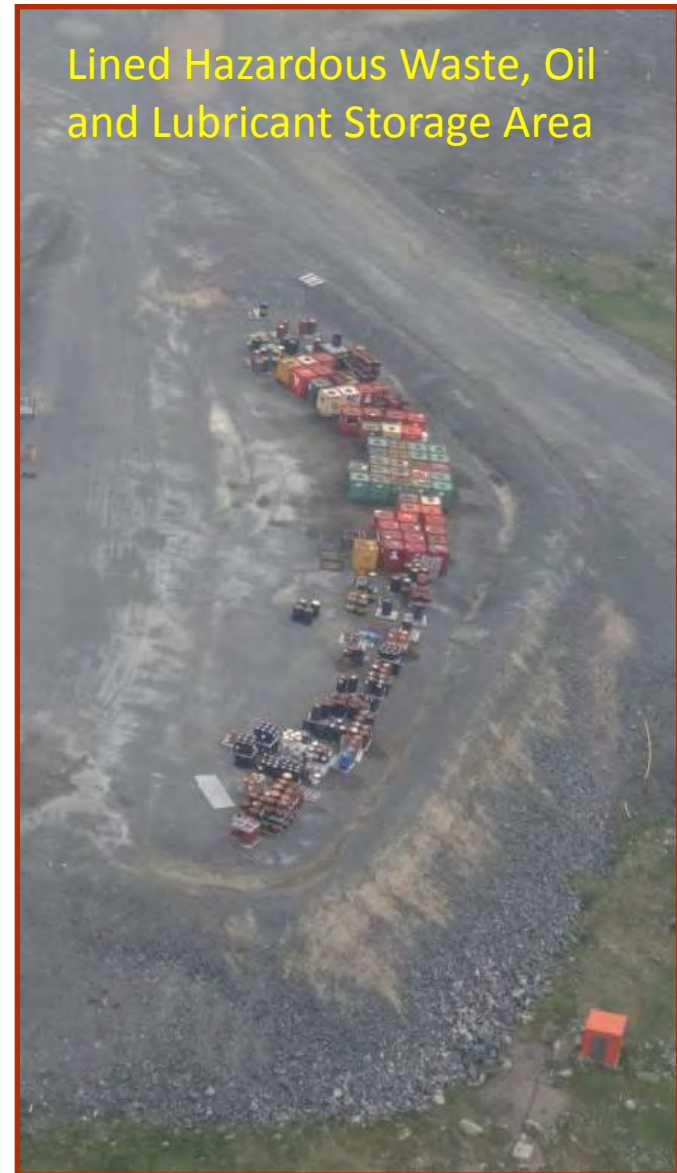
- Hazardous Waste Management
- Sewage Lagoon
- Tailings Management

# LUPIN GOLD MINE – *Hazardous Waste Management*

## – *Well maintained and secure*



Note: Several container are not full and plans are to consolidate quantities within full containers



# LUPIN GOLD MINE – *Hazardous Waste Management*

- Lined and bermed hazardous waste storage facility on-site and properly maintained.
- Since 2011 significant volumes of historic hazardous waste have been removed from site on a systematic basis (manifest list was provided to AANDC).
- Ongoing removal of waste planned with major removal as backhaul once re-stock of bulk supplies transported to site as part of re-start.
- No major issues have occurred with storage of hazardous waste as it is properly stored and monitored.
- Once consolidated current container count will be significantly reduced and additional space will be available for storage.

# LUPIN GOLD MINE – *Sewage Lagoon*

- Water levels managed
- Water quality is routinely tested and consistently meets discharge objectives



# LUPIN GOLD MINE – *Tailings Effluent Treatment and Discharge*

- Profiled water column prior to discharge
- Constructed treatment facility
- Treated effluent
- Discharge compliant water.



# LUPIN GOLD MINE – *Questions Raised during Renewal Process*

- Windblown Tailings
- Tailings Cover
- Re-vegetation
- Hydrocarbon Soil Management



# LUPIN GOLD MINE – *Site Investigations*

- The issue of “wind-blown” tailings had historically been noted as a concern. It was identified as potentially “wind-blown” on Cell 1 and detailed studies were completed. The covering of the tails was largely completed by 2005 which prevented windblown tails from being deposited outside of the TCA.
- Under Part E, Item 6e requires that the TCA be operated so that tails be contained within the TCA.
- AANDC Inspector sampled an area they were concerned was potentially impacted by wind blown tailings. One area identified by the Inspector as potentially impacted by “wind-blown” tailings is not near any “tailings” deposition area – beside water containment dam.
- LMI provided with Inspector’s laboratory sample results in November 2014. SRK reviewed the data and determined that the sample result did not exceed background arsenic soil concentrations specific to the site. It is LMI’s professional assessment that these samples do not show that there has been further “wind blown” tailings.

# LUPIN GOLD MINE – *Site Investigations*





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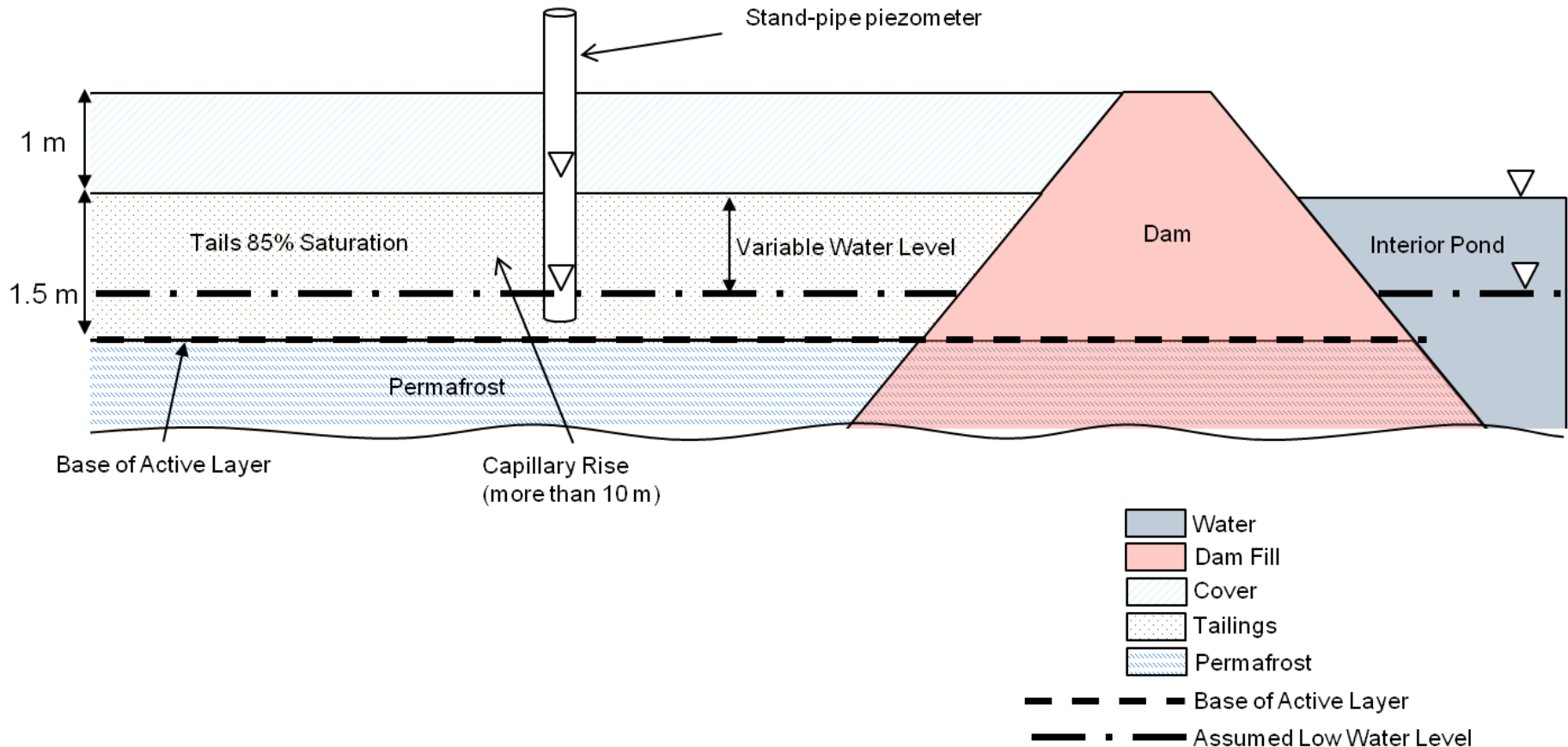




# LUPIN GOLD MINE – *Site Investigations*

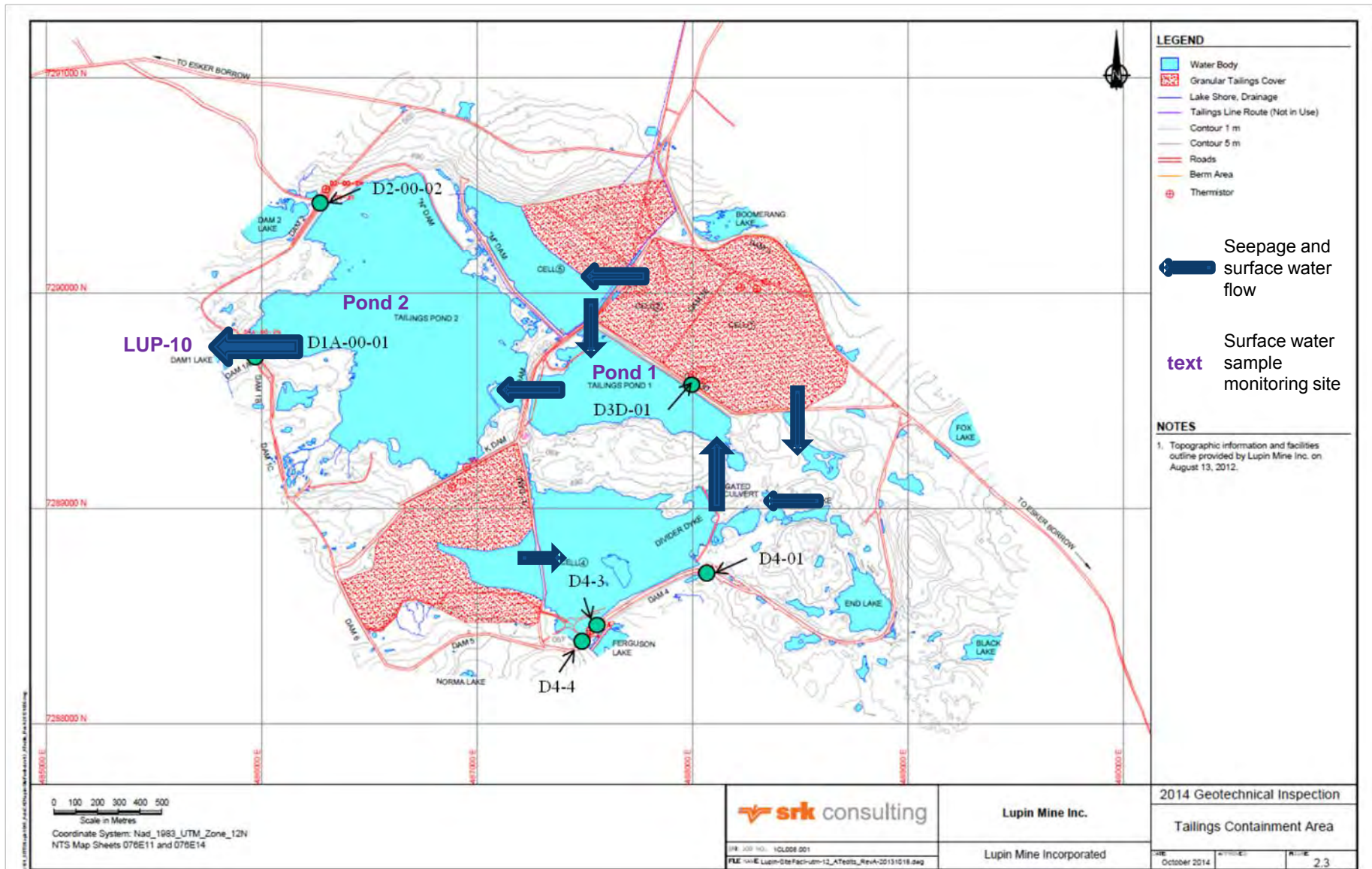


# LUPIN GOLD MINE – *Tailings Cover Performance*



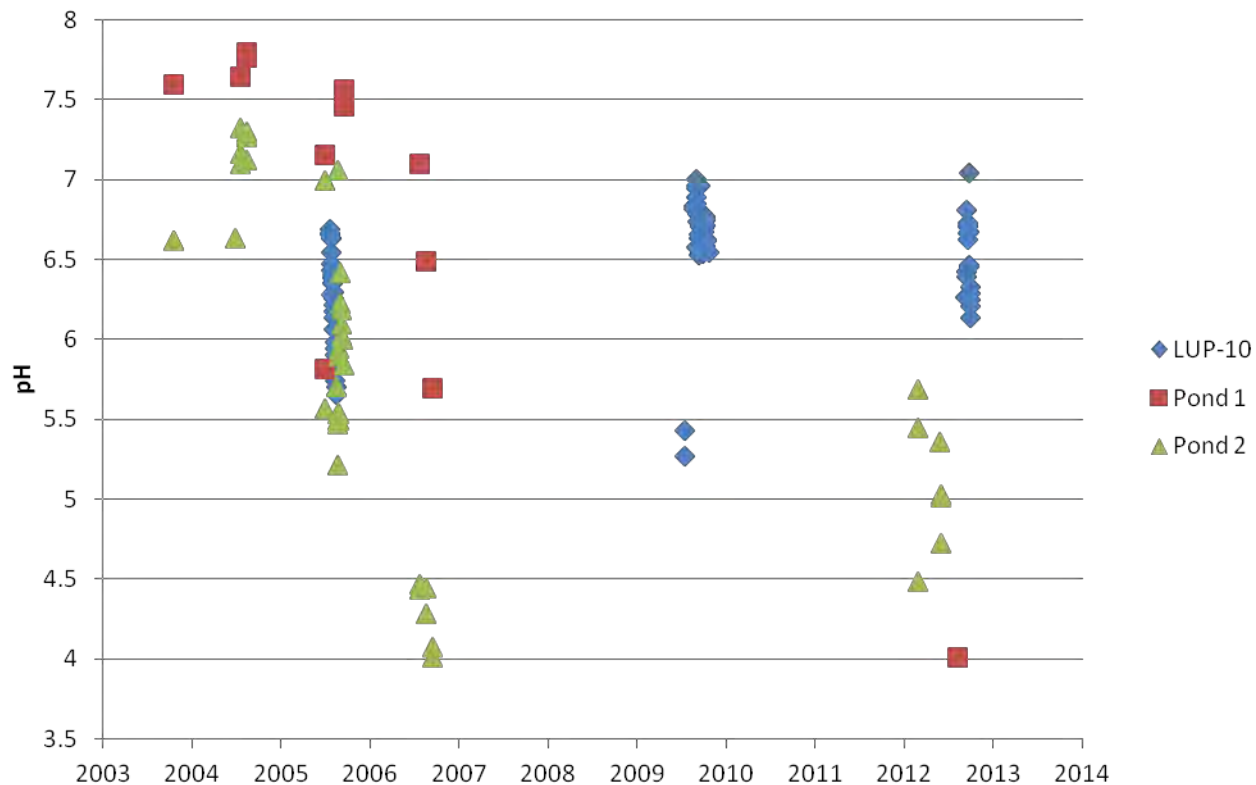


# LUPIN GOLD MINE – Tailings Containment Area



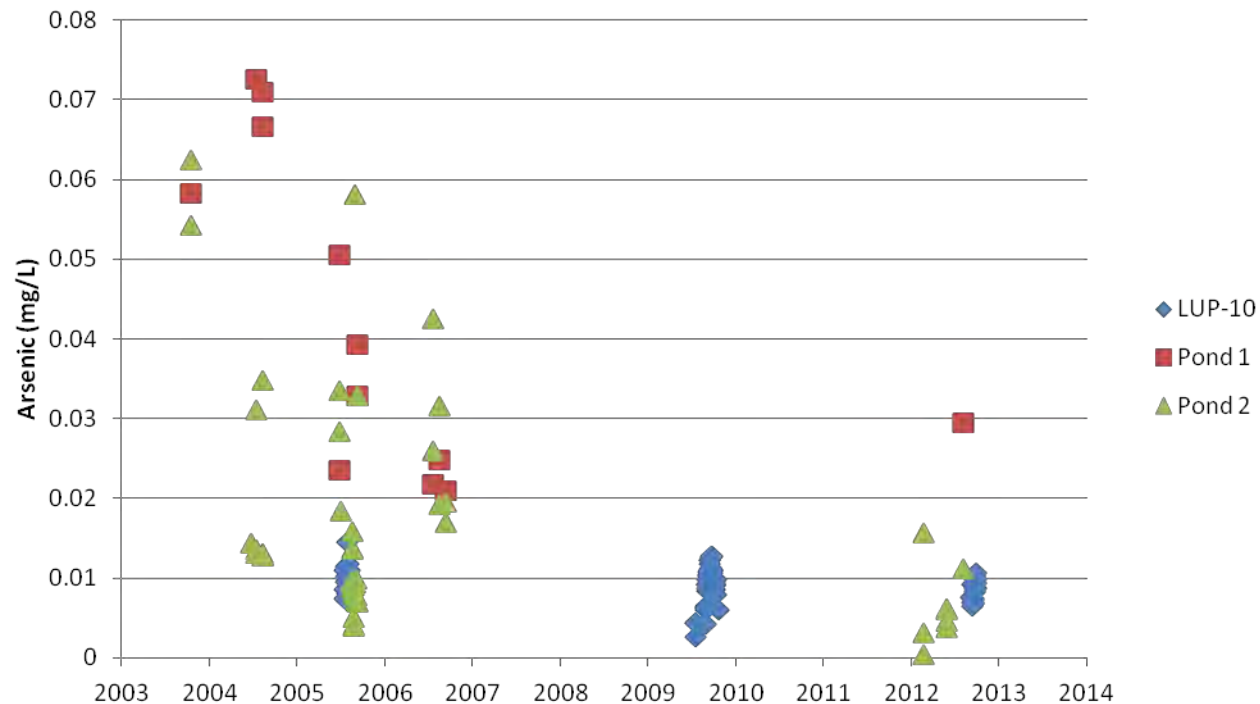
# LUPIN GOLD MINE – *Tailings Surface Water Monitoring*

## Surface Water: Trends in pH



# LUPIN GOLD MINE – *Tailings Surface Water Monitoring*

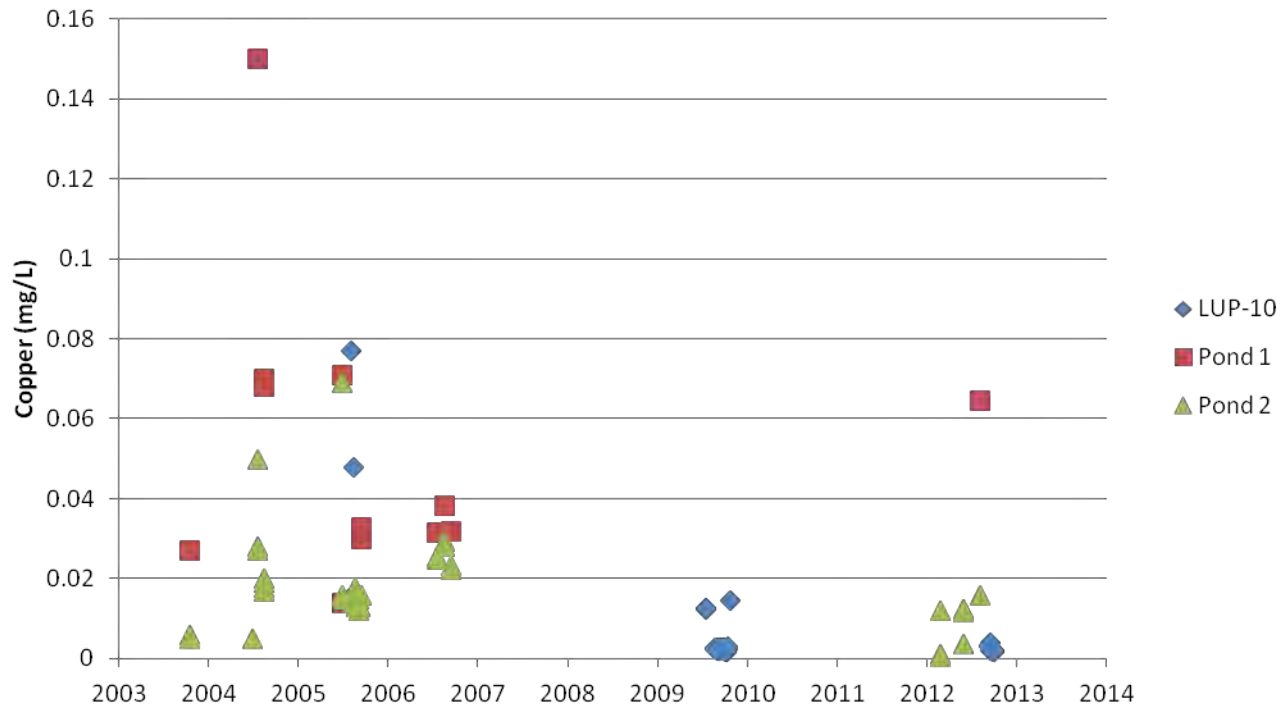
Surface Water: Trends in arsenic



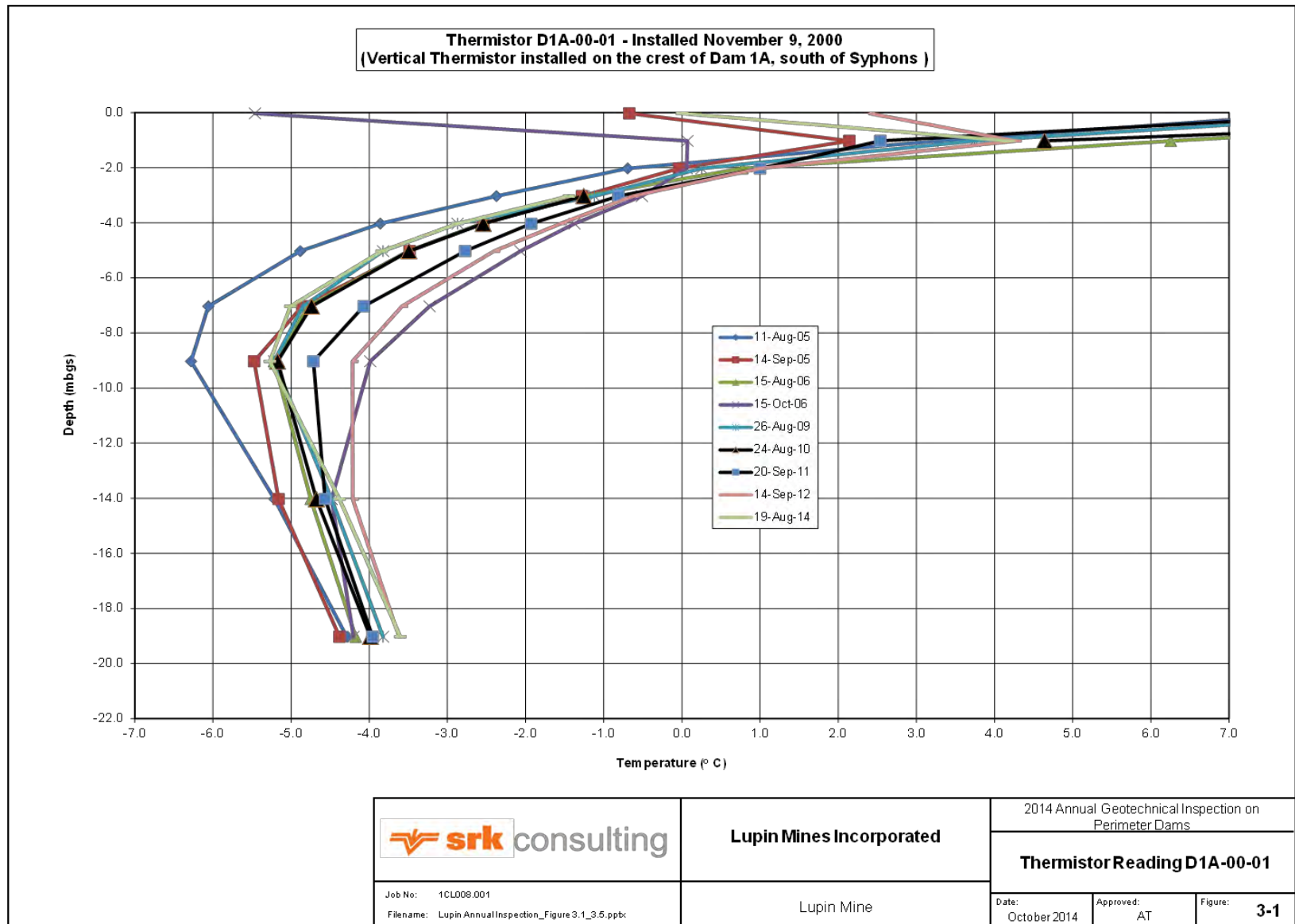


# LUPIN GOLD MINE – *Tailings Surface Water Monitoring*

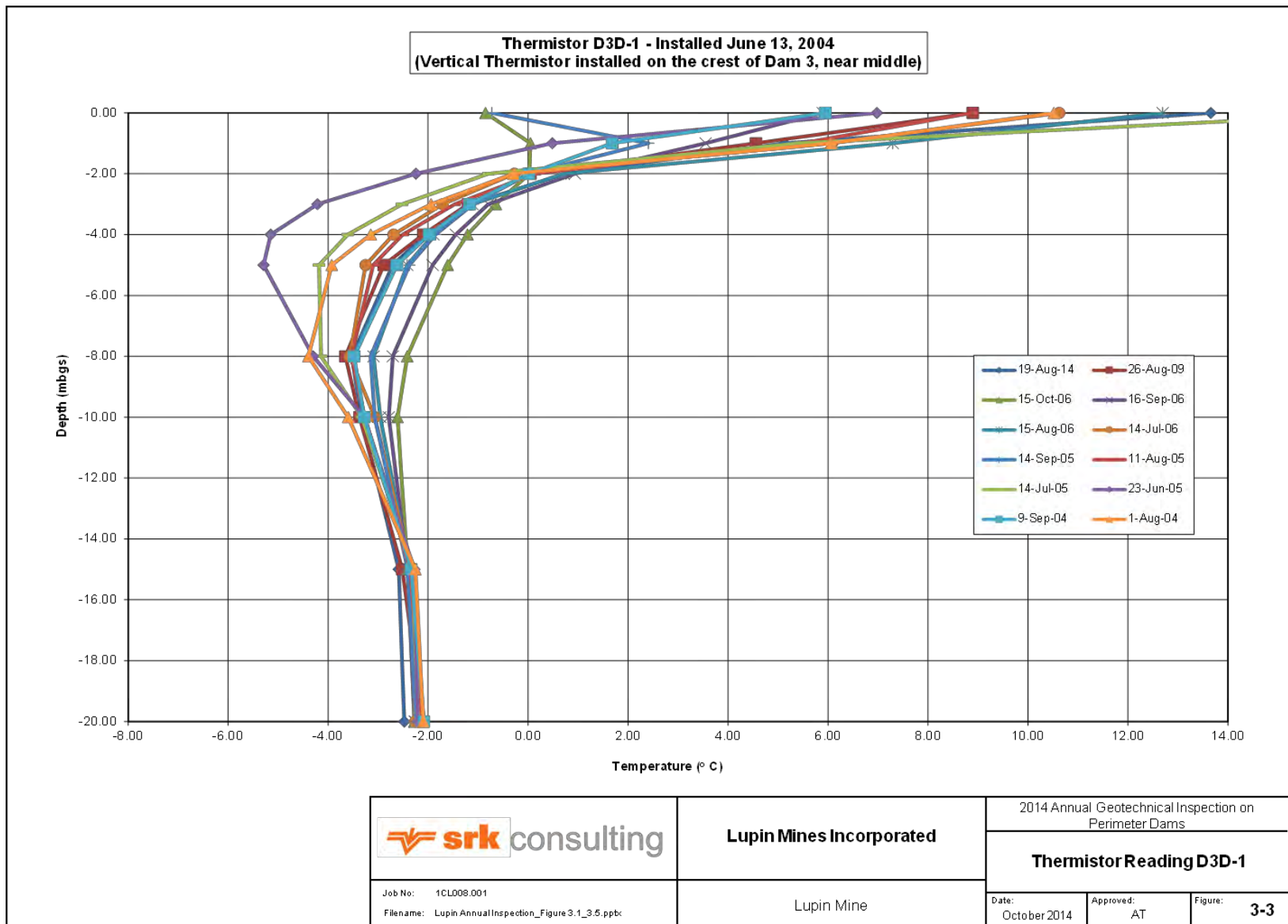
## Surface Water: Trends in copper



# LUPIN GOLD MINE – Tailings Containment Area



# LUPIN GOLD MINE – Tailings Containment Area



# LUPIN GOLD MINE – Re-Vegetation



# LUPIN GOLD MINE – *Hydrocarbon Contaminated Soils*



# LUPIN GOLD MINE – *Potential ARD Waste Rock*

- In early 2000s the potential for Acid Rock Drainage (ARD) was identified at Lupin
- Kinross initiated studies in 2004 and 2005 of the mine development rock used for site construction. The results indicated 40% Potential Acid Generating (PAG) rock and 40% acidic seeps from areas where waste rock was used
- Various remedial options are available for dealing with PAG waste rock. For the purposes of the IARP it is assumed that 40% of the waste rock will be handled as ARD material. However, segregation may not be the most cost effective approach for some of the options under consideration, such as consolidating and covering the waste.
- LMI proposes to complete a more detailed options evaluation prior to closure, and then tailor any further investigations required to support further advancement of the preferred option.
- If the preferred option requires segregation of the PAG rock, it is acknowledged that further work will be required to assess methods for identifying this material during excavation



# LUPIN GOLD MINE – *Social and Community Concerns*

Key Issues as Raised by Community Members:

*Climate Change*

*Tailings Pond*

*Cold Storage*

*Tailings (Windblown)*

*Current Standards*

*Terrestrial Wildlife and Habitat*

*Fish*

*Waste Management*

*Inuit Owned Lands*

*Water Monitoring*

*Previous/Historical Records*

*Wildlife Management*

*Reclamation and Contamination*

*Winter Road*

- 
- LMI will provide the results of annual monitoring and geotechnical inspections directly to the KIA
  - LMI will invite KIA representatives to site in 2015.



# LUPIN GOLD MINE – Licence Requirements and Commitments

- Inspection Frequencies for Licence
- Licence Requirements
- Commitments
- Financial Security

# LUPIN GOLD MINE – Financial Security

LMI has submitted a detailed cost estimate, based on third party contractor quotes and several detailed engineering studies.

The estimate was compiled under the following parameters:

- All parties contributing to this work have had full and free access to site to verify unit costs and quantities.
- Unit costs and rates reflect contractor quotes and costs.
- Mobilization and Demobilization costs based on recent quotes and additional input from contractors and consultants
- Quantities updated to accurately reflect engineering studies, measured quantities and detailed drawings and designs
- ARD estimates updated to reflect data compiled by Morrow
- Tailings rip rap and ditching included
- In-directs reflect level of engineering and data
- Contingency calculated based on risk and probability analysis of all areas of the estimate

# LUPIN GOLD MINE – Conclusion

- LMI prioritizes a safe and environmentally responsible site, in all phases of mining.
- LMI's reclamation security estimate is accurate and appropriate for the current stage of development at Lupin.
- Lupin has been responsible for significant investment in the Nunavut economy since inception and with proper management and sustainable gold price can be a source of significant future Nunavut investment., jobs and training.
- A Type A Water Licence that includes monitoring obligations appropriate to C & M as well as the ability to re-commence production is essential to recommence production in future and to avoid premature closure of the mine.

**Thank you.**

**Lupin Mines Incorporated**