TREASURY METALS

City of Dryden - Waterworks

Mark Wheeler, Sr. Mining Engineer
Murray Ferguson, Director of Community Development
Mac Potter, Environmental Superintendent

www.treasurymetals.com

TML LISTED ON TMX Toronto Stock Exchange

FORWARD-LOOKING STATEMENTS

This presentation contains projections and forward-looking information that involve various risks and uncertainties regarding future events. Such forward-looking information can include without limitation statements based on current expectations involving a number of risks and uncertainties and are not guarantees of future performance of the Corporation. These risks and uncertainties could cause actual results and the Corporation's plans and objectives to differ materially from those expressed in the forward-looking information. Actual results and future events could differ materially from anticipated in such information. These and all subsequent written and oral forward-looking information are based on estimates and opinions of management on the dates they are made and expressly qualified in their entirety by this notice. The Corporation assumes no obligation to update forward-looking information should circumstances or management's estimates or opinions change. This presentation contains projections and forward looking information that involve various risks and uncertainties regarding future events. Such forward-looking information can include without limitation statements based on current expectations involving a number of risks and uncertainties and are not guarantees of future performance of the Corporation. These risks and uncertainties could cause actual results and the Corporation's plans and objectives to differ materially from those expressed in the forward-looking information. Actual results and future events could differ materially from anticipated in such information. These and all subsequent written and oral forward-looking information are based on estimates and opinions of management on the dates they are made and expressly qualified in their entirety by this notice. The Corporation assumes no obligation to update forward-looking information should circumstances or management's estimates or opinions change.

TREASURY METALS INC.

- WHO WE ARE
- WHERE WE ARE
- PROJECT STATUS
- EMPLOYMENT OPPORTUNITIES
- JOB REQUIREMENTS
- SUMMARY

GOLD FACTS: $1,300 / OZ

- The consumption of gold produced in the world is about 50% in jewelry, 40% in investments, and 10% in industry.

TREASURY METALS | ABOUT US

- We are a leading exploration and development company in the Kenora Mining District.
  - Goliath Project: 1.7 million ounces with a clear path to growth
  - Goldcliff Property: Early exploration with high grade surface samples
- TML's management and board have a successful record in building companies and developing world-class mining projects.
- Treasury Metal's Goliath Gold Project is one of 6 gold mining projects in Ontario that is in the mine permitting process.
  - Treasury Metals – Goliath Gold Project (Dryden)
  - New Gold – Rainy River Project (Barwick)
  - Premier Gold – Hardrock Deposit Project (Geraldton)
  - IAMGOLD – Cote Gold Project (Timmins)
  - Osisko Mining Corp – Hammond Reef Project (Atikokan)
  - Argonaut Gold – Mangino Gold Project (Wawa)

TREASURY METALS - CORE VALUES AND RELATIONSHIPS

- SAFETY
  - Working safely is about "CARING FOR PEOPLE"
  - Nothing we do is worth getting hurt over
  - Working towards "Zero" recordable injury rate
- ENVIRONMENT
  - Responsible Stewards of the lands on which we operate
- PEOPLE / STAKEHOLDERS
  - Work for the mutual benefit of all Communities and Stake Holders
  - Treat people with Respect and Dignity
  - Demonstrate Ethical Behavior and Act with Integrity
  - Act with Simplicity, Speed, Decisiveness

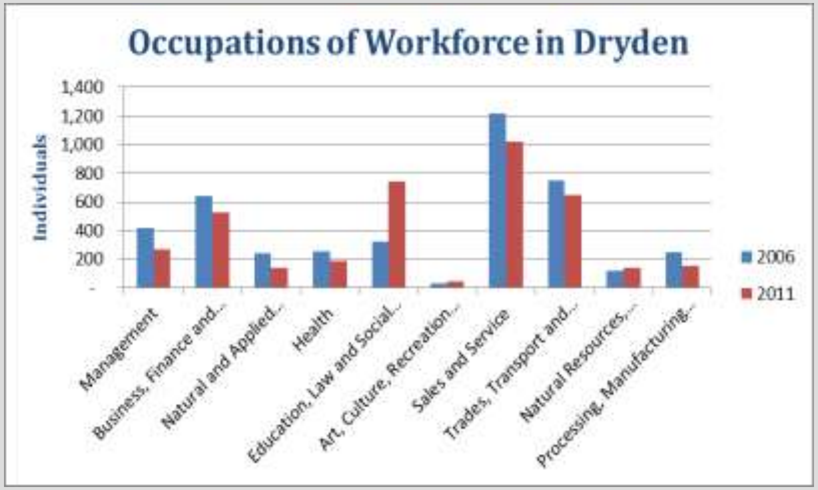
Doing the "Right Thing" because it is the "Right Thing To Do."

TREASURY METALS – HIGHLIGHTS

- Flagship high-grade gold project in Ontario
  - 1.7 million ounces in the combined category (Indicated and Inferred) from November 2011 resource estimate
- Achievable nominal $100 million CAPEX to produce 70,000 – 80,000 ounces per year for 10-year plus mine life
  - Excellent recoveries +95% by CIL and +92% by gravity/flotation
- Funded to shovel ready stage including feasibility study and mine permitting
- Significant infrastructure in place, highway accessible

DRYDEN

- Population ~8,000, 7.6% unemployment;
- Traditional dependency on forestry, recent closures;
- Transportation and Service Hub on TransCanada highway;
- Significant challenges related to economic restructuring and diversification.

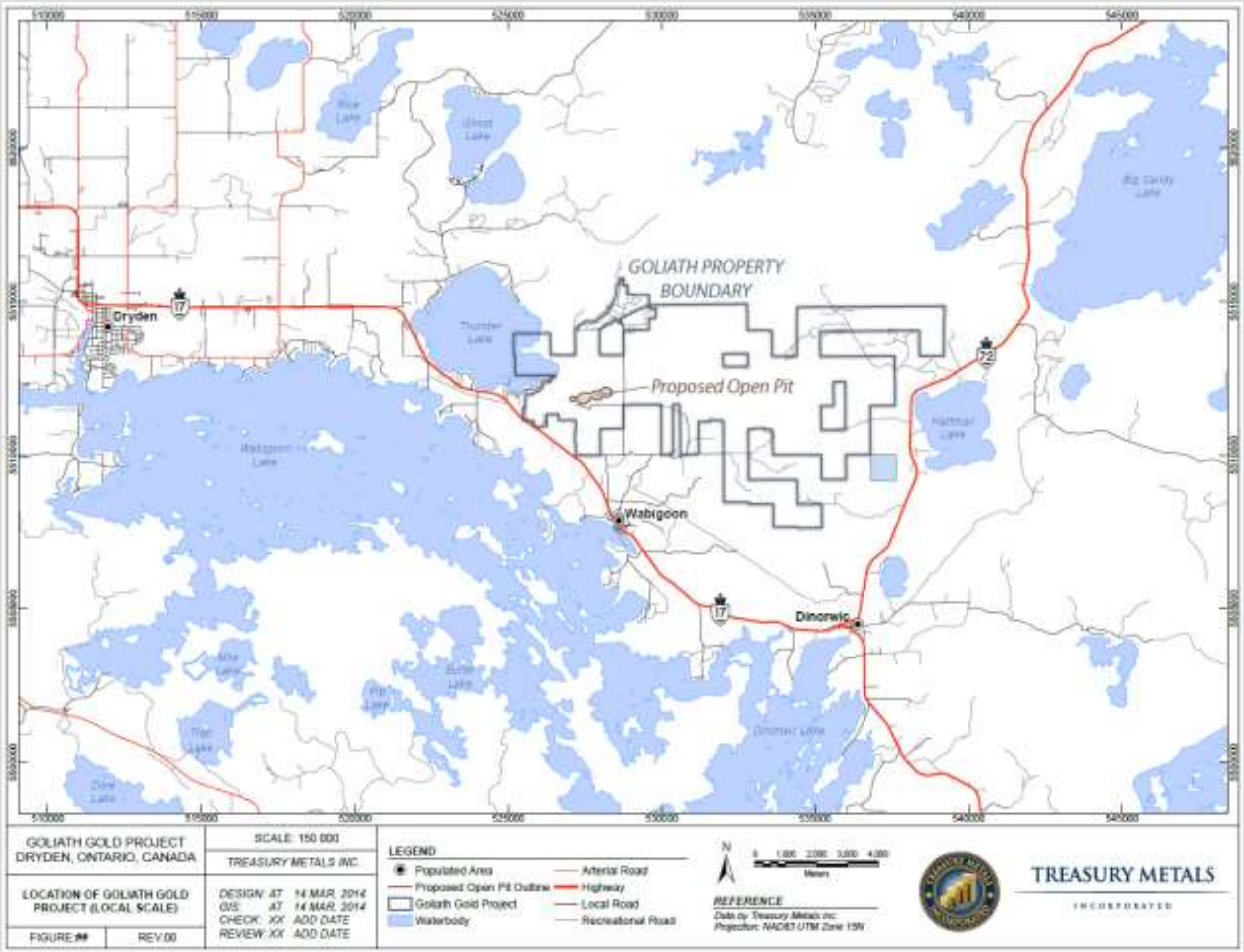


	Dryden		
	2006	2011	% Change
Total Population	8,195	7,617	-7%
Age 0-4	380	335	-11.8%
Age 5-14	1,070	865	-19.2%
Age 15-19	615	540	-12.2%
Age 20-24	465	410	-11.8%
Age 25-44	2,020	1,650	-18.3%
Age 45-54	1,350	1,325	-1.9%
Age 55-64	975	1,075	10.3%
Age 65-74	690	725	5.1%
Age 75-84	445	475	6.7%
Age 85 and over	180	215	19.4%
Median age of population	41.8	45.0	7.7%
Percent aged 15 and over	82.4%	84.2%	2.2%

Source: Statistics Canada, 2006 and 2011 Census Community Profiles

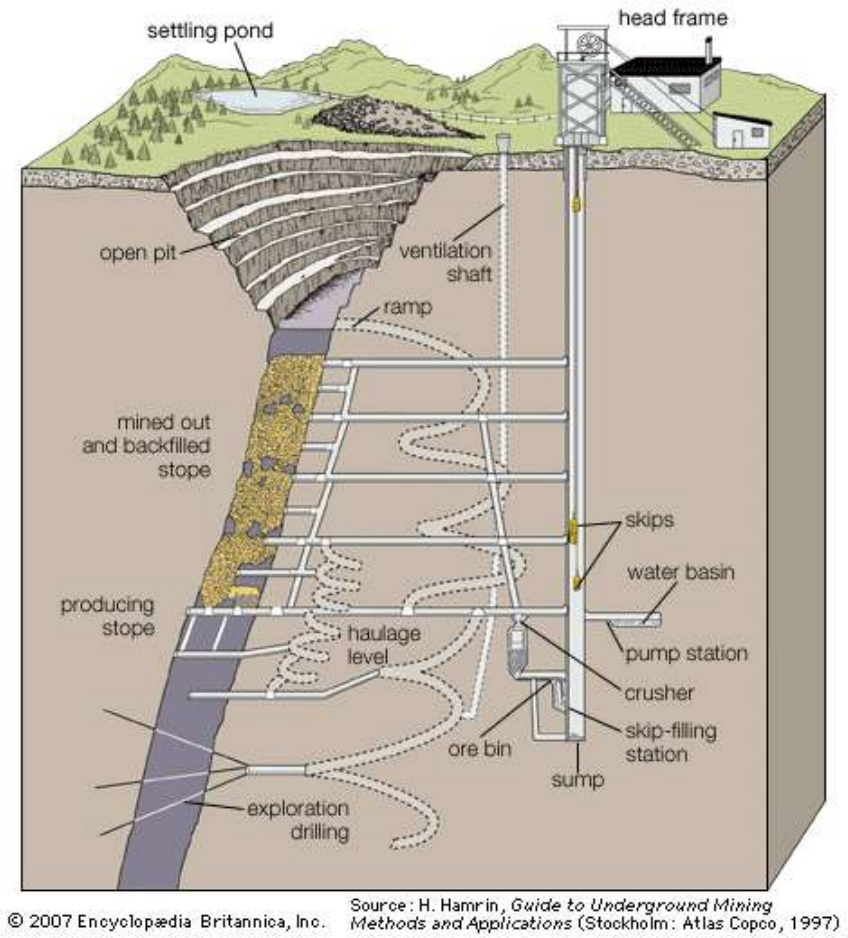
HISTORY OF GOLIATH GOLD PROJECT

PROJECT LOCATION

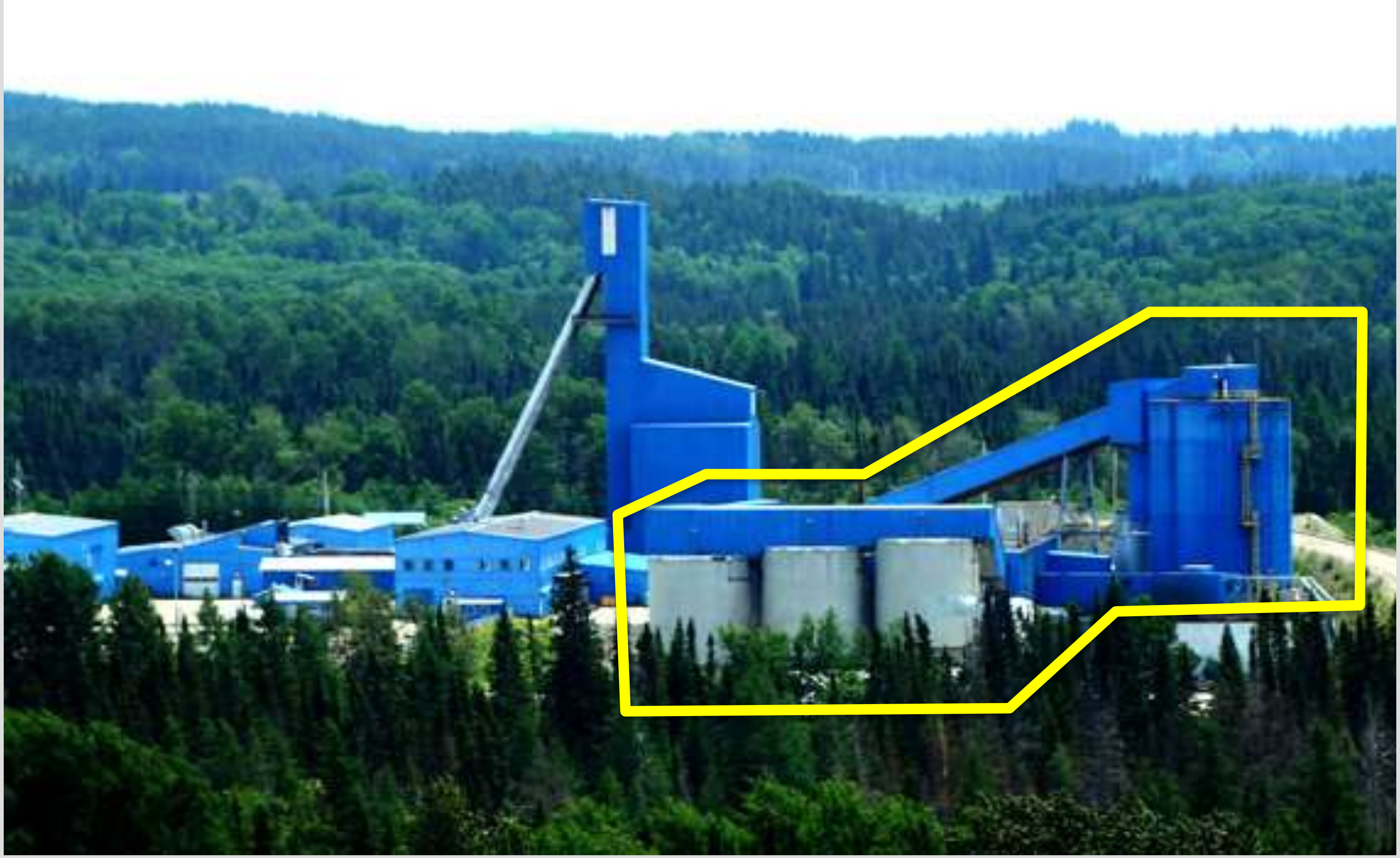


PROJECT STATUS

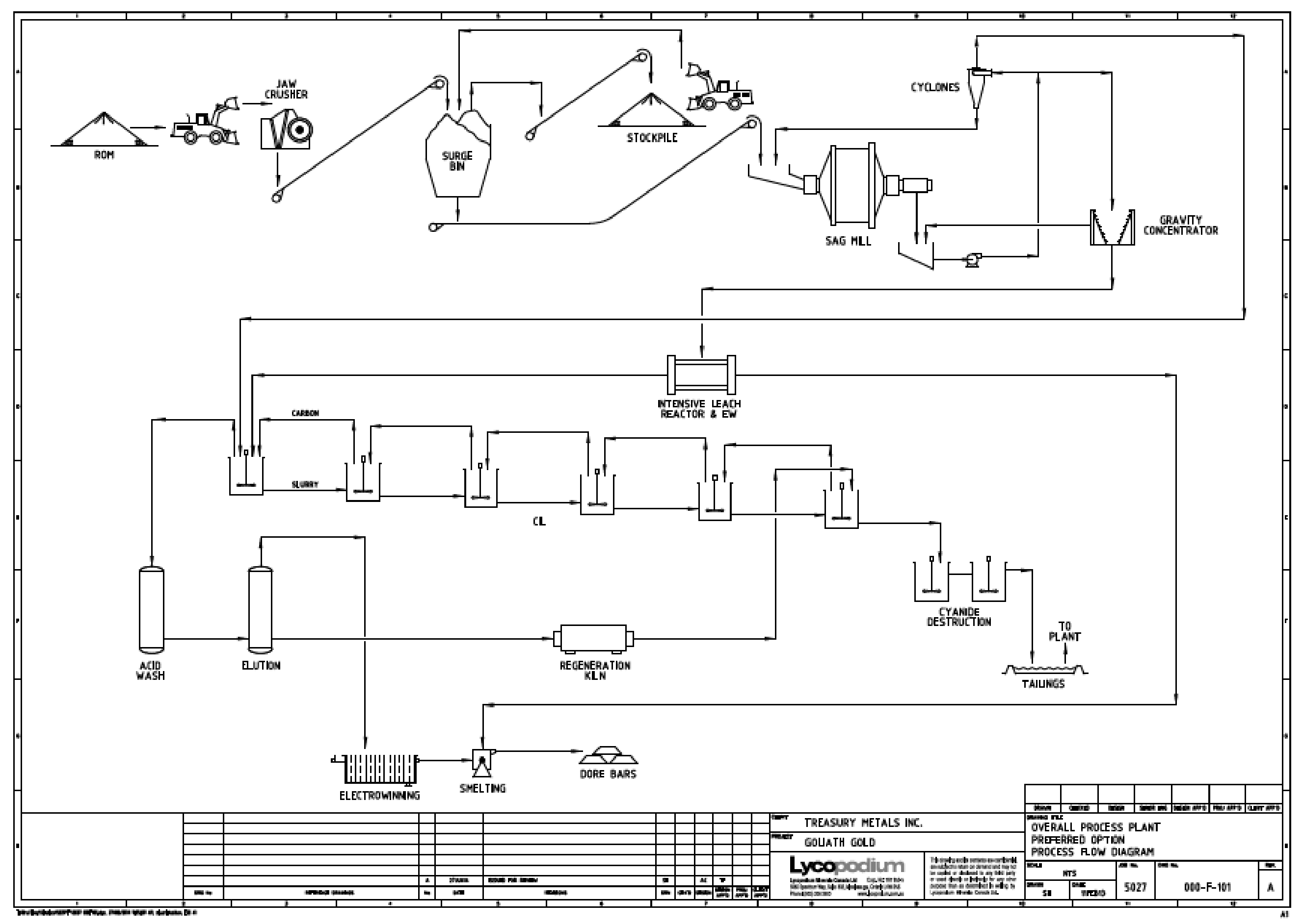
MINING INTRODUCTION

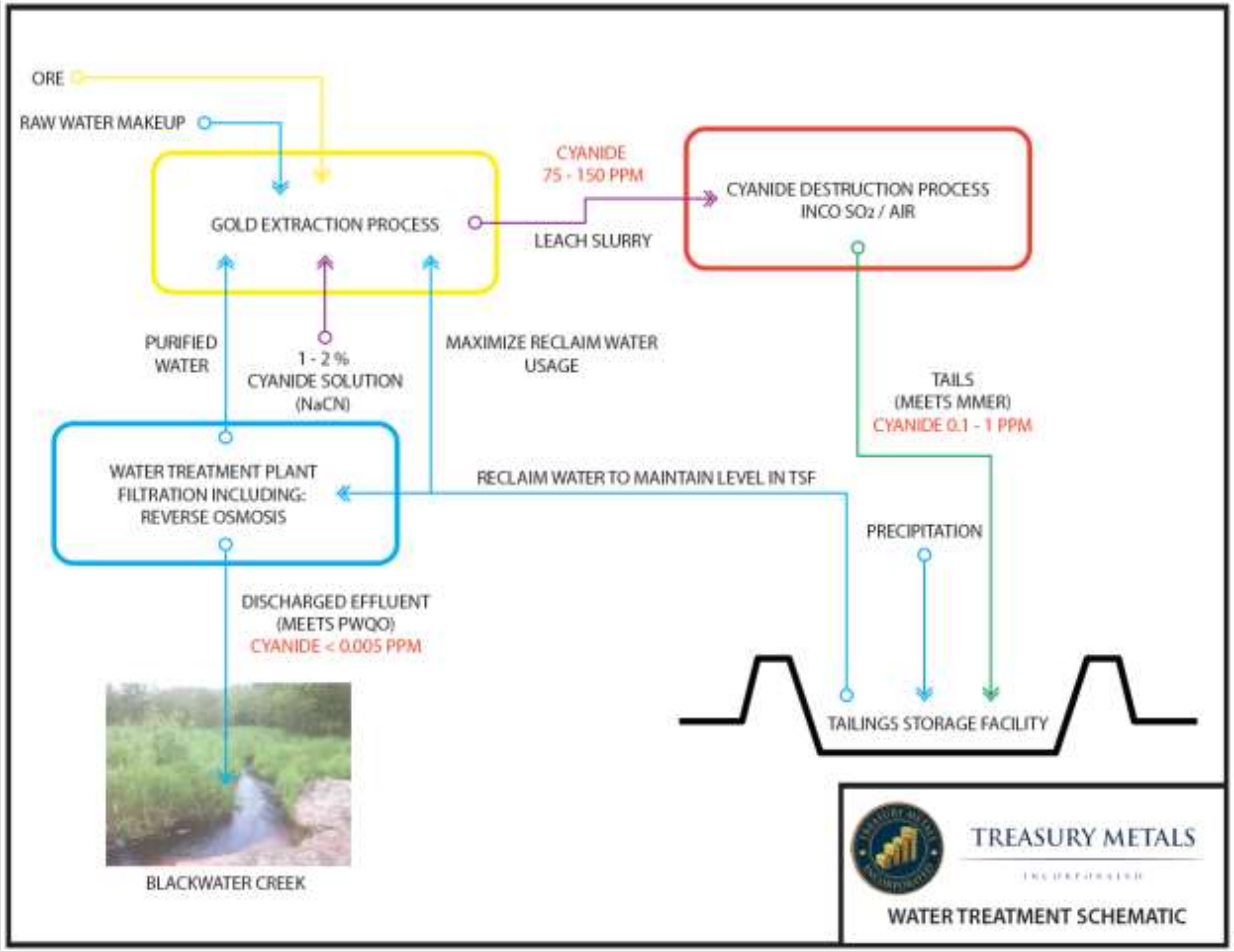


PROCESSING PLANT

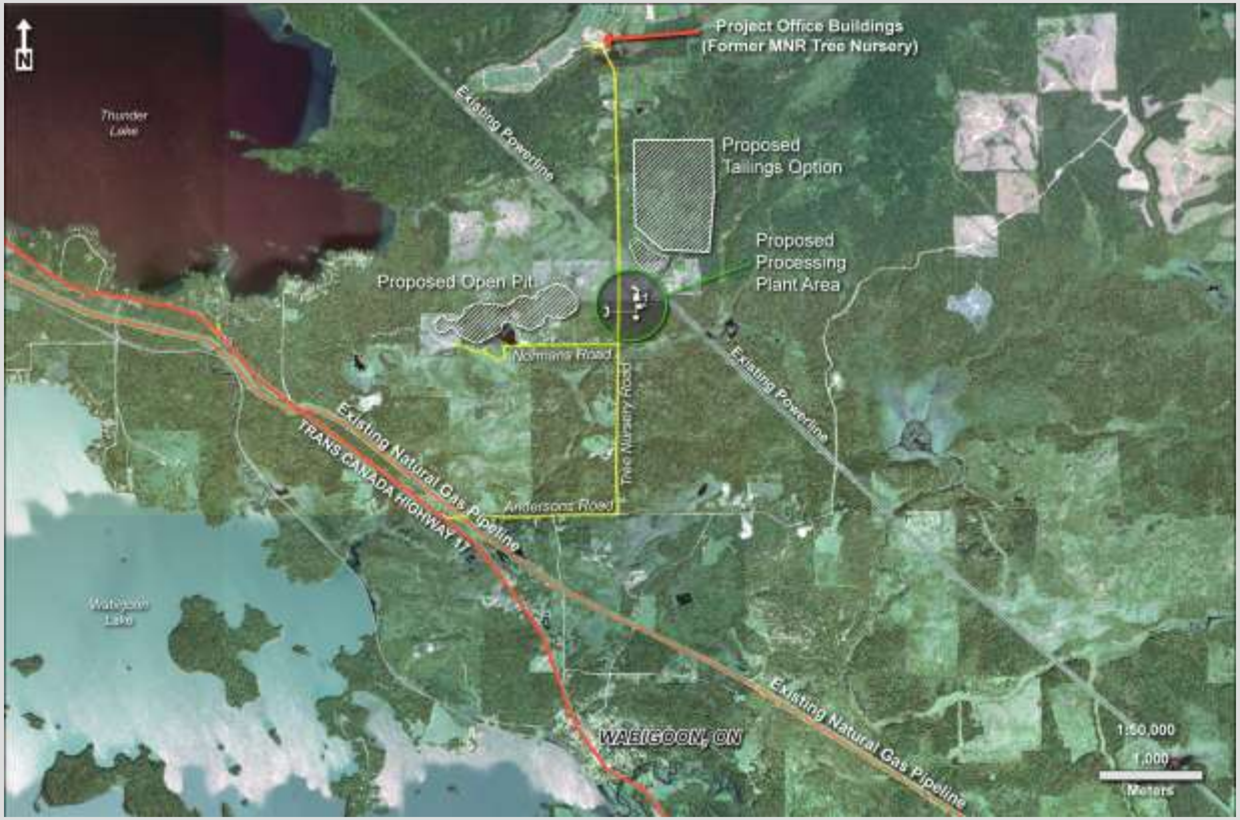


MILL PROCESS




ORE
RAW WATER MAKEUP
GOLD EXTRACTION PROCESS
CYANIDE
75 - 150 PPM
LEACH SLURRY
CYANIDE DESTRUCTION PROCESS
INCO SO2 / AIR
PURIFIED
WATER
1 - 2 %
CYANIDE SOLUTION
(NaCN)
MAXIMIZE RECLAIM WATER
USAGE
TAILS
(MEETS MMER)
CYANIDE 0.1 - 1 PPM
WATER TREATMENT PLANT
FILTRATION INCLUDING:
REVERSE OSMOSIS
RECLAIM WATER TO MAINTAIN LEVEL IN TSF
PRECIPITATION
DISCHARGED EFFLUENT
(MEETS PWQO)
CYANIDE < 0.005 PPM
TAILINGS STORAGE FACILITY
BLACKWATER CREEK
TREASURY METALS
INCORPORATED
WATER TREATMENT SCHEMATIC

INFRASTRUCTURE IN PLACE



- NW Ontario provides excellent infrastructure – reducing costs.
- Power, local workforce and transportation all readily available.
- Historical industrial offices are now TML's exploration and development site.
- Power sources on-site: gas and electric power lines.

GOLIATH SITE PLAN

MINING PLAN

- ~3 g/t Au Eq Average Mill Feed (3 parts per million)
- $1375 Gold Price
- 4.5 Million Tonnes OP, 4.5 Million Tonnes U/G
- 70,000 – 80,000 ounces/year, 2100 - 2700 t/day milling
- 130-180 m. Final Pit depth. 500-600 m. Underground Depth
- Capex: ≃ $ 100 MM
- Total Mine Life: 10 – 12 years (5 open pit/ 5 UG)

MAJOR STUDIES – SUPPORTING DEVELOPMENT

- Tetra Tech WEI
  - Coordination of the Environmental Impact Statement.
- Lycopodium Minerals Canada
  - Development of process options;
  - Infrastructure and design layout;
  - Water balance and treated water discharge characterization.
- WSP Canada
  - Design of the Tailings Storage Facility.
- P+E Mining Consultants
  - Mine design and mine plan.

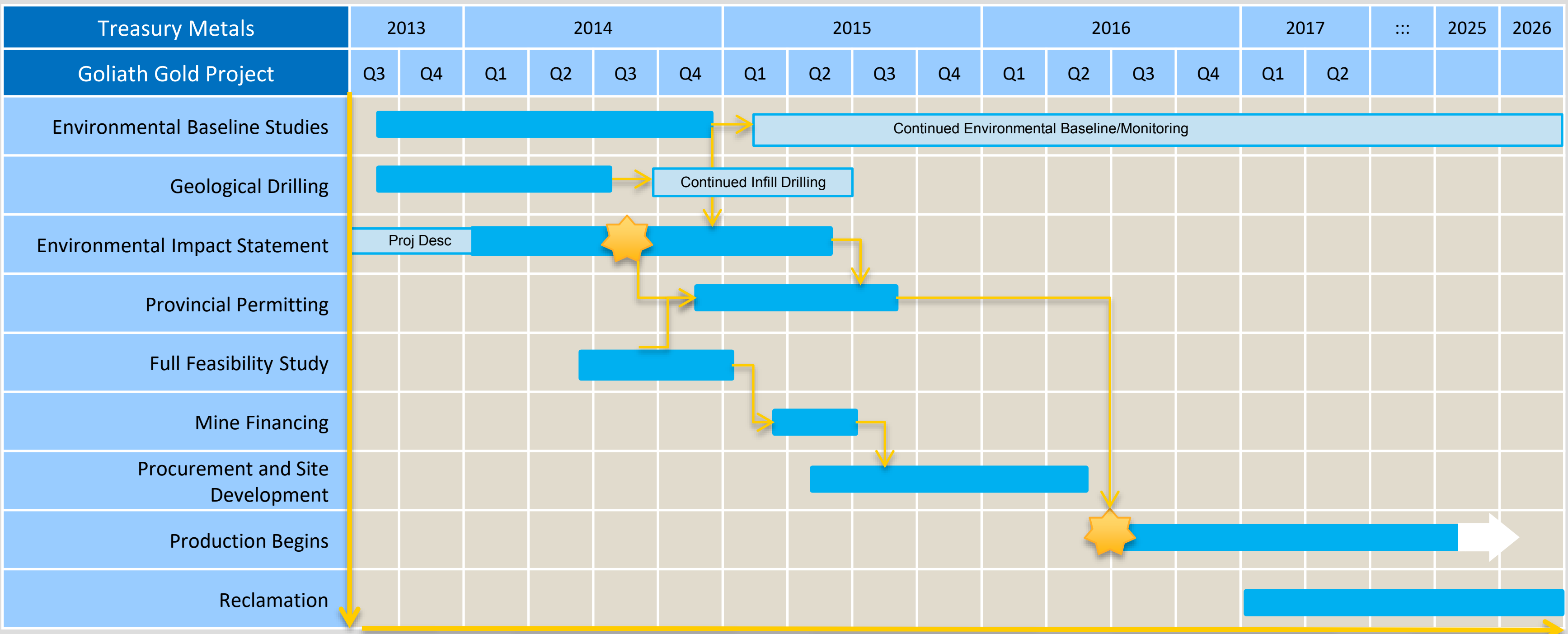
TETRA TECH

Lycopodium

WSP

P&E MINING CONSULTANTS INC.
Geologists and Mining Engineers

PROJECT TIMELINE

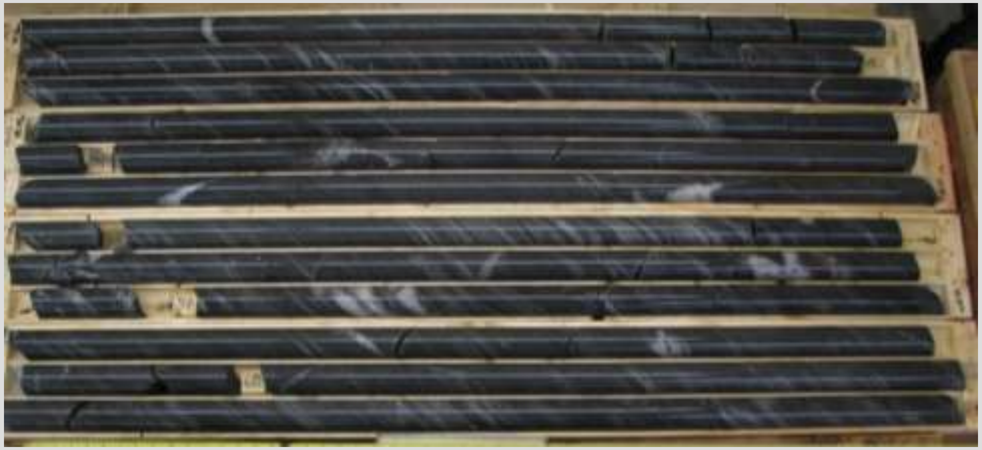


GEOLOGY

TML GEOLOGY AND ALTERATION

TML has two main rock types we intersect in the resource area:

- Muscovite-sericite schist (MSS)
- Biotite-muscovite schist (BMS)



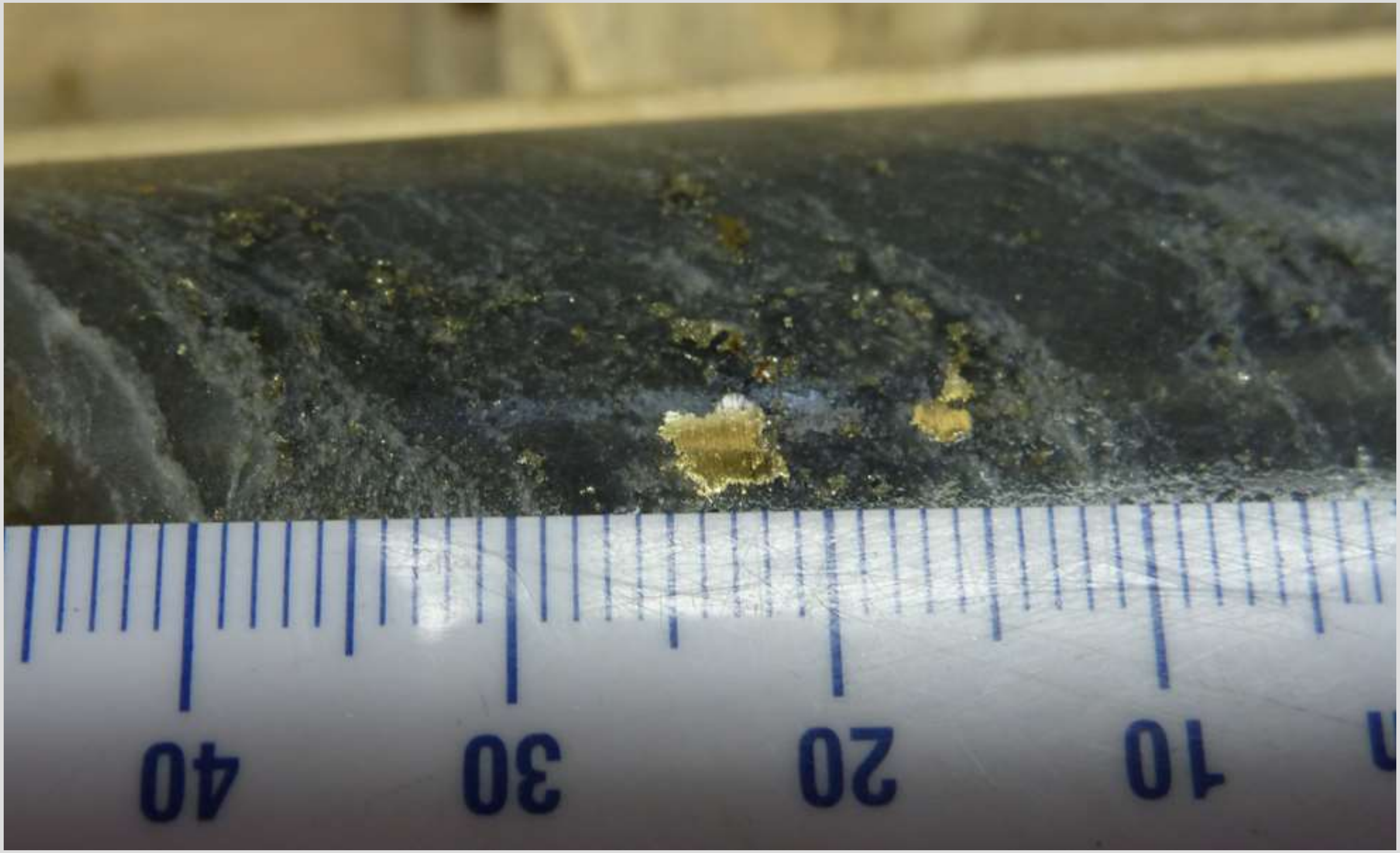
Other rock types include:

- Metasediments
- QFP
- Mafic Dykes
- Iron formation
- Biotite schist
- Amphibolite

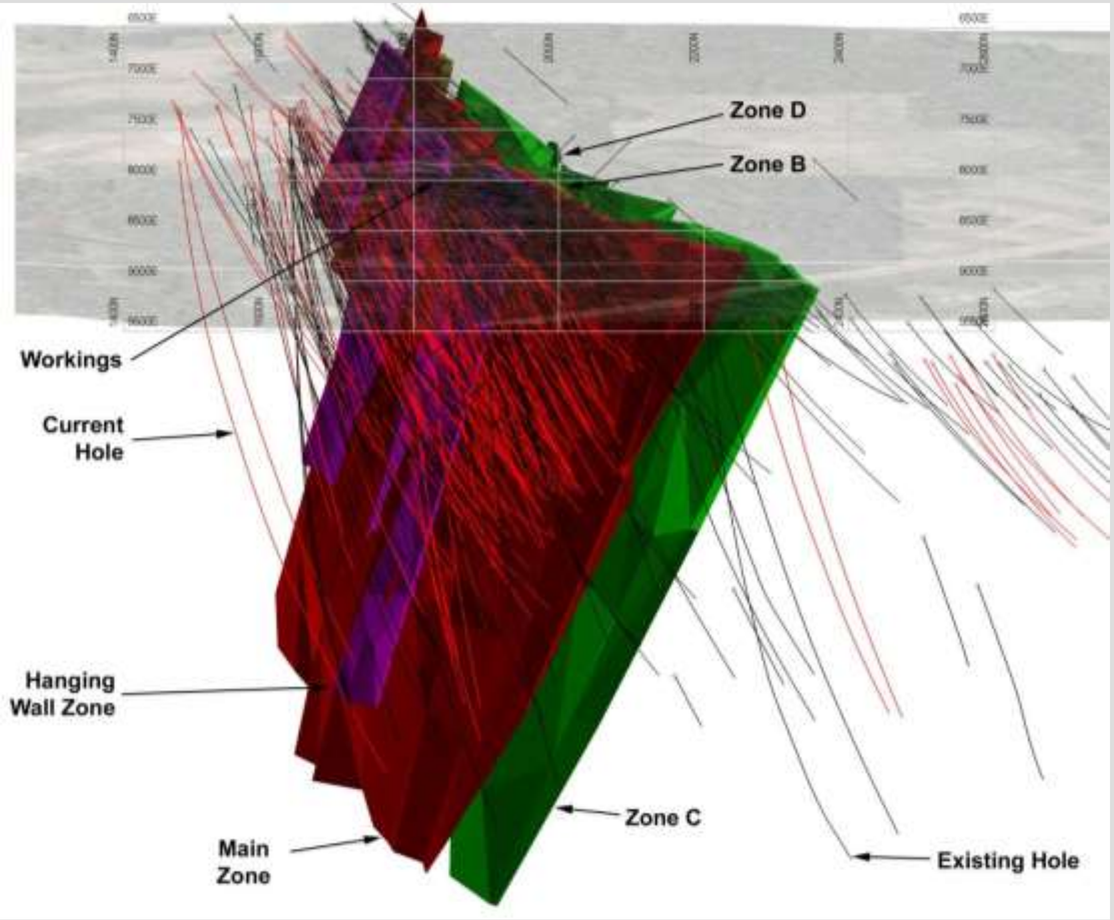
MINERALIZED MSS IS THE KEY

- Key minerals:
  - Sphalerite
  - Galena
  - Best concentrations occur proximal to upper and lower MSS contacts

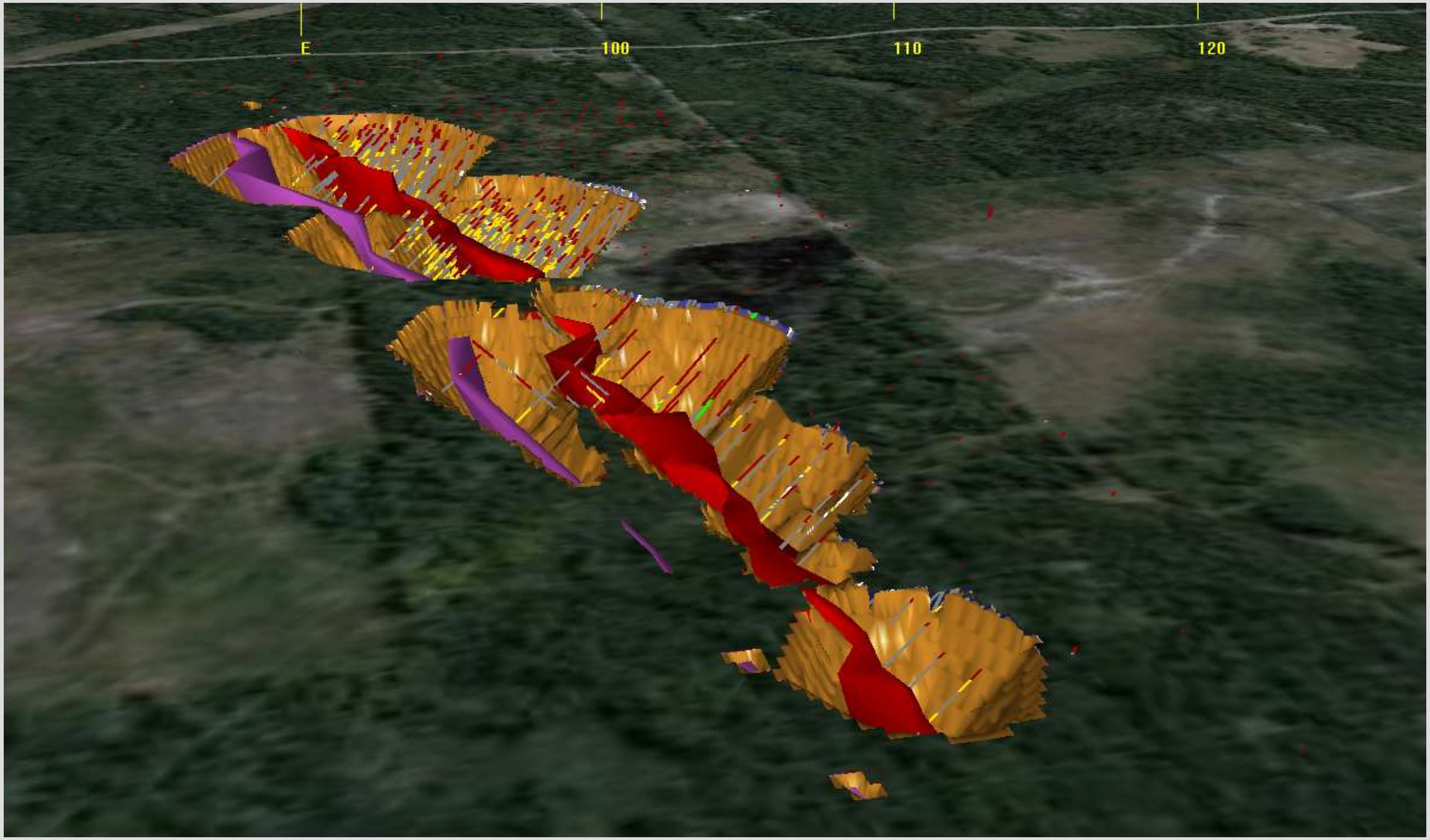
OUR IDEAL SCENARIO



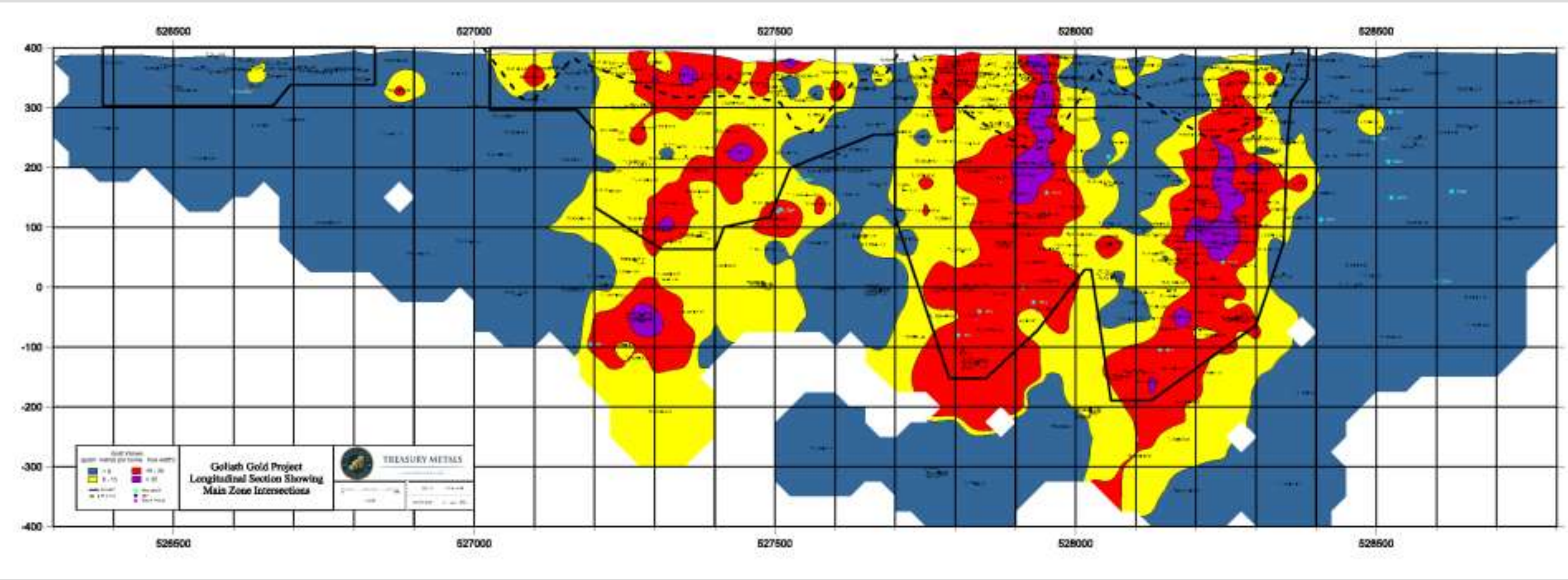
MINERALIZED ZONES



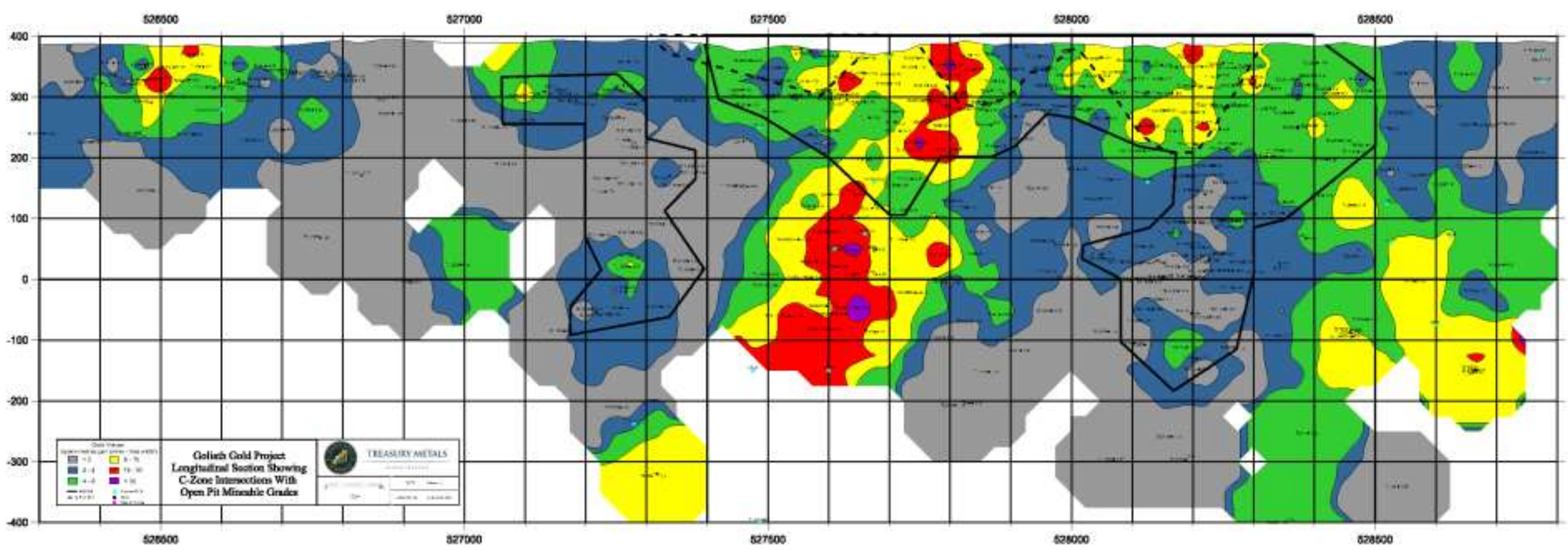
OPEN PIT



MAIN ZONE LONG SECTION



C ZONE LONG SECTION



ENVIRONMENTAL PERMITTING AND BASELINE STUDIES

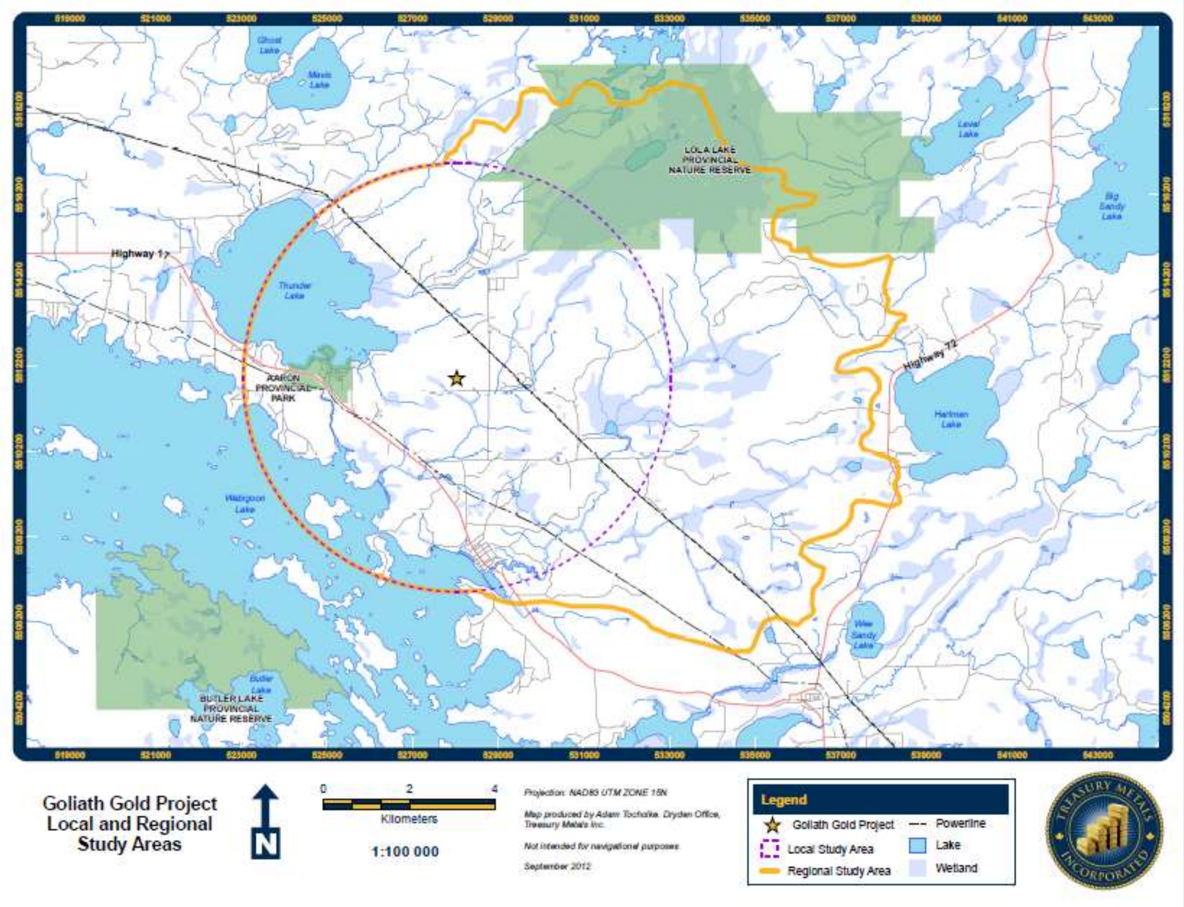
ENVIRONMENTAL ASSESSMENT PROCESS AND PERMITTING

- Federal
  - Canadian Environmental Assessment Agency (CEAA).
    - Triggers include ore processing greater than 600 tonnes per day and the potential to disturb fish habitat.
    - Environmental Impact Statement will be completed as part of federal regulations. Environmental Impact Statement will be available April 25.
- Provincial
  - 40 + individual permits may be required.
  - Permits will be approved based on provincial regulatory requirements (Class environmental assessment).

BASELINE STUDIES

- 2010-2014 fieldwork has been completed with operational team of DST, TBT, AMEC, EcoMetrix, KCB, gck, Keewatin-Aski and Treasury Metals personnel.
- Studies include:
  - Surface Water and Hydrology
  - Aquatics and Fisheries
  - Wetlands
  - Terrestrial Wildlife
  - Noise, Light and Dust
  - Archaeology
  - Soils and Vegetation
  - Hydrogeology
  - Socioeconomic, and Traffic
  - Geochemistry / Geotechnical
  - Country Foods

STUDY AREA


Goliath Gold Project
Local and Regional
Study Areas
N
0 2 4
Kilometers
1:100 000
Projection: NAD83 UTM ZONE 15N
Map produced by Adam Tochalka, Dryden Office, Treasury Metals Inc.
Not intended for navigational purposes
September 2012
Legend
Goliath Gold Project
Local Study Area
Regional Study Area
Powerline
Lake
Wetland
LOLA LAKE PROVINCIAL NATURE RESERVE
AARON PROVINCIAL PARK
BUTLER LAKE PROVINCIAL NATURE RESERVE
Highway 17
Highway 72
Thunder Lake
Wabigoon Lake
Hartman Lake
TREASURY METALS INCORPORATED

ENVIRONMENTAL PROGRAM OVERVIEW

- Environmental baseline studies have been completed to:
  - Understand the natural environment before development;
  - Support mine design and development decisions;
  - Support monitoring during operations and final closure plan decisions.
- Treasury's environmental program is on schedule, providing the data necessary to support the Company's environmental permitting activities with the Federal and Provincial governments.

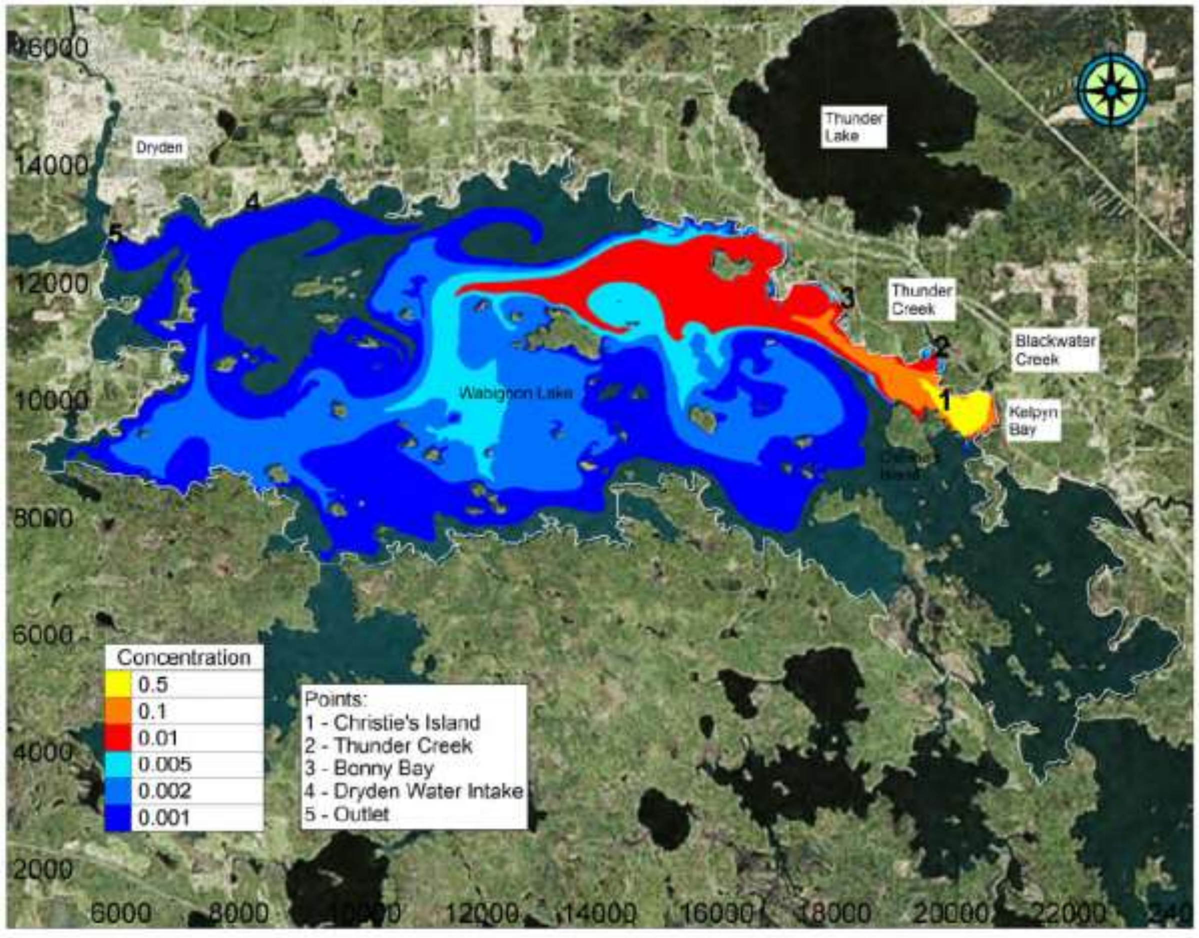
TAILINGS STORAGE FACILITY FAILURE MODELLING

Table 2. Breach Model Input

Dam Breach Parameter	Breach Scenario 1	Breach Scenario 2
Failure Mode	Piping	Overtopping
Dam Breach Elevation (m)	420	420
Volume of Tailing in TSF (m^3)	8,242,364	8,242,364
Volume of 100-yr Inflow (m^3)	N/A	62,478
Dam Slopes (H:V)	1:2.5 (u/s) and 1:1.5 (d/s)	1:2.5 (u/s) and 1:1.5 (d/s)
D_{50} Grain Size (mm) [1]	0.1 (inner) and 5 (outer)	0.1 (inner) and 5 (outer)
Porosity Ratio	0.25 (inner) and 0.30 (outer)	0.25 (inner) and 0.30 (outer)
Unit Weight (lb/ft^3)	120 (inner) and 135 (outer)	120 (inner) and 135 (outer)
Internal Friction (°)	35 (inner) and 33 (outer)	35 (inner) and 33 (outer)
Cohesive Strength (lb/ft^2)	150 (inner) and 50 (outer)	150 (inner) and 50 (outer)
Results		
Peak Flow (m^3/sec)	52	77

Notes: [1] Assumed low permeable layer on the inside and graded filter layer on the outside

TAILINGS STORAGE FACILITY FAILURE MODELLING



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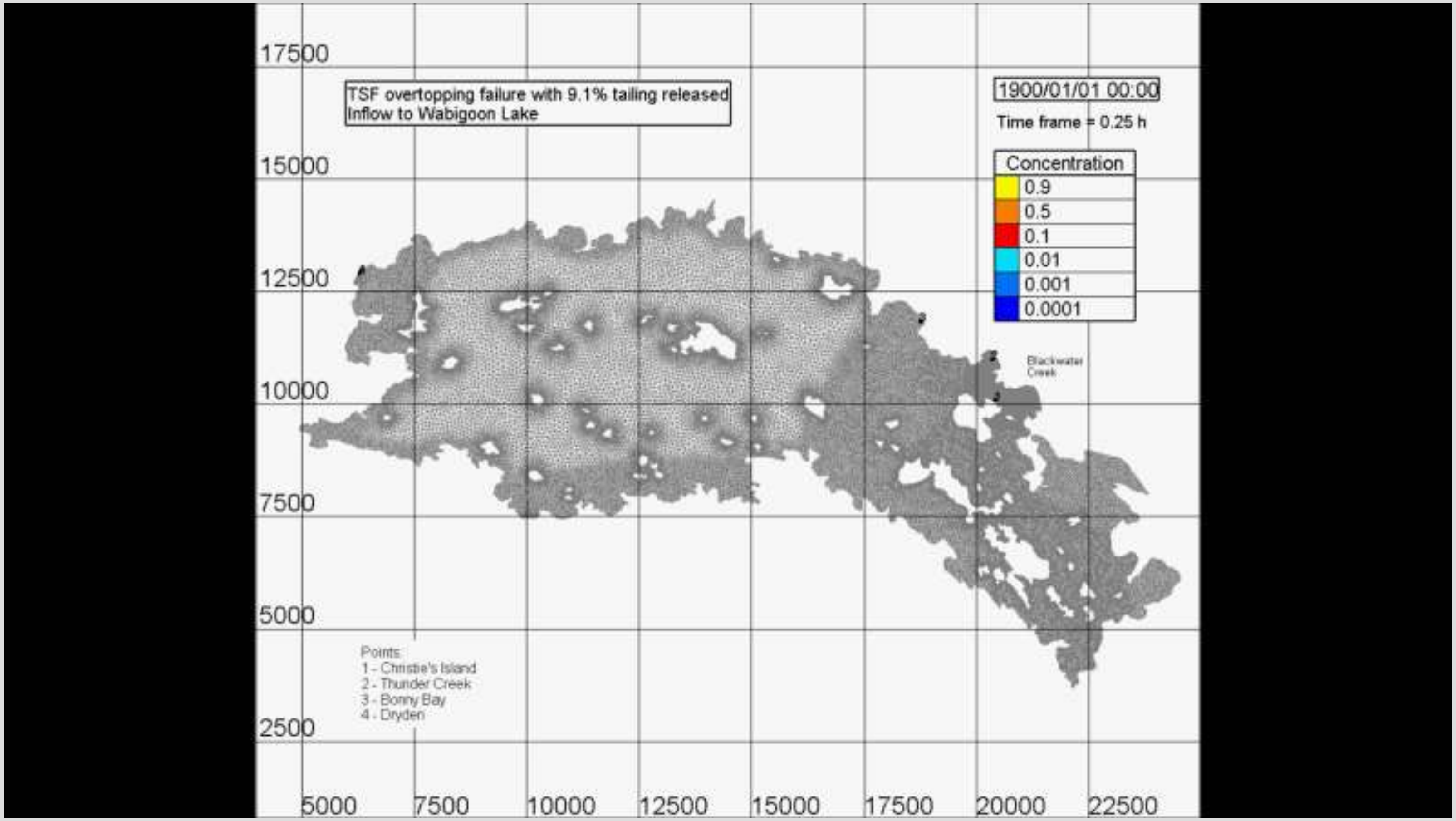

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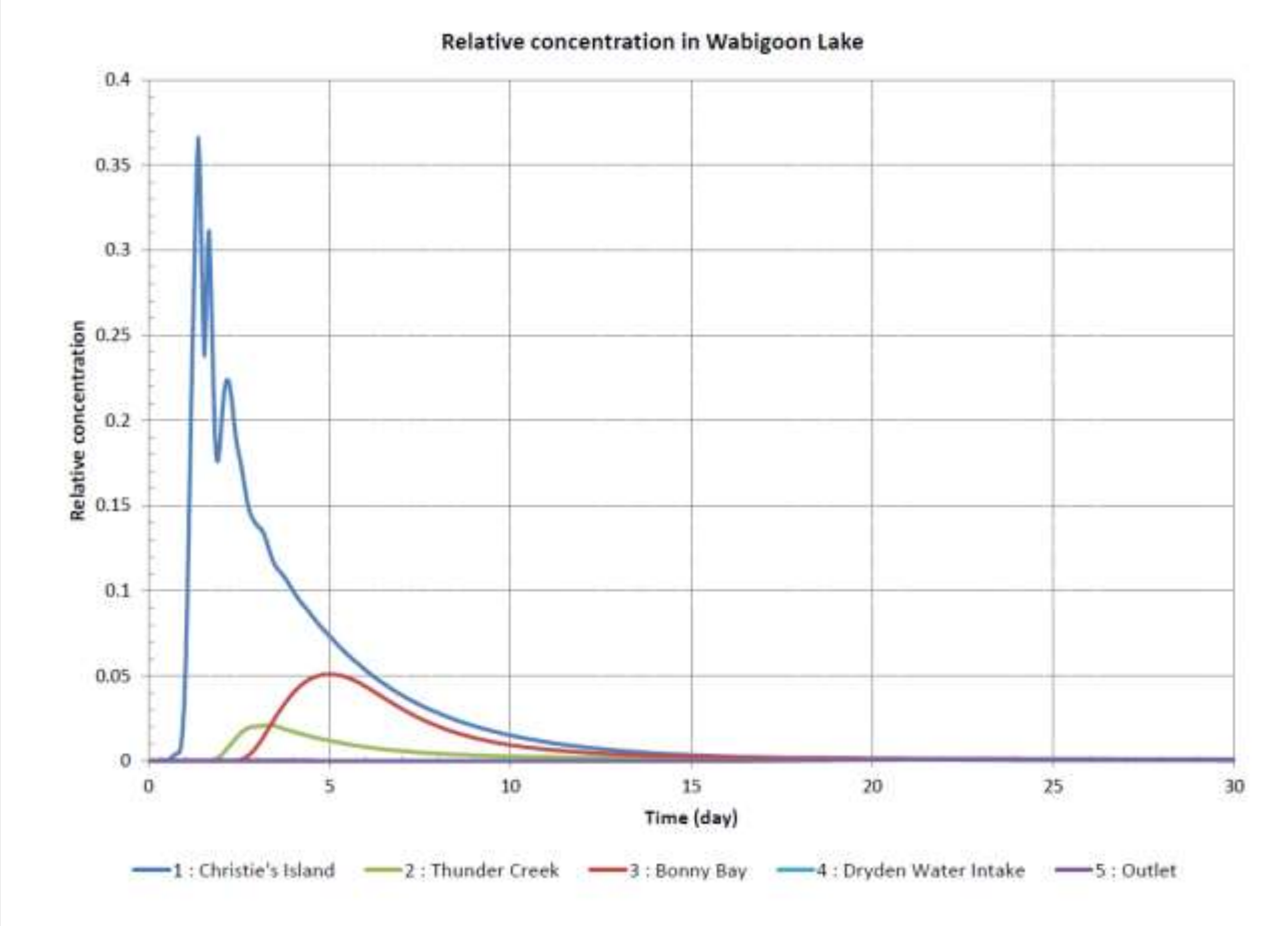


TAILINGS STORAGE FACILITY FAILURE MODELLING

Table 7. TSF Overflow Concentrations for parameters that Exceeded the Water Quality Objective

	TSF Overflow Concentration (mg/L) Except pH	Ontario Drinking Water Standards (mg/L)	Water Quality Objectives (mg/L)	MMER (Max Monthly Mean) (mg/L)
Parameter				
pH	5.0616		6.5 - 8.5	6.5 - 9.0
Al	0.1985		0.075	
Cd	0.0010	0.005	0.0002	
Co	0.0030		0.0006	
Cu	0.0652		0.005	0.3
Fe	0.3428		0.3	
Pb	0.3046	0.01	0.005	0.2
Hg	0.0126	0.001	0.0002	
Se	1.1748	0.01	0.1	
Ag	0.0004		0.0001	
Tl	0.3789		0.0003	
U	0.0115	0.02	0.005	
Cyanide	0.2025	0.2	0.005	1

Table 8. Duration of Exceedances above Water Quality Objectives in Wabigoon Lake

	Duration exceedance above Water Quality Objective After Spill into Wabigoon Lake (days)				
Water Quality Parameter	Christie's Island	Thunder Creek	Bonny Bay	Dryden Water Intake	Outlet
Al	0.0	0.0	0.0	0.0	0.0
As	0.0	0.0	0.0	0.0	0.0
Cd	1.0	0.0	0.0	0.0	0.0
Co	1.0	0.0	0.0	0.0	0.0
Cu	2.5	0.0	0.0	0.0	0.0
Fe	0.0	0.0	0.0	0.0	0.0
Pb	10.0	1.0	5.0	0.0	0.0
Hg	10.0	1.0	9.0	0.0	0.0
Se	4.0	0.0	0.0	0.0	0.0
Ag	1.0	0.0	0.0	0.0	0.0
Tl	20.0	10.0	12.0	0.0	0.0
U	0.0	0.0	0.0	0.0	0.0
Zn	0.0	0.0	0.0	0.0	0.0
Cyanide	1.0	0.0	2.0	0.0	0.0

SOCIO-ECONOMIC IMPACT AND BENEFITS

COMMUNITY OWNERSHIP

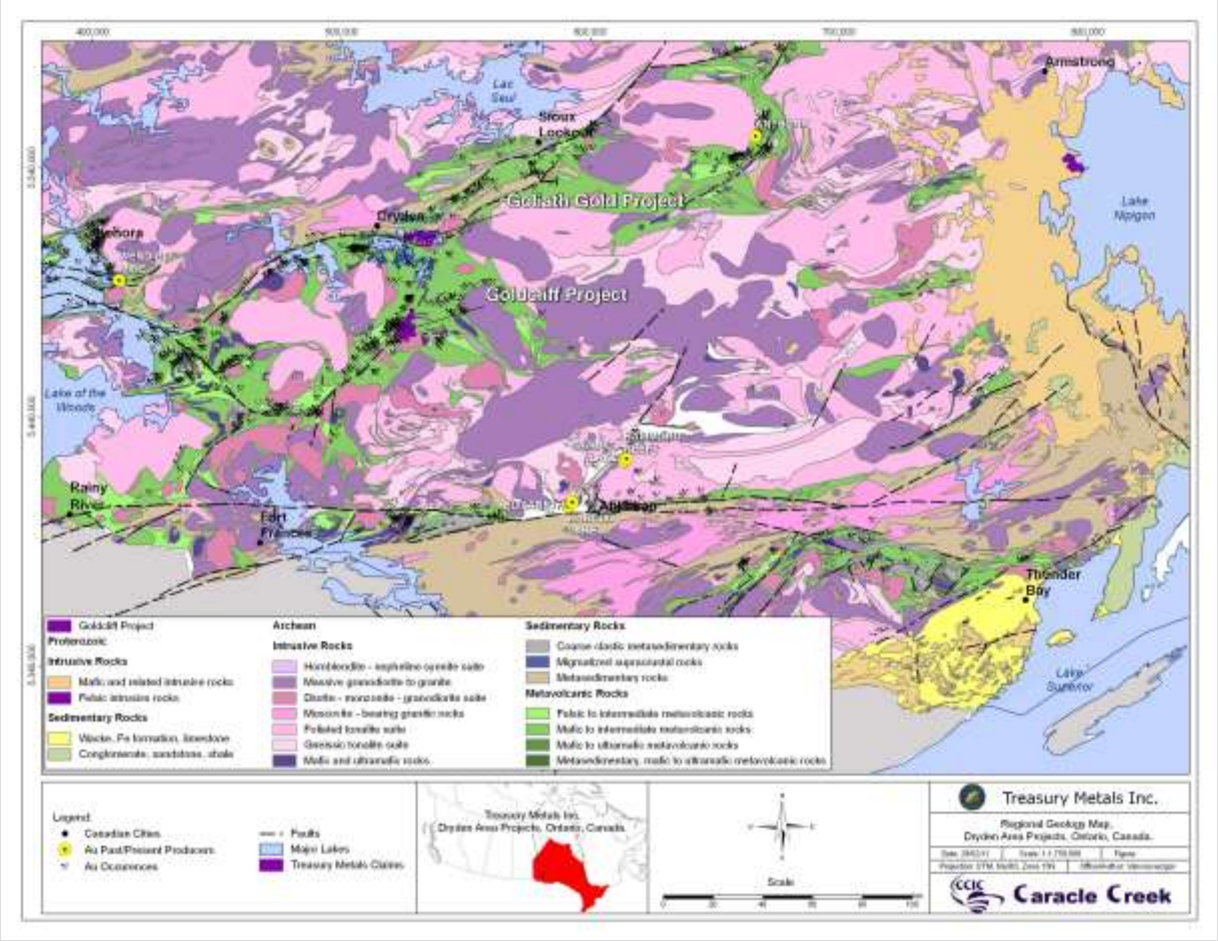
SOCIAL AND ECONOMICAL IMPACTS

	Current	Future
Direct Employment	20	200
Indirect Employment (4:1 Multiplier)	80	800
Total Employment Impact	100	1000

- In 2012 TML supported over 75 Northwestern Ontario businesses with over 70 based in Dryden.

TML Total Vendor Spending 2012	$ 5.9 Million
Northwest Ontario	$ 4.3 Million

REGIONAL HUB



EMPLOYMENT TRAINING AND BUSINESS OPPORTUNITIES

TREASURY METALS – JOB QUALIFICATIONS

JOB	GRADE 12	COLLEGE DIPLOMA	UNIVERSITY DEGREE	TRADES CERTIFICATION	OTHER
FIELD TECHNICIAN	√				
UNDERGROUND MINER	√				√
ASSAY LAB TECH	√				
HEAVY EQUIPMENT OPERATOR (MTCU Transcript)	√				√
ADMINISTRATIVE TECH	√	√			
ENVIRONMENTAL TECH	√	√			
HEAVY DUTY EQUIPMENT TECH (MTCU)	√	√		√	
ELECTRICAL/INSTRUMENTATION & CONTROL TECHNICIAN (MTCU)	√	√		√	
MULTI-TRADES CRAFTSPERSON (MTCU)	√	√		√	
GEOLOGIST	√		√		
MINE ENGINEER	√		√		
MINE MANAGER	√		√		

TREASURY METALS – BASIC HIRING CRITERIA

- Basic Requirements and Reasoning:
  - Minimum Grade 12/GED
    - Higher level education for specialized positions (Grade 12/12 Math and English);
    - Specialized skill requirements* and use of technology;
    - Comprehension, report writing.
  - Valid Drivers Licence
    - Drive company vehicles on and off road.
  - Pre-employment Drug Test
    - Safety for self and others;
    - Working with and around heavy equipment and machinery.
  - Criminal background check.
    - Screen-out undesirables;
    - Reduce risk to employees and property;
    - Harassment free workplace.

*Note: All training through recognized training institute or MTCS.

SUMMARY

- Treasury is committed to working with local municipalities and stakeholders.
- Treasury is committed to forgoing partnerships with local First Nation communities.
- 2014 is another busy year with further exploration work, environmental permitting activities, and other Project studies.
- Treasury Metals goal is to be:

Partners in Economic Development with our local Municipalities, and Aboriginal communities.

Questions ?

TREASURY METALS

Focused on Gold Based in Ontario

Dryden & Wabigoon Area - Goliath Project Update

Oct 30, 2012

Norm Bush V.P. Goliath Gold Project

www.treasurymetals.com

Agenda

- Project and Corporate Update – Norm Bush
- Environmental Review – Mac Potter
- Mine Plan Overview – Mark Wheeler
- Summary and Questions?

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  - WHERE WE ARE
    - JOB OPPORTUNITIES
      - JOB QUALIFICATIONS

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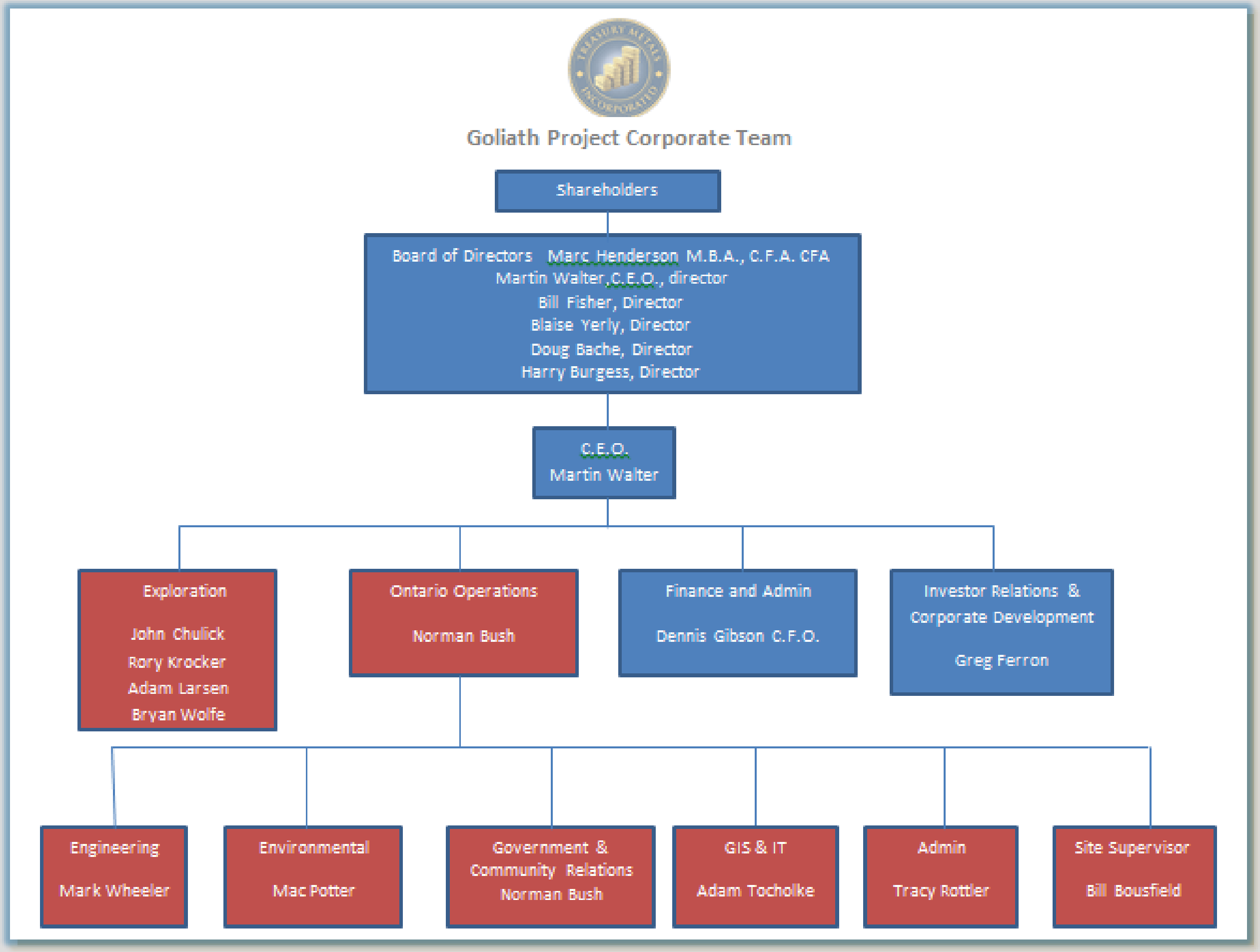
  - Goliath Project: 1.7 million ounces with a clear path to growth
  - Goldcliff Property: Early exploration with high grade surface samples

- **TML's management and board have a successful record in building companies and developing world-class mining projects**
  - Key members of the board include Marc Henderson (Aquiline) and Bill Fisher (Aurelian)
  - New management team appointed in December 2010 including Martin Walter, CEO
  - John Chulick, V.P. Exploration and Norm Bush, V.P. Goliath Gold Project added December, 2011

- **Our future growth will come from developing existing assets and acquisition of other gold assets in Canada and the Americas**

GOLIATH GOLD PROJECT – CORPORATE TEAM



TREASURY METALS - CORE VALUES AND RELATIONSHIPS

SAFETY

- ✓ Working safely is about "CARING FOR PEOPLE"
- ✓ Nothing we do is worth getting hurt over
- ✓ Working towards "Zero" recordable injury rate

ENVIRONMENT

- ✓ Responsible Stewards of the lands on which we operate

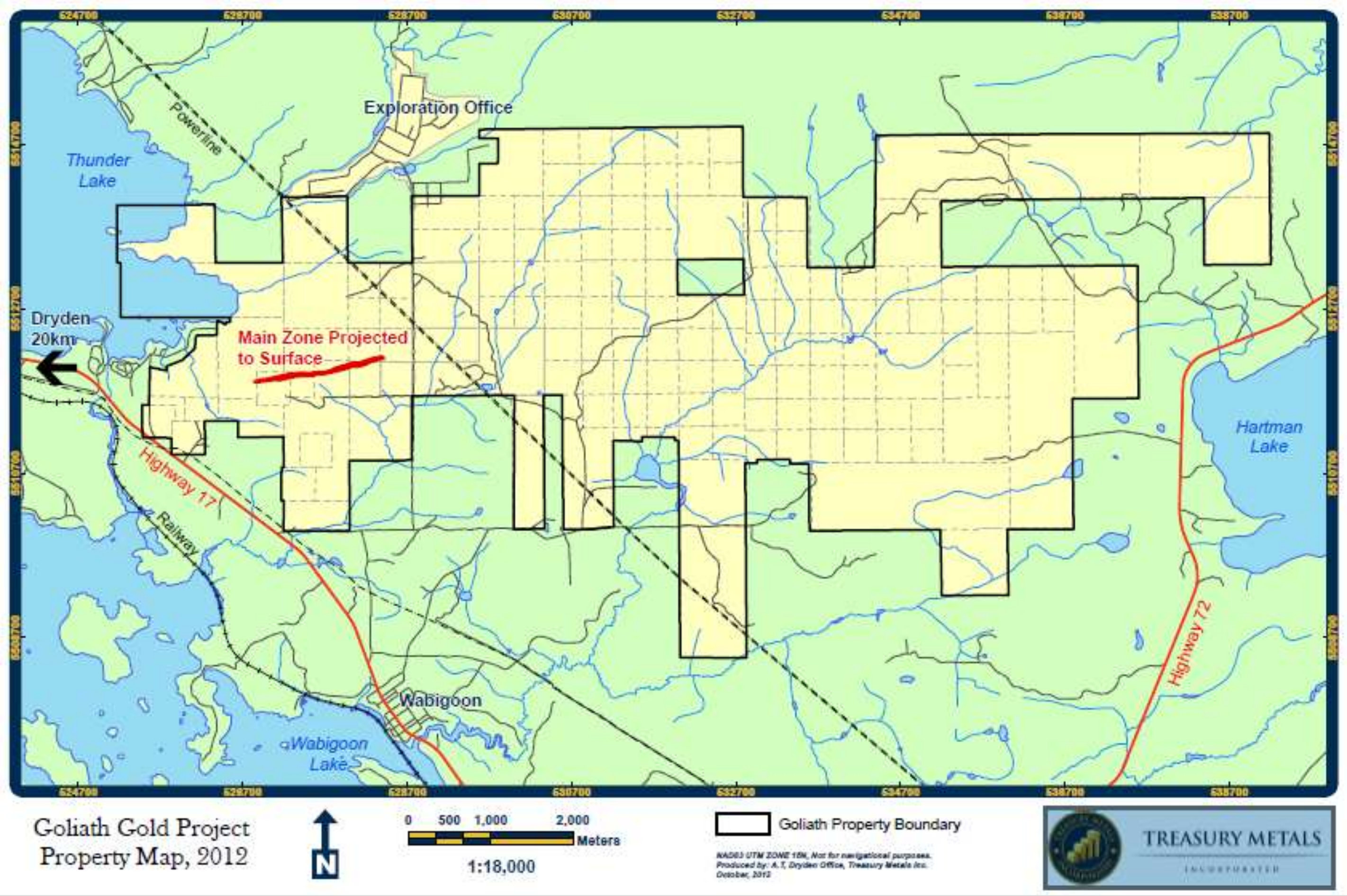
PEOPLE / STAKEHOLDERS

- ✓ Work for the mutual benefit of all Communities and Stake Holders
- ✓ Treat people with Respect and Dignity
- ✓ Act with Integrity
- ✓ Demonstrate Ethical Behavior
- ✓ Act with Simplicity, Speed, Decisiveness

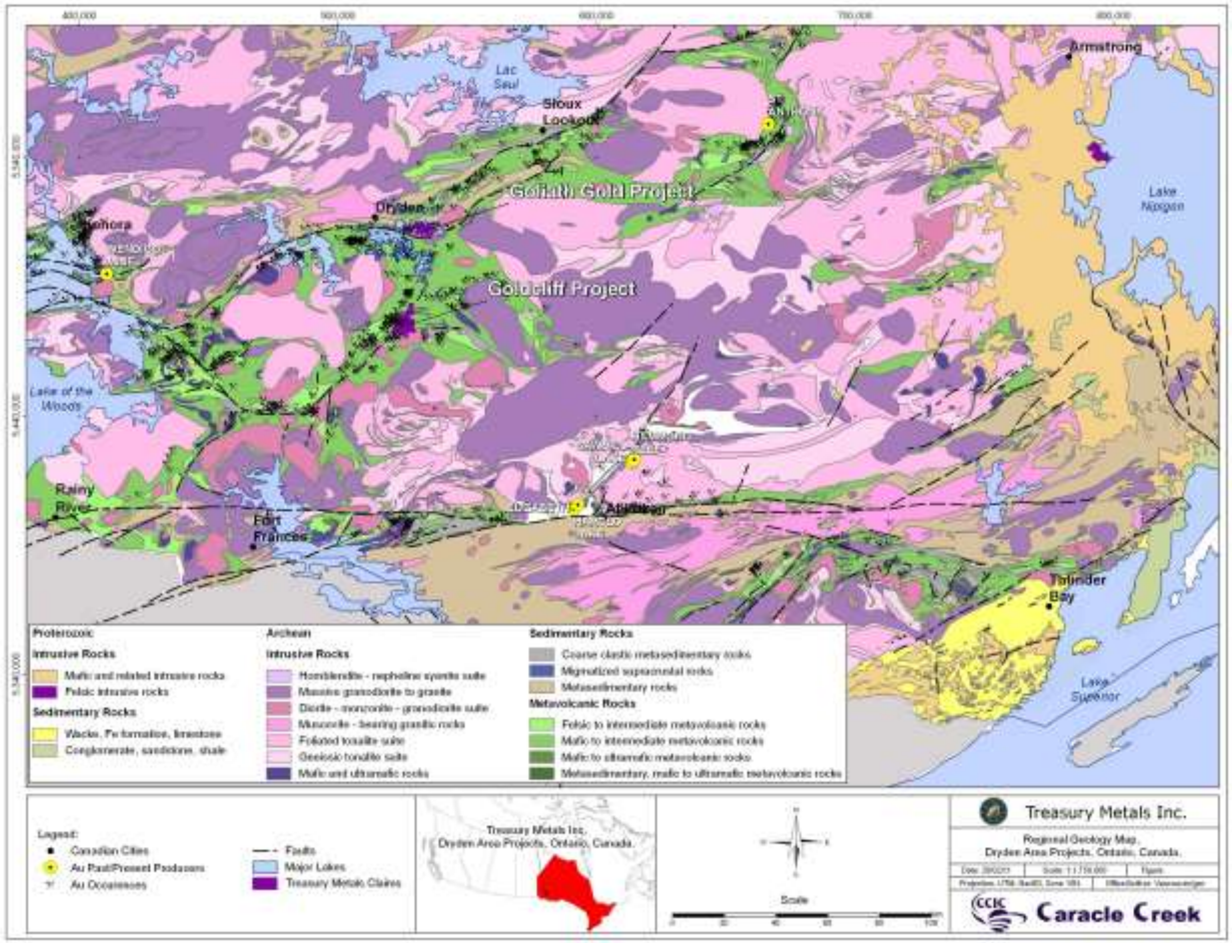
Doing the "Right Thing" because it is the "Right Thing To Do."

PROPERTY LOCATION AND HISTORY

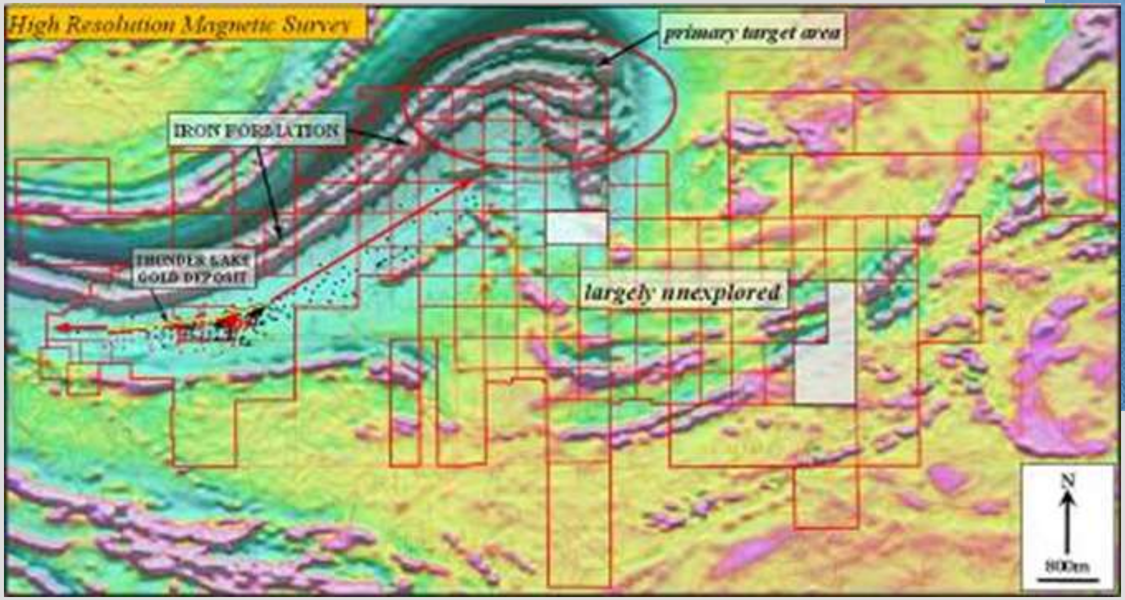
GOLIATH GOLD PROJECT: INFRASTRUCTURE IN PLACE



KENORA/DRYDEN AREA - REGIONAL GEOLOGY



EXPLORATION TECHNIQUES: GEOPHYSICAL

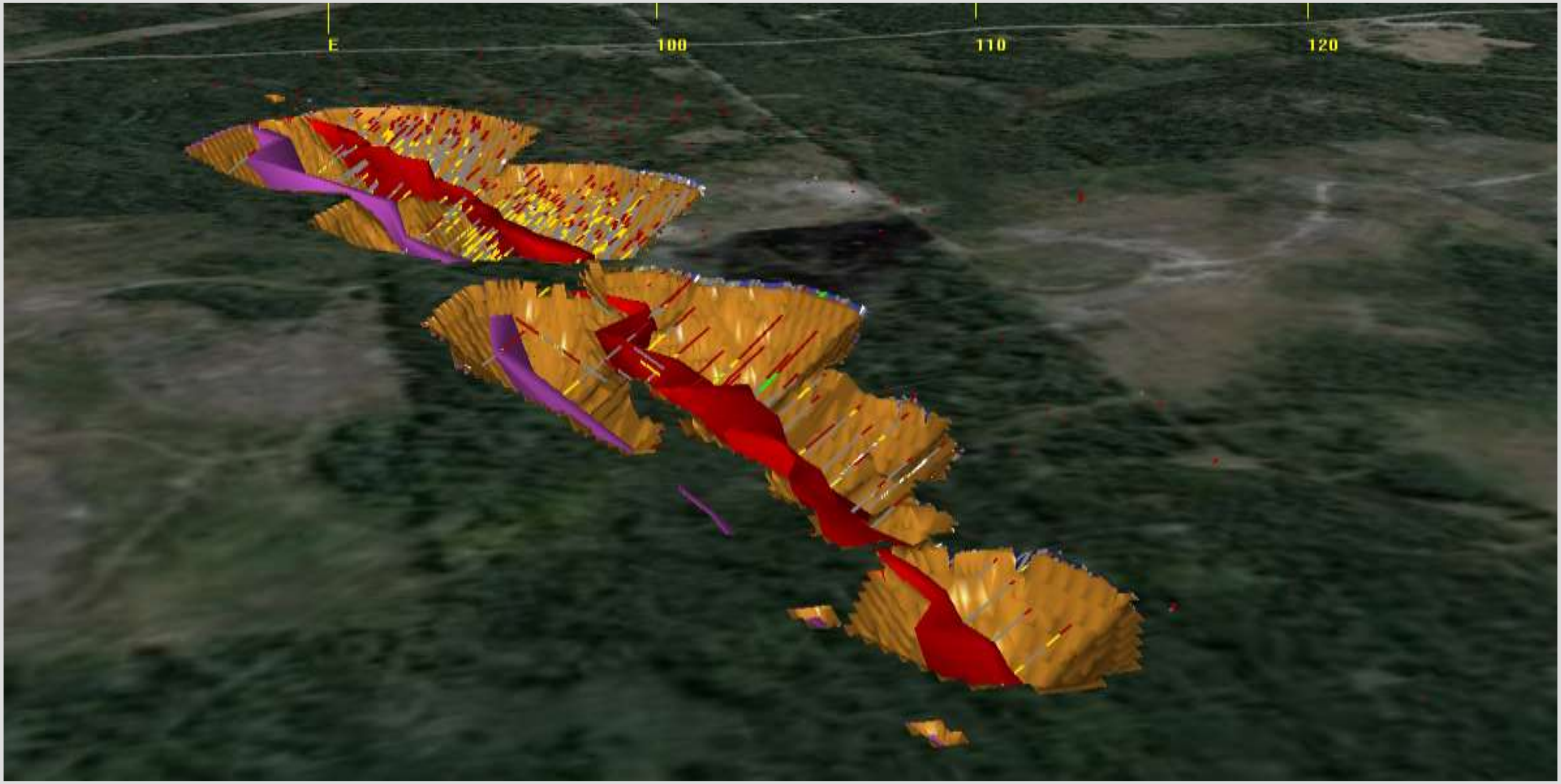


PROJECT TARGETS

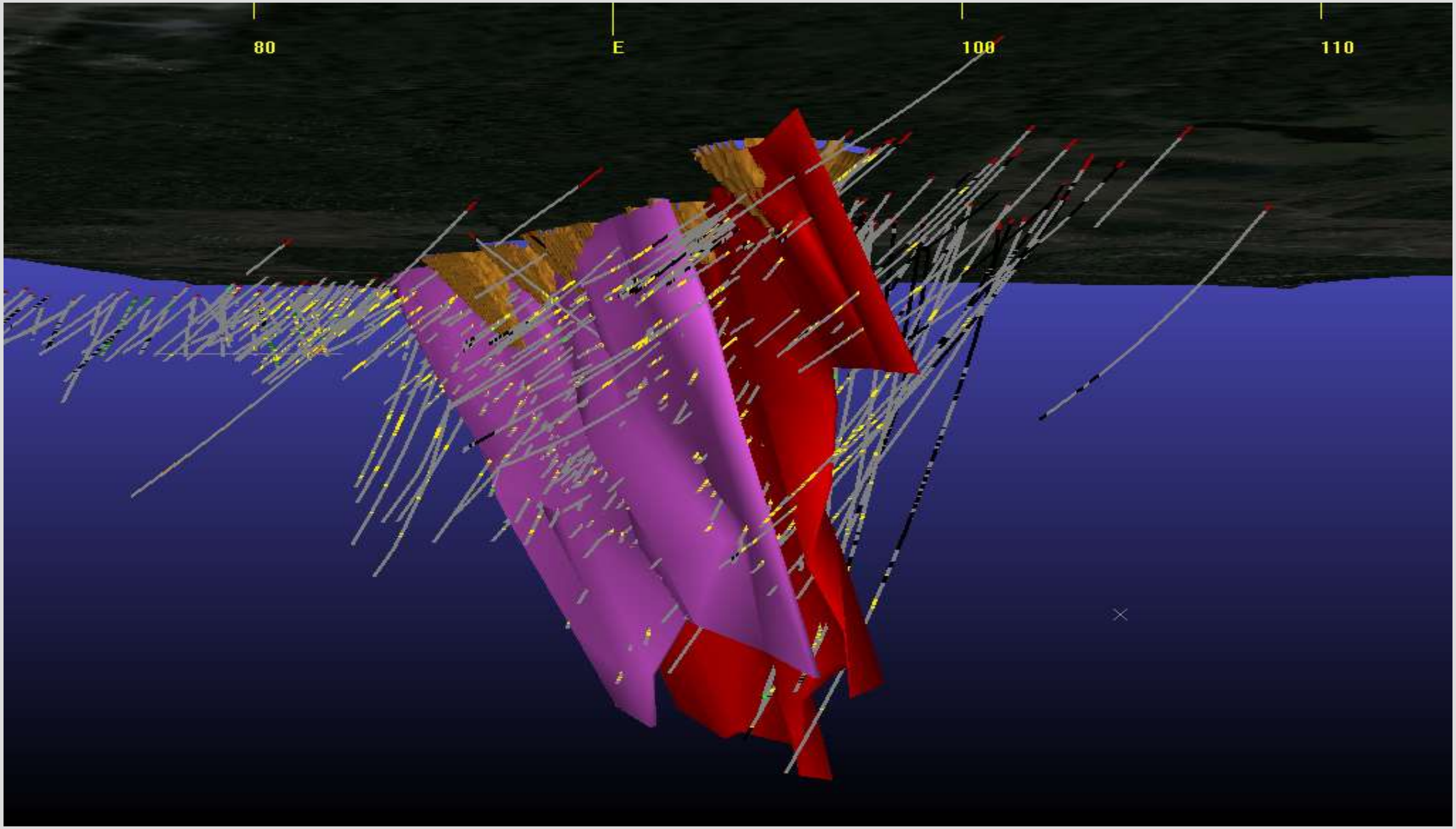
- Annual Gold Prod'n – 98,000+ oz/annum
- Mill Daily Rate - 2700t/d or better
- Capex - $80 - $90 MM
- Total Mine Life - 10 – 12 years (5 open pit/ 5 UG)

TREASURY METALS – PROJECTED VIEW

PITS



UNDERGROUND IMAGE

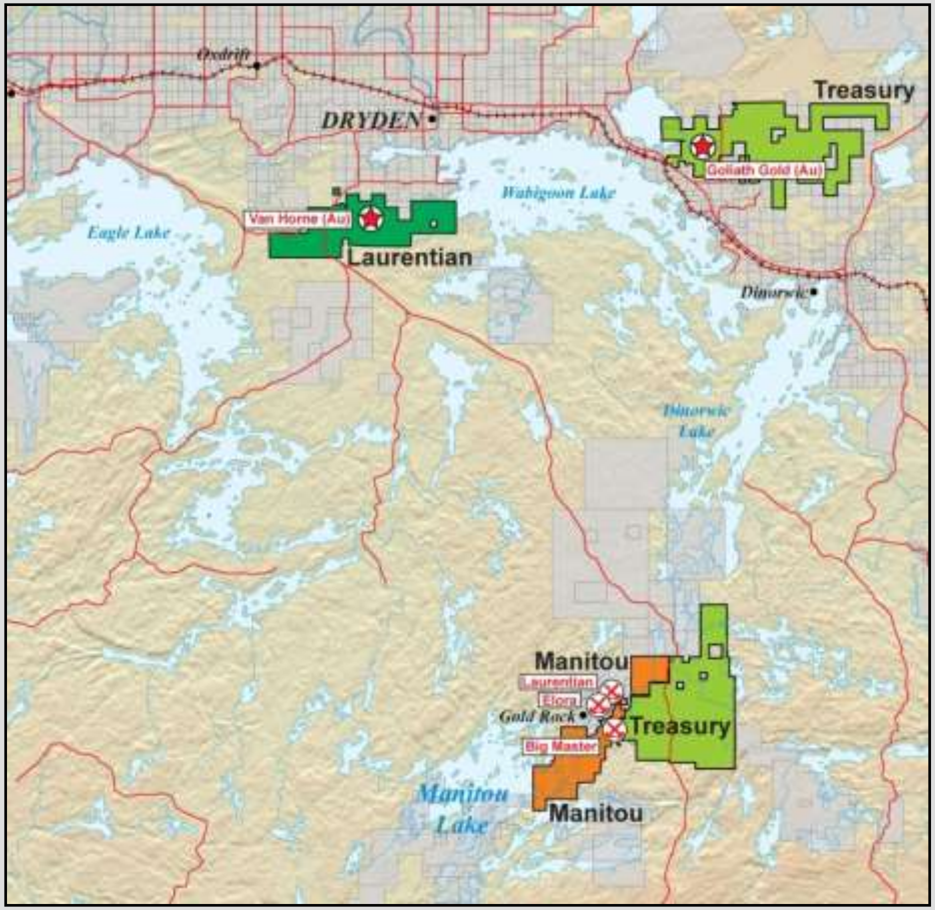


GOLDCLIFF PROJECT | A NEW GOLD DISCOVERY

- New gold discovery that covers 42 km^2

- Goldcliff property is contiguous to Mantiou Gold (reported 53.7 kg per tonne au over a core length of 0.55 m)

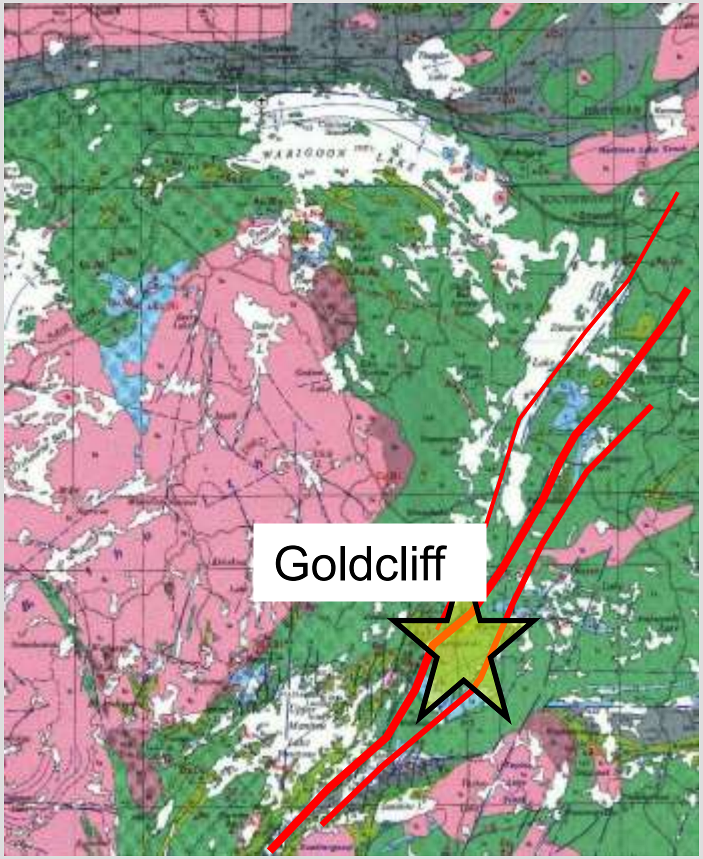
- Several gold showings
  - Assays up to 106.4 g/t Au



GOLDCLIFF PROJECT | OUR PLANS

- Exploration
  - Field based mapping (alteration/structures)
  - 2012 Drilling Program started in October 2012

Visible gold from 2010 field mapping



MINING SEQUENCE: EXPLORATION STAGES AND MINING CYCLE

STAGE 1	2	3	4	5
Exploration	Development	Construction and Training	Mining and Processing	Reclamation and Closure

Stage 1

Stage 2

Stage 3

"SPENDING MONEY"

"MAKING MONEY"

TREASURY METALS - COMMUNITY FOCUSSED

GOLIATH GOLD MINE – Built in N.W. Ontario by N.W. Ontarians

HIRE LOCALLY

- ✓ Where labour force and skills are available
- ✓ Develop sector specific skills and capacity working with Educational Institutes, First Nations, and other Local Industries

PURCHASE LOCALLY

- ✓ Purchase goods & services from Dryden and local businesses, assuming competitive pricing, service
- ✓ Mine Design & Construction - seek to use N.W. Ontario design & construction services

TREASURY METALS IN DRYDEN & AREA

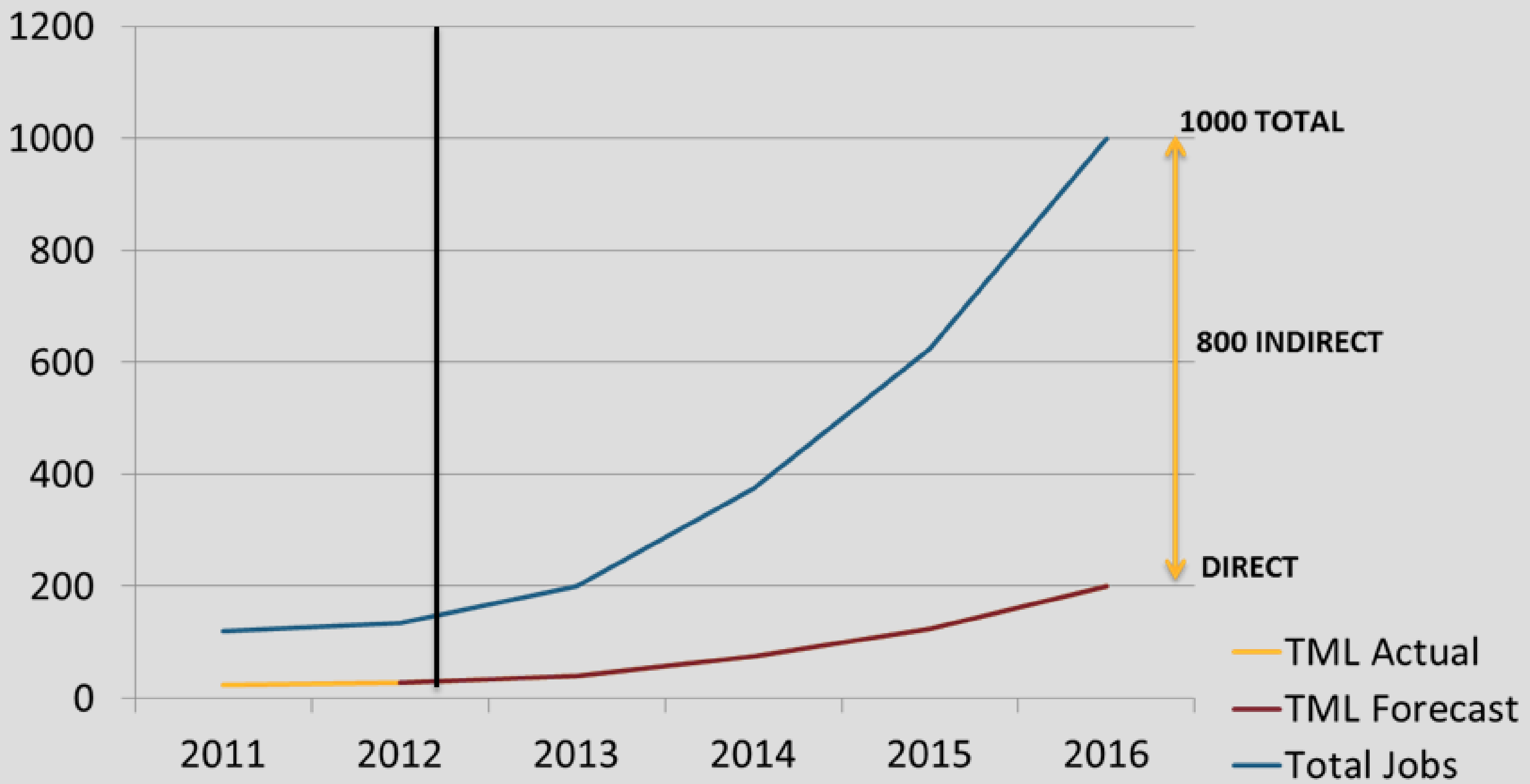
Social and Economical Impacts

	Current	Future (Projected)
▪ Direct Employment	21	200
Indirect Employment Impact (4:1 Multiplier)	80	800
Total Employment Impact	100	1000

TML Total Vendor Spending 2011	$ 7.4 Million
Northwest Ontario	4.9 Million (Locally)

IN 2011 TML SUPPORTED OVER 75 NORTHWESTERN ONTARIO BUSINESSES WITH OVER 60 DRYDEN BASED.

TREASURY METALS TIME PROJECTION

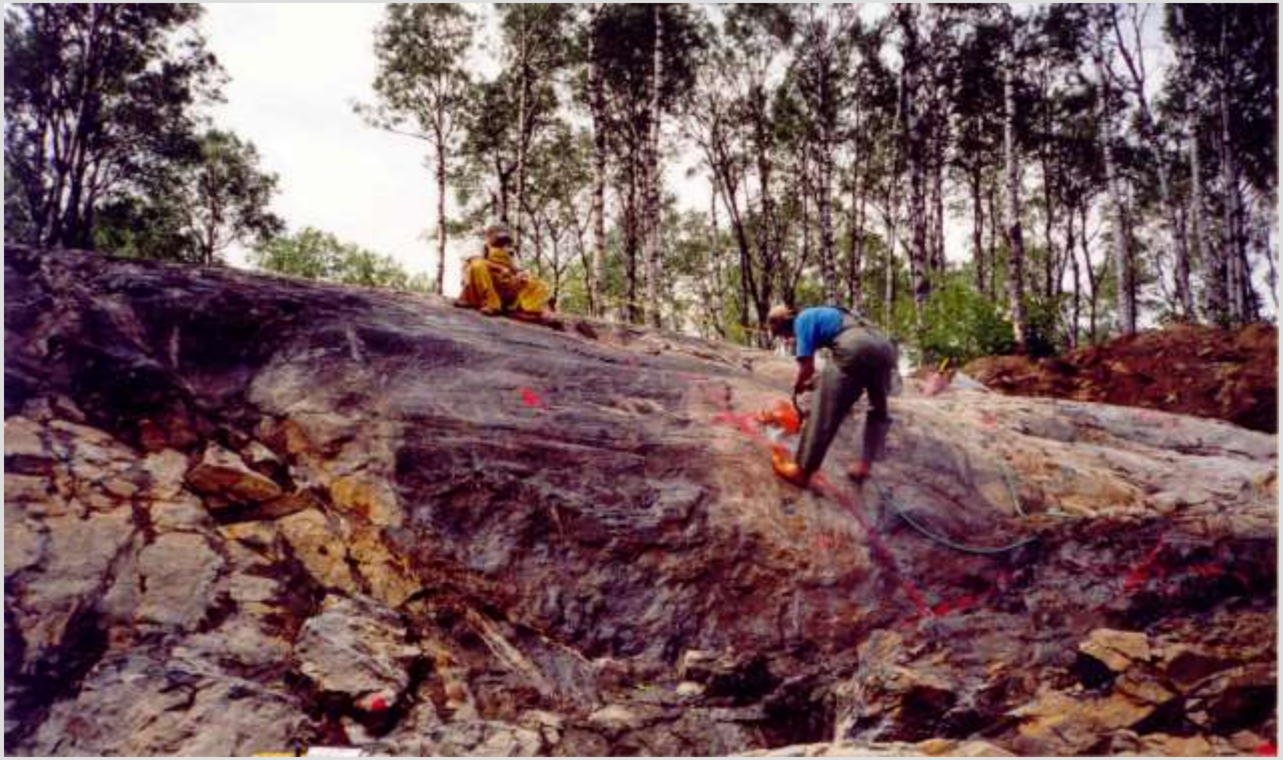


EMPLOYMENT OPPORTUNITIES: EXPLORATION

Prospecting

Getting out there

EXPLORATION TECHNIQUES



Trenching

Scratching the Surface

EXPLORATION TECHNIQUES: DRILLING

EMPLOYMENT: FIELD TECHNICIANS – LOGGING CORE

INVENTORY MANAGEMENT

EMPLOYMENT OPPORTUNITIES: MINE OPERATION

- ✓ Underground Miner
- ✓ Ore Processing Plant Operator
- ✓ Heavy Duty Equipment Operator*
- ✓ Heavy Duty Equipment Technician*
- ✓ Multi-Trades Craftsperson's*
  (Pipefitter/Industrial Millwright Mechanic/Welder)
- ✓ Assay Lab Technician
- ✓ Instrumentation and Control Technician*
- ✓ Industrial Electrician*
- ✓ Environmental Technician
- ✓ Safety Professional

* INDICATES NEED FOR JOURNEY PERSON TICKET/OR MTCU TRANSCRIPT

TREASURY METALS – JOB QUALIFICATIONS

JOB	GRAD E 12	COLLEGE DIPLOMA	UNIVERSITY DEGREE	TRADES CERTIFICATION	OTHER
FIELD TECHNICIAN	√				
UNDERGROUND MINER	√				√
ASSAY LAB TECH	√				
HEAVY EQUIPMENT OPERATOR (MTCU Transcript)	√				√
ADMINISTRATIVE TECH	√	√			
ENVIRONMENTAL TECH	√	√			
HEAVY DUTY EQUIPMENT TECH (MTCU)	√	√		√	
ELECTRICAL/INSTRUMENTATION & CONTROL TECHNICIAN (MTCU)	√	√		√	
MULTI-TRADES CRAFTSPERSON (MTCU)	√	√		√	
GEOLOGIST	√		√		
MINE ENGINEER	√		√		
MINE MANAGER	√		√		

TREASURY METALS – BASIC HIRING CRITERIA

BASIC REQUIREMENTS	**REASONS**
✓ MINIMUM GRADE 12/GED	- Higher level Education for Specialized (Including Gr 11/12 Math & English) - Specialized Skills Requirements, use of Technology - Comprehension, Report Writing
✓ VALID DRIVERS LICENCE	- Drive company vehicles on and off road
✓ PRE-EMPLOYMENT DRUG TEST	- Safety for Self and Others - Working with Heavy Machinery/Equipment
✓ CRIMINAL BACKGROUND CHECK	- Screen-out Undesirables - Reduce risk to Employees/Property - Harassment Free Workplace

NOTE: ALL TRAINING THROUGH RECOGNIZED TRAINING INSTITUTE OR MTCU.

GOLIATH GOLD PROJECT | PROGRESS TO DATE

- **Expanded the NI 43-101 Resource** calculation to 1.7 million ounces Au (in 2011)
- **Preliminary Economic Assessment** completed by A.C.A. Howe in 2010
  - Validated project potential and its economic viability.
  - Updated PEA completed in August 2012, supported 2010 PEA conclusions.
  - Detailed Project Description (PD) being developed for submission in October of 2012.
- **2012 exploration drilling program underway at Goliath site.**
- **Limited 2012 early exploration drilling program underway at Goldcliff site.**
- **A project schedule has been developed to bring the resource into production.**
- **Current employee base of 21 people in 2012 to support the project activities and schedule.**

SUMMARY

- TML has put together strong corporate and site teams to develop the Goliath project
- TML is staffing up to support the environmental permitting, engineering and project management activities needed to build a mine
- TML is committed to working closely with our local Communities.
- TML is committed to forging partnerships with local First Nations Bands and Metis Nation of Ontario
- Key project focus areas – **SAFETY, ENVIRONMENT**
- Treasury Metals' Goal is to be,

Partners in Economic Development with our local Municipalities, First Nations communities and the Metis Nation of Ontario

QUESTIONS?

For more information about us, please visit our website at
www.treasurymetals.com

TREASURY METALS

Environmental Program and Permitting

Oct. 30, 2012

www.treasurymetals.com

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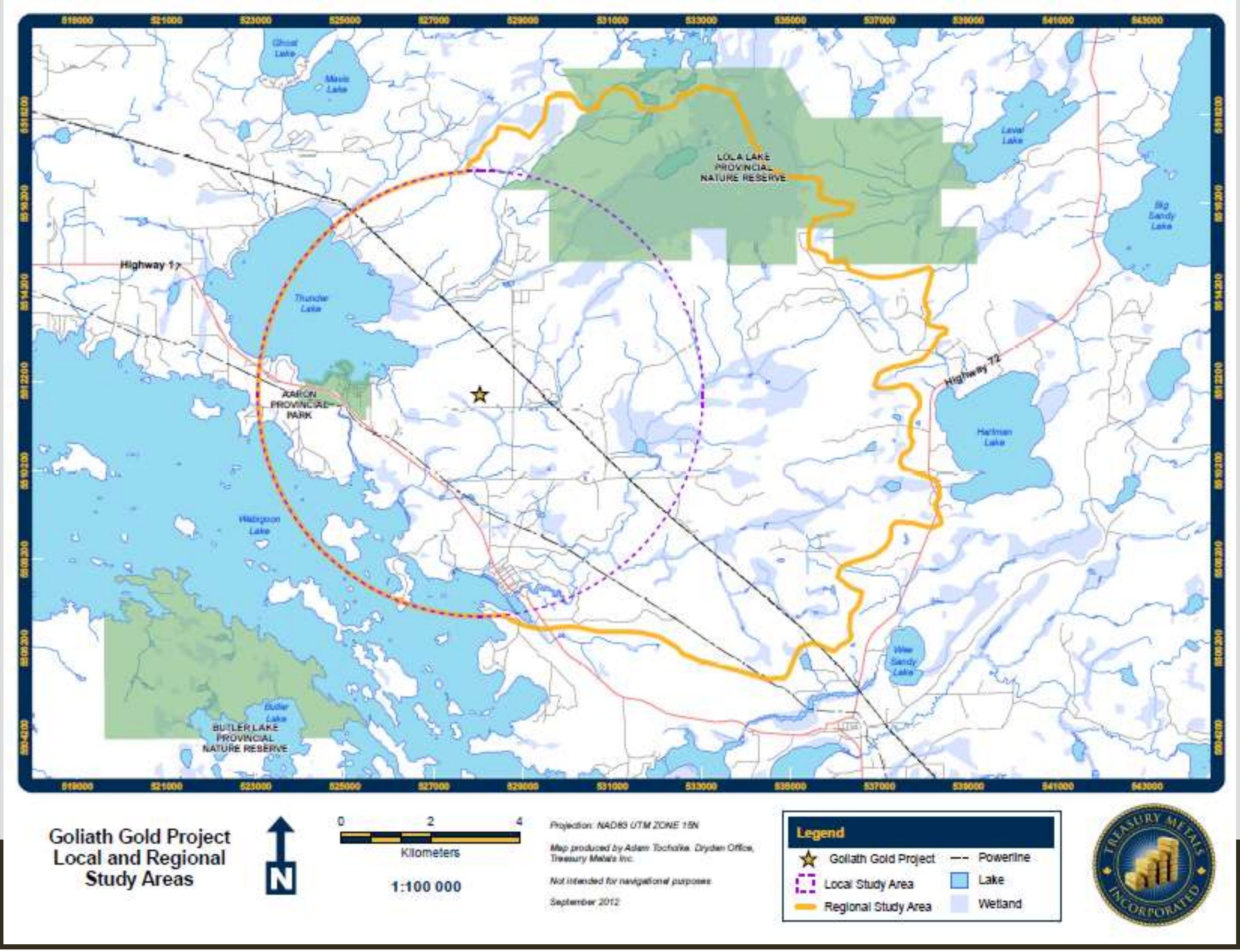
GOLIATH GOLD PROJECT

- Baseline Study Review
- Environmental Assessment Process and Permitting
- Questions?

BASELINE PROGRAM - OVERVIEW



BASELINE PROGRAM – **WHY?**

- Baseline study is completed to:
  - Achieve an understanding of the natural environment before beginning development.
  - Support mine development.
  - Support successful monitoring and closure plans.

BASELINE PROGRAM – 2010 - 2011

- Klohn Crippen Berger (KCB) reports received September 2012
- KCB work has been reviewed by Federal Government (CEAA, DFO), and Provincial Government (MOE, MNR) with positive feedback.

BASELINE PROGRAM – CURRENT

+ 2012 fieldwork has been completed with operational team of DST, TBT, AMEC, EcoMetrix and Treasury Metals personal.

  – Primary studies include:
    - Surface Water and Hydrology
    - Aquatics and Fisheries
    - Terrestrial Wildlife
    - Weather
    - Soils and Vegetation
    - Hydrogeology
    - Geochemistry
    - Geotechnical

TBT ENGINEERING CONSULTING GROUP
DST consulting engineers
EcoMetrix INCORPORATED
amec

BASELINE PROGRAM – SURFACE WATER & HYDROLOGY

- KCB began program in November 2010.
- Surface water sampling program has been upgraded from original size to **15 sites**, including Thunder Lake and Wabigoon Lake.
- Sampling currently is occurring monthly.
- Water flow conditions are being monitored and are measured every 2-3 weeks **and** after heavy storm events.

BASELINE PROGRAM – HYDROLOGY

BASELINE PROGRAM – AQUATICS AND FISHERIES

- KCB conducted principle fisheries, and aquatics work within the 2010-2011 field seasons.
- Fisheries work has been completed for the 2012 field season.
  - DST served as the lead on the fisheries work. Work included a upgrade of the habitat mapping associated with habitat offsets.
- Benthic invertebrate sampling has been conducted with DST.

BASELINE PROGRAM – AQUATICS AND FISHERIES

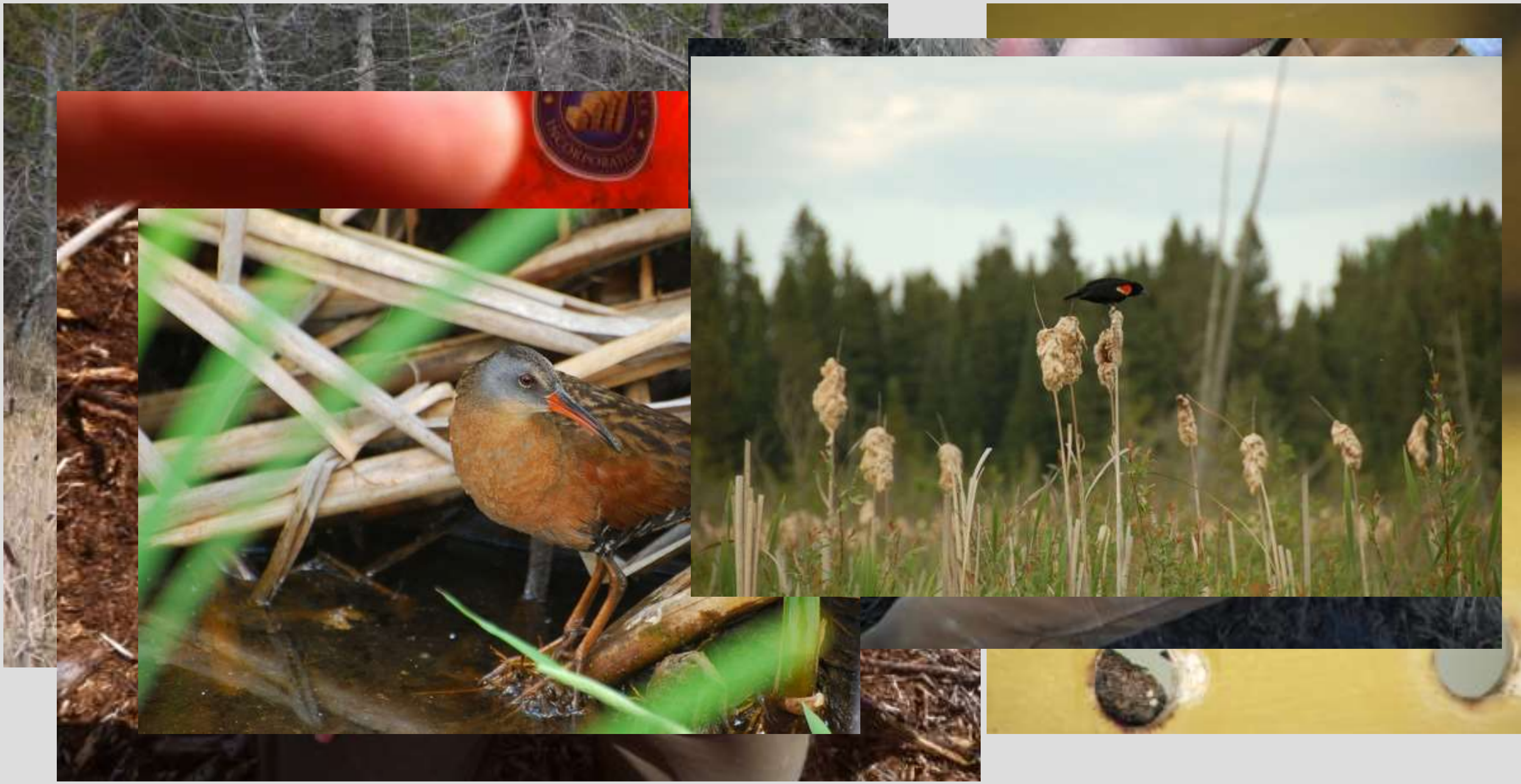
BASELINE PROGRAM – TERRESTRIAL WILDLIFE

- KCB completed surveys within the 2010-2011 field seasons. This included bird, amphibian, reptile, and mammal studies.
  - Work competed includes:
    - Forest Bird, and Songbird Survey
    - Migratory Bird Survey
    - Marsh and Waterfowl Survey
    - Whip-Poor-Will, Bobolink, and Common Nighthawk Survey
    - Bald Eagle Survey
    - Amphibian, and Reptile Survey
    - Mammal Encounter Survey
    - Bat Survey
    - Habitat Assessment

BASELINE PROGRAM – TERRESTRIAL WILDLIFE

- DST has been the lead within the 2012 field season with Treasury aid.
  - Work completed includes:
    - Songbird Survey and Monitoring
    - Whip-Poor-Will, and Common Nighthawk Surveys
    - Waterfowl, and Marsh Bird Surveys
    - Amphibian, and Reptile Encounter Survey, and Monitoring
    - Bat Survey
    - Small Mammal Survey
    - Large Mammal Encounter Survey

BASELINE PROGRAM – TERRESTRIAL WILDLIFE



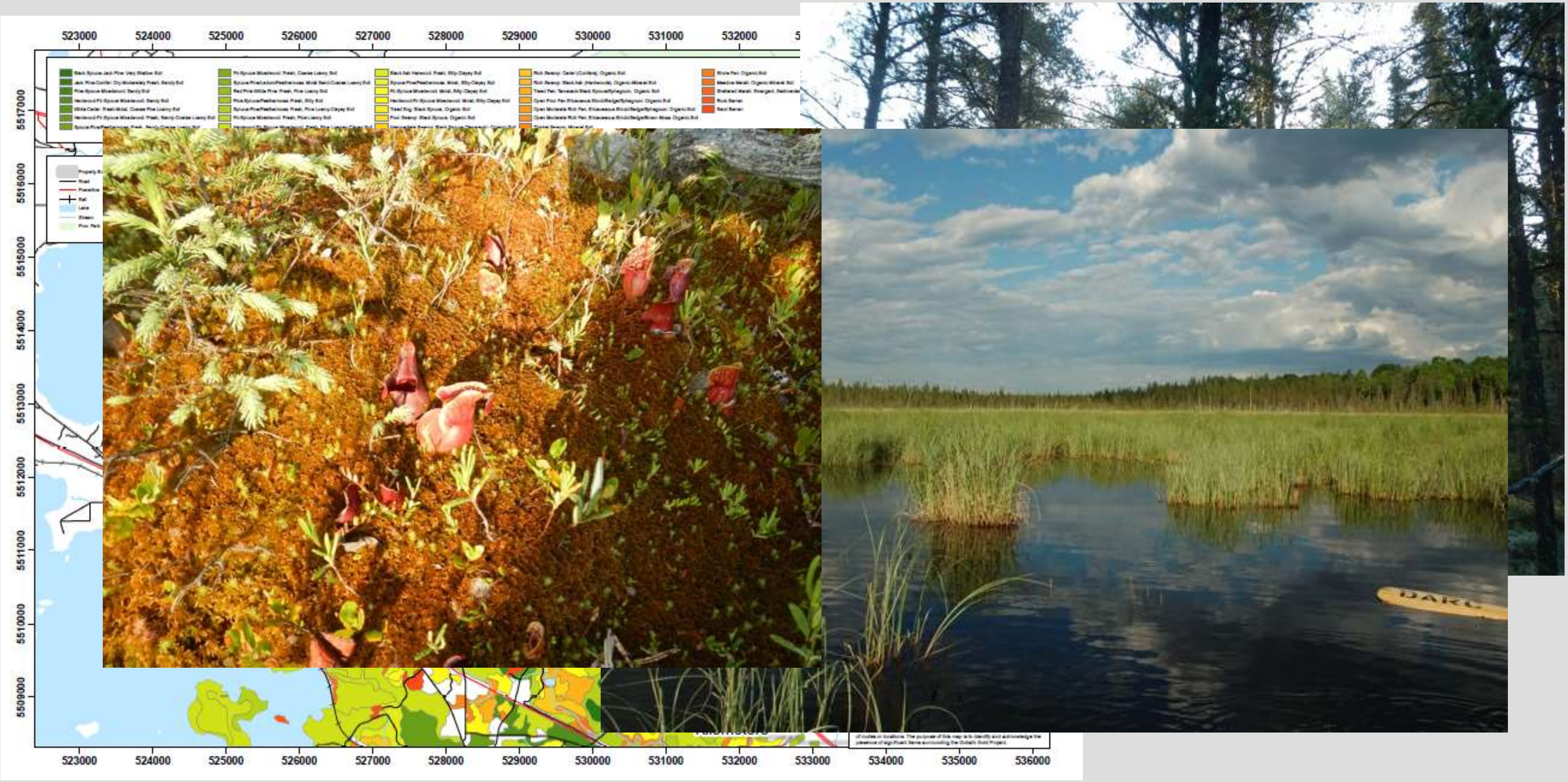
BASELINE PROGRAM – WEATHER

- KCB and RWDI have completed principle desktop studies using Environmental Canada stations within 100 km of project, and Dryden Airport.
- Weather Station installed with aid of Signal Weather on site and is operational; the temperature yesterday on site was: -2.31°C at 12 PM

BASELINE PROGRAM – SOILS AND VEGETATION

- KCB conducted principle soil studies within 2010 field season. This included a number of pit logs and chemical analysis of soil.
- KCB completed vegetation surveys within the 2010-2011 field programs. Targeted surveys were completed in June, July, and August 2011.
- Within 2012 field program DST and Treasury personal will continue to note vegetation and FRI inventory has been acquired for targeted survey areas.

BASELINE PROGRAM – SOILS AND VEGETATION



BASELINE PROGRAM - GEOCHEMISTRY

- Initial Acid Base Accounting (ABA) done with KCB during 2011 Study.
  - Low sulphide content in general, with higher concentrations in Gold bearing Material
  - Possible Acid generating material, with recommendations for further study.
- Commenced further study with EcoMetrix in 2012.
  - Will continue ABA, Metal Leaching and Neutralization Potential on 80 additional samples from various zones of the main resource.
  - Will also test process solids and decant from metallurgical testing.
  - Treasury personal will test and sample field cells.
- Geochemistry studies will allow for calculated management (chemistry, volume) of Acid Rock Drainage (ARD).

BASELINE PROGRAM - GEOCHEMISTRY

BASELINE PROGRAM - HYDROGEOLOGY AND GEOTECHNICAL

- Commenced detailed Hydrogeological Study with AMEC and TBT in 2012.
  - Approximately half complete with final results for 4th quarter of 2012.
- Detailed geotechnical study will also be completed within 4th quarter of 2012.
  - Will conduct overburden sampling in the Waste Rock Storage and Tailings Storage facilities.

BASELINE PROGRAM - HYDROGEOLOGY AND GEOTECHNICAL

BASELINE PROGRAM - SUMMARY

- Comprehensive baseline study work has been ongoing since Nov. 2010 with various environmental consultant companies.
- Treasury is continuing to complete the environmental baseline work necessary to support mine development and closure plan submission.

ENVIRONMENTAL ASSESSMENT PROCESS AND PERMITTING

- **Federal**
  - Canadian Environmental Assessment Agency (CEAA)
    - Triggers include a Gold mine processing greater than 600 tonnes per day and the potential to disturb fish habitat.
    - Environmental Impact Study will be completed as part of federal regulations.
- **Provincial**
  - 40 + provincial permits may be required.
  - EA Process will follow Provincial Regulations (Individual or Class EA).

Environmental Assessment and Permitting process on schedule

QUESTIONS?

TREASURY METALS INCORPORATED

TMI_13-PC(1)-01_Attachment_2

TREASURY METALS

Mine Planning and Engineering

Oct. 30, 2012

www.treasurymetals.com

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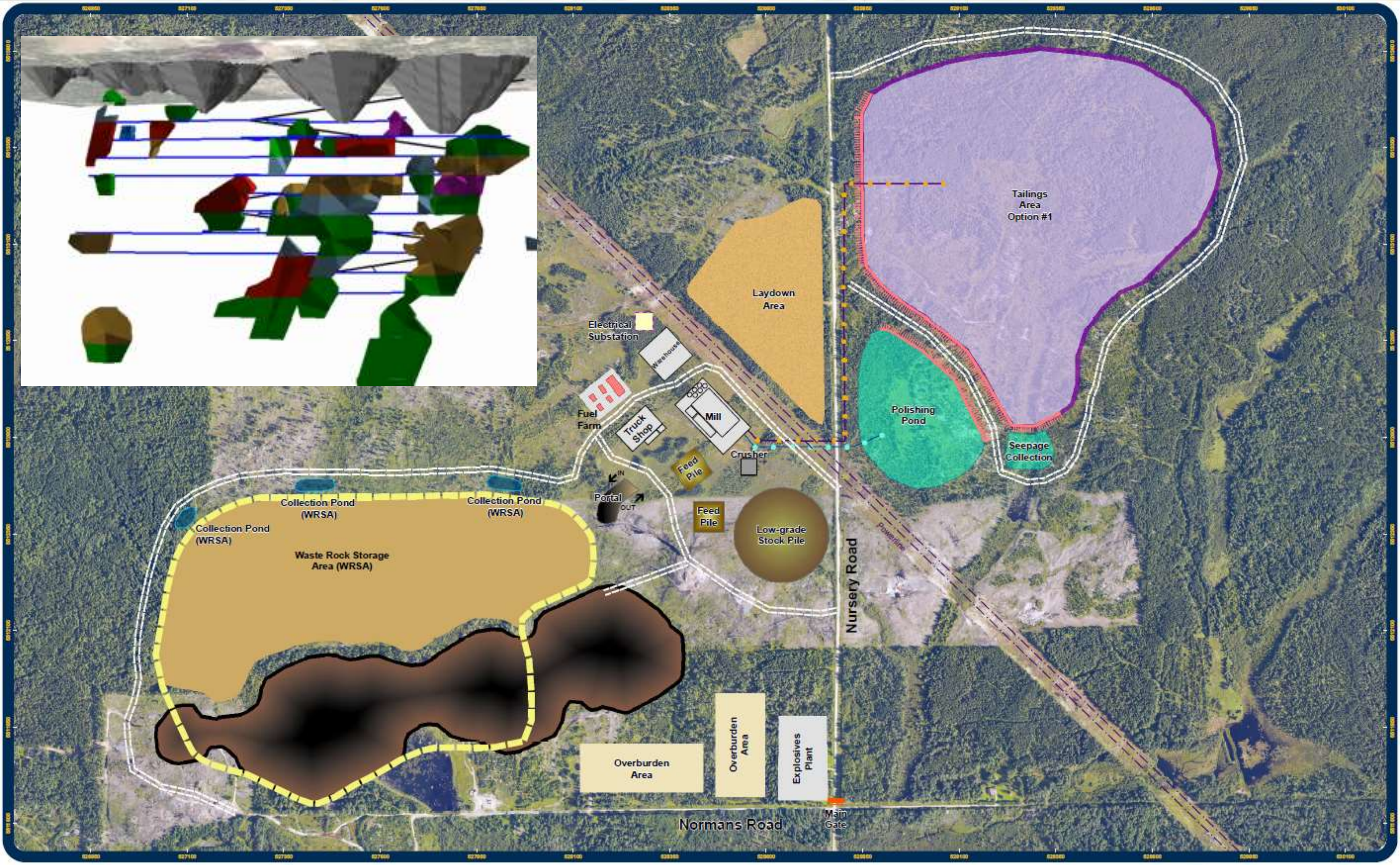
GOLIATH PROJECT

- Mine Layout - Open Pit and Underground
- Processing Plant
- Project Timeline
- Questions?

GOLIATH GOLD PROJECT – HIGHLIGHTS

- Open pit and Ramp Access Underground Mining, Approx. 10+ year Mine life.
- Waste Rock storage of approx. 25 MM tonnes, remainder to be backfilled into pits. Approx. 9:1 Stripping Ratio
- 2,500 TPD C.I.L. Mill. Mill discharge reporting to Tailings Storage Facility for treatment.
- Very Near to infrastructure. Few roads to be built. Easy electrical power access, natural gas access.
- Small Footprint, Suitable office/warehousing infrastructure currently in place.



Goliath Gold Project Detailed Site Map

N

0 200 400 600
Meters

1:4,000

October, 2012

Waste Rock Before Backfill	Dam	Proposed Access Road
Waste Rock After Backfill	Reclaim Line	Local Road
Waste Rock Collection Pond	Tailings Line	Security Gate

Projection: Nad83 UTM ZONE 15N

Map Produced by Adam Tocholke. Dryden Office, Treasury Metals Inc.

Not For Navigational Purposes

TREASURY METALS INCORPORATED


Normans Rd
Image © 2012 DigitalGlobe
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© 2012 Europa Technologies
Google earth


Normans Rd
Nursery Rd
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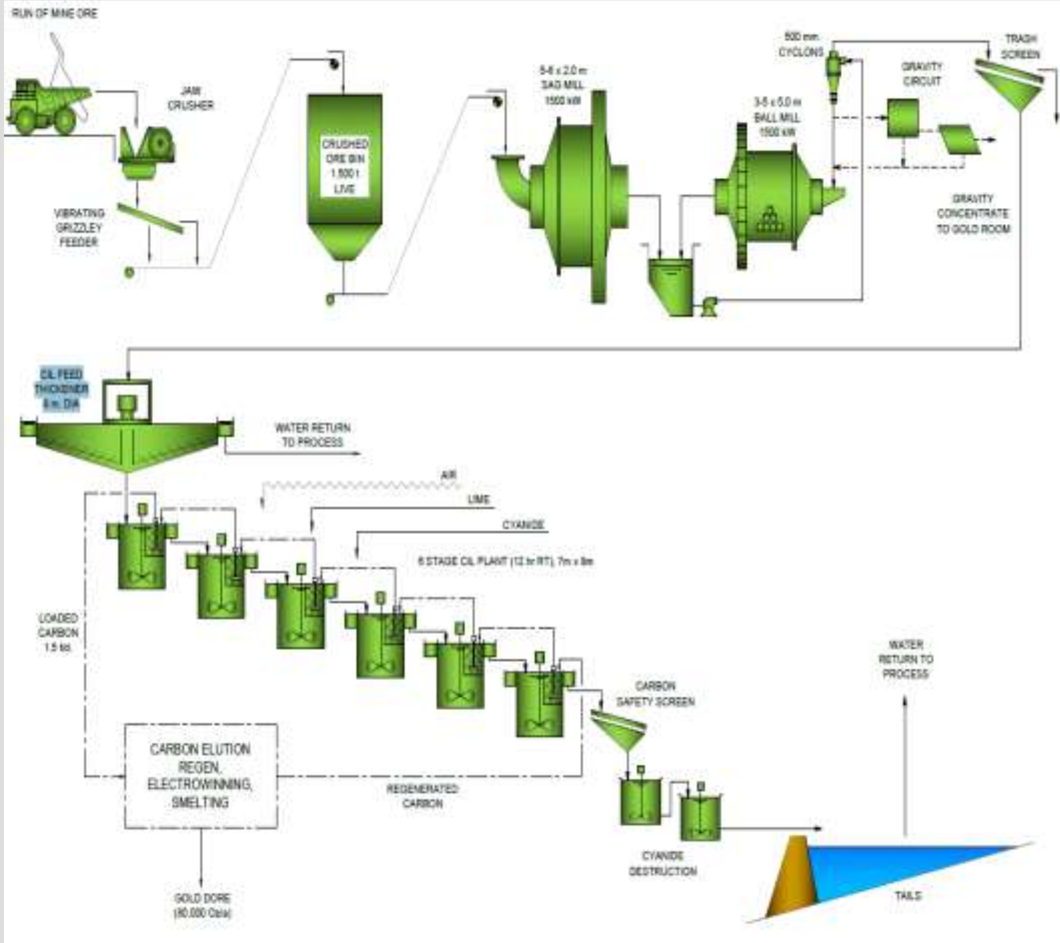
Google earth

PROCESSING PLANT

- High recoveries by Gravity Separation, remaining recoveries by Carbon In Leach using cyanidation
- Extremely low leach times with low concentrations of Cyanide
- 2,500 tonnes per day
- High proportion of recycled water



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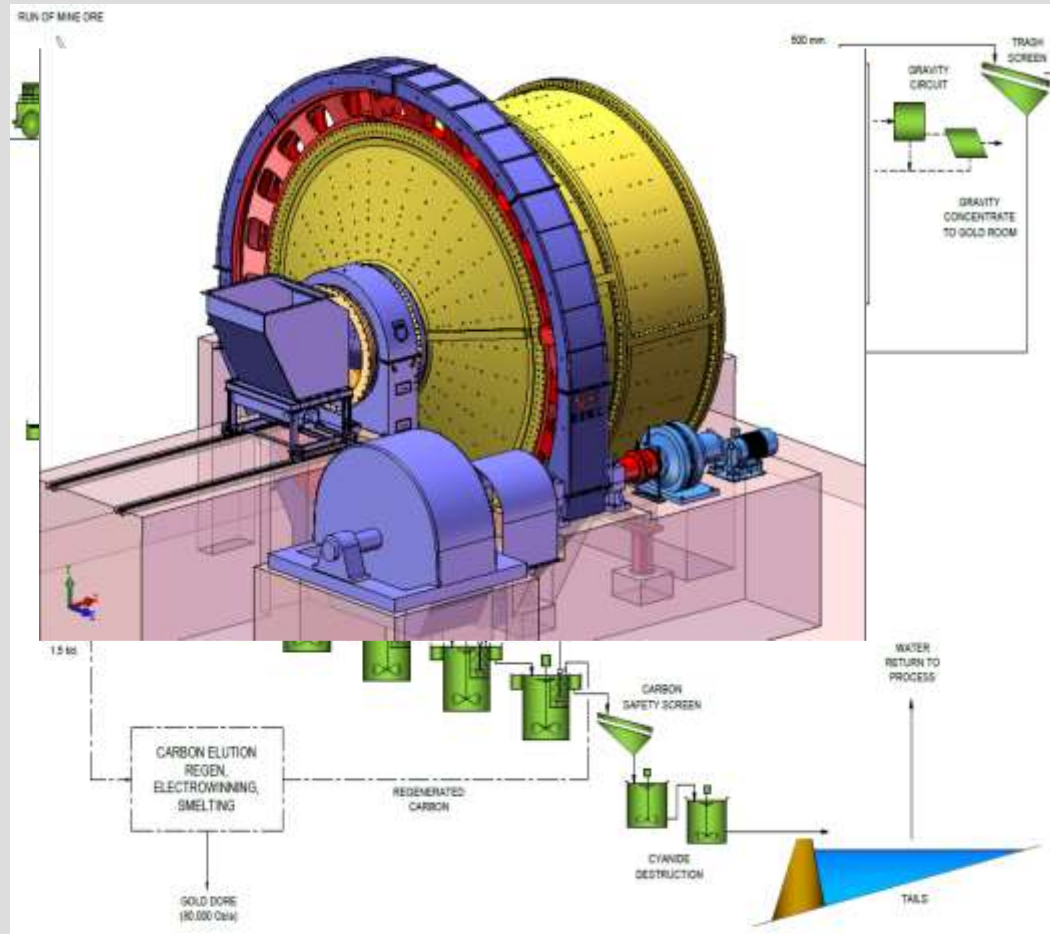

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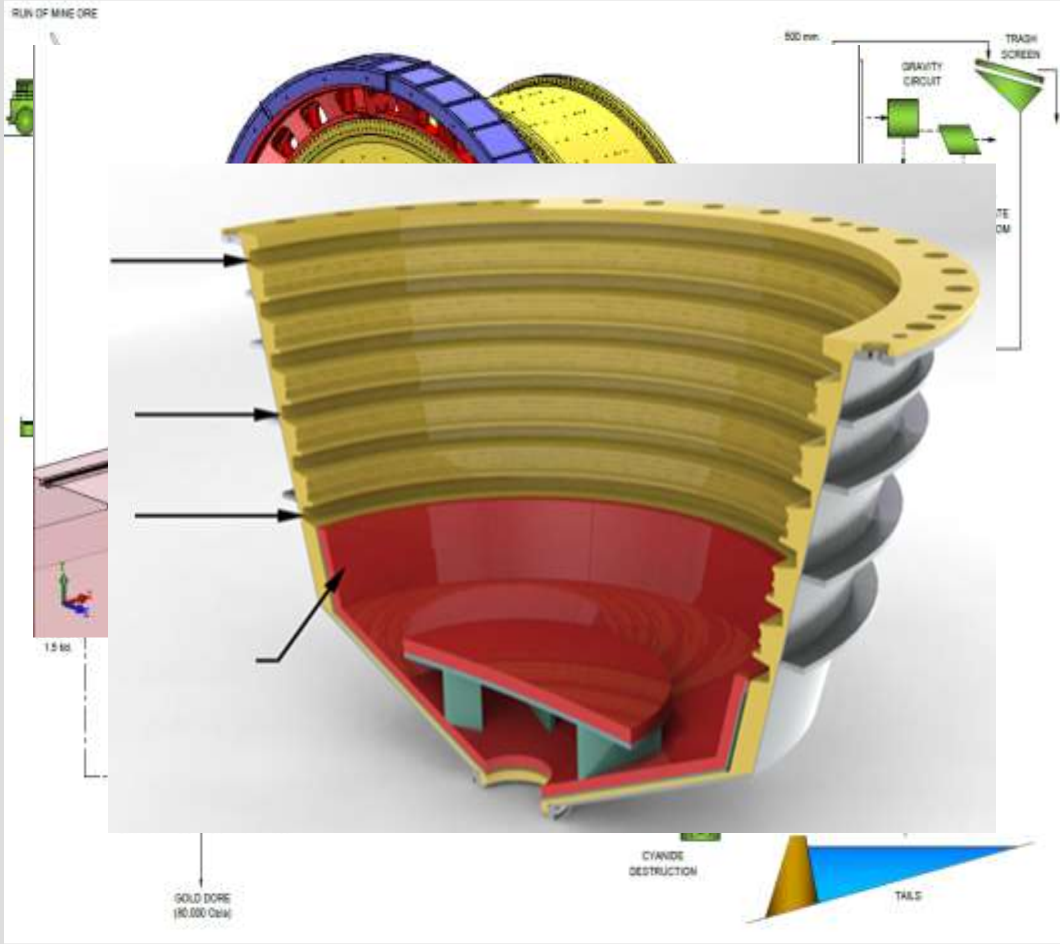

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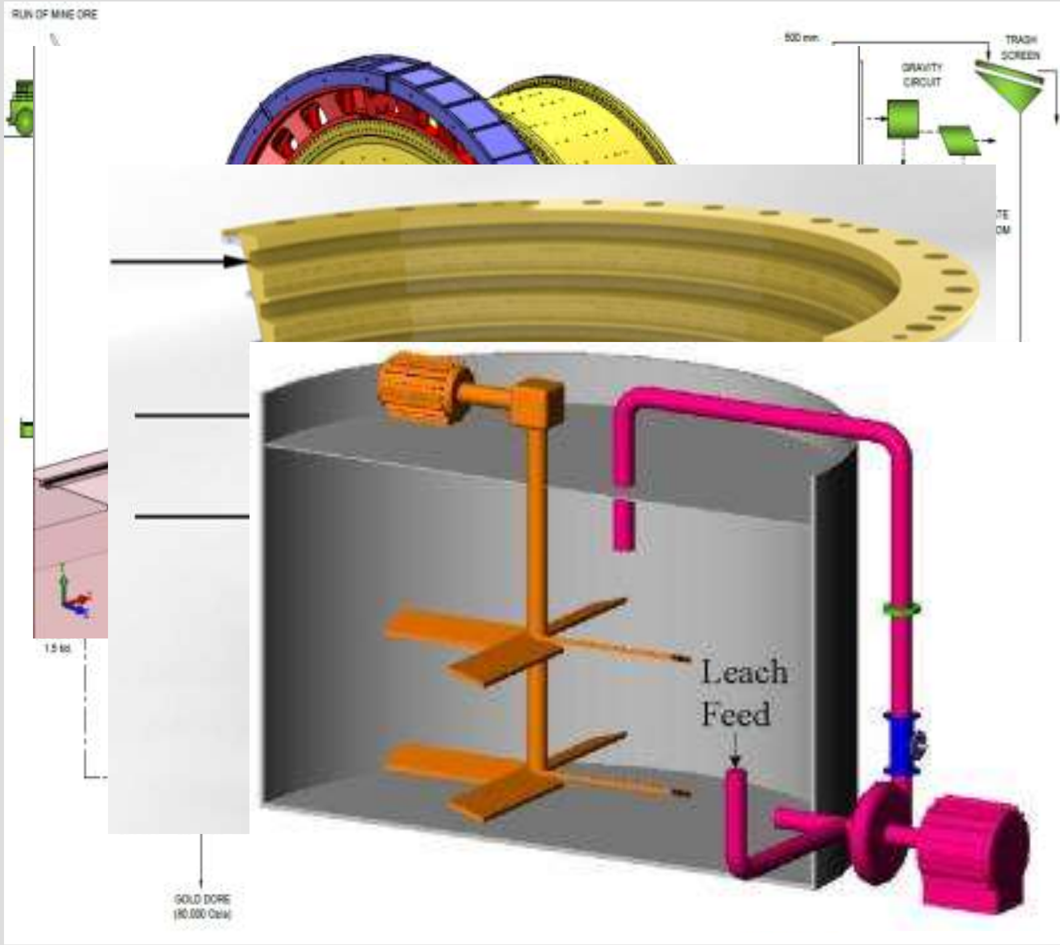
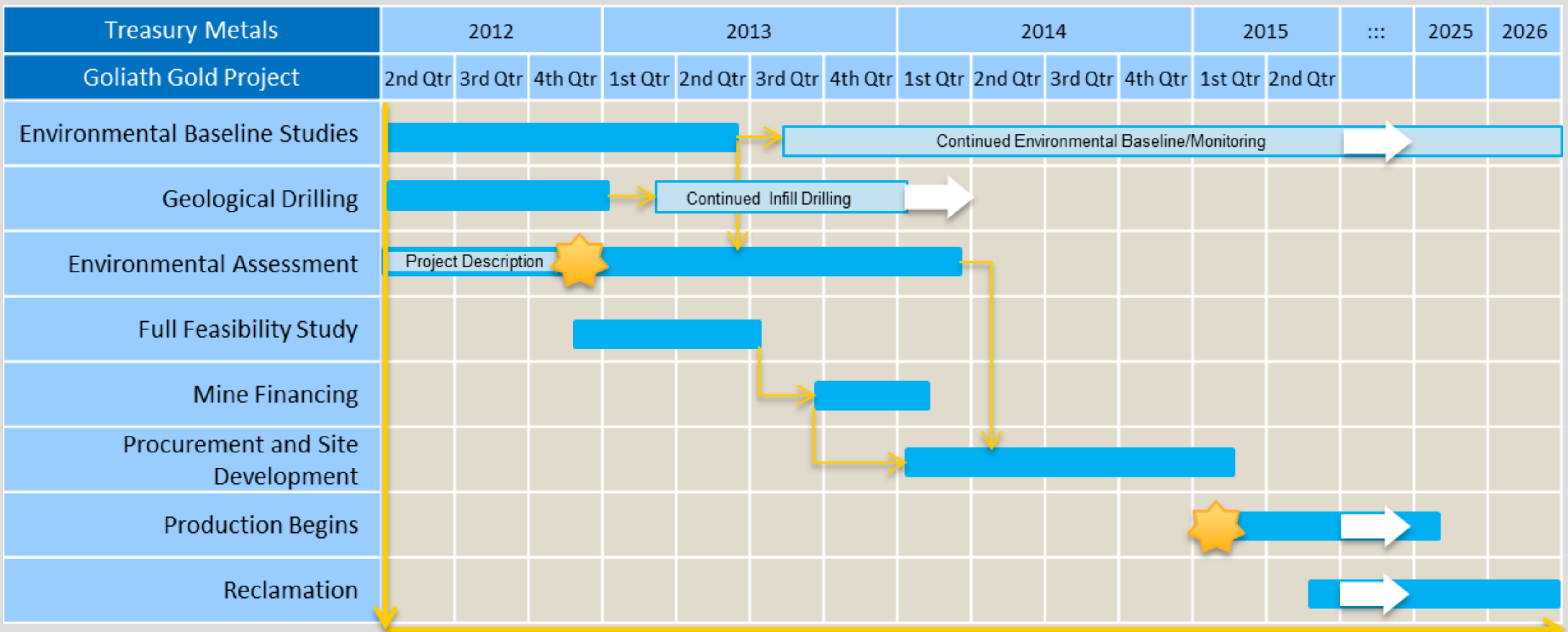


PROCESSING PLANT

- High recoveries by Gravity Separation, remaining recoveries by Carbon In Leach using cyanidation
- Extremely low leach times with low concentrations of Cyanide
- 2,500 tonnes per day
- High proportion of recycled water

- Continue Hydrogeology and Geotechnical programs in parallel with Exploration/Infill drilling program.
- Submit Project description to initiate Permitting Process and E.A.
- Select consultant to Initiate Full Bankable Feasibility with latest metallurgy results.



TREASURY METALS

Thank You!

Questions?

www.treasurymetals.com

TREASURY METALS

Goliath Gold Project

Federal Baseline Review

May 15, 2014

www.treasurymetals.com

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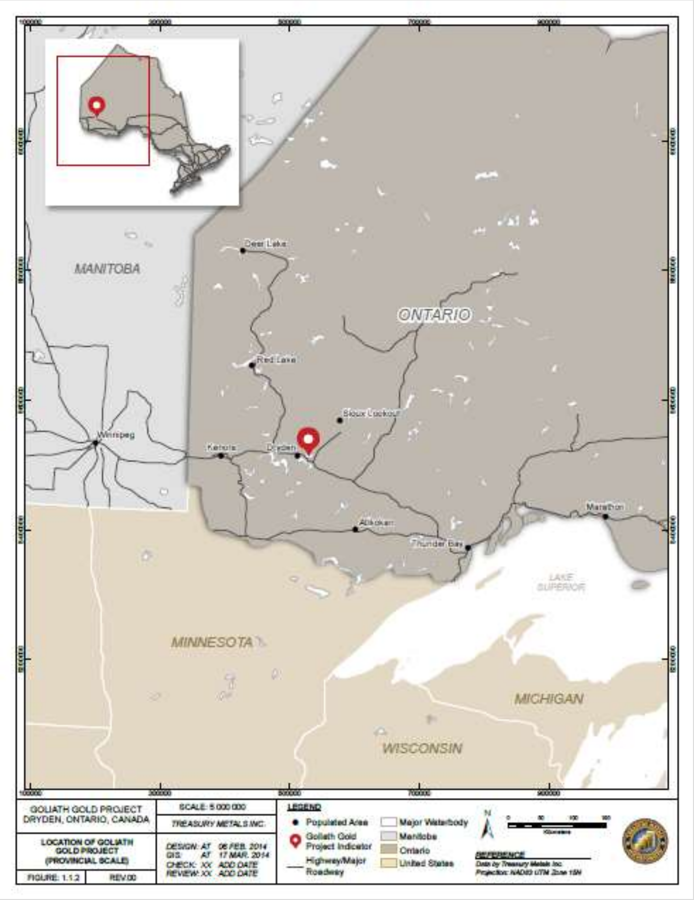
FORWARD-LOOKING STATEMENTS

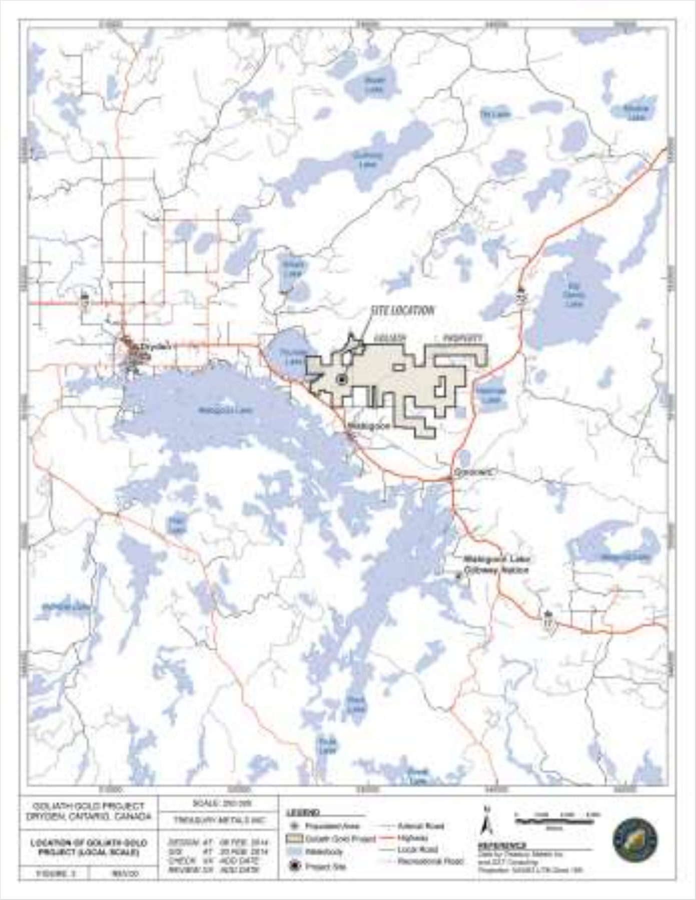
This presentation contains projections and forward-looking information that involve various risks and uncertainties regarding future events. Such forward-looking information can include without limitation statements based on current expectations involving a number of risks and uncertainties and are not guarantees of future performance of the Corporation. These risks and uncertainties could cause actual results and the Corporation's plans and objectives to differ materially from those expressed in the forward-looking information. Actual results and future events could differ materially from anticipated in such information. These and all subsequent written and oral forward-looking information are based on estimates and opinions of management on the dates they are made and expressly qualified in their entirety by this notice. The Corporation assumes no obligation to update forward-looking information should circumstances or management's estimates or opinions change. This presentation contains projections and forward looking information that involve various risks and uncertainties regarding future events. Such forward-looking information can include without limitation statements based on current expectations involving a number of risks and uncertainties and are not guarantees of future performance of the Corporation. These risks and uncertainties could cause actual results and the Corporation's plans and objectives to differ materially from those expressed in the forward-looking information. Actual results and future events could differ materially from anticipated in such information. These and all subsequent written and oral forward-looking information are based on estimates and opinions of management on the dates they are made and expressly qualified in their entirety by this notice. The Corporation assumes no obligation to update forward-looking information should circumstances or management's estimates or opinions change.

GOLD FACTS: $1,300 / OZ

- The consumption of gold produced in the world is about 50% in jewelry, 40% in investments, and 10% in industry.

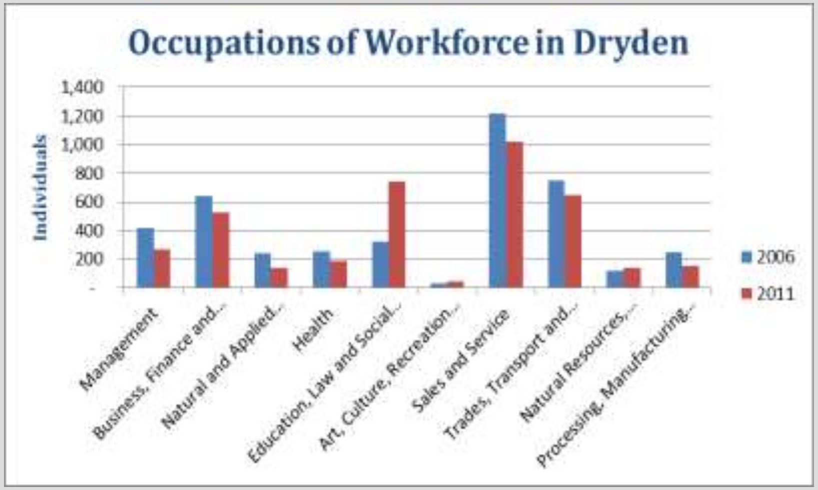
SITE LOCATION





DRYDEN

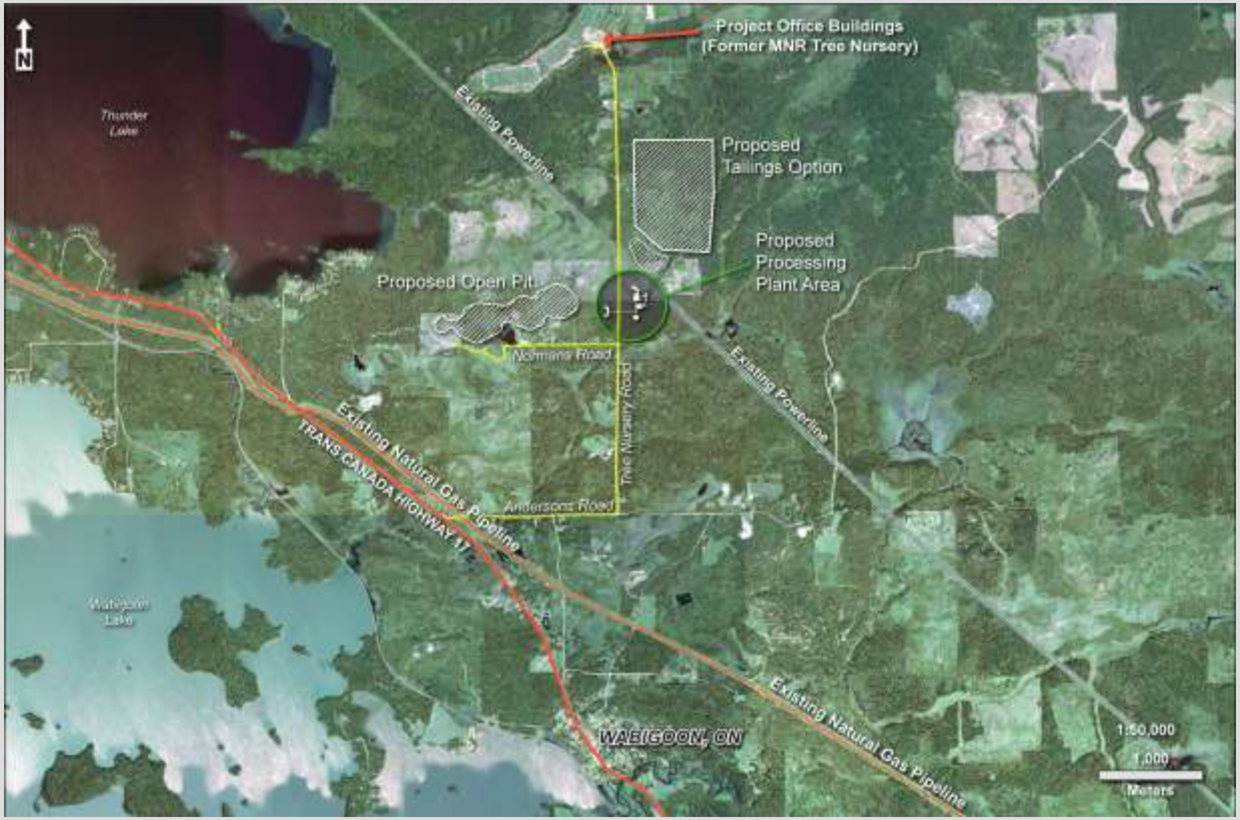
- Population ~8,000, 7.6% unemployment;
- Traditional dependency on forestry, recent closures;
- Transportation and Service Hub on TransCanada highway;
- Significant challenges related to economic restructuring and diversification.



	Dryden		
	2006	2011	% Change
Total Population	8,195	7,617	-7%
Age 0-4	380	335	-11.8%
Age 5-14	1,070	865	-19.2%
Age 15-19	615	540	-12.2%
Age 20-24	465	410	-11.8%
Age 25-44	2,020	1,650	-18.3%
Age 45-54	1,350	1,325	-1.9%
Age 55-64	975	1,075	10.3%
Age 65-74	690	725	5.1%
Age 75-84	445	475	6.7%
Age 85 and over	180	215	19.4%
Median age of population	41.8	45.0	7.7%
Percent aged 15 and over	82.4%	84.2%	2.2%

Source: Statistics Canada, 2006 and 2011 Census Community Profiles

GOLIATH GOLD PROJECT – INFRASTRUCTURE IN PLACE

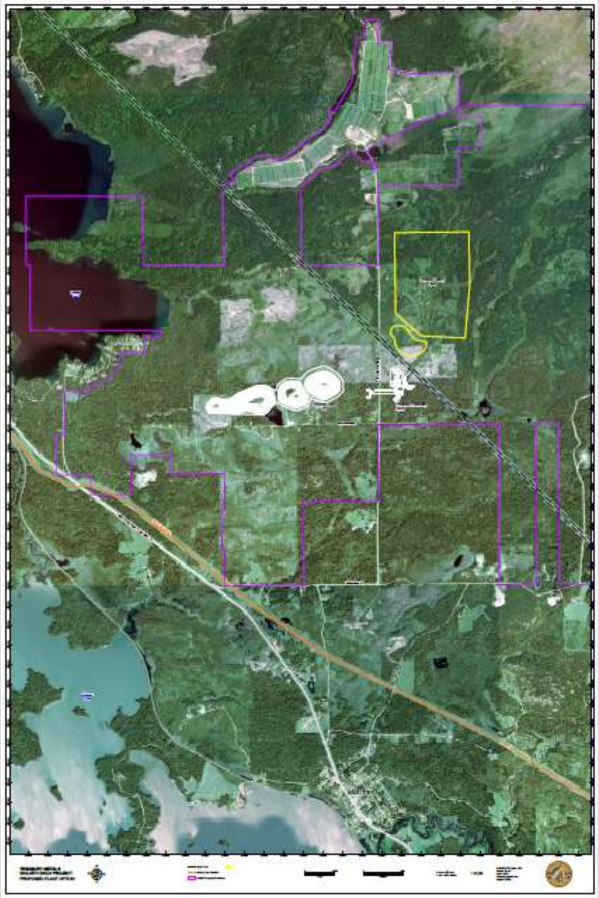


- NW Ontario provides excellent infrastructure – reducing costs.
- Power, local workforce and transportation all readily available.
- Historical industrial offices are now TML's exploration and development site.
- Power sources on-site: gas and electric power lines.

PROJECT TARGETS

- Annual gold production: 98,000+ oz/annum
- Mill Daily Rate: 2700t/d or better
- Capex: $\underset{\sim}{}$ ≃ $ 100 MM
- Total Mine Life: 10 – 12 years (5 open pit/ 5 UG)

GOLIATH SITE PLAN

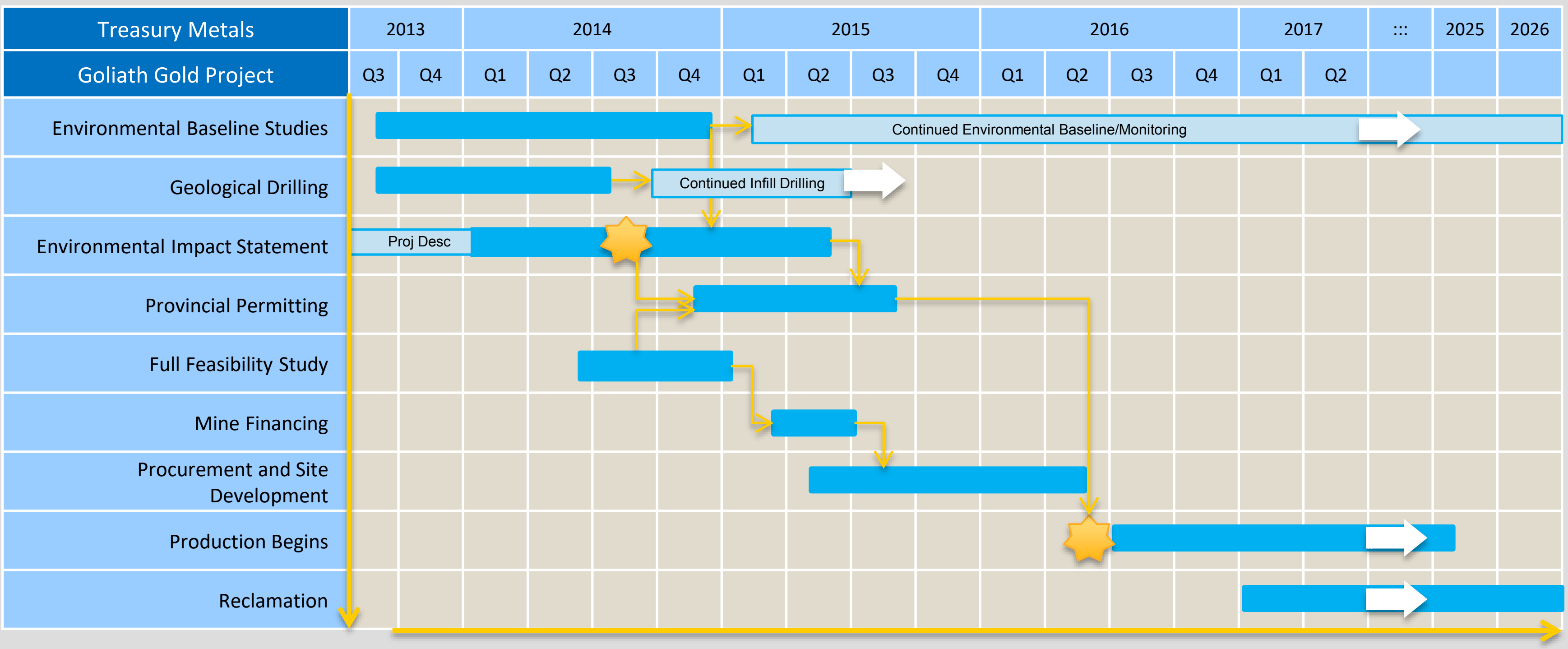


GOLIATH SITE PLAN

MINING PLAN

- >2.8 g/t Au Eq. Open Pit, 3.05 g/t Au Eq Average Mill Feed.
- $1375 Gold Price, 39.3% IRR, $199 M NPV (5%), 2.2 years payback.
- 4.5 Million Tonnes OP, 4.5 Million Tonnes U/G
- 80,000 ounces/year, 2500 t/day milling
- ~$90 Mil CAPEX. Portal and Ramp access development beginning during initial years
- 95% Mining Recovery, 15% Dilution OP, 15% Dilution U/G
- $3.01/t Open Pit Mining Cost, $60/t U/G Mining Cost, $15.81/t Milling cost
- 130-180 m. Final Pit depth. 500-600 m. Underground Depth

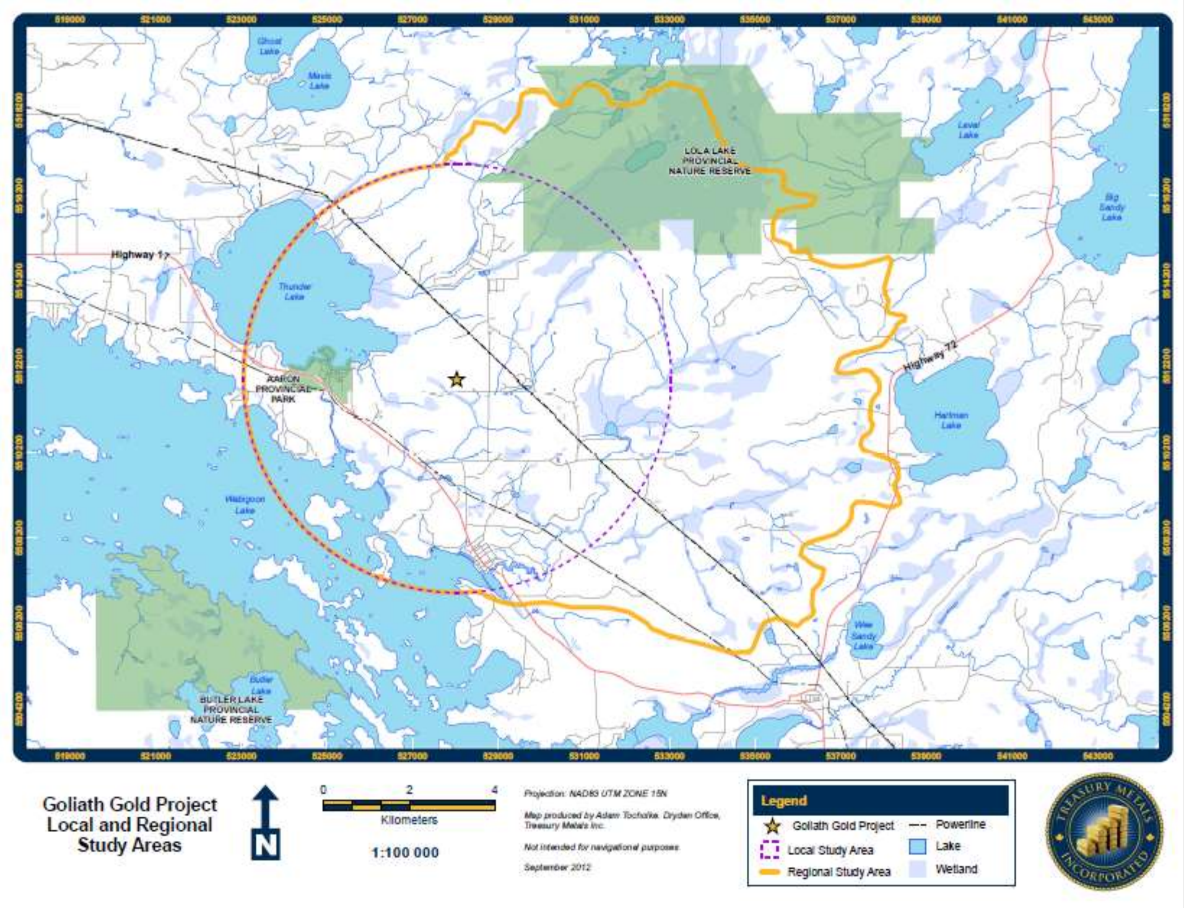
GOLIATH GOLD PROJECT – PROJECT TIMELINE



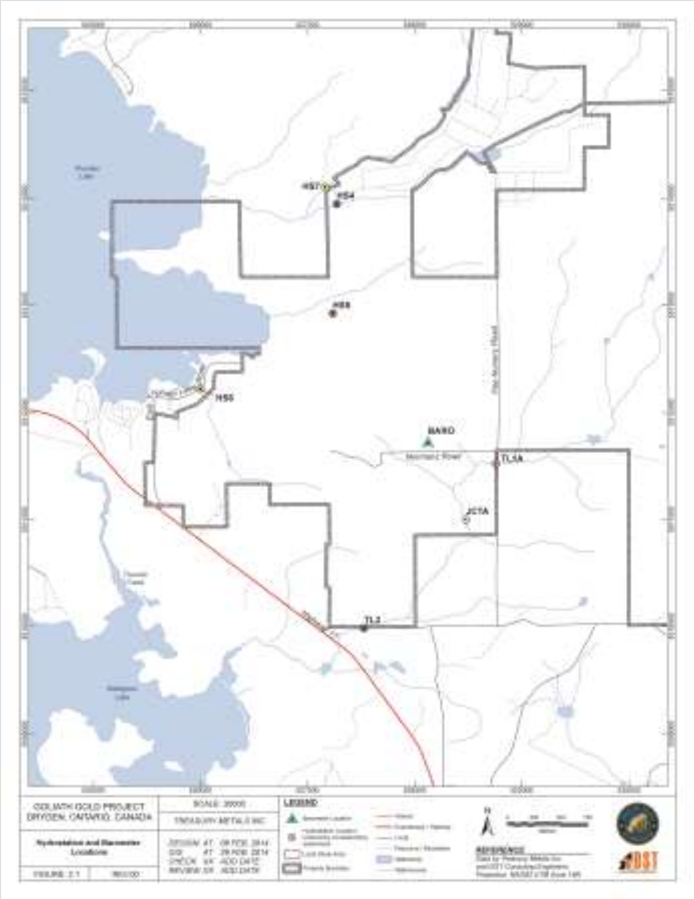
BASELINE STUDIES

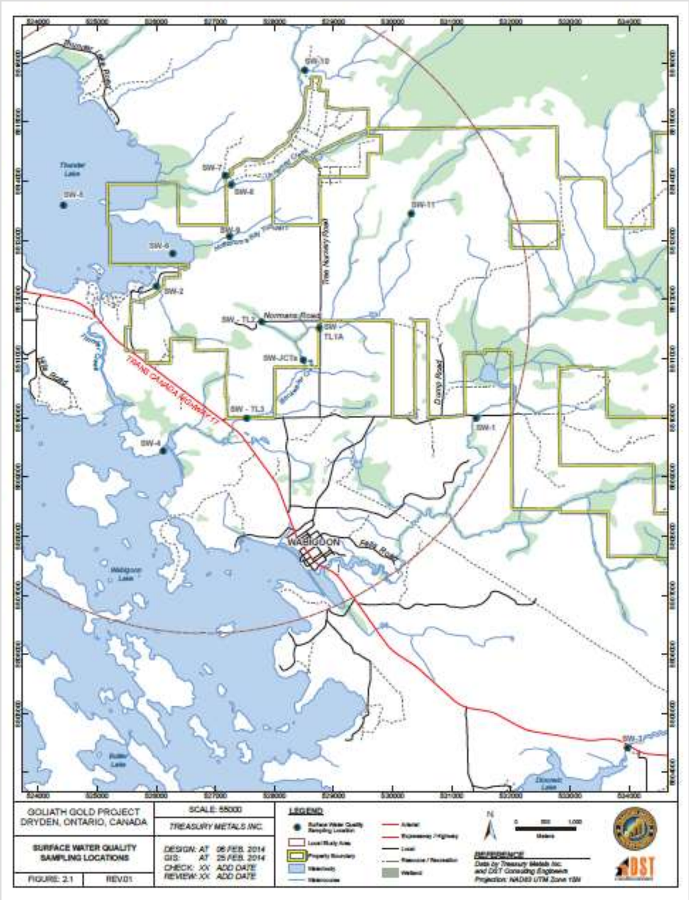
- 2010-2014 fieldwork has been completed with operational team of DST, TBT, AMEC, EcoMetrix, KCB, and Treasury Metals personnel.
- Studies include:
  - Surface Water and Hydrology
  - Aquatics and Fisheries
  - Wetlands
  - Terrestrial Wildlife
  - Noise, Light and Dust
  - Archaeology
  - Soils and Vegetation
  - Hydrogeology
  - Socioeconomic
  - Geochemistry / Geotechnical

STUDY AREA


LOLA LAKE PROVINCIAL NATURE RESERVE
Highway 17
Thunder Lake
AARON PROVINCIAL PARK
Wabigoon Lake
Highway 72
BUTLER LAKE PROVINCIAL NATURE RESERVE
Goliath Gold Project
Local and Regional
Study Areas
N
Kilometers
1:100 000
Legend
Goliath Gold Project
Local Study Area
Regional Study Area
Powerline
Lake
Wetland

SURFACE WATER AND HYDROLOGY

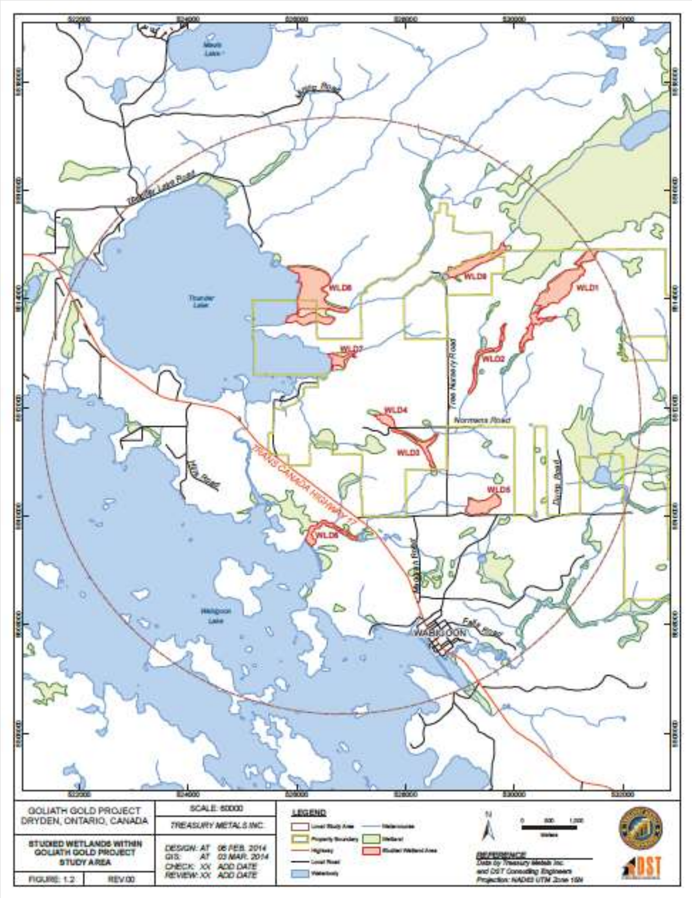




SURFACE WATER AND HYDROLOGY

- The hydrologic monitoring for this project began in 2011 by KCB and continued to 2013 by TML and DST staff. A total of seven hydrometric monitoring stations (TL1A, TL3, JCTA, HS4, HS5, HS6, and HS7) were manually monitored by TML personnel during this monitoring period (2012 to 2013).
- The surface water sampling results from the Project area in 2012 were similar to those of 2013 and are typical of oligotrophic lakes in northwestern Ontario. In the 2012 and 2013 sampling events, surface water in the area had low nutrient concentrations (nitrogen and phosphorus).
- Surface water sampling occurs quarterly, and hydrology is completed from spring to freeze up.
- Additional hydrological work to be completed in Q2/Q3 2014 with characterization of effluent discharge and hydrological factors.

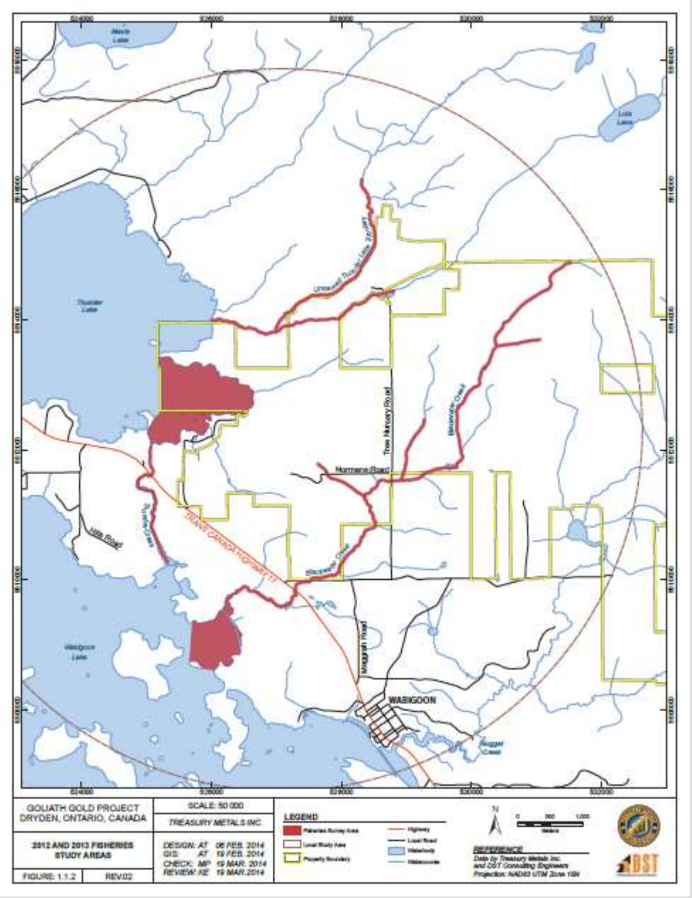
WETLANDS

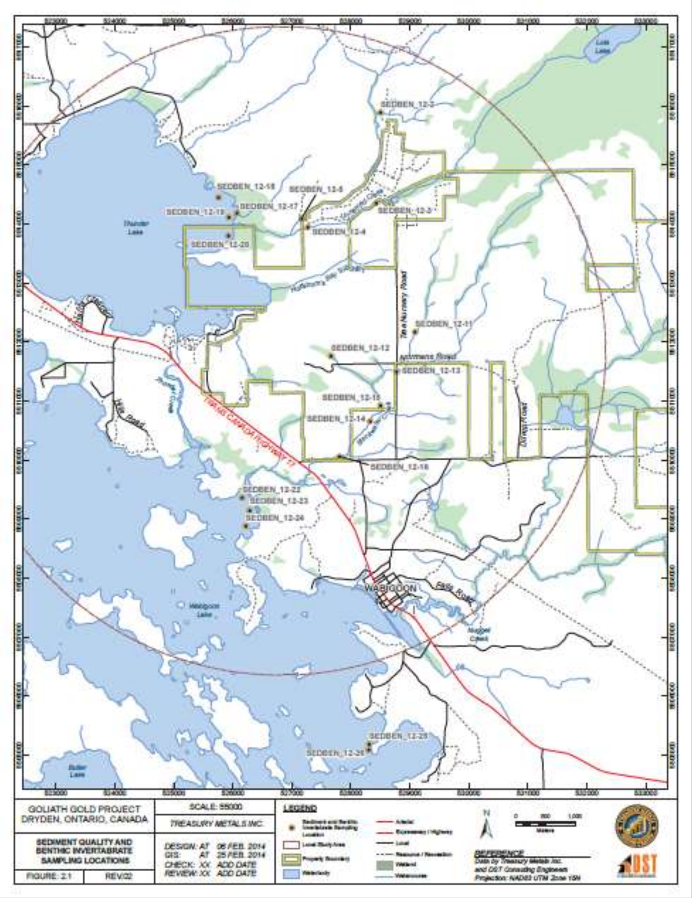

Thunder Lake
Wabigoon Lake
WLD1
WLD2
WLD3
WLD4
WLD5
WLD6
WLD7
WLD8
WLD9
Normans Road
Tree Nursery Road
TRANS CANADA HIGHWAY 17
WABIGOON
GOLIATH GOLD PROJECT
DRYDEN, ONTARIO, CANADA
STUDIED WETLANDS WITHIN GOLIATH GOLD PROJECT STUDY AREA
FIGURE: 1.2
REV.00
SCALE: 60000
TREASURY METALS INC.
DESIGN: AT 06 FEB. 2014
GIS: AT 03 MAR. 2014
CHECK: XX ADD DATE
REVIEW: XX ADD DATE
LEGEND
REFERENCE

WETLANDS

- None of the provincially significant species listed in the NHIC database were encountered during the field surveys;
- The swamp wetland type occupied 49.7% of the wetland areas assessed. The dominant vegetation form was tall shrubs;
- Small areas of marsh dominated by emergent vegetation and shrubs are prominent throughout the study area;
- Provincially significant species were identified in five of the wetlands assessed; and;
- No Provincially significant wetlands were identified within the study area under the OWES.

AQUATICS AND FISHERIES

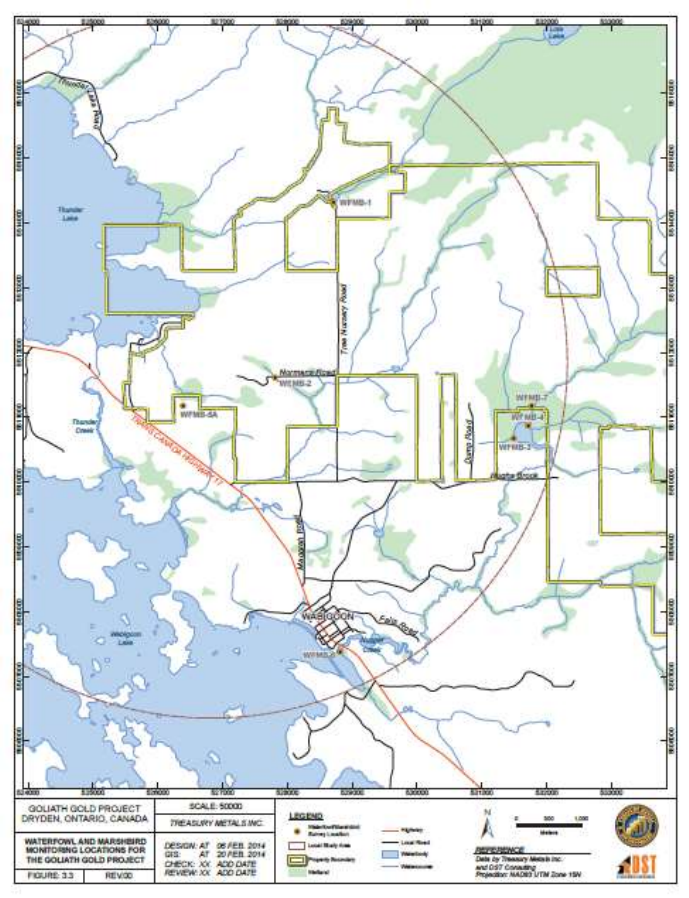


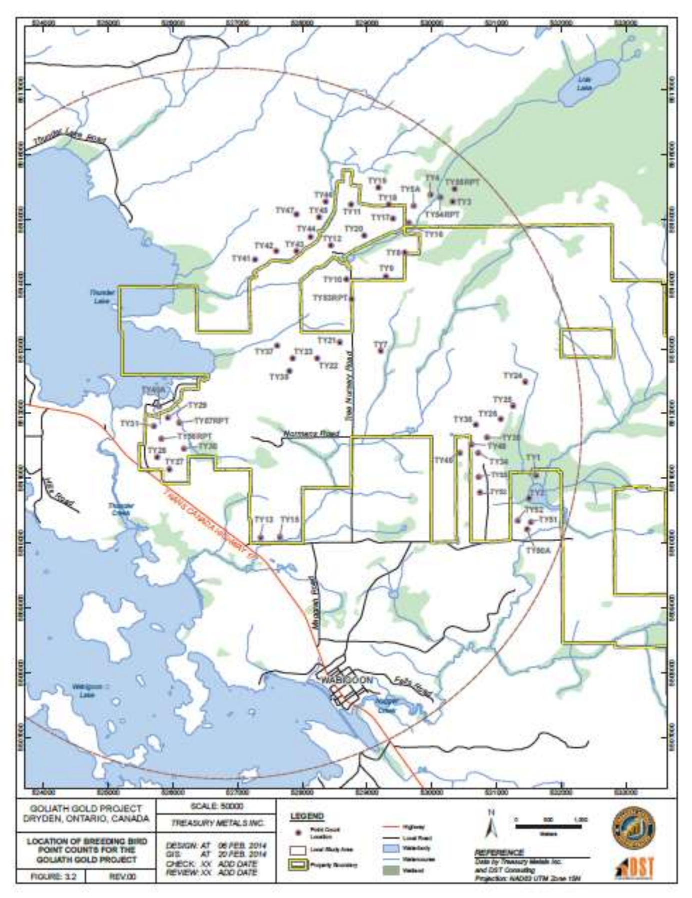


AQUATICS AND FISHERIES

- Benthic invertebrate samples were collected from two lakes (Wabigoon Lake and Thunder Lake) and two streams (an unnamed creek and Blackwater Creek) located within the Goliath Gold Project footprint area. In general, the benthic invertebrate community reflected normal conditions at the Site.
- Fisheries surveys were concentrated in two water bodies and three streams; Thunder Lake, Wabigoon Lake, Thunder Creek, Blackwater Creek, and an Unnamed tributary of Thunder Lake.
- Spawning and habitat surveys were conducted in both bays during the spring of 2013. Although no spawning activity was observed, potentially suitable habitat for Northern Pike, Muskellunge, White Sucker, and Lake Whitefish was observed.

TERRESTRIAL WILDLIFE

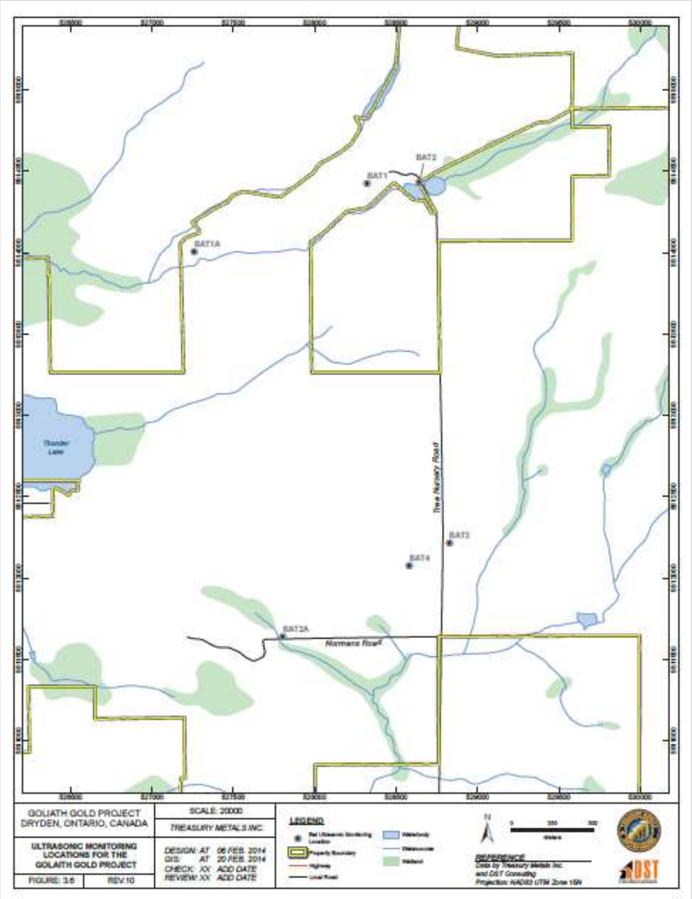


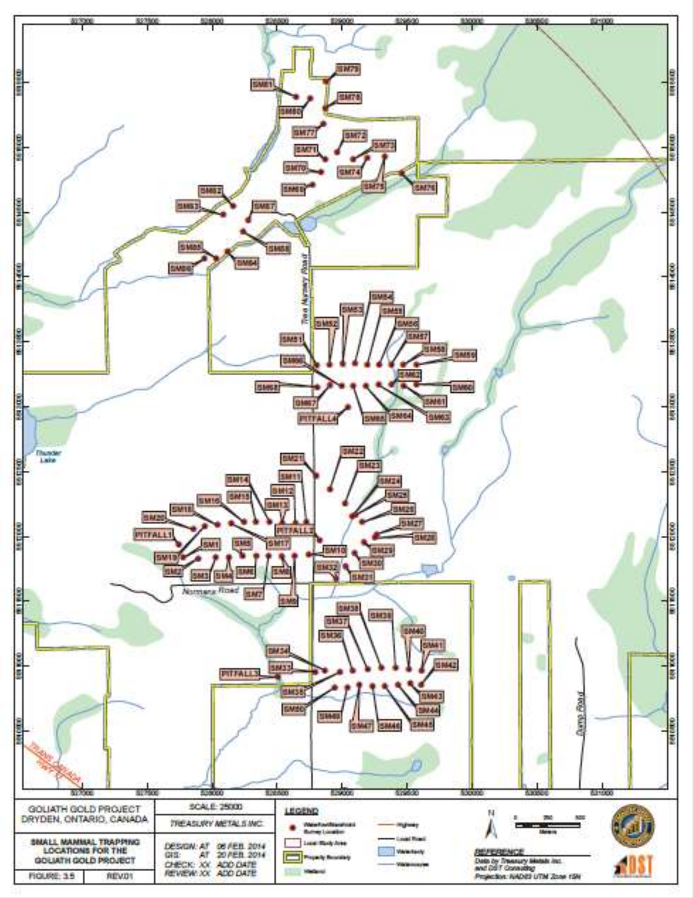


TERRESTRIAL WILDLIFE

- A total of 83 avian species were observed. Of the 83 avian species, 33 species were noted as probable breeders based on the 2012 surveys. Species richness was the highest in point count stations that were in deciduous habitats.
- Avian SAR detected at the Project Site include Bald Eagle, Common Nighthawk, Barn Swallow, Canada Warbler and Olive-sided Flycatcher.

TERRESTRIAL WILDLIFE

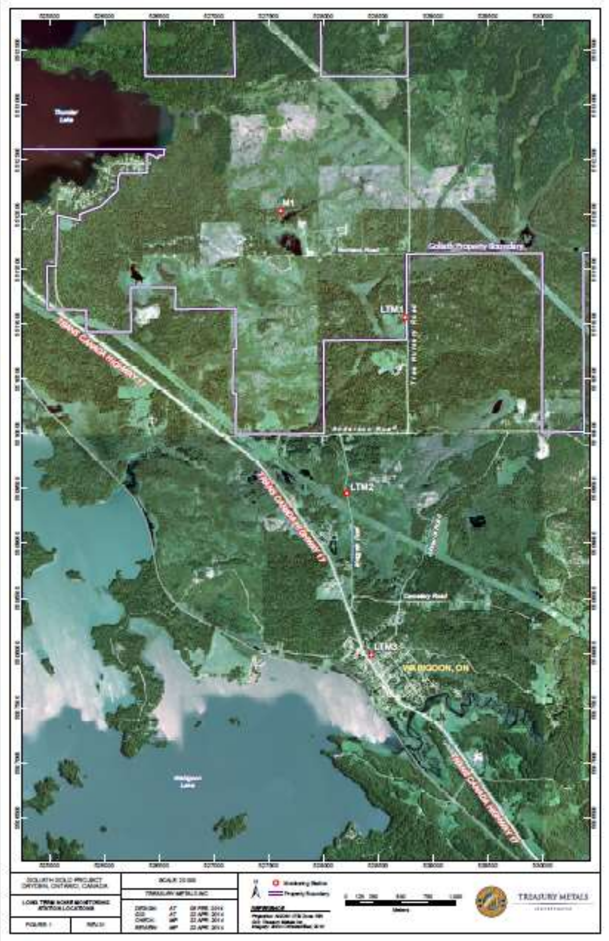




TERRESTRIAL WILDLIFE

- All animals captured during the small mammal trapping program are common throughout northwestern Ontario and their capture rates and relative abundance are comparable with those found in similar habitats.
- Ultrasonic recorders were set up at six locations, with bats being recorded at four of the locations. Although exact population numbers are not determinable based on recorder information, this is a clear indication that bats are present within the Project study area.

LIGHT AND NOISE



NOISE, LIGHT AND DUST

- The noise measurement results indicate that the existing baseline sound levels did not exceed the sound level limits as outlined in the MOE Publication NPC-232.
- Illuminance was assessed for residential receptors located within about 1 km of the expected Project primary light area as well as some representative receptors located across Thunder Lake from the Project site. Current illuminance levels at the receptors are below LEED criteria for rural residential areas with the exception of any sample sites that were located in direct proximity to light sources such as exterior home light or street light.
- Dust levels will be calculated on finalization of plant design and infrastructure location. Screening process has been completed.
- Mitigation of point sources of noise, light, and dust will be considered.

ARCHEOLOGY

- The area of the proposed Treasury Metals Goliath Gold Advanced Exploration Program Project does not exhibit archaeological potential therefore it is recommended that no further archaeological assessment is required.

“Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports.”

- Ministry of Tourism Culture and Sport

- Further archeological work to be completed in near future on finalization of discharge routing and method.

SOILS


525500
526000
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531500
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5513576
BH14-05
5513430
BH14-03
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TP14-01
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5513411
BH14-20
528127
5513036
BH14-21
528281
5512927
BH14-17
528077
5512878
BH14-19
528233
5512843
BH14-18
528147
5512748
BH14-06
528957
5512937
TP14-02
529189.5
5512953.8
BH14-02
529629
5512935
TP14-03
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5512891.8
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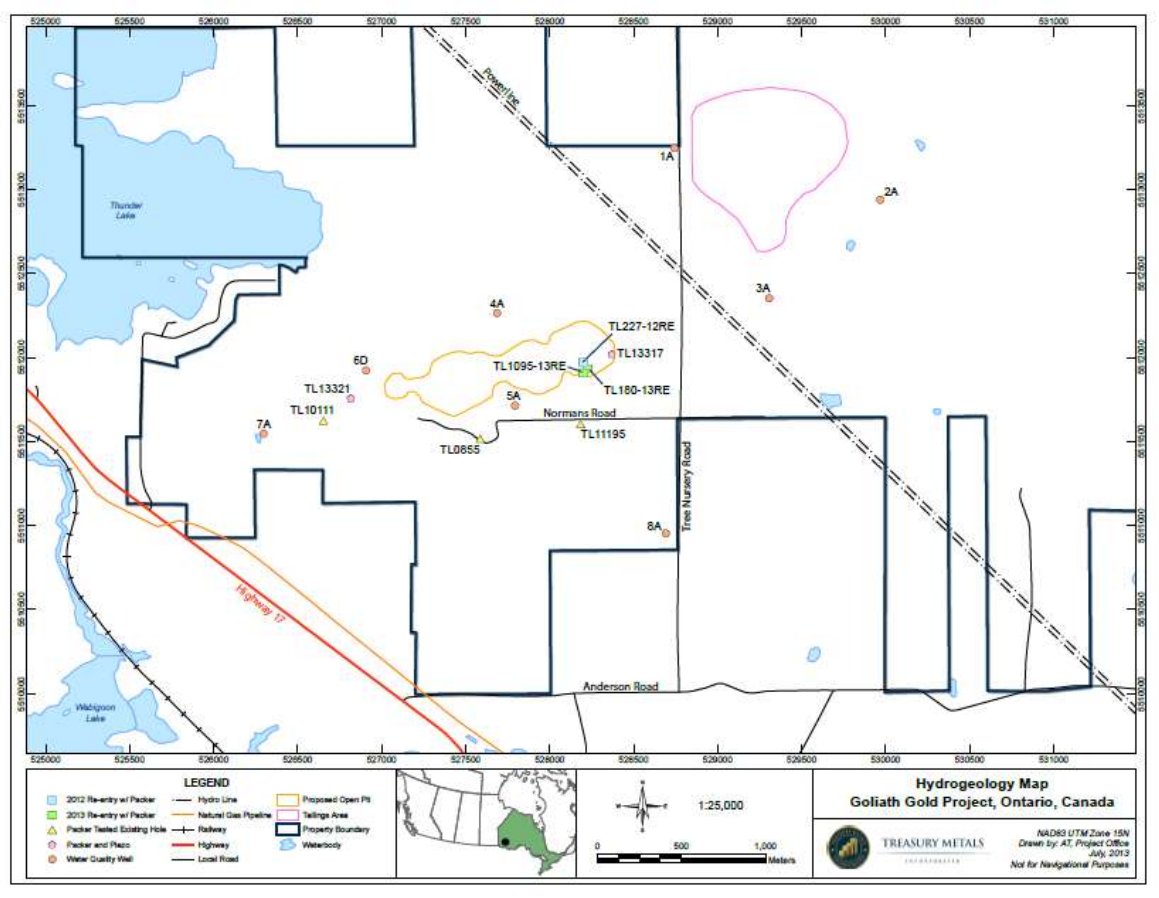
5512066
TP14-06
527403.9
5512092.8
TP14-07
527919.8
5511980.4
TP14-08
528114.9
BH14-16
528687
5511955
BH14-15
528951
BH14-08
528137.1
5511557.3
BH14-09A
528374.6
5511564.8
527972
5511362
TP14-04
528191.6
5511442.4
BH14-10A
527763
5511172
TP14-09
529053.5
5510236
TP14-10
529426.2

SOILS

- Soil baseline did not identify any unexpected land conditions or soil characteristics. The potential for metal leaching is low and nutrient content of soils is moderate.
- Additional work in soils has been completed as part of initial TSF design. Sampling and spilt spoons have been recorded, results are due in Q2 2014 and as part of EIS completion.

HYDROGEOLOGY



HYDROGEOLOGY

- Groundwater model and report due in Q2 2014.
- Sampling of OB wells occurs monthly.
- The developed groundwater flow model was calibrated to the current (pre-mining) water levels observed in nine monitoring wells, eight exploration holes, and nested shallow and deep vibrating wire piezometers.

TREASURY METALS

Goliath Stakeholders Meeting

Norm Bush Vice President, Operations
Mark Wheeler, Sr. Mining Engineer
Murray Ferguson, Director of Community Development
Rory Krocker, Sr. Project Geologist
Mac Potter, Environmental Technician

www.treasurymetals.com

TML LISTED ON TMX Toronto Stock Exchange

FORWARD-LOOKING STATEMENTS

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TREASURY METALS INC.

- WHO WE ARE
- WHERE WE ARE
- PROJECT STATUS
- EMPLOYMENT OPPORTUNITIES
- JOB REQUIREMENTS
- SUMMARY

GOLD FACTS: $1,300 / OZ

+ The consumption of gold produced in the world is about 50% in jewelry, 40% in investments, and 10% in industry.

TREASURY METALS | ABOUT US

- We are a leading exploration and development company in the Kenora Mining District.
  - Goliath Project: 1.7 million ounces with a clear path to growth
  - Goldcliff Property: Early exploration with high grade surface samples

- TML's management and board have a successful record in building companies and developing world-class mining projects.

- Treasury Metal's Goliath Gold Project is one of 6 gold mining projects in Ontario that is in the mine permitting process.
  - Treasury Metals – Goliath Gold Project (Dryden)
  - New Gold – Rainy River Project (Barwick)
  - Premier Gold – Hardrock Deposit Project (Geraldton)
  - IAMGOLD – Cote Gold Project (Timmins)
  - Osisko Mining Corp – Hammond Reef Project (Atikokan)
  - Argonaut Gold – Mangino Gold Project (Wawa)

TREASURY METALS - CORE VALUES AND RELATIONSHIPS

- SAFETY
  - Working safely is about "CARING FOR PEOPLE"
  - Nothing we do is worth getting hurt over
  - Working towards "Zero" recordable injury rate
- ENVIRONMENT
  - Responsible Stewards of the lands on which we operate
- PEOPLE / STAKEHOLDERS
  - Work for the mutual benefit of all Communities and Stake Holders
  - Treat people with Respect and Dignity
  - Demonstrate Ethical Behavior and Act with Integrity
  - Act with Simplicity, Speed, Decisiveness

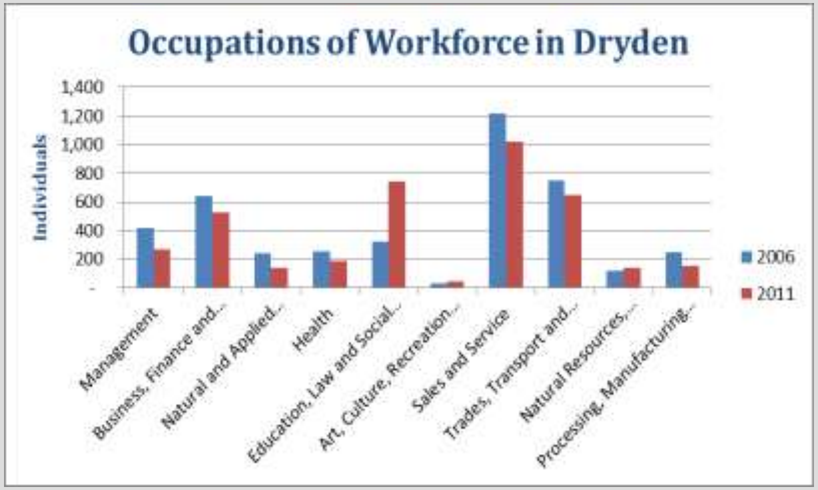
Doing the "Right Thing" because it is the "Right Thing To Do."

TREASURY METALS – HIGHLIGHTS

- Flagship high-grade gold project in Ontario
  - 1.7 million ounces in the combined category (Indicated and Inferred) from November 2011 resource estimate
- Achievable nominal $100 million CAPEX to produce 70,000 – 80,000 ounces per year for 10-year plus mine life
  - Excellent recoveries +95% by CIL and +92% by gravity/flotation
- Funded to shovel ready stage including feasibility study and mine permitting
- Significant infrastructure in place, highway accessible

DRYDEN

- Population ~8,000, 7.6% unemployment;
- Traditional dependency on forestry, recent closures;
- Transportation and Service Hub on TransCanada highway;
- Significant challenges related to economic restructuring and diversification.

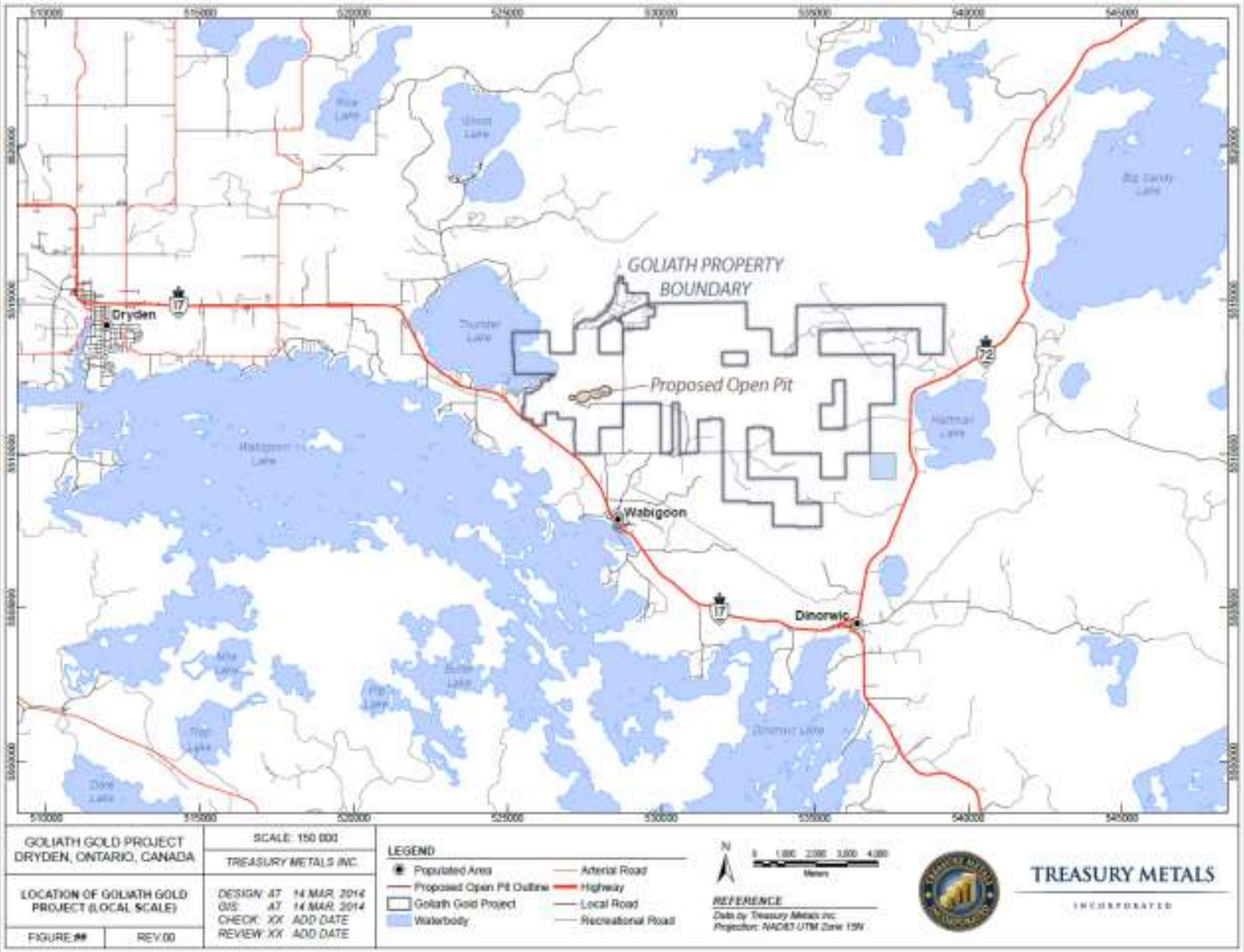


	Dryden		
	2006	2011	% Change
Total Population	8,195	7,617	-7%
Age 0-4	380	335	-11.8%
Age 5-14	1,070	865	-19.2%
Age 15-19	615	540	-12.2%
Age 20-24	465	410	-11.8%
Age 25-44	2,020	1,650	-18.3%
Age 45-54	1,350	1,325	-1.9%
Age 55-64	975	1,075	10.3%
Age 65-74	690	725	5.1%
Age 75-84	445	475	6.7%
Age 85 and over	180	215	19.4%
Median age of population	41.8	45.0	7.7%
Percent aged 15 and over	82.4%	84.2%	2.2%

Source: Statistics Canada, 2006 and 2011 Census Community Profiles

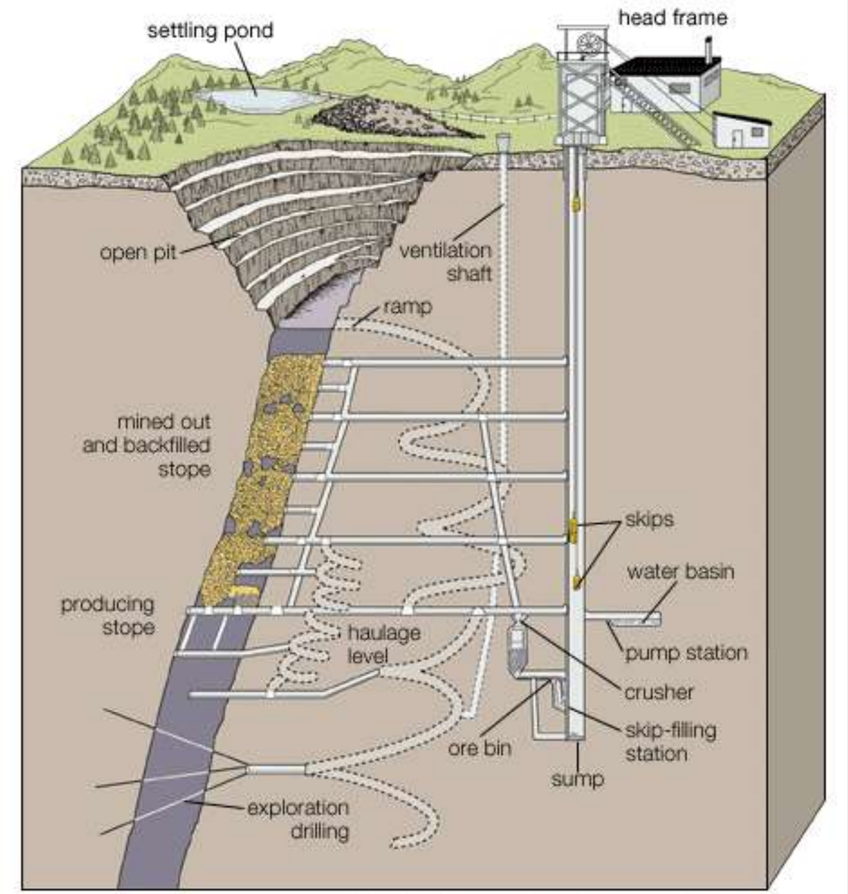
HISTORY OF GOLIATH GOLD PROJECT

PROJECT LOCATION



PROJECT STATUS

MINING INTRODUCTION



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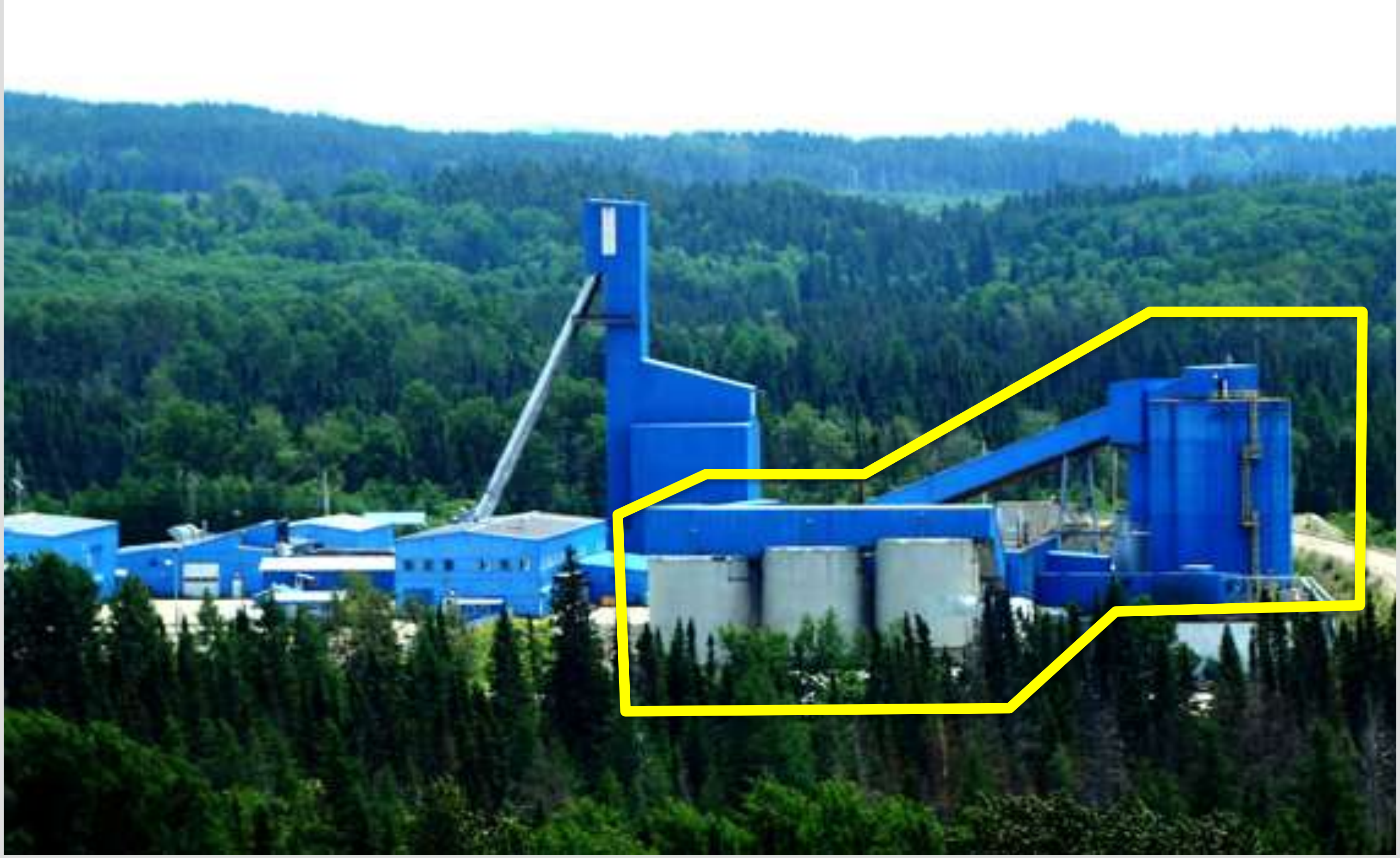
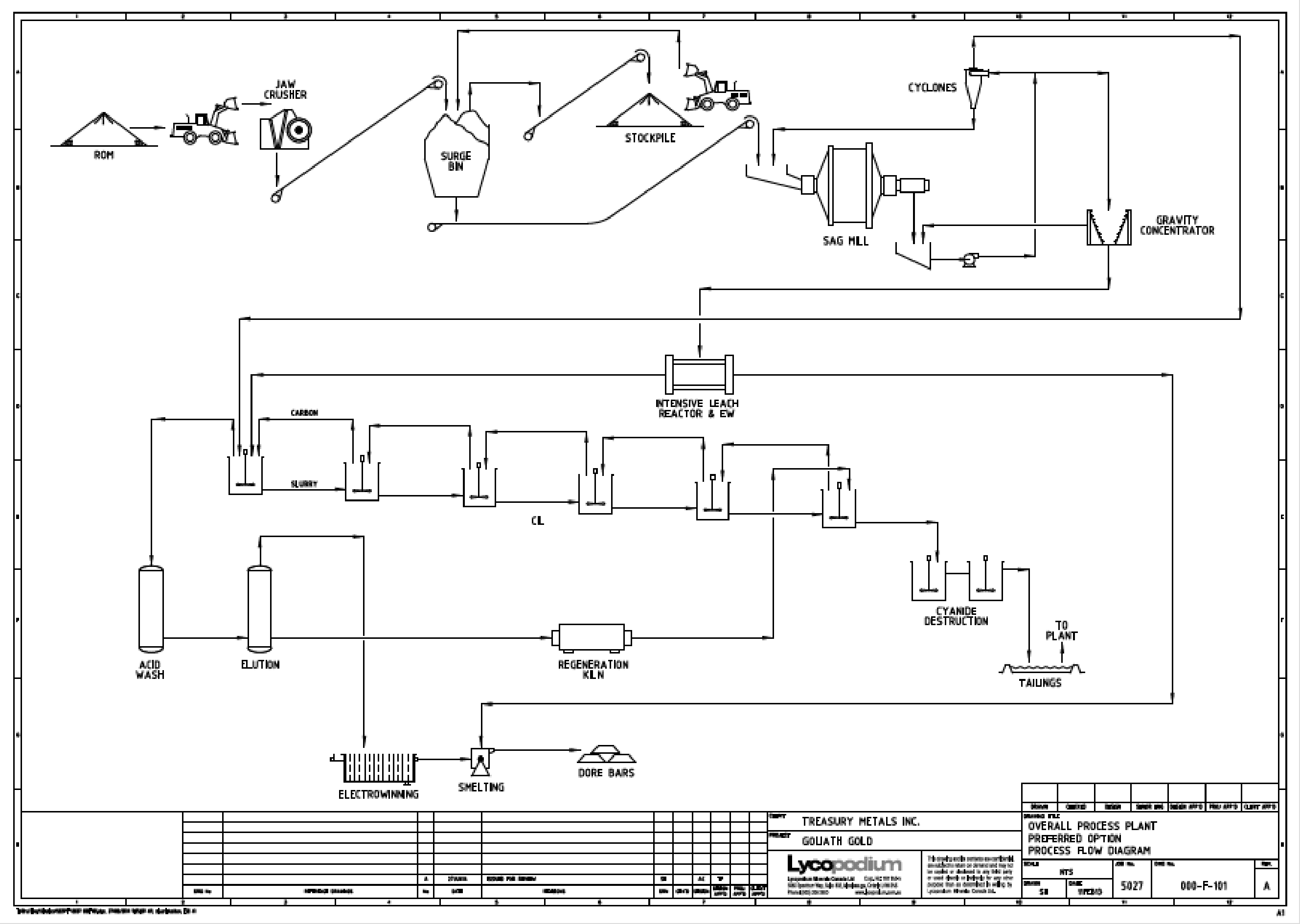
Source: H. Hamrin, *Guide to Underground Mining Methods and Applications* (Stockholm: Atlas Copco, 1997)

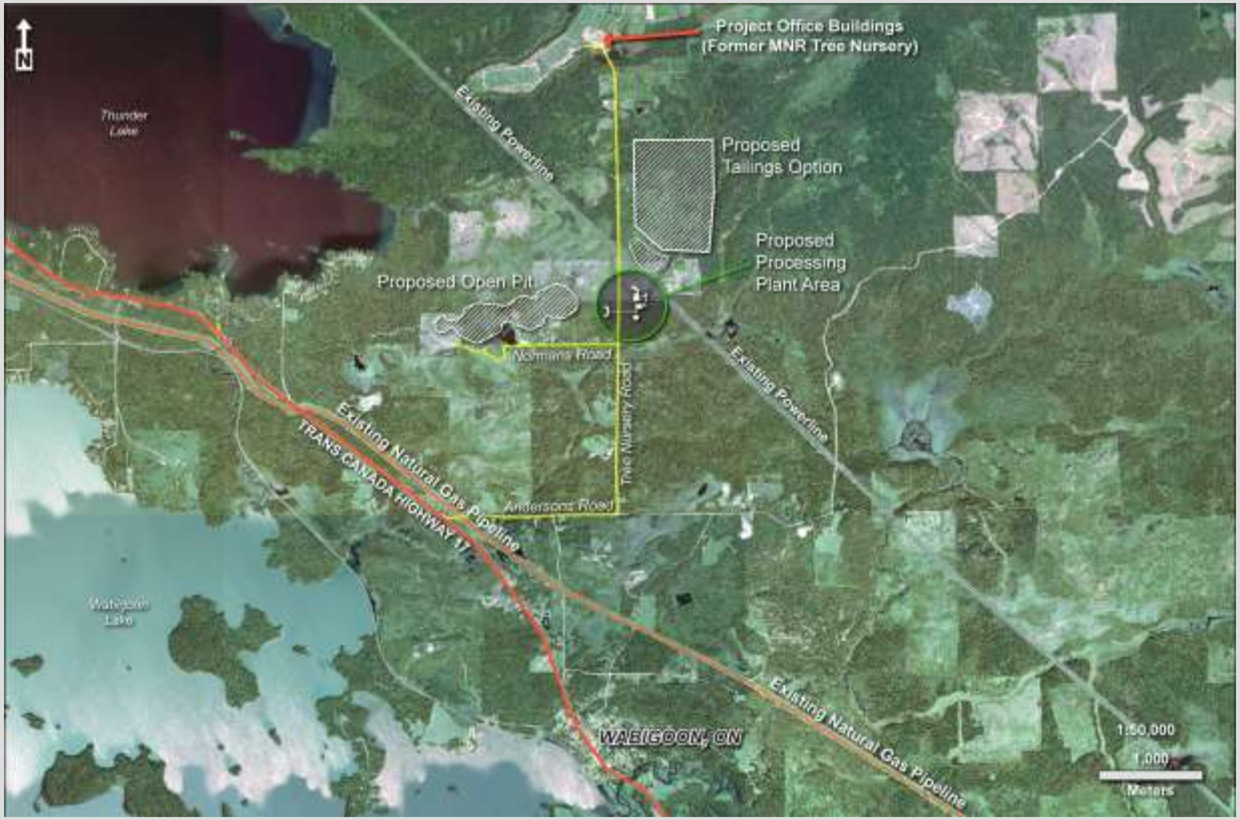
PROCESSING PLANT



MILL PROCESS



INFRASTRUCTURE IN PLACE



- NW Ontario provides excellent infrastructure – reducing costs.
- Power, local workforce and transportation all readily available.
- Historical industrial offices are now TML's exploration and development site.
- Power sources on-site: gas and electric power lines.

GOLIATH SITE PLAN

MINING PLAN

- ~3 g/t Au Eq Average Mill Feed (3 parts per million)
- $1375 Gold Price
- 4.5 Million Tonnes OP, 4.5 Million Tonnes U/G
- 70,000 – 80,000 ounces/year, 2100 - 2700 t/day milling
- 130-180 m. Final Pit depth. 500-600 m. Underground Depth
- Capex: ≃ $ 100 MM
- Total Mine Life: 10 – 12 years (5 open pit/ 5 UG)

MAJOR STUDIES – SUPPORTING DEVELOPMENT

+ Tetra Tech WEI
  - Coordination of the Environmental Impact Statement.
+ Lycopodium Minerals Canada
  - Development of process options;
  - Infrastructure and design layout;
  - Water balance and treated water discharge characterization.
+ WSP Canada
  - Design of the Tailings Storage Facility.
+ P+E Mining Consultants
  - Mine design and mine plan.

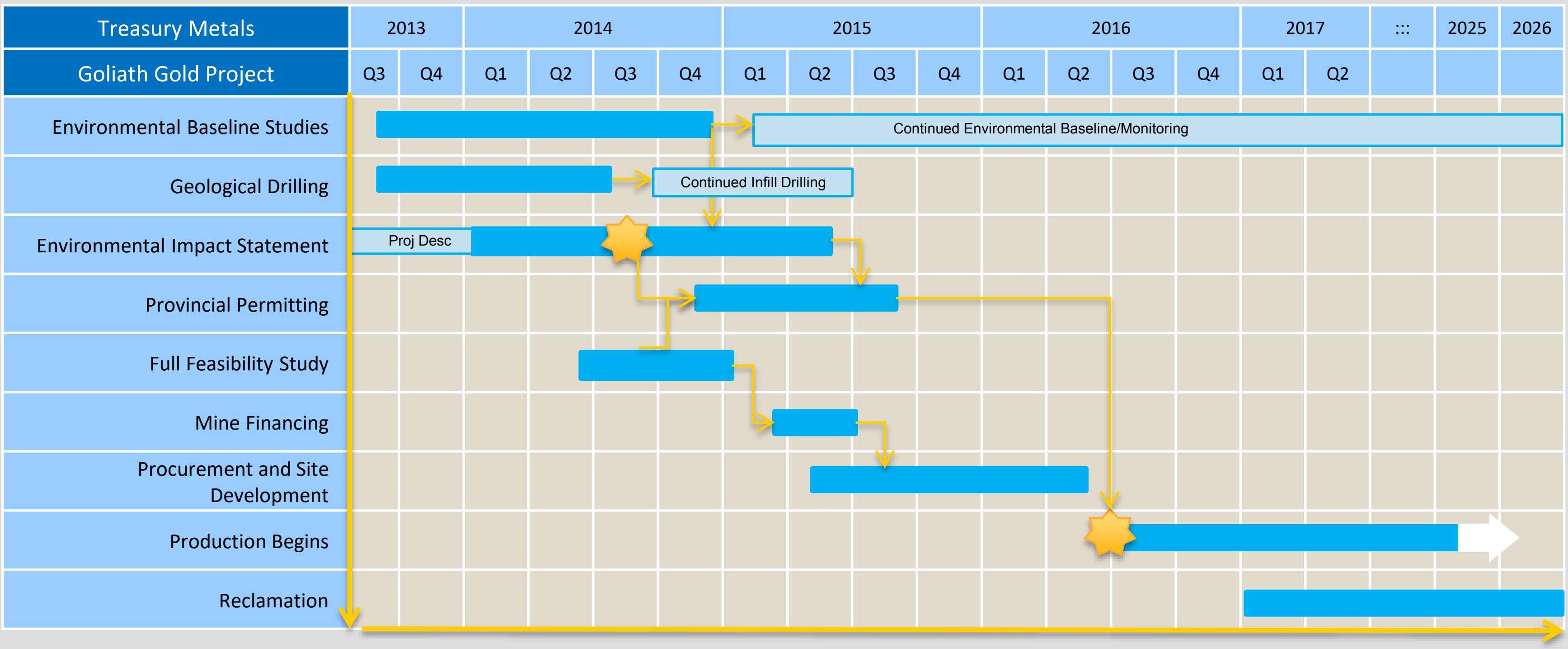
TETRA TECH

Lycopodium

WSP

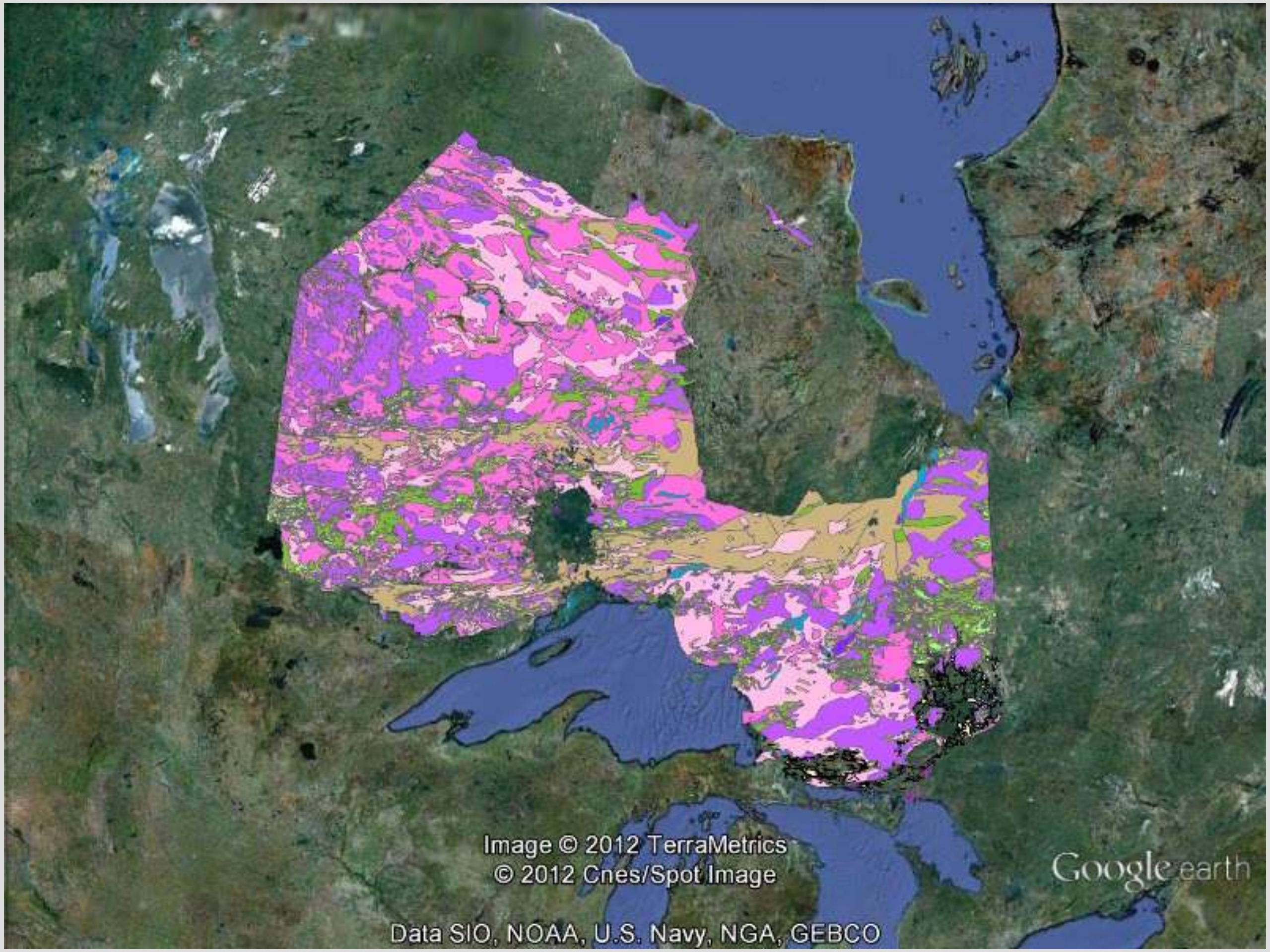
P&E MINING CONSULTANTS INC.
Geologists and Mining Engineers

PROJECT TIMELINE



GEOLOGY

GEOLOGICAL SETTING



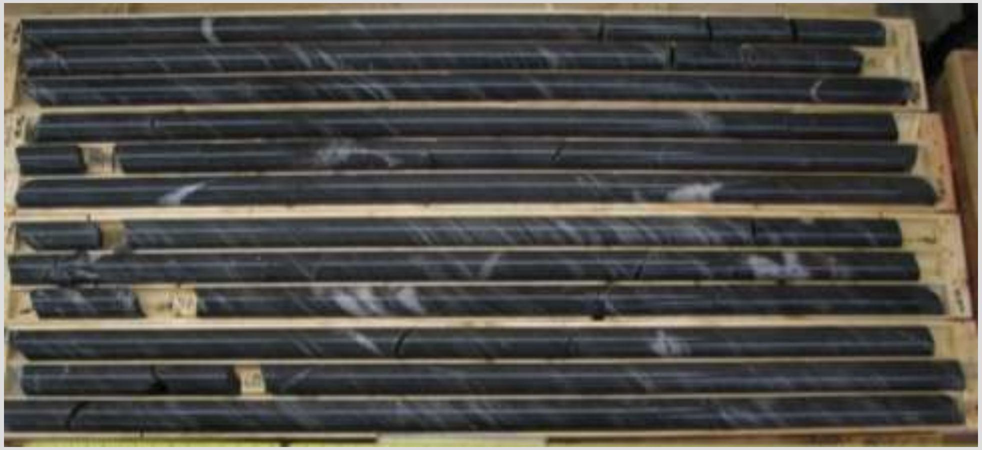
TML GEOLOGY AND ALTERATION

TML has two main rock types we intersect in the resource area:

+ Muscovite-sericite schist (MSS)
+ Biotite-muscovite schist (BMS)

Other rock types include:

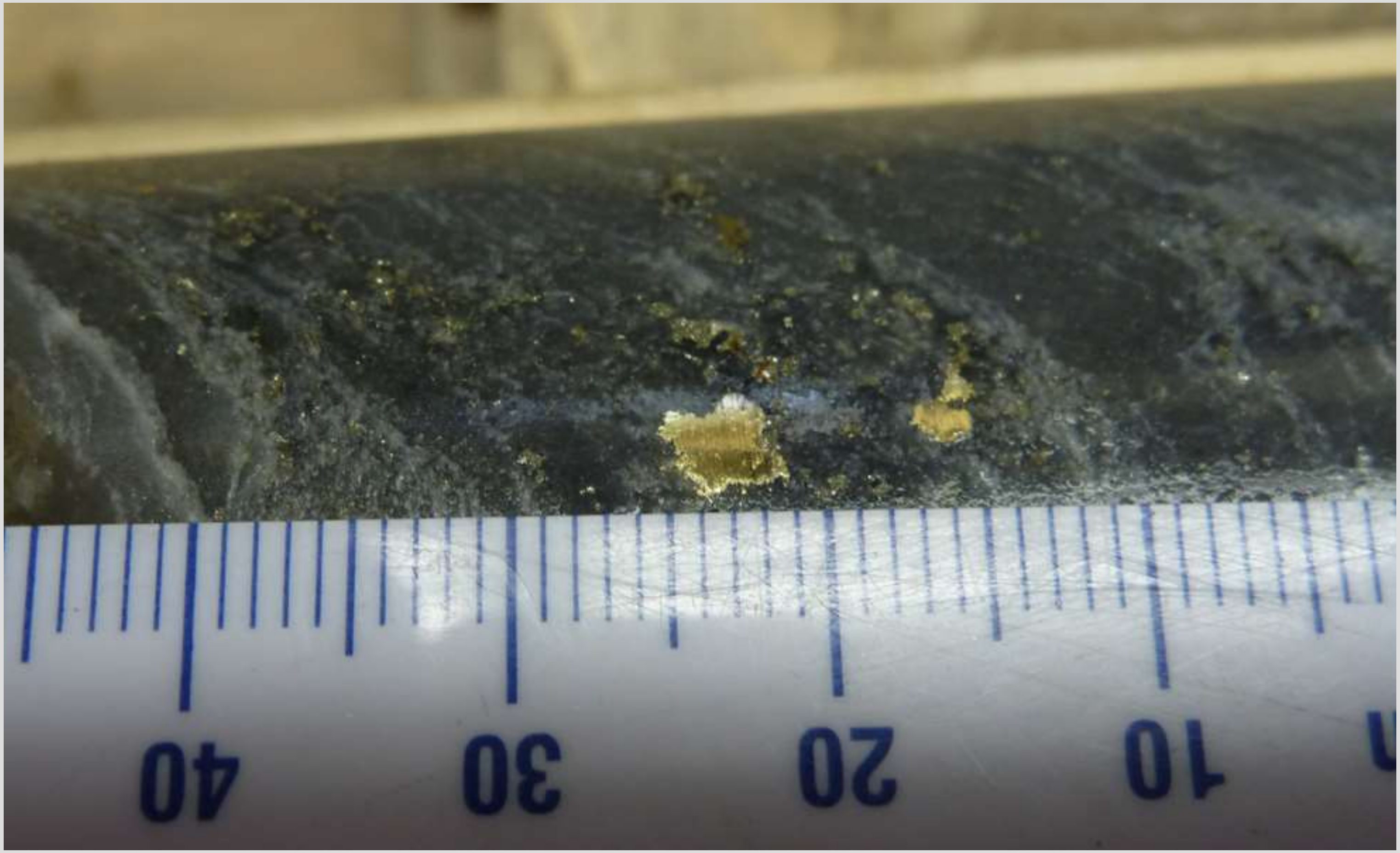
+ Metasediments
+ QFP
+ Mafic Dykes
+ Iron formation
+ Biotite schist
+ Amphibolite



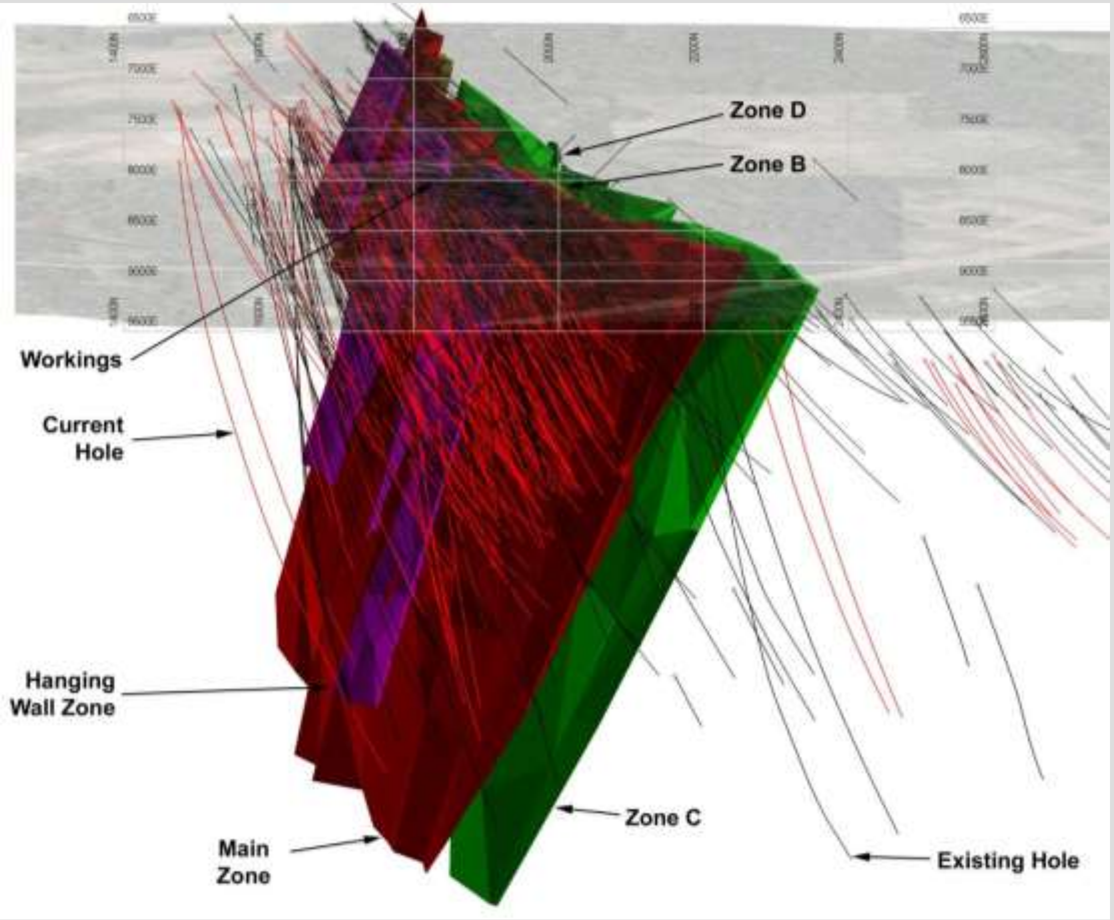
MINERALIZED MSS IS THE KEY

- Key minerals:
  - Sphalerite
  - Galena
  - Best concentrations occur proximal to upper and lower MSS contacts

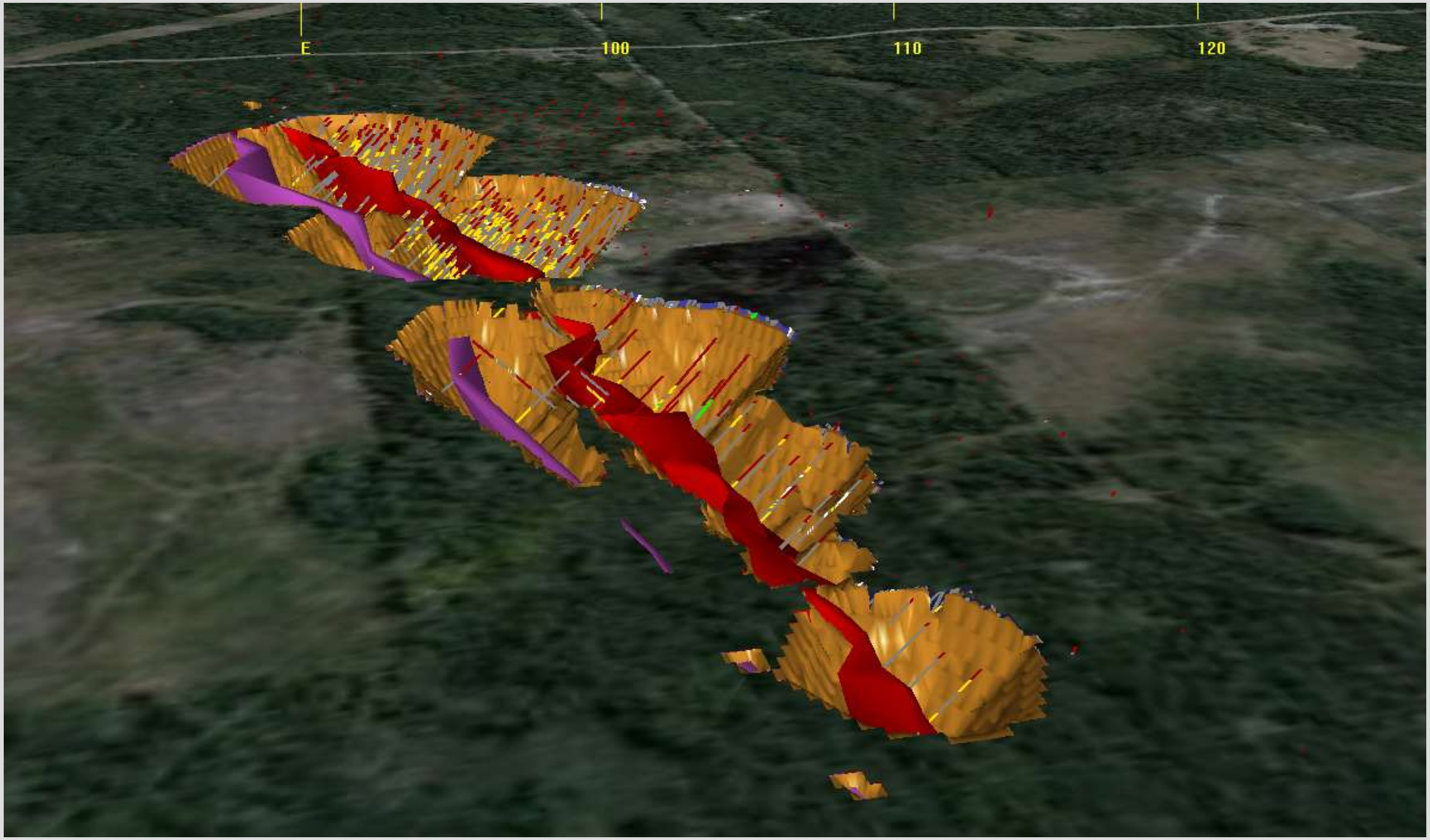
OUR IDEAL SCENARIO



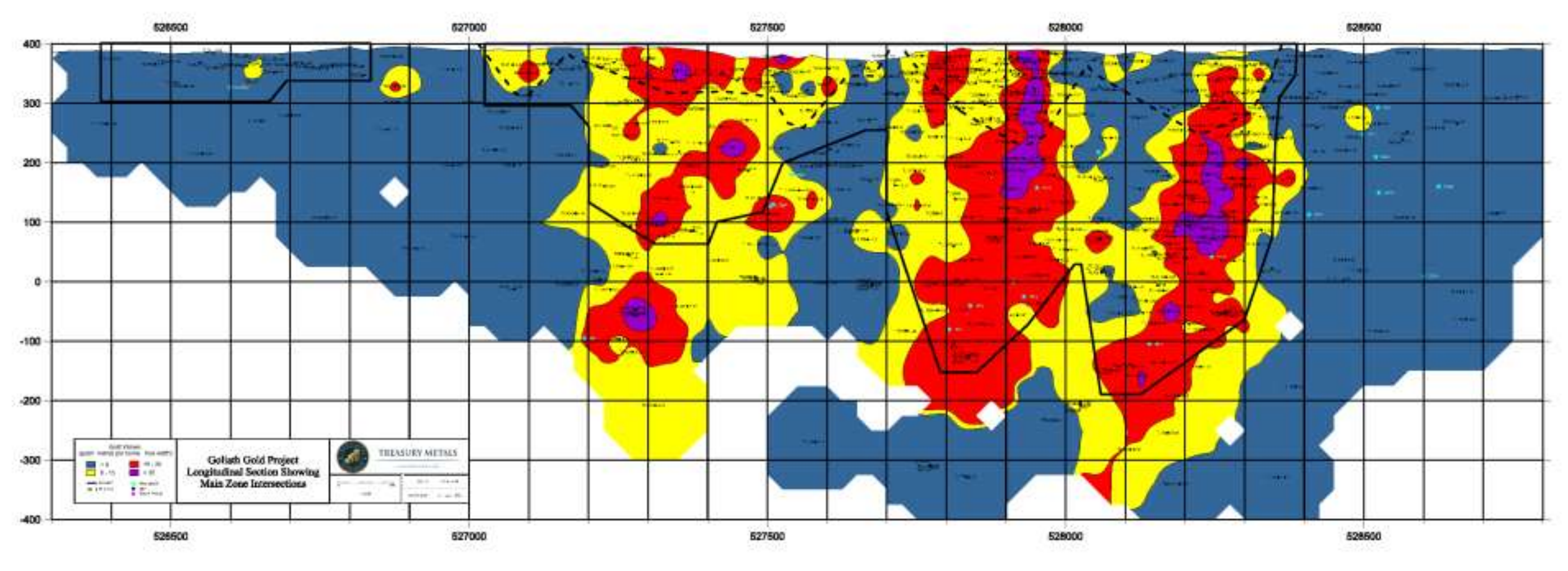
MINERALIZED ZONES



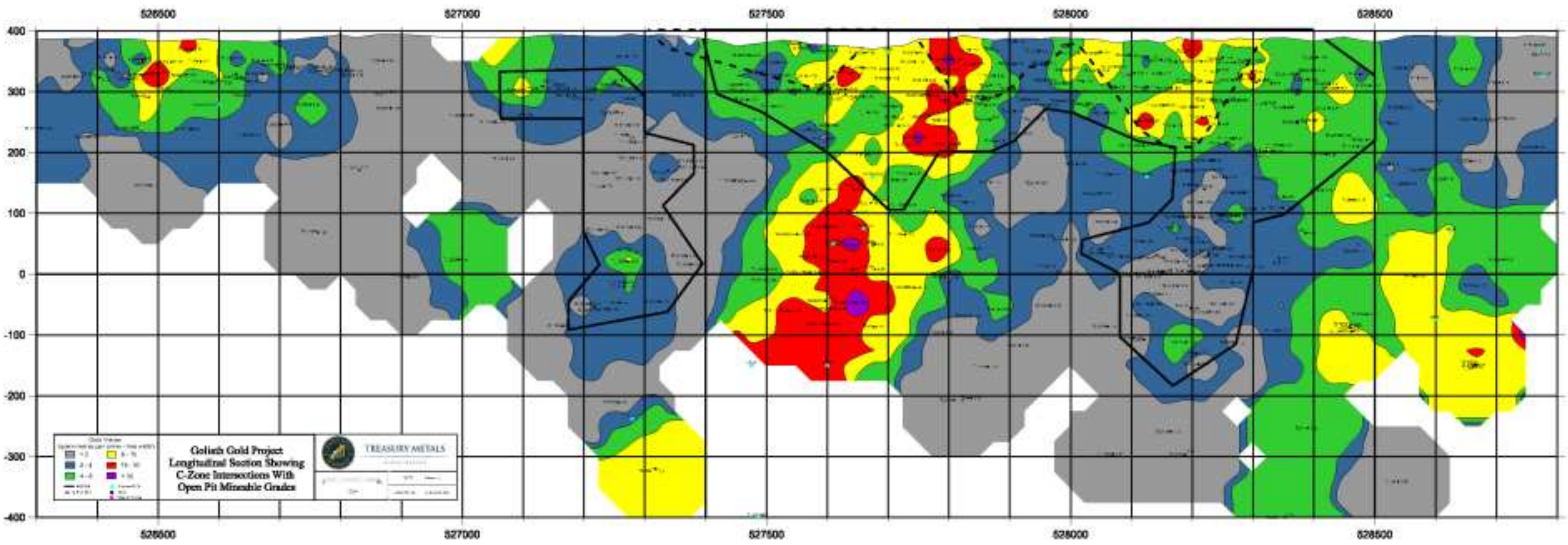
OPEN PIT



MAIN ZONE LONG SECTION



C ZONE LONG SECTION



ENVIRONMENTAL PROGRAM AND PERMITTING

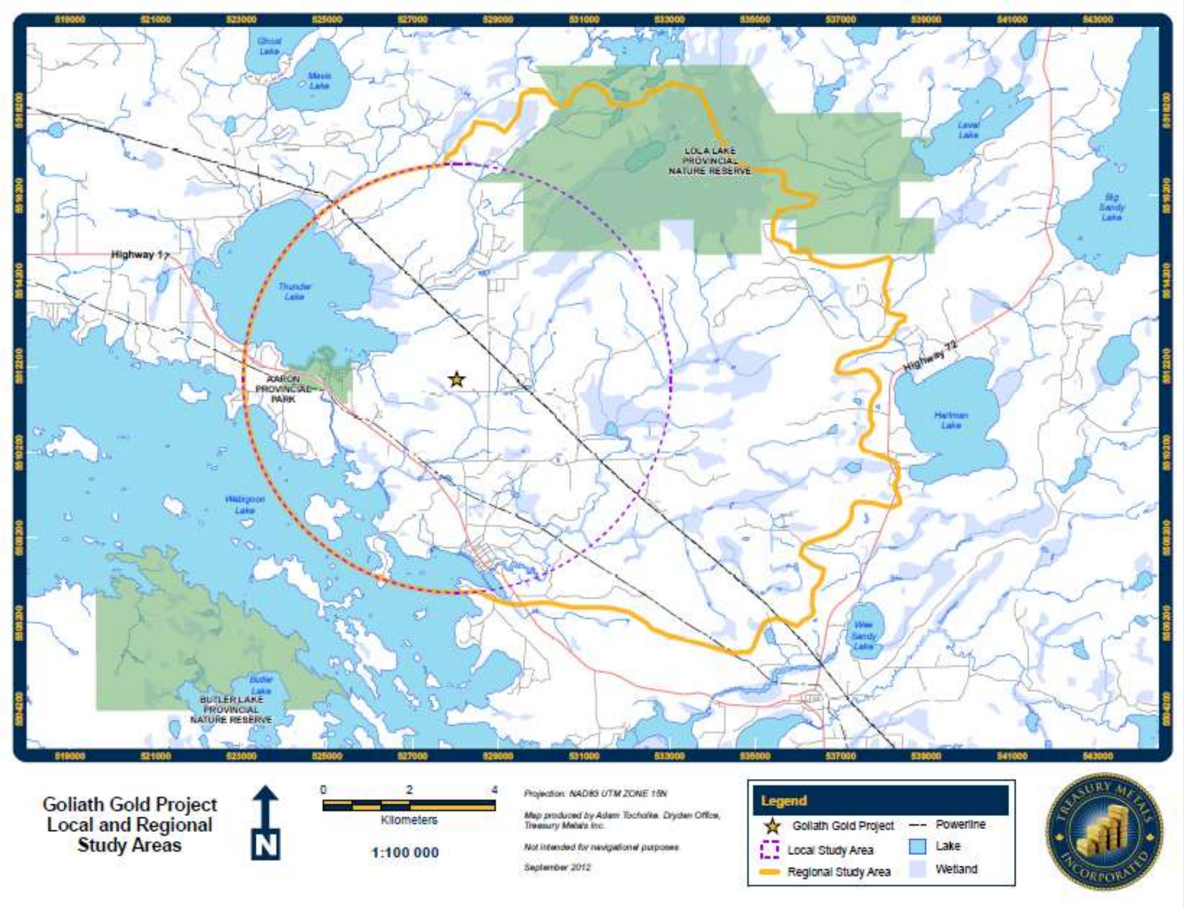
ENVIRONMENTAL ASSESSMENT PROCESS AND PERMITTING

- Federal
  - Canadian Environmental Assessment Agency (CEAA).
    - Triggers include ore processing greater than 600 tonnes per day and the potential to disturb fish habitat.
    - Environmental Impact Statement will be completed as part of federal regulations.
- Provincial
  - 40 + individual permits may be required.
  - Permits will be approved based on provincial regulatory requirements (Class environmental assessment).

BASELINE STUDIES

- 2010-2014 fieldwork has been completed with operational team of DST, TBT, AMEC, EcoMetrix, KCB, gck, Keewatin-Aski and Treasury Metals personnel.
- Studies include:
  - Surface Water and Hydrology
  - Aquatics and Fisheries
  - Wetlands
  - Terrestrial Wildlife
  - Noise, Light and Dust
  - Archaeology
  - Soils and Vegetation
  - Hydrogeology
  - Socioeconomic
  - Geochemistry / Geotechnical

STUDY AREA


LOLA LAKE PROVINCIAL NATURE RESERVE
Highway 17
Thunder Lake
AARON PROVINCIAL PARK
Highway 72
Wabigoon Lake
BUTLER LAKE PROVINCIAL NATURE RESERVE
Goliath Gold Project Local and Regional Study Areas
N
0 2 4
Kilometers
1:100 000
Projection: NAD83 UTM ZONE 15N
Not intended for navigational purposes
September 2012
Legend
Goliath Gold Project
Local Study Area
Regional Study Area
Powerline
Lake
Wetland

ENVIRONMENTAL PROGRAM OVERVIEW

- Environmental baseline studies have been completed to:
  - Understand the natural environment before development;
  - Support mine design and development decisions;
  - Support monitoring during operations and final closure plan decisions.
- Treasury's environmental program is on schedule, providing the data necessary to support the Company's environmental permitting activities with the Federal and Provincial governments.

SOCIO-ECONOMIC IMPACT AND BENEFITS

COMMUNITY OWNERSHIP

- Goliath Gold Mine
  - Built in N.W. Ontario by N.W. Ontarians.
- Hire Locally
  - Where labour force and skills are available;
  - Develop sector specific skills and capacity working with Educational Institutes, First Nations, and other local industries.
- Purchase Locally
  - Purchase goods and services from Dryden and local businesses, assuming competitive pricing and service.
  - Mine construction;
    - Seek to use N.W. Ontario construction services.

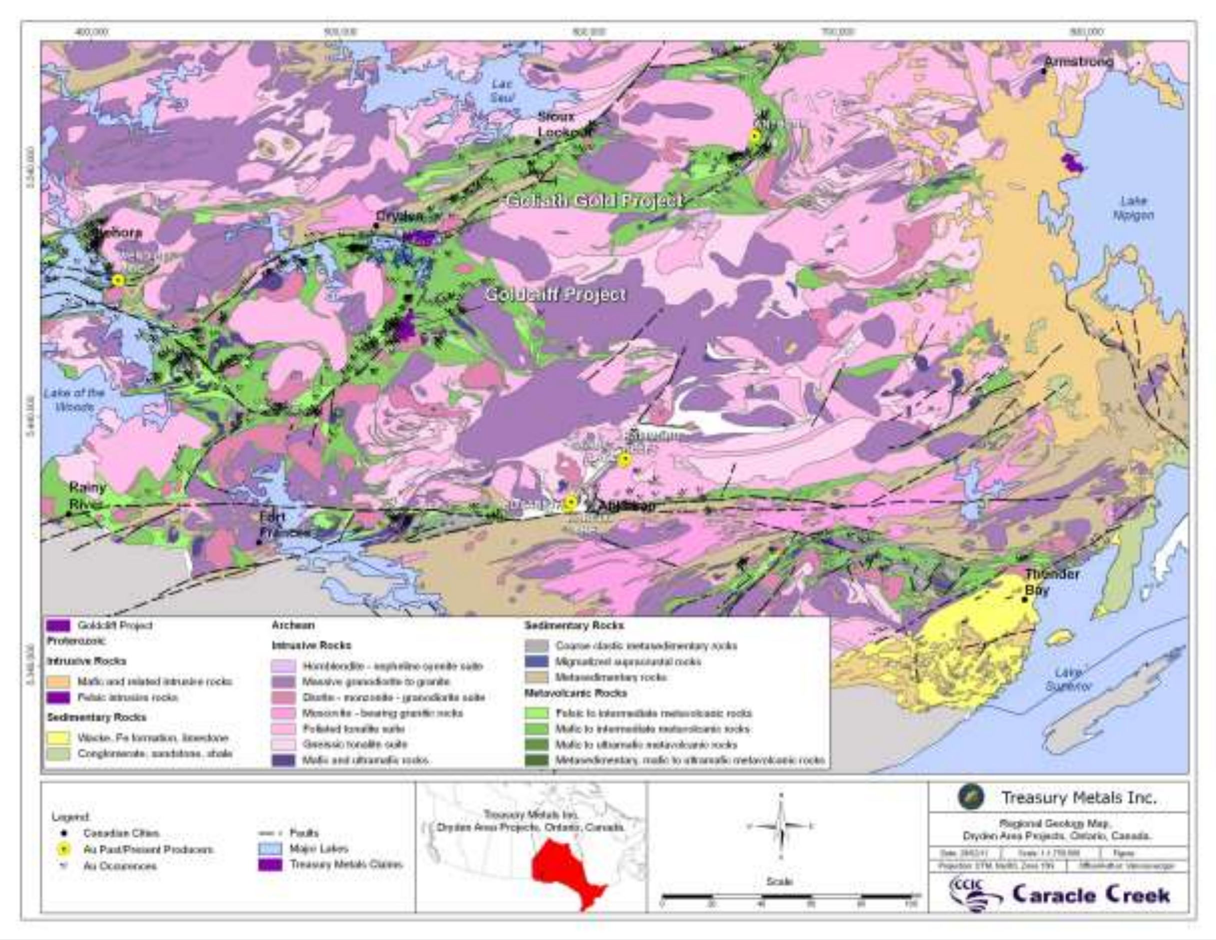
SOCIAL AND ECONOMICAL IMPACTS

	Current	Future
Direct Employment	20	200
Indirect Employment (4:1 Multiplier)	80	800
Total Employment Impact	100	1000

- In 2012 TML supported over 75 Northwestern Ontario businesses with over 70 based in Dryden.

TML Total Vendor Spending 2012	$ 5.9 Million
Northwest Ontario	$ 4.3 Million

REGIONAL HUB



EMPLOYMENT TRAINING AND BUSINESS OPPORTUNITIES

TREASURY METALS – JOB QUALIFICATIONS

JOB	GRADE 12	COLLEGE DIPLOMA	UNIVERSITY DEGREE	TRADES CERTIFICATION	OTHER
FIELD TECHNICIAN	√				
UNDERGROUND MINER	√				√
ASSAY LAB TECH	√				
HEAVY EQUIPMENT OPERATOR (MTCU Transcript)	√				√
ADMINISTRATIVE TECH	√	√			
ENVIRONMENTAL TECH	√	√			
HEAVY DUTY EQUIPMENT TECH (MTCU)	√	√		√	
ELECTRICAL/INSTRUMENTATION & CONTROL TECHNICIAN (MTCU)	√	√		√	
MULTI-TRADES CRAFTSPERSON (MTCU)	√	√		√	
GEOLOGIST	√		√		
MINE ENGINEER	√		√		
MINE MANAGER	√		√		

TREASURY METALS – BASIC HIRING CRITERIA

- Basic Requirements and Reasoning:
  - Minimum Grade 12/GED
    - Higher level education for specialized positions (Grade 12/12 Math and English);
    - Specialized skill requirements* and use of technology;
    - Comprehension, report writing.
  - Valid Drivers Licence
    - Drive company vehicles on and off road.
  - Pre-employment Drug Test
    - Safety for self and others;
    - Working with and around heavy equipment and machinery.
  - Criminal background check.
    - Screen-out undesirables;
    - Reduce risk to employees and property;
    - Harassment free workplace.

*Note: All training through recognized training institute or MTCS.

SUMMARY

- Treasury is committed to working with local municipalities and stakeholders.
- Treasury is committed to forgoing partnerships with local First Nation communities.
- 2014 is another busy year with further exploration work, environmental permitting activities, and other Project studies.
- Treasury Metals goal is to be:

Partners in Economic Development with our local Municipalities, and Aboriginal communities.

Questions ?

TREASURY METALS

Inter-Governmental Site Visit

September 24, 2014

Norm Bush Vice President, Operations
Mac Potter, Environmental Coordinator
Mark Wheeler, Senior Mining Engineer
Murray Ferguson, Director of Community Development

FORWARD-LOOKING STATEMENTS

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AGENDA

- Project Update
- Environmental Permitting and Approval Process
  - Federal and Provincial Overview
- Dryden and Area Social and Economic Benefits
- Summary
- Q & A

TREASURY METALS | ABOUT US

- Treasury is a leading Exploration and Development Company in the Kenora Mining District.
  - Goliath Project is Treasury's Flagship High Grade Gold Project

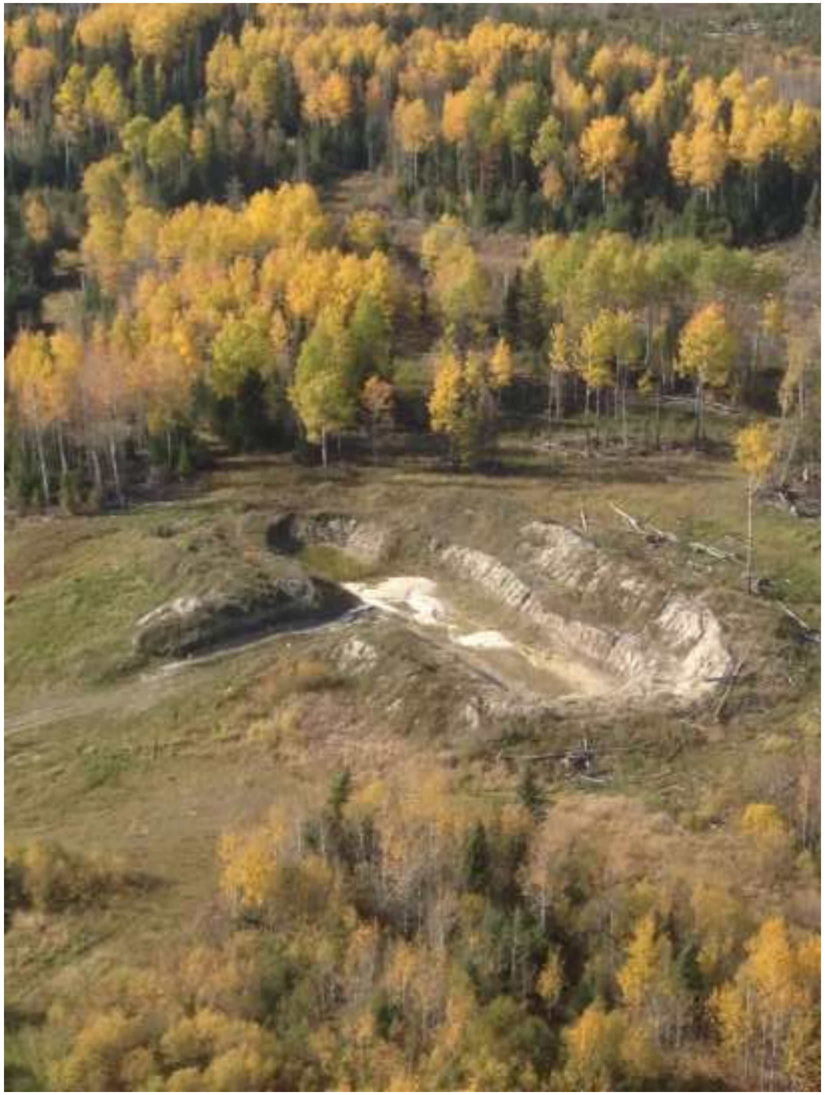
    1.7 million ounces (indicated and inferred) November 2011 Resource Estimate
  - Goldcliff Project on the upper Manitou – Early exploration, future opportunity
- Goliath Gold Project is one of 6 Gold Mine Projects in Ontario that is in the Mine Permitting Process.

  (Treasury Metals, Osisko – Hammond Reef, IAMGold – Cote Gold Project. Argonaut Gold – Mangino Gold, Premier Gold – Hard Rock, New Gold – Rainy River Project)
- Key Features:
  - 70,000 – 80,000 oz./year, approximately $100 million Capex
  - Minimum 10 – 12 years mine life but expect longer as deposit is open at depth and along strike
  - Excellent recoveries +95% by CIL and 92% by gravity/flotation

TREASURY METALS - CORE VALUES AND RELATIONSHIPS

+ **SAFETY**
  - Working safely is about "CARING FOR PEOPLE"
  - Nothing we do is worth getting hurt over
  - Working towards "Zero" recordable injury rate
+ **ENVIRONMENT**
  - Responsible Stewards of the lands on which we operate
+ **PEOPLE / STAKEHOLDERS**
  - Work for the mutual benefit of all Communities and Stake Holders
  - Treat people with Respect and Dignity
  - Demonstrate Ethical Behavior and Act with Integrity
  - Act with Simplicity, Speed, Decisiveness

PROJECT – STATUS UPDATE



PROJECT STATUS UPDATE

+ Major developments

  - Critical Project financing secured December 2013
  - Enable Treasury to:
    - Continue environmental baseline work;
    - Advance environmental permitting activities, complete the Environmental Impact Statement (EIS) for CEAA
    - Conduct a Feasibility Study;
    - Modest infill and exploration drilling programs.

+ Key milestones in permitting process:

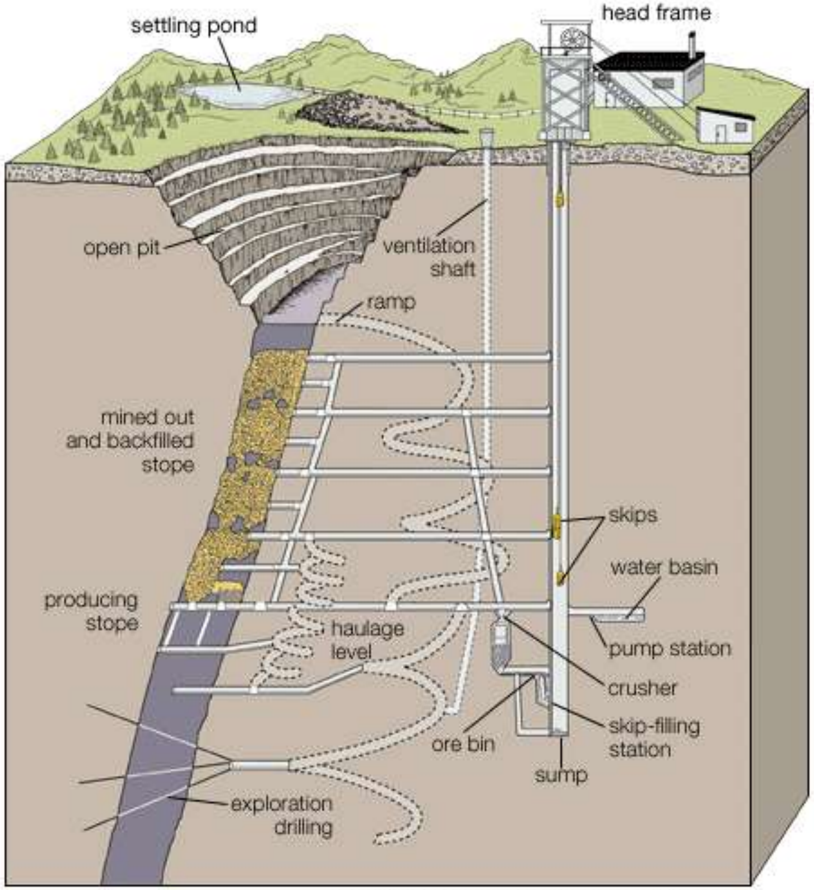
  - November 30, 2012: Project Description approved by CEAA;
  - February 21, 2013: EIS guidelines issued to TML
  - Q3 2014: EIS document planned submission;
  - Q4 2014: Provincial permitting activities to start.

ENGINEERING AND MINE DESIGN

- Exposing main zone at surface

- Teck ramp to ore body in 1998

MINING INTRODUCTION



© 2007 Encyclopædia Britannica, Inc.

Source: H. Hamrin, *Guide to Underground Mining Methods and Applications* (Stockholm: Atlas Copco, 1997)

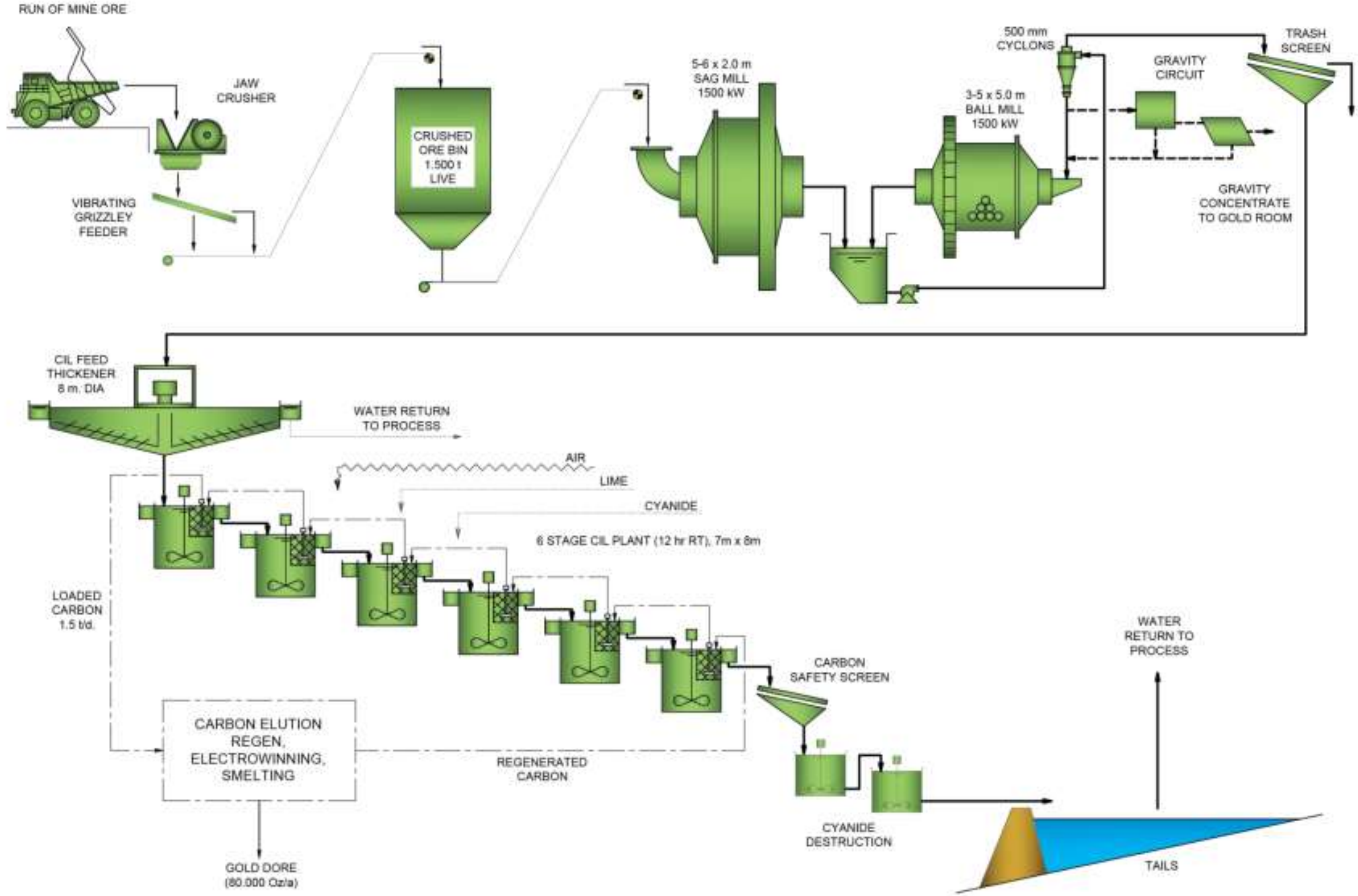
MINING PLAN | CURRENT ASSUMPTIONS

- ~3 g/t Au Eq Average Mill Feed (3 parts per million)
- $1375 Gold Price
- 4.5 Million Tonnes OP, 4.5 Million Tonnes U/G
- 70,000 – 80,000 ounces/year, 2100 - 2700 t/day milling
- 130-180 m Final Pit Depth.
- 500-600 m Underground Depth
- Capex: ≅ $ 100 MM
- Total Mine Life: 10 – 12 years (5-7 open pit/ 5 underground)

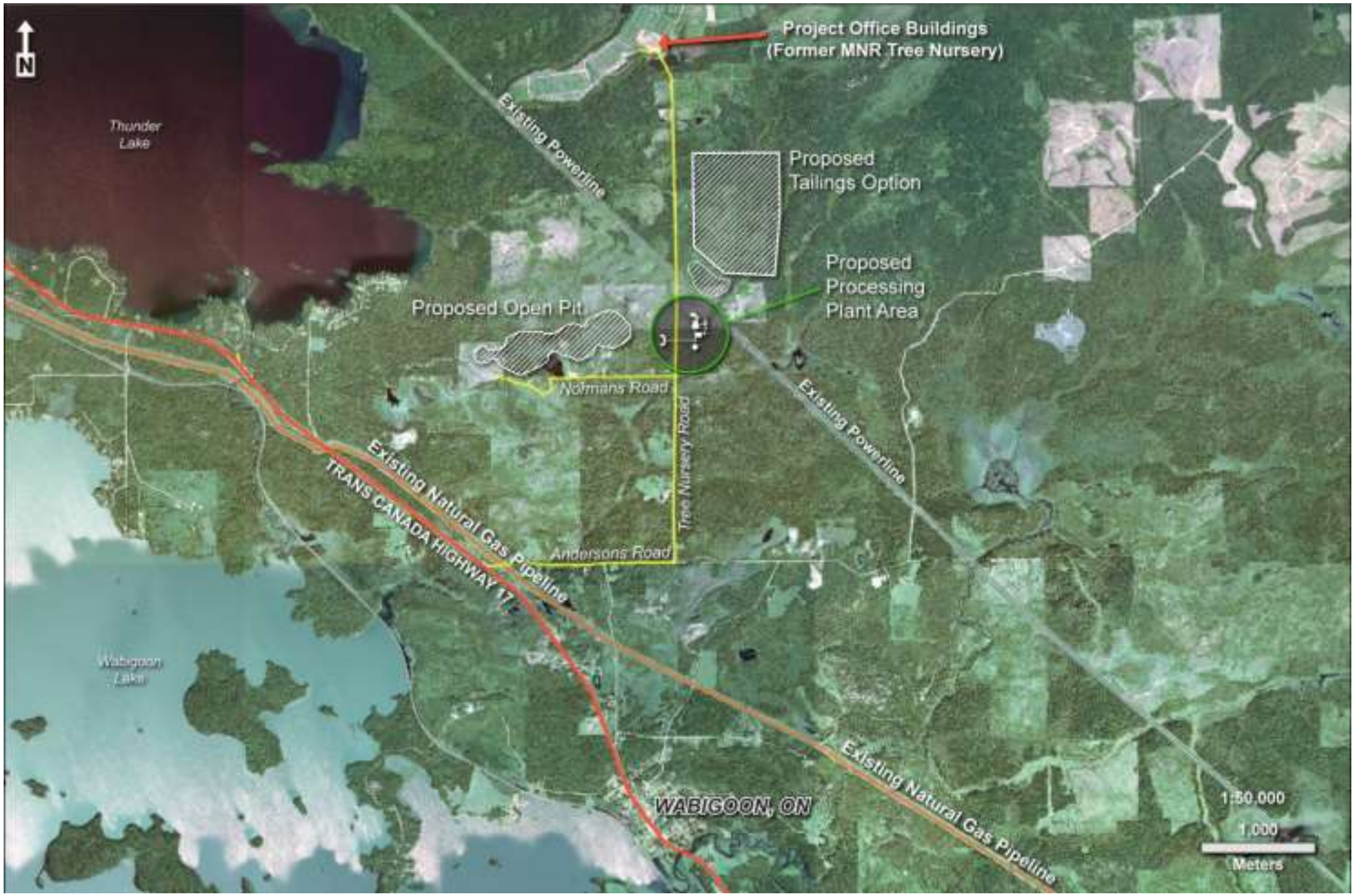
PROCESSING PLANT

Treasury Metals Mining Conceptual Flowsheet

Goliath 2500 Tonnes Per Day at 2.9 Grams Per Tonne Gold

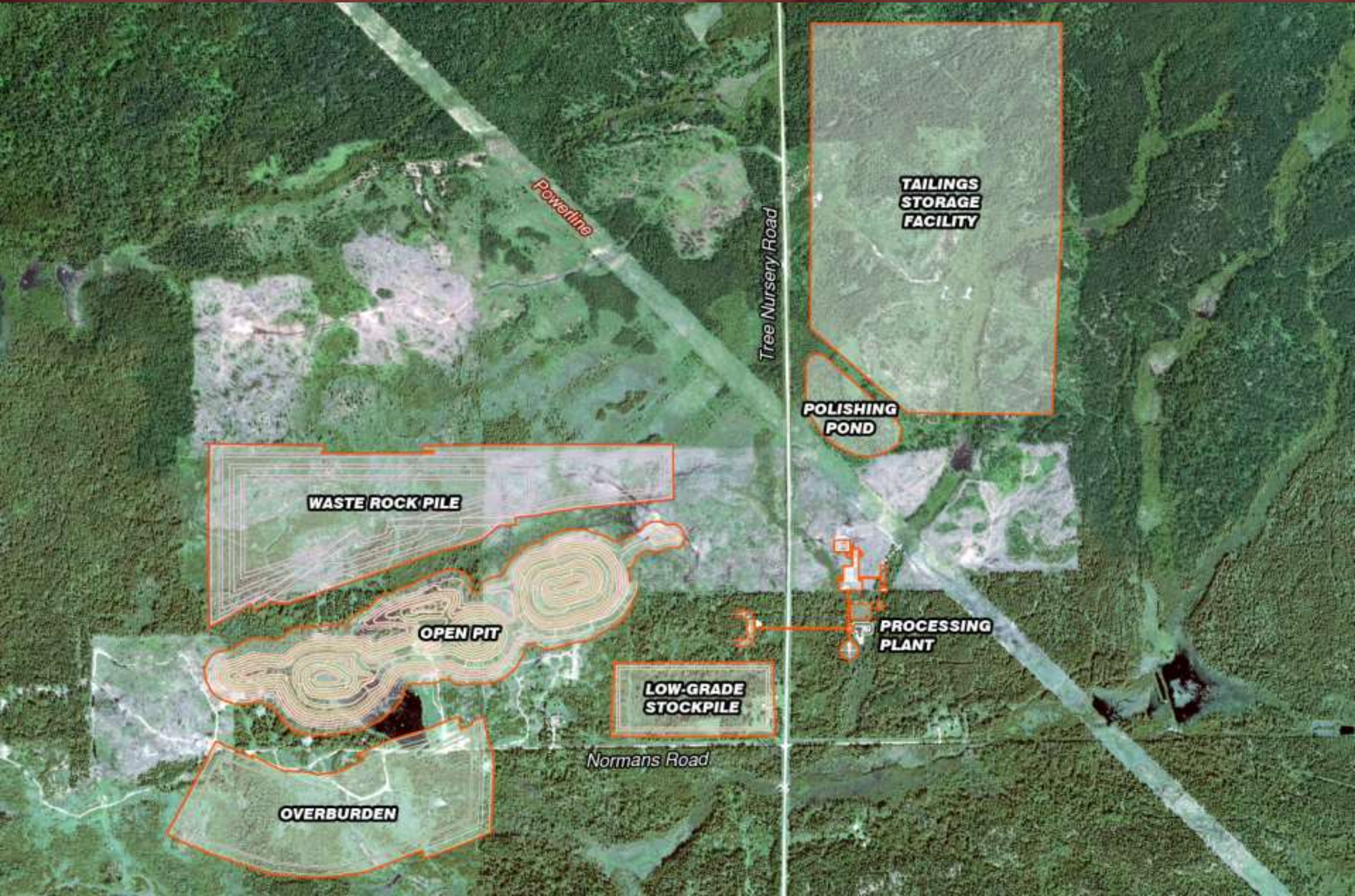


GOLIATH GOLD PROJECT – INFRASTRUCTURE IN PLACE



- NW Ontario provides excellent infrastructure – reducing costs.
- Power, local workforce and transportation all readily available.
- Historical industrial offices are now TML's exploration and development site.
- Power sources on-site: gas and electric power lines.

GOLIATH SITE PLAN



MAJOR STUDIES – SUPPORTING DEVELOPMENT

- Tetra Tech WEI
  - Coordination of the Environmental Impact Statement.
- Lycopodium Minerals Canada Limited
  - Development of process options;
  - Infrastructure and design layout;
  - Water balance and treated water discharge characterization.
- WSP Canada
  - Design of the Tailings Storage Facility.
- P + E Mining Consultants
  - Mine design and mine plan.

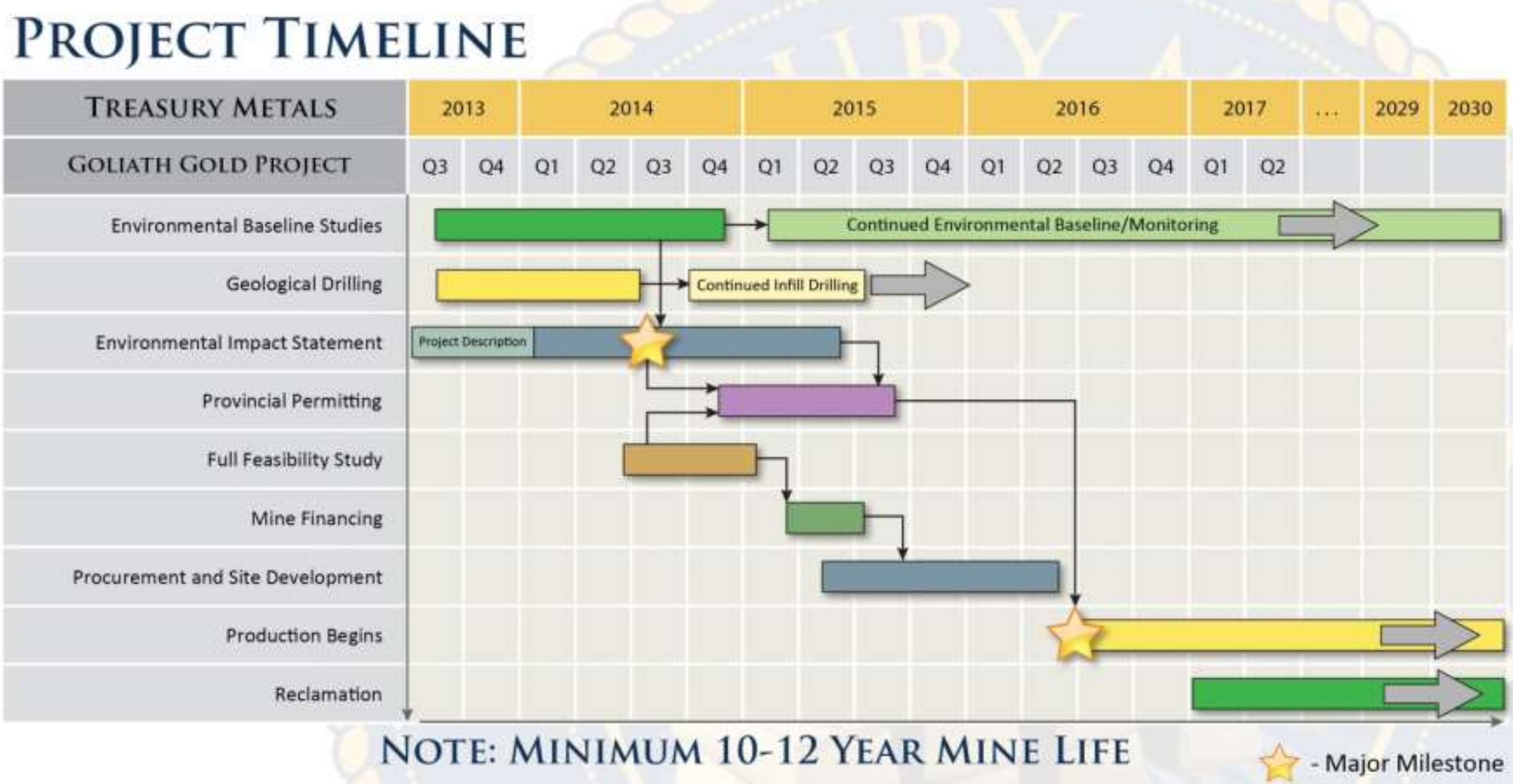
TETRA TECH

Lycopodium

WSP

P&E MINING CONSULTANTS INC.
Geologists and Mining Engineers

PROJECT TIMELINE



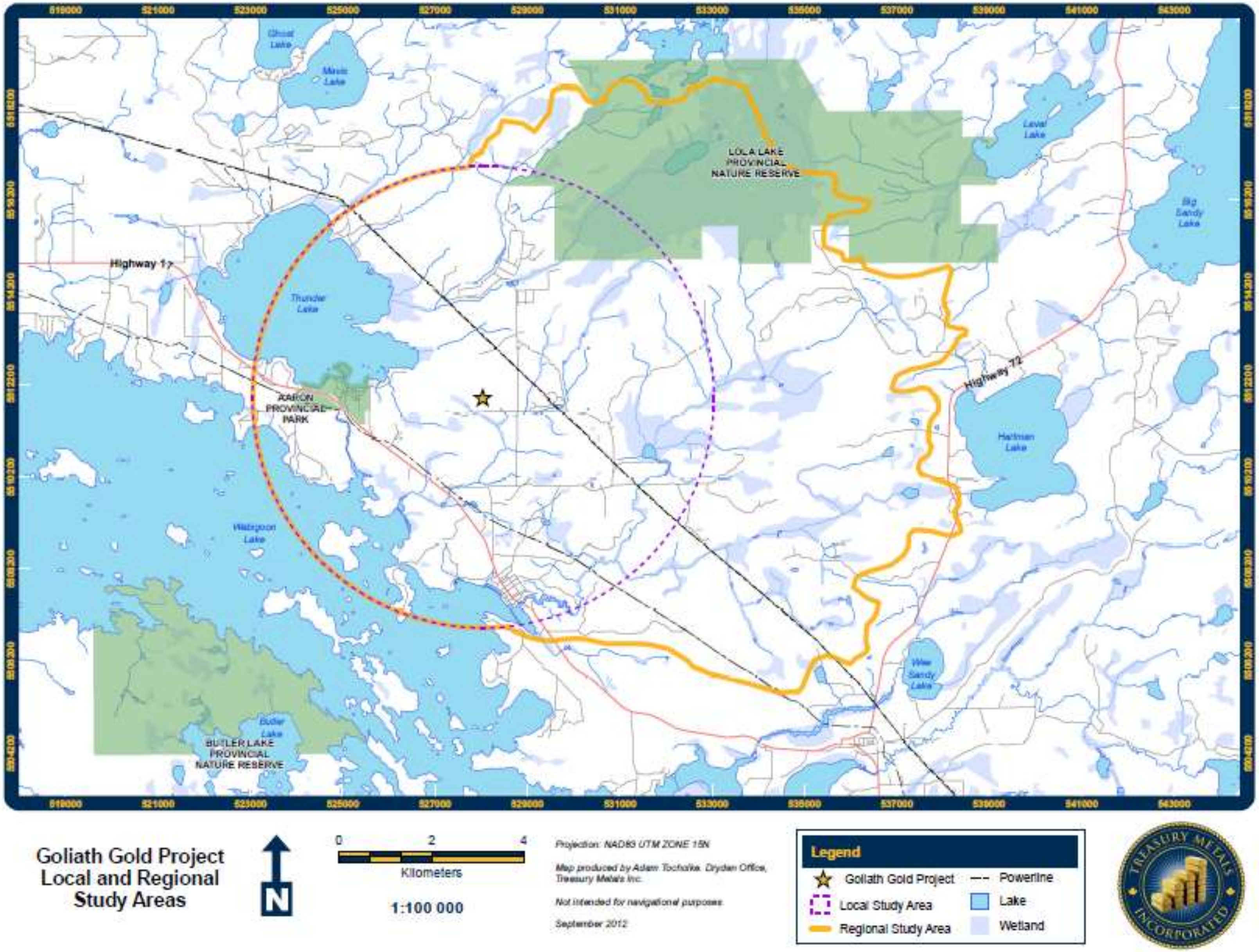
ENVIRONMENTAL PROGRAM AND PERMITTING

ENVIRONMENTAL ASSESSMENT PROCESS AND PERMITTING

- Federal
  - Canadian Environmental Assessment Agency (CEAA).

    Environmental Assessment (EA) Designated Project under CEAA 2012
    - Ore processing > 600 t/day
    - Potential to disturb fish habitat.
  - Proponent Environmental Impact Statement completed as part of federal regulations.
- Provincial
  - 50+ individual permits may be required.
  - Permits will be approved based on proponent meeting Provincial regulatory requirements.
  - Mine closure plan and financial assurance (bond posted)

LOCAL AND REGIONAL STUDY AREA



BASELINE STUDIES

- 2010-2014 fieldwork has been completed with operational team of DST, TBT, AMEC, EcoMetrix, KCB, gck, Keewatin-Aski and Treasury Metals personnel.
- Studies include:
  - Surface Water and Hydrology
  - Aquatics and Fisheries
  - Wetlands
  - Terrestrial Wildlife
  - Noise, Light and Dust
  - Archaeology
  - Soils and Vegetation
  - Hydrogeology
  - Socioeconomic
  - Geochemistry / Geotechnical

ENVIRONMENTAL PERMITTING – MILESTONE ACTIVITIES

ACTIVITY	TIME FRAME
+ Environmental Baseline Studies	2010 – 2014 +
+ Project Description to Federal Govt.(CEAA)	Nov. 2012
+ CEAA issues Environmental Impact Statement Guidelines to Proponent	Feb. 2013
+ Treasury develops EIS per Guidelines	Feb.2013 – Sept 2014
- Comprehensive technical document, covers all Env. aspects of project	
+ CEAA review of EIS	Sept.2014 – June 2015
- Public consultation meetings	Oct. – Nov. 2014
- Aboriginal consultation meetings	
- Feedback to Treasury, possible requests for modification of process	
+ CEAA approval of EA	Q 3 – 2015
+ Submit Permit applications to Provincial Govt. Ministries (50+)	Q 3 - 2015
+ Submit Mine Closure Plan to MNDM (Provincial)	Q 3 - 2015
+ Financial Insurance - Post Bond with Prov. Govt. to cover Mine closure costs	Q 3 - 2015
+ Approval of Provincial permit applications	Q 4 - 2015

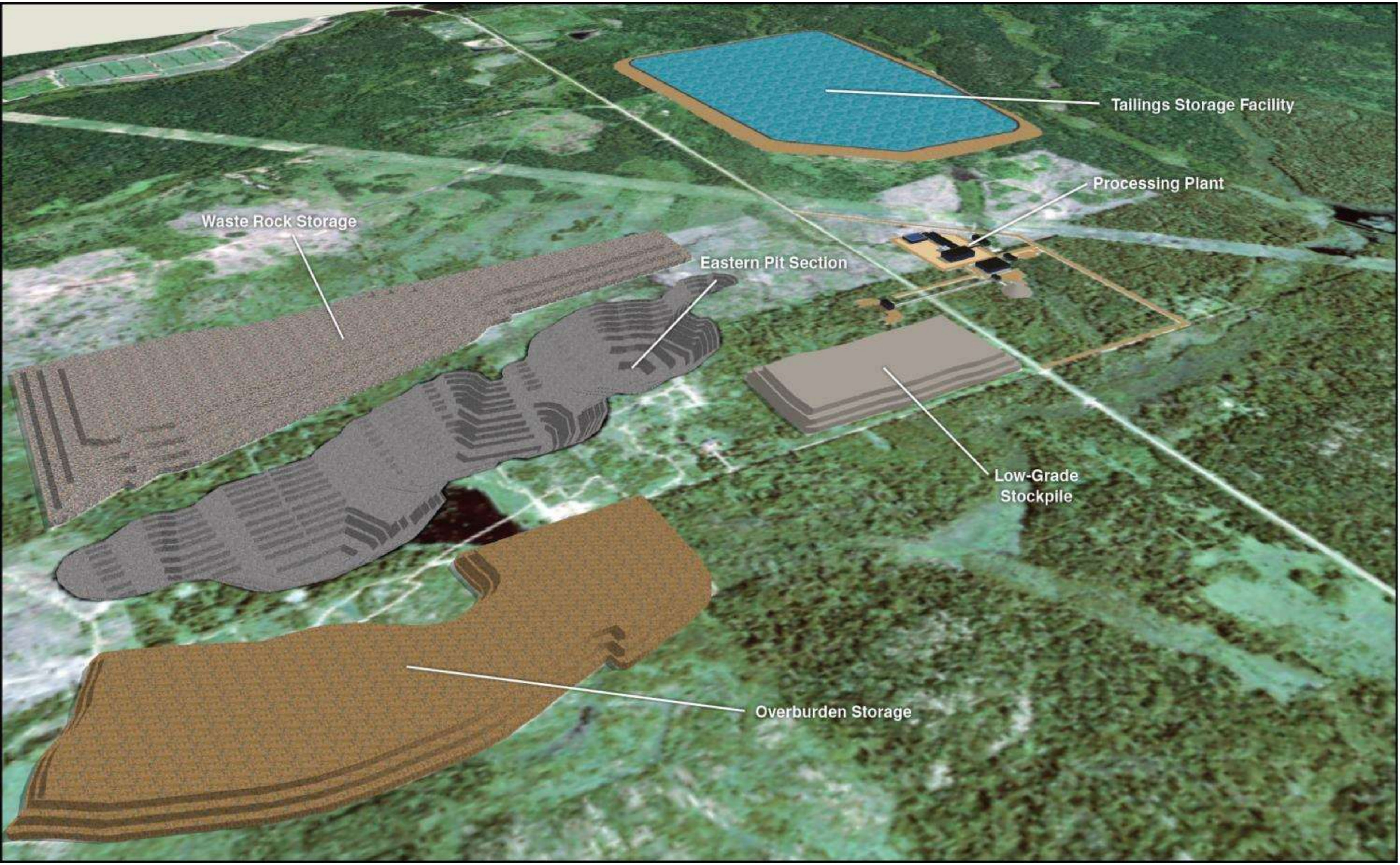
ENVIRONMENTAL STEWARDSHIP – KEY ASPECTS

- **Meet or exceed all Federal & Provincial regulatory requirements.**
- **Comprehensive water management plan and monitoring programs**
  - Ground water
  - Surface water
  - Process source water
  - Treated water discharge (Meets PWQO standards)
  - Post closure monitoring

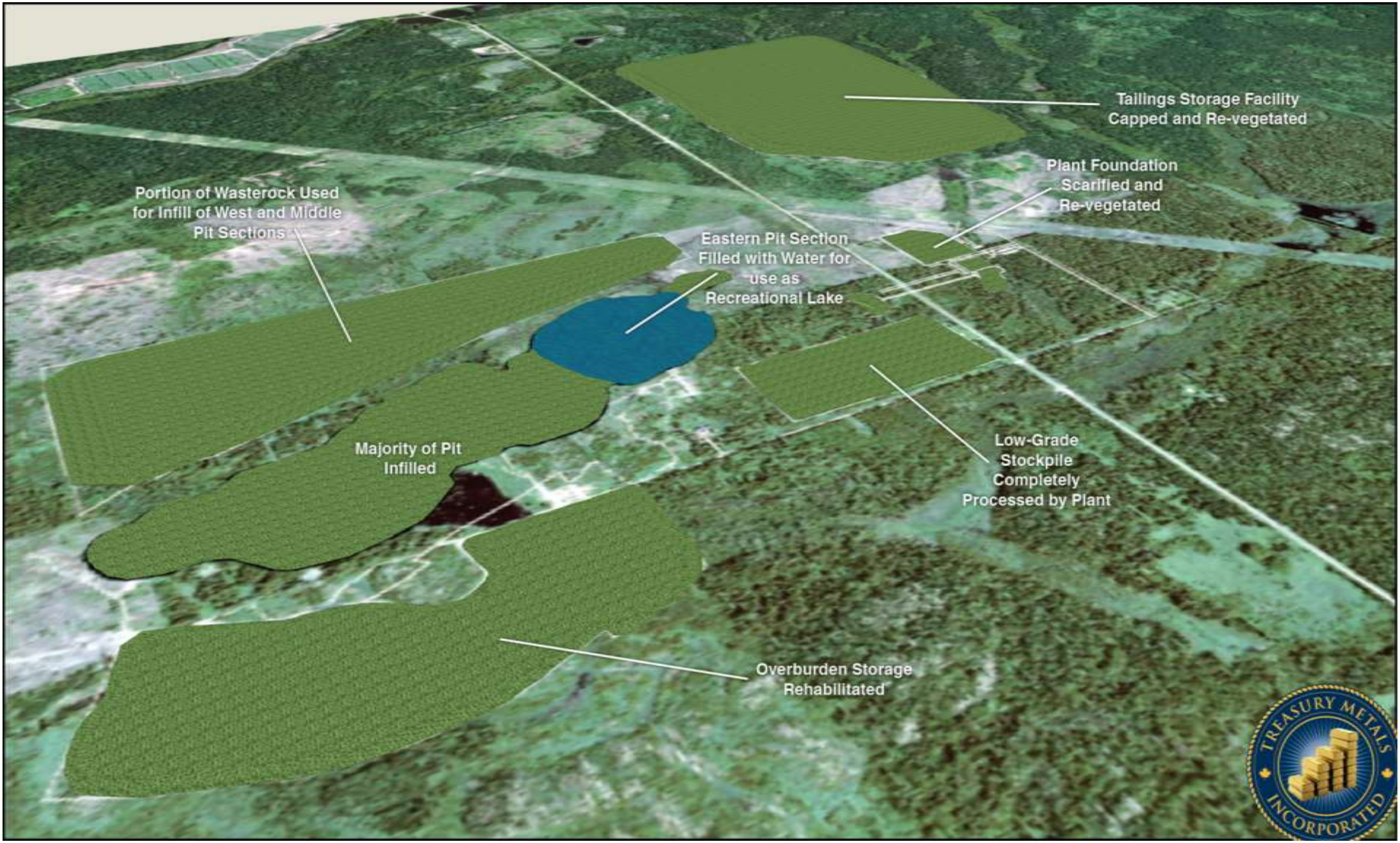
- **Tailings Management**
  - Tailings stored in an onsite TSF, NOT discharged to any lakes
  - Implementation of "Best Management Practices": Operations, Maintenance
- **Process effluent treatment (6 stage)**
  - In-plant residual sodium cyanide destruction stage - < 1 ppm NaCN
  - TSF storage, further NaCN destruction, solids removal
  - Polishing pond – final solids removal
  - Advanced oxidation process
  - Multi-media filtration
  - Reverse osmosis treatment prior to final discharge
  - Treated water discharge will meet the strict PWQO standards for Ontario

- **Ongoing site environmental monitoring control of all processes, emissions sources**
- **Comprehensive, pre-engineered and financed mine closure plan**
  - Bond posted prior to receipt of operating permits

MINE CLOSURE – BEFORE RECLAMATION



MINE CLOSURE – AFTER RECLAMATION



TECK RECLAMATION – A GREAT EXAMPLE

1998 - Decline and Ramp to Main Zone by Teck

Today - Decline and Ramp after Reclamation

GOLIATH ABORIGINAL CONSULTATION

DUTY TO CONSULT

- Duty of the Crown to consult with Aboriginal Communities
  - When projects have the potential to adversely affect treaty and Aboriginal Rights (s.35 - Constitution Act, 1982)
- Crown may delegate aspects of consultation to proponents
  - Provide information about the project
  - Consider ways to adjust project plans to minimize, avoid or otherwise address potential adverse impacts identified by Aboriginal communities

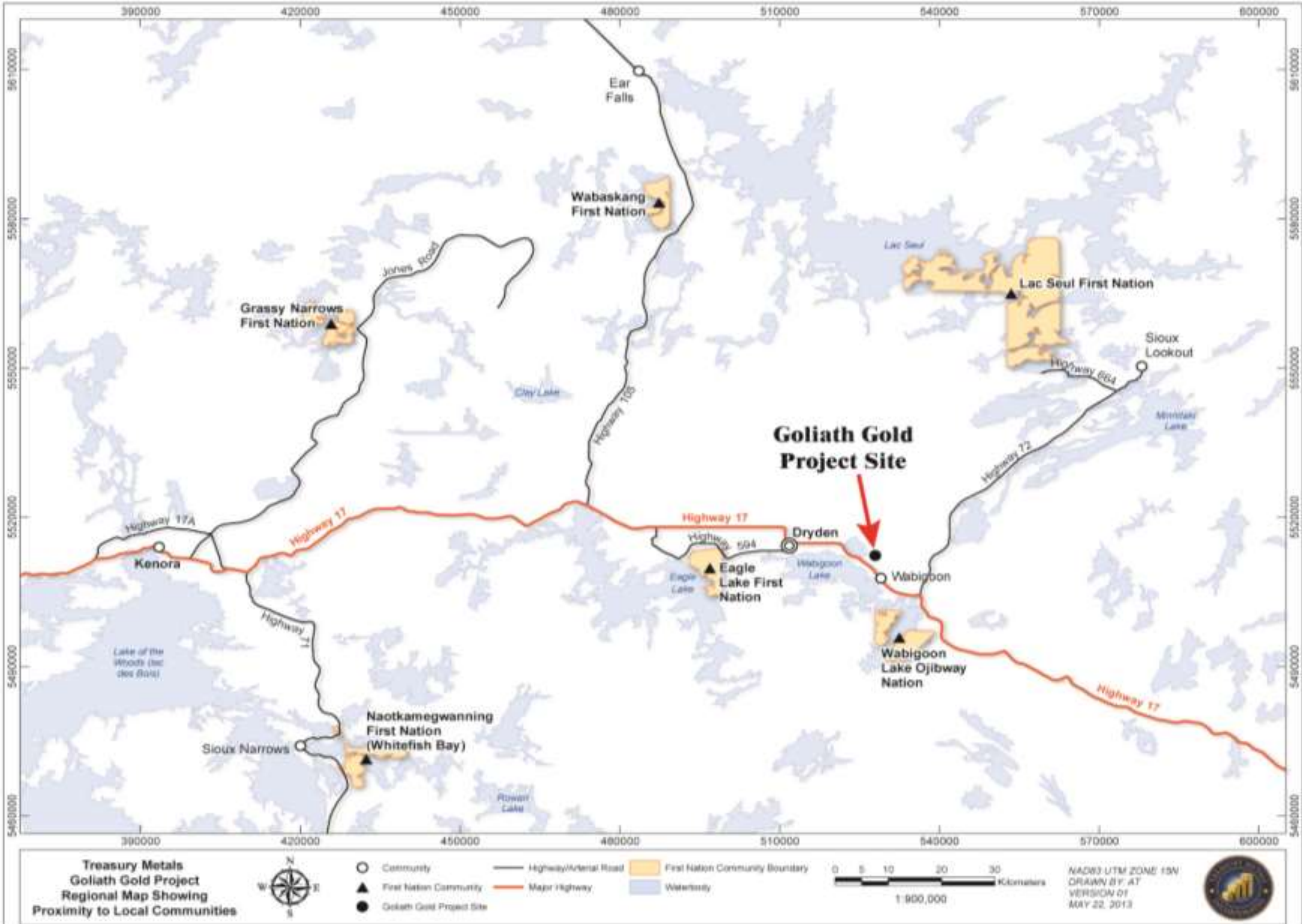
TREATY 3

- First Nations are a part of Treaty 3 - 1871
  - 55,000 square miles in NW Ontario
- Key Terms:
  - …cede, release, surrender and yield up forever, all their rights, titles and privileges whatsoever
  - …. right to pursue their avocation of hunting and fishing throughout the tract surrendered
  - …save and except such tracts as may be required or taken up for settlement, mining, lumbering or other purposes.

COMMUNITIES TO BE CONSULTED

- Identified by CEAA and / or MNDM
  - Wabigoon Lake Ojibway Nation
  - Eagle Lake First Nation
  - Lac Seul First Nation
  - Wabauskang First Nation
  - Whitefish Bay First Nation
  - Grassy Narrows First Nation
  - Métis Nation of Ontario
  - Aboriginal People of Wabigoon

ABORIGINAL COMMUNITIES



ENGAGING ABORIGINAL COMMUNITIES

+ Communities have in general been slow to engage with Treasury
+ **267** entries in the contact log for Wabigoon Lake Ojibway Nation since 2008
+ **47** contact log entries - June 2013 to January 2014 relate to arranging a meeting with WLON which finally occurred on January 20, 2014

ABORIGINAL CONSULTATION

- Treasury has met with all identified Aboriginal Communities and has provided:
  - An overview of the project location and the project
  - Copies of Environmental Baseline Reports
  - Information relating to employment and business opportunities

LONG-TERM RELATIONSHIPS

+ Treasury has expressed a desire to form long- term mutually-beneficial relationships with Aboriginal communities that include:
  – Measures for the protection of treaty and Aboriginal rights and Aboriginal values
  – Opportunities for employment and business
  – Ongoing forums for exchange of information
  – Treasury's stated offer to conduct TK studies with interested FN's and other Aboriginal communities (MNO, APW)

RESULTS OF ABORIGINAL CONSULTATION

- Communities maintain that their rights must be respected
- No specific adverse impacts relating to the Goliath site have been identified
- Concerns expressed relating to downstream effects on water quality / fishing

CURRENT STATUS OF ABORIGINAL CONSULTATION

- Currently no Agreements in place
- Detailed logs of all contact efforts maintained
  - Correspondence, phone calls, emails, meeting notes, copies of information provided etc.
- Government agencies have been kept abreast of our efforts to engage
  - Regular bi-weekly calls with MNDM / CEAA
  - Copies of correspondence / meeting notes etc. provided

EIS SUBMISSION AND ABORIGINAL CONSULTATION

- Submission of the EIS will trigger the Federal government's role in consultation
- CEAA will arrange meetings with communities with Treasury participation
- Anticipate more feedback / input from communities to result from these sessions
- New information may be required to be considered

SOCIO-ECONOMIC IMPACT AND BENEFITS

Why New Industry and Jobs Are Important to Dryden and Northwestern Ontario

DRYDEN

- Population ~7,600, 7.6% unemployment;
- Significant challenges related to economic restructuring and diversification;
- Transportation and Service Hub on TransCanada highway;
- Traditional dependency on forest industry, recent closures.

	Dryden		
	2001	2011	% change 2001 - 11
Total Population	8195	7617	-7%
Age 0 - 4	495	335	-32.3%
Age 5 - 14	1145	865	-19.2%
Age 15 - 19	590	540	-8.5%
Age 20 - 24	470	410	-12.8%
Age 25 - 44	2420	1650	-31.8%
Age 45 - 54	1205	1325	10.0%
Age 55 - 64	785	1075	36.9%
Age 65 - 74	615	725	17.9%
Age 75 - 84	380	475	25.0%
Age 85 and over	90	215	138.9%
Median age of population	38.2	45	17.8%
Percentage aged 49 and younger	62.40%	49.9%	5.3%

Source: Statistics Canada, 2001, 2006 and 2011 Census Community Profiles

CITY OF DRYDEN EMPLOYMENT COMPARATORS

SECTOR	YEAR 2001	YEAR 2014	VARIANCE
All jobs (1)	5899	4676	(1223)
Manufacturing			(889)
Retail sales-persons, sales clerks	263	158	(105)
Cashiers	210	154	(50)
Education (2)			
Primary teachers	77	59	(18)
Secondary teachers	60	56	(4)
Total	**137**	**115**	**(22)**

Note:

1) School closures in Barclay, Oxdrift, Wabigoon, Eagle River

2) Job losses would have been greater if not for inception of all day kindergarten, maximum class size restrictions, increased resources to special education.

Note: Some offsets in health care

Healthcare workers	288	506	218

Sources:

1) Chamber of Commerce, Ministry of Northern Development and Mines – EMSI Report

2) Board of Education

DRYDEN & AREA MLS REAL ESTATE DATA

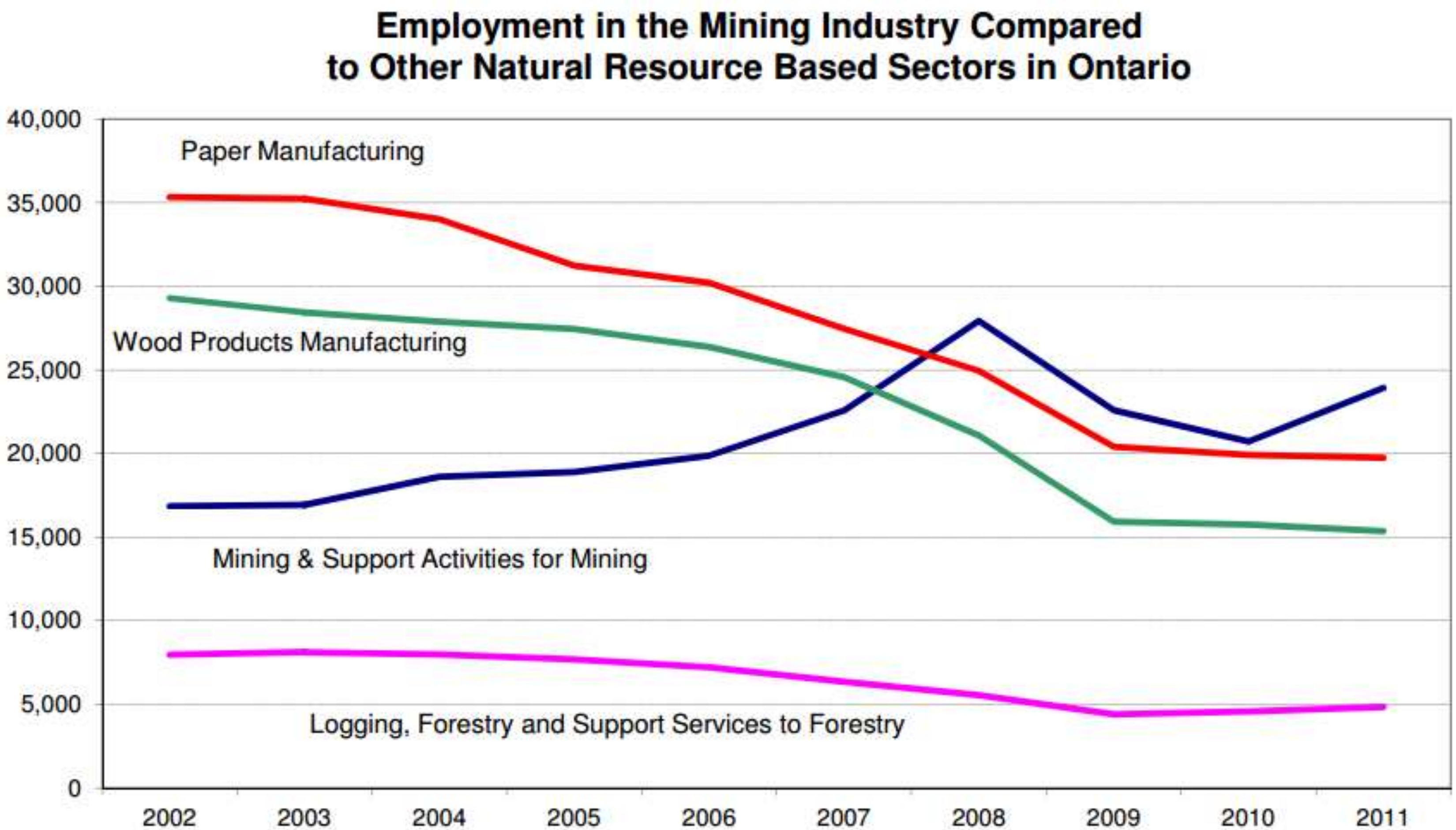
SALES TOTAL

YEAR	TOTAL	RES.	%
2010	121	97	80
2011	112	90	80
2012	111	90	81
2013	120	88	73
2014 (YTD)	91	77	85
Averages	**116**	**91**	**79%**

- Real estate market has been flat for many years
- House values essentially flat for many years

CURRENT TOTAL LISTINGS	**257**
Residential	104
Vacant Property	108
Commercial	36
Recreational	6

EMPLOYMENT COMPARISON – WHERE DO FUTURE JOBS COME FROM?



Source: Statistics Canada and authors' calculations

Treasury Metals - Community Focused

Hire Locally

- Where Labour Force and Skills are Available
- Develop Sector Specific Skills and Capacity Working With Education Institutes, First Nations, and Other Local Industries

Goliath Gold Mine

- Built in Northwestern Ontario by North-western Ontarians

Purchase Locally

- Purchase Goods and Services from Dryden and Local Businesses, Assuming Competitive Pricing and Service.
- Mine Construction;
  - Seek to use N.W. Ontario Construction Services

GOLIATH GOLD PROJECT: A LONG TERM JOB CREATOR

TMI_13-PC(1)-01_Attachment_5

PERIOD	ACTIVITIES	# PEOPLE EMPLOYED DIRECT	INDIRECT (3:1 Ratio)	TOTAL	
2008 - 2014	EXPLORATION & DRILLING, ENVIRONMENTAL & ECONOMIC STUDIES	20	60	80/YR	FOR 6 YEARS
	DRILLING CONTRACTOR	11		11	
2015	EXPLORATION & DRILLING, ENVIRONMENTAL & ECONOMIC STUDIES	20	60	80	
	DRILLING CONTRACTOR	11		11	
	PROJECT "GO" DECISION SOME HIRING OF STAFF, TRADES, OPERATORS - START TRAINING	90	270	360	
	CONSTRUCTION JOBS	100	25	125	
2016	FULL STAFFING OF MINE INCLUDING EXPLORATION & DRILLING	150	450	600	
	CONSTRUCTION JOBS	200	50	250	
2017	OPEN PIT MINING	150	450	600	
	CONSTRUCTION JOBS	50	10	60	
2018	OPEN PIT MINING	150	450	600	
2019	START U/G MINING, CONTINUE OPEN PIT MINING	190	570	760	
2020	UG MINING STARTS, PLUS OPEN PIT	190	570	760	
2021	UG MINING, FINISH OPEN PIT	180	540	720	
2022 - 2027	PIT RECLAMATION STARTS	150	450	600	FOR 6 YEARS
2028 - 2030	SITE CLOSURE & RECLAMATION, EXPLORATION WITH 12 YEAR MINE LIFE, HIGH POTENTIAL MINE LIFE WILL BE EXTENDED BEYOND 2028	50	150	200	FOR 3 YEARS
2031+	CONTINUED EXPLORATION AND DRILLING	10	30	40	
	DRILLING CONTRACTOR	11		11	

EMPLOYMENT IMPACT

ACTUAL AND FORCAST EMPLOYMENT IMPACT: 2008 - 2031

GOLIATH GOLD PROJECT

NOTE:

- MINE LIFE BEYOND THE CURRENT BASE CASE OF 10 - 12 YEARS WOULD SIGNIFCANTLY INCREASE EMPLOYMENT OPPORTUNITIES

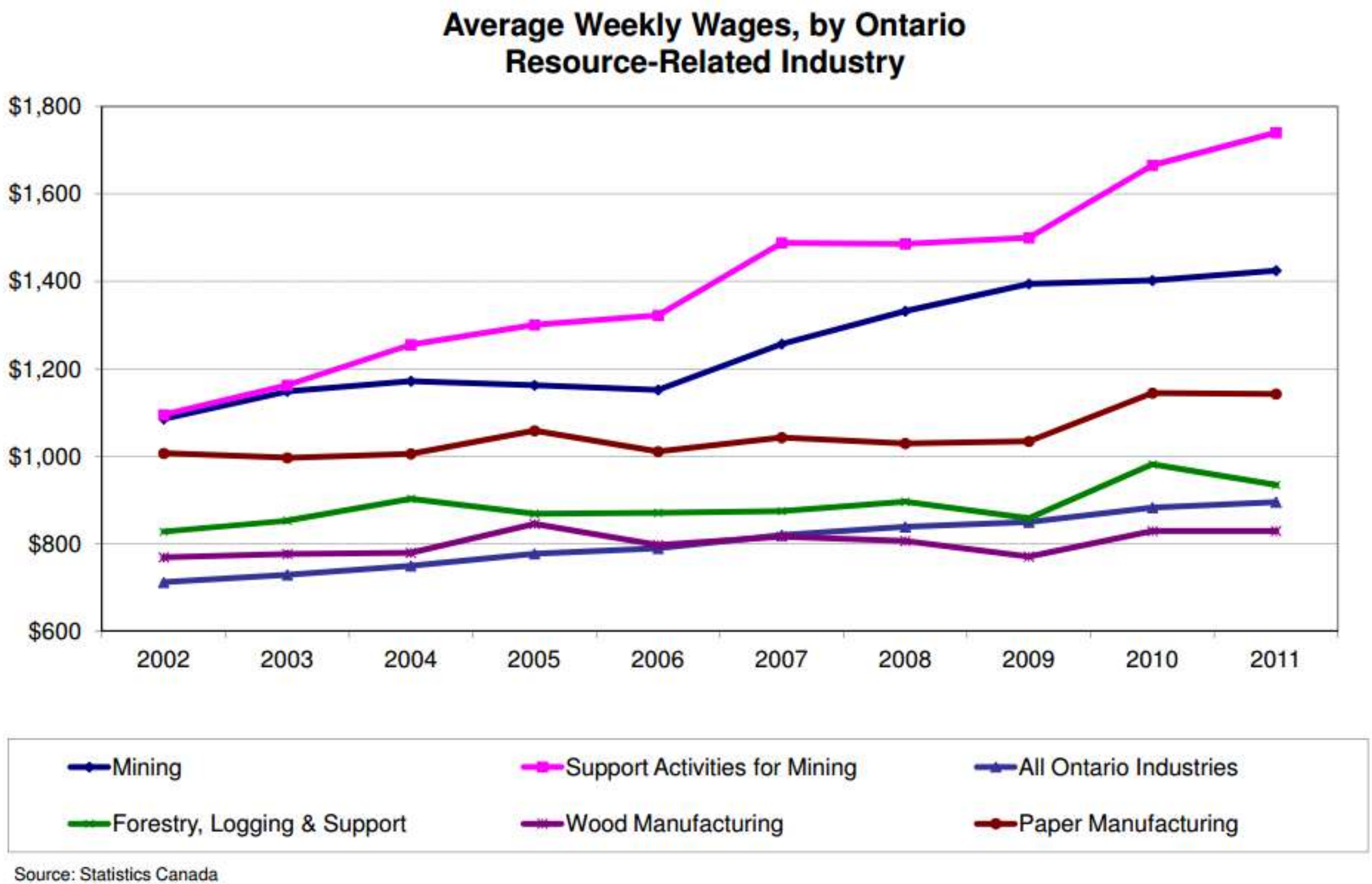
- DISCOVERY OF ADDITIONAL MINABLE RESOURCES AT THE GOLIATH OR GOLDCLIFF SITES WOULD GENERATE FURTHER OPPORTUNITIES.

SOURCE OF EMPLOYMENT	PERSON YEARS OF EMPLOYMENT
TREASURY METALS - EXPLORATION AND DRILLING - MINE DEVELOPMENT - MINE OPERATION & RECLAMATION	2,235
CONTRACTORS - CONSTRUCTION - EXPLORATION AND DRILLING	534
INDIRECT JOBS	7,045
GRAND TOTAL	9,814 PERSON YEARS

EMPLOYMENT OPPORTUNITIES: MINE OPERATION

- ✓ Underground Miner
- ✓ Ore Processing Plant Operator
- ✓ Heavy Duty Equipment Operator*
- ✓ Heavy Duty Equipment Technician*
- ✓ Multi-Trades Craftsperson's*
  (Pipefitter/Industrial Millwright Mechanic/Welder)
- ✓ Assay Lab Technician
- ✓ Instrumentation and Control Technician*
- ✓ Industrial Electrician*
- ✓ Environmental Technician
- ✓ Safety Professional

* INDICATES NEED FOR JOURNEY PERSON TICKET/OR MTCU TRANSCRIPT


Average Weekly Wages, by Ontario
Resource-Related Industry
$1,800
$1,600
$1,400
$1,200
$1,000
$800
$600
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Mining
Support Activities for Mining
All Ontario Industries
Forestry, Logging & Support
Wood Manufacturing
Paper Manufacturing
Source: Statistics Canada

TREASURY METALS – SUPPORTING LOCAL BUSINESS

- Treasury Metals has invested over $35 mm into the Goliath Project since 2008
- 2012 Spending $ 5.9 mm, $ 4.3 mm Locally

Treasury has purchased goods and services from over 92 Dryden area businesses in 2013.

2013 LOCAL PURCHASES SUMMARY – TRANSACTION LIST BY VENDOR

	Dryden and Area	Location
1	A&W	Dryden
2	Acklands-Grainger Inc.	Dryden
3	All Seasons Travel	Dryden
4	Anderson's Crystal Clear Bottled Water	Dryden
5	Aaron Provincial Park	Dryden
6	AWCL Printing	Dryden
7	B&B Roadhouse	Dryden
8	B&M Delivery Service Ltd.	Dryden
9	Bearskin Air	Dryden
10	Bell Canada / 807-938-6961 (610)	Dryden
11	Bell Mobility Inc.	Dryden
12	Best Western	Dryden
13	Boffo Bag Co.	Dryden
14	Bri-Mar Courier Plus	Dryden
15	Buster's BBQ	Dryden
16	Canada Post	Dryden
17	Canadian Tire	Dryden
18	Caren Clearing & Spraying	Dryden
19	City of Dryden	Dryden
20	City Of Dryden - Dryden Waterworks	Dryden
21	CKDR Dryden	Dryden
22	Clean More Service	Dryden
23	Cleanrite	Dryden
24	Cornerstore, The	Dryden
25	Courtesy Freight Systems Ltd.	Dryden
26	D & D Contracting	Dryden
27	Daignault, Karen (Cleaning)	Dryden
28	Distinctive Drilling Services Inc.	Dryden
29	DMTS	Dryden
30	Domino's Pizza	Dryden
31	Dryden District Chamber of Commerce	Dryden
32	Dryden High School	Dryden
33	Dryden IGA	Dryden
34	Enterprise Car Rentals	Dryden
35	Extra Foods	Dryden
36	Fediuk's Plumbing & Heating	Dryden
37	Fire-Alert Balmertown	Dryden
38	Gardewine North	Dryden
39	George Solomon & Sons Ltd.	Dryden
40	Green Achers	Dryden
41	Handee-Man	Dryden
42	Home Hardware	Dryden
43	Husky	Dryden
44	IGA	Dryden
45	J.N. Webb & Sons	Dryden
46	J & R's Pumps & Electric Motor Repair	Dryden
47	Just for You Catering by Ross	Dryden
48	KFC	Dryden
49	K.K. Penner & Sons	Dryden

	Dryden and Area	Location
50	Kokom's Bannock Shack	Dryden
51	Kupper's Bakery	Dryden
52	Lac Seul First Nation	Dryden
53	Lock & Key Service	Dryden
54	M&M Meatshops	Dryden
55	Mac Print	Dryden
56	Manitoulin Transport	Dryden
57	McAuley & Partners	Dryden
58	McDonald's	Dryden
59	Migisi Sahgaigan - Catering	Dryden
60	Metis Nation of Ontario	Dryden
61	Mohawk - Car Wash	Dryden
62	Morgan Fuels	Dryden
63	Northland Septic Service	Dryden
64	Northwest Metis Council	Dryden
65	Patricia Inn	Dryden
66	Red River Cooperative Ltd.	Dryden
67	REZ Electric General Contracting	Dryden
68	Ristorante Pizzeria	Dryden
69	Riverview Lodge	Dryden
70	Safeway	Dryden
71	Sa's Electric	Dryden
72	7-Eleven	Dryden
73	Shaw Walleye Masters	Dryden
74	Short Stop	Dryden
75	SPI Health & Safety Inc.	Dryden
76	St. Aubin Saw Shop	Dryden
77	Subway	Dryden
78	Sunset Country Realty Inc.	Dryden
79	SUNTRAC Contracting & Rentals Inc.	Dryden
80	The $ Store Plus	Dryden
81	TimberMax	Dryden
82	TLC Automotive	Dryden
83	Trans Canada Motel	Dryden
84	Twin Towers	Dryden
85	UAP NAPA	Dryden
86	United Rentals of Canada Inc.	Dryden
87	Vermeer and VanWalleghem	Dryden
88	Wabigoon Lake Community Store	Dinorwic
89	Wabigoon Memorial Hall	Dryden
90	Wal-Mart	Dryden
91	Wesawkwete Zone One Community Group	Dryden
92	Wilson's Business Solutions	Dryden

	N.W.Ontario Businesses	Location
1	ALS Canada Ltd.	Thunder Bay
2	Avis Rent a Car	Sioux Lookout
3	Bayview Toyota	Kenora
4	Boreal Heritage Consulting	Thunder Bay
5	DP Diamond Blades	Thunder Bay
6	Esso	Sioux Lookout
7	Johnny's Fresh Market	Sioux Lookout
8	Lakeside Inn	Kenora
9	Minister of Finance (Prov Taxes)	Thunder Bay
10	Ministry of Finance (Land Taxes)	Thunder Bay
11	Nordmin Engineering Ltd.	Thunder Bay
12	N.W.O. Mines and Minerals	Thunder Bay
13	Pleson, Alex*	Thunder Bay
14	Sling-Choker Mfg. (Thunder Bay) Ltd.	Thunder Bay
15	TBT Engineering Consulting Group	Thunder Bay
16	TBaytel	Thunder Bay
17	Thunder Bay International Airport	Thunder Bay
18	Tom Thompson Photography	Kenora
19	Valhalla Inn	Thunder Bay

	Ontario	Location
1	Accurassay Laboratories	London
2	AGAT Laboratories	Mississauga
3	AMEC Environment & Infrastructure	Toronto
4	CAE Mining Canada Inc.	Sudbury
5	EcoMetrix Incorporated	Mississauga
6	ESRI Canada	Toronto
7	Fort William First Nation	Thunder Bay
8	Hydro One (5)	Toronto
9	Mine Design Engineering Inc.	Kingston
10	Pine Environmental Services Inc.	Mississauga
11	Porter Air	Toronto
12	RWDI Air Inc.	Guelph
13	Tetra Tech WEI Inc.	Mississauga
14	Union Gas Limited	Toronto
15	Wurth Canada	Mississauga

	Out of Province	Location
1	CDN Resource Laboratories Ltd.	Langley
2	John Chulick USD	Chile
3	Ellis Geophysical Consulting Inc. USD	Reno
4	Gekko Systems	Vancouver
5	Great Slave Helicopters	Calgary
6	North Shore Environmental Services	Regina
7	Pioneer Groundwater Monitoring Products	Calgary
8	SHAW Cable	Calgary
9	Wells, John A.	Vancouver

2012 LOCAL PURCHASES SUMMARY TRANSACTION LIST BY VENDOR

	Dryden and Area	Location
1	2050206 Ontario	Dryden
2	7-Eleven	Dryden
3	A&W	Dryden
4	Acklands-Grainger Inc.	Dryden
5	Alex Wilson Coldstream Ltd.	Dryden
6	All Seasons Travel	Dryden
7	Anderson's Crystal Clear Bottled Water	Dryden
8	Apple Autoglass	Dryden
9	AWCL Printing	Dryden
10	B&B Roadhouse	Dryden
11	B&M Delivery Service Ltd.	Dryden
12	Balla Bros. Rentals	Dryden
13	Baywash	Dryden
14	Bearskin Air	Dryden
15	Bell Canada / 807-938-6961 (610)	Dryden
16	Bell Mobility Inc.	Dryden
17	Bert's Auto Wrecking	Dryden
18	Best Western	Dryden
19	Buster's BBQ	Dryden
20	Cal's Lawn Care	Dryden
21	Canadian Red Cross Society	Dryden
22	Canada Post	Dryden
23	Canadian Tire	Dryden
24	City of Dryden	Dryden
25	City Of Dryden - Dryden Waterworks	Dryden
26	City of Dryden - Phone	Dryden
27	City of Dryden - Recreation Complex	Dryden
28	CKDR Dryden	Dryden
29	Clean More Service	Dryden
30	Cory Henderson Contracting	Dryden
31	Courtesy Freight Systems Ltd.	Dryden
32	D & D Contracting	Dryden
33	D. McDonald Carpentry	Dryden
34	Daignault, Karen (Cleaning)	Dryden
35	Distinctive Drilling Services Inc.	Dryden
36	DMTS	Dryden
37	Domino's Pizza	Dryden
38	Dryden District Chamber of Commerce	Dryden
39	Dryden High School	Dryden
40	Dryden Ice Dogs Junior "A" Hockey Club	Dryden
41	Dryden IGA	Dryden
42	Dryden Regional Health Services Foundatio	Dryden
43	Dryden Skating Club	Dryden
44	Enterprise Car Rentals	Dryden
45	Extra Foods	Dryden
46	Fediuk's Plumbing & Heating	Dryden
47	Gardewine North	
48	George Solomon & Sons Ltd.	Dryden
49	Grace Haven Festival of Trees	Dryden
50	Green Achers	Dryden
51	Handee-Man	Dryden
52	Home Hardware	Dryden
53	Husky	Dryden
54	IGA	Dryden
55	Keith Kakapetum	Dryden

	Dryden and Area	Location
56	KA Sports	Dryden
57	KPDSB (The Centre auditorium rental)	Dryden
58	KFC	Dryden
59	Kupper's Bakery	Dryden
60	Lac Seul First Nation	Dryden
61	Local Services Board of Wabigoon	Dryden
62	Lock & Key Service	Dryden
63	Mac Print	Dryden
64	Marks Workwear	Dryden
65	M&M Meatshops	Dryden
66	Manitoulin Transport	Dryden
67	Masala	Dryden
68	McAuley & Partners	Dryden
69	McDonald's	Dryden
70	Morgan Fuels	Dryden
71	Northern Renegades Hockey Club	Dryden
72	Northwestern Auto Sales	Dryden
73	Oshtugon Computers	Dryden
74	Patrcia Inn	Dryden
75	Petro Canada	Dryden
76	Pizza Hut	Dryden
77	Precision Motors	Dryden
78	Railside Sports & Marine	Dryden
79	Red River Cooperative Ltd.	Dryden
80	RES Equipment Sales	Dryden
81	REZ Electric General Contracting	Dryden
82	Ristorante Pizzeria	Dryden
83	Riverview Lodge	Dryden
84	Roach's Taxi	Dryden
85	Rock House Tap & Grill	Dryden
86	Safeway	Dryden
87	Sa's Electric	Dryden
88	Shaw Walleye Masters	Dryden
89	Shoppers Drug Mart	Dryden
90	Short Stop	Dryden
91	Sioux Lookout Area	Dryden
92	Skene Transfer	Dryden
93	SPI Health & Safety Inc.	Dryden
94	St. Aubin Saw Shop	Dryden
95	Subway	Dryden
96	Sunset Country Realty Inc.	Dryden
97	SUNTRAC Contracting & Rentals Inc.	Dryden
98	Superior Safety Inc.	Dryden
99	The Camera Corner	Dryden
100	Tim Hortons	Dryden
101	TimberMax	Dryden
102	TLC Automotive	Dryden
103	Tony's Bait and Tackle	Dryden
104	Trans Canada Motel	Dryden
105	Twin Towers	Dryden
106	United Rentals of Canada Inc.	Dryden
107	Vermeer and VanWalleghem	Dryden
108	Wabigoon Lake Community Store	Dinorwic
109	Wal-Mart	Dryden
110	Wilson's Business Solutions	Dryden

	N.W.Ontario Businesses	Location
1	ALS Canada Ltd.	Thunder Bay
2	Bayview Toyota	Kenora
3	Boreal Heritage Consulting	Thunder Bay
5	DP Diamond Blades	Thunder Bay
6	DST Consulting Engineers Inc.	Thunder Bay
7	Fire-Alert Balmertown	Dryden
8	Minister of Finance (Prov Taxes)	Thunder Bay
9	Ministry of Finance (Land Taxes)	Thunder Bay
10	Naicatchewenin Development Corporation	Fort Frances
11	Northshore Environmental	Thunder Bay
12	Pleson, Alex*	Thunder Bay
13	Sioux Lookout Abiriginal Management Board	Sioux Lookout
14	TBT Engineering Consulting Group	Thunder Bay
15	TBaytel	Thunder Bay
16	The Drafting Clinic	Mississauga
17	Tom Thompson Photography	Kenora
18	Valhalla Inn	Thunder Bay

	Ontario	Location
1	A C A Howe International Limited	Toronto
2	Accurassay Laboratories	London
3	AMEC Environment & Infrastructure	Toronto
4	CAE Mining Canada Inc.	Sudbury
5	Cansel Survey Equipment Ltd.	Toronto
6	EcoMetrix Incorporated	Mississauga
7	ESRI Canada	Toronto
8	Hydro One (4)	Toronto
9	Pine Environmental Services Inc.	Mississauga
10	Service Ontario - Publications	
11	Union Gas Limited	Toronto
12	Wurth Canada	Mississauga

	Out of Province	Location
1	Bell Mobility	
2	Campbell Scientific (Canada) Corp.	Edmonton
3	CDN Resource Laboratories Ltd.	Langley
4	John Chulick USD	Chile
5	Ellis Geophysical Consulting Inc. USD	Reno
6	Exploration Services	Sudbury
7	Gekko Systems	Vancouver
8	Klohn Crippen Berger Ltd.	Vancouver
9	North Shore Environmental Services	Regina
10	SHAW Cable	Calgary
11	Wells, John A.	Vancouver

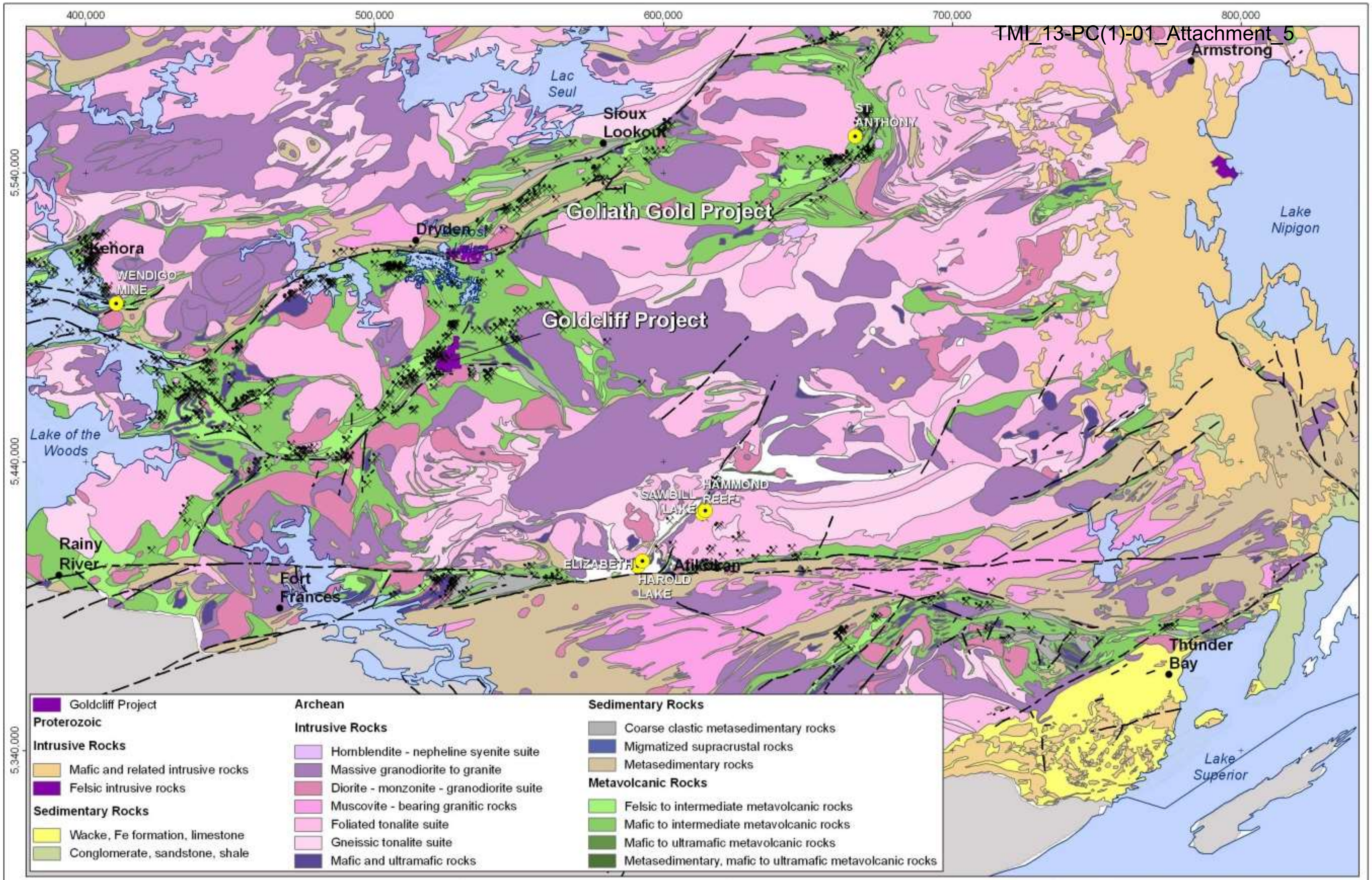
SOCIAL AND ECONOMIC BENEFITS HI-LITE SUMMARY

- 150 – 190 direct high paying skilled jobs
  - Opportunity to repatriate displaced forest industry workers
  - Local youth and Aboriginal communities
- Local business opportunities
  - Supplies, services, contract services
- Home purchasing and construction
- Wabigoon municipality tax revenue increase
- Residential tax base increase
- Potential improvement in commercial residential real estate values

A FUTURE VISION FOR DRYDEN


"DRYDEN A MINING HUB"

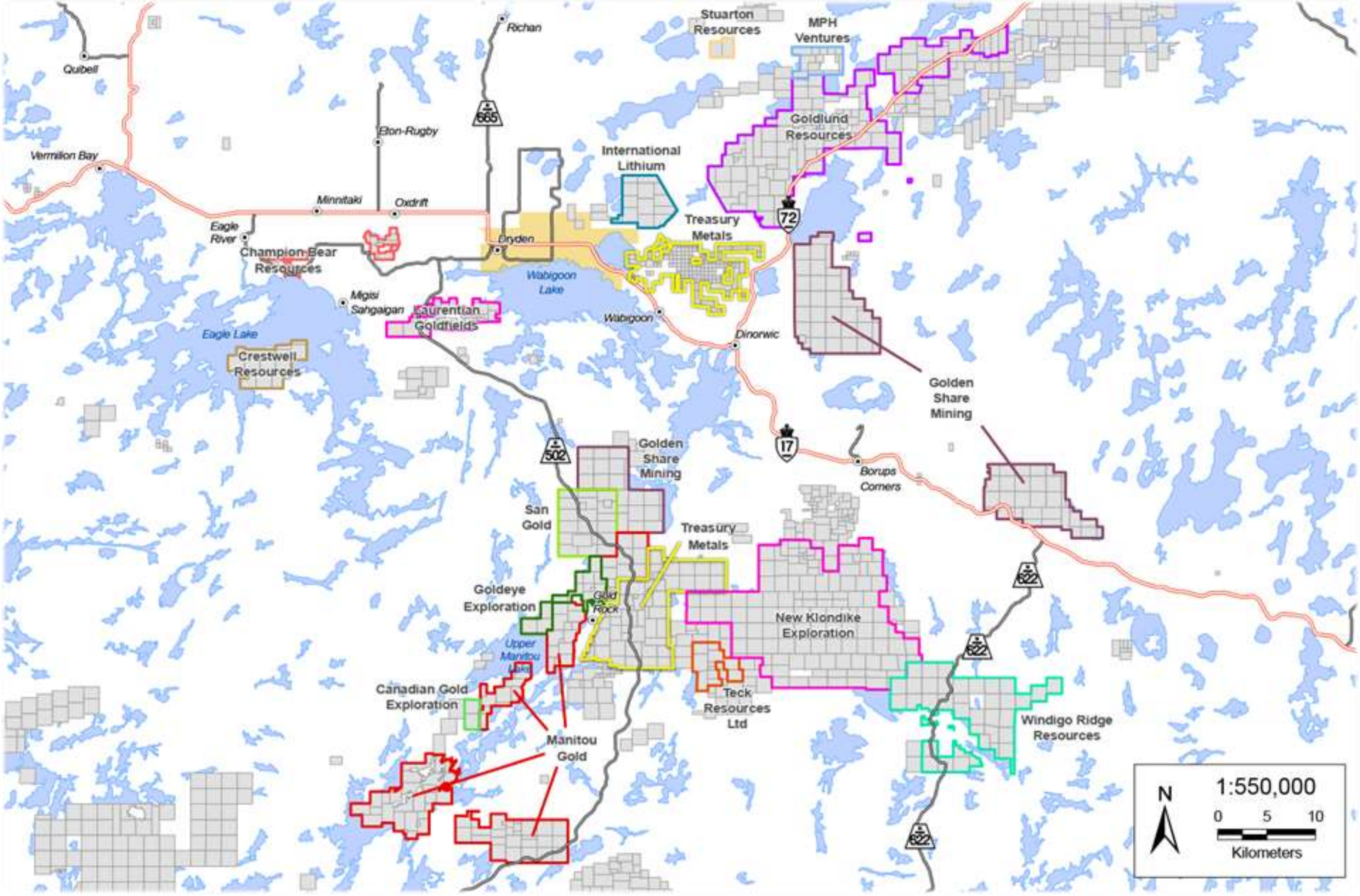




GEOLOGY SUPPORTS DRYDEN AS A REGIONAL HUB

TMI_13-PC(1)-01_Attachment_5

REGIONAL CLAIMS, 2014



TREASURY METALS INFORMATION CENTER

- Downtown Dryden
- Provides public access to information about the Treasury Metals and the Goliath Gold Project
- Four Information Stations:
  - Environment & Closure
  - Social & Economic Benefits
  - Geology
  - Project Layout
- Video room
- Public feedback and questions welcome!

TREASURY METALS – THIS TIME NEXT YEAR

- Optimization Studies, EIS, Resource Estimate, PFS/Feasibility Studies completed
- Well advanced on permitting process
- Potential new strategic financiers involved
- Near-term production visibility with exploration up-side

Partners in Economic Development with our local Municipalities, First Nation and Aboriginal Communities

TREASURY METALS INCORPORATED

We would be pleased to answer any questions you have.

For more information about us, please visit our website at
www.treasurymetals.com

Treasury Metals has completed its Environmental Impact Statement under the Canadian Environmental Assessment Act, 2012 for the development and operation of the Goliath Gold Project.

The Project is a proposed open pit and underground gold mine with related processing facilities and infrastructure. The Project will be developed approximately 5 kilometers northwest of Wabigoon, ON.

You're… INVITED

The Canadian Environmental Assessment Agency will be hosting open houses to share the details of the Environmental Impact Statement as part of the 30 day comment period.

PLEASE JOIN US
AT ONE OF OUR OPEN HOUSES:

WEDNESDAY, MAY 6
6 p.m. to 9 p.m.
Wabigoon Memorial Hall
Highway 17 #10700

THURSDAY, MAY 7
3 p.m. to 5 p.m. and
6 p.m. to 9 p.m.
Dryden Best Western
349 Government St

For more information contact
TREASURY METALS
at (807) 938-6961
www.treasurymetals.com

TREASURY METALS
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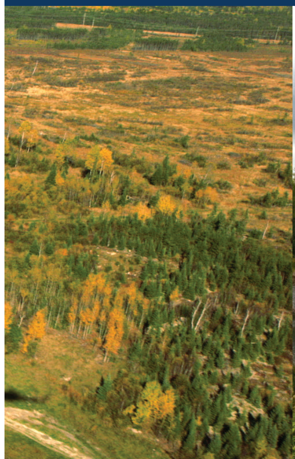



AN ONTARIO COMPANY WITH A LOCAL FOCUS:

CORE VALUES & RELATIONSHIPS:

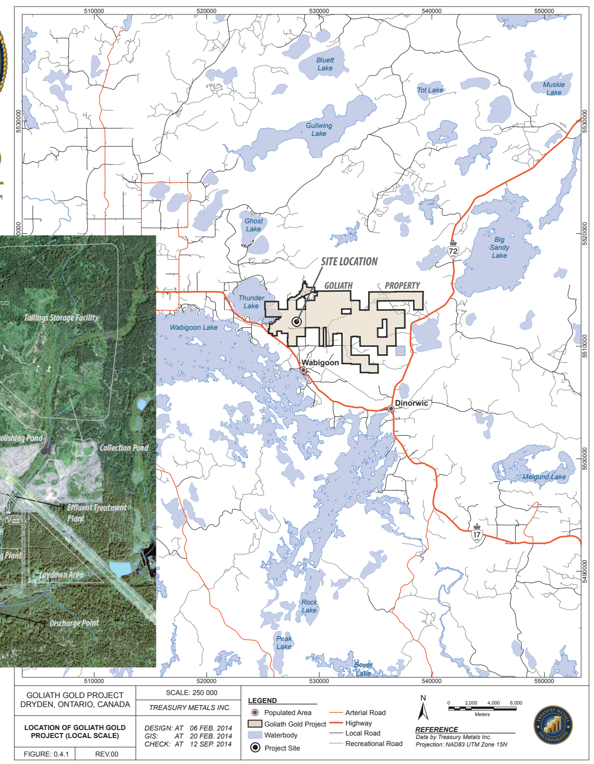
SAFETY

- Working safely is about "Caring for People"
- Nothing we do is worth getting hurt over
- Working towards "Zero" recordable injury rate
- Environment
- Responsible Stewards of the lands on which we operate

PEOPLE / STAKEHOLDERS

- Work for the mutual benefit of all Communities and Stake Holders
- Treat people with Respect and Dignity
- Demonstrate Ethical Behavior and Act with Integrity
- Act with Simplicity, Speed, Decisiveness


SITE LOCATION AND SITE LAYOUT



Ministry of the Environment & Climate Change

Mineral Exploration & Mine Development

Presented at: Treasury Metals

By: Shawn Burr, Senior Environmental Officer

Date: August 7, 2014

Objectives

- Overview of MOECC
    - Legislation
    - Policies

- Overview of MOECC
    - Inspections program

Legislation

- MOECC Provincial Officers are designated under the following legislation:
  - *Ontario Water Resources Act (OWRA)*
  - *Environmental Protection Act (EPA)*
  - *Pesticides Act*
  - *Safe Drinking Water Act*
  - *Nutrient Management Act*
  - *Environmental Assessment Act*
- Under each Act, there are many Regulations. All environmental legislation can be viewed on the website www.e-laws.gov.on.ca

Ontario Water Resources Act

- **Certificate of Approval – Private Sewage Works:**
  - Required under Section 53 if the system(s) has a treatment capacity of over 10,000 liters per day (otherwise approval is through the Health Unit).
  - The treatment capacity is based on the 1997 Ontario Building Code (Part 8).
- **Permit to take Water:**
  - Required under Section 34 for any taking of (surface or ground) water exceeding 50,000 litres in a day.

Ontario Water Resources Act

- **Ontario Regulation 903:**
  - Wells must be drilled and abandoned in accordance with the Regulation.
- **Certificate of Approval - Industrial Sewage:**
  - Required under Section 53 for industrial sewage works construction and discharge (e.g. tailings ponds, mine water discharge, oil/water separators).

- General prohibition against discharging materials of any kind into surface waters or to land where it may enter surface water, that may impair the quality of the water.

Environmental Protection Act

- **Certificate of Approval - Air:**
  - Required by s. 9 of the EPA for the discharge of contaminants to air.
  - Also requirements under Regulations, e.g. Ontario Regulation 419.
- General prohibition against discharge of contaminants into the air.

- **Certificate of Approval – Waste Disposal Site (Landfill)**
  - Required under section 27 for a waste disposal site.

- General prohibition against disposal of waste except in an approved waste disposal site.

Environmental Protection Act

- **Liquid/Hazardous Waste Management**
  - Ontario Regulation 347 (pursuant to the EPA), requires that a generator of liquid industrial or hazardous waste register as a generator if at a site, more than 25 litres of subject waste is generated in one month.
  - Field operations are exempted from needing registration.
  - Subject waste includes, for example, waste oil, contaminated fuel or waste petroleum distillates (mineral spirits).
- **Spills:**
  - Section 92 requires that anyone who caused, permitted or knows of a spill to **forthwith** make a report of such to the Ministry (24 hour Spills Action Centre at 1-800-268-6060).
  - Everything practicable shall be undertaken **forthwith** to prevent, eliminate and ameliorate the adverse effect of a spill and to restore the natural environment.

Environmental Protection Act

- Ontario Regulation 560/94 Effluent Monitoring and Effluent Limits – Metal Mining Sector establishes:
  - Calculation of Loadings and Concentrations
  - Parameter and Lethality Limits
    - Acute Lethality Testing & Chronic Toxicity Testing
  - Monitoring
    - pH, cyanide, suspended solids, copper, lead, nickel, zinc & arsenic
  - Effluent Volume
  - Storm water
  - Records & Reports
    - Public reporting requirements – June 1st.

Surface Water Requirements

- The Ministry of Environment and Climate Change (MOECC) will require stringent effluent limits to be included as part of the Environmental Compliance Approval (ECA).
- Effluent limits are enforceable benchmarks that MOECC will require the company to meet for all site discharges.
- Final effluent limits are developed taking into consideration the Ministry's "Deriving Receiving-Water Based, Point-Source Effluent Requirements for Ontario Waters, July 1994" (Procedure B-1-5).
- Receiving water targets will be set at Provincial Water Quality Objectives (PWQO) or other scientifically defensible surface water criteria. PWQO's are set at a level of water quality which is protective of all forms of aquatic life and all aspects of the aquatic life cycles during indefinite exposure.

Environmental Approvals

- Activities regulated under the Environmental Protection Act, R.S.O 1990, Chapter E.19, and the Ontario Water Resources Act, R.S.O 1990, Chapter O.40, must be carried out in accordance with those Acts, the applicable regulations and the guidelines administered by the ministry.
- In many cases that will require the obtaining of an approval under Part II.1 of the Environmental Protection Act (EPA). The ministry updates these requirements from time to time, as the environmental standards and environmental management approaches evolve and develop.
- By law, a business must have an environmental approval or registration from the Ministry of the Environment and Climate Change if it:
  - releases pollutants into the air, land or water
  - stores, transports or disposes of waste
- An environmental approval or registration sets out rules of operation for these activities that are intended to protect the natural environment and are legally enforceable.

Inspections

- Inspections are a proactive mechanism to assess facilities for compliance with ministry requirements and audit information provided to the ministry.
- Inspections can be planned or responsive, scheduled or unscheduled and are completed for a number of reasons (e.g. in response to complaints, general audit purposes etc).
- The goal of inspections is to promote awareness of the requirements in Ontario and to minimize overall environmental and human health impacts.
- Powers of Provincial Officers - s. 156

Inspections

- During the inspection, the Provincial Officer will:
  - Meet with staff to discuss the purpose of the inspection.
  - Conduct a visual inspection of the works, taking notes, pictures, and samples where appropriate.
  - Review permit/legislative requirements.
  - Review, and as necessary, copy documentation retained at the facility.
  - Provide comments regarding potential compliance issues noted during the inspection and discuss potential corrective actions.
- Following the inspection, the Provincial Officer will complete an inspection report and mail it to the company.

Compliance Issues

- Compliance issues noted during the inspection will be recorded in a ministry incident report.
- Incident reports are used to track the compliance issue and response actions undertaken by both the ministry and the company.
- A compliance issue will be evaluated to determine whether it constitutes:
  - A known or anticipated human health or environmental impact or
  - A potential, uncertain environmental hazard.

Protecting our environment. Ontario

Compliance Issues

- Depending upon the circumstances (e.g. type of non-compliance, type of facility, and compliance history) and following the ministry's Compliance Policy*, the Provincial Officer may:
  - In the case of an emergency or spill that poses an immediate danger to human health or to the environment, require immediate action to be taken.
  - Undertake a voluntary abatement plan or a mandatory abatement plan (e.g. issue a Provincial Officer's Order).
  - Issue a ticket under Part I of the Provincial Offences Act.
  - Refer the issue to the ministry's Investigation and Enforcement Branch.

*Available on the ministry's website www.ene.gov.on.ca

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TREASURY METALS
INCORPORATED

Goliath Gold Project

PUBLIC INFORMATION MEETING

TREASURY METALS INC. INVITES YOU TO ATTEND A PUBLIC MEETING ON TUESDAY OCTOBER 30TH TO HEAR ABOUT OUR EXCITING "GOLIATH GOLD PROJECT". TREASURY METALS HAS BEEN DOING EXPLORATION WORK ON ITS PROPERTY BETWEEN WABIGOON AND THUNDER LAKE SINCE 2008 AND IS NOW STARTING DOWN THE PATH TO DEVELOPING THIS RESOURCE INTO AN OPERATING MINE.

ALTHOUGH THERE IS MUCH WORK TO BE DONE AND MANY BRIDGES TO CROSS BEFORE A MINE BECOMES A REALITY, WE ARE EXCITED ABOUT THE ECONOMIC ACTIVITY THE PROJECT WILL GENERATE AND THE JOBS IT WOULD BRING TO THE COMMUNITY. YOUR INPUT AND QUESTIONS ARE IMPORTANT TO US. WE APPRECIATE THE OPPORTUNITY SHARE WHAT WE ARE DOING WITH YOU AND ANSWERING ANY QUESTIONS YOU MAY HAVE.

WE WILL HOLD **TWO** MEETINGS TO ACCOMMODATE MOST PEOPLE'S WORK SCHEDULES.

DATE: Tuesday, October 30TH, 2012

TIMES: 2 pm and 7 pm

LOCATION: THE CENTRE – AUDITORIUM
100 Casmir Avenue
Dryden, ON

IN ADDITION TO OUR PRESENTATION, WE WILL HAVE A BOOTH SET UP AND HAVE SEVERAL DRAWS FOR THOSE WHO ATTEND.

WE LOOK FORWARD TO SEEING YOU ON OCTOBER 30TH.

<Original signed by>	<Original signed by>	<Original signed by>
Norm Bush	Rory Krocker	Mark Wheeler
V.P. Operations	Sr. Project Geologist	Sr. Mining Engineer

Environmental Baseline Studies

Comprehensive environmental and socio-economic studies were initiated by Treasury Metals and its consultant team in 2008 to characterize and document the pre-development environmental baseline.. Complete results of these studies are included in the Goliath Gold Project Environmental Impact Statement. Please feel free to speak with Treasury personnel and the study authors during the open house meetings.

Studies completed to support the Goliath Gold Project Environmental Impact Statement (EIS) include:

- Surface Water and Hydrology
- Hydrogeology
- Geochemistry
- Aquatics and Fisheries
- Terrestrial Wildlife
- Terrain and Soils
- Wetlands
- Socioeconomic and Traffic
- Archaeology
- Country Foods
- Noise, Air, Dust, and Light
- Effluent discharge plume study

Klohn Crippen Berger
gck consulting
EcoMetrix Incorporated
DST consulting engineers
Keewatin-Aski Ltd.
TBT Engineering Consulting Group
amec
RWDI Consulting Engineers & Scientists
Tetra Tech

Valued Components

The Environmental Assessment (EA) process serves as an important decision making tool. The process requires the identification of potential adverse effects that may result from a project and ensures that those impacts are mitigated or avoided. The process also ensures that opportunities are provided for meaningful public and Aboriginal engagement.

Valued components (VC's) are those aspects of the natural and socio-economic environment that are particularly notable or valued because of their ecological, scientific, resource, socio-economic, cultural, health, aesthetic or spiritual importance. The VC's are used to focus the effects assessment for the Project.

The VC's for the Project were determined by the multi-disciplinary team conducting the assessment. Inputs to the process included regulatory requirements, consultation with regulatory authorities, information available from published and unpublished data sources, and biophysical field surveys.

Many of the VC's were derived from the engagement of local stakeholders, citizens, and Aboriginal communities which has taken place over the past four years.

The evaluation of environmental effects associated with the Project followed five steps:

1. Identification of potential Project-related effects.
2. Selection and evaluation of VC's.
3. Identification of potential interactions between the Project and VC's.
4. Development of measures to avoid, minimize, and mitigate potential Project effects.
5. Characterization of residual effects and their significance.

Residual Effects

Treasury evaluated the potential significance of residual effects by examining the level of each residual effect characteristic in the context of existing baseline data, relative literature, and consultation with regulators and other experts.

Based on guidance published by the Government of Canada, residual effects were characterized using the following criteria:

Magnitude – expected size or severity of the residual effect

- Level I – none; Level II –measurable but within range of natural variation; Level III –outside range of natural variation

Geographic Extent – the spatial scale of the residual effect

- Level I –restricted to Project footprint; Level II –extends into local study area; Level III –extends into regional study area

Duration – the temporal scale of the residual effect

- Level I –temporary or not measurable beyond given Project phase (e.g., construction); Level II –could persist up to 10 years after Project initiation; Level III –could persist beyond 10 years after Project initiation

Frequency – how often the residual effect is expected to occur

- Level I –expected to occur infrequently; Level II –expected to occur intermittently; Level III –occurs frequently or continuously

Reversibility – whether or not the residual effect can be reversed once the disturbance or activity has ended

- Level I –readily reversible over a relative short time period; Level II –partially reversible (i.e., mitigation cannot guarantee a return to pre-disturbance conditions); Level III –not reversible

Significance

A determination of the significance of any potential residual effects on VC's resulting from the Project, after the application of all proposed mitigation measures, is a specific requirement of CEAA.

CEAA defines significance as:

The relative importance of an issue, concern or environmental effect, as measured by prevailing standards, regulatory requirements, and social values.

In general, the following logic was then applied:

- If the magnitude is categorized as Level I, then the residual effect is considered not significant regardless of the levels assigned to other effect attributes.
- If the magnitude of a potential residual effect is categorized as Level II or III, a decision tree was used to evaluate significance.

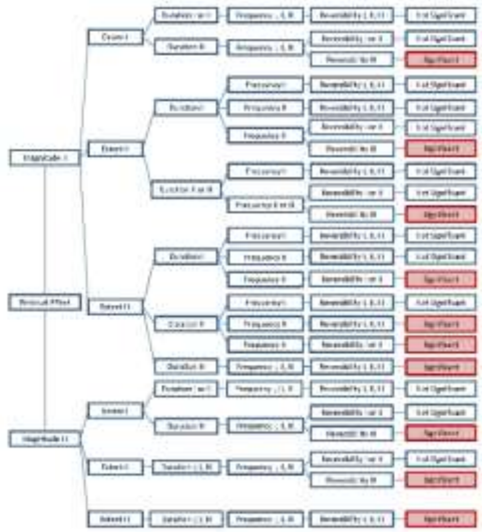


Figure 6.1.1 Residual Effects Significance Flow Chart

No significant effects to Project VC's under normal operations were identified through the EA process.

Significant effects may result in the highly unlikely event that an accidental release of contaminants to waterways occurs. The following posters identify the measures Treasury has put in place through design, mitigation and monitoring to prevent accidental releases to the environment.

Accidents and Malfunctions

A major component of the EIS process is the identification and assessment of potential accidents and malfunctions that could occur throughout all phases of the Project. Treasury understands the risks associated with the Project and is committed to operate the Project to the highest standards in safety, environmental control, security, and operations and maintenance.

Accidents and malfunctions were identified using a Failure Mode and Effects Analysis (FMEA) methodology. An FMEA is a comprehensive risk analysis procedure used to identify and characterize potential accidents and malfunctions (i.e., failure). The methodology evaluates the likelihood of an occurrence and the severity/magnitude of the failure.

Preventative procedures were identified to minimize impacts to the identified VCs, as well as contingency/emergency response procedures and follow-up monitoring for each potential failure identified.

Three categories of potential failure were selected for a more in-depth environmental assessment:

Spills/Releases to Land and Water

- Safeguards to prevent accidental spills or releases to the environment have been designed into the Project including secondary containment, best maintenance and operating practices, and operator/driver training in spill prevention and response.
- Vehicular accident while carrying hazardous materials is the greatest risk. Speed limits will be posted on-site and penalties for infractions will be imposed.
- An Emergency and Spill Response Plan will be developed for the site and spills will be reported as per regulatory requirements.

Sodium Cyanide Releases to Land, Water, and Air

- The Project incorporates an industry standard in-plant cyanide destruction process designed for the safe detoxification of residual cyanide present in process water going to the TSF. This system complies the International Cyanide Code as well as federal and provincial regulations and guidelines.
- System design, coupled with operating and maintenance best practices will ensure the plant will be operated within regulatory compliance limits established in Canada and Ontario, and/or recommended by the International Cyanide Management Institute.
- Approved transportation containers and appropriate vehicles will be used to transport sodium cyanide to site. Transport companies will follow the Transportation of Dangerous Goods regulatory requirements.
- All ore processing will cease when the cyanide destruction process is down for maintenance or an unplanned failure.

Accidents and Malfunctions

Health and Safety Expectations and Objectives:

- All injuries are preventable; every task can be performed without injury.
- Management is accountable for health and safety performance.
- All employees are responsible and accountable for their personal safety.
- Treasury Metals is committed to achieving full compliance with all applicable legal requirements and company standards.
- Promote and develop strong leadership, safe behaviours and personal accountability through employee involvement in continuous improvement processes.
- Maintain a workplace free of the effects of alcohol and other drugs of abuse.
- Promote health and safety at work, at home and in our communities.
- Recognize, reward and support excellent safety performance.

TSF Failure

- The TSF will be designed to meet or exceed all regulatory standards; with safeguards in place to minimize or prevent a potential breach.
- Best Management Practices in operations, maintenance, and surveillance will be implemented to ensure the safe and reliable operation of the TSF. Some elements of this process will include continual monitoring of the TSF levels, daily visual inspections of the seepage collection system, daily and annual dam maintenance, annual safety and surveillance inspections, and routine dam safety audits.
- A hypothetical model was created to better understand the environmental consequences of a highly improbable failure, which allowed Treasury to develop mitigation measures to reduce or eliminate any potential impacts to the environment and/or human health should such an event take place.
- TSF failure was incorporated into the Emergency Preparedness Plan (EPP) for the Project. This includes the stoppage of systems inputting to the TSF, containment of tailings along with removal and re-deposition into the TSF once it is reinstated and approved for use, and EPP implementation training for employees.

In addition, natural hazards that could potentially affect the Project were considered including extreme flooding, natural fires, earthquakes, tornadoes and climate change.

Cumulative Effects Assessment

CEAA defines cumulative effects as:

The effect on the environment which results from effects of a project when combined with those of other past, existing and imminent projects and activities.

CEAA 2012 requires that the EA of a designated project evaluate any cumulative environmental effects that may result from the designated project in combination with the environmental effects of other physical activities that have been or will be carried out.

It also states that a cumulative environmental effects assessment of a designated project must include future physical activities that are certain and should generally include physical activities that are reasonably foreseeable.

For the purposes of the Project's cumulative effects assessment, Treasury focused on potential cumulative effects on the existing environmental and socioeconomic baselines relative to identified projects and activities that are predicted to occur (or are reasonably foreseeable) in the next 10 years. Three spatial scales were evaluated: Local Study Area and Regional Study Area (primarily biophysical) and a 40-km radius centred on the open pit (primarily socioeconomic).

Current or potential future projects related to mining and exploration, forestry, electricity, transportation, and municipal development were considered. With the exception of forest operations and small scale municipal developments, no projects are anticipated within the cumulative effects study area.

With the decline of other industries in the region, the Project is expected to result in net-positive effects on regional economic metrics such as employment, training, personal income, local spending, and business opportunities. The cumulative effects assessment did not result in increased adverse effects on any other Project VC's.

Why complete a Baseline Environmental Program?

Environmental baseline program and studies have been completed to provide the Federal and Provincial regulatory bodies 3 basic concepts:

- Develop an understanding of the natural environment before development;
- Support design and development decisions with consideration for adverse effects on the environment;
- Support the design and implementation of monitoring over the course of operations, and provide support to reclamation and closure design.

Goliath Baseline Studies

- Treasury Metals has been conducting environmental baseline studies on the Goliath Project since 2010. Internationally recognised consulting firms have been engaged in the development and construction of baseline data studies for the Goliath Project.
- Studies that have been completed include:
  + Surface Water and Hydrology;
  + Groundwater;
  + Aquatics;
    - Fisheries, Benthic Invertebrates, Sediment.
  + Terrestrial Biology;
    - Birds, Mammals, Reptiles, Amphibians, and Invertebrates.
  + Wetlands and Vegetation;
  + Soils;
  + Noise, Air Quality, and Light;
  + Geochemical, and Geotechnical;
  + Archeology; and
  + Socio-economic.

TBT ENGINEERING CONSULTING GROUP
DST consulting engineers
Klohn Crippen Berger
gck consulting
RWDI CONSULTING ENGINEERS & SCIENTISTS
KEEWATIN-ASKI LTD. CONSULTING ENGINEERS & ARCHITECT
TETRA TECH
amec
EcoMetrix INCORPORATED

TREASURY METALS

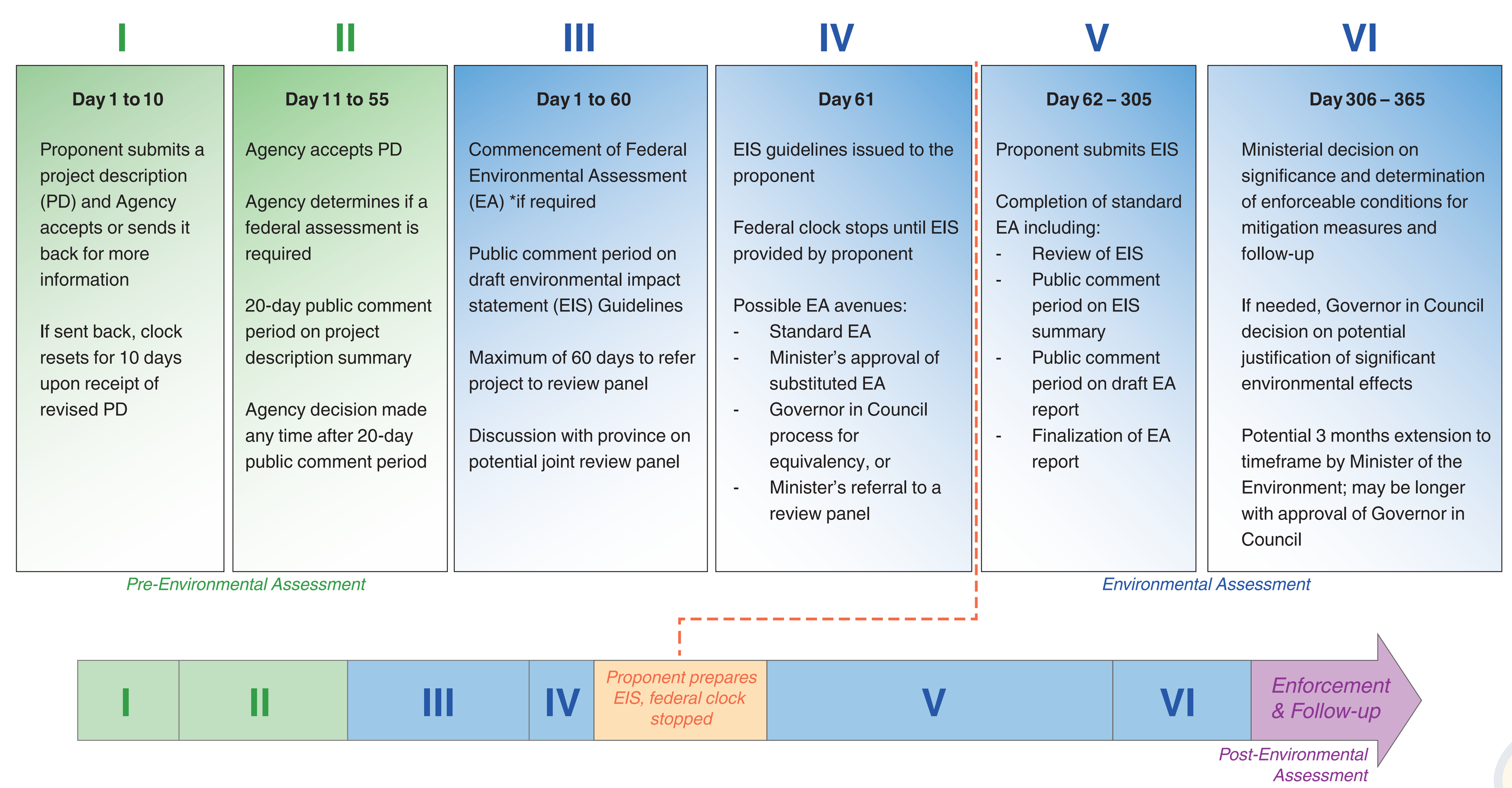
INCORPORATED

Federal Environmental Assessment and Permitting

Treasury Metals must complete an Environmental Impact Statement (EIS) as per the guidelines issued by the ***Canadian Environmental Assessment Agency***.

- The EIS and Environmental Assessment (EA) process serves as a planning and review tool for all projects. The process requires the identification of any possible adverse effects resulting from a project and ensures that all potential impacts are mitigated, reduced, or accomodated. The process also encourages a proponent and permit approval decision makers to initiate actions that promote sustainable development.
- The EIS and EA process includes opportunities for the local public and First Nations to attend a number of information sessions to review and provide feeback on the project.
- The steps and timelines for participation within the Federal timeline are illustrated.

Standard Environmental Assessment Process



Provincial Mine Permitting and Closure Plan

Treasury Metals will be required to complete up to 50+ Provincial individual Class environmental permits. The Provincial permitting process is initiated upon approval of the Federal EA by the Canadian Environmental Assessment Agency and the Minister of Natural Resources.

- The regulatory bodies of the Province include but are not limited to:
  + Ministry of Infrastructure;
  + Ministry of Labour;
  + Ministry of Natural Resources;
  + Ministry of Northern Development and Mines;
  + Ministry of the Environment and Climate Change;
  + Ministry of Tourism Culture and Sport;
  + Ministry of Transportation; and
  + Hydro One Networks Inc.
- The Provincial permitting process provides for public and First Nation input.
- The Closure Plan for the Goliath Project must be approved by the Director of Mine Rehabilitation under the Ministry of Northern Development and Mines prior to project approval.

Closure of the Goliath Project

- Ministry of Northern Development and Mines (MNDM) is the regulatory body that reviews and approves the closure plan of the Goliath Gold Project.
- The closure plan applicant (Treasury Metals) must ensure that the rehabilitation is carried out in accordance with the standards and requirements outlined in MNDM's Rehabilitation Code.
- Highlighted features of the closure plan for the Goliath Project include:
  + Financial Bond to cover final closure costs set up prior to project approval;
  + Tailings storage facility design reviewed by independant third party prior to project approval;
  + Ongoing monitoring of site and ground water after closure;
  + Capping of the Waste Rock Storage Area;
  + Capping of the Tailings Storage Facility; and
  + Progressive rehabilitation.
    - Visual representation of proposed closure site will be available in the near future.

Appendix XX Electrical Power Sources				
Cost Effectiveness				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			
Goliath Gold Project Financing	Investor desirability and/or risk	Advantages: - Lowest cost option for both Capital cost and operating cost	Advantages: - Owned, operated and controlled by Treasury Metals	Advantages: - None Apparent
		Disadvantages: - None Apparent	Disadvantages: - Capital required for development. - Additional Project footprint required. - Additional Closure costs required.	Disadvantages: - Extremely Capital intensive for initial construction. - Extremely high footprint needed for power generation.
Return on Investment (ROI)	Provides a competitive and acceptable ROI	Advantages: - Long term stability in purchase price/contract	Advantages: - None Apparent	Advantages: - Low operating cost once in production.
		Disadvantages: - None Apparent	Disadvantages: - None Apparent	Disadvantages: - Extremely high payback period and low ROI
Financial Risk	Provides a manageable or acceptable financial risk	Advantages: - Long term stability in purchase price/contract	Advantages: - None Apparent.	Advantages: - Large capital investment required.
		Disadvantages: - None Apparent	Disadvantages: - None Apparent.	Disadvantages: - Large capital investment required and associated long term payback period.
Cost Effectiveness	Summary Evaluation and Rating	Option 1 creates the lowest cost over the life of mine of the project with the lowest capital outlay. Summary Rating: Preferred	On site electrical generation provides reliable electrical power at a reasonable cost. Summary Rating: Acceptable	Alternative energy sources do not provide a reliable electrical power source at a reasonable cost for the project. Summary Rating: Unacceptable

Technical feasibility and technical reliability				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			

Readily Available Technology	Has been successfully implemented in similar mining Projects and can be relied upon for sufficient performance over an extended period of time.	Advantages: - Proven technology used at other mine locations. - Infrastructure in place and currently operating.	Advantages: - Proven technology used at other mine locations, albeit at mines in remote operations.	Advantages: - None apparent
		Disadvantages: - None Apparent.	Disadvantages: - None apparent.	Disadvantages: - Has not been applied to a known mining operation as the sole source of power.
	New technologies must be supported by sufficient investigations and technical study to provide confidence in their performance abilities	N/A	N/A	N/A
Technical feasibility and technical reliability	Summary Evaluation and Rating	Alternative is applicable and acceptable. Summary Rating: Preferred	Alternative is applicable and acceptable. Summary Rating: Acceptable	Not a proven technology for similar mine project. Summary Rating: Unacceptable

Ability to Service Site Effectively				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			
Service	Provides a guaranteed supply to the site with manageable potential for supply disruption, and contingencies available.	Advantages: - Transformer infrastructure is operated by Treasury Metals, eliminating service disruption risks - Using major electrical power line with very high mechanical availability	Advantages: - Operated by Treasury Metals, eliminating service disruption risks	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - Lower availability of power generators with a higher probability of downtime.	Disadvantages: - Dependent on external environmental factors not with the company's control.
Accessibility	Accessible land base or infrastructure needed to support component development and operation.	Advantages: - Smallest footprint needed.	Advantages: - Some additional footprint needed for power generating stations.	Advantages: - None Apparent.
		Disadvantages: - None Apparent.	Disadvantages: - None Apparent.	Disadvantages: - Very large footprint needed for sufficient power generation.
Ability to Service Site Effectively	Summary Evaluation and Rating	A reliable option with limited disruption risks.	A reliable option with limited disruption risks, however additional construction and potential permits required.	Dependent on external service, however accessible.

Ability to Service Site Effectively				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
		Summary Rating: Preferred	Summary Rating: Acceptable	Summary Rating: Unacceptable

Effects to the Human Environment				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			
Local residents and recreational users	Effect on property values	Advantages: - None apparent. Disadvantages: - None apparent.	Advantages: - None apparent. Disadvantages: - None apparent	Advantages: - None apparent. Disadvantages: - None apparent.
	Effect on employment opportunities	Advantages: - None apparent. Disadvantages: - None apparent	Advantages: - Potential for employment opportunities. Disadvantages: - None apparent	Advantages: - Employment opportunities for third party. Disadvantages: - None apparent
	Effect on local access points	N/A	N/A	Advantages: - None apparent Disadvantages: - Very large footprint needed for project.
	Effect on current noise levels	Advantages: - Quietest option available. Disadvantages: - None apparent.	Advantages: - None apparent. Disadvantages: - Loudest option.	Advantages: - None apparent. Disadvantages: - Reasonable concern for high pitched noise living near windmills.
	Effect on water supply for both well water and drinking water	N/A	N/A	N/A
	Effect on visual disturbance	Advantages: - None apparent. Disadvantages: - None apparent.	Advantages: - None apparent. Disadvantages: - None apparent.	Advantages: - None apparent. Disadvantages: - Large visual disturbance using windmills.
	Potential for adverse health effects	Advantages: - None apparent. Disadvantages: - None apparent.	Advantages: - None apparent. Disadvantages: - None apparent.	Advantages: - None apparent. Disadvantages: - None apparent.
Infrastructure	Effect on local access	Advantages: - None apparent. Disadvantages: - None apparent.	Advantages: - None apparent. Disadvantages: - None apparent.	Advantages: - None apparent. Disadvantages: - Very large footprint needed for project.
	Effect on power supply systems	Using load as approved and purchased from existing power supply.	N/A	N/A
Public Health and Safety	Attainment of air quality point of impingement standards or scientifically	Advantages: - None Apparent. Disadvantages: - None Apparent.	Advantages: - None Apparent. Disadvantages: - Increased	Advantages: - None Apparent. Disadvantages: - None apparent.

Effects to the Human Environment				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
	defensible alternatives		greenhouse gas emissions from burning fossil fuels.	
	Effect on drinking water supply	N/A	N/A	N/A
	Effect on local health services	N/A	N/A	N/A
Local Economy	Effect on local businesses and economic opportunities	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effect on access for tourism operators and/or natural resource harvesters	N/A	N/A	N/A
Tourism	Effect on local tourism	N/A	N/A	N/A
Regional Economy	Effect on regional businesses and economic opportunities	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Government Services	Effect on local government services and capacities	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Resource management objectives	Effect on established resource management plans	N/A	N/A	N/A
Built heritage and cultural heritage	Effect on any built heritage resource or cultural heritage features	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Alteration that is not sympathetic or is incompatible with the historic fabric and appearance of cultural heritage resources	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Isolation of a built heritage resource or heritage attribute from it surrounding environment, context or a significant relationship	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Direct or indirect obstruction of significant views or vistas within, from or of built heritage resources or cultural heritage landscapes	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - Large visual change by installation of windmills.
	A change in land use	Advantages:	Advantages:	Advantages:

Effects to the Human Environment				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
		- None apparent.	- None apparent.	- None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Avoidance of damage to built heritage resources or cultural heritage landscapes, or document cultural resources if damage or relocation cannot be reasonably avoided	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Archaeological resources	Effect on land disturbances	Advantages: - Same as above.	Advantages: - Same as above.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Avoidance of archaeological sites or mitigation by excavation if avoidance is not possible, as per the Standards and Guidelines for Consultant Archaeologists (2010).	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
First Nation Reserves and communities	Effect on conditions of community on First Nation reserves	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Spiritual and ceremonial sites	Avoidance of damage or disturbance to known spiritual and/or ceremonial sites	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Traditional Land use	Effect on Traditional Land use as caused by the project	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Aboriginal and Treaty Rights	Effect on Aboriginal and Treaty rights	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Effects to Human Environment	Summary Evaluation and Rating	There is no appreciable or predicted effect or benefit to the human environment. Summary Rating: Acceptable	There is no appreciable or predicted effect or benefit to the human environment. Summary Rating: Acceptable	There is no appreciable or predicted effect or benefit to the human environment. Summary Rating: Unacceptable

Effects to the Physical and Biological Environments				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			

Effects to the Physical and Biological Environments				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Effect on Air Quality and Climate	Maintain air quality point of impingement standards or defensible alternatives	Advantages: - No effect on local air quality.	Advantages: - None apparent.	Advantages: - No effect on local air quality.
		Disadvantages: - None apparent.	Disadvantages: - Highest emissions option.	Disadvantages: - None apparent.
	Emission rates of greenhouse gases (GHGs)	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - Highest emissions option.	Disadvantages: - None apparent.
Effect on aquatic life and habitat	Fulfilment of water quality standards and guidelines for protection of aquatic life or ensuring no further degradation of water quality if current conditions do not match PWQO	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Management of water level in effected water bodies and streams to maintain aquatic life	N/A	N/A	N/A
	Maintenance of fish population	N/A	N/A	N/A
	Maintenance of groundwater levels for both flows and quality	N/A	N/A	N/A
Effect on wetlands	Fulfilment of water quality standards and guidelines for protection of aquatic life or ensuring no further degradation of water quality if current conditions do not match PWQO	N/A	N/A	N/A
	Area, type and quality (functionality) of wetlands that would be displaced or altered	N/A	N/A	N/A
	Maintenance of wetland connectivity	N/A	N/A	N/A
Effect on terrestrial species and habitat	Area, type and quality of terrestrial habitat that would be displaced or altered	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effects of noise disturbance generated by the project	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - Minimal noise from generating station.	Disadvantages: - Unknown effects of high pitched noise of wind turbines.
	Maintenance of wildlife movement corridors and plant dispersion	N/A	N/A	N/A

Effects to the Physical and Biological Environments				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
	Effect on overall wildlife population	N/A	N/A	N/A
Effect on Species at Risk (SAR)	Sensitively level of effected SAR (Endangered, Threatened, Special Concern)	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - Can cause damage to specific bird and bat species by collisions.
	Area, type and quality of SAR that would be displaced or altered	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
	Effects of noise disturbance generated by the project	Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Maintenance of wildlife movement corridors and plant dispersion	N/A	N/A	Disadvantages: - Can cause damage to specific bird and bat species by collisions.
Effects to Physical and Biological Environments	Summary Evaluation and Rating	No significant effects. Summary Rating: Preferred	Some minimal effects. Summary Rating: Acceptable	Some minimal effects. Summary Rating: Unacceptable

Potential ability for future closure/reclamation processes				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
Criteria	Assessment			
Public Safety and Security	Effect on safety and security risks to the community and general public	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Environmental Health and Long Term Sustainability	Effect on long term air quality and the ability to meet point of impingement standards	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effect on long term water quality and the ability to meet water quality guidelines	N/A	N/A	N/A
	Restoration of passive drainage systems	N/A	N/A	N/A
	Effect on long term wildlife habitats including SARs	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Land Use	Effect on long term land uses	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.
		Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
	Effect on long term visual appearance of	Advantages: - None apparent.	Advantages: - None apparent.	Advantages: - None apparent.

Potential ability for future closure/reclamation processes				
	Alternative	1	2	3
	Description	Use of Existing Hydro One power infrastructure	Develop an on-site Natural Gas power generation facility	Develop Alternative means of power generation such as wind or solar
	Project Site	Disadvantages: - None apparent.	Disadvantages: - None apparent.	Disadvantages: - None apparent.
Closure and Reclamation	Summary Evaluation and Rating	Least obtrusive option in regards to closure and reclamation. Summary rating: Preferred	Minimal work for closure and reclamation. Summary rating: Acceptable	Largest amount of work to create closure and reclamation at the end of the project life. Summary rating: Acceptable
Overall Summary Rating		Using existing infrastructure to provide electrical power is the most cost effective option with no environmental disadvantages over other options. Preferred	On site power generation is technically feasible but at a higher cost than using current infrastructure. Acceptable	Use of alternative means of power generation come at a much higher cost and do not provide a consistent and reliable power source sufficient for the project. Unacceptable

SEDGMAN

Goliath Gold Project

Power Supply Study Report

Treasury Metals

Document No.: A392-D01-04010-RP-001
Revision: 0

Sedgman Canada Limited
Registration number: A0088793

Revision Status

Revision Number	Author	Description	Date	Approved By
0	SR	Issued for Use	28-Nov-2016	MW

Distribution

Company Name	Contact Name	Revision	Date
Treasury Metals Inc.	Mark Wheeler	0	28-Nov-2016

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1.0 Introduction

Treasury Metals Inc. (TML) are developing a gold processing plant, the Goliath Gold project, which is located adjacent to the village of Wabigoon, Ontario, approximately 20 km east of the city centre of Dryden or 330 km west of the city of Thunder Bay.

The Goliath gold plant is a 2700t/d gold processing facility which will operate 24hours a day. After an initial 3 years of operation, the mine will transition from an open cut to an underground mining operation. Additional power will be required for the future U/G mine infrastructure.

Sedgman Canada Ltd (SDM) has been engaged by TML to provide an updated preliminary power supply design for the Goliath Project.

This document provides the required information to Hydro One to form the technical basis for a request for power for the Goliath Gold Project.

2.0 Power Supply Details

2.1 General Details

The details of the project and of the proposed load for the project site are detailed below:

Name of Company:	Treasury Metals Incorporated
Office Address:	130 King Street West Suite 3680 Toronto, Ontario, M5X 1B1 Tel: 416 214-4654
Project Name:	Goliath Gold Project
Business Activity:	Mining / processing of gold
Initiation of electricity requirement:	2nd Quarter 2018 (Tentative, to be confirmed)

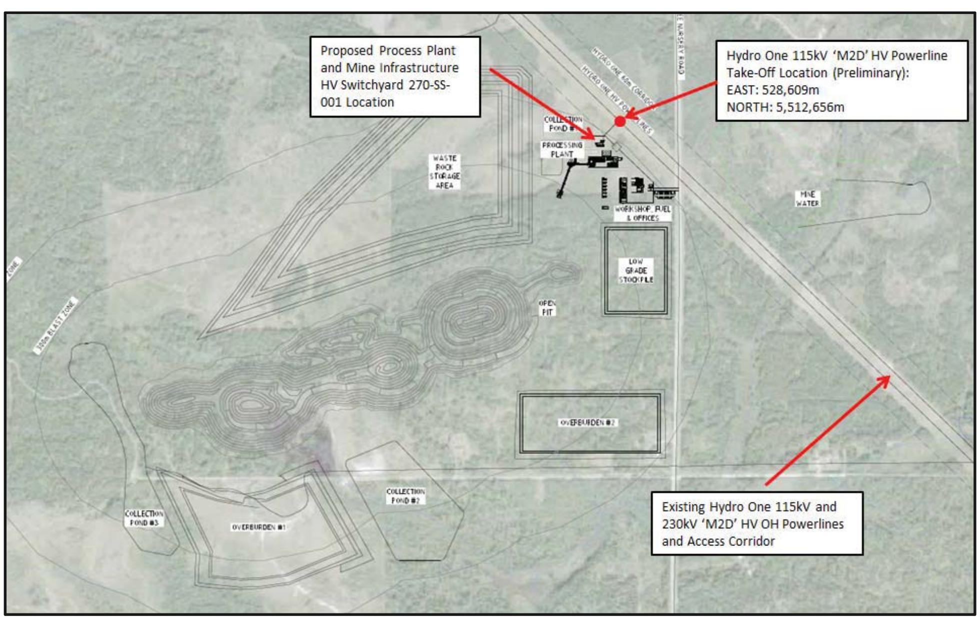
2.2 Incoming Power Supply

The plant shall be supplied from the Hydro One 115 kV power line circuit M2D via one 138 kV 600 A motorized disconnect switch 270-DS-001 in series with one 1200 A, SF6 circuit breaker 270-CB-001 shown in the 115 / 4.16 kV single line diagram in Appendix A.

An additional motorized disconnect switch 270-DS-002, SF6 circuit breaker 270-CB-002 and 5 / 7.5 MVA 115 kV / 4.16 kV transformer will be installed in year 3 for the future underground mine power supply.

The location for the proposed 115kV overhead powerline take-off point is shown in Figure 1 below.

Figure 1 - Preliminary Hydro One HV Powerline Take-Off Point and Plant HV Switchyard Location



2.3 Plant Distribution Services Transformers and Switchgear

- The 4.16 kV facilities include HV switchgear and two 600 kVAr shunt capacitor banks together with station services, protection and controls.
- Allowable voltage variation: not to exceed ±10% on steady state and ±15% during large drive start-up. Voltage drops in excess of this could affect the operation of the process plant.
- Allowable Frequency Variation: 60 Hz +2.5, -0.5

2.4 Emergency Power Supply

Three diesel generating units will be included to supply emergency power (Administration Building 150 kW, Concentrator 250 kW, and Mine 150 kW). The emergency power is not meant to be used for sustaining the operations of the plant and will not be connected to the grid for back feed generation. The purpose of the diesel generators is to provide power for the following consumers:

- Mine/Plant Administration building power
- Guard house
- 30% of area lighting
- Control room power
- Critical slurry tank agitators
- Critical plant services
- Fire-detection system and dry-pipe fire-fighting system (main fire loop has diesel pump)

3.0 Plant Demand

3.1 Load Requirements

- Maximum demand (Yrs 1-3) 6.8 MW
- Maximum Demand (Yrs 4-10) 9.9 MW
- Average Load (Yrs 1-3) 5.5 MW
- Average Load (Yrs 4-10) 8.1 MW
- Power factor 0.95 or better with power factor correction
- Period of production 24 hours per day, continuous
- Largest size motors 1 x 2.2 MW at 4.16 kV (SAG Mill)
- Largest motor starting current 1 x 583 A at 4.16 kV (approx) for 30 seconds
- Largest motor running current 1 x 364 A at 4.16 kV
- Largest motor method of starting Liquid Resistance Starter
- 4.16 kV system neutral grounding Resistance grounded
- 600 V Neutral Grounding Solidly grounded

A large proportion of the required electrical load will be due to the surface process plant, which is expected to run continuously for 24 hours per day. The load list summary is detailed in Table 1 below. These loads below are preliminary and will be refined during further design stages.

Table 1 Load List Summary

Plant Area	Demand Power
Area 100 Miscellaneous Facilities and Buildings (Incl. Mine Maintenance)	1,600 kW
Area 104 Tailings Dam	170 kW
Area 120 Feed Preparation	380 kW
Area 130 Milling	2,400 kW
Area 140 CIL	1,000 kW
Area 230 Water System and Area 250 Air System	650 kW
Area 115 Collection Ponds	180 kW
Contingency	400 kW
TOTAL PLANT DEMAND (Yrs 1-3)	~6,780 kW
Area 110 Underground Mining (Future)	3,200 kW
TOTAL PLANT DEMAND (Yrs 4-10)	~9,980 kW

A detailed preliminary project load list is included in Appendix B.

3.2 Load Characteristics

The plant electrical load is generally constant. The plant average load depends on the following:

- Plant throughput.
- Operating sections of the plant (crushing, milling, desorption, etc.).
- Scheduled Shutdowns.

Generally, the plant is designed for continuous operation throughout the year.

3.2 Maximum Demand

The plant substation shall meet the plant maximum demand without exceeding the voltage and frequency limitations.

Mill Starting Load

The process plant will include one SAG mill.

The SAG Mill will be driven by 1 x 2.2 MW wound rotor induction motor with a liquid resistance starter for soft starting. The maximum starting current would be about 1.4 – 1.6 times full load current (FLC).

The incoming power supply shall have the capacity to meet this step-load while the rest of the plant is in operation without exceeding the voltage and frequency limitations.

4.0 Method of Supply

The preferred option for the supply of power to the project has been identified as the Hydro One 115 kV, 'M2D' circuit. The scope of work would involve the following:

- Voltage level: 115 kV and 4.16 kV (metered at 4.16 kV).
- Quantity / Capacity of transformers: 2 x 5 / 7.5 MVA 115 kV / 4.16 kV main transformers (ONAN / ONAF) with delta configured primary and wye configured secondary which is grounded via a resistor.
- Installation of an overhead line take-off structure at the proposed T-off point for the process plant and mine infrastructure (By Hydro One).
- Construction of approximately 50-100 m (to be confirmed) of an overhead 115 kV line from the T-off point to the plant outdoor switchyard location (By Hydro One).
- Construction of a 115 / 4.16 kV, 1 x 5 / 7.5 MVA transformer / substation at the plant site.
- Construction of the second 115 / 4.16 kV, 1 x 5 / 7.5 MVA transformer at the plant site in year 3-4 of operation to supply the U/G mine power requirements.

Discussions with Hydro One may result in alternatives that better meet the requirements of both Hydro One and TML.

SDM shall liaise with Hydro One in the development of the conceptual design of the power supply to the site, including the HV power lines and the substation.

5.0 Schedule

The required schedule is about 60 weeks from commencement of the Project development phase. It is important that at the end of week 60, power is available to the site to enable commissioning of the facility.

6.0 Energy Tariff

Hydro One is requested to provide a bulk purchase energy tariff agreement, based on the following:

- The project will use on average about 5.5 MW of power for the initial 3-4 open cut mining period.
- The project average power requirement will increase to approximately 8.1 MW for the remaining 6-7 years of underground mining operation.

All capital costs associated with bringing the power supply to the site HV switchyard shall be provided by TML and it is proposed that these costs be recovered over a five year period as part of the energy supply cost, with the tariff structure based on a flat unit rate and charged on the units (MWHrs) consumed.

The tariff will be part of the Power Purchase Agreement to be signed by both parties (Hydro One and TML).

7.0 Implementation Plan

The responsibilities associated with the project implementation shall be shared with Hydro One.

7.1 Responsibilities of Hydro One

- Provide detailed design technical input to the project in consultation with the EPC Engineer.
- Provide the technical specifications of the major items of electrical equipment e.g. 115 / 4.16 kV transformers, 115 kV circuit breakers and isolators (disconnects), 115 kV CTs and PTs and assist TML in procuring these items directly or through the EPC Engineer.
- Provide construction standards for the 115 kV line and the 115 / 4.16 kV substation.
- Procure the 115 kV overhead line that will be required for the project.
- Construct the M2D take-off structure and 115 kV overhead line required for the project to the agreed battery limit at the site HV switchyard location.
- Provide supervision and quality control for the HV substation construction, through the EPC Engineer.
- Witness and supervise the commissioning of the line and substation.

7.2 Responsibilities of Treasury Metals Inc. / EPC Engineer

- Liaise with Hydro One in the development of the detailed design of the line and substation.
- Procure all major items of equipment such as 115 / 4.16 kV transformer, 115 kV circuit breaker and disconnect switch as well as 115 kV CTs and PTs, according to Hydro One's specifications and from manufacturers acceptable to Hydro One.
- Procure through a reputable contractor, acceptable to Hydro One, the remainder of the substation plant as well as the erection of the complete 115 / 4.16 kV substation. Treasury Metals Inc. will supply major items of equipment directly to the contractor.
- Pays for all works and services associated with the project (Hydro One infrastructure capital costs to be reimbursed as part of the signed tariff agreement).
- Overall success and timely completion of the project.

7.3 Ownership of the Power Facilities

- The ownership of the facility shall form part of the negotiated agreement between Treasury Metals Inc. and Hydro One.
- The issues of protection and tele-control will be determined by Hydro One.

Appendix A – 115/4.16 kV Single Line Diagram

Appendix B – Preliminary Load List (Broken down by plant area and starting method)

Table 2 - Goliath Gold Project Preliminary Load List

Equipment Tag	Equipment Description	Installed Power (kW)	Drive Type	Demand / Utilisation (%)
Area 100 Miscellaneous Facilities and Buildings				
FE MIA	MIA facilities	1,600.0	FDR	100%
	SUB-TOTAL (kW)	**1,600.0**		
Area 104 Tailings Dam				
PP708	TSF Decant Return Pump	37.0	DOL	75%
PP709	TSF Decant Return Pump	37.0	DOL	0%
BG901	TSF Decant Return (Mine Water) Pond De-icing	7.5	DOL	80%
PP705	Under Drainage Pump	1.5	DOL	75%
PP706	Seepage Pump	1.5	DOL	75%
PP710	TSF EFFluent Pump	55.0	DOL	75%
PP711	TSF EFFluent Pump	55.0	DOL	0%
BG901	TSF Effluent Pump Return (Mine Water) Pond De-icing	7.5	DOL	80%
PP921	Raw Water Supply Pump (from mine water pond)	75.0	DOL	75%
PP922	Raw Water Supply Pump (from mine water pond)	75.0	DOL	0%
BG902	Raw Water (Mine Water) Pond De-icing	7.5	DOL	80%
	Lights & GPO's	15.0	FDR	85%
	WO's	0.0	FDR	85%
	Building	20.0	FDR	85%
	SUB-TOTAL (kW)	**395.0**		
Area 120 Feed Preparation				
FE001	Apron Feeder	15.0	VSD	80%
CR001a	Primary Crusher	100.0	DOL	65%
CR001b	Primary Crusher Lube Pump	12.0	DOL	65%
CV001	Primary Crusher Discharge Conveyor	93.0	DOL	85%
FN001	Primary Crusher Dust Collector	11.0	DOL	80%
PP001	Primary Crusher Sump Pump	15.0	DOL	75%
CV002	Stockpile Feed Conveyor	30.0	DOL	85%
PK001	Rock Breaker	30.0	DOL	80%
MG001	Magnet	15.0	DOL	80%
CN001	Primary Crusher OH Crane	10.0	DOL	25%
AC001	Primary Crusher Air Compressor	19.0	DOL	80%
	Lights & GPO's	45.0	FDR	85%
	WO's	50.0	FDR	85%
	Building	75.0	FDR	85%
	SUB-TOTAL (kW)	**520.0**		
Area 130 Milling				
FE201	Reclaim Feeder	15.0	VSD	80%
CV201	SAG Mill Feed Conveyor	56.0	DOL	85%
FE202	Lime Feeder	3.0	VSD	80%
FE203	Lime Silo Activator	0.9	DOL	80%
PP201	Transfer Area Sump Pump	15.0	DOL	75%
FN201	Fine Ore Bin Dust Collector	4.0	DOL	80%
FN202	Lime Bin Dust Collector	4.0	DOL	80%
ML201	SAG Mill	2,600.0	VSD	80%
PP202	SAG Mill Services (Lube, etc)	50.0	DOL	75%
PP203	Cyclone Feed Pump	187.0	VSD	75%
PP204	Cyclone Feed Pump	187.0	VSD	0%
PP205	Mill Feed End Sump Pump	22.0	DOL	75%
PP206	Mill Discharge Sump Pump	22.0	DOL	75%
CN201	Mill Area Crane	20.0	DOL	25%
CN202	Ball Hoist	4.0	DOL	25%
	Lights & GPO's	45.0	FDR	85%
	WO's	50.0	FDR	85%
	Building	45.0	FDR	85%
	SUB-TOTAL (kW)	**3,330.0**		
Area 140 CIL				
SC301	Scalping Screen	5.5	DOL	70%

Equipment Tag	Equipment Description	Installed Power (kW)	Drive Type	Demand / Utilisation (%)
PK300	Intensive Cyanide Reactor	55.0	DOL	80%
CF301	Centrifugal Concentrator	45.0	DOL	80%
PP301	ICR Reaction Vessel Discharge Pump	5.5	DOL	75%
PP305	Leach Area Sump Pump	5.5	DOL	75%
PP302	ICR EW Cell Feed Pump	2.2	DOL	75%
PK301	EW Cell	5.5	DOL	80%
SC302	Trash Screen	4.4	DOL	70%
AG301	CIL Tank 1 Agitator	30.0	DOL	80%
SC303	CIL Tank 1 Intertank Screen	2.2	DOL	70%
PP303	CIL Tank 1 Loaded Carbon Advance Pump	3.7	DOL	75%
AG302	CIL Tank 2 Agitator	30.0	DOL	80%
SC304	CIL Tank 2 Intertank Screen	2.2	DOL	70%
PP306	CIL Tank 2 Loaded Carbon Advance Pump	3.7	DOL	75%
AG303	CIL Tank 3 Agitator	30.0	DOL	80%
SC305	CIL Tank 3 Intertank Screen	2.2	DOL	70%
PP307	CIL Tank 3 Loaded Carbon Advance Pump	3.7	DOL	75%
AG304	CIL Tank 4 Agitator	30.0	DOL	80%
SC306	CIL Tank 4 Intertank Screen	2.2	DOL	70%
PP308	CIL Tank 4 Loaded Carbon Advance Pump	3.7	DOL	75%
AG305	CIL Tank 5 Agitator	30.0	DOL	80%
SC307	CIL Tank 5 Intertank Screen	2.2	DOL	70%
PP309	CIL Tank 5 Loaded Carbon Advance Pump	3.7	DOL	75%
AG306	CIL Tank 6 Agitator	30.0	DOL	80%
SC308	CIL Tank 6 Intertank Screen	2.2	DOL	70%
PP310	CIL Tank 6 Loaded Carbon Advance Pump	3.7	DOL	75%
CN301	CIL Area Crane	11.0	DOL	25%
PP304	CIL Area Sump Pump	15.0	DOL	75%
PP305	CIL Area Sump Pump	15.0	DOL	75%
SC309	Carbon Recovery Screen	2.2	DOL	70%
SC310	Carbon Safety Screen	4.4	DOL	70%
SC401	Carbon Dewatering Screen	0.8	DOL	70%
PK401	Carbon Regen Kiln	10.0	DOL	80%
FE401	Carbon Kiln Screw Feeder	1.1	DOL	80%
FN401	Kiln Exhaust Scrubber	7.5	DOL	80%
PP401	Kiln Exhaust Scrubber Pump	5.5	DOL	75%
PP402	Carbon Conditioning Transfer Pump	7.5	DOL	75%
PP403	Carbon Regen Area Sump Pump	5.5	DOL	75%
SC402	Carbon Sizing Screen	2.2	DOL	70%
PK405	Elution Heater	5.5	DOL	80%
PP404	Acid Rinse Pump	5.5	DOL	75%
PP405	Stripping Solution Pump	3.7	DOL	75%
PP406	Lean Eluate Pump	11.0	DOL	75%
PP407	Acid Wash Column Area Sump Pump	5.5	DOL	75%
PP420	EW Pump	5.5	DOL	75%
PP421	EW Return Pump	5.5	DOL	75%
PP408	Pregnant Solution Pump	3.7	DOL	75%
PP409	Pregnant Solution Pump	3.7	DOL	75%
PP410	Pregnant Solution Area Sump Pump	5.5	DOL	75%
PK402	EW Cell	30.0	DOL	80%
FN402	EW Cell Fume Fan	1.1	DOL	80%
PP411	EW Cell Wet Scrubber Pump	0.8	DOL	75%
CN401	Gold Room Hoist	7.5	DOL	25%
PP412	Gold Room Sump Pump	5.5	DOL	75%
PP414	Sludge Filter Feed Pump	2.5	DOL	75%
PK406	Sludge Press	2.5	DOL	80%
PK403	Drying Oven	22.0	DOL	80%
PK404	Barring Furnace	10.0	DOL	80%
FN405	Furnace Dust Collector	7.5	D0L	80%
PP303	ICR EW Cell Feed Pump 1	2.2	DOL	75%
PP304	ICR EW Cell Feed Pump 2	2.2	DOL	75%
PK301	ICR EW Cell 1	5.5	DOL	80%
PK302	ICR EW Cell 2	5.5	DOL	80%
FN403	Goldroom Exhaust Fan 1	0.8	DOL	80%
FN403	Goldroom Exhaust Fan 2	0.8	DOL	80%

Equipment Tag	Equipment Description	Installed Power (kW)	Drive Type	Demand / Utilisation (%)
AG701	Detox Tank Agitator	75.0	DOL	80%
AG702	Detox Tank Agitator	75.0	DOL	80%
PP701	Sodium Metabisulphate Transfer Pump	1.5	DOL	75%
AG703	Sodium Metabisulphate Tank Agitator	2.2	DOL	80%
DP701	Sodium Metabisulphate Dosing Pump	1.5	DOL	85%
DP702	Sodium Metabisulphate Dosing Pump	1.5	DOL	85%
CN701	Sodium Metabisulphate Dosing Hoist	1.1	DOL	25%
FN701	Cyanide Detox Blower	45.0	DOL	80%
FN702	Cyanide Detox Blower	45.0	DOL	80%
PP702	Detox Area Sump Pump	5.5	DOL	75%
PP703	Tailings Pump	110.0	VSD	75%
PP704	Tailings Pump	110.0	VSD	0%
PP707	Tailings Area Sump Pump	18.5	DOL	75%
PP801	Hydrochloric Acid Pump	7.5	DOL	75%
PP802	Acid Area Sump Pump	5.5	DOL	75%
CN801	Reagents Hoist	5.5	DOL	25%
AG801	Cyanide Mixing Tank Agitator	2.2	DOL	80%
PP803	Cyanide Transfer Pump	3.7	DOL	75%
PP804	Cyanide Circulation Pump	1.5	DOL	75%
PP805	Cyanide Circulation Pump	1.5	DOL	75%
DP801A	Cyanide Dosing Pump	1.5	VSD	85%
DP801B	Cyanide Dosing Pump	1.5	VSD	0%
PP809	Cyanide Sump Pump	5.5	DOL	75%
AG802	Caustic Mixing Agitator	2.2	DOL	80%
DP802	Caustic Dosing Pump ICR	0.4	DOL	85%
DP803	Caustic Dosing Pump Stripping	0.4	DOL	85%
PP805	Acid Neutralisation Pump	0.4	DOL	75%
PP806	Caustic Transfer Pump	1.5	DOL	75%
AG803	Copper Sulphate Agitator	5.5	DOL	80%
CN802	Copper Sulphate Hoist	2.3	DOL	25%
PP810	Copper Sulphate Transfer Pump	1.5	DOL	75%
DP806a	Copper Sulphate Dosing Pump	1.5	DOL	85%
DP806b	Copper Sulphate Dosing Pump	1.5	DOL	0%
PP807	Diesel Circulation Pump	1.5	DOL	75%
PP808	Diesel Circulation Pump	1.5	DOL	75%
CN803	Hydrated Lime Sulphate Hoist	2.3	DOL	25%
AG804	Hydrated Lime Agitator	2.2	DOL	80%
PP811	Lime Transfer Pump	1.5	DOL	75%
PP812	Lime Ring Main Pump	5.5	DOL	75%
PP813	Lime Ring Main Pump	5.5	DOL	0%
PP814	Lime Area Sump Pump	5.5	DOL	75%
	Lights & GPO's	150.0	FDR	85%
	WO's	100.0	FDR	85%
	Building	90.0	FDR	85%
	SUB-TOTAL (kW)	**1,500.0**		
Area 230 Water System and Area 250 Air System				
PP901	Raw Water Distribution Pump	30.0	DOL	75%
PP902	Raw Water Distribution Pump	30.0	DOL	0%
PK901	Stripping Water Treatment Plant	30.0	DOL	80%
PP903	Collection Pond 1 Water Supply Pump 1	30.0	DOL	75%
PP904	Collection Pond 1 Water Supply Pump 2	30.0	DOL	0%
PK904	Collection Pond 1 De-icing	7.5	DOL	80%
PP930	Treated Effluent Discharge Pump 1	75.0	DOL	75%
PP931	Treated Effluent Discharge Pump 2	75.0	DOL	0%
PP905	Fire Water Pump	55.0	DOL	75%
PP906	Fire Water Jockey Pump	1.5	DOL	75%
PP907	Gland Water Pump	7.5	DOL	75%
PP908	Gland Water Pump	7.5	DOL	0%
PP920	Med Press Gland Water Pump	3.0	DOL	75%
PP921	Med Press Gland Water Pump	3.0	DOL	0%
PP922	High Press Gland Water Pump	4.0	DOL	75%
PP923	High Press Gland Water Pump	4.0	DOL	0%
AC901	Air Compressor	45.0	DOL	80%
AD901	Air Dryer	3.4	DOL	80%

Equipment Tag	Equipment Description	Installed Power (kW)	Drive Type	Demand / Utilisation (%)
AC902	Air Compressor	45.0	DOL	80%
AD902	Air Dryer	3.4	DOL	80%
FN901	CIL Blower	75.0	DOL	80%
FN902	CIL Blower	75.0	DOL	80%
FN903	CIL Blower	75.0	DOL	0%
PP910	Process Water Pump	75.0	DOL	75%
PP911	Process Water Pump	75.0	DOL	0%
PP912	Centrifugal Concentrator Water Pump	7.5	DOL	75%
PK902	Sewage Plant	30.0	DOL	80%
PP913	Sewage Pump	2.2	DOL	75%
PP914	Sewage Pump	2.2	DOL	75%
PP915	Sewage Pump	2.2	DOL	75%
PP916	Sewage Pump	2.2	DOL	75%
PK903	Potable Water Treatment Plant	30.0	DOL	80%
PP917	Potable Water Pump	30.0	DOL	75%
PP918	Potable Water Pump	30.0	DOL	0%
PP919	Cooling Water Pump	2.2	DOL	75%
CN901	Maintenance Crane	15.0	DOL	25%
	Lights & GPO's	45.0	FDR	85%
	WO's	50.0	FDR	85%
	Building	20.0	FDR	85%
	Exhaust fans/heating	75.0	FDR	85%
	SUB-TOTAL (kW)	**1,208.0**		
Area 115 Collection Ponds				
PP931	Collection Pond 2 Water Supply Pump 1	100.0	DOL	75%
PP932	Collection Pond 2 Water Supply Pump 2	100.0	DOL	0%
BG930	Collection Pond 2 De-icing	7.5	DOL	80%
PP933	Collection Pond 3 Water Supply Pump 1	100.0	DOL	75%
PP934	Collection Pond 3 Water Supply Pump 2	100.0	DOL	0%
BG931	Collection Pond 3 De-icing	7.5	DOL	80%
	Lights & GPO's	10.0	FDR	85%
	WO's	0.0	FDR	85%
	Building	20.0	FDR	85%
	SUB-TOTAL (kW)	**223.0**		
Contingency				
	Contingency (Allowance)	400.0	FDR	100%
	SUB-TOTAL (kW)	**400.0**		
Area 110 Undergound Mining (Future)				
FE Mining	Allowance for underground mining (future)	4,000.0	FDR	80%
	SUB-TOTAL (kW)	**4,000.0**		
	TOTAL INSTALLED POWER (kW)	**13,176.0**		

MEMO

Date:	January 26, 2017
Project Title:	Treasury Metals, Goliath Gold Project
Project Number:	161-15856-00
Re:	EIS Responses, Alternatives Assessment for Tailings Impoundment Area
Document Control:	161-15856-00.01

Treasury Metals prepared an Environmental Impact Statement (EIS) for an Environmental Assessment (EA) conducted pursuant to the Canadian Environmental Assessment Act, 2012 for the Goliath Project and subject to the EIS guidelines issued on February 21, 2013. A component of the EIS guidelines was the completion of an Alternative Assessment (AA) for the Tailings Impoundment Area (TIA) using the Guidelines for the Assessment of Alternatives for Mine Waste Disposal, as administered by Environment Canada (EC).

An EIS for the Goliath Gold Project was issued to the Canadian Environmental Assessment Agency (CEAA) in April of 2015.

As part of the EA process, CEAA reviews the EIS to verify that it provides the information required by the environmental statement guidelines. CEAA has identified to Treasury Metals the areas of the EIS which require additional information prior to initiating a sufficiency review of the EIS. Several of these information requests pertained to the completed Alternatives Assessment. The purpose of this memorandum is to detail the efforts undertaken to address the areas of deficiency and to provide additional information with respect to the Alternatives Assessment for the Goliath Gold project.

Information Request 32 (IR# AA(1)-13)

This request pertains to the source of the information used in Table 4.4 of the Alternatives Assessment (AA). WSP has provided an additional column within Table 4.4, detailing the source of the information used to evaluate the alternatives for the TIA. Updated tables for the AA are provided with this memo.

Information Request 33 (IR#AA(1)-14)

A more detailed description of indicator parameters for each qualitative sub account was requested for Table 4.3. This information has been provided such that is should be clear to an independent reviewer what the basis is for the characterization criteria stipulated for any alternative. Please refer to the updated and more detailed Table 4.3 attached that clarifies indicator parameters between alternatives for qualitative factors.

Information Request 34 (IR#AA(1)-15)

Additional detail was requested to be provided for the scoring scale for qualitative indicators. Accordingly, Table 4.5 (attached) has been updated to provide further definition on the range of sensitivities used to score all qualitative indicators.

Information Request 35 (IR#AA(1)-16)

It was noted in the review, that the value scales for some quantitative indicators did not sufficiently differentiate each alternative in accordance with the guidelines. The “worst” and the “best” values have been assigned to the end values of the scoring ranges for all quantitative indicators. Please refer to the attached Table 4.5 which sets out the updated scoring for quantitative indicators.

Information Request 36 (IR#AA(1)-17)

To differentiate between all alternatives considered in this assessment, the value scale ranges used to score all quantitative indicators in Table 4.5 have been adjusted so that they are consistent to ensure that scoring is proportional for each value in the scale. Table 4.5 is attached for reference.

Information Request 37 (IR#AA(1)-18)

It was noted during the review process, that several indicators have metrics which are measured identically in the Alternatives Assessment. A review of indicators and accounts was completed to ensure that metrics for the indicators are unique, so as to remove the possibility of double counting.

<u>For subaccounts “Potential for Greenhouse Gas Emission” and “Noise”:</u>
These two have been combined into “Potential for Greenhouse Gas and Noise Emissions”, as the increased amount of truck traffic would increase the potential for both gas and noise emissions.

<u>For subaccounts “Number of Main Watersheds Affected” and “Number of Watershed”:</u>
The “Number of Streams Directly Impacted” and “Number of Water Bodies Directly Impacted” have been combined into a single subaccount titled “Permanent Streams Impacted”. The Category “Indirect Impacts (Downstream flow Reductions)” remains as a separate account.

<u>For subaccounts ”Distance from Plant Site” and “Operation Distance”:</u>
It is recommended that these two subaccounts remain separate as the quantitative indicator values are different for each of the categories. Distance from the Plant Site (Environmental Category) refers to the road haul distance from the plant site to structure. An increase in distance results in more construction, higher consumables and increased emissions. Operation Distance refers to the distance of the pipeline or access roads required for placement of fill. It takes into account preliminary pipeline or haul road alignments, and perimeter distance of the facility for piping or placement of tailings.

<u>For subaccounts “Storage Facility and Associated Infrastructure Footprint” and “Existing Vegetation”:</u>
It is recommended that these two subaccounts remain. However, “Existing Vegetation” indicator parameters has been changed from the hectares affected to the number of ecosites affected.

<u>For subaccounts “Slope Stability” and “Visual Impact”:</u>
These two subaccounts have been combined into the “Slope Stability” account.

<u>For subaccounts “Risk to Human Health” and “Risk to Worker Safety”:</u>
These two subaccounts have been combined into a single category titled “Risk to Worker Health and Safety”

<u>For subaccounts “Economic Benefits to Regional Communities” and “Regional Job Creation and Diversity”:</u>
These two subaccounts have been combined into a single category titled “Economic Benefits to Regional Communities”

<u>For subaccounts “Aboriginal Rights” and “Extent of Traditional Land Use”:</u>
These two subaccounts have been combined under Traditional Land Use.

The Alternatives Assessment Tables have been updated to reflect these changes.

MEMO

Information Request 38 (IR#AA(1)-19)

During the review process, it was noted that for some specific indicators were assigned qualitative indicators where it was thought that these indicators could have been assigned quantitative metrics. Further assessment was requested to define indicators in parametric terms or provide justification as to why these indicators were defined qualitatively. The following indicators were reviewed, and our response is discussed in detail as follows:

<u>Potential Impacts to Water Quality:</u>
At the time of completion of the Alternatives Assessment, the potential impacts to water quality due to the presence of a TIA was completed in qualitative terms. The design of the TIA had not yet been advanced to a level whereby the selection of the construction materials had been completed in order to complete the TIA design. A design of the TIA with details on foundation materials, construction specifications and material specifications would be required to complete studies to determine the pH or metal leaching concentrations. A site investigation is currently in progress to determine types of materials available on site for the construction of the dam (borrow sources), foundation materials and parameters that will assist with the design of the TIA. As a result, qualitative parameters were selected in order to rank each of the alternatives.

<u>Construction Material Availability:</u>
This account had been defined in terms of a qualitative indicator for the following reasons. The design of the TIA had not been advanced to a level sufficient to predict the volume and parameters of materials required for construction in terms of quantity, or quality. In addition, borrow source studies and investigations have not been completed to a sufficient level of detail to accurately predict the amount of material available on or off site. Site investigation programs and testing are currently being completed or planned on site to determine the amount and parameters that may be available on site. The TIA design will be advanced based on the availability of material and the associated material parameters.

<u>Tailings Storage Expansion Capacity:</u>
The design goal for the TIA is that it satisfy the requirement to hold the currently estimated volume of tailings produced by mine from the proposed underground and open pit mine plan (minus any tailings that are planned to be stored elsewhere such as underground as fill). Should additional reserves be proven, further studies and design work would be required to plan for the storage of these materials and all applicable codes, guidelines and permit requirements would be followed. It is unknown at this time if additional capacity may be required. This indicator was selected to measure the possibility to expand the TIA if required from a ranking perspective as some of the geographical locations have little opportunity for expansion, and some in situ parameters such as foundation materials may limit the ability to store additional capacity. Insufficient data is available at this time to use parametric parameters for this account.

<u>Summary</u>

As a result of the preparation of the updates, all of the updated tables for the Alternatives Assessment have been included with this memo.

The following summary conclusions are provided:

- An Alternatives Assessment was completed to enable the selection of the Tailings Impoundment Area location and deposition technology. Seven (7) locations and four (4) deposition technologies were assessed with a total of 22 potential alternatives. The assessment followed Environment Canada's Guidelines for the Assessment of Alternatives for Mine Waste Disposal (Environment and Climate Change Canada, 2013). Several input indicators were assessed for the Environmental, Technical, Economic and Socio-Economic indicators;

- A pre-screening assessment was used in accordance with the guidelines to identify options that were advanced through the Alternatives Assessment process;
- The results of the Alternatives Assessment showed that Location 1 with conventional tailings deposition and future co-disposal of tailings into the underground mine workings (Option 1D) had the highest alternative merit score;
- The results of the sensitivity analysis were consistent with the Alternatives Assessment with Option 1D returning the highest alternative merit score;
- Option 1D is recommended as the preferred alternative for tailings management at the Goliath Project Site;
- Design parameters and assumptions developed to complete the Alternative Assessment and augmented for the geotechnical field program that is presently underway, will form the basis for the design of the tailings Storage Facility as the project is advanced to subsequent levels of design. Parameters and assumptions will be confirmed/refined/optimized during the subsequent levels of design as site specific information is obtained and design of other project component (open pit, underground, waste rock stockpiles, site runoff and collection systems, etc.) are completed.

The required edits to the Alternative Assessment tables did not change substantially from the results of the Alternatives Assessment dated July 21, 2014 completed by WSP.

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TABLE 4.1

TREASURY METALS INC.
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 1 - IDENTIFICATION OF CANDIDATE ALTERNATIVES

Project Aspect	Candidate Locations	General Location
Tailings Management Facility Location	Location 1	Northeast of the proposed plant site
	Location 2	Northeast of Location 1
	Location 3	Far east of the plant site
	Location 4	South of Location 1, east side of Tree Nursery Road
	Location 5	Between Location 4 and Location 3
	Location 6	South of proposed mine site and south of existing Normans Road
	Location 7	South of Location 4, potential dry option

Project Aspect	Candidate Tailings Technology
Tailings Disposal Technology	Conventional Slurry Tailings
	Thickened Tailings
	Filtered/Dry Stack Tailings
	Conventional Slurry Tailings with Future Co-Disposal Portion of Tailings into mine workings

Number of Candidate Alternatives	Alternative Identification	Description
1	1A	Location 1- Conventional Slurry Tailings
2	1B	Location 1 - Thickened Tailings
3	1C	Location 1 - Filtered/Dry Stack Tailings
4	1D	Location 1 - Conventional with Future Co-Disposal
5	2A	Location 2- Conventional Slurry Tailings
6	2B	Location 2- Thickened Tailings
7	2C	Location 2 - Filtered/Dry Stack Tailings
8	3A	Location 3 - Conventional Slurry Tailings
9	3B	Location 3 - Thickened Tailings
10	3C	Location 3- Filtered/Dry Stack Tailings
11	4A	Location 4 - Conventional Slurry Tailings
12	4B	Location 4 - Thickened Tailings
13	4C	Location 4 - Filtered/Dry Stack Tailings
14	5A	Location 5- Conventional Slurry Tailings
15	5B	Location 5 - Thickened Tailings
16	5C	Location 5 - Filtered/Dry Stack Tailings
17	6A	Location 6 - Conventional Slurry Tailings
18	6B	Location 6 - Thickened Tailings
19	6C	Location 6 - Filtered/Dry Stack Tailings
20	7A	Location 7 - Conventional Slurry Tailings
21	7B	Location 7 - Thickened Tailings
22	7C	Location 7 - Filtered/Dry Stack Tailings

Notes:
1. Alternatives selected for pre-screening.

WSP

TABLE 4.2

TREASURY METALS INC.
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 2 -PRE-SCREENING ASSESSMENT OF CANDIDATE ALTERNATIVES

			Candidate Alternative Idnetifier[1]																					
Criteria #	**Pre-Screening Criteria**	**Rationale**	**1A**	**1B**	**1C**	**1D**	**2A**	**2B**	**2C**	**3A**	**3B**	**3C**	**4A**	**4B**	**4C**	**5A**	**5B**	**5C**	**6A**	**6B**	**6C**	**7A**	**7B**	**7C**
1	Would the TIA sterilize a potential Resource?	If a TIA that is located over an area where there are proven indicators of mineralization, or a reasonable indication of possible mineralization based on regional trends, may be excluded from further consideration.	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
2	Is any part of the Tailings Disposal Unproven Technology at the proposed throughput?	If a specific depositional method relies on unproven technology at the project site, then it could justifiability be argued that the alternative should be excluded from further consideration.	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
3	Is any part of the Tailings Disposal Unproven Technology at the given climate?	If a specific depositional technology could be adversely affected by the local climate conditions, then it could justifiability be argued that the alternative should be excluded from further consideration.	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
4	Does the life-of-mine tailings production exceed the available storage of the alternative?	If the selected alternative does not have the required capacity to hold the produced tailings, it should be eliminated.	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
5	Does the disposal site exceed a practical distance from the mill?	If an alternatives location is too far from the production facilities, it may become economically unviable and should be eliminated.	No	No	No	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No
6	Is the location topography favourable for the tailings deposition technology	Steep topography can be unfavourable for some types of tailings deposition (such as paste) and should be eliminated as an alternative.	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No
7	Does the increased cost of an alternative exceed a reasonable threshold for the viability of the project?	The feasibility of any mining project is sensitive to cost. Higher costs may be warranted to eliminate significant adverse effects; however, there is no reason to investigate alternatives requiring significant additional costs unless there is reasonable assumption of environmental gains, and as such, it should be eliminated.	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No
8	Does the Alternative present an Unacceptable Environmental Liability?	Treasury Metals Inc., follows the PDAC Framework for Responsible Mining. Treasury Metals policy states that they are committed to responsible stewardship of the environment. Their key focus is on meeting the company's goals of minimizing environmental impact, efficient use of the resources consumed and conserving natural resources for future generations. If an alternative is perceived to present an unacceptable environmental liability, it should be eliminated.	No	No	No	No	No	No	No	No	No	Yes	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No
9	Does the Alternative exceed the risk threshold for failure of engineering containment?	If the tailings management facility exceeds the risk threshold for failure (CDA guidelines), then the Alternative should be eliminated.	No	No	No	No	No	No	No	No	No	No	No	No	No	N o	No	No	No	No	No	No	No	No
10	Does the footprint of the Alternative exceed the land position currently held by Treasury Metals Incorporated?	If the tailing management facility extends beyond the current land boundaries established by Treasury Metals Incorporated, then the Alternative should be eliminated.	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
11	Does the footprint of the Alternative occur above a geohazard, or a structural geological feature?	If the tailings management facility occurs above a geohazard or a structural geological feature that adversely affects the stability of said facility, than the Alternative should be eliminated.	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
		Should the Alternative be Excluded from Further Consideration	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**	**Yes**

Alternative Identification	**Description**
1A	Location 1- Conventional Slurry Tailings
1B	Location 1 - Thickened Tailings
1C	Location 1 - Filtered/Dry Stack Tailings
1D	Location 1 - Conventional with Future Co-Disposal
2A	Location 2- Conventional Slurry Tailings
2B	Location 2- Thickened Tailings
2C	Location 2 - Filtered/Dry Stack Tailings
3A	Location 3 - Conventional Slurry Tailings
3B	Location 3 - Thickened Tailings
3C	Location 3- Filtered/Dry Stack Tailings
4A	Location 4 - Conventional Slurry Tailings
4B	Location 4 - Thickened Tailings
4C	Location 4 - Filtered/Dry Stack Tailings
5A	Location 5- Conventional Slurry Tailings
5B	Location 5 - Thickened Tailings
5C	Location 5 - Filtered/Dry Stack Tailings
6A	Location 6 - Conventional Slurry Tailings
6B	Location 6 - Thickened Tailings
6C	Location 6 - Filtered/Dry Stack Tailings
7A	Location 7 - Conventional Slurry Tailings
7B	Location 7 - Thickened Tailings
7C	Location 7 - Filtered/Dry Stack Tailings

Notes:
1. Options that do not pass pre-screening are not advanced though the Alternatives Assessment.

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TABLE 4.3

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 3 - ALTERNATIVE CHARACTERIZATION

Environmental Account					Alternatives Location and Deposition Technology Identifier							
Sub-Account	Description	Rationale	Indicator Parameter	Unit	1A	1B	1C	1D	2A	2B	6A	6C
Land Use	Distance from the Plant Site to Structure	Distance to monitoring, pipeline distance and/or haul distance (for filtered/dry stack tailings only) results in more construction and higher consumables (fuel) and emissions (noise, exhaust, dust)	Direct Distance from Plant Site to Structure	m	Shortest distance to the plant site at ~400 m	Shortest distance to the plant site at ~400 m	Shortest distance to the plant site at ~400 m	Shortest distance to the plant site at ~400 m	Longest distance to the plant site at ~2,200 m	Longest distance to the plant site at ~2,200 m	Medium distance to plant site at ~1,400 m	Medium distance to plant site at ~1,400 m
	Pipeline/Access Road Requirements	Additional requirements for pipeline or access road requirements beyond that existing that will be required for Option	Length of Additional Infrastructure Required	m	Minimal access road required as existing roads can be primarily used for access and pipeline alignments. Estimation of 700 m of additional infrastructure required.	Minimal access road required as existing roads can be primarily used for access and pipeline alignments. Estimation of 700 m of additional infrastructure required.	Existing road infrastructure can be used to haul tailings waste. Increased load requirements to haul tailings will required road enhancements. Increased road maintenance requirements. Estimation of 700 m of additional infrastructure required.	Minimal access road required as existing roads can be primarily used for access and pipeline alignments. Future planned road infrastructure can be used alignments to pump tailings to the mine workings. Estimation of 700 m of additional infrastructure required.	Required development of access roads and pipeline alignments that will disturb existing land and vegetation. Will also require crossing several existing streams. This location is the furthest from the planned infrastructure and an additional 2400 m of infrastructure is estimated.	Required development of access roads and pipeline alignments that will disturb existing land and vegetation. Will also require crossing several existing streams. This location is the furthest from the planned infrastructure and an additional 2400 m of infrastructure is estimated.	More access roads and pipeline alignments required to be constructed than Location 1, but less than Location 2. Existing Tree Nursery Road can be used for part of the alignment. Estimation of 1500 m of additional infrastructure is estimated.	Tree Nursery Road can be used for hauling, however will generate increased truck traffic on road used for mine access. Increased in dust generation around the mine area. Increased road maintenance and design requirements due to hauling of tailings. Estimation of 1500 m of additional infrastructure is estimated.
	Storage Facility and Associated Infrastructure Footprint	A larger footprint resulting in a greater disturbance to vegetation and species	Estimate of Storage Facility(s) Area	ha	Footprint Area ~ 88 ha	Footprint Area ~ 88 ha	Footprint Area ~ 100 ha (includes tailings storage and water collection pond).	Footprint Area ~ 88 ha	Footprint Area ~ 246 ha	Footprint Area ~ 246 ha	Footprint Area ~ 54 ha	Footprint Area ~60 ha (includes tailings storage and water collection pond).
Water Impacts	Potential Impact to surface water availability	Various locations may have an impact to surface water availability. The impact is quantified by the extent of surface water diversions that will be required and site wide water balance models for each alternative.	Qualitative Estimate of Potential Surface Water Impact	Rank	Low to Medium - Requires minimal surface water diversions of minor (tributary) water features. Closest proximity to Thunder Lake, medium proximity to Wabigoon Lake.	Low to Medium - Requires minimal surface water diversions of minor (tributary) water features. Closest proximity to Thunder Lake, medium proximity to Wabigoon Lake.	Low to Medium - Requires minimal surface water diversions of minor (tributary) water features. Larger area impacted than 1A, 1B and 1D. Closest proximity to Thunder Lake, medium proximity to Wabigoon Lake.	Low to Medium - Requires minimal surface water diversions of minor (tributary) water features. Closest proximity to Thunder Lake, medium proximity to Wabigoon Lake.	High - Requires partial diversion of 2 major surface water systems. Farthest from Wabigoon Lake and Thunder Lake .	High - Requires partial diversion of 2 major surface water systems. Farthest from Wabigoon Lake and Thunder Lake .	Medium to High - Requires partial diversion of 1 major surface water system. Closest proximity to Wabigoon Lake Requires partial diversion of 1 major surface water system.	Medium to High - Requires partial diversion of 1 major surface water system. Closest proximity to Wabigoon Lake Requires partial diversion of 1 major surface water system.
	Potential Impacts to Water Quality (ARD, Metal Leaching, etc.)	Locations as well as construction materials may have impacts on water quality	Likelihood of Mining Impacts and ability of mitigation measures to limit ARD and Metal Leaching	Rank	Low to Medium -Anticipated to be contained by natural clay basin and clay lined dam with internal drain system with secondary downstream seepage collection and pump back system and likely water treatment for prolonged period. Tailings are placed with a large amount of water.	Medium - Anticipated to be contained by natural clay basin and clay lined dam with internal drain system with secondary downstream seepage collection and pump back system and likely water treatment for prolonged period. Tailings are placed with minimal water (more oxygen exposure).	High - Tailings waste stockpiled on surface. Runoff collected by perimeter collection ditches and routed to separate facility for containment and reclaim. Expected prolonged water treatment.	Low to Medium - Anticipated to be contained by natural clay basin and clay lined dam with internal drain system with secondary downstream seepage collection and pump back system and likely water treatment for prolonged period. Tailings are placed with a large amount of water.	Low to Medium - Anticipated to be contained by engineered liner in basin and upstream slopes of embankment with internal drain system and secondary downstream seepage collection and pump back system and likely water treatment for prolonged period.	Medium - Anticipated to be contained by engineered liner in basin and upstream slopes of embankment with internal drain system and secondary downstream seepage collection and pump back system and likely water treatment for prolonged period.	Low to Medium - Anticipated to be contained by natural clay basin and clay lined dam with internal drain system with secondary downstream seepage collection and pump back system and likely water treatment for prolonged period. Tailings are placed with a large amount of water.	High - Tailings waste stockpiled on surface. Runoff collected by perimeter collection ditches and routed to separate facility for containment and reclaim. Expected prolonged water treatment.
Aquatic Habitat	Permanent Streams Impacted	Locations may impact one or more permanent streams	No. of Streams Directly Impacted	No.	1 - Blackwater Creek may be permanently affected.	1 - Blackwater Creek may be permanently affected.	1 - Blackwater Creek may be permanently affected.	1 - Blackwater Creek may be permanently affected.	2 - Hughes Creek and Blackwater Creek may be permanently affected.	2 - Hughes Creek and Blackwater Creek may be permanently affected.	1 - Blackwater Creek may be permanently affected.	1 - Blackwater Creek may be permanently affected.
	Indirect impacts (downstream flow reductions)	Locations may have indirect impacts to downstream flows	No. of Streams Potentially Indirectly Impacted (includes tributaries and main creek)	No.	3 - Blackwater Creek, Hoffstroms Bay Creek may be permanently affect due to hydrological changes associated with dam and infrastructure development. Spring freshet level may be directly changed and total discharge volume for each creek may be adversely affected (Blackwater due to loss of tributary, and Hoffstroms Bay due to topographical change due to construction and flow variation).	3 - Blackwater Creek, Hoffstroms Bay Creek may be permanently affect due to hydrological changes associated with dam and infrastructure development. Spring freshet level may be directly changed and total discharge volume for each creek may be adversely affected (Blackwater due to loss of tributary, and Hoffstroms Bay due to topographical change due to construction and flow variation).	3 - Blackwater Creek, Hoffstroms Bay Creek may be permanently affect due to hydrological changes associated with dam and infrastructure development. Spring freshet level may be directly changed and total discharge volume for each creek may be adversely affected (Blackwater due to loss of tributary, and Hoffstroms Bay due to topographical change due to construction and flow variation).	3 - Blackwater Creek, Hoffstroms Bay Creek may be permanently affect due to hydrological changes associated with dam and infrastructure development. Spring freshet level may be directly changed and total discharge volume for each creek may be adversely affected (Blackwater due to loss of tributary, and Hoffstroms Bay due to topographical change due to construction and flow variation).	6 - Hughes Creek and Blackwater Creek may be permanently affected due to hydrological changes associated with damn and infrastructure development. Spring freshet levels may be directly changed and total discharge volume may be adversely affected (Blackwater Creek as the headwaters are in the TSF location and Hughes Creek due to tributary loss).	6 - Hughes Creek and Blackwater Creek may be permanently affected due to hydrological changes associated with damn and infrastructure development. Spring freshet levels may be directly changed and total discharge volume may be adversely affected (Blackwater Creek as the headwaters are in the TSF location and Hughes Creek due to tributary loss).	3 - Blackwater Creek may be permanently affected due to hydrological changes associated with dam and infrastructure development. Spring freshet level may be directly changed and total discharge volume for Blackwater Creek may be adversely affected (Blackwater due to loss of tributary).	3 - Blackwater Creek may be permanently affected due to hydrological changes associated with dam and infrastructure development. Spring freshet level may be directly changed and total discharge volume for Blackwater Creek may be adversely affected (Blackwater due to loss of tributary).
	Direct impact to open water	Various locations may impact open water	No. of Water Bodies Directly Impacted	No.	1 - Only impact associated with open water created by way of beaver dams on Blackwater Creek. Hydrological change to Blackwater Creek may cause flow concerns and abandonment of open water areas by local beaver population.	1 - Only impact associated with open water created by way of beaver dams on Blackwater Creek. Hydrological change to Blackwater Creek may cause flow concerns and abandonment of open water areas by local beaver population.	1 - Only impact associated with open water created by way of beaver dams on Blackwater Creek. Hydrological change to Blackwater Creek may cause flow concerns and abandonment of open water areas by local beaver population.	1 - Only impact associated with open water created by way of beaver dams on Blackwater Creek. Hydrological change to Blackwater Creek may cause flow concerns and abandonment of open water areas by local beaver population.	2 - Impact associated with open water created by beaver dams on Blackwater Creek and beaver dams within the Hughes Creek marshland, and Anderson road culvert dam. Loss of flow may lower water levels and in turn affect the local population at either of these locations.	2 - Impact associated with open water created by beaver damns on Blackwater Creek and beaver dams within the Hughes Creek marshland, and Anderson road culvert dam. Loss of flow may lower water levels and in turn affect the local population at either of these locations.	1 - Only impact associated with open water created by way of beaver dams on Blackwater Creek. Hydrological change to Blackwater Creek may cause flow concerns and abandonment of open water areas by local beaver population.	1 - Only impact associated with open water created by way of beaver dams on Blackwater Creek. Hydrological change to Blackwater Creek may cause flow concerns and abandonment of open water areas by local beaver population.

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TABLE 4.3

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 3 - ALTERNATIVE CHARACTERIZATION

	Number of fish bearing lakes impacted	Various locations may impact fish bearing lakes	No of Fish Bearing Lakes Directly Affected	No.	1 - Probable impact associated with Wabigoon Lake. Closest proximity to Thunder Lake, medium proximity to Wabigoon Lake.	1 - Probable impact associated with Wabigoon Lake. Closest proximity to Thunder Lake, medium proximity to Wabigoon Lake.	1 - Probable impact associated with Wabigoon Lake. Closest proximity to Thunder Lake, medium proximity to Wabigoon Lake.	1 - Probable impact associated with Wabigoon Lake. Closest proximity to Thunder Lake, medium proximity to Wabigoon Lake.	1 - Discharge would flow by way of Hughes or Blackwater Creek to Wabigoon Lake. Farthest from Wabigoon Lake and Thunder Lake	1 - Discharge would flow by way of Hughes or Blackwater Creek to Wabigoon Lake. Farthest from Wabigoon Lake and Thunder Lake	1 - Probable impact associated with Wabigoon Lake. Close proximity to Wabigoon Lake	1 - Probable impact associated with Wabigoon Lake. Close proximity to Wabigoon Lake
Terrestrial Habitat	Area of feeding or shelter loss due to TSF or associated structures.	Various locations may impact habitat of animals (moose, deer, bear etc.)	No. of Terrestrial Areas Directly Impacted	No.	1 - Impact area would be associated with footprint area associated with construction of TSF and associated infrastructure.	1 - Impact area would be associated with footprint area associated with construction of TSF and associated infrastructure.	1 - Impact area would be associated with footprint area associated with construction of TSF and associated infrastructure.	1 - Impact area would be associated with footprint area associated with construction of TSF and associated infrastructure.	1 - Impact area would be associated with footprint area associated with construction of TSF and associated infrastructure.	1 - Impact area would be associated with footprint area associated with construction of TSF and associated infrastructure.	1 - Impact area would be associated with footprint area associated with construction of TSF and associated infrastructure.	1 - Impact area would be associated with footprint area associated with construction of TSF and associated infrastructure.
	Existing vegetation, ecosystems will be lost	Various locations may impact wetlands, rare ecosystems, grasslands, forests and associated species.	Loss of Flora and Fauna	No. of Ecosites	FRI indicates that there are 7 varieties of forest type within the area (Ecosites include: Pine / Spruce / Feathermoss: Fresh Silty Soil, Spruce / Pine / Feathermoss: Fresh, Fine, Loamy-Clayey Soil, Hardwood-Fir-Spruce Mixed wood: Fresh, Fine, Loamy-Clayey Soil, Intermediate Swamp: Black Spruce (Tamarack), Organic Soil, Rich Swamp: Black Ash (Hardwoods), Organic Mineral Soil, Thicket Swamp: Mineral Soil). Birds and small mammals will be affected by development. Estimation of 88 ha may be impacted.	FRI indicates that there are 7 varieties of forest type within the area (Ecosites include: Pine / Spruce / Feathermoss: Fresh Silty Soil, Spruce / Pine / Feathermoss: Fresh, Fine, Loamy-Clayey Soil, Hardwood-Fir-Spruce Mixed wood: Fresh, Fine, Loamy-Clayey Soil, Intermediate Swamp: Black Spruce (Tamarack), Organic Soil, Rich Swamp: Black Ash (Hardwoods), Organic Mineral Soil, Thicket Swamp: Mineral Soil). Birds and small mammals will be affected by development. Estimation of 88 ha may be impacted.	FRI indicates that there are 7 varieties of forest type within the area (Ecosites include: Pine / Spruce / Feathermoss: Fresh Silty Soil, Spruce / Pine / Feathermoss: Fresh, Fine, Loamy-Clayey Soil, Hardwood-Fir-Spruce Mixed wood: Fresh, Fine, Loamy-Clayey Soil, Intermediate Swamp: Black Spruce (Tamarack), Organic Soil, Rich Swamp: Black Ash (Hardwoods), Organic Mineral Soil, Thicket Swamp: Mineral Soil). Birds and small mammals will be affected by development. Estimation of 100 ha may be impacted.	FRI indicates that there are 7 varieties of forest type within the area (Ecosites include: Pine / Spruce / Feathermoss: Fresh Silty Soil, Spruce / Pine / Feathermoss: Fresh, Fine, Loamy-Clayey Soil, Hardwood-Fir-Spruce Mixed wood: Fresh, Fine, Loamy-Clayey Soil, Intermediate Swamp: Black Spruce (Tamarack), Organic Soil, Rich Swamp: Black Ash (Hardwoods), Organic Mineral Soil, Thicket Swamp: Mineral Soil). Birds and small mammals will be affected by development. Estimation of 88 ha may be impacted.	FRI indicates that there are 6 different varieties of forest type within the area (Ecosites include: (Poor Swamp: Black Spruce, Organic Soil, Intermediate Swamp: Black Spruce (Tamarack), Organic Soil, Treed Bog: Black Spruce, Organic Soil, Treed Fen: Tamarack-Black Spruce / Sphagnum, Organic Soil, Spruce - Pine / Feathermoss: Fresh, Sandy-Coarse Loamy Soil). Birds and small mammals will be affected by development. estimation of 246 ha may be impacted.	FRI indicates that there are 6 different varieties of forest type within the area (Ecosites include: (Poor Swamp: Black Spruce, Organic Soil, Intermediate Swamp: Black Spruce (Tamarack), Organic Soil, Treed Bog: Black Spruce, Organic Soil, Treed Fen: Tamarack-Black Spruce / Sphagnum, Organic Soil, Spruce - Pine / Feathermoss: Fresh, Sandy-Coarse Loamy Soil). Birds and small mammals will be affected by development. Estimation of 246 ha may be impacted.	FRI indicates that there are 6 varieties of forest type within the area (Ecosites include: Thicket Swamp: Mineral Soil, Shore Fen: Organic Soil, Fir - Spruce Mixed wood: Fresh, Coarse, Loamy Soil, Rock Barren, Hardwood-Fir-Spruce Mixed wood: Fresh, Fine, Loamy-Clayey Soil, Fir - Spruce Mixed wood: Moist, Silty-Clayey Soil). Birds and small mammals will be affected by development. Estimation of 54 ha may be impacted.	FRI indicates that there are 6 varieties of forest type within the area (Ecosites include: Thicket Swamp: Mineral Soil, Shore Fen: Organic Soil, Fir - Spruce Mixed wood: Fresh, Coarse, Loamy Soil, Rock Barren, Hardwood-Fir-Spruce Mixed wood: Fresh, Fine, Loamy-Clayey Soil, Fir - Spruce Mixed wood: Moist, Silty-Clayey Soil). Birds and small mammals will be affected by development. Estimation of 61 ha may be impacted.
	Potential for Dust Emission (contributed by trucks)	Longer haul distances will increase potential dust contribution.	Length of Haulage Roads	m	No hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance. Additional roads for hauling of tailings are not required.	No hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance. Additional roads for hauling of tailings are not required.	Shortest haul distance related to tailings placement. Daily traffic required for tailings placement. Also traffic related to operations, maintenance and surveillance. Estimation of 700 m of additional road required to haul tailings to facility	No hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance. Additional roads for hauling of tailings are not required.	No hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance. Additional roads for hauling of tailings are not required.	No hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance. Additional roads for hauling of tailings are not required	No hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance. Additional roads for hauling of tailings are not required	Longest haul distance related to tailings placement. Daily traffic required for tailings placement. Also traffic related to operations, maintenance and surveillance. Estimation of 1500 m of additional road required to haul tailings to facility.
Air Quality	Potential for Dust Emission (Contributed by tailings)	Potential for deposited tailings to produce dust	Type of tailings technology used and potential dust generation	Rank	Lowest potential for dusting based on water storage within facility maintaining tailings beach in wet conditions.	Medium potential from conventional tailings based on potential less water being stored in facility.	Highest potential for dusting.	Lowest potential for dusting based on water storage within facility maintaining tailings beach in wet conditions.	Lowest potential for dusting based on water storage within facility maintaining tailings beach in wet conditions.	Medium potential from conventional tailings based on potential less water being stored in facility.	Lowest potential for dusting based on water storage within facility maintaining tailings beach in wet conditions.	Highest potential for dusting.
	Potential for Greenhouse Gas and Noise Emissions (number of truck hours)	Increased truck traffic will increase potential for Greenhouse Gas Emissions and Noise Pollution	Qualitative Rank of Potential Greenhouse Gas Emissions and Noise Pollution due to truck traffic based on tailings disposal technology	Rank	Lowest potential, no hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance.	Lowest potential, no hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance.	Medium to High potential based on truck hauling used for tailings deposition, however location is closer than Option 6C.	Lowest potential, no hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance.	Lowest potential, no hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance. Furthest distance from plant	Lowest potential, no hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance. Furthest distance from plant	Lowest potential, no hauling of tailings required for tailings disposal. Traffic related to operations, maintenance and surveillance.	Highest potential based on truck hauling used for tailings deposition. Further from plant than 1C.

Technical Account

Sub-Account	Description	Rationale	Indicator Parameter	Unit	1A	1B	1C	1D	2A	2B	6A	6C
	Foundation Conditions	Conditions of the foundation may be undesirable and may require additional stability measures	Qualitative Rank ofSuitability of Foundation Conditions	Rank	High Suitability - Natural ground in the area generally consisting of clay materials. Potential containment in basin area.	High Suitability - Natural ground in the area generally consisting of clay materials. Potential containment in basin area.	High Suitability - Natural ground in the area generally consisting of clay materials. Potential containment in basin area.	High Suitability - Natural ground in the area generally consisting of clay materials. Potential containment in basin area.	Low Suitability - Natural ground in the area generally consisting of sands and gravels. Not suitable for basin containment.	Low Suitability - Natural ground in the area generally consisting of sands and gravels. Not suitable for basin containment.	Moderate Suitability - Potentially consisting of clay to bedrock knobs. Possible containment in basin area	Moderate Suitability - Potentially consisting of clay to bedrock knobs. Possible containment in basin area.
	Distance from Plant	Longer distance results in more access roads (or haul roads for dry stack) and pipeline construction, more pumping energy and potential booster stations (for conventional slurry or paste). Takes into account preliminary pipeline alignment distances and perimeter distance of impoundment facility for piping or haulage of tailings. Longer pipelines have an increased operational complexity, additional required efforts for monitoring and increased risk for rupture due to additional components and longer pipe lengths.	Distance From Plant Site to Far End of Facility for pipeline or haul road.	m	Closest proximity to plant site. Projected pipeline distance to far side of facility is 2,200 m.	Closest proximity to plant site. Projected pipeline distance to far side of facility is 2,200 m.	Closest proximity to plant site. Projected haulage distance to far side of facility is 2,200 m using perimeter roads.	Closest proximity to plant site. Projected pipeline distance to far side of facility is 2,200 m.	Farthest distance to plant site. Projected pipeline distance to far side of facility is 5,200 m	Farthest distance to plant site. Projected pipeline distance to far side of facility is 5,200 m	Medium proximity to plant site. Projected pipeline distance to far side of facility is 2,400 m.	Medium proximity to plant site. Projected pipeline distance to far side of facility is 2,400 m.

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STEP 3 - ALTERNATIVE CHARACTERIZATION

Design	Topographic Complexity	More complex topography may constrain approaches to type of seepage ditch construction (based on expected flow velocity). Areas with some topographic relief may provide opportunities to minimize embankment heights	Qualitative Rank of Topographic Complexity	Rank	Moderate Complexity - Local topography can be used to minimize embankment heights and future raising. Minimal topographic change from the plant site allowing for simple drainage and containment.	Moderate Complexity - Local topography can be used to minimize embankment heights and future raising. Minimal topographic change from the plant site allowing for simple drainage and containment.	Low Complexity - Local topography is suitable for storage of tailings solids and water management. Minimal topographic change from the plant site allowing for simple drainage and containment.	Low to Moderate Complexity - Local topography can be used to minimize embankment heights and future raising. Directing tailings underground in future years operations will also reduce required embankment heights. Minimal topographic change from the plant site allowing for simple drainage and containment.	Very High Complexity - Local topography can be used to minimize embankment heights and future raising. Moderate complexity due to topography to address drainage and containment.	High Complexity - Local topography can be used to minimize embankment heights and future raising. Moderate complexity due to topography to address drainage and containment.	Very High Complexity - Local topography can be used to minimize embankment height and future raising. Higher complexity issues with respect to potential bedrock can hinder establishing perimeter ditches.	Moderate Complexity - Local topography can be used to minimize embankment heights. Undulating topography will require operational planning for tailings placement. Higher complexity issues with respect to potential bedrock can hinder establishing perimeter ditches.
	Topography	Elevation difference between processing plant and tailings storage facility affects pumping requirements	Elevation Difference From Plant Site to Final Embankment Arrangement	m	Medium topographic change from the plant site (27 m)	Medium topographic change from the plant site (25 m).	Dry stack tailings are hauled to facility and is unaffected by elevation differences.	Medium topographic change from the plant site (25 m).	Largest topographic difference to the plant site (35 m).	Large topographic difference to the plant site (34 m).	Location is at equal or lower elevation difference from the plant site. Some topographic undulation between plant site and location (24 m).	Dry stack tailings are hauled to facility and is unaffected by elevation differences.
	Dam Complexity	More complex dam design will result in more difficult construction requirements and associated monitoring conditions	Qualitative Rank of Dam Complexity	Rank	Zoned earth fill with low permeable clay layer or liner material. Foundation favourable for foundation key-in. Dam can be raised during operations.	Zoned earth fill with low permeable clay layer or liner material. Foundation favourable for foundation key-in. Dam can be raised during operations. Paste fill technology will result in lower embankment heights due to higher in situ density conditions than 1A.	Design will require a containment dam for water collection and reclaim as a separate facility from dry stack pile. Structure is smaller (less material and height) and less complex than other options.	Zoned earth fill with low permeable clay layer or liner material. Foundation favourable for foundation key-in. Dam can be raised during operations. Anticipated lower dam heights than 1A and 1B due to portion of tailings waste directed to the mine workings for storage.	Zoned earth fill with low permeable clay layer or liner material. Foundation anticipated to consist of sand or gravel that will require basin lining. Dam can be raised during operations.	Zoned earth fill with low permeable clay layer or liner material. Foundation anticipated to consist of sand or gravel that will require basin lining. Dam can be raised during operations. Paste fill technology will result in lower embankment heights due to higher in situ density conditions than 2A.	Zoned earth fill with low permeable clay layer or liner material. Foundation may consist of rock that will be more complex for embankment key-in or liner anchorage. Foundation consisting of rock will provide good embankment stability. Dam can be raised during operations.	Design will require a containment dam for water collection and reclaim as a separate facility from dry stack pile. Structure is smaller (less material and height). Will require using existing topography and bedrock to establish containment dam.
	Dam Hazard Classification	Based on classification systems, various designs can be assessed a hazard classification	CDA Dam Classification Estimate	Classification	HPC will be dependent on Environmental considerations and proximity to the plant site.	HPC will be dependent on Environmental considerations and proximity to the plant site.	HPC based on Water Collection Pond	HPC will be dependent on Environmental considerations and proximity to the plant site.	HPC will be dependent on Environmental considerations.	HPC will be dependent on Environmental considerations.	Anticipated to require a higher HPC due to proximity to Hwy 17 and Wabigoon Lake.	HPC based on Water Collection Pond
	Construction Material Availability	Areas closer to confirmed borrow pit sources and amount of material required to construct dams.	Qualitative Rank of Construction Material Volume Requirements and Availability	Rank	Medium to High - In moderate proximity to local clay borrow source and mine waste rock that will be provided from the open pit mining area. Adjacent to established roads for materials hauled from external sources.	Medium - In moderate proximity to local clay borrow source and mine waste rock that will be provided from the open pit mining area. Adjacent to established roads for materials hauled from external sources. Will require less materials for construction than Option 1A due to lower embankment height.	Low - Close to local clay borrow source and mine waste rock that will be provided from the open pit mining area. Adjacent to established roads for materials hauled from external sources. Will require less materials for construction than Option 1A, 1B and 1D due to lower embankment height.	Low to Medium - Close to local clay borrow source and mine waste rock that will be provided from the open pit mining area. Adjacent to established roads for materials hauled from external sources. Will require less material for construction than Option 1A and 1B, but more than 1C.	Medium to High - Farther distance that Location 1 and 6 for local borrow sources, mine waste rock and external supplied materials. Will also require establishing construction roads for access. Will require more construction material than Option 2B.	High - Farther distance that Location 1 and 6 for local borrow sources, mine waste rock and external supplied materials. Will also require establishing construction roads for access. Will require less construction material than Option 2A.	Medium - Closest proximity for local borrow material, mine waste rock and also external supplied materials than Location 1 and 2. Will require more construction material than 6C.	Very Low - Closest proximity for local borrow material, mine waste rock and also external supplied materials than Location 1 and 2. Will require less construction material than 6A.
	Slope Stability	Taller slopes required to achieve the required volume while minimizing footprint increases risk of instability	Preliminary Estimate of Total Embankment Height	m	24	22	18 (estimate of final height of tailings pile)	22	30	29	34	27 (estimate of final height of tailings pile)
	Slope Stability	Steeper slopes required to achieve the required volume while minimizing footprint increases risk of instability	Estimate of Slope Angle during operations	H:V	1.5H:1V	1.5H:1V	2.1H:1V	1.5H:1V	1.5H:1V	1.5H:1V	1.5H:1V	2.1H:1V
	Distance between storage facility and Mill Site	Longer access road requirements, longer transport distance for tailings materials required increased surveillance and potential for spills outside of containment areas.	Distance from Plant Site to Far End of Facility	m	2,200	2,200	2,200	2,200	5,200	5,200	2,400	2,400

161-15856-00
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TABLE 4.3

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 3 - ALTERNATIVE CHARACTERIZATION

Operations	Operational Risks and Other Uncertainties	Various depositional technologies and locations may have additional operational risks	Qualitative Rank of operations assessment based on tailings and water management.	Rank	Low to Medium - Tailings solids and water management contained within perimeter embankments. Requires tailings deposition planning and operational management with consideration of seasonal influences for water management. Water management requires several reclaim lines and monitoring.	Medium to High - Tailings and water storage within single containment facility, potential requirements for further containment for water management. Capacity dependent on achieving consistent beach slopes and in situ densities in summer and winter conditions. Requires tailings deposition planning and operation management. Potential seasonal influence on tailings deposition. Water management may require two facilities and several reclaim lines and monitoring.	Medium - Tailings solids not contained within perimeter embankments. Potential dusting issue in summer. Potential to trap ice lenses in lifts. Will require snow removal during winter operations. Requires collection and containment of surface water runoff. Requires truck placement of tailings. Water management in separate facility with reclaim line.	Low - Tailings solids and water management contained within perimeter embankments. Water reclaim from the facility. Direction of a portion of the tailings to the underground reduces the volume of tailings required to be stored on surface within the facility. Requires tailings deposition planning and operational management with consideration of seasonal influence for water management. Water reclaim requires several reclaim lines and monitoring.	Low to Medium - Tailings solids and water management contained within perimeter embankments. Requires tailings deposition planning and operational management with consideration of seasonal influences for water management. Water management requires several reclaim lines and monitoring. Water reclaim from the facility. Furthest location from site for monitoring purposes.	High - Tailings and water storage within single containment facility, potential requirements for further containment for water management. Capacity dependent on achieving consistent beach slopes and in situ densities in summer and winter conditions. Requires tailings deposition planning and operational management. Potential seasonal influence on tailings deposition. Water management may potentially require two facilities and several reclaim lines and monitoring. Furthest location from site for monitoring.	Low to Medium - Tailings solids and water management contained within perimeter embankments. Requires tailing deposition planning and operational management with consideration of seasonal influences for water management. Water management requires several reclaim lines and monitoring	Medium - Tailings solids not contained within perimeter embankments. Potential dusting issue in summer. Potential to trap ice lenses in lifts. Will require snow removal during winter operations. Requires collection and containment of surface water runoff. Requires truck placement of tailings. Water management in separate facility with reclaim line.
	Water Treatment Requirements	The depositional technologies have various water treatment requirements	Estimate of Water Treatment Volume	m^3	Highest anticipated volume of water released to supernatant pond. Facility required to provide storage of surplus water for direction to treatment.	Medium volume of water released to supernatant pond. May require inclusion of secondary water management facility during the operations.	Tailings dewatered at the plant site prior to being stored at the facility. Water treatment from runoff collection from stored tailings and other water collection at the site.	Highest volume of water released to supernatant pond. Facility required to provide storage of surplus water for direction to treatment.	Highest volume of water released to supernatant pond. Facility required to provide storage of surplus water for direction to treatment.	Medium volume of water released to supernatant pond. May require inclusion of secondary water management facility	Highest volume of water released to supernatant pond. Facility required to provide storage of surplus water for direction to treatment.	Tailings dewatered at the plant site prior to being stored at the facility. Water treatment from runoff collection from stored tailings and other water collection at the site.
Closure	Remediation Requirements	Complexity of Remediation requirements for Closure	Quantitative Rank of Remediation Requirements	Rank	Highest complexity, requiring facility closure (includes stabilize slopes and closure for containment area) and surface water management design.	Medium to High complexity, requiring closure of facility. Includes embankment slopes and containment area. Potential reclamation of water collection pond if used.	Lowest complexity, requiring closure and capping of facility and providing stable final surfaces. Potential for progressive reclamation. Reclamation of water management facility.	Highest complexity, requiring facility closure (includes stabilize slopes and closure for containment area) and surface water management design. However, smaller amount of material stored on surface than option 1A.	Highest complexity, requiring facility closure (includes stabilize slopes and closure for containment area) and surface water management design.	Medium to High complexity, requiring closure of facility. Includes embankment slopes and containment area. Potential reclamation of water collection pond if used.	Highest complexity, requiring facility closure (includes stabilize slopes and closure for containment area) and surface water management design.	Lowest complexity, requiring closure and capping of facility and providing stable final surfaces. Potential for progressive reclamation. Reclamation of water management facility.
	Post Closure Water Treatment Requirements	Post Closure water treatment requirements may be more involved for various options.	Qualitative Rank of Potential Post Closure Water Treatment Requirements	Rank	Low - Potential short-term water treatment until closure activities are completed	Low - Potential short-term water treatment until closure activities are completed	Medium - Potential long-term water treatment requirements - to be determined with monitoring of seepage and runoff after closure activities are completed.	Low - Potential short-term water treatment until closure activities are completed	Low - Potential short-term water treatment until closure activities are completed	Low - Potential short-term water treatment until closure activities are completed	Low - Potential short-term water treatment until closure activities are completed	Medium Potential long-term water treatment requirements - to be determined with monitoring of seepage and runoff after closure activities are completed.
	Post Closure Landform Stability	Various landform designs may be more stable than others	Qualitative Rank - Estimate of Risk Associated with Post Closure Landform Stability	Rank	Medium - Closure requires long-term stability of embankments, potential grading of slopes, medium embankment height. Single dam structure stabilized at closure.	High - Closure requires long-term stability of embankments, potential grading of slopes, medium embankment height. Potentially two dam structures requiring stabilization at closure.	Very Low - Closure requires long-term stability of tailings pile slopes, may require regrading at closure for placement of cover material, lowest final height of options. Includes closure of dam structure for water management.	Low to Medium - Closure requires long-term stability of embankments, potential grading of slopes, lowered embankment height than 1A and 1B. Single dam structure stabilized at closure.	Medium to High - Closure requires long-term stability of embankments, potential grading of slopes, higher final embankment height than 2B. Single dam structure stabilized at closure.	Medium - Closure requires long-term stability of embankments, potential grading of slopes, lower final embankment height than 2A. Single dam structure stabilized at closure.	High - Closure requires long-term stability of embankments, potential grading of slopes, highest final embankment height. Potentially two dam structures requiring stabilization at closure.	Low - Closure requires long-term stability of tailings pile slopes, may require regrading at closure for placement of cover material, lower final embankment height than 6A. Includes closure of dam structure for water management.
	Post Closure Chemical Stability	Various closure plans may allow for more chemical stability	Qualitative Rank - Estimate of Post Closure Chemical Stability	Rank	Medium - Closure anticipated to consist of capping final tailings surface with low permeable liner or clay material and inclusion of a shedding cover with revegetation to prevent water infiltration into deposited tailings.	Medium - Closure anticipated to consist of capping final tailings surface with low permeable liner or clay material and inclusion of a shedding cover with revegetation to prevent water infiltration into deposited tailings.	Low - Closure anticipated to consist of capping final tailings surface with low permeable clay material and revegetation. Facility uses foundation seepage collection.	Medium - Closure anticipated to consist of capping final tailings surface with low permeable liner or clay material and inclusion of a shedding cover with revegetation to prevent water infiltration into deposited tailings.	High - Closure anticipated to consist of capping final tailings surface with low permeable liner or clay material and inclusion of a shedding cover with revegetation to prevent water infiltration into deposited tailings. Facility uses engineered liner for embankments and basin.	High - Closure anticipated to consist of capping final tailings surface with low permeable liner or clay material and inclusion of a shedding cover with revegetation to prevent water infiltration into deposited tailings. Facility uses engineered liner for embankments and basin.	Medium - Closure anticipated to consist of capping final tailings surface with low permeable liner or clay material and inclusion of a shedding cover with revegetation to prevent water infiltration into deposited tailings.	Low - Closure anticipated to consist of capping final tailings surface with low permeable clay material and revegetation. Facility uses foundation seepage collection.
Capacity	Tailings Storage Expansion Capacity	Some geographical locations and designs may allow for additional expansion requirements more easily than others	Qualitative Rank of Potential Expansion	Rank	High - Area is favourable to expansion for additional tailings storage through embankment raising and possibly to footprint area.	High - Area is favourable to expansion for additional tailings storage through embankment raising and possibly to footprint area	High - Area is favourable to expansion for additional tailings storage with increases to footprint area or increased pile heights.	High - Area is favourable to expansion for additional tailings storage through embankment raising and possibly to footprint area.	Medium - Area is favourable to expansion for additional tailings storage through embankment raising. Some opportunities for expansion to footprint area, expansion is limited to north due to property boundary	Medium - Area is favourable to expansion for additional tailings storage through embankment raising. Limited opportunities for expansion to footprint area, expansion is limited to north due to property boundary	Low - Area is less favourable to expansion due to local topography and adjacent property boundaries as well as the proximity of the Open Pit operations to the North	Low - Area is less favourable to expansion due to local topography and adjacent property boundaries as well as the proximity of the Open Pit operations to the North

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TABLE 4.3

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 3 - ALTERNATIVE CHARACTERIZATION

	Storage Efficiency	Designs may be more efficient than others at storing tailings	Storage Capacity Volume per Construction Material Volume	m^3/m^3	5	5.3	>7	5.2	4.6	4.1	2.4	>7
Water Management	Sensitivity to Climate Variability	Some locations and other influences can produce options that are more sensitive to climate variability. Locations can be influenced by topography, elevation, proximity to water, wind direction, and geographic location. Due to proximity of all options, climate variability is not expected to be measurably variable across all locations.	Qualitative Rank of climate sensitivity	Rank	Low sensitivity to climate variability, requires reclaim from pond during winter with ice buildup in pond. Relatively flat topography.	Low to Medium sensitivity to climate variability, requires reclaim from pond during winter with ice buildup in pond. Relatively flat topography.	Low sensitivity to climate variability, requires reclaim from pond during winter with ice buildup in pond. Relatively flat topography.	Low sensitivity to climate variability, requires reclaim from pond during winter with ice buildup in pond. Relatively flat topography.	Low sensitivity to climate variability, requires reclaim from pond during winter with ice buildup in pond. Relatively flat topography.	Low to medium sensitivity to climate variability, requires reclaim from pond during winter with ice buildup in pond. Relatively flat topography.	Low sensitivity to climate variability, requires reclaim from pond during winter with ice buildup in pond. Relatively flat topography.	Low sensitivity to climate variability, requires reclaim from pond during winter with ice buildup in pond. Relatively flat topography.
	Surface Water Control Measures	Various options may require more complex surface water control measures	Qualitative Rank of Surface Water Control Complexity	Rank	Low complexity, consisting of containment within facility and reclaim from the facility. To be completed with surface water operational plan.	Moderate complexity. Bleed water anticipated, management within Cell 2 during initial phase of operations. Additional water management facility required in second phase of operations and required to store water from mine dewatering.	Moderate to High complexity. Surface water management required consisting of runoff from tailings pile and surrounding catchment runoff management. Separate facility required to store water from mine dewatering.	Lowest complexity, consisting of containment within facility and reclaim from the facility. To be completed with surface water operational plan. Less process water with portion of the tailings being directed to the underground.	Low complexity, consisting of containment within facility and reclaim from the facility. To be completed with surface water operational plan.	Moderate complexity. Bleed water anticipated, water management will include separate facility to manage surface water and mine dewatering.	Low complexity, consisting of containment within facility and reclaim from the facility. To be completed with surface water operational plan.	Moderate to High complexity. Surface water management required consisting of runoff from tailings pile and surrounding catchment runoff management. Separate facility required to store water from mine dewatering.
	Seepage Control Measures	Ability to restrict the migration of mine water	Qualitative Rank of Effectiveness of Seepage Control	Rank	High - Seepage control with low permeable clay or liner materials. Collection of seepage with downstream ditching and pump back system.	Medium to High - Seepage control with low permeable clay or liner materials. Collection of seepage with downstream ditching and pump back system from two potential containment areas.	Low - Seepage control with foundation liners (natural or product) and perimeter containment ditching and berm with transfer to secondary containment facility. Secondary containment facility to have berm and ditch with pump back system.	High - Seepage control with low permeable clay or liner materials. Collection of seepage with downstream ditching and pump back system.	High - Seepage control with low permeable clay or liner materials. Collection of seepage with downstream ditching and pump back system.	Medium to High - Seepage control with low permeable clay or liner materials. Collection of seepage with downstream ditching and pump back system from two potential containment areas.	High - Seepage control with low permeable clay or liner materials. Collection of seepage with downstream ditching and pump back system.	Low - Seepage control with foundation liners (natural or product) and perimeter containment ditching and berm with transfer to secondary containment facility. Secondary containment facility to have berm and ditch with pump back system.

Economic Account

Sub-Account	Description	Rationale	Indicator Parameter	Unit	1A	1B	1C	1D	2A	2B	6A	6C
Life of Mine Costs	Capital	Larger Capital Costs will result in a decreased project return.	$M, Life of Mine (differentiating)	$	34.5	28.8	9.9	29.1	119.3	113.4	54.1	6.3
	Operational	Larger Operational costs will result in a decreased project return	$M, Life of Mine (differentiating)	$	2.9	10.9	31.3	10.9	3.7	11.7	3.1	31.3
	Fish Habitat Compensation	Increased fish habitat impacts increases compensation costs (including bonding, capital and monitoring)	$M, Life of Mine (differentiating)	$	Not Assessed - Each Alternative Assigned a Neutral Rating							
	Closure and Reclamation Costs	More complex dam design will result in more difficult construction requirements and associated monitoring conditions	$M, Life of Mine (differentiating)	$	18.4	18.4	10.8	18.4	51.5	51.5	11.5	7.4

Socio-Economic Account

Sub-Account	Description	Rationale	Indicator Parameter	Unit	1A	1B	1C	1D	2A	2B	6A	6C
Archaeology	Archaeological Potential	Tailings Storage Facility that impacts archaeological resources will potentially require additional investigation, permitting and may attract adverse public concern	Area of direct impact and archaeological potential	ha/potential	No archeological potential.	No archeological potential.	No archeological potential.	No archeological potential.	No archeological potential.	No archeological potential.	No archeological potential.	No archeological potential.
Health and Safety	Risk to Worker Health and Safety	Tailings facilities that can generate tailings dust or potential discharge of untreated water can cause adverse affects to worker health. Facilities that are upstream of other operating facilities or require increased manpower for operations can be higher risk to worker safety	Qualitative Rank of Worker Health and Safety Risk	Rank	Medium to High risk based on water management, location and required operations.	Medium to High risk based on water management, location and required operations.	High risk based on potential surface dusting, and on required daily operations.	Medium to High risk based on water management, location and required operations.	Medium risk based on lower embankments and water management and required operations.. Site is further from plant site than other options.	Medium risk based on lower embankments and water management and required operations.. Site is further from plant site than other options.	High Risk based on high dams and water management, location and required operations. Close to plant site and open pit site.	Very high risk based on potential surface dusting, location and required daily operations. Close to plant site and open pit site.
	Risk to Public Safety	Facilities with significant embankment heights can be less stable. Facilities without perimeter containment can be higher risk. Facilities dependent on water management can be higher risk if unwanted water is released from the facility.	Qualitative Rank of Public Safety Risk	Rank	Medium risk based on dam heights and water management	Medium risk based on dam heights and water management	Low to Medium risk based on reduced water management and tailings storage arrangement	Medium risk based on dam heights and water management	Low risk based on location and water management	Low risk based on location and water management	Medium risk based on dam heights and water management	Low to Medium risk based on reduced water management and tailings storage arrangement
Socio-Economic Indicators	Economic Benefits to Regional Communities	Facilities requiring startup and future construction activities as well as on-going operations can beneficial to the regional community.	Qualitative Rank of Economic Benefits to Community including job creation and diversity	Rank	Medium indirect employment with initial construction costs, future construction costs and with low impact as TSF becomes operational to closure.	Medium indirect employment with initial construction costs, future construction costs and with low impact as TSF becomes operational to closure.	Low - Low initial costs to construct with higher employment as operational staff is greater in nature than traditional tailings facility. Shorter haul distance than Option 6C resulting in fewer jobs.	Medium indirect employment with initial construction costs, future construction costs and with low impact as TSF becomes operational to closure.	Medium to High - higher indirect employment with initial construction costs, future construction costs and with low impact as TSF becomes operational to closure.	Medium to High - higher indirect employment with initial construction costs, future construction costs and with low impact as TSF becomes operational to closure.	Medium to High - higher indirect employment with initial construction costs, with low impact as TSF becomes operational to closure.	Low to Medium - Low initial costs to construct with higher employment as operational staff is greater in nature then traditional tailings facility.
	Indirect Employment	Direct relation of Regional Job Creation.	Qualitative Rank of Potential Indirect Employment	Rank	Low to Medium indirect employment with initial construction costs, with low impact as TSF becomes operational to closure.	Low to Medium indirect employment with initial construction costs, with low impact as TSF becomes operational to closure.	Low - initial costs to construct with medium indirect employment as operational staff is greater in nature then traditional tailings facility.	Low to Medium indirect employment with initial construction costs, with low impact as TSF becomes operational to closure.	Low to Medium indirect employment with initial construction costs, with low impact as TSF becomes operational to closure.	Low to Medium indirect employment with initial construction costs, with low impact as TSF becomes operational to closure.	Low to Medium indirect employment with initial construction costs, with low impact as TSF becomes operational to closure.	Low - initial costs to construct with medium indirect employment as operational staff is greater in nature then traditional tailings facility.

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TABLE 4.3

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 3 - ALTERNATIVE CHARACTERIZATION

First Nation Impacts	Extent of Traditional Land Use	Potential impacts to Traditional Land Use by Person	Qualitative Rank of Traditional Land Use	Rank	Medium-Low. This location offers potential opportunities for traditional practices including food gathering and hunting. Land is classified as private parcel.	Medium-Low. This location offers potential opportunities for traditional practices including food gathering and hunting. Land is classified as private parcel.	Medium-Low. This location offers potential opportunities for traditional practices including food gathering and hunting. Land is classified as private parcel.	Medium-Low. This location offers potential opportunities for traditional practices including food gathering and hunting. Land is classified as private parcel.	Medium. This location offers potential opportunities for traditional practices including food gathering and hunting. Land is classified as crown land	Medium. This location offers potential opportunities for traditional practices including food gathering and hunting. Land is classified as crown land.	Low. This location offers minimal potential opportunities for traditional practices including food gathering and hunting. Land is classified as private parcel.	Low. This location offers minimal potential opportunities for traditional practices including food gathering and hunting. Land is classified as private parcel.
	Extent of Traditional Land Use	Potential impacts to Traditional Land Use by Activity	Qualitative Rank of Traditional Land Use Activities	Rank	Medium. Traditional uses of the area include that of berry picking, hunting, trapping, and mushroom picking.	Medium. Traditional uses of the area include that of berry picking, hunting, trapping, and mushroom picking.	Medium. Traditional uses of the area include that of berry picking, hunting, trapping, and mushroom picking.	Medium. Traditional uses of the area include that of berry picking, hunting, trapping, and mushroom picking.	Medium to Low. Traditional uses of the area includes hunting and trapping and due to recent forestry activities in the area, traditional food options have become available.	Medium to Low. Traditional uses of the area includes hunting and trapping and due to recent forestry activities in the area, traditional food options have become available.	Low. Due to access concerns and the presence of private and Company own land this area has been only used for hunting.	Low. Due to access concerns and the presence of private and Company own land this area has been only used for hunting.
Recreational and Commercial Land Use	Impact to Navigable Waters	Facility impact to established waterways used for travel	Area of Direct Impact	ha	0 - No impact to navigable waters throughout course of project.	0 - No impact to navigable waters throughout course of project.	0 - No impact to navigable waters throughout course of project.	0 - No impact to navigable waters throughout course of project.	0 - No impact to navigable waters throughout course of project.	0 - No impact to navigable waters throughout course of project.	0 - No impact to navigable waters throughout course of project.	0 - No impact to navigable waters throughout course of project.
	Extent of Recreational Land Use	Facility negatively impacting Recreational Land Use.	Qualitative Rank of Recreational Use	Rank	Low to Medium, concern for recreational activity as traditional use for area include berry picking, hunting, trapping, and mushroom picking. However area is under private property therefore activities have been limited	Low to Medium, concern for recreational activity as traditional use for area include berry picking, hunting, trapping, and mushroom picking. However area is under private property therefore activities have been limited	Low to Medium, concern for recreational activity as traditional use for area include berry picking, hunting, trapping, and mushroom picking. However area is under private property therefore activities have been limited	Low to Medium, concern for recreational activity as traditional use for area include berry picking, hunting, trapping, and mushroom picking. However area is under private property therefore activities have been limited	Low, limited recreational activities due to access issues. Limited to hunting and trapping.	Low, limited recreational activities due to access issues. Limited to hunting and trapping.	Very Low, limited recreational activities due to access and private parcel	Very Low, limited recreational activities due to access and private parcel
	Extent of Commercial Land Use	Facility negatively impacting Commercial Land Use.	Qualitative Rank of Commercial Use	Rank	Low - No impact to commercial land use.	Low - No impact to commercial land use.	Low - No impact to commercial land use.	Low - No impact to commercial land use.	Low - No impact to commercial land use.	Low - No impact to commercial land use.	Low - No impact to commercial land use.	Low - No impact to commercial land use.

Alternative Identification	Description
1A	Location 1- Conventional Slurry Tailings
1B	Location 1 - Thickened Tailings
1C	Location 1 - Filtered/Dry Stack Tailings
1D	Location 1 - Conventional with Future Co-Disposal
2A	Location 2- Conventional Slurry Tailings
2B	Location 2- Thickened Tailings
6A	Location 6 - Conventional Slurry Tailings
6C	Location 6 - Filtered/Dry Stack Tailings

Notes:

1. Indicators that can not be quantified have been assigned a rank to enable comparison for assessment.

WSP

TABLE 4.4

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 4 - MULTIPLE ACCOUNTS LEDGER FOR CANDIDATE ALTERNATIVES

Environmental Account				Indicator Quantity								
Sub-Account	Description	Indicator	Indicator Parameter	1A	1B	1C	1D	2A	2B	6A	6C	Data Source
Land Use	Distance from the Mine	Direct Distance from Plant Site to Structure	m	400	400	400	400	2,200	2,200	1,400	1,400	WSP
	Pipeline/Access Road Requirements	Length of Additional Infrastructure Required	m	700	700	700	700	2,400	2,400	1,500	1,500	WSP
	Storage Facility and Associated Infrastructure Footprint	Estimate of Storage Facility(s) Area	ha	88	88	100	88	246	246	54	61	WSP
Water Impacts	Impact to surface water availability	Qualitative Estimate of Potential Surface Water Impact	Rank	Low to Medium	Low to Medium	Low to Medium	Low to Medium	High	High	Medium to High	Medium to High	WSP
	Potential Impacts to Water Quality (ARD, Metal Leaching, etc.)	Likelihood of Mining Impacts and ability of mitigation measures to limit ARD and Metal Leaching	Rank	Low-Medium	Medium	High	Low-Medium	Low-Medium	Medium	Low-Medium	High	AMEC Foster Wheeler (Appendix M of EIS) Ecometrix (Appendix K and Appendix L)
Aquatic Habitat	Permanent Streams Impacted	No. of Streams Directly Impacted	No	1	1	1	1	2	2	1	1	WSP
	Indirect impacts (downstream flow reductions)	No of Streams Potentially Indirectly Impacted	No	3	3	3	3	6	6	3	3	WSP
	Direct impact to open water	No of Water Bodies Directly Impacted	No	1	1	1	1	1	1	1	1	WSP
	Fish Bearing Lakes	No of Fish Bearing Lakes Directly Affected	No	1	1	1	1	1	1	1	1	Appendix G of EIS, Appendix Q of EIS
Terrestrial Habitat	Area of feeding or shelter loss due to TSF or associated structures.	No of Terrestrial Areas Directly Impacted	No	1	1	1	1	1	1	1	1	WSP
	Existing vegetation, ecosystems will be lose	Potential Loss to Flora and Fauna with construction and operations	No. of Ecosites	7	7	7	7	6	6	6	6	WSP
Air Quality	Potential for Dust Emission (contributed by trucks)	Length of Haulage Roads	m	0	0	700	0	0	0	0	1,500	WSP
	Potential for Dust Emission (Contributed by tailings)	Type of tailings technology used and potential dust generation	Rank	Low	Medium	High	Low	Low	Medium	Low	High	WSP
	Potential for Greenhouse Gas and Noise Emissions (number of truck hours)	Qualitative Rank of Potential Greenhouse Gas Emissions and Noise Pollution due to truck traffic based on tailings disposal technology	Rank	Low	Low	Medium to High	Low	Low	Low	Low	High	WSP

Technical Account				Indicator Quantity								
Sub-Account	Description	Indicator	Indicator Parameter	1A	1B	1C	1D	2A	2B	6A	6C	Data Source
	Foundation Conditions	Qualitative Rank of Suitability of Foundation Conditions	Rank	High	High	High	High	Low	Low	Moderate	Moderate	WSP

TABLE 4.4

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 4 - MULTIPLE ACCOUNTS LEDGER FOR CANDIDATE ALTERNATIVES

Design	Distance From Plant Site	Distance From Plant Site to Far End of Facility for pipeline or haul road.	m	2,200	2,200	2,200	2,200	5,200	5,200	2,400	2,400	WSP
	Topographic Complexity	Qualitative Rank of Topographic Complexity	Rank	Low	Low	Very Low	Low	Medium	Low to Medium	Medium to High	High	WSP
	Topography	Elevation Difference From Plant Site at final Embankment Arrangement. For tailings pumping.	m	27	25	No Pumping	25	35	34	24	No Pumping	WSP
	Dam Complexity	Qualitative Rank of Dam Complexity	Rank	Moderate	Moderate	Low	Low to Moderate	Very High	High	Very High	Moderate	WSP
	Dam Hazard Classification	CDA Dam Classification, MNR Dam Classification	CDA Dam Classification Estimate	High	High	High	High	High	High	Very High	Very High	WSP
	Construction Material Availability	Qualitative Rank of Construction Material Volume Requirements and Availability	Qualitative Rank of Construction Material Availability	Medium to High	Medium	Low	Low to Medium	Medium to High	High	Medium	Very Low	WSP
	Slope Stability	Preliminary Estimate of Total Embankment Height	m	24	22	18	22	30	29	34	27	WSP
	Slope Stability	Estimate of Slope Angle during operations	H:V	1.5H:1V	1.5H:1V	2.1H:1V	1.5H:1V	1.5H:1V	1.5H:1V	1.5H:1V	2.1H:1V	WSP
Operations	Operation Distance	Distance From Plant Site to Far End of Facility	m	2,200	2,200	2,200	2,200	5,200	5,200	2,400	2,400	WSP
	Operational Risks and Other Uncertainties	Qualitative Rank of operations assessment based on tailings and water management	Rank	Low to Medium	Medium to High	Medium	Low	Low to Medium	High	Low to Medium	Medium	WSP
	Water Treatment Requirements	Estimate of Water Treatment Volume	m^3/yr.	340,000	250,000	720000	340,000	702,000	620,000	260,000	690,000	WSP
Closure	Remediation Requirements	Quantitative Rank of Remediation Requirements by complexity	Rank	Very High	Medium to High	Low	High	Very High	Medium to High	Very High	Low	WSP
	Post Closure Water Treatment Requirements	Qualitative Rank of Potential Post Closure Water Treatment Requirements	Rank	Low	Low	Medium	Low	Low	Low	Low	Medium	WSP, Appendix L of EIS
	Post Closure Landform Stability	Qualitative Rank - Estimate of Risk Associated with Post Closure Landform Stability	Rank	Medium	High	Very Low	Low to Medium	Medium to High	Medium	High	Low	WSP
	Post Closure Chemical Stability	Qualitative Rank - Estimate of Post Closure Chemical Stability	Rank	Medium	Medium	Low	Medium	High	High	Medium	Low	WSP, Appendix M of EIS, Appendix L of EIS

WSP

TABLE 4.4

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 4 - MULTIPLE ACCOUNTS LEDGER FOR CANDIDATE ALTERNATIVES

Capacity	Tailings Storage Expansion Capacity	Qualitative Rank of Potential Expansion	Rank	High	High	High	High	Medium	Medium	Low	Low	WSP
	Storage Efficiency	Storage Capacity Volume per Construction Material Volume	m^3/m^3	5.0	5.3	>7	5.2	4.6	4.1	2.4	>7	WSP
Water Management	Sensitivity to Climate Variability	Qualitative Rank of climate sensitivity	Rank	Low	Low to Medium	Low	Low	Low	Low to Medium	Low	Low	WSP, Appendix J and G of EIS
	Surface Water Control Measures	Qualitative Rank of Surface Water Control Complexity	Rank	Low	Medium	Medium to High	Very Low	Low	Medium	Low	Medium to High	WSP
	Seepage Control Measures	Qualitative Rank of Effectiveness of Seepage Control	Rank	High	Medium to High	Low	High	High	Medium to High	High	Low	WSP

Economic Account				Indicator Quantity								
Sub-Account	**Description**	**Indicator**	**Indicator Parameter**	**1A**	**1B**	**1C**	**1D**	**2A**	**2B**	**6A**	**6C**	**Data Source**
Life of Mine Costs	Capital	Capital Costs, $M, Life of Mine (differentiating)	$	34.5	28.8	9.9	29.1	119.3	113.4	54.1	6.3	WSP
	Operational	Operational Cost Estimate, $M, Life of Mine	$	2.9	10.9	31.3	10.9	3.7	11.7	3.1	31.3	WSP
	Fish Habitat Compensation	Potential Fish Habitat Compensation, $M, Life of Mine	$	Not Assessed - Each Alternative Assigned a Neutral Rating								-
	Closure and Reclamation Costs	Closure Cost Estimate, $M, Life of Mine (differentiating)	$	18.4	18.4	10.8	18.4	51.5	51.5	11.5	7.4	WSP

Socio-Economic Account				Indicator Quantity								
Sub-Account	**Description**	**Indicator**	**Indicator Parameter**	**1A**	**1B**	**1C**	**1D**	**2A**	**2B**	**6A**	**6C**	**Data Source**
Archaeology	Archaeological Potential	Area of direct impact and archaeological potential	ha/potential	0, Low	0, Low	0, Low	0, Low	0, Low	0, Low	0, Low	0, Low	Appendix U of EIS
Health and Safety	Risk to Worker Health and Safety	Qualitative Rank of Worker Health and Safety Risk	Rank	Medium to High	Medium to High	High	Medium to High	Medium	Medium	High	Very High	Appendix W
	Risk to Public Safety	Qualitative Rank of Public Safety Risk	Rank	Medium	Medium	Low - Medium	Medium	Low	Low	Medium	Low to Medium	Appendix GG and HH of EIS
Socio-Economic Indicators	Economic Benefits to Regional Communities Including Job Creation and Diversity	Qualitative Rank of Economic Benefits to Community including job creation and diversity	Rank	Medium	Medium	Low	Medium	Medium to High	Medium to High	Medium to High	Low to Medium	Appendix T of EIS

WSP

TABLE 4.4

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 4 - MULTIPLE ACCOUNTS LEDGER FOR CANDIDATE ALTERNATIVES

	Indirect Employment	Qualitative Rank of Potential Indirect Employment	Rank	High	High	Low	High	High	High	High	Low	Appendix T of EIS
First Nation Impacts	Extent of Traditional Land Use (# of individual users)	Qualitative Rank of Traditional Land Use	Rank	Medium to Low	Medium to Low	Medium to Low	Medium to Low	Medium	Medium	Low	Low	Appendix B, DD, EE of EIS
	Extent of Traditional Land Use (# of Activities)	Qualitative Rank of Traditional Land Use Activities	Rank	Medium	Medium	Medium	Medium	Medium to Low	Medium to Low	Low	Low	Appendix B, DD, EE of EIS
Recreational and Commercial Land Use	Impact to Navigable Waters	Area of Direct Impact	ha	0	0	0	0	0	0	0	0	WSP
	Extent of Recreational Land Use	Qualitative Rank of Recreational Use	Rank	Low to Medium	Low to Medium	Low to Medium	Low to Medium	Low	Low	Very Low	Very Low	Appendix T of EIS
	Extent of Commercial Land Use	Qualitative Rank of Commercial Use	Rank	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very low	Very Low	Appendix T of EIS

Alternative Identification	Description
1A	Location 1- Conventional Slurry Tailings
1B	Location 1 - Thickened Tailings
1C	Location 1 - Filtered/Dry Stack Tailings
1D	Location 1 - Conventional with Future Co-Disposal
2A	Location 2- Conventional Slurry Tailings
2B	Location 2- Thickened Tailings
6A	Location 6 - Conventional Slurry Tailings
6C	Location 6 - Filtered/Dry Stack Tailings

Notes:
1. Inputs for Indicators based on available information and work completed to date.

TABLE 4.5

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE SCORING FOR CANDIDATE ALTERNATIVES INDICATORS

Environmental Account						
Indicator	**Descriptor**					
	1 (Worst)	**2**	**3**	**4**	**5**	**6 (Best)**
Direct Distance from Plant Site to Structure	>2,000	2,000 - 1,600	1,600 - 1,200	1,200 - 800	400-800	≤400
Length of Additional Infrastructure Required	>2,300	1,900 - 2,300	1,500 - 1,900	1,100 - 1,500	700 - 1,100	≤700
Estimate of Storage Facility(s) Area	>220	180 - 220	140 - 180	100 - 140	60 - 100	≤60
Qualitative Estimate of Potential Surface Water Impact	High - requires full diversion of 2 major surface water features	High to Medium - requires partial diversion of 1 major surface water feature	Medium - requires diversion of minor (tributary) surface water features	Medium to Low - requires minimal or minor diversion of minor surface water feature only	Low - requires only diversion of seasonal surface water feature	Very Low - does not require any surface water diversions (major, minor or seasonal)
Likelihood of Mining Impacts and ability of mitigation measures to limit ARD and Metal Leaching	High - High Potential for mining impacts. Prolonged water treatment and/or collection system(s). Expected ARD and metal leaching.	High to Medium Potential	Medium Potential - Likely some form of prolonged water treatment and/or collection system(s). Probable ARD and metal leaching.	Medium to Low Potential	Low Potential	Very Low Potential - No water or collection systems required. No expected ARD or metal leaching
No. of Streams Directly Impacted	>2	2	-	-	1	<1
No of Streams Potentially Indirectly Impacted	>6	6	5	4	3	<3
No of Water Bodies Directly Impacted	5	4	3	2	1	<1
No. of Fish Bearing Lakes Directly Affected	5	4	3	2	1	<1
No of Terrestrial Areas Directly Impacted	5	4	3	2	1	<1
Potential Loss to Flora and Fauna with construction and operations	>7 ecosites affected	7 ecosites affected and greater than 100 ha affected	7 ecosites affected and less than 100 ha affected	6 ecosites affected and greater than 100 ha affected	6 ecosites affected and less than 100 ha affected	<6 ecosites affected
Length of Haulage Roads	>1,300	1,100 - 1,300	900 - 1,100	700 - 900	500 - 700	≤500

TABLE 4.5

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE SCORING FOR CANDIDATE ALTERNATIVES INDICATORS

Type of tailings technology used and potential dust generation	High	High to Medium	Medium	Medium to Low	Low	Very Low
Qualitative Rank of Potential Greenhouse Gas Emissions and Noise Pollution due to truck traffic based on tailings disposal technology	High	High to Medium	Medium	Medium to Low	Low	Very Low

Technical Account						
Indicator	**Descriptor**					
	1 (Worst)	**2**	**3**	**4**	**5**	**6 (Best)**
Qualitative Rank of Suitability of Foundation Conditions	Low - Conditions providing poor foundation strength and poor containment, consisting primarily of swamp or organic materials.	Low to Moderate - Conditions providing poor foundation strength and poor containment, having areas of potential swamp or organic materials.	Moderate - Conditions providing fair foundation strength and fair containment, having areas of potential swamp or organic material.	Moderate to High - Conditions providing good foundation strength and poor containment, minimal areas of swamp or organic material.	High - Conditions providing fair foundation strength and poor containment, minimal areas of swamp or organic material	Very High - Conditions providing good foundation conditions and low permeable material for containment, no presence of swamp or organic material.
Distance From Plant Site to Far End of Facility for pipeline or haul road.	>5000	4300 to 5000	3600 to 4300	2900 to 3600	2200 to 2900	Less than or equal to 2200
Qualitative Rank of Topographic Complexity	High - Topography provides difficulties to dam construction, embankment raising, tailings and water management.	Medium to High - Topography provides difficulties to dam construction, embankment raising, and tailings management but is suitable for water management.	Medium - Topography provides difficulties to dam construction, embankment raising, but is suitable for tailings and water management.	Low to Medium - Topography is suitable for dam construction and embankment raising but is not suitable for tailings and water management.	Low - Topography is suitable for dam construction, embankment raising and tailings management but is not suitable for water management.	Very Low - Topography is suitable for dam construction and embankment raising, tailings and water management.
Elevation Difference From Plant Site at Final Embankment Elevation, for tailings pumping.	>33 m	31 to 33 m	29 to 31 m	27 to 29 m	25 to 27 m	≤25 m

WSP

TABLE 4.5

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE SCORING FOR CANDIDATE ALTERNATIVES INDICATORS

Qualitative Rank of Tailings Dam Complexity	Very High - Embankment Constructed on sloping ground, difficult foundation key-in, significant internal drain system with engineering products required for containment.	High - Embankment Constructed on sloping ground, favourable foundation key-in, significant internal drain system and engineering products required for containment.	Moderate to High - Embankment Constructed mostly perpendicular to sloping ground, favourable foundation key-in, significant internal drain system and engineering products required for containment.	Moderate - Embankment Constructed primarily perpendicular to ground, favourable foundation key-in, moderate internal drain system and engineering products required for containment.	Low to Moderate - Embankments constructed primarily perpendicular to sloping ground, favourable foundation key-in conditions, moderate internal drain system and low permeable fill material.	Low - Low height berm and ditch system for surface runoff containment.
CDA Dam Classification Estimate	Extreme	Very High	High	Significant	Low	No Rating
Qualitative Rank of Construction Material Volume Requirements and Availability	High - Farthest Distance from Sources, Dependent on Mine Waste	Medium to High - Farthest distance, not dependent on mine waste	Medium - Medium Distance, Dependent on Mine Waste	Low to Medium - Medium Distance, not dependent on mine waste	Low - Close to Source, dependent on mine waste	Very Low - Close to Sources, not dependent on Mine Waste
Preliminary Estimate of Total Embankment Height	>32	29 to 32	26 to 29	23 to 26	20 to 23	≤20
Estimate of Slope Angle during operations	1.5H:1V	1.6H:1V	1.7H:1V	1.8H:1V	1.9H:1V	≥2.0H:1V
Distance From Plant Site to Far End of Facility	>5000	4300 to 5000	3600 to 4300	2900 to 3600	2200 to 2900	≤2200
Qualitative Rank of operations assessment based on tailings and water management	High - Potential difficulty with tailings and water management.	Medium to High - Potential difficulty with tailings management, moderate difficulty with water management.	Medium - Moderate Difficulty with tailings and water management.	Low to Medium - Favourable water management, moderate difficulty with tailings management.	Low - Favourable tailings management, moderate difficulty with water management.	Very Low - Favourable tailings and water management.
Estimate of Water Treatment Volume per Year	650,000 to 750,000	550,000 to 650,000	450,000 to 550,000	350,000 to 450,000	250,000 to 350,000	≤250,000
Quantitative Rank of Remediation Requirements	Very High - Reclamation of more than one facility with potential long term water management requirements.	High - Reclamation of more than one facility with water management requirements.	Medium to High - Reclamation of more than one facility with no water management requirements	Medium - Reclamation of single facility with potential water management requirements.	Low to Medium - Reclamation of single facility with no potential water management.	Low - Reclamation of single facility with no potential water management and potential progressive reclamation.

TABLE 4.5

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE SCORING FOR CANDIDATE ALTERNATIVES INDICATORS

Qualitative Rank of Potential Post Closure Water Treatment Requirements	High - Water treatment in perpetuity	Medium to High - Long-Term Water treatment to Perpetuity	Medium - Long-Term Water Treatment.	Low to Medium - Long-Term to Short-Term Water Treatment	Low - Short-Term Water Treatment.	Very low - No water treatment requirements
Qualitative Rank - Estimate of Risk Associated with Post Closure Landform Stability	High	Medium to High	Medium	Low to Medium	Low	Very Low
Qualitative Rank - Estimate of Post Closure Chemical Stability	Very Low	Low	Low to Medium	Medium	Medium to High	High
Qualitative Rank of Potential Expansion	Very Low	Low	Low to Medium	Medium	Medium to High	High
Storage Capacity Volume per Construction Material Volume	<3	3-4	4-5	5-6	6-7	>7
Qualitative Rank of climate sensitivity	High	Medium to High	Medium	Low to Medium	Low	Very Low
Qualitative Rank of Surface Water Control Complexity	High	Medium to High	Medium	Low to Medium	Low	Very Low
Qualitative Rank of Effectiveness of Seepage Control	Very Low - lowest ability to collect and retain seepage	Low	Low to Medium	Medium	Medium to High	High - system has a high ability to contain and collect all seepage

Economic Account						
Indicator	**Descriptor**					
	1 (Worst)	**2**	**3**	**4**	**5**	**6 (Best)**
Capital Costs, $M, Life of Mine (differentiating)	>90	70 - 90	50 - 70	30 - 50	10 - 30	≤10
Operational Cost Estimate, $M, Life of Mine	>27	21-27	15-21	9-15	3-9	≤3
Potential Fish Habitat Compensation, $M, Life of Mine	5	4	3	2	1	0
Closure Cost Estimate, $M, Life of Mine (differentiating)	>50	50-40	40-30	30-20	20-10	≤10

TABLE 4.5

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE SCORING FOR CANDIDATE ALTERNATIVES INDICATORS

Socio-Economic Account						
Indicator	**Descriptor**					
	1 (Worst)	**2**	**3**	**4**	**5**	**6 (Best)**
Area of direct impact and archaeological potential	High	High to Medium	Medium	Medium to Low	Low	Very Low
Qualitative Rank of Worker Health and Safety Risk	Very High	High	Medium to High	Medium	Low to Medium	Low
Qualitative Rank of Public Safety Risk	High	High to Medium	Medium	Medium to Low	Low	Very Low
Qualitative Rank of Economic Benefits to Community including job creation and diversity	Very Low	Low	Low to Medium	Medium	Medium to High	High
Qualitative Rank of Potential Indirect Employment	Very Low	Low	Low to Medium	Medium	Medium to High	High
Qualitative Rank of Traditional Land Use	High	High to Medium	Medium	Medium to Low	Low	Very Low
Qualitative Rank of Traditional Land Use Activities	High	High to Medium	Medium	Medium to Low	Low	Very Low
Area of Direct Impact	>50	50-40	40-30	30-20	20-10	≤10
Qualitative Rank of Recreational Use	High	High to Medium	Medium	Medium to Low	Low	Very Low
Qualitative Rank of Commercial Use	High	High to Medium	Medium	Medium to Low	Low	Very Low

Notes:
1. Scoring based on inputs for assessment Indicators.

WSP

TABLE 4.6

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE WEIGHTING FOR CANDIDATE ALTERNATIVES INDICATORS

Environmental Account																		
Sub-Account	Indicator	Indicator Weight	Alternatives Location and Deposition Technology Identifier															
			1A		1B		1C		1D		2A		2B		6A		6C	
			Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score
		W	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)
Land Use	Direct Distance from Plant Site to Structure	6	6	36	6	36	6	36	6	36	1	6	1	6	3	18	3	18
	Length of Additional Infrastructure Required	6	6	36	6	36	6	36	6	36	1	6	1	6	4	24	4	24
	Estimate of Storage Facility(s) Area	6	5	30	5	30	4	24	5	30	1	6	1	6	6	36	5	30
Water Impacts	Qualitative Estimate of Potential Surface Water Impact	6	4	24	4	24	4	24	4	24	1	6	1	6	2	12	2	12
	Likelihood of Mining Impacts and ability of mitigation measures to limit ARD and Metal Leaching	6	4	24	3	18	1	6	4	24	4	24	3	18	4	24	1	6
Aquatic Habitat	No. of Streams Directly Impacted	6	5	30	5	30	5	30	5	30	2	12	2	12	5	30	5	30
	No of Streams Potentially Indirectly Impacted	6	5	30	5	30	5	30	5	30	2	12	2	12	5	30	5	30
	No of Water Bodies Directly Impacted	6	5	30	5	30	5	30	5	30	5	30	5	30	5	30	5	30
	No of Fish Bearing Lakes Directly Affected	6	5	30	5	30	5	30	5	30	5	30	5	30	5	30	5	30
Terrestrial Habitat	No of Terrestrial Areas Directly Impacted	6	5	30	5	30	5	30	5	30	5	30	5	30	5	30	5	30
	Potential Loss to Flora and Fauna with construction and operations	6	3	18	3	18	2	12	3	18	4	24	4	24	5	30	5	30
Air Quality	Length of Haulage Roads	6	6	36	6	36	5	30	6	36	6	36	6	36	6	36	1	6
	Type of tailings technology used and potential dust generation	6	5	30	3	18	1	6	5	30	5	30	3	18	5	30	1	6
	Qualitative Rank of Potential Greenhouse Gas Emissions and Noise Pollution due to truck traffic based on tailings disposal technology	6	5	30	5	30	2	12	5	30	5	30	5	30	5	30	1	6

WSP

TABLE 4.6

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE WEIGHTING FOR CANDIDATE ALTERNATIVES INDICATORS

Technical Account																		
Sub-Account	Indicator	Indicator Weight	Alternatives Location and Deposition Technology Identifier															
			1A		1B		1C		1D		2A		2B		6A		6C	
			Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score
		W	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)
Design	Qualitative Rank of Suitability of Foundation Conditions	3	5	15	5	15	5	15	5	15	2	6	2	6	3	9	3	9
	Distance From Plant Site to Far End of Facility for pipeline or haul road.	3	6	18	6	18	6	18	6	18	1	3	1	3	5	15	5	15
	Qualitative Rank of Topographic Complexity	3	5	15	5	15	6	18	5	15	3	9	4	12	2	6	1	3
	Elevation Difference From Plant Site at final embankment height, for tailings pumping	3	4	12	5	15	6	18	5	15	1	3	1	3	6	18	6	18
	Qualitative Rank of Dam Complexity	3	4	12	4	12	6	18	5	15	1	3	2	6	1	3	4	12
	CDA Dam Classification Estimate	3	3	9	3	9	3	9	3	9	3	9	3	9	2	6	2	6
	Qualitative Rank of Construction Material Volume Requirements and Availability	3	2	6	3	9	5	15	4	12	2	6	1	3	3	9	6	18
	Preliminary Estimate of Total Embankment Height	3	4	12	5	15	6	18	5	15	2	6	2	6	1	3	3	9
	Estimate of Slope Angle during operations	3	1	3	1	3	6	18	1	3	1	3	1	3	1	3	6	18
Operations	Distance From Plant Site to Far End of Facility	3	6	18	6	18	6	18	6	18	1	3	1	3	5	15	5	15
	Qualitative Rank of operations assessment based on tailings and water management .	3	4	12	2	6	3	9	5	15	4	12	1	3	4	12	3	9
	Estimate of Water Treatment Volume	3	5	15	6	18	1	3	5	15	1	3	2	6	5	15	1	3
Closure	Quantitative Rank of Remediation Requirements	3	1	3	3	9	5	15	2	6	1	3	3	9	1	3	5	15
	Qualitative Rank of Potential Post Closure Water Treatment Requirements	3	5	15	5	15	3	9	5	15	5	15	5	15	5	15	3	9
	Qualitative Rank - Estimate of Risk Associated with Post Closure Landform Stability	3	3	9	1	3	6	18	4	12	2	6	3	9	1	3	5	15
	Qualitative Rank - Estimate of Post Closure Chemical Stability	3	4	12	4	12	2	6	4	12	6	18	6	18	4	12	2	6

TABLE 4.6

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE WEIGHTING FOR CANDIDATE ALTERNATIVES INDICATORS

Capacity	Qualitative Rank of Potential Expansion	3	6	18	6	18	6	18	6	18	4	12	4	12	2	6	2	6
	Storage Capacity Volume per Construction Material Volume	3	3	9	4	12	6	18	4	12	3	9	3	9	1	3	6	18
Water Management	Qualitative Rank of climate sensitivity	3	5	15	5	15	4	12	5	15	5	15	4	12	5	15	5	15
	Qualitative Rank of Surface Water Control Complexity	3	5	15	3	9	2	6	6	18	5	15	3	9	5	15	3	9
	Qualitative Rank of Effectiveness of Seepage Control	3	6	18	5	15	2	6	6	18	6	18	5	15	6	18	2	6
Economic Account																		
Sub-Account	**Indicator**	**Indicator Weight**	**Alternatives Location and Deposition Technology Identifier**															
			1A		**1B**		**1C**		**1D**		**2A**		**2B**		**6A**		**6C**	
			Indicator Value	**Indicator Merit Score**	**Indicator Value**	**Indicator Merit Score**	**Indicator Value**	**Indicator Merit Score**	**Indicator Value**	**Indicator Merit Score**	**Indicator Value**	**Indicator Merit Score**	**Indicator Value**	**Indicator Merit Score**	**Indicator Value**	**Indicator Merit Score**	**Indicator Value**	**Indicator Merit Score**
		W	**S**	**(SxW)**	**S**	**(SxW)**	**S**	**(SxW)**	**S**	**(SxW)**	**S**	**(SxW)**	**S**	**(SxW)**	**S**	**(SxW)**	**S**	**(SxW)**
Life of Mine Costs	Capital Costs, $M, Life of Mine (differentiating)	1.5	4	6	5	7.5	6	9	5	7.5	1	1.5	1	1.5	3	4.5	6	9
	Operational Cost Estimate, $M, Life of Mine	1.5	6	9	4	6	1	1.5	4	6	5	7.5	4	6	5	7.5	1	1.5
	Potential Fish Habitat Compensation, $M, Life of Mine	1.5	3	4.5	3	4.5	3	4.5	3	4.5	3	4.5	3	4.5	3	4.5	3	4.5
	Closure Cost Estimate, $M, Life of Mine (differentiating)	1.5	5	7.5	5	7.5	5	7.5	5	7.5	1	1.5	1	1.5	5	7.5	6	9

TABLE 4.6

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE WEIGHTING FOR CANDIDATE ALTERNATIVES INDICATORS

Socio-Economic Account																		
Sub-Account	Indicator	Indicator Weight	Alternatives Location and Deposition Technology Identifier															
			1A		1B		1C		1D		2A		2B		6A		6C	
			Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score	Indicator Value	Indicator Merit Score
		W	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)
Archaeology	Area of direct impact and archaeological potential	3	5	15	5	15	5	15	5	15	5	15	5	15	5	15	5	15
Health and Safety	Qualitative Rank of Worker Health and Safety Risk	3	3	9	3	9	2	6	3	9	4	12	4	12	2	6	1	3
	Qualitative Rank of Public Safety Risk	3	3	9	3	9	4	12	3	9	6	18	6	18	3	9	5	15
Socio-Economic Indicators	Qualitative Rank of Economic Benefits to Community including job creation and diversity	3	4	12	4	12	2	6	4	12	5	15	5	15	5	15	3	9
	Qualitative Rank of Potential Indirect Employment	3	4	12	4	12	2	6	4	12	6	18	6	18	4	12	2	6
First Nation Impacts	Qualitative Rank of Traditional Land Use	3	4	12	4	12	4	12	4	12	3	9	3	9	5	15	5	15
	Qualitative Rank of Traditional Land Use Activities	3	3	9	3	9	3	9	3	9	4	12	4	12	5	15	5	15
Recreational and Commerical Land Use	Area of Direct Impact	3	6	18	6	18	6	18	6	18	6	18	6	18	6	18	6	18
	Qualitative Rank of Recreational Use	3	4	12	4	12	4	12	4	12	5	15	5	15	6	18	6	18
	Qualitative Rank of Commercial Use	3	6	18	6	18	6	18	6	18	6	18	6	18	6	18	6	18
Sub-Account Merit Score				**828**		**808.5**		**757.5**		**856.5**		**624**		**598.5**		**759**		**678**
Sub-Account Merit Rating				**4.52**		**4.42**		**4.14**		**4.68**		**3.41**		**3.27**		**4.15**		**3.70**

Alternative Identification	Description
1A	Location 1- Conventional Slurry Tailings
1B	Location 1 - Thickened Tailings
1C	Location 1 - Filtered/Dry Stack Tailings
1D	Location 1 - Conventional with Future Co-Disposal
2A	Location 2- Conventional Slurry Tailings
2B	Location 2- Thickened Tailings
6A	Location 6 - Conventional Slurry Tailings
6C	Location 6 - Filtered/Dry Stack Tailings

TABLE 4.7

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE WEIGHTING AND ANALYSIS FOR CANDIDATE ALTERNATIVES SUB-ACCOUNTS

Environmental Account

Sub-Account	Sub-Account Weight	Alternatives Location and Deposition Technology Identifier															
		1A		1B		1C		1D		2A		2B		6A		6C	
		Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score
	W	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)
Land Use	6	5.7	34.0	5.7	34.0	5.3	32.0	5.7	34.0	1.0	6.0	1.0	6.0	4.3	26.0	4.0	24.0
Water Impacts	6	4.0	24.0	3.5	21.0	2.5	15.0	4.0	24.0	2.5	15.0	2.0	12.0	3.0	18.0	1.5	9.0
Aquatic Habitat	6	5.0	30.0	5.0	30.0	5.0	30.0	5.0	30.0	3.5	21.0	3.5	21.0	5.0	30.0	5.0	30.0
Terrestrial Habitat	6	4.0	24.0	4.0	24.0	3.5	21.0	4.0	24.0	4.5	27.0	4.5	27.0	5.0	30.0	5.0	30.0
Air Quality	6	5.3	32.0	4.7	28.0	2.7	16.0	5.3	32.0	5.3	32.0	4.7	28.0	5.3	32.0	1.0	6.0

Technical Account

Sub-Account	Sub-Account Weight	Alternatives Location and Deposition Technology Identifier															
		1A		1B		1C		1D		2A		2B		6A		6C	
		Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score
	W	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)
Design	3	3.8	11.3	4.1	12.3	5.4	16.3	4.3	13.0	1.8	5.3	1.9	5.7	2.7	8.0	4.0	12.0
Operations	3	5.0	15.0	4.7	14.0	3.3	10.0	5.3	16.0	2.0	6.0	1.3	4.0	4.7	14.0	3.0	9.0
Closure	3	3.3	9.8	3.3	9.8	4.0	12.0	3.8	11.3	3.5	10.5	4.3	12.8	2.8	8.3	3.8	11.3
Capacity	3	4.5	13.5	5.0	15.0	6.0	18.0	5.0	15.0	3.5	10.5	3.5	10.5	1.5	4.5	4.0	12.0
Water Management	3	5.3	16.0	4.3	13.0	2.7	8.0	5.7	17.0	5.3	16.0	4.0	12.0	5.3	16.0	3.3	10.0

Economic Account

Sub-Account	Sub-Account Weight	Alternatives Location and Deposition Technology Identifier															
		1A		1B		1C		1D		2A		2B		6A		6C	
		Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score
	W	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)
Life of Mine Costs	1.5	4.5	6.8	4.3	6.4	3.8	5.6	4.3	6.4	2.5	3.8	2.3	3.4	4.0	6.0	4.0	6.0

Socio-Economic Account

Sub-Account	Sub-Account Weight	Alternatives Location and Deposition Technology Identifier															
		1A		1B		1C		1D		2A		2B		6A		6C	
		Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score	Sub-Account Merit Rating	Sub-Account Merit Score
	W	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)
Archaeology	3	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0
Health and Safety	3	3.0	9.0	3.0	9.0	3.0	9.0	3.0	9.0	5.0	15.0	5.0	15.0	2.5	7.5	3.0	9.0
Socio-Economic Indicators	3	4.0	12.0	4.0	12.0	2.0	6.0	4.0	12.0	5.5	16.5	5.5	16.5	4.5	13.5	2.5	7.5
First Nation Impacts	3	3.5	10.5	3.5	10.5	3.5	10.5	3.5	10.5	3.5	10.5	3.5	10.5	5.0	15.0	5.0	15.0
Recreational and Commercial Land Use	3	5.3	16.0	5.3	16.0	5.3	16.0	5.3	16.0	5.7	17.0	5.7	17.0	6.0	18.0	6.0	18.0
Account Merit Score			**278.8**		**270.0**		**240.5**		**285.1**		**227.1**		**216.3**		**261.8**		**223.8**
Account Merit Rating			**4.5**		**4.4**		**3.9**		**4.6**		**3.7**		**3.5**		**4.3**		**3.6**

Alternative Identification	Description
1A	Location 1- Conventional Slurry Tailings
1B	Location 1 - Thickened Tailings
1C	Location 1 - Filtered/Dry Stack Tailings
1D	Location 1 - Conventional with Future Co-Disposal
2A	Location 2- Conventional Slurry Tailings
2B	Location 2- Thickened Tailings
6A	Location 6 - Conventional Slurry Tailings
6C	Location 6 - Filtered/Dry Stack Tailings

TABLE 4.8

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 5 - VALUE-BASED DECISION PROCESS
QUANTITATIVE WEIGHTING AND ANALYSIS FOR CANDIDATE ALTERNATIVES ACCOUNTS

Account	Account Weight	Alternatives Location and Deposition Technology Identifier															
		1A		1B		1C		1D		2A		2B		6A		6C	
		Account Merit Rating	Account Merit Score	Account Merit Rating	Account Merit Score	Account Merit Rating	Account Merit Score	Account Merit Rating	Account Merit Score	Account Merit Rating	Account Merit Score	Account Merit Rating	Account Merit Score	Account Merit Rating	Account Merit Score	Account Merit Rating	Account Merit Score
	W	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)	S	(SxW)
Environment	6	4.8	28.8	4.6	27.4	3.8	22.8	4.8	28.8	3.4	20.2	3.1	18.8	4.5	27.2	3.3	19.8
Technical	3	4.4	13.1	4.3	12.8	4.3	12.9	4.8	14.5	3.2	9.7	3.0	9.0	3.4	10.2	3.6	10.9
Project Economics	1.5	4.5	6.8	4.3	6.4	3.8	5.6	4.3	6.4	2.5	3.8	2.3	3.4	4.0	6.0	4.0	6.0
Socio-Economic	3	4.2	12.5	4.2	12.5	3.8	11.3	4.2	12.5	4.9	14.8	4.9	14.8	4.6	13.8	4.3	12.9
Alternative Merit Score			**61.2**		**59.1**		**52.6**		**62.1**		**48.4**		**46.0**		**57.2**		**49.6**
Alternative Merit Rating			**4.53**		**4.38**		**3.90**		**4.60**		**3.59**		**3.40**		**4.23**		**3.67**

Alternative Identification	Description
1A	Location 1- Conventional Slurry Tailings
1B	Location 1 - Thickened Tailings
1C	Location 1 - Filtered/Dry Stack Tailings
1D	Location 1 - Conventional with Future Co-Disposal
2A	Location 2- Conventional Slurry Tailings
2B	Location 2- Thickened Tailings
6A	Location 6 - Conventional Slurry Tailings
6C	Location 6 - Filtered/Dry Stack Tailings

TABLE 4.9

TREASURY METALS
GOLIATH PROJECT

TAILINGS STORAGE FACILITY
ALTERNATIVES ASSESSMENT

STEP 6 - SENSITIVITY ANALYSIS

Analysis ID	Scenario Description	Alternative Merit Rating							
		1A	1B	1C	1D	2A	2B	6A	6C
Base Case	Results of Alternatives Assessment	4.53	4.38	3.90	4.60	3.59	3.40	4.23	3.67
No. 1	Change All Environmental Weights to 9	4.03	3.94	3.33	4.05	3.31	3.16	3.87	3.38
No. 2	Change All Technical Weights to 6	4.00	3.90	3.43	4.03	3.42	3.24	3.66	3.38
No. 3	Change All Weights to 1	4.03	3.96	3.46	4.05	3.40	3.18	3.73	3.54
No. 4	Change all Socio-Economic Weights to 1.5	4.07	3.97	3.39	4.09	3.27	3.09	3.81	3.38

Alternative Identification	Description
1A	Location 1- Conventional Slurry Tailings
1B	Location 1 - Thickened Tailings
1C	Location 1 - Filtered/Dry Stack Tailings
1D	Location 1 - Conventional with Future Co-Disposal
2A	Location 2- Conventional Slurry Tailings
2B	Location 2- Thickened Tailings
6A	Location 6 - Conventional Slurry Tailings
6C	Location 6 - Filtered/Dry Stack Tailings

TMI_108-SW(1)-22 –Table 1a: Pre-development Dissolved Mercury by Watercourse/Waterbody (mg/L)

Blackwater Creek			Hughes Creek			McHughes Creek			Wabigoon Lake			Thunder Lake Tributary #2			Thunder Lake Tributary #3			Hoffstrom's Bay Tributary			Little Creek			Thunder lake		
Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)
SW-TL1a	0.000021	0.000010	SW1	0.000033	0.000010	SW3	0.000025	0.000012	SW4	0.000028	0.000010	SW7	0.000028	0.000010	SW8	0.000027	0.000010	SW9	0.000029	0.000010	SW2	0.000024	0.000010	SW5	0.000021	0.000010
SW-TL2	0.000021	0.000010	—	—	—	—	—	—	—	—	—	SW10	0.000028	0.000010	—	—	—	—	—	—	—	—	—	SW6	0.000020	0.000010
SW-TL3	0.000028	0.000010	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SW-JCTa	0.000029	0.000010	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SW11	0.000020	0.000010	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Overall	0.000024	0.000010	Overall	0.000033	0.000010	Overall	0.000025	0.000012	Overall	0.000028	0.000010	Overall	0.000028	0.000010	Overall	0.000027	0.000010	Overall	0.000029	0.000010	Overall	0.000024	0.000010	Overall	0.000021	0.000010

TMI_108-SW(1)-22 –Table 1b: Baseline Dissolved Mercury Readings (mg/L)

SW-TL1a		SW-TL2		SW-TL3		SW-JCTa		SW11		SW1		SW2	
Blackwater Creek		Blackwater Creek Tributary #1		Blackwater Creek		Blackwater Creek		Blackwater Creek		Hughes Creek		Little Creek	
Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading
Apr 4, 2012	< 0.0001	Apr 4, 2012	< 0.0001	Jan 25, 2012	< 0.0001	Jan 27, 2012	< 0.0001	Apr 27, 2012	< 0.00001	Jan 25, 2012	< 0.0001	Apr 4, 2012	< 0.0001
Apr 26, 2012	< 0.00001	Apr 26, 2012	< 0.00001	Apr 4, 2012	< 0.0001	Apr 5, 2012	< 0.0001	May 15, 2012	< 0.00001	Apr 4, 2012	< 0.0001	Apr 26, 2012	< 0.00001
Apr 26, 2012	< 0.00001	May 15, 2012	< 0.00001	Apr 26, 2012	< 0.00001	Apr 27, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Apr 4, 2012	< 0.0001	May 15, 2012	< 0.00001
May 15, 2012	< 0.00001	Jun 20, 2012	< 0.00001	May 15, 2012	< 0.00001	Mar 15, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Apr 26, 2012	< 0.00001	Jun 20, 2012	< 0.00001
Jun 20, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Aug 22, 2012	< 0.00001	May 15, 2012	< 0.00001	Jul 19, 2012	< 0.00001
Jul 19, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Nov 28, 2012	< 0.00001	Jun 21, 2012	< 0.00001	Aug 22, 2012	< 0.00001
Aug 22, 2012	< 0.00001	Oct 31, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Dec 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Sep 2, 2012	< 0.00001
Sep 17, 2012	< 0.00001	Oct 31, 2012	< 0.00001	Sep 17, 2012	< 0.00001	Sep 17, 2012	< 0.00001	Apr 18, 2013	< 0.0001	Aug 24, 2012	< 0.00001	Oct 31, 2012	< 0.00001
Oct 31, 2012	< 0.00001	—	—	Oct 31, 2012	< 0.00001	Nov 27, 2012	< 0.00001	Oct 30, 2013	< 0.00001	Sep 17, 2012	< 0.00001	Nov 27, 2012	< 0.00001
Nov 27, 2012	< 0.00001	—	—	Nov 27, 2012	< 0.00001	Dec 19, 2012	< 0.00001	—	—	Oct 31, 2012	< 0.00001	Jan 29, 2013	< 0.00001
Dec 18, 2012	< 0.00001	—	—	Dec 18, 2012	< 0.00001	Jan 28, 2013	< 0.00001	—	—	Nov 27, 2012	< 0.00001	Apr 17, 2013	< 0.0001
Jan 29, 2013	< 0.00001	—	—	Jan 29, 2013	< 0.00001	Apr 17, 2013	< 0.0001	—	—	Dec 18, 2012	< 0.00001	Jul 23, 2013	< 0.00001
Jan 29, 2013	< 0.00001	—	—	Apr 17, 2013	< 0.0001	Jul 24, 2013	< 0.00001	—	—	Jan 23, 2013	< 0.00001	Oct 30, 2013	< 0.00001
Apr 17, 2013	< 0.0001	—	—	Jul 24, 2013	< 0.00001	Oct 30, 2013	< 0.00001	—	—	Apr 17, 2013	< 0.0001	—	—
Jul 23, 2013	< 0.00001	—	—	Oct 30, 2013	< 0.00001	—	—	—	—	Jul 23, 2013	< 0.00001	—	—
Oct 30, 2013	< 0.00001	—	—	—	—	—	—	—	—	Oct 30, 2013	< 0.00001	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avg.	0.000021	Avg.	0.000021	Avg.	0.000028	Avg.	0.000029	Avg.	0.000020	Avg.	0.000033	Avg.	0.000024
Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010

SW3		SW4		SW5		SW6		SW7		SW10		SW8		SW9	
McHughes Creek		Wabigoon Lake		Thunder Lake		Thunder Lake		Thunder Lake Tributary #2		Thunder Lake Tributary #2		Thunder Lake Tributary #3		Hoffstrom's Bay Tributary	
Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading
Jan 25, 2012	< 0.0001	Jan 26, 2012	< 0.0001	Jan 26, 2012	< 0.0001	Jan 26, 2012	< 0.0001	Jan 27, 2012	< 0.0001	Jan 26, 2012	< 0.0001	Jan 27, 2012	< 0.0001	Jan 26, 2012	< 0.0001
Apr 4, 2012	< 0.0001	Jan 26, 2012	< 0.0001	May 15, 2012	< 0.00001	May 15, 2012	< 0.00001	Apr 5, 2012	< 0.0001	Apr 5, 2012	< 0.0001	Apr 5, 2012	< 0.0001	Apr 5, 2012	< 0.0001
Apr 26, 2012	0.000038	May 16, 2012	< 0.00001	Jun 21, 2012	< 0.00001	Jun 21, 2012	< 0.00001	Apr 26, 2012	< 0.00001	Apr 27, 2012	< 0.00001	Apr 27, 2012	< 0.00001	Apr 27, 2012	< 0.00001
May 15, 2012	< 0.00001	Jun 21, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jun 1, 2012	< 0.00001	May 15, 2012	< 0.00001	May 15, 2012	< 0.00001	May 15, 2012	0.000013	May 15, 2012	< 0.00001
May 15, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Jun 20, 2012	< 0.00001
Jun 20, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Jan 29, 2013	< 0.00001	Aug 22, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001
Jul 19, 2012	< 0.00001	Sep 18, 2012	< 0.00001	Jul 24, 2013	< 0.00001	Jan 29, 2013	< 0.00001	Aug 22, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Aug 22, 2012	< 0.00001
Aug 22, 2012	< 0.00001	Sep 18, 2012	< 0.00001	Oct 30, 2013	< 0.00001	Jul 24, 2013	< 0.00001	Sep 17, 2012	< 0.00001	Sep 17, 2012	< 0.00001	Sep 17, 2012	< 0.00001	Sep 17, 2012	< 0.00001
Sep 17, 2012	< 0.00001	Jan 29, 2013	< 0.00001	—	—	Oct 30, 2013	< 0.00001	Oct 31, 2012	< 0.00001	Oct 31, 2012	< 0.00001	Oct 31, 2012	< 0.00001	Oct 31, 2012	< 0.00001
Oct 31, 2012	< 0.00001	Jan 24, 2013	< 0.00001	—	—	—	—	Nov 27, 2012	< 0.00001	Nov 27, 2012	< 0.00001	Nov 27, 2012	< 0.00001	Nov 28, 2012	< 0.00001
Nov 27, 2012	< 0.00001	—	—	—	—	—	—	Dec 18, 2012	< 0.00001	Dec 18, 2012	< 0.00001	Dec 18, 2012	< 0.00001	Dec 19, 2012	< 0.00001
Dec 18, 2012	< 0.00001	—	—	—	—	—	—	Jan 28, 2013	< 0.00001	Jan 29, 2013	< 0.00001	Jan 28, 2013	< 0.00001	Apr 16, 2013	< 0.0001
Jul 23, 2013	< 0.00001	—	—	—	—	—	—	Apr 18, 2013	< 0.0001	Apr 18, 2013	< 0.0001	Apr 18, 2013	< 0.0001	Jul 23, 2013	< 0.00001
Oct 30, 2013	< 0.00001	—	—	—	—	—	—	Jul 23, 2013	< 0.00001	Jul 23, 2013	< 0.00001	Jul 23, 2013	< 0.00001	Oct 30, 2013	< 0.00001
—	—	—	—	—	—	—	—	Oct 30, 2013	< 0.00001	Oct 30, 2013	< 0.00001	Jul 23, 2013	< 0.00001	—	—
—	—	—	—	—	—	—	—	—	—	—	—	Oct 30, 2013	< 0.00001	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avg.	0.000025	Avg.	0.000028	Avg.	0.000021	Avg.	0.000020	Avg.	0.000028	Avg.	0.000028	Avg.	0.000027	Avg.	0.000029
Avg. (EC MDL)	0.000012	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010

Note:
Basline readings where the values that exceeded the relevant laboratory MDL values are shown in the table shaded in yellow.
Baseline readings where the laboratory MDL does not meet current Environment Canada recommendations are highlighted in bold faced type.

TMI_108-SW(1)-22 –Table 1c: Pre-development Total Mercury by Watercourse/Waterbody (mg/L)

Blackwater Creek			Hughes Creek			McHughes Creek			Wabigoon Lake			Thunder Lake Tributary #2			Thunder Lake Tributary #3			Hoffstrom's Bay Tributary			Little Creek			Thunder lake		
Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)	Station	Average	Average (EC MDL)
SW-TL1a	0.000021	0.000010	SW1	0.000033	0.000010	SW3	0.000023	0.000011	SW4	0.000028	0.000010	SW7	0.000028	0.000010	SW8	0.000027	0.000010	SW9	0.000029	0.000010	SW2	0.000025	0.000010	SW5	0.000021	0.000010
SW-TL2	0.000021	0.000010	—	—	—	—	—	—	—	—	—	SW10	0.000028	0.000010	—	—	—	—	—	—	—	—	—	SW6	0.000020	0.000010
SW-TL3	0.000028	0.000010	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SW-JCTa	0.000029	0.000010	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SW11	0.000020	0.000010	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Overall	0.000024	0.000010	Overall	0.000033	0.000010	Overall	0.000023	0.000011	Overall	0.000028	0.000010	Overall	0.000028	0.000010	Overall	0.000027	0.000010	Overall	0.000029	0.000010	Overall	0.000025	0.000010	Overall	0.000021	0.000010

TMI_108-SW(1)-22 –Table 1d: Baseline Total Mercury Readings (mg/L)

SW-TL1a		SW-TL2		SW-TL3		SW-JCTa		SW11		SW1		SW2	
Blackwater Creek		Blackwater Creek Tributary #1		Blackwater Creek		Blackwater Creek		Blackwater Creek		Hughes Creek		Little Creek	
Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading
Apr 4, 2012	< 0.0001	Apr 4, 2012	< 0.0001	Jan 25, 2012	< 0.0001	Jan 27, 2012	< 0.0001	Apr 27, 2012	< 0.00001	Jan 25, 2012	< 0.0001	Mar 4, 2012	< 0.0001
Apr 26, 2012	< 0.00001	Apr 26, 2012	< 0.00001	Apr 4, 2012	< 0.0001	Apr 5, 2012	< 0.0001	May 15, 2012	< 0.00001	Apr 4, 2012	< 0.0001	Apr 26, 2012	< 0.00001
Apr 26, 2012	< 0.00001	May 15, 2012	< 0.00001	Apr 26, 2012	< 0.00001	Apr 27, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Apr 4, 2012	< 0.0001	May 15, 2012	< 0.00001
May 15, 2012	< 0.00001	Jun 20, 2012	< 0.00001	May 15, 2012	< 0.00001	Mar 15, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Apr 26, 2012	< 0.00001	Jun 20, 2012	< 0.00001
Jun 20, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Aug 22, 2012	< 0.00001	May 15, 2012	< 0.00001	Jul 19, 2012	< 0.00001
Jul 19, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Nov 28, 2012	< 0.00001	Jun 21, 2012	< 0.00001	Aug 22, 2012	< 0.00001
Aug 22, 2012	< 0.00001	Oct 31, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Dec 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Sep 17, 2012	< 0.00001
Sep 17, 2012	< 0.00001	Oct 31, 2012	< 0.00001	Sep 17, 2012	< 0.00001	Sep 17, 2012	< 0.00001	Apr 18, 2013	< 0.0001	Aug 24, 2012	< 0.00001	Oct 31, 2012	—
Oct 31, 2012	< 0.00001	—	—	Oct 31, 2012	< 0.00001	Nov 27, 2012	< 0.00001	Oct 30, 2013	< 0.00001	Sep 17, 2012	< 0.00001	Nov 27, 2012	< 0.00001
Nov 27, 2012	< 0.00001	—	—	Nov 27, 2012	< 0.00001	Dec 19, 2012	< 0.00001	—	—	Oct 31, 2012	< 0.00001	Jan 23, 2013	< 0.00001
Dec 18, 2012	< 0.00001	—	—	Dec 18, 2012	< 0.00001	Jan 28, 2013	< 0.00001	—	—	Nov 27, 2012	< 0.00001	Apr 17, 2013	< 0.0001
Jan 29, 2013	< 0.00001	—	—	Jan 29, 2013	< 0.00001	Apr 17, 2013	< 0.0001	—	—	Dec 18, 2012	< 0.00001	Jul 23, 2013	< 0.00001
Jan 29, 2013	< 0.00001	—	—	Apr 17, 2013	< 0.0001	Jul 24, 2013	< 0.00001	—	—	Jan 23, 2013	< 0.00001	Oct 30, 2013	< 0.00001
Apr 17, 2013	< 0.0001	—	—	Jul 24, 2013	< 0.00001	Oct 30, 2013	< 0.00001	—	—	Apr 17, 2013	< 0.0001	—	—
Jul 23, 2013	< 0.00001	—	—	Oct 30, 2013	< 0.00001	—	—	—	—	Jul 23, 2013	< 0.00001	—	—
Oct 30, 2013	< 0.00001	—	—	—	—	—	—	—	—	Oct 30, 2013	< 0.00001	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avg.	0.000021	Avg.	0.000021	Avg.	0.000028	Avg.	0.000029	Avg.	0.000020	Avg.	0.000033	Avg.	0.000025
Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010

SW3		SW4		SW5		SW6		SW7		SW10		SW8		SW9	
McHughes Creek		Wabigoon Lake		Thunder Lake		Thunder Lake		Thunder Lake Tributary #2		Thunder Lake Tributary #2		Thunder Lake Tributary #3		Hoffstrom's Bay Tributary	
Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading	Date	Reading
Jan 25, 2012	< 0.0001	Jan 26, 2012	< 0.0001	Jan 26, 2012	< 0.0001	Jan 26, 2012	< 0.0001	Jan 27, 2012	< 0.0001	Jan 26, 2012	< 0.0001	Jan 27, 2012	< 0.0001	Jan 26, 2012	< 0.0001
Apr 4, 2012	< 0.0001	Jan 26, 2012	< 0.0001	May 15, 2012	< 0.00001	May 15, 2012	< 0.00001	Apr 5, 2012	< 0.0001	Apr 5, 2012	< 0.0001	Apr 5, 2012	< 0.0001	Apr 5, 2012	< 0.0001
Apr 26, 2012	< 0.00001	May 16, 2012	< 0.00001	Jun 21, 2012	< 0.00001	Jun 21, 2012	< 0.00001	Apr 26, 2012	< 0.00001	Apr 27, 2012	< 0.00001	Apr 27, 2012	< 0.00001	Apr 27, 2012	< 0.00001
May 15, 2012	0.000017	Jun 21, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jun 1, 2012	< 0.00001	May 15, 2012	< 0.00001	May 15, 2012	< 0.00001	May 15, 2012	< 0.00001	May 15, 2012	< 0.00001
May 15, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Jun 20, 2012	< 0.00001	Jun 20, 2012	< 0.00001
Jun 20, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Jan 29, 2013	< 0.00001	Aug 22, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001	Jul 19, 2012	< 0.00001
Jul 19, 2012	< 0.00001	Sep 18, 2012	< 0.00001	Jul 24, 2013	< 0.00001	Jan 29, 2013	< 0.00001	Aug 22, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Aug 22, 2012	< 0.00001	Aug 22, 2012	< 0.00001
Aug 22, 2012	< 0.00001	Sep 18, 2012	< 0.00001	Oct 30, 2013	< 0.00001	Jul 24, 2013	< 0.00001	Sep 17, 2012	< 0.00001	Sep 17, 2012	< 0.00001	Sep 17, 2012	< 0.00001	Sep 17, 2012	< 0.00001
Sep 17, 2012	< 0.00001	Jan 29, 2013	< 0.00001	—	—	Oct 30, 2013	< 0.00001	Oct 31, 2012	< 0.00001	Oct 31, 2012	< 0.00001	Oct 31, 2012	< 0.00001	Oct 31, 2012	< 0.00001
Oct 31, 2012	< 0.00001	Jan 24, 2013	< 0.00001	—	—	—	—	Nov 27, 2012	< 0.00001	Nov 27, 2012	< 0.00001	Nov 27, 2012	< 0.00001	Nov 28, 2012	< 0.00001
Nov 27, 2012	< 0.00001	—	—	—	—	—	—	Dec 18, 2012	< 0.00001	Dec 18, 2012	< 0.00001	Dec 18, 2012	< 0.00001	Dec 19, 2012	< 0.00001
Dec 18, 2012	< 0.00001	—	—	—	—	—	—	Jan 28, 2013	< 0.00001	Jan 29, 2013	< 0.00001	Jan 28, 2013	< 0.00001	Apr 16, 2013	< 0.0001
Jul 23, 2013	< 0.00001	—	—	—	—	—	—	Apr 18, 2013	< 0.0001	Apr 18, 2013	< 0.0001	Apr 18, 2013	< 0.0001	Jul 23, 2013	< 0.00001
Oct 30, 2013	< 0.00001	—	—	—	—	—	—	Jul 23, 2013	< 0.00001	Jul 23, 2013	< 0.00001	Jul 23, 2013	< 0.00001	Oct 30, 2013	< 0.00001
—	—	—	—	—	—	—	—	Oct 30, 2013	< 0.00001	Oct 30, 2013	< 0.00001	Jul 23, 2013	< 0.00001	—	—
—	—	—	—	—	—	—	—	—	—	—	—	Oct 30, 2013	< 0.00001	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avg.	0.000023	Avg.	0.000028	Avg.	0.000021	Avg.	0.000020	Avg.	0.000028	Avg.	0.000028	Avg.	0.000027	Avg.	0.000029
Avg. (EC MDL)	0.000011	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010	Avg. (EC MDL)	0.000010

Note:
Basline readings where the values that exceeded the relevant laboratory MDL values are shown in the table shaded in yellow.
Baseline readings where the laboratory MDL does not meet current Environment Canada recommendations are highlighted in bold faced type.