ENVIRONMENTAL MANAGEMENT AT THE KUMTOR GOLD MINE

AUCA - 19 March 2013

INTRODUCTIONS

- Ben Ferris
  - Kumtor Environment Director (since June 2012)
  - Environmental Engineer (Hons), MBA
  - 19 years experience in industrial environmental management (mainly mining)
  - Worked mainly in SEAsia but also audited and inspected mines in North America, Argentina, Philippines
  - Australian (hopefully you can understand my accent) ☺
- Happy to answer any questions but please hold them until the end!

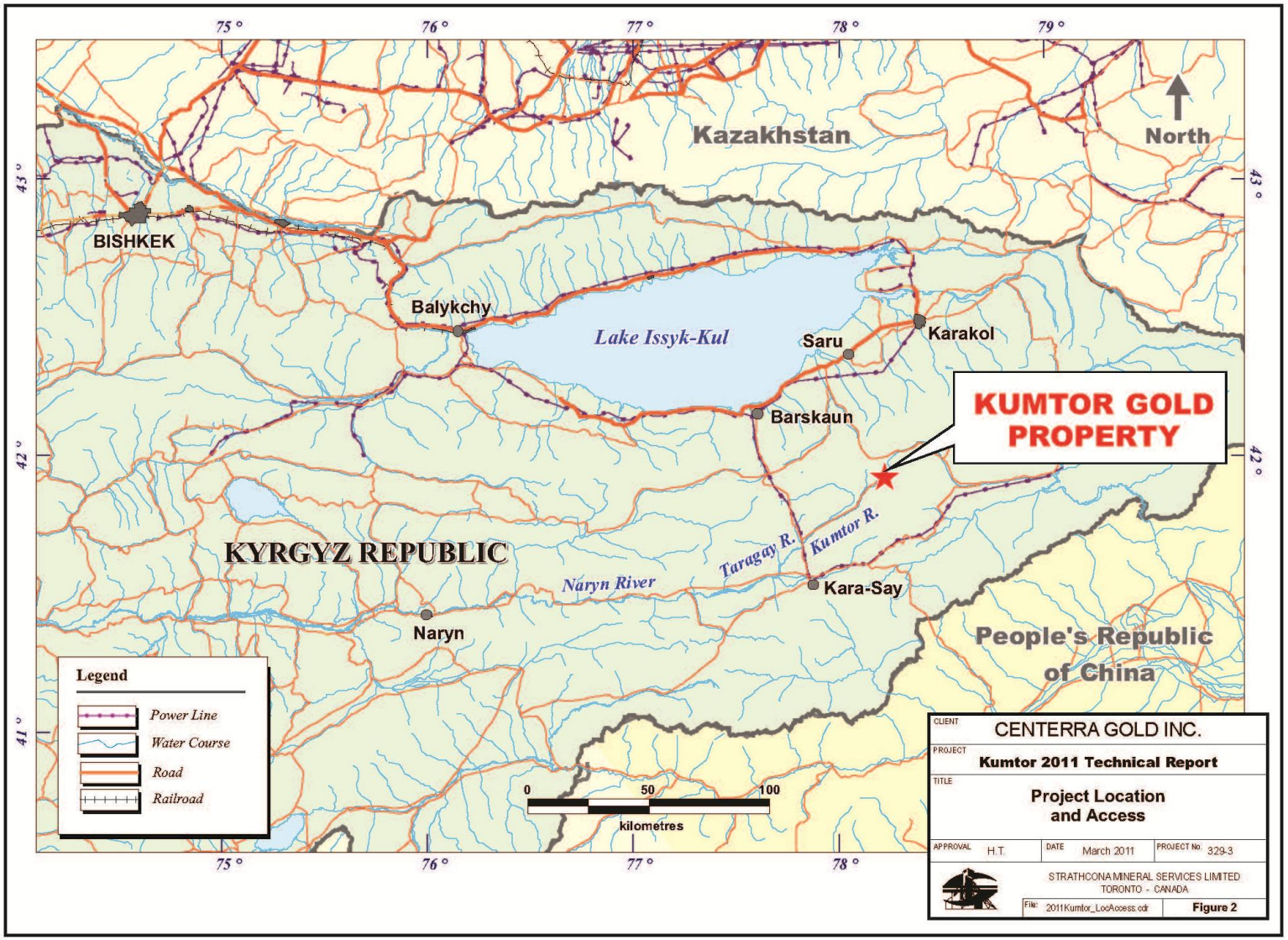
OVERVIEW OF PRESENTATION

- Overview of Kumtor Gold Mine Operations
  - Location & Setting
  - History
  - Production Overview
  - Tailings Management
  - Effluent Treatment
  - People & Safety
- Environmental Management at Kumtor Gold
  - Environmental Commitment
  - Regulatory Framework
  - Applicable Standards
  - Key Environmental Aspects
  - Environmental Management Strategies
  - Challenges
  - Communication Strategy

Kumtor Gold Mine – Overview of Operations

centerra GOLD

LOCATION

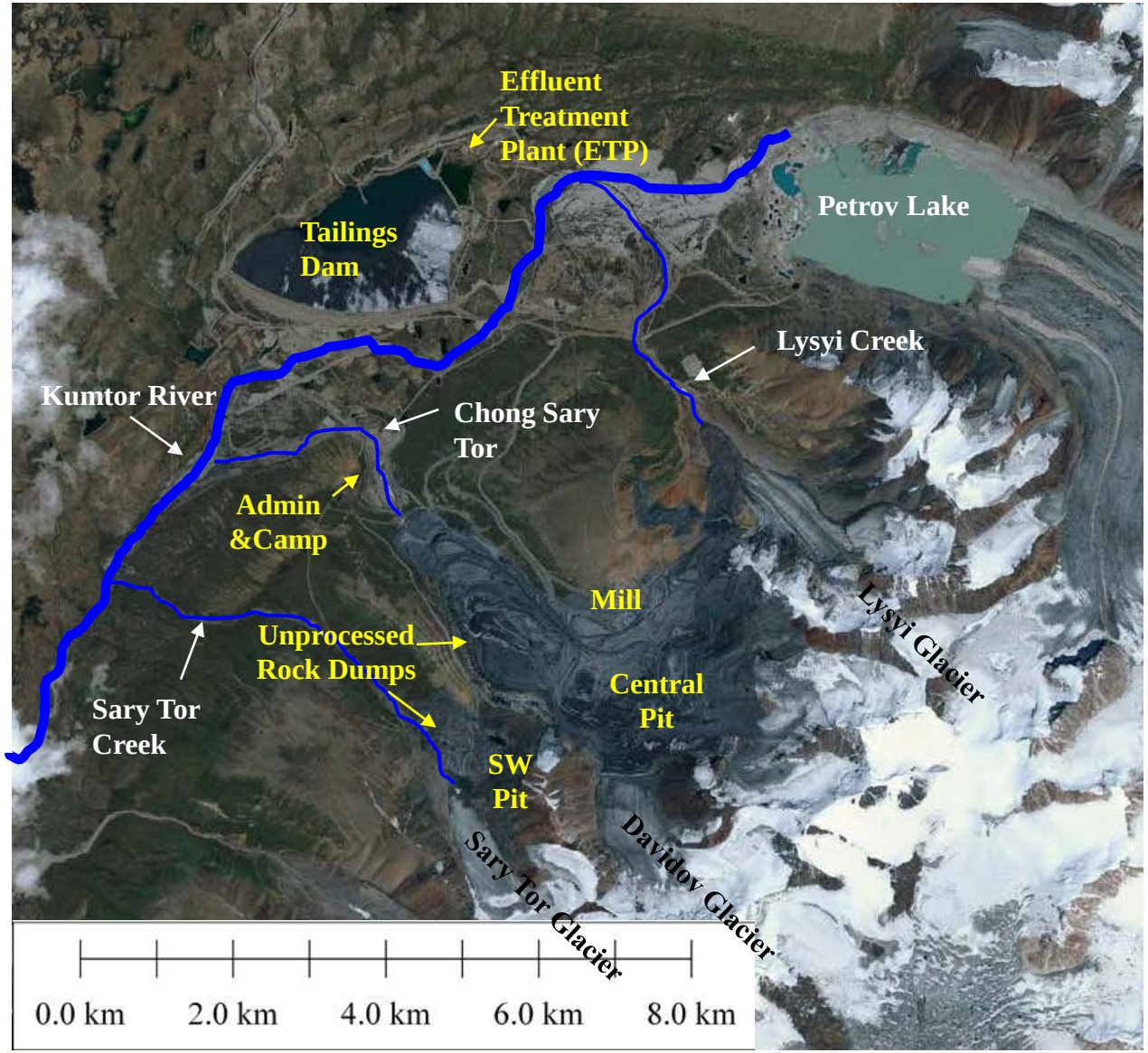

75 °
76 °
77 °
78 °
79 °
43 °
42 °
41 °
Kazakhstan
North
BISHKEK
Balykchy
Lake Issyk-Kul
Saru
Karakol
Barskaun
KUMTOR GOLD PROPERTY
KYRGYZ REPUBLIC
Naryn River
Taragay R.
Kumtor R.
Kara-Say
Naryn
People's Republic of China
Legend
Power Line
Water Course
Road
Railroad
0
50
100
kilometres
CLIENT
CENTERRA GOLD INC.
PROJECT
Kumtor 2011 Technical Report
TITLE
Project Location and Access
APPROVAL H.T.
DATE March 2011
PROJECT No. 329-3
STRATHCONA MINERAL SERVICES LIMITED
TORONTO - CANADA
File: 2011Kumtor_LocAccess.cdr
Figure 2

SETTING

- The Kumtor Gold Project is one of only a handful of remote, high altitude mines operating in the world today
- The operation lies at an altitude between 3,600 and 4,400 m above sea level in the Tien Shan Mountains
- Ecosystem is high alpine arctic tundra (no trees, permafrost)
- Terrain is typically glaciated with broad valleys and moraine mounds along valley walls.
- Annual temperatures range between –34C and +19C.
- Average annual precipitation is 428 mm of which 25% falls as rain and the remaining 75% as snow.

SETTING

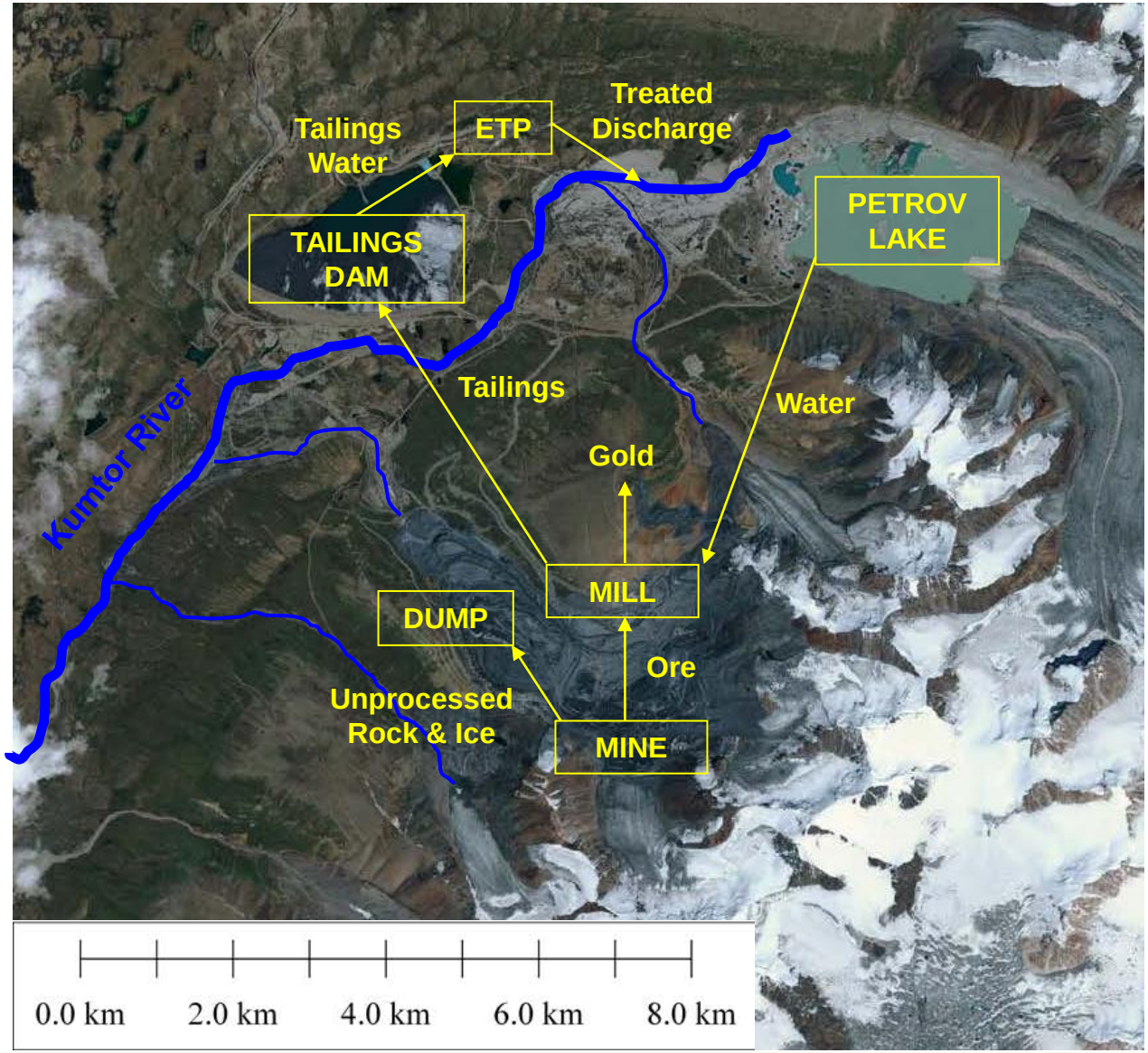
SITE MAP


Effluent Treatment Plant (ETP)
Petrov Lake
Tailings Dam
Lysyi Creek
Kumtor River
Chong Sary Tor
Admin &Camp
Mill
Lysyi Glacier
Unprocessed Rock Dumps
Central Pit
Sary Tor Creek
SW Pit
Davidov Glacier
Sary Tor Glacier
0.0 km
2.0 km
4.0 km
6.0 km
8.0 km

HISTORY

- 1978: The Kumtor deposit was discovered by the Kyrgyzgeology's geophysical expedition
- 1992: Cameco and Kyrgyzaltyn State Concern signed the Master Agreement forming the Kumtor Gold Project. Kumtor Operating Company formed as a subsidiary of Cameco and operator of the project.
- 1993: Feasibility study finalized (including Environmental Impact Assessment – EIA)
- 1994: Feasibility Study (&EIA) approved by KR Government. Key elements included ice removal, TMF, ETP, haz/waste storage and disposal.
- 1997: Commercial gold production began
- 2003-2004: Restructuring of Kumtor Project under Centerra Gold Inc. including IPO for Centerra to become a public company listed on TSX
- 2009: Agreement on New Terms and the Kyrgyz Republic through SOE Kyrgyzaltyn which owns 1/3 of Centerra

PROCESS OVERVIEW



MINING

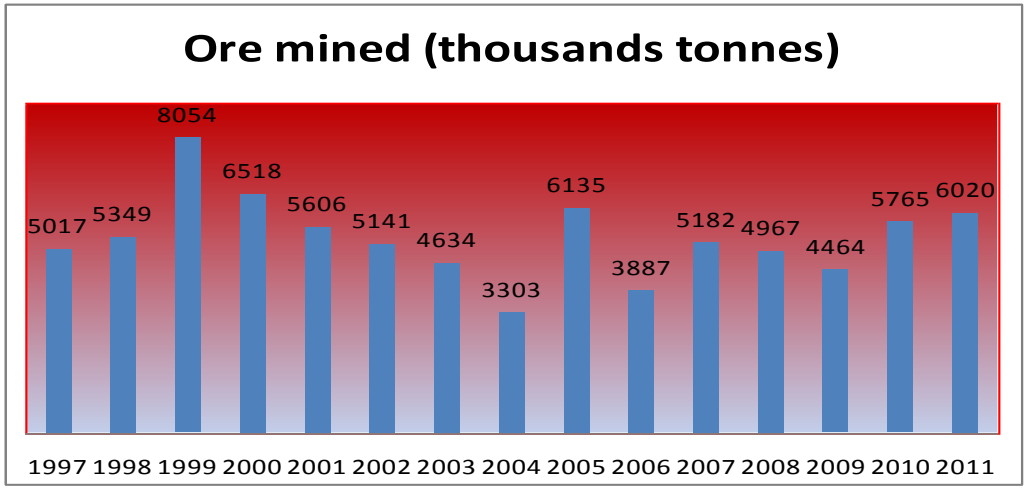
- Kumtor is an open pit operation, which uses conventional drill, blast, load and haul – along with Ice Removal.
- Production equipment includes large numbers of big machinery.
- Kumtor is capable of moving an average of 500,000 tonnes (290,000 m3) per day. This is equivalent to a cube approx 66m x 66m x 66m.
- In 2012, approximately 25% of material moved (by weight) was ice

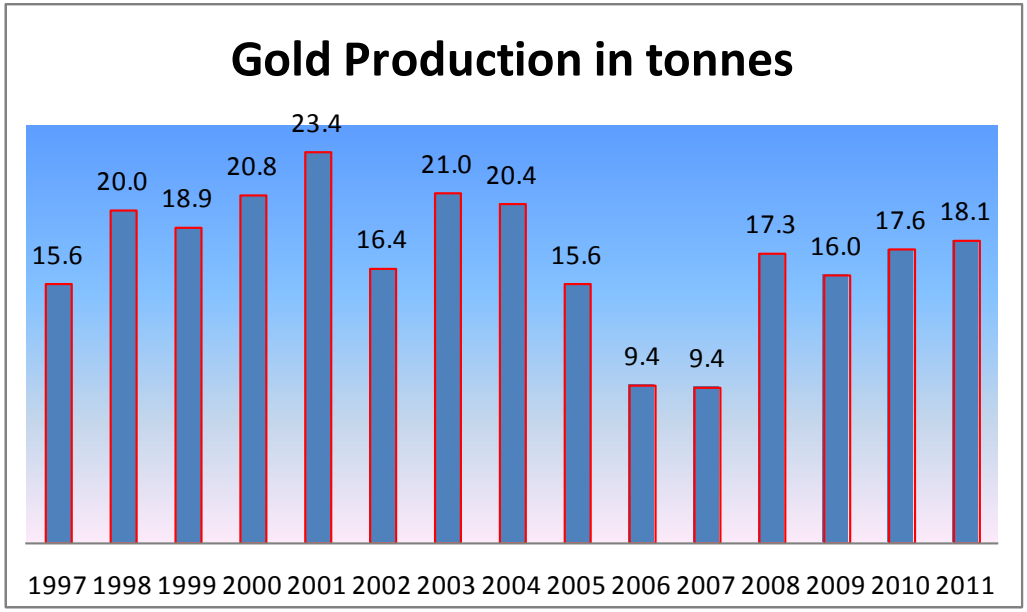
MINING EQUIPMENT

MILLING

- The Kumtor mill throughput is approximately 17,000 tonne per day (~4% of total material mined)
- This rock is ground to a very small size to allow flotation and gold extraction
- Gold is extracted using conventional Carbon in Leach (CIL) plant (using cyanide)
- Average Gold grade is around 3-4 grams/tonne (less than one teaspoon per tonne of rock)

GOLD PRODUCTION





A total of 260 tonnes of gold (8.4 million ounces) has been produced between May 1, 1997 and December 2011

TAILINGS MANAGEMENT

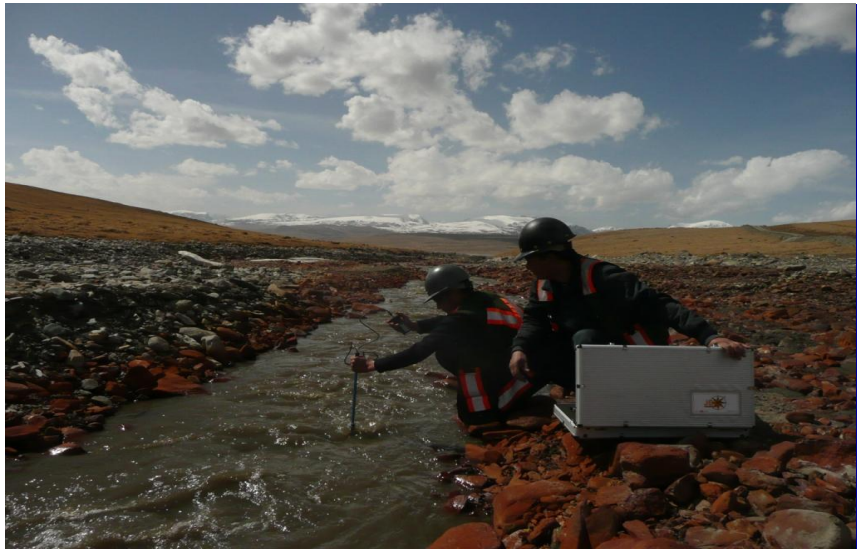
- Tailings from the Kumtor Mill are approximately 50% water and 50% solids and contain small amounts of chemicals from the flotation and leaching circuits, including frother, and cyanide complexes.
- The tailings are transported from the Mill to the Tailings Dam via HDPE pipeline's with secondary and tertiary containment.
- The concentration of sodium cyanide (CN) contained within the tailings discharge is approximately 50 mg/L (ppm). This is consistent with CN code recommendations.

TAILINGS DAM/POND

- The Tailings Dam is approximately 2,000m long and 34m high
- Design follows international standards as well as best engineering practice
- Monitored continuously by Kumtor, regulatory agencies and designer
- Centerra is a signatory to the ICMI Cyanide Code of Practice and Kumtor achieved certification in 2012

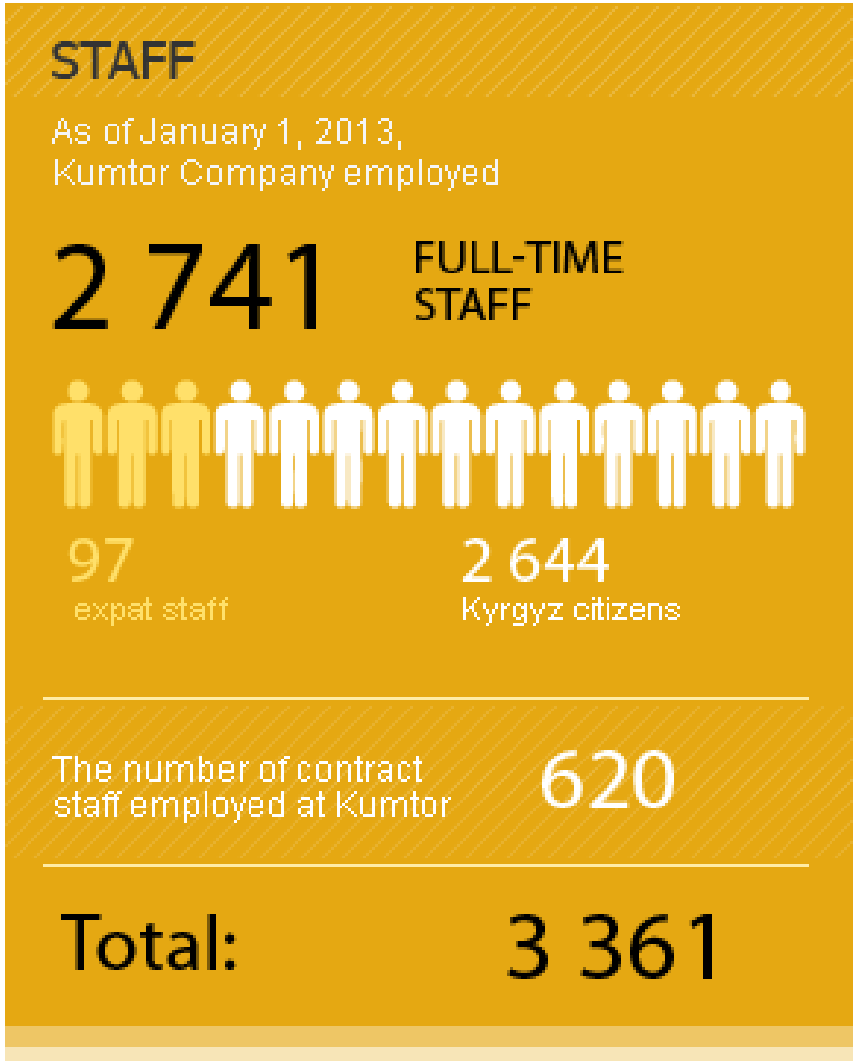
EFFLUENT TREATMENT

- Water from the Tailings Dam is pumped through an Effluent Treatment Plant (ETP) before being discharged into the Kumtor River
- To date, approximately 61 Million m^3 of tailings water has been treated at the ETP (~5 Million m^3 /year).
- All discharges are typically below Canadian and Kyrgyz Regulatory Limits.

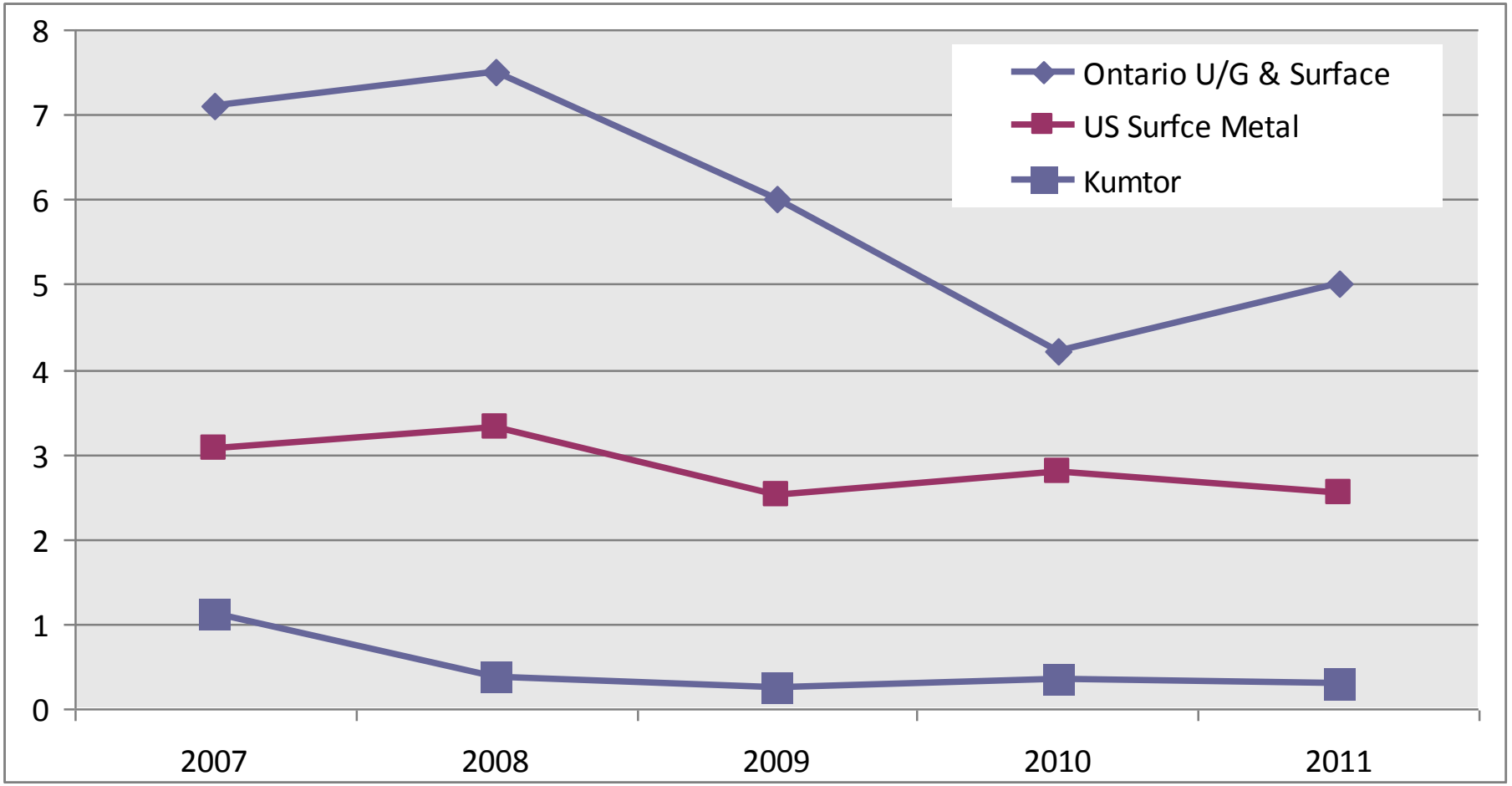


PEOPLE

- 95 per cent of the Company full-time employees are Kyrgyz citizens
- This proportion is growing as foreign managerial personnel are being gradually replaced by national employees.
- A further 620 people are contract employees involved in the mine's operations



SAFETY STATISTICS (RIFR)



Kumtor Gold Mine – Environmental Management

centerra GOLD

ENVIRONMENTAL COMMITMENT

Kumtor Gold Mine is committed to…

- compliance with applicable laws and regulations…and generally accepted international industry practices.
- …minimizing possible negative exposures to the environment due to company operations.

Kumtor Gold Mine will...

- Set objectives and targets so as to continually improve…environment management and performance
- Conduct regular audits to assess and ensure conformance to this policy
- Engage in constructive communication of this policy…

HEALTH, SAFETY AND ENVIRONMENTAL POLICY

The Kumtor Operating Company (KOC) recognizes the protection of the health and safety of its employees, contractors and the public along with environment management system as among the highest corporate priorities at all stages of our activities including exploration, operations and decommissioning, and is committed to the safety motto that **"no job is so important that we can not take the time to do it safely"** and to the following:

- compliance with applicable laws and regulations of the jurisdictions in which we operate, and generally accepted international industry practices;
- providing employees and contractors with a working environment free of uncontrolled hazards;
- identifying and eliminating or controlling potential risks to health and safety of employees, contractors and the public to levels as low as reasonably achievable, social and economic factors being taken into account;
- preventing environmental impacts and minimizing possible negative exposures to the environment due to company operations;
- achieving continual awareness of and improvement to our overall health, safety and environment performance.

In support of these commitments, KOC will:

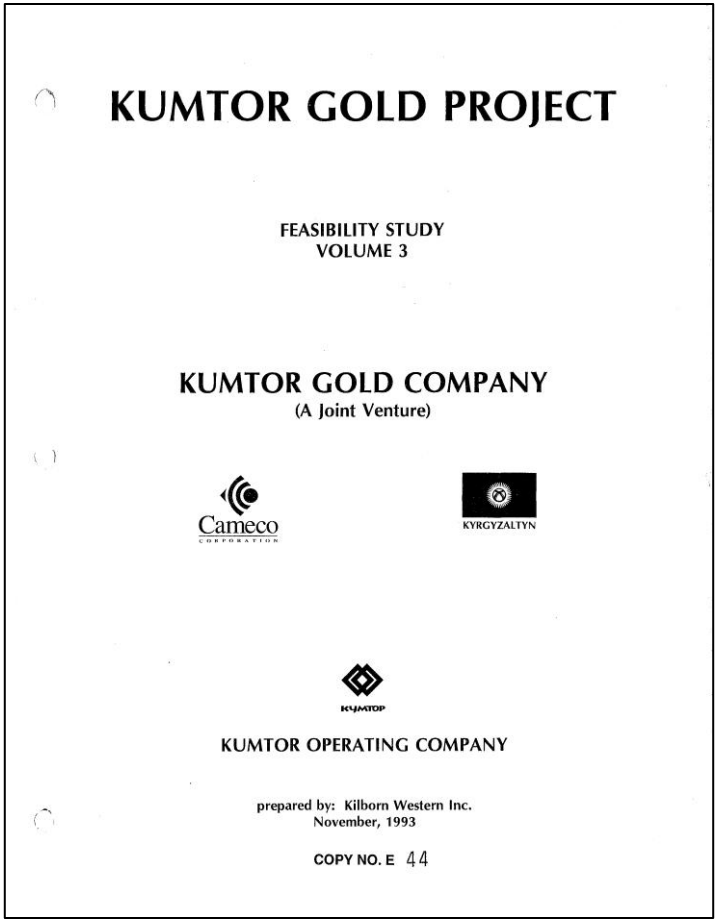
- implement and maintain a formally approved health, safety and environment management system;
- identify the significant health and safety hazards and risks associated with company activities;
- set industrial factors of the company exposing to environment;
- set objectives and targets so as to improve continually KOC health, safety and environment management and performance;
- identify the potential for accidents and emergency situations and develop, maintain and test emergency response plans which provide for the protection of the health, safety and environment of our employees, the public, and the communities adjacent to our operations;
- undertake constructive dialogue with the communities located near KOC operations to make them understand the importance of KOC activities related to health and safety of local community;
- place and recycle industrial waste of the company by using methods providing absence, reducing or restriction of pollution;
- soil reclaiming and decommissioning of KOC facilities should be done timely and in accordance with assigned schedule;
- conduct regular audits to assess and ensure conformance to this policy;
- engage in constructive communication of this policy with all employees and relevant contractors and suppliers so they are aware of, and able to comply with their health, safety and environment responsibilities in a manner appropriate to their role in the organization, and to encourage them to make contributions to KOC's health, safety and environment management;
- provide employees at all levels with appropriate training so as to allow them to carry out their health, safety and environment duties and responsibilities;
- ensure the participation of employees in the development and implementation of health, safety and environment programs and procedures associated with their work places;
- provide adequate and appropriate resources to implement this policy;
- make this policy available to the public.

Michael Fischer
President KOC

March 2, 2012

REGULATORY FRAMEWORK

- The Feasibility Study (including Environmental Impact Assessment - EIA) - approved by the KR Gov in 1994
- This means project and key components were subject to ‘Expertisa’ process, resulting in issuance of ‘Ecological Passports’
- These ‘passports’ are listed on the Kumtor website (www.kumtor.kg)
- From time to time, Kumtor also receives parameters and limits for emissions and discharges


KUMTOR GOLD PROJECT

FEASIBILITY STUDY
VOLUME 3

KUMTOR GOLD COMPANY
(A Joint Venture)

Cameco
KYRGYZALTYN

KUMTOR OPERATING COMPANY

prepared by: Kilborn Western Inc.
November, 1993

COPY NO. E 44

APPLICABLE STANDARDS

- Environmental Management Action Plan (EMAP)
  - Originally approved 1995 and subsequently revised (last revision 2010)
  - Lists relevant standards to consider including those listed in EIA, KR, Canadian Metal Mining Effluent Regulation (MMER)
- Restated Investment Agreement (June 2009)
  - Ratified by KR government
  - References EMAP, KR, Canadian (Saskatchewan), IFC (Mining EHS Guideline), GIIP
- Kyrgyz Standards
  - Ecological Passports
  - Maximum Allowable Concentration (MAC) – eg End of mixing zone downstream
  - Maximum Allowable Discharge (MAD) – eg ETP, STP discharge
  - Maximum Allowable Emissions (MAE)
  - Other applicable regulatory requirements

KEY ENVIRONMENTAL ASPECTS

- Water Quality (community concerns)
- Tailings Management
- Effluent Treatment
- Rehabilitation/Closure (current LOM 2026)
- Waste Management (landfill general waste, temp storage of industrial waste)
- Flora, Fauna & Biodiversity (threatened species, SCER)

ENV MANAGEMENT STRATEGIES

- Environment Management System - compatible with ISO 14001 standard but not certified. Regular audits undertaken (external and internal)
- Annual environmental action plans – passed down to individuals as part of annual incentive plans (AIPs)
- Adequate environmental resources (26 people in Environment Dept) and budget with trained and qualified personnel
- Comprehensive environmental monitoring program (~10,000 samples and ~50,000 analyses per year, budget ~$360k USD)
- Regular reporting – weekly, monthly, quarterly, annually (The Annual Env Report is published on the Kumtor website – www.kumtor.kg. We are the only company in KR that does this).
- Use of external experts as required – eg closure planning, risk assessments

CHALLENGES

- Political Environment:
  - 4 separate government commissions over last 2 years
  - Approx 50 separate inspections, 300 separate individuals in 2012
  - Factually incorrect press releases about the company
  - Calls to rescind/dissolve Restated Investment Agreement
- Prevalence of misinformation and distrust:
  - Affects approach to regulation
  - Wastes time and money (eg duplicate samples)
  - Focus on non-critical / low-risk areas
- Community concerns (legacy issues)
- Effective communication of complex environmental issues and monitoring results

COMMUNICATION STRATEGY

Approach	Activities
Inform	Annual Environment Report (AER), monthly newsletters, newspaper articles and press releases, Kumtor website, brochures about key issues (eg biodiversity, water mgt etc)
Consult & Involve	Information Centers Presentations about Kumtor (such as this one) Regional Committee Meetings Site Tours Participatory environmental monitoring with community
Partnership	MOU with FFI regarding biodiversity (SCER) Partnership with AUCA – new major on Environment & Sustainability Supporting a variety of projects with other NGO's

Thank You – Questions?