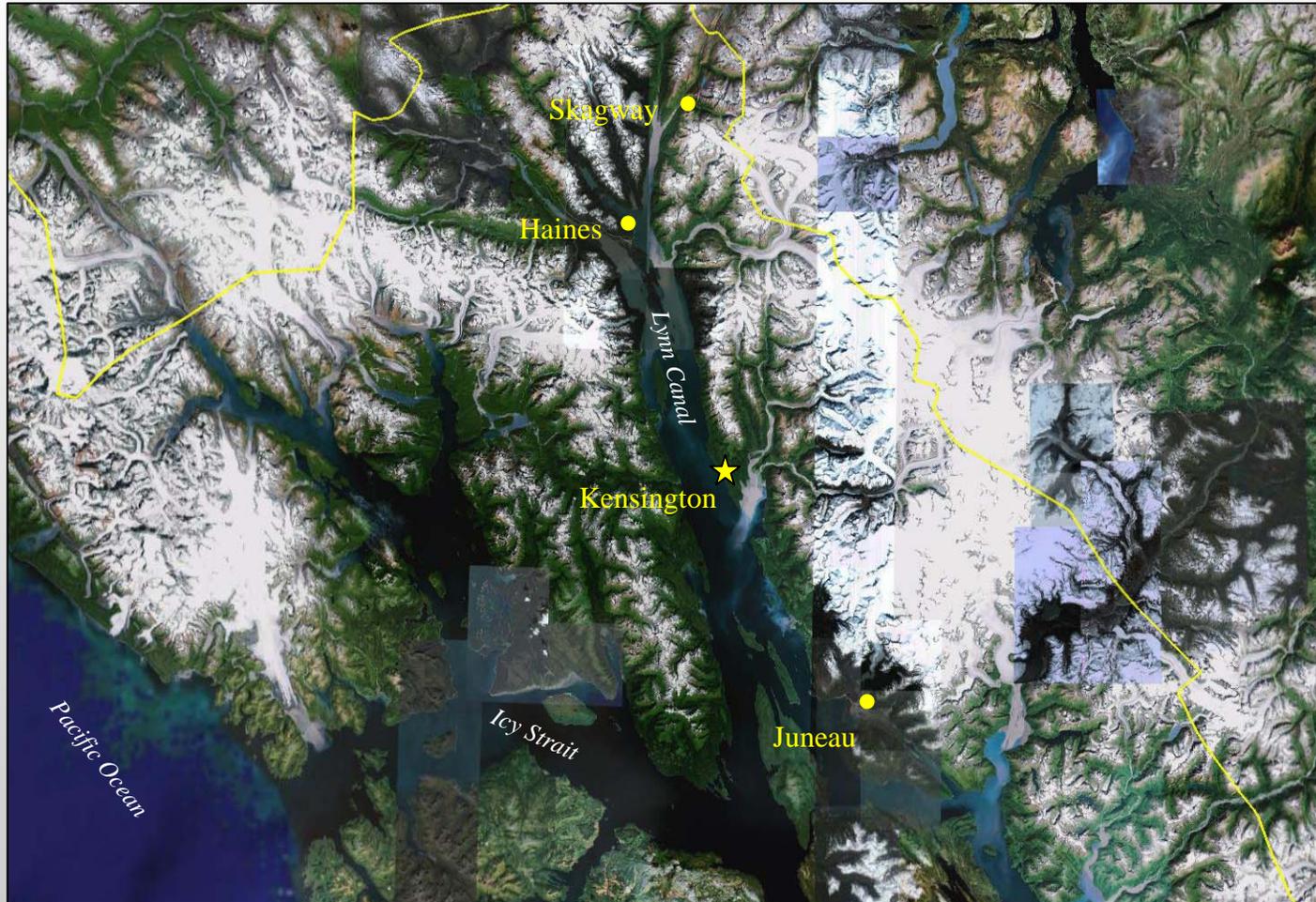




# KENSINGTON MINE

COEUR  
THE PRECIOUS METALS COMPANY

# Project Location

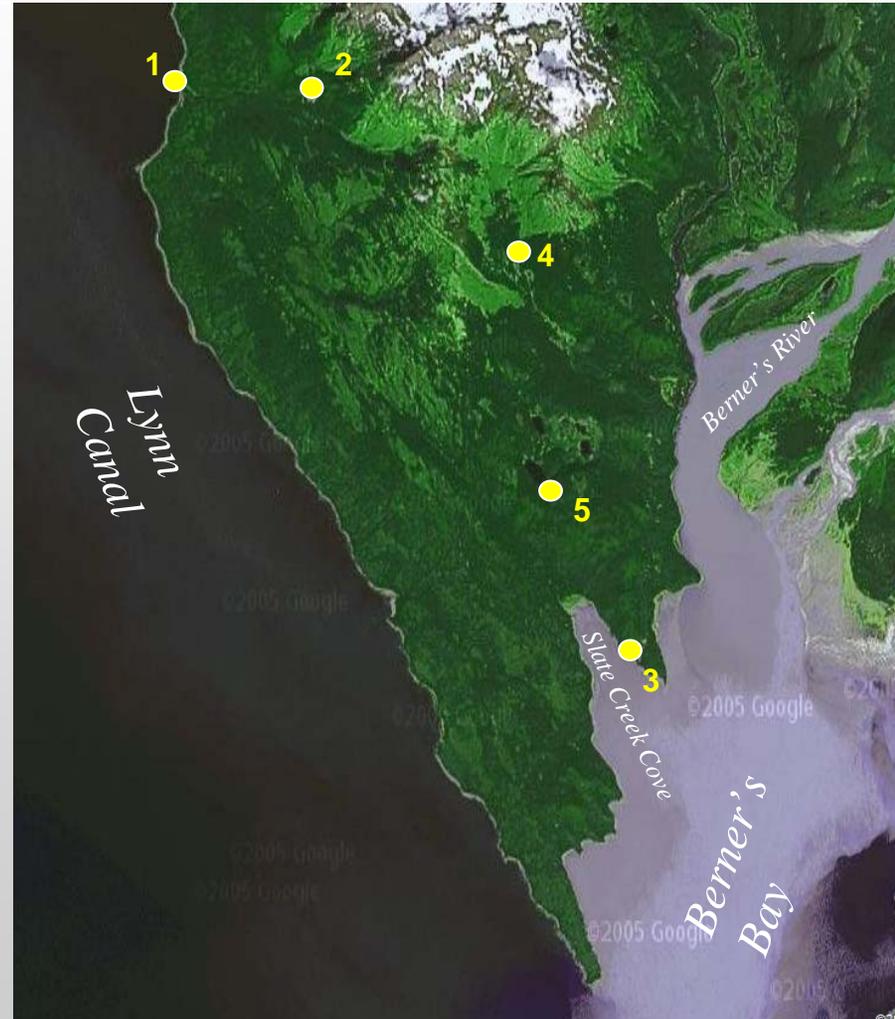




# Project Location

## LEGEND

- 1 - Comet Beach Camp
- 2 - 850 Level Portal
- 3 - Slate Creek Cove Marine Facility
- 4 - Mill / Admin & Jualin Portal
- 5 - Lower Slate Lake Tailings Facility





# Project Overview



- 1,250 TPD underground gold mine
- 150,000 oz./year of gold during early years of production
- 1.35 million oz. of reserves
- 10+ year mine life
- Mine support from Juneau and Southeast Alaska



# Project History

- 1891 – Berner’s Bay Mining & Milling Company developed the Bear & Comet Mines
  - 40 Stamp Mill installed to recover free gold
- 1901 – Heavy flooding causes the closure of the Comet Mine.
- 1910 – BBM&M Co. reorganizes as the Kensington Mining Company
  - Completion of the Kensington Adit at the 2,050 ft elevation
  - Development of the Eureka, Kensington, and Johnson Lodes
- 1917 – Termination of funding on the Kensington Property
- 1930’s – Development of Kensington resumes
  - Narrow gauge railroad replaced by a road from the beach landing to the Comet



# Project History

- 1891 – Berner’s Bay Mining & Milling Company developed the Bear & Comet Mines
  - 40 Stamp Mill installed to recover free gold
- 1901 – Heavy flooding causes the closure of the Comet Mine.
- 1910 – BBM&M Co. reorganizes as the Kensington Mining Company
  - Completion of the Kensington Adit at the 2,050 ft elevation
  - Development of the Eureka, Kensington, and Johnson Lodes
- 1917 – Termination of funding on the Kensington Property
- 1930’s – Development of Kensington resumes
  - Narrow gauge railroad replaced by a road from the beach landing to the Comet



# Project History

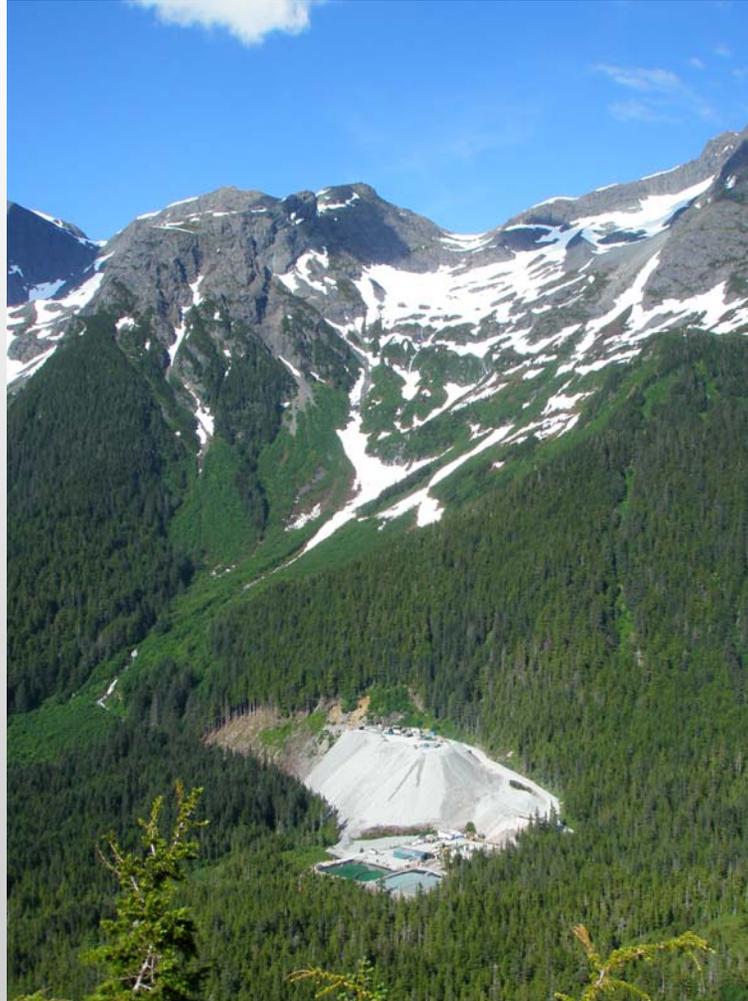
- 1937 – Operations cease due to a Territorial tax levied on gross gold production
- 1960's – Kensington acquired by Alan Wright from the three remaining owners.
- 1980's – Surface Exploration by Placid Oil
- 1988 - 1992 – Property acquired by Echo Bay / Coeur Joint Venture
  - Development of the 850L and ramp system
  - Underground drilling of the Kensington vein system
  - Bulk samples
  - Drifting & raise on the Horrible Vein.



# Project History

- 1995 – Coeur acquires 100% ownership.
  - Feasibility studies and permitting ongoing
- 1997 – Project permits received, but declining gold prices keep project on hold.
- 2005 – Project is permitted with most facilities at Jualin
  - Construction begins

# Kensington



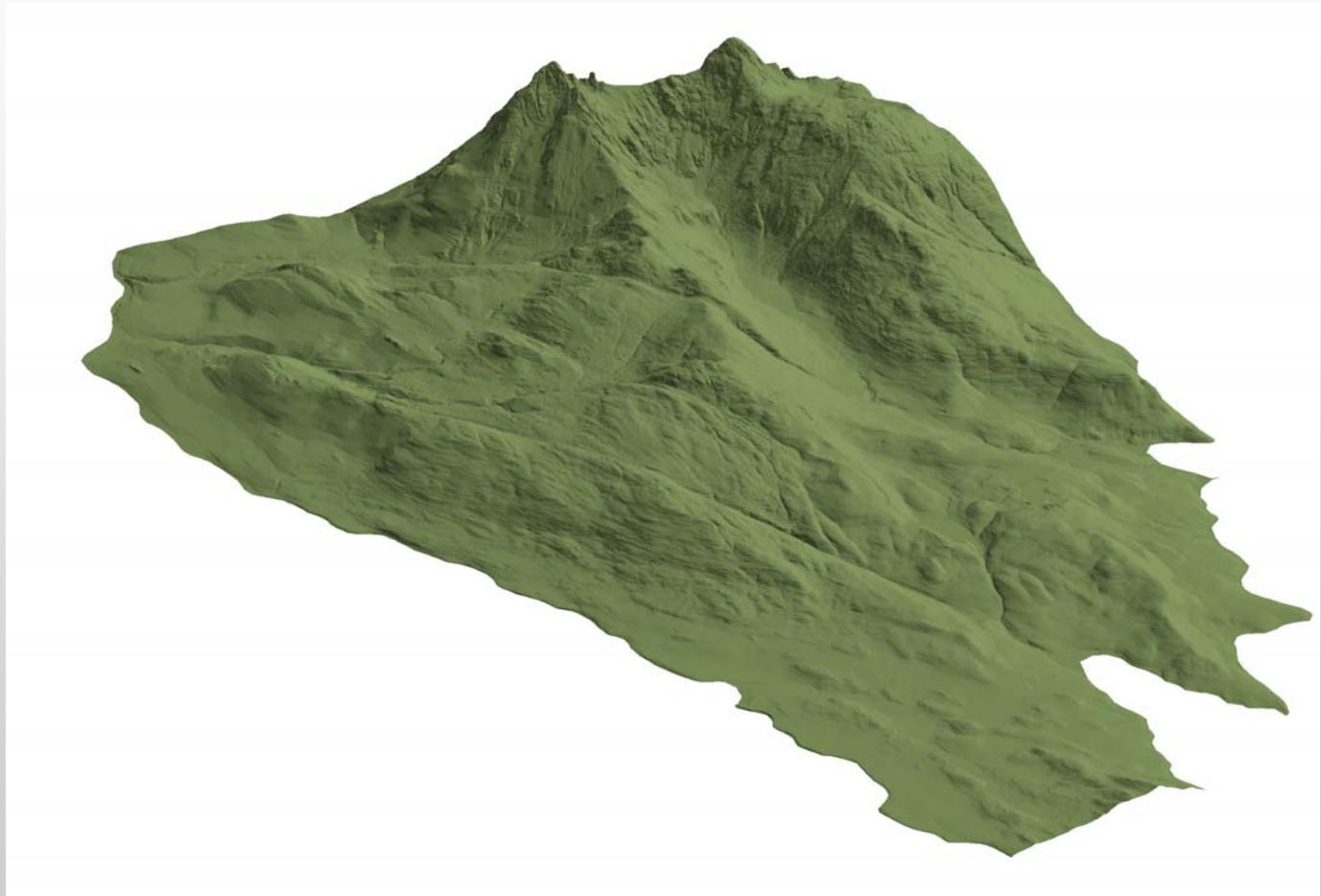
Facing North East

# Jualin

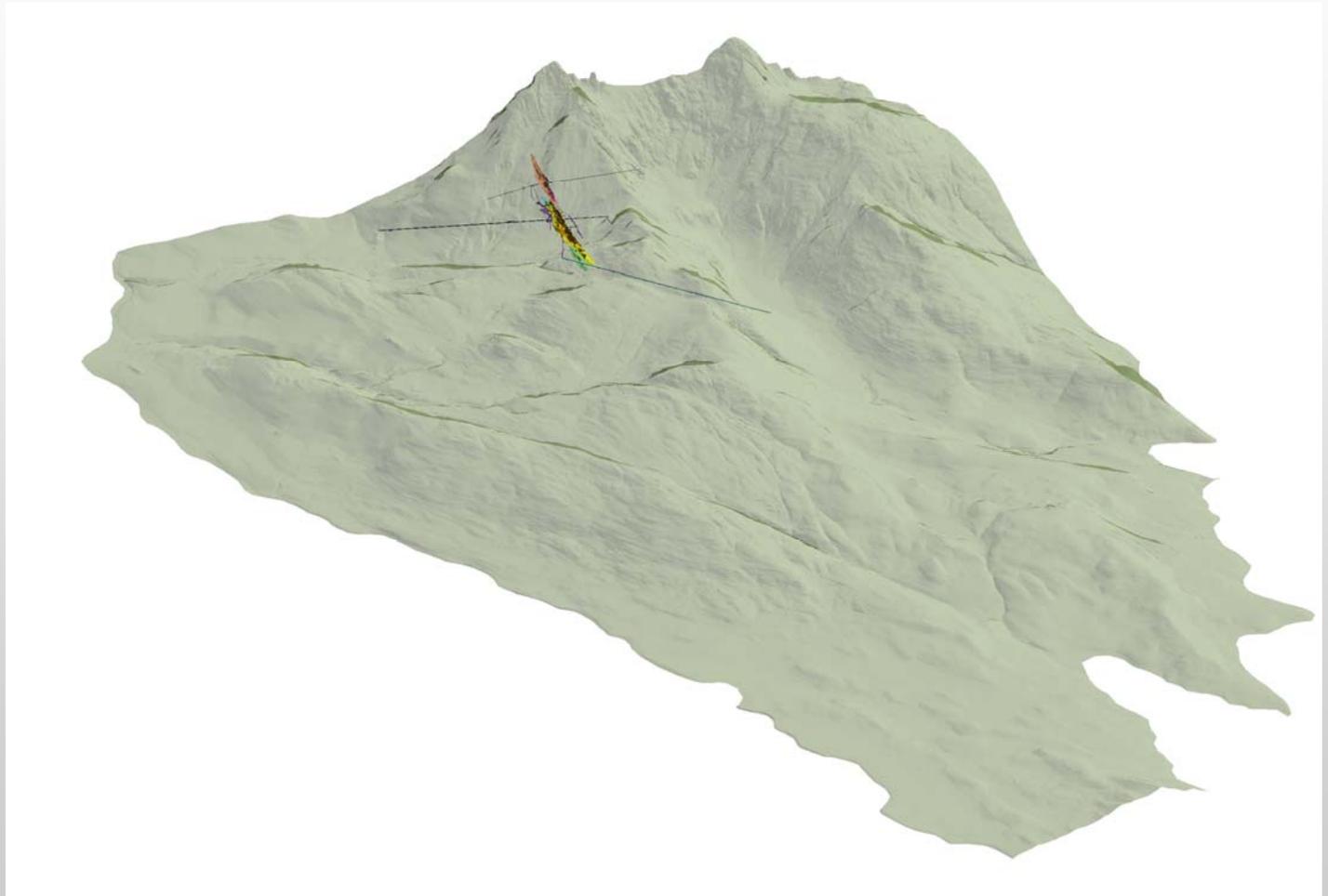


Mill & Lion's Head Mountain – Facing North

# Deposit Orientation

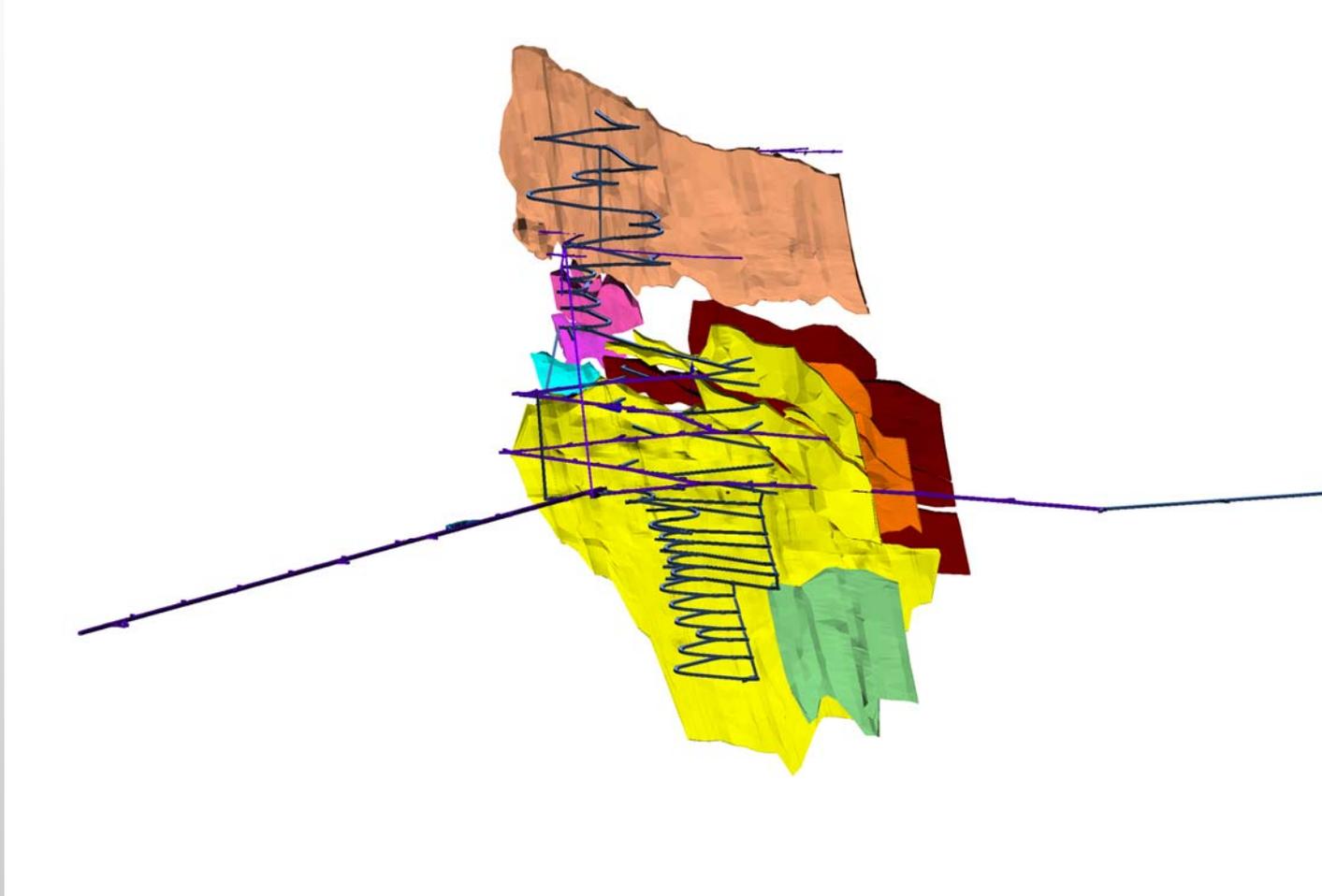


# Deposit Orientation





# Mine Development





# Local Geology

- Gold occurs as the telluride calaverite and as minor native gold.
- Large structural dilation localized between two large shears.
- Composite system of complex vein arrays confined to the competent Jualin diorite stock.
- Bounded to the north by mafic metavolcanics
- Hangingwall and footwall borders are diffuse and marked by significant change in quartz-carbonate-pyrite vein density.



# Local Geology

- North-south trending, dipping  $60-70^{\circ}$  to the east
- 1,500 ft strike length
- 3,000 ft vertical length
- Average 45 ft wide (up to 120 ft wide)

# Geology



# Mining



Jumbo drilling a face round

# Mining



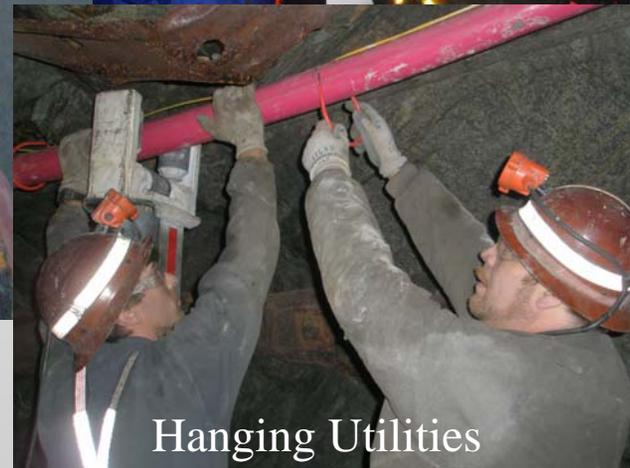
40 Tonne Haul Truck



# Mining



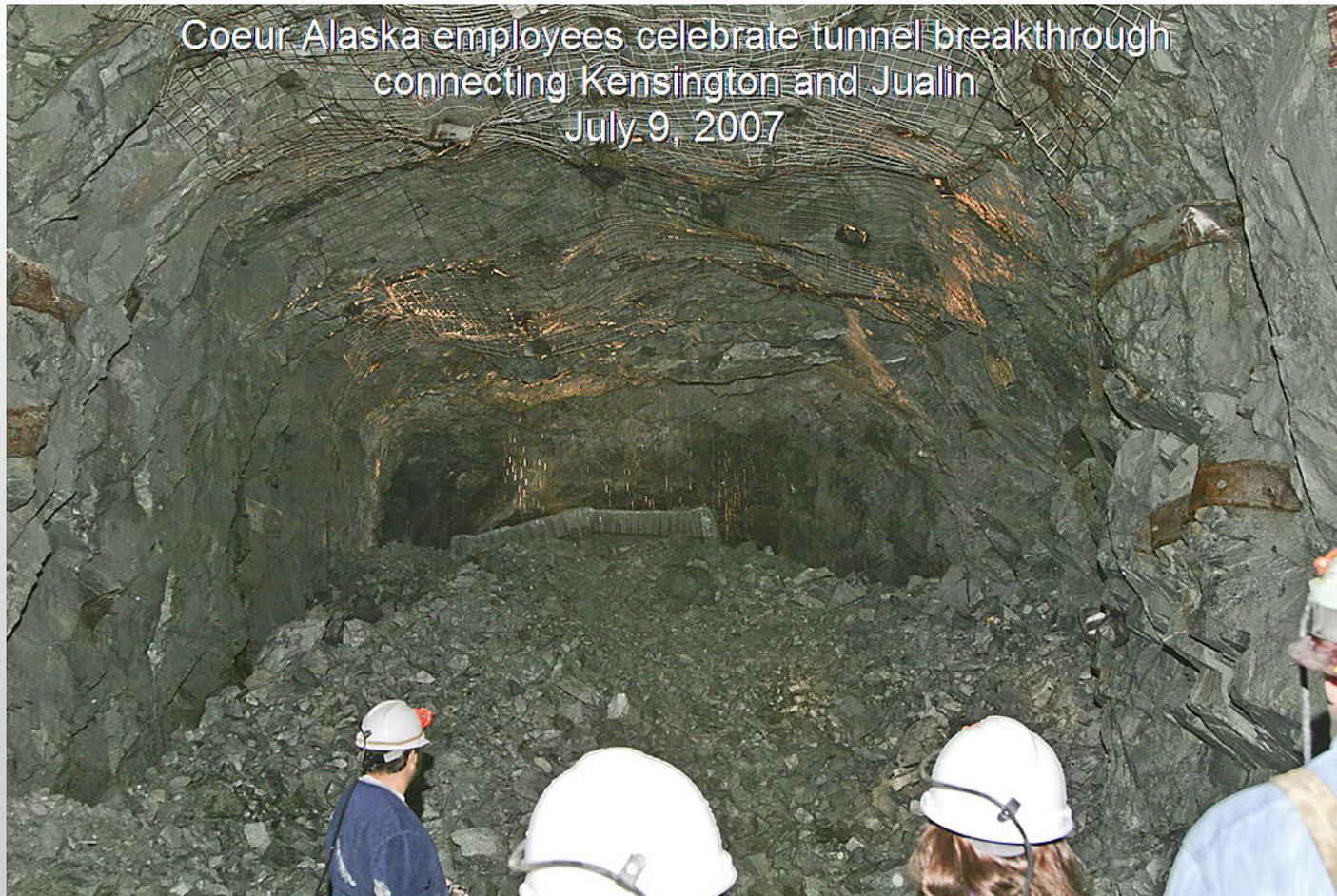
Maclean Bolter



Hanging Utilities



# Jualin Tunnel - Breakthrough



# Aerial View - Mill



# ROM Ore Feed Pocket





# Crushing



# Crushed Ore Bin & Conveyor



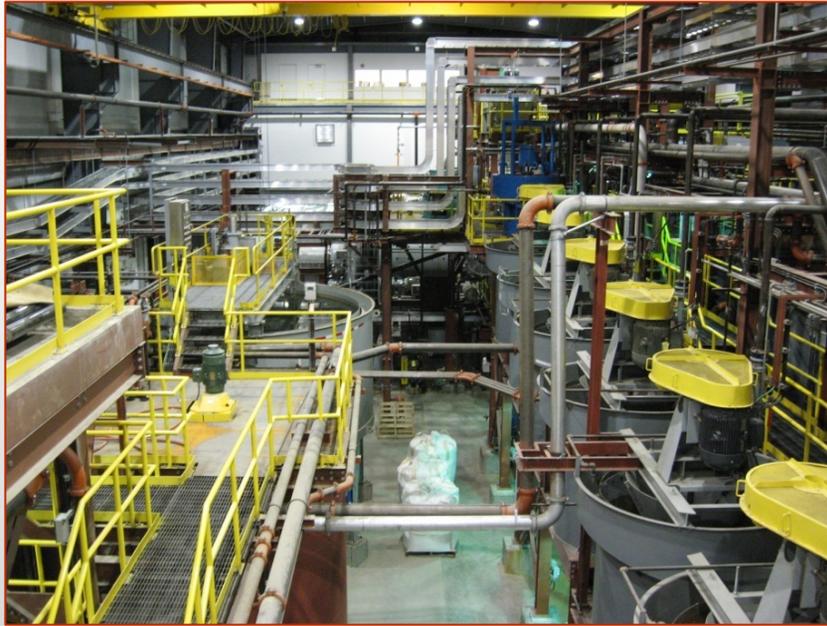
# Mill Bench



# Milling



# Flotation





# Concentrate Handling





# Power Generation



5 - 2 MW generators

# Temporary Jualin Camp



64 person capacity camp

# Slate Creek Cove Dock/Laydown





## Total Construction Related Labor Income

---

*Total annual direct and indirect income...*

- \$15 million for Juneau residents
- \$25 million for Southeast residents
- \$31 million for Alaska residents



# Anticipated Mine Operations Impacts

---

- 200 direct jobs (Coeur plus contractors)
- \$14 million annual payroll
- 360 total direct and indirect jobs
- \$21 million total payroll
- \$2 million annual CBJ tax revenues



# Personnel

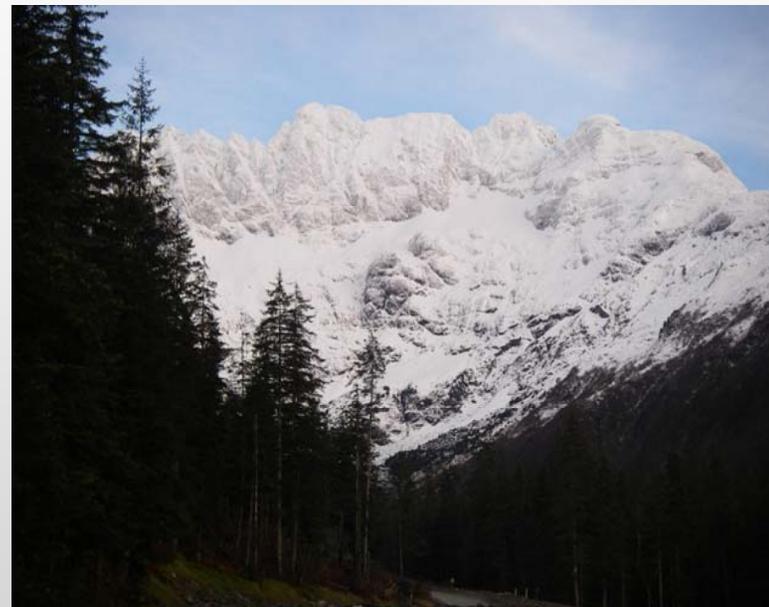
- Kevin Eppers - New Environmental Superintendent
- Joe Kemp – Environmental Coordinator
- John Randolph – Environmental Technician
- Peter Strow – Environmental Technician
- Johnse Ostman – Environmental Technician
- LeAnn Scheel – Environmental Administrative Assistant





# Environmental Management System

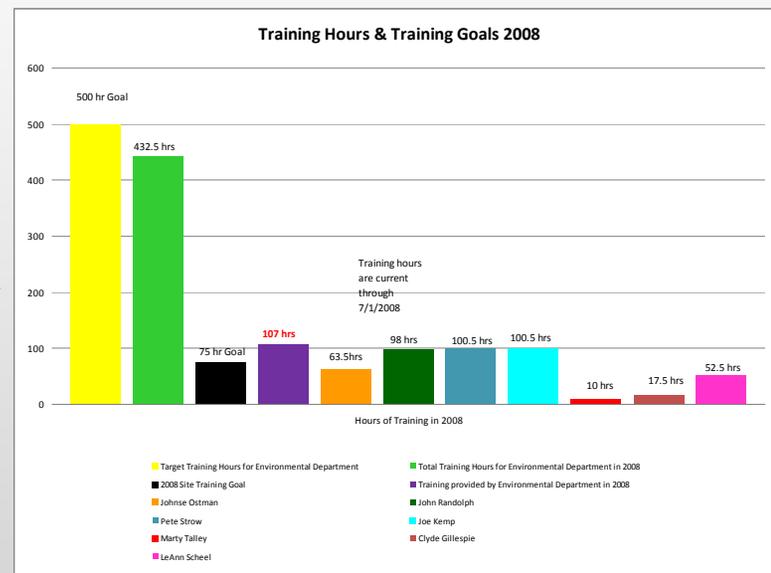
- Environmental Policy
- Lists of Permits and Plans
- Guidelines
  - Sampling
  - Flow Monitoring
  - Spill Reporting and Notification
  - Waste Management
  - Labeling
  - Purchasing of Hazardous Materials
  - Used Oil
  - Water Quality Data Management
  - Empty Container
  - Fueling
  - Hydrocarbon Contaminated Soil
  - NOx Analyzer
  - Secondary Containment Pumping
  - Sample Container





# Environmental Management System

- Environmental Policy
- Intelx Software Reminder System
- Inspections
- Assigned Areas of Responsibility
- Quality Control Program
- Training
- Central Paper and Electronic Filing System
- Continuous Improvement





# Environmental Policy

**COEUR**  
A L A S K A  
KENSINGTON GOLD MINE

## ENVIRONMENTAL POLICY

**Coeur Alaska Kensington Mine will conduct activities in such a manner as to protect the health and safety of our employees, the environment, wildlife, and be involved in the communities in which we operate. We will comply with all applicable environmental and safety laws and regulations while administering an Environmental Management System to ensure compliance. This policy can be simply stated as:**

*"Producing and Protecting"  
(Protecting while Producing)*



# Kensington is continuous environmental improvement

Environmental Committee  
KPI's 2008

	NOV's	Permit Exceedances	New and Updated Plans	Acres Reclaimed	Hours Trained	Spills	% Analytical Results Received w/in time frame	Gallons Mine H2o Treated since last exceedance	Gallons Waste H2o treated since last exceedance	Gallons Used Oil and Antifreeze Recycled
Jan-08	0	2	0	0	28.5	1	92	27,014,264	68,592	1210
Feb-08	0	0	1	0	16.5	2	100	50,473,184	139,529	0
Mar-08	0	0	0	0	6.5	4	93	74,373,720	211,259	0
Apr-08	0	0	1	0	14	4	86	94,103,832	282,907	0
May-08										
Jun-08										
Jul-08										
Aug-08										
Sep-08										
Oct-08										
Nov-08										
Dec-08										
YTD	0	2	2	0	66.5	11	93	94,103,832	282,907	1210
GOAL	0	0	6	2	75	12	100%	280,000,000	840,000	5000

	lbs. Plastic paper aluminum scrap metal Recycled	Underground & Surface Gal/Hours Operated	Powder Factor lbs/ton	Lbs. of explosives Used	Gallons of Rock Drill Oil Used	Number of Tires recycled	Used Oil Quality	Generators Fuel Consumed	Generator hours Operated	Power Produced (hours operated ^ kWh)	Gallons /kWh
Jan-08	8000	NA	1.96	7380.00	NA	12	On spec	78886	1512	1134000	0.070
Feb-08	0	NA	1.70	5075.00	NA	5	NA	69074	1293	989750	0.071
Mar-08	0	7.27	1.37	3331.25	NA	9	NA	78864	1389	1041750	0.076
Apr-08	13500	5.53	1.47	8214.75	25	4	NA	75193	1177	882750	0.085
May-08											
Jun-08											
Jul-08											
Aug-08											
Sep-08											
Oct-08											
Nov-08											
Dec-08											
YTD	21500	6.40	1.62	24001.00	25	30	On spec	301997	5371	1007082.5	0.075
GOAL	60000	6.50	1.5	78000	215	90	On spec	690000	12000	3000000	0.07

\*used oil quality is for the oil we recycled offsite

Environmental Key Performance Indicators are a monthly monitoring system which provide a way to identify areas for improvement.

Such as: diesel consumption, training hours, materials recycled etc....

# Environmental Committee

## Meets Weekly to Discuss

- Compliance and Permitting Issues
- Environmental Management System
- Training
- Key Performance Indicators
- Risk Assessments
- Design and Operating Plans
- Drills and Table Top Exercises
- Incidents of Noncompliance
- Recognition
- Permit and Plan Review





# Water Treatment Plant

## Operators

- Rick Saulnier – Supervisor
- Larry Akaran – Operator
- Clark Mondich – Operator
- Charlie Spud - Operator
- Brent McEwen – Operator
- Don Martin – Operator
- John Ashenfelter – Operator
- Jesse Daniels – Operator
- Phil Walker – Operator
- Curt Jones - Operator





# Water Treatment Plant

- Preventive Maintenance Program
- Warehouse Inventory
- New Filter Press
- Multimedia Filter Media Rebuild
- Operating Control System Improvements
  - Reagent Addition Automation
  - Backwash Improvements
  - Enhanced Monitoring and Reporting
- New Control Room and Laboratory
- 3 Person, 3 Crew Rotation and Schedule
- Operating and Maintenance Manual
- Operating Guidelines and Training



# Storm Water BMPs

✓ BMPs (Best Management Practices) both structural and non-structural devices/methods are utilized to prevent sediment migration into water.

✓ Kensington has over 30 different types of approved BMPs.



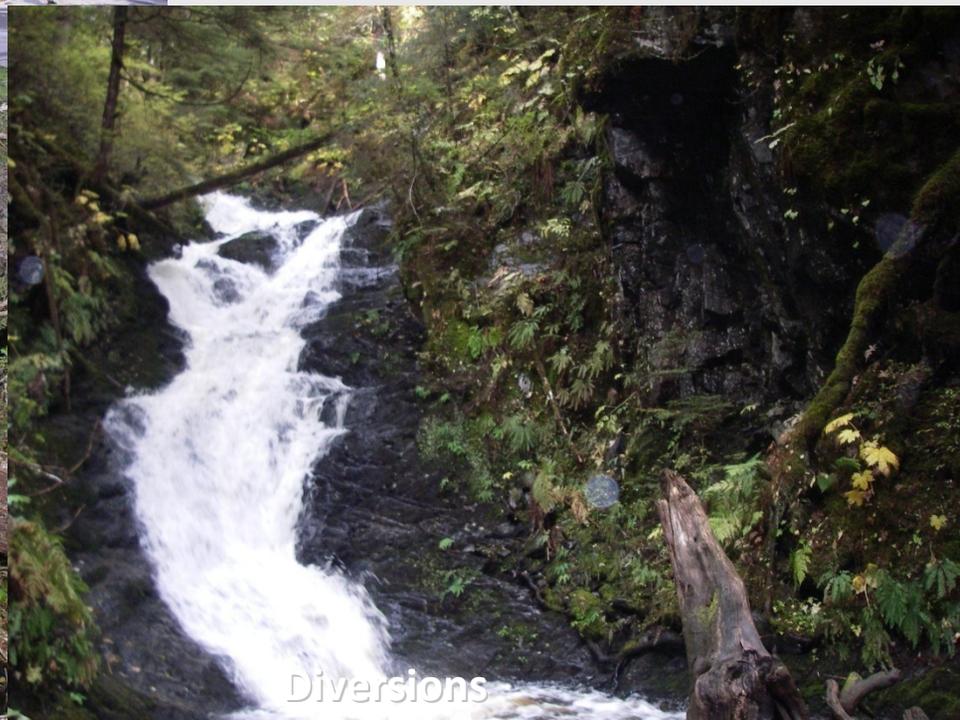
Silt Fences



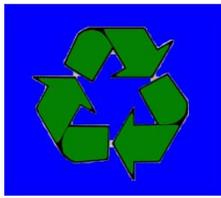
Sediment Basins



Culverts



Diversions



# Recycling Program



- ✓ Plastic Bottles
- ✓ Aluminum Cans
- ✓ Office Paper
- ✓ Scrap Metal
- ✓ Batteries
- ✓ Printer Cartridges
- ✓ Coming Soon "Cardboard"



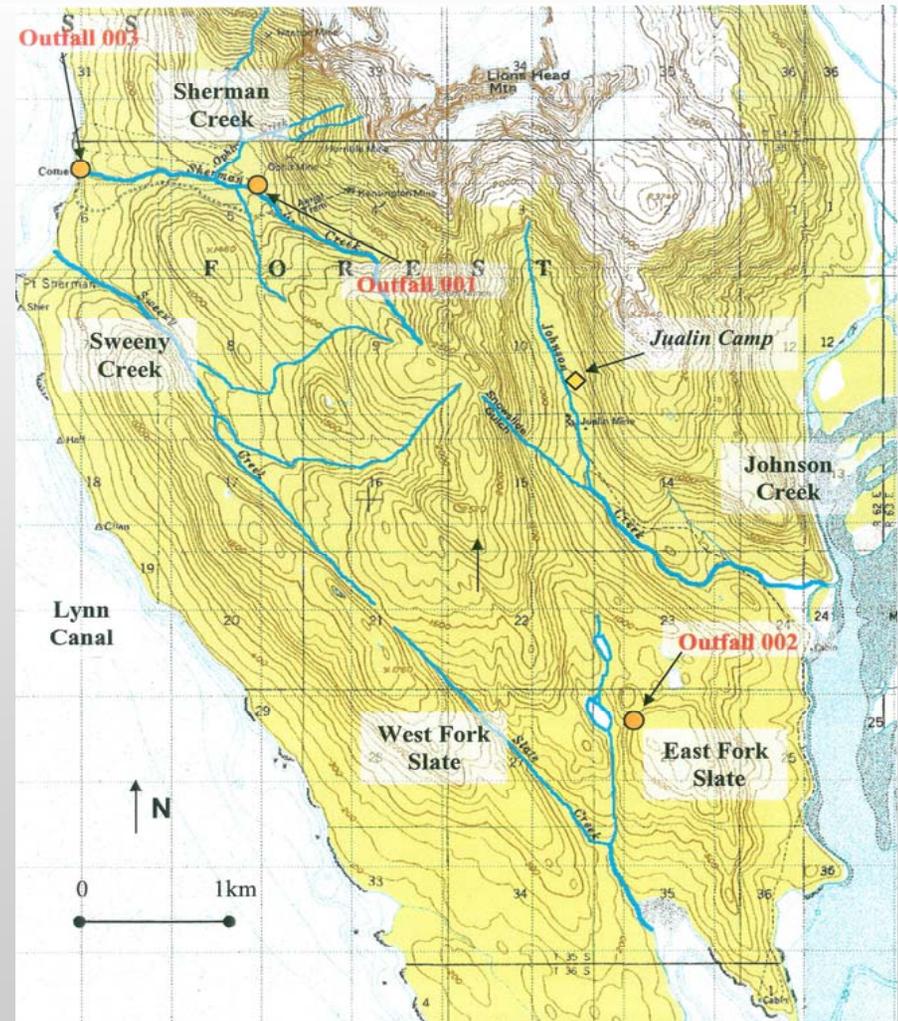
# 2007 Water Quality





# Water Quality- Monitoring Locations

- Outfalls
  - 001
  - 002
  - 003
- Receiving Waters
  - Sherman Creek
  - Slate Creek
  - Johnson Creek





# Water Quality- QA/QC Summary

- Field Blind Duplicate Comparison
- Review of Laboratory Reports
- Review of Field Data Sheets
- Overall Completeness Review
- Variance Analysis Reports





# Water Quality- QA/QC Program

## Field Blind Duplicates

- Total collected = 34
- Relative Percent Difference

## Data Review

- Laboratory Reports
- Field Data Sheets

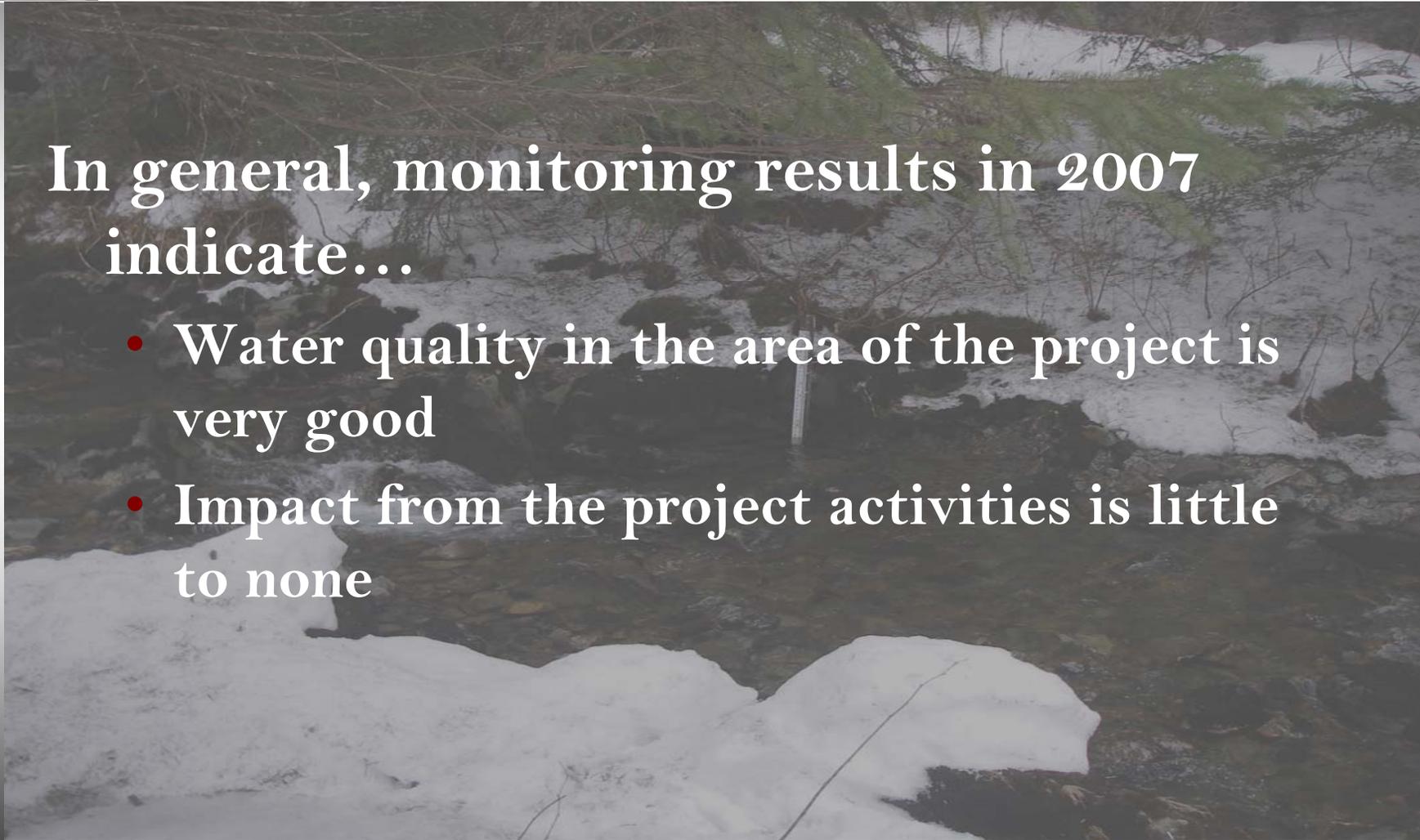
	Stn.Code	Duplicate	Sample				
		CAK-099	001 Effluent				
	Collect						
	Date	2/28/2007	2/28/2007	Mean	Difference	% Difference	≥20% ?
Turbidity Lab	NTU	0.59	0.34	0.465	0.25	53.8	Yes
Ammonia as N	mg/L	2.7	2.8	2.75	0.1	3.6	
Nitrate as N	mg/L	5.57	5.0	5.305	0.53	10.0	
Hardness, Total	mg/L	311	307	309	4	1.3	
Sulfate	mg/L	279	272	275.5	7	2.5	
TR Aluminum	ug/L	10	9	9.5	1	10.5	
TR Arsenic	ug/L	2.5	2.5	2.5	0	0.0	
TR Cadmium	ug/L	0.1	0.1	0.1	0	0.0	
TR Copper	ug/L	1	1	1	0	0.0	
TR Lead	ug/L	0.16	0.16	0.16	0	0.0	
TR Manganese	ug/L	50	51	50.5	1	2.0	
TR Nickel	ug/L	7	7	7	0	0.0	
TR Selenium	ug/L	1	1	1	0	0.0	
TR Silver	ug/L	0.1	0.1	0.1	0	0.0	
TR Zinc	ug/L	7.4000	9.9000	8.65	2.5	28.9	Yes
Mercury Total	ug/L	0.0011	0.001	0.00105	0.0001	9.5	
Total Dissolved Solids	mg/L	530	550	540	20	3.7	



# Water Quality- Receiving Waters

In general, monitoring results in 2007 indicate...

- Water quality in the area of the project is very good
- Impact from the project activities is little to none





# Water Quality- Receiving Waters

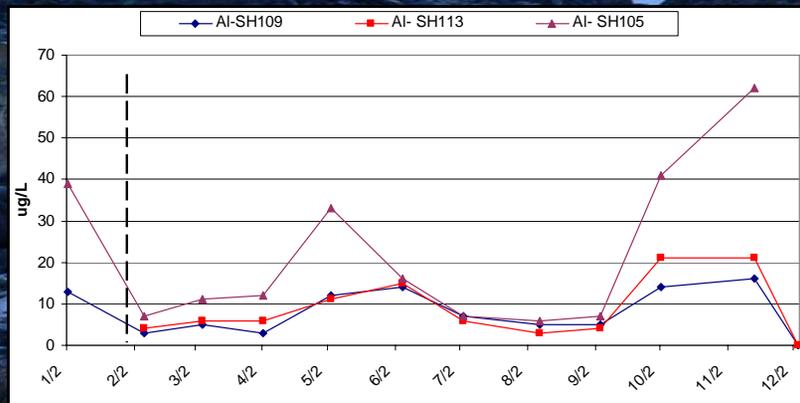
## Area receiving waters generally...

- Are absent of the majority of dissolved metals
- Have highly variable levels of turbidity
- Have mildly basic pH
- Are near oxygen saturation
- Are soft (in most cases <100ppm hardness)
- Contain low levels of sulfate (<10ppm, excluding Sherman Creek)

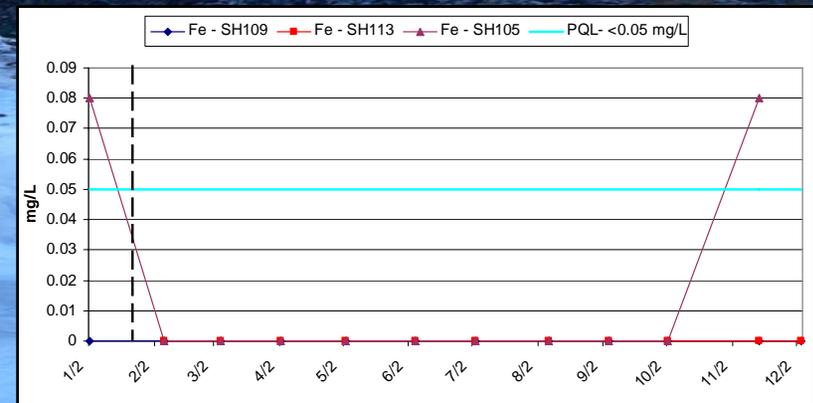


# Water Quality – Sherman Creek

## DISSOLVED ALUMINUM *Sherman Creek*



## DISSOLVED IRON *Sherman Creek*

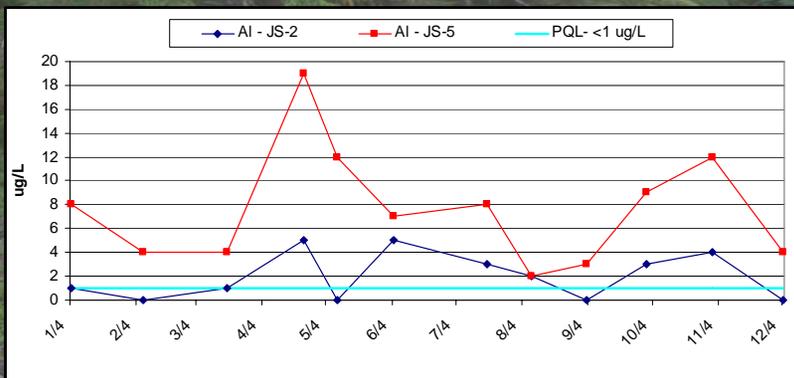


Figures from Volume 2: Water Quality 2007 in the NPDES Annual Report

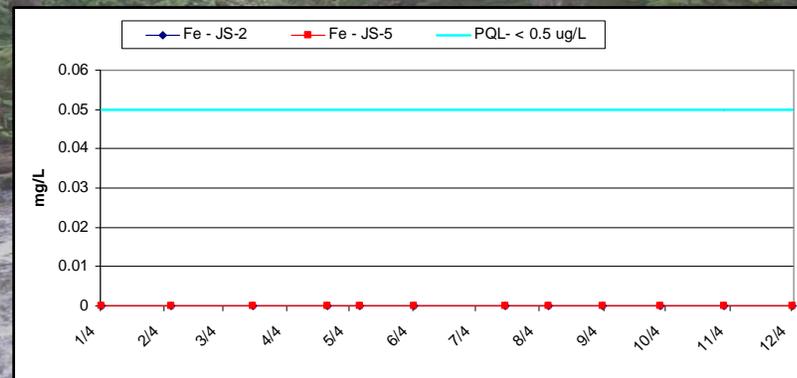


# Water Quality – Johnson Creek

## DISSOLVED ALUMINUM *Johnson Creek*



## DISSOLVED IRON *Johnson Creek*

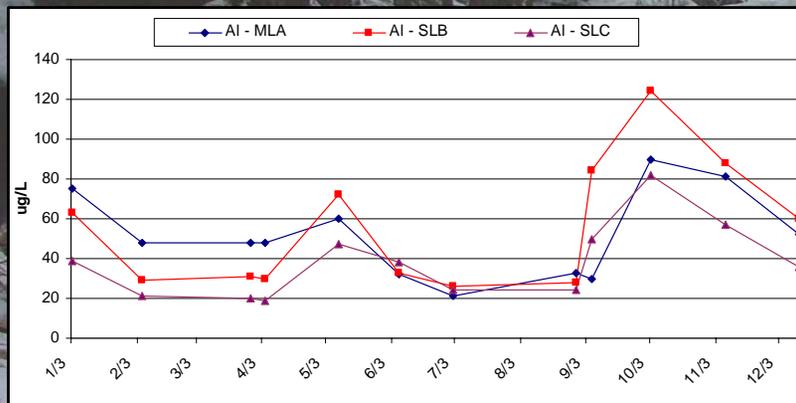


Figures from Volume 2: Water Quality 2007 in the NPDES Annual Report

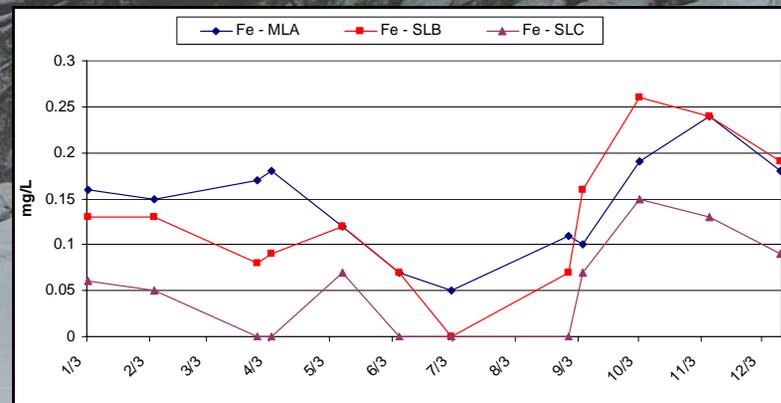


# Water Quality – Slate Creek

## DISSOLVED ALUMINUM *Slate Creek*



## DISSOLVED IRON *Slate Creek*



Figures from Volume 2: Water Quality 2007 in the NPDES Annual Report



# Water Quality- Outfall 001

## Mine Water Treatment Plant

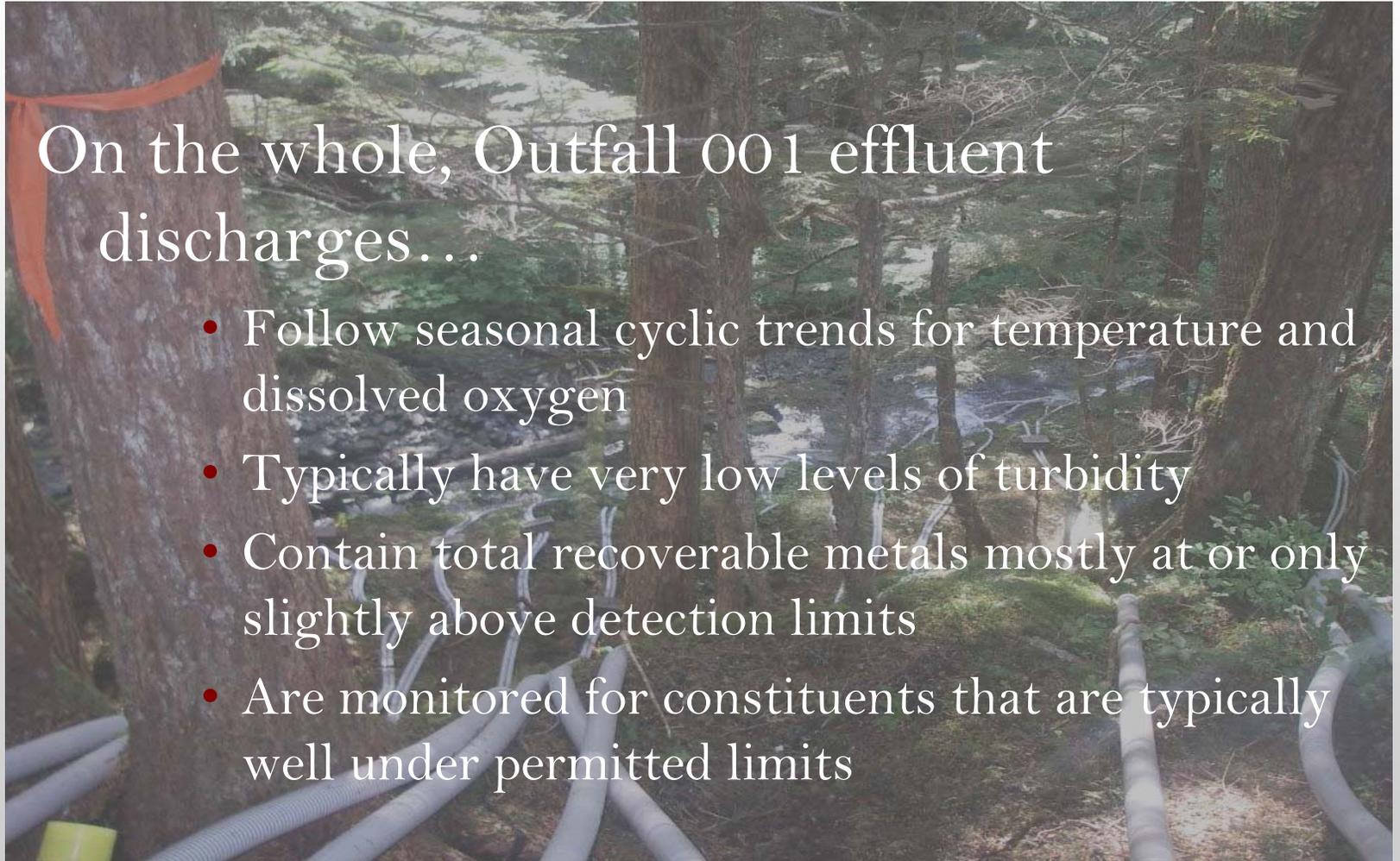




# Water Quality- Outfall 001

On the whole, Outfall 001 effluent discharges...

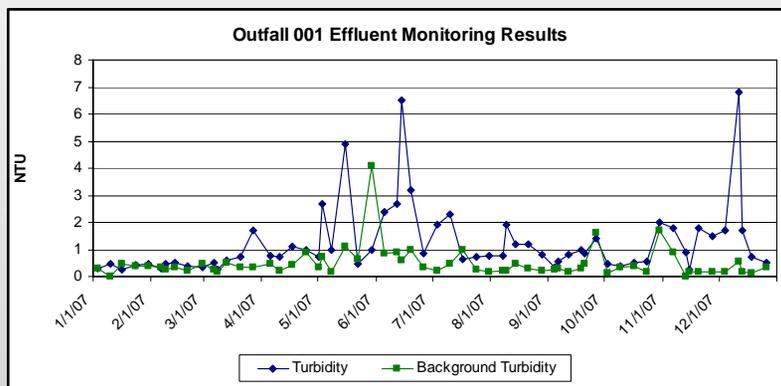
- Follow seasonal cyclic trends for temperature and dissolved oxygen
- Typically have very low levels of turbidity
- Contain total recoverable metals mostly at or only slightly above detection limits
- Are monitored for constituents that are typically well under permitted limits



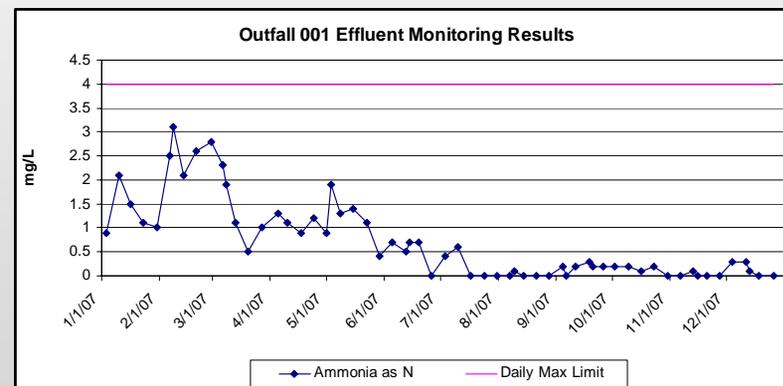


# Water Quality – Outfall 001

## TURBIDITY *Background and Effluent*



## AMMONIA as N *Effluent*

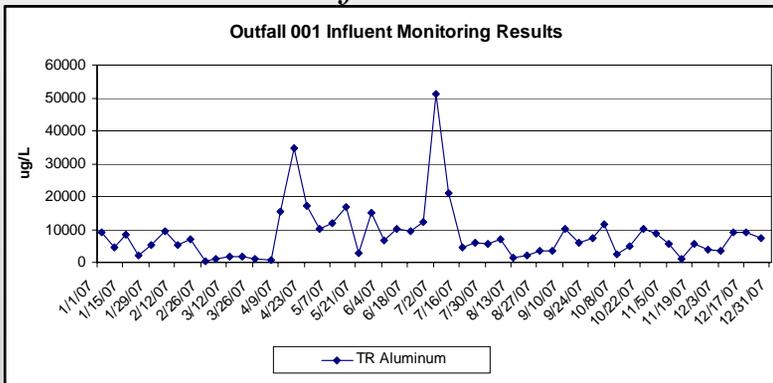


Figures from Volume 2: Water Quality 2007 in the NPDES Annual Report

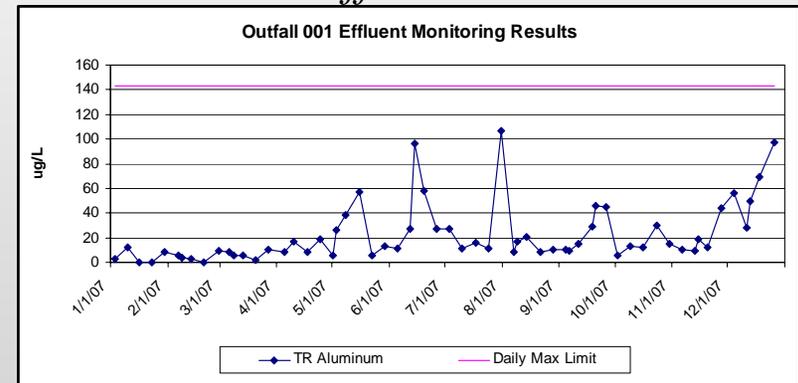


# Water Quality – Outfall 001

## TOTAL RECOVERABLE ALUMINUM *Influent*



## TOTAL RECOVERABLE ALUMINUM *Effluent*



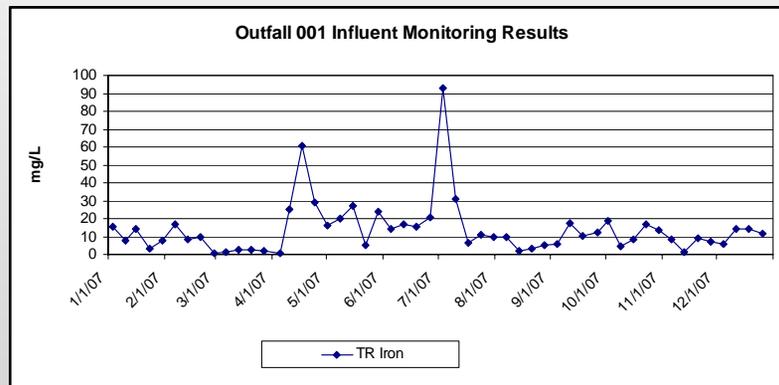
Average % Removal = 99.5%

Figures from Volume 2: Water Quality 2007 in the NPDES Annual Report

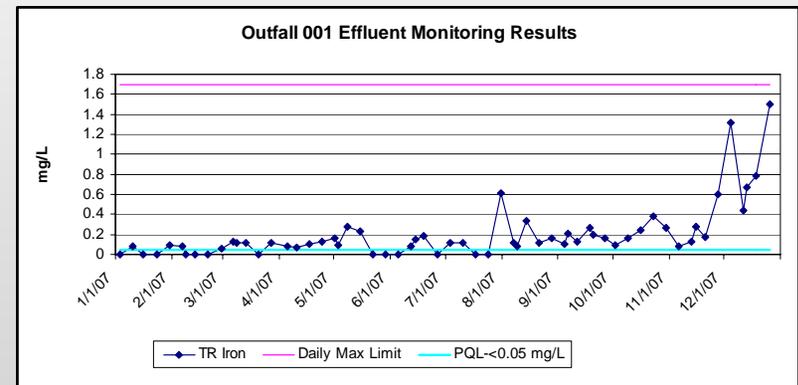


# Water Quality – Outfall 001

## TOTAL RECOVERABLE IRON *Influent*



## TOTAL RECOVERABLE IRON *Effluent*



Figures from Volume 2: Water Quality 2007 in the NPDES Annual Report



## Water Quality – Outfall 002

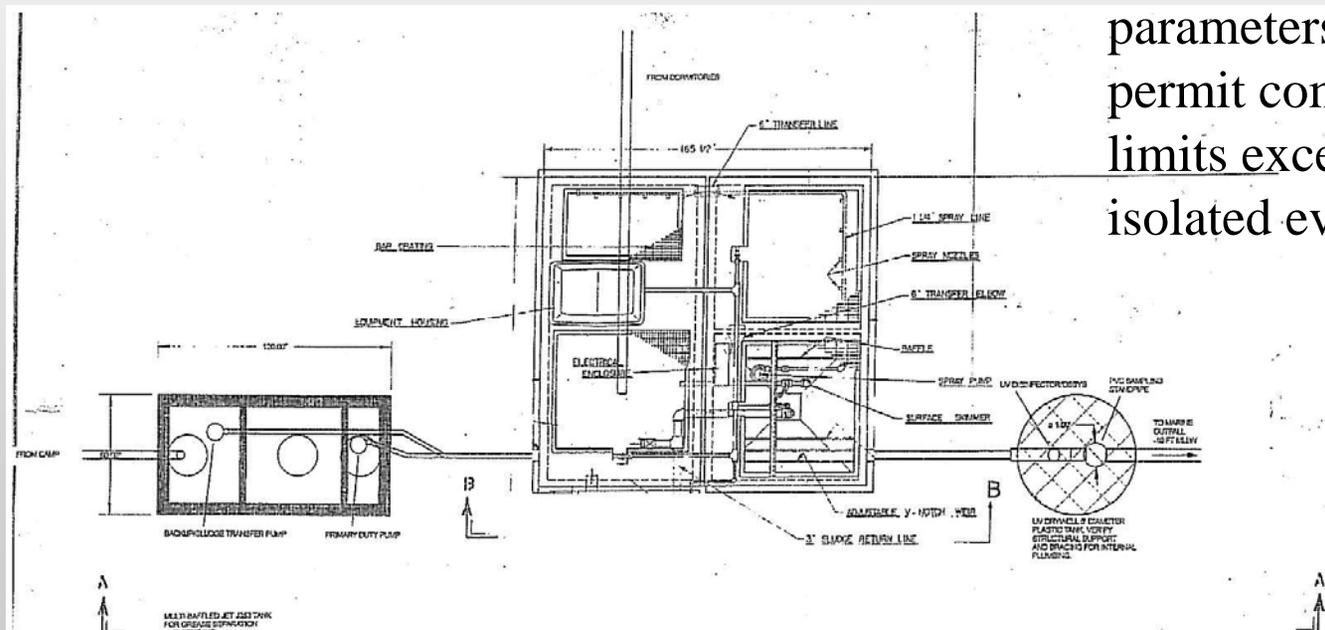
- Tailings Storage Facility has not been constructed
- Water Treatment Facility has not been constructed



# Water Quality – Outfall 003

## Domestic Wastewater Treatment Plant

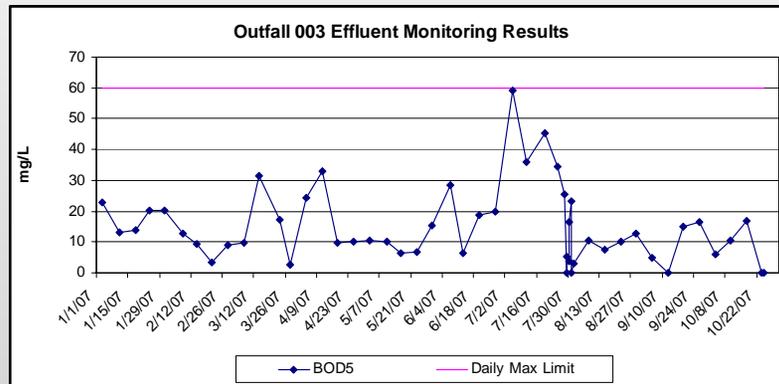
- Operated during 2007 until October 29th
- All monitoring parameters were within permit compliance limits except for a few isolated events



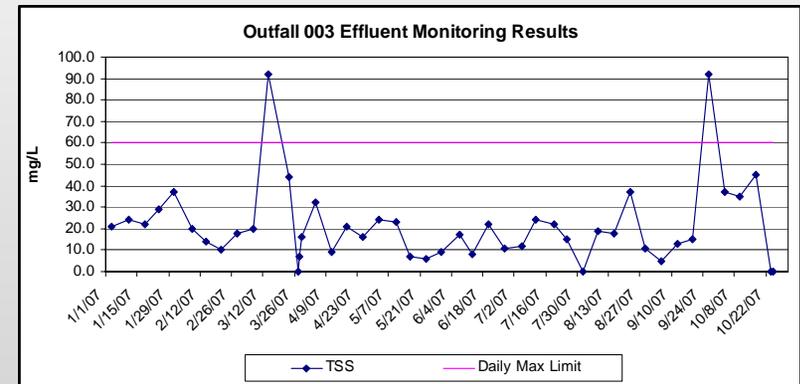


# Water Quality – Outfall 003

## BIOLOGICAL OXYGEN DEMAND *Effluent*



## TOTAL SUSPENDED SOLIDS *Effluent*



*Note: Variances in effluent data may reflect subtle changes to treatment techniques or changes in camp population*

# Water Quality- Field Pictures





# 2007 AQUATIC RESOURCES MONITORING

- ❖ Annual monitoring includes toxicity testing of stream sediment, benthic invertebrate surveys, resident fish population estimates, counts of outmigrating salmon fry and returning adult salmon, analysis of spawning gravel quality, and aquatic vegetation surveys.
- ❖ River drainages monitored include Johnson Creek, Slate Creek and Sherman Creek.



Brown bear fishing at Sherman Creek



Location of monitored streams



# SEDIMENT AND INVERTEBRATE MONITORING

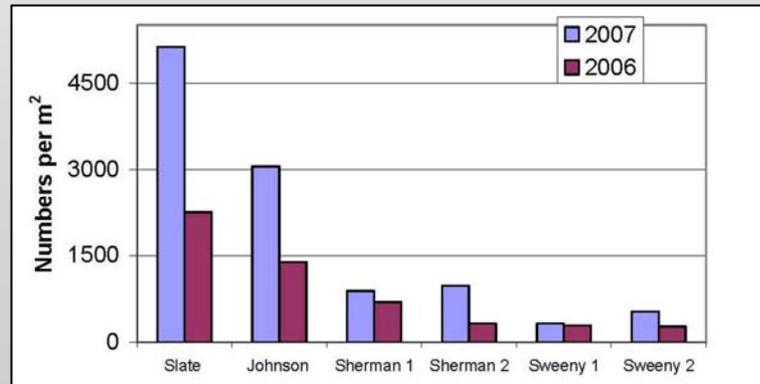
- ❖ In August stream sediment samples were collected from lower and middle Sherman Creek, lower Slate Creek and lower Johnson Creek.
- ❖ Results for Biological toxicity testing conducted on survival and growth of the amphipod, and the midge larvae showed survival of these organisms was similar to or higher than survival in previous years. Growth responses were similar to those in 2006 for all sites tested.

## AQUATIC INVERTEBRATE COLLECTION

- ❖ Benthic invertebrates were collected from established sampling sites on Johnson, Slate, Sherman and Sweeny Creeks in April and May.
- ❖ Invertebrate densities in 2007 were more than double 2006 figures at Slate and Johnson Creeks and Reach 2 of Sherman Creek, perhaps due to persistent snow cover over the winter that insulated the streambed from the cold.



Samples collected for sediment monitoring



Comparison of invertebrate density

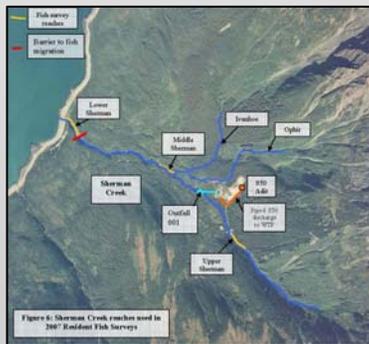


Surber sampler used to collect benthic invertebrates.



# RESIDENT FISH POPULATION

- ❖ In August and July of 2007, population surveys of resident fish, predominantly Dolly Varden and cutthroat trout, were conducted in lower, middle and upper reaches of Sherman, Johnson and Slate Creeks.
- ❖ Numbers of Dolly Varden were higher in 2007 than 2006 for Middle and Upper Sherman and Upper Johnson, while similar numbers were found each year for Middle Johnson and Middle Slate. Upper Slate showed higher numbers in 2006 than 2005 or 2007 and Dolly Varden numbers were higher in Lower Sherman and Lower Johnson in 2005 than in 2006 or 2007, possibly due to a large flood event in November of 2005 and fish moving out of these lower reaches via the stream mouth in response to changing stream flows or food availability.
- ❖ Comparison with previous years did not reveal many significant changes in “mean condition factor”, an index based on the ratio of fish length to weight.



**Sherman Creek reaches used in the resident fish surveys**



**A Dolly Varden captured in Middle Sherman Creek**

**Johnson and Slate Creek reaches used in the resident fish survey**



**Figure 7: Johnson and Slate Creek reaches used in 2007 Resident Fish Survey**



# ANADROMOUS FISH MONITORING – OUTMIGRATING FRY

- ❖ Fyke nets with adjustable wings were used to trap outmigrating pink salmon fry at each creek. Each net funneled into a live box with a partition allowing the fry to move into a compartment of lower flow. Nets were checked daily and mark-recapture trials with Bismark brown dye were conducted every 3 – 4 days. Counts began on April 10 at Johnson and Slate Creeks, on April 12 at Sherman Creek and were continued until early June.
- ❖ Overall freshwater survival of pink salmon from egg to alevin, even in highly productive streams, commonly reaches only 10-20%. The egg to fry survival rate at Sherman and Johnson Creek were between 18 and 25%, while at Slate the egg to fry survival rate was between 20 and 27%.



Fyke net at Slate Creek



Fyke net with wings and live holding box at Johnson Creek



A partition in the holding box helps maintain moderate flow inside

Pink salmon fry marked with Bismark Brown dye



Stream	Adjusted estimate of outmigrating fry	Estimated number of adult females	Number of fry per female	Egg to fry survival rate
Sherman	184,150 <sup>a</sup>	500	368	18-25%
Johnson	1,221,690 <sup>a</sup>	3267	374	18-25%
Slate	800,000 <sup>a,b</sup>	2000 <sup>b</sup>	400 <sup>b</sup>	20-27%

Estimates adjusted for numbers hatching downstream of trap(a) and for realistic egg to fry survival rates(b)

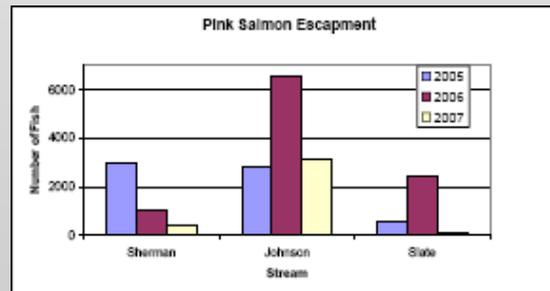


# ANADROMOUS FISH MONITORING – ADULT SALMON COUNTS

- ❖ Adult pink salmon were counted weekly in the anadromous reaches of Sherman, Johnson and Slate Creeks between July 26 and September 27, with the number of dead and live salmon recorded either through a ground based or aerial survey.
- ❖ The data was used to determine the abundance and distribution of returning adult salmon at each stream, as well as the timing of the spawning run.
- ❖ In South-East Alaska, even-year pink salmon populations are generally larger than odd-year populations due to their 2 year life cycle. More than twice as many pink salmon were estimated to have returned to Johnson Creek in 2006 than 2005 or 2007, while returns were much higher in Slate Creek in 2006. Sherman Creek, however, had only around one third of the escapement as the previous year. Escapement at Sherman and Slate Creeks in 2007 appeared to be affected by low flows. Numbers returning to Sherman Creek are affected by the number of salmon that negotiate the falls near the mouth of the creek, which in turn depends on stream flow. Returns in 2006 may have been affected by the size of the stock in 2004, which was also a dry summer.



Adult pink salmon in Sherman Creek



Estimated pink salmon escapement for 2005 to 2007



Pink salmon observed in Johnson Creek by helicopter



# ANALYSIS OF SPAWNING SUBSTRATE AND AQUATIC VEGETATION

- ❖ Core samples of spawning gravel were collected from each of two reaches in Sherman Creek, Slate Creek and Johnson Creek in July, 2007 from potential spawning sites using a McNeil sampler.
- ❖ Sediment texture affects salmonid embryo survival by influencing the pore size and permeability of the gravel. Oxygen transport to incubating embryos and the movement of alevins within the gravel is effected. The coarser the material the higher the survival of salmonid embryos.
- ❖ The only significant difference between years was for both reaches of Sherman, with the geometric means greater in 2007.



**Inserting the McNeil sampler into the streambed at Sherman Creek**

## **AQUATIC VEGETATION**

- ❖ A visual survey of instream vegetation was carried out in the lower and middle reaches of Sherman, Johnson, and Slate Creeks in July and August during resident fish surveys.
- ❖ Johnson and Slate Creeks have relatively bare substrate with very little aquatic vegetation. Periodic high flows in these steep, coastal streams are likely to disturb the substrate and restrict aquatic plant growth. There was very little aquatic vegetation in Sherman Creek, with only larger, more stable substrate having a thin algal covering.



**Lower Johnson Creek with small substrate and no aquatic vegetation**



**Lower Sherman Creek. Aquatic vegetation is scarce**



**Lower Slate Creek with negligible aquatic vegetation**

# Questions

