

STATE of ALASKA
DEPARTMENT of NATURAL
RESOURCES

*Large Mine Permitting
in Alaska*

**Strategic and Critical Minerals
Summit**

November 30, 2012 ■ Fairbanks, Alaska

Tom Crafford

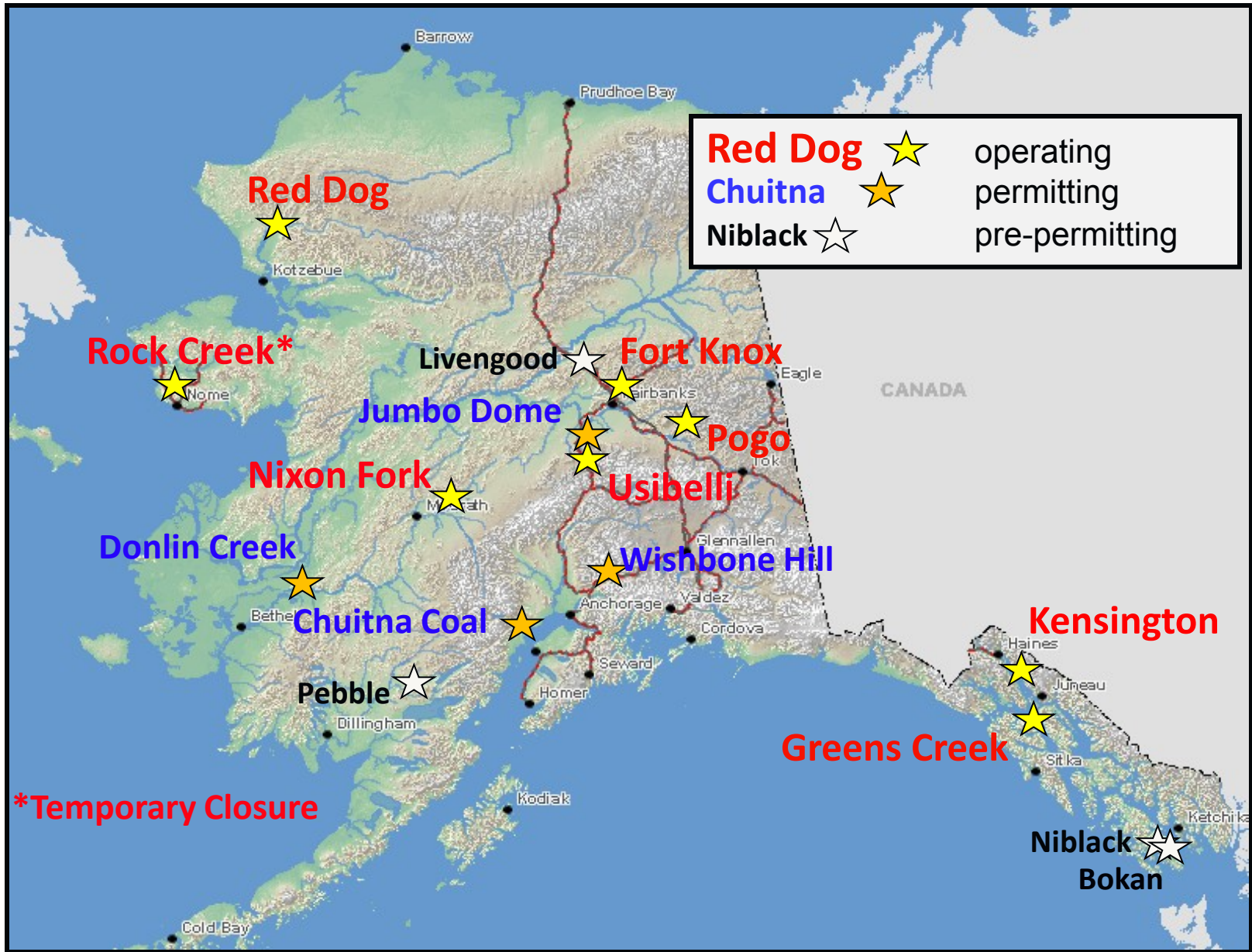
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Fort Knox Mine

Large mining projects in Alaska



MINES CAN BE PERMITTED IN ALASKA

Modern Hardrock Mining Began in Alaska in 1989 with the opening of the Red Dog Pb-Zn-Ag Mine (Nana/Teck) in NW Alaska and the Greens Creek Ag-Au-Zn-Pb Mine (Hecla) in SE Alaska, followed by:

- Fort Knox Gold Mine (Kinross) – 1996
- Pogo Gold Mine (Sumitomo) – 2006
- Kensington Gold Mine (Coeur) – 2010
- Nixon Fork Gold Mine (Fire River Gold) – reopened 2011



Red Dog Mine
(Nana/Teck)

No Single Permit to Mine: there are many permits & authorizations

Mine permitting is a mixture of State, Federal and, potentially, local permitting requirements. Each project is unique.

STATE

- **Plan of Operations (DNR)**
- **Reclamation and Bonding (DNR)**
- **Waste Management Permits and Bonding (ADEC)**
- **CWA Section 402 APDES Water Discharge Permit**
- **Certification of ACOE Permits (ADEC)**
- **Sewage Treatment System Approval (ADEC)**
- **Air Quality Permits (ADEC)**
- **Fish Habitat and Fishway Permits (ADF&G)**
- **Water Rights (DNR)**
- **Right of Way/Access (DNR/DOT)**
- **Tidelands Leases (DNR)**
- **Dam Safety Certification (DNR)**
- **Cultural Resource Protection (DNR)**
- **Monitoring Plan (Surface/Groundwater/Wildlife) (DNR/DEC)**

FEDERAL

- **US EPA Air Quality Permit review**
- **US EPA Safe Drinking Water Act (UIC Permit)**
- **US ACOE Section 404 Dredge and Fill Permit**
- **US ACOE Section 10 Rivers and Harbors Act**
- **US ACOE Section 106 Historical and Cultural Resources Protection**
- **NMFS Threatened and Endangered Species Act Consultation**
- **NMFS Marine Mammal Protection Act**
- **NMFS Essential Fish Habitat**
- **NMFS Fish and Wildlife Coordination Act**
- **USFWS Threatened and Endangered Species Act Consultation**
- **USFWS Bald Eagle Protection Act Clearance**
- **USFWS Migratory Bird Protection**
- **USFWS Fish and Wildlife Coordination Act**

These are only some of the permits required

STATE/FEDERAL MINE PERMITTING AGENCIES

STATE

- Large Mine Permitting Team (LMPT)

Departments

- **Natural Resources (ADNR)**
 - Office of Project Management and Permitting
 - Division of Mining, Land & Water
- **Environmental Conservation (ADEC)**
 - Division of Water
 - Division of Air Quality
 - Division of Environmental Health
- **Fish and Game (ADF&G)**
 - Habitat Division
- **Health and Social Services (ADHSS)**
- **Law (ADOL)**
- **Commerce, Community and Economic Development (ADCED)**
- **Transportation & Public Facilities (ADOTPF)**

FEDERAL

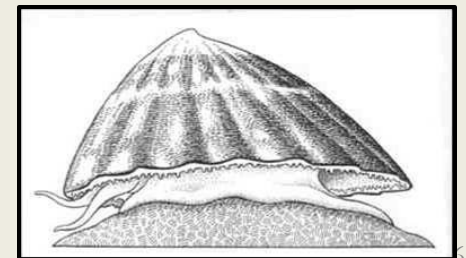
- **US Army Corps of Engineers**
- **US Environmental Protection Agency**
- **US Fish and Wildlife Service**
- **NOAA-National Marine Fisheries Service**
- **Federal Land Managers: Bureau of Land Management/U.S. Forest Service/U.S. Fish & Wildlife Service/U.S. Park Service**



Kensington Mine (Coeur)

STATE OF ALASKA LARGE MINE PERMITTING TEAM (LMPT)

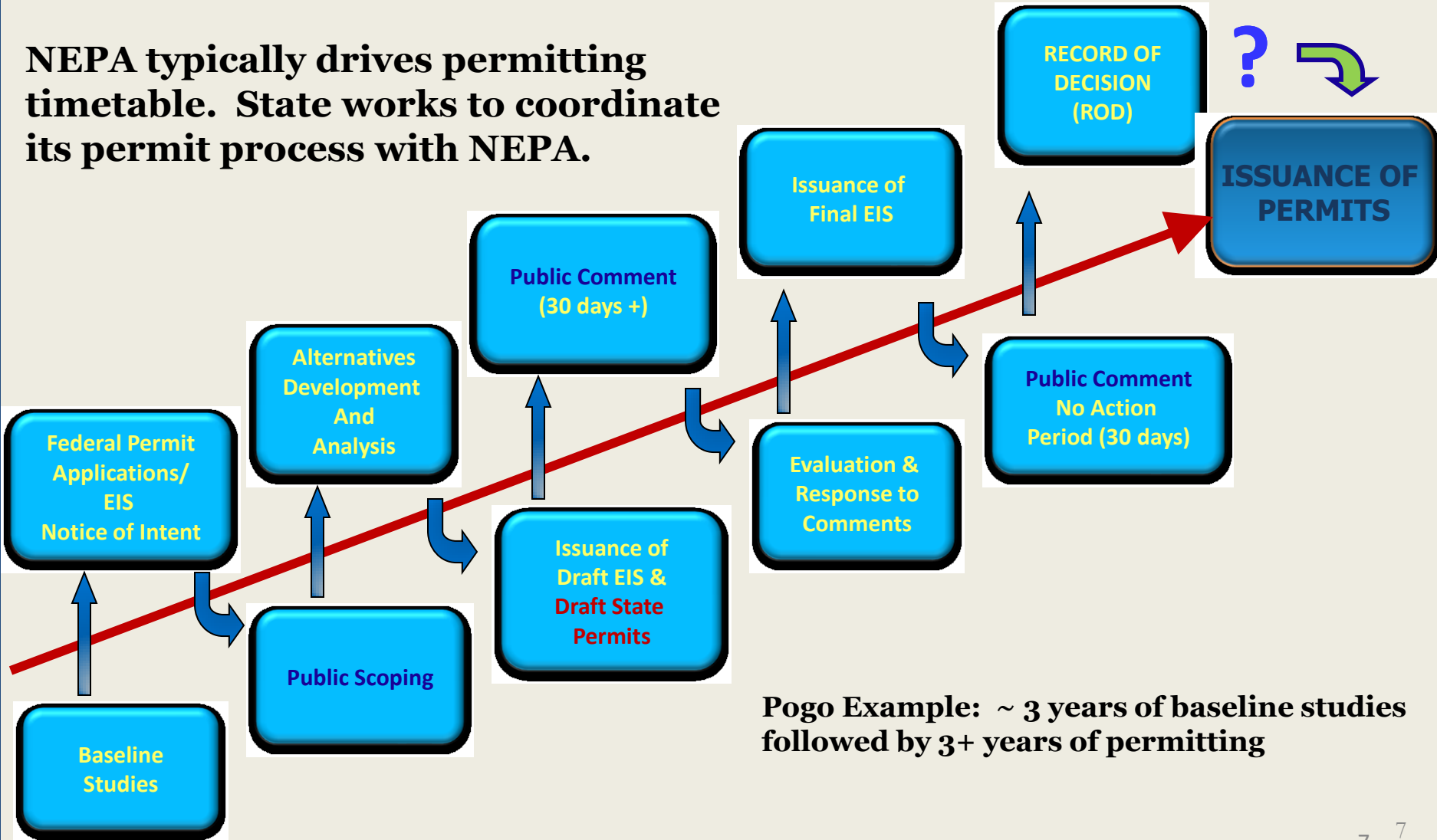
- State employs a coordinated, multi-agency team approach to mine permitting
- Permitting Coordination by OPMP under ADNR's authority as Lead State agency for mining projects – (AS 27.05.010 & AS 38.05.020(b)(9))
- Permitting Coordination is voluntary, at applicant's expense – No guarantee of permitting outcome
- Funding MOU with establishment of yearly budgets for participation of state agencies
- OPMP Project Coordinator is Primary Point of Contact
 - Seeks efficiencies, works to eliminate needless duplication, coordinates notice & comment opportunities
 - Is State spokesperson for the project
 - Coordinates with Federal Agencies



Our mascot

NEPA PROCESS FOR EIS

NEPA typically drives permitting timetable. State works to coordinate its permit process with NEPA.



Pogo Example: ~ 3 years of baseline studies followed by 3+ years of permitting

BASELINE STUDIES

State recommends early consultation with LMPT and Federal Agencies to help assure correct baseline information is collected.

- **Surface Water Quality & Quantity**
- **Groundwater Quality & Quantity**
- **Aquatic Life (Includes Marine & Freshwater Fish, Invertebrates, etc.)**
- **Traditional Ecological Knowledge**
- **Health Impact Assessment**
- **Wildlife**
- **Wetlands**
- **Socioeconomics**
- **Subsistence**
- **Cultural Resources**
- **Air Quality**
- **Meteorology**
- **Visual Resources**
- **Noise**

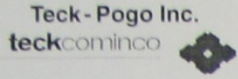
Greens Creek Mine (Hecla)



MONITORING PLANS & ENVIRONMENTAL AUDITS

- Air Quality, Water Quality, Fish & Wildlife are monitored according to approved plan
- Environmental Audits are conducted on 5 year schedule tied to re-crafting & reissuance of permits
 - All environmental systems audited
 - Audits evaluate Agencies as well as operations
 - Audits by 3rd party experts
- Financial Assurances revisited and recalculated based on Audit results

FINANCIAL ASSURANCES ARE BASED ON A DETAILED ENGINEERING ANALYSIS



Reclamation & Closure Plan Update

Table F.1: Demolition Hourly Labor Wage Rates

Description	General Demolition Crew	Mechanical Crew	Heavy Equipment Operator	Electrical Crew	Foreman	Laborer
Base Hourly Rate - straight time	\$26.55	\$26.04	\$27.77	\$30.83	\$30.55	\$23.43
Overtime for 50 hour week	10.0%	\$2.66	\$2.60	\$2.78	\$3.08	\$3.06
Adjusted Hourly Base Rate	\$29.21	\$28.64	\$30.55	\$33.91	\$33.61	\$25.77
Social Liability				\$7.36	\$7.29	\$5.59
Total				\$41.27	\$40.90	\$31.37



Pogo Mine (Sumitomo – Sally McLeod)

Table F.2: Hourly Equipment Rates (\$)

Equipment	Equipment Lease Rate	Maintenance & Fuel	Support & Transport	Total
Excavator 330	31.00	52.00	16.60	100.00
Excavator 375L	48.00	89.00	27.40	164.00
Excavator 235	31.00	52.00		
Dozer D10R	73.00	78.00		
Dozer D8R	42.00	51.00		
D6R Dozer	30.00	36.00		
Grader 16G	34.00	57.00		
Water Truck	20.00	25.00		
Tamrock Drill	48.00	98.00		
Shotcrete Machine	20.00	40.00		
Picker Truck	30.00	30.00		
Re-seeding	15.00	20.00		
Shear on 375L	65.00	160.00		
FE Loader 950	30.00	65.00		
FE Loader 980G	45.00	95.00		
FE Loader 992C	62.00	138.00		
Dump Truck 14Cy	25.00	30.00		
Self Load Flat Bed	50.00	40.00		
Low Bed Truck	35.00	35.00		
Dump Truck 17cy	31.00	40.00		
Crane Truck 20T	45.00	65.00		
Crane Truck 50T	70.00	100.00		
Track Skidder 528	50.00	70.00		



POGO: RECLAMATION COST ESTIMATE (SEPTEMBER 2003)

Project Number: U419F
Currency: USD 4Q2002

Description	Qty	Unit	Total Direct Hr	Total Direct Lab Cost	Unit Mat	Total Mat Cost	Unit Sub	Total Sub Cost	Unit Equip	Total Equip Cost	Total Cost
Phase I: Post-Construction			4,988	287,345		13,213		26,400		156,977	483,935
Phase II: Reclamation Concurrent with Mining											
A-07 WELLS	115			6,294		1,200		0		0	7,494
A-09 GRAVEL PADS	363			21,312		900		0		25,013	47,224
A-12 ROCK PILES	2,928			165,891		0		0		197,786	363,677
A-13 LINERS UNDER ROCK PILES	629			35,340		0		0		41,040	76,381
A-14 PADS UNDER ROCK PILES	340			19,996		870		0		23,860	44,726
A-15 EXPLOSIVES STORAGE	406			23,515		0		0		10,904	34,418
R-01 SURFACE BOREHOLES	2,000			114,060		50,000		0		31,260	195,320
S-00 WATER QUALITY ASSURANCE	0			0		0		10,000		0	10,000
Phase II: Reclamation Concurrent with Mining			6,781	386,408		52,970		10,000		329,862	779,241

LMPT INVOLVEMENT

- LMPT is involved throughout, i.e., from pre-permitting to post-closure
 - Pre-permitting baseline study plans
 - Permit modifications & renewals
 - Operational Monitoring & Inspections
 - Post Closure Monitoring & Inspections
- LMPT regularly meets to review status and permitting needs for all major mining projects
- LMPT includes wide variety of experienced, technical professionals (engineers, hydrologists, geologists, chemists, etc.)
- LMPT contracts with technical experts when additional expertise is required

DESIGN FOR CLOSURE

- Mines must have an approved Reclamation and Closure Plan to prior to construction
- Post-closure monitoring standard is 30 years (declining schedule)
- Financial Assurances required for post-closure activities – Trust Fund mechanism is available



Nixon Fork Mine
(Fire River Gold)

QUESTIONS?

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or visit

<http://dnr.alaska.gov/mlw/mining/largemine/>