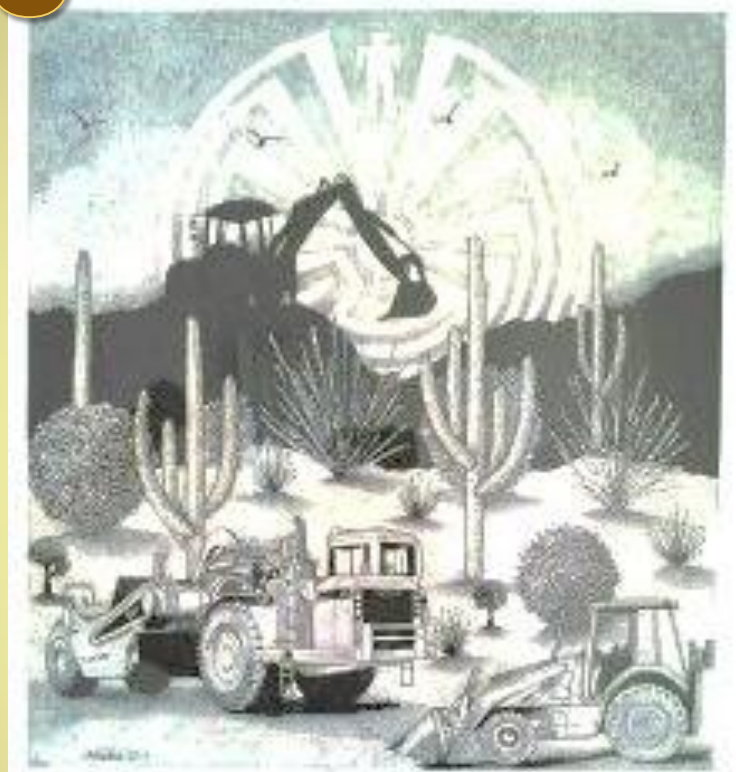


Mining on Tribal Lands



**Tribal Lands Environmental Forum
August 2016**

*Laurie Suter, Mineral Resources Administrator
Tohono O'odham Nation Department of Natural Resources*

Class Outline:

- **Mining on Tohono O'odham Tribal Lands**
- **Mining History**
- **Basic Mining Concepts**
- **Life Cycle Of A Mine**
- **Potential Positive Tribal Gains**
- **“Multi-media” Environmental Concerns**
- **Sovereign Involvement**
- **Discussion**

Great Spirit, let every rock be my teacher

"All the stones that are around here, each one has a language of its own. Even the earth has a song."-- Wallace Black Elk, LAKOTA

Elder's Meditation

To believe that every tree, plant, and insect can talk takes an open mind. Go pick up a rock and listen to your thoughts. After a while, put that rock down and pick up another rock. Your thoughts will change. These are the voices and wisdom of the Stone People. Each one has different wisdom and they are willing to share their wisdom with you. Many of the Stone People are very old and very wise.

ACTIVITY!



Class Outline:

- **Mining on Tohono O'odham
Nation Tribal Lands**

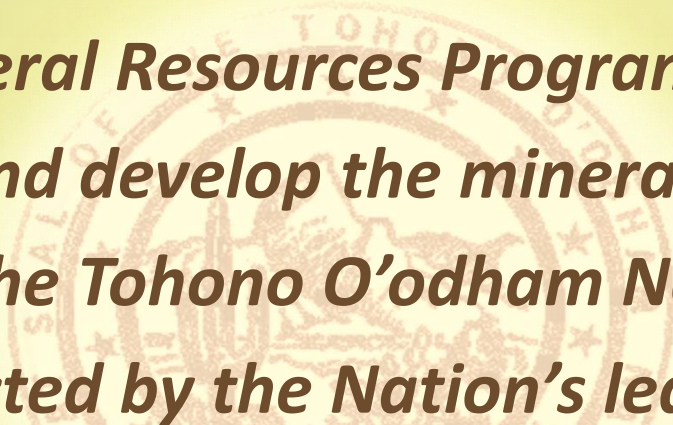
- Mining History
- Basic Mining Concepts
- Life Cycle Of A Mine
- Potential Positive Tribal Gains
- “Multi-media” Environmental Concerns
- Sovereign Involvement
- Discussion



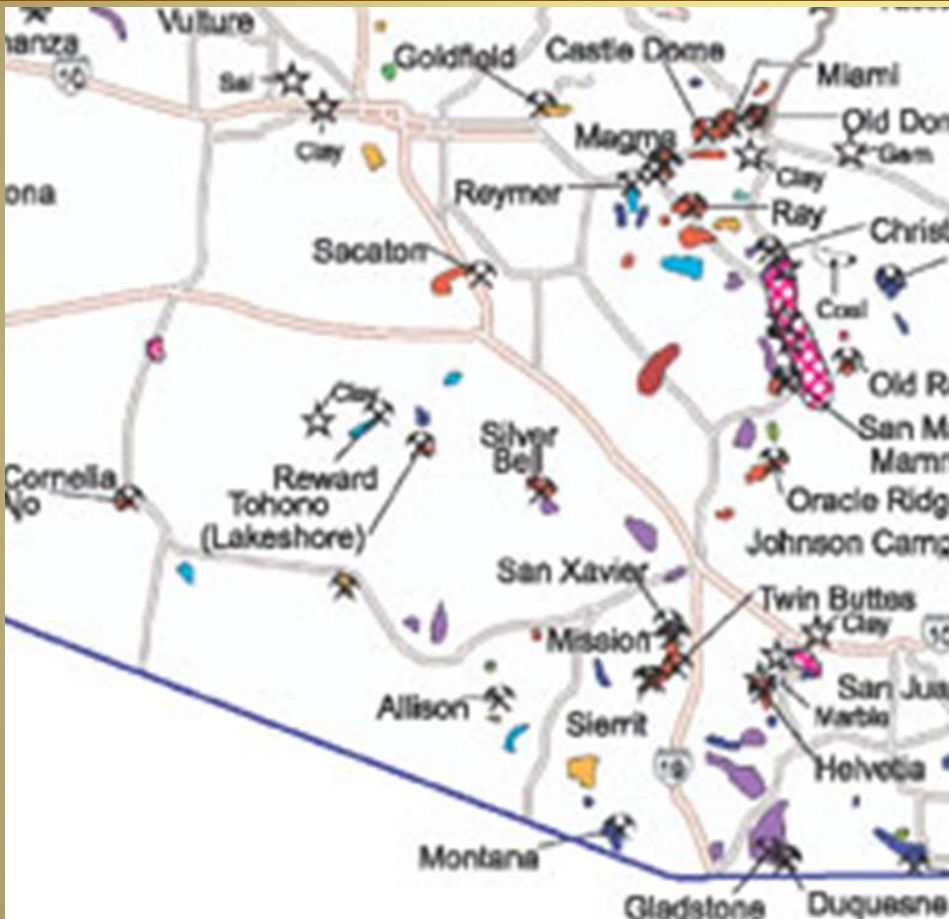
We are the Border, We are Beautiful

Mission Statement

*The mission of the
Mineral Resources Program is to
protect and develop the mineral resources
of the Tohono O'odham Nation
as directed by the Nation's leadership.*

A faint, circular seal of the Tohono O'odham Nation is visible in the background. The seal features a central figure, possibly a Native American, surrounded by the text "TOHONO O'ODHAM NATION" and "1837-1986". The seal is partially obscured by the text of the mission statement.

Mining near & on Tohono O'odham



- Copper mines
 - Cyprus Tohono Mine
 - ASARCO Mission Mine
 - Planned: Rosemont
 - Silverbell & Sierrita
- ~100 patented
- ~10 unpatented
- >500 legacy mines

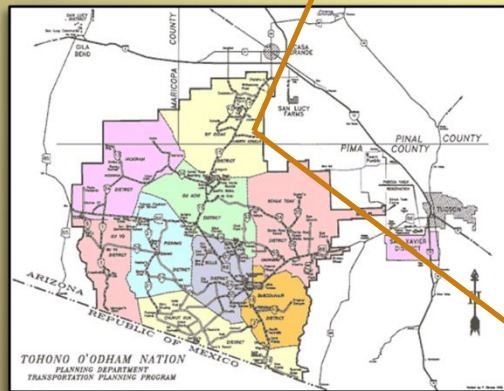
TASK #1: CYPRUS TOHONO CORPORATION (CTC) FREEPORT-MCMORAN INC (FCX) MINE OVERSIGHT

FOCUS AREA	APPLICABLE AREA	IMPLEMENTATION STRATEGY
<p>CTC- Continue attending meetings and monitoring events such as bat counts, water sampling, post-removal cover inspections, historical site visits, etc.</p>	<p>Manage Mineral Resources.</p>	<p>Continue to attend meetings; Read and analyze information and provide updates to tribal entities. Develop excellent working relationship with mining company.</p>
<p>CTC - Continue involvement with Remedial Investigation/Feasibility Study (RI/FS)for ground water contamination; evaluate mitigation options, and provide for corrective action implementation.</p>	<p>Manage Mineral Resources. Protect Groundwater.</p>	<p>Coordinate and facilitate meetings with Cyprus Tohono, Sif Oidak District, the Nation’s Executive and Legislative Branches, Water Resources Department, AG office, USEPA, BLM, and implement mitigation.</p>
<p>CTC - Coordinate with all Tribal and government entities on re-start of mining operations if mining is to resume. Negotiate new terms for the renewed mining lease.</p>	<p>Economic Development. Jobs for Youth and Adults.</p>	<p>Obtain appraisals and coordinate with Realty, AG, WRD, DNR, Sif Oidak District, North Komelik, Nation’s Executive and Legislative Branches, USEPA, BLM, BIA, etc. to reach agreement on new terms.</p>

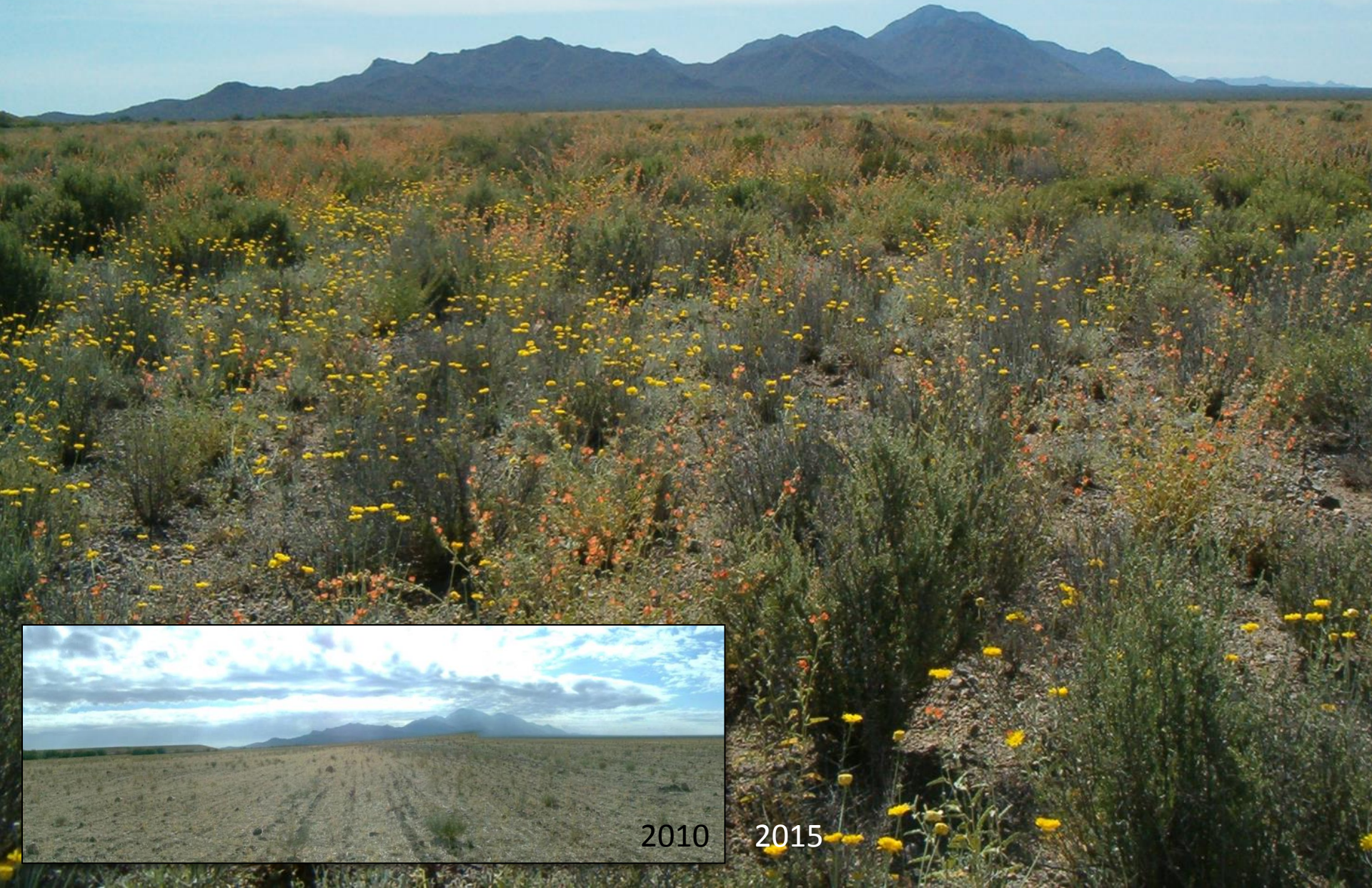
Cyprus Tohono Mine



- ✓ Alternative Superfund Copper Mine Site
- ✓ Impacted land and groundwater



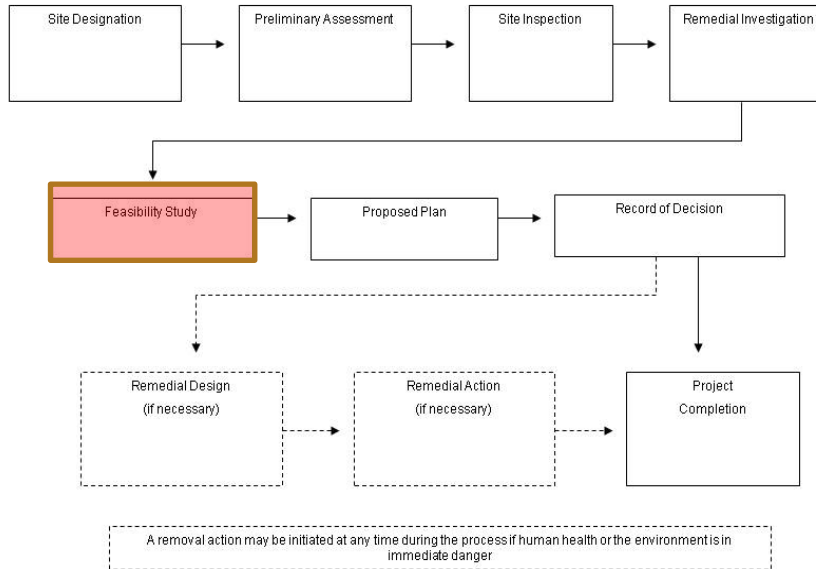
Cyprus Tohono Corporation Mine



2010

2015

CERCLA Process



Health Consultation: Cyprus Tohono Mine Site

January 2016

A Summary of Findings North Komelik, Tohono O'odham Nation

Overview

The Agency for Toxic Substances and Disease Registry (ATSDR) works with other agencies, states, tribal, and local governments to assess health risks in communities where people may come in contact with dangerous chemicals. This fact sheet summarizes findings from ATSDR's investigation of environmental health conditions in North Komelik, near the Cyprus Tohono Mine Site.

The Bottom Line

- The drinking water Tohono O'odham Utility Authority currently provides to North Komelik is safe.
- Until 2013, North Komelik drinking water contained arsenic and fluoride at levels that could have harmed people's health if they drank it for 1 year or more.
- Nitrates may have been present in North Komelik drinking water before 2002. However, there is not enough data to know if it was present at levels that could have harmed people's health.
- We don't have enough data to judge the quality of the air for people living near the site, so ATSDR recommends that the mine owner, federal agencies, and the Tohono O'odham Nation conduct more testing.
- Locally available animals and plants are most likely safe to eat, but to be sure, ATSDR would need to review site-specific data. Local soils are likely safe, however, it is good for your health to limit the amount of soil you eat if you do. ATSDR suggests that everyone wear gloves while gardening or harvesting plants, clear plants before eating them, and wash hands after gardening or harvesting.
- There is not enough information to know whether a restart of copper mining operations could pose health risks to tribal members in the future. ATSDR recommends the mine owner, federal agencies, and the Tohono O'odham Nation review the proposed mining plan to assess the health and environmental risks prior to restarting mine operations.
- The ground did exceed or approach levels that could harm people's health.
- The soil did exceed or approach levels that could harm people's health.
- The public did receive more than enough information for ATSDR to conclude whether people's health could be harmed.

History

The Cyprus Tohono Corporation (C TC) mine site is located 32 miles south of Casa Grande, AZ, in a rural part of the Tohono O'odham Nation (TON). The site boundary is 1 mile east of the village of North Komelik. C TC has a 4,180-acre mining lease with the Bureau of Indian Affairs and the TON for this site. The US Environmental Protection Agency (EPA) is investigating groundwater contamination at the site. Copper mining began on the site in the 1880s. Open-pit mining began in 1959. In 1970, large-scale underground mining and processing of oxide and sulfide ores began. Open-pit mining ended in 1987, and in 1996, the mine transitioned to care and maintenance mode. Past mining activities contaminated local groundwater with uranium, sulfate, and perchlorate. EPA is investigating options for cleaning up groundwater contamination. C TC is considering whether to resume mining activities.

ATSDR Activities at the Cyprus Tohono Mine Site

Representatives of ATSDR visited the Nation with EPA in September 2013 and January 2015 and spoke with TON officials and community members of North Komelik. Since then, ATSDR has been reviewing data and information about human contact with chemicals, and possible health effects at the site. ATSDR did this work at the request of the EPA and the TON.

Agency for Toxic Substances and Disease Registry
Division of Community Health Investigations



Community Involvement at Cyprus Tohono Mine

Sarah Cafasso

US EPA Community Involvement Coordinator

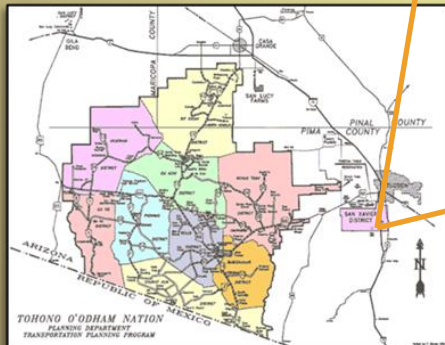


TASK #2: ASARCO MISSION MINE OVERSIGHT

FOCUS AREA	APPLICABLE AREA	IMPLEMENTATION STRATEGY
<p>ASARCO – Provide data analysis towards the proposed Mining lease, Mine Plan of Operations, and Reclamation Plan for the Northward Pushback and towards the North San Xavier Ore body proposals.</p>	<p>Economic Development and Jobs for Youth and Adults. Manage Natural Resources.</p>	<p>Coordinate with San Xavier District, Allottees, NRC, ASARCO, BLM, BIA, USEPA, etc., to agree on terms of potential mining. Attend ASARCO Working Group meetings. Insure necessary approvals are obtained.</p>
<p>ASARCO - Provide technical analysis to AWG and Nation’s parties concerning mining proposals</p>	<p>Educate decision makers.</p>	<p>Read and analyze information and provide updates; Work with ASARCO Working Group, ASARCO, AG, & DNR Director</p>
<p>ASARCO - Complete reclamation of North San Xavier mine dumps if parties choose not to enter into a new lease.</p>	<p>Manage Natural Resources. Reclamation of Mine lands.</p>	<p>Help implement reclamation requirements in the Mining and Reclamation Plan (MARF) of the Settlement Agreement.</p>

ASARCO Mission Complex

- ✓ ASARCO Mission Mine Complex: situated on 20,000 acres.
- ✓ Current pit: 2.5 miles long, 1.5 mile wide, 1,200 feet deep
- ✓ Located on tribal land on the south end of San Xavier District (everything above red line)





ASARCO Mission mine

Before reclamation: 2009



After reclamation: 2015

TASK #3: MINE SITE INVENTORY (LEGACY, PATENTED AND UNPATENTED)

FOCUS AREA	APPLICABLE AREA	IMPLEMENTATION STRATEGY
Create & update mining sites database	Manage Natural Resources.	Continue adding sites and information to BIT Access database. Visit sites.
Investigate potential purchase of Patented Legacy mining Sites; Investigate Legacy sites especially those not in BIA Trust Status.	Assist in acquiring properties.	Set up site visits and work with Nation's Executive and Legislative Branches, AG Office, Realty, USEPA, BLM, and BIA; and the affected Districts. Visit BLM/AZ State offices.
Work with departments and federal agencies to get site surveys and assessments completed	Economic Development. Jobs for Youth and Adults.	Support Development Department Industrial (aggregate, sand and gravel) Minerals Site Survey; Work with Nation's EPO Brownfields program to assess sites
Initiate parameters aimed at eradicating unsafe abandoned mine land (AML) features, especially open mine shafts.	Promote health and safety both on and off mine sites.	Inventory, investigate, and seek funding for safely securing mine sites such as posting warning signs, fencing or bat grates/cupolas; Locate using GIS; need community input.

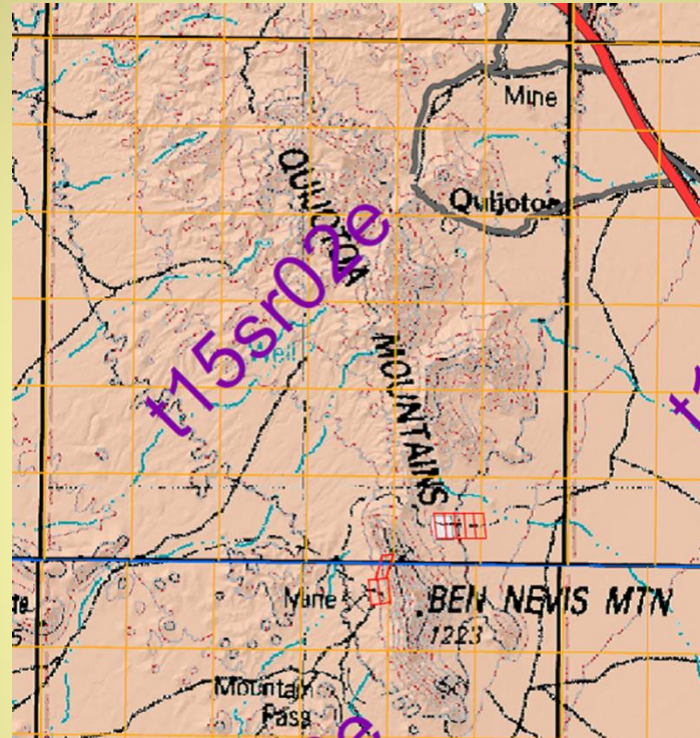
Mine Site Inventory

DO NOT alter the black bars, they are used for internal functionality. Also, all dates should begin with a (single quote)

Field Name	Site Name	Status	Section	Township	Part of Section	Name/Number of Meridian	Range	Site Type	ADMS ID	Property ID	Street Address	City	State	Zip Code
Field Name	Site Name	Status	Section	Township	Part of Section	Name/Number of Meridian	Range	Site Type	ADMS ID	Property ID	Street Address	City	State	Zip Code
RM0001	Diamond Hill		Sec 30	T15S			NOTE				58000000	Arizona		
RM0002	Lodopac		Sec 10	T15N			NOTE				58000000	Arizona		
RM0003	Emerald		Sec 10	T15S			NOTE				58000000	Arizona		
RM0004	Rumley Mine		Sec 10	T15N			NOTE				58000000	Arizona		
RM0005	Onion		Sec 10	T15S			NOTE				58000000	Arizona		
RM0006	Windy		Sec 30	T15N			NOTE				GU Adm	Arizona		
RM0007	Silver Ditch		Sec 20	T15S			NOTE				GU Adm	Arizona		
RM0008	Wine Gap		Sec 20	T15S			NOTE				GU Adm	Arizona		
RM0009	Monarch		Sec 30	T15S			NOTE				GU Adm	Arizona		
RM0010	Mercury		Sec 01	T15S			NOTE				GU Adm	Arizona		
RM0011	Cricket	Potential Purchase 5100 acres	10/21/2015	Sec 21	T15S		NOTE				GU Vc	Arizona		
RM0012	O.S.D	Potential Purchase 5100 acres	10/21/2015	Sec 21	T15S		NOTE				GU Vc	Arizona		
RM0013	Keystone	Potential Purchase 5100 acres	10/21/2015	Sec 21	T15S		NOTE				GU Vc	Arizona		
RM0014	Silver Glance	Potential Purchase 5100 acres	10/21/2015	Sec 21	T15S		NOTE				GU Vc	Arizona		
RM0015	Southern Belle	Potential Purchase 5100 acres	10/21/2015	Sec 21	T15S		NOTE				GU Vc	Arizona		
RM0016	Marlin	Potential Purchase 5100 acres	10/21/2015	Sec 21	T15S		NOTE				GU Vc	Arizona		
RM010	Gunite Millite	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM010	F.M. Gillette	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM020	Galena Lodge	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM021	Sonora	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM022	Silver Gin	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM023	Gun Sight	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM024	Eastern	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM025	Morning Star	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM026	Morning Star Ext.	Potential Purchase 5100 acres	10/21/2015	Sec 10	T15S		NOTE				McKwan	Arizona		
RM030	Carsonite		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM030	Upham		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM030	Copeland		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM031	Stromwater		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM033	Hornstake		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM033	Polina		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM034	Kickapoo		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM035	Waddy Woods		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM036	Hocho		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM037	Colford		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM038	Southern		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM038	Summit		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
RM038	WSPM		Sec 20	T15S			NOTE				Spuk Toak	Arizona		
TON011	Spokane	Purchased by TON 12-12-2002		Sec 11	T15S		NOTE				Spuk Toak	Arizona		
RM0013	Fernandis		Sec 13	T15S			NOTE				Spuk Toak	Arizona		
RM0013	Fernandis Millite		Sec 13	T15S			NOTE				Spuk Toak	Arizona		
RM0014	Silver Hill West		Sec 30	T15S			NOTE				Spuk Toak	Arizona		
RM0015	Silver Hill		Sec 21	T15S			NOTE				Spuk Toak	Arizona		
RM0016	Majestic Copper		Sec 01	T15S			NOTE				Spuk Toak	Arizona		
RM0016	Majestic Beauty		Sec 01	T15S			NOTE				Spuk Toak	Arizona		
TON015	No 1 Lagan	Purchased by TON May 2009		Sec 20	T15S		NOTE				Sala	Arizona		
TON019	No 2 Lagan	Purchased by TON May 2009		Sec 20	T15S		NOTE				Sala	Arizona		
TA0050	Cokeazo Millite	Delinquent Tax	Rima Co List	Sec 30	T15S		NOTE				Sala	Arizona		
TA0051	Cokeazo Silver	Delinquent Tax	Rima Co List	Sec 05	T15S		NOTE				Sala	Arizona		
TA0052	Picacho	Delinquent Tax	Rima Co List	Sec 05	T15S		NOTE				Sala	Arizona		
TA0053	Picacho Millite	Delinquent Tax	Rima Co List	Sec 05	T15S		NOTE				Sala	Arizona		
TA0054	Angas	Delinquent Tax	Rima Co List	Sec 05	T15S		NOTE				Sala	Arizona		
TA0055	Sala	Delinquent Tax	Rima Co List	Sec 09	T15S		NOTE				Sala	Arizona		
TA0056	Silver Hill	Delinquent Tax	Rima Co List	Sec 09	T15S		NOTE				Sala	Arizona		
TA0057	Conch	Delinquent Tax	Rima Co List	Sec 10	T15S		NOTE				Sala	Arizona		
TA0058	Conduit	Delinquent Tax	Rima Co List	Sec 09	T15S		NOTE				Sala	Arizona		
TA0059	Coyote	Delinquent Tax	Rima Co List	Sec 09	T15S		NOTE				Sala	Arizona		
TA0060	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0061	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0062	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0063	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0064	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0065	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0066	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
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TA0070	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0071	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0072	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0073	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0074	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0075	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0076	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
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TA0080	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
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TA0082	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
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TA0087	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
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TA0089	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0090	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0091	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0092	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0093	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0094	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
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TA0098	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0099	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		
TA0100	Deer	Delinquent Tax	Rima Co List	Sec 06	T15S		NOTE				Sala	Arizona		

BIT Database TON Mining Claims

Unpatented Sites



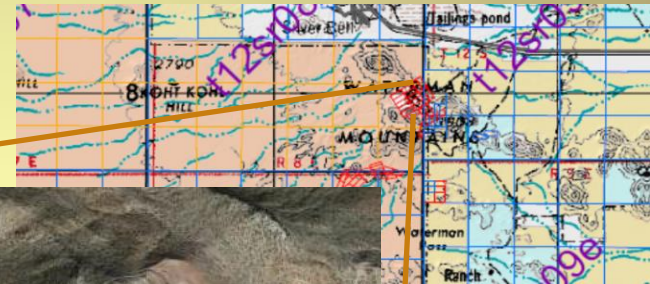
Unpatented mining claimant has the right to explore and develop the minerals on the claim, but the government retains the surface rights. An unpatented claim can be challenged. In 1970, the Nation challenged 425 unpatented claims through the BLM validation tests: only 10 remained!

A Valuable Mineral Deposit

Prudent Man Rule: 1894

“...where minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success in developing a valuable mine, the requirements of the statute have been met.”

Patented Sites



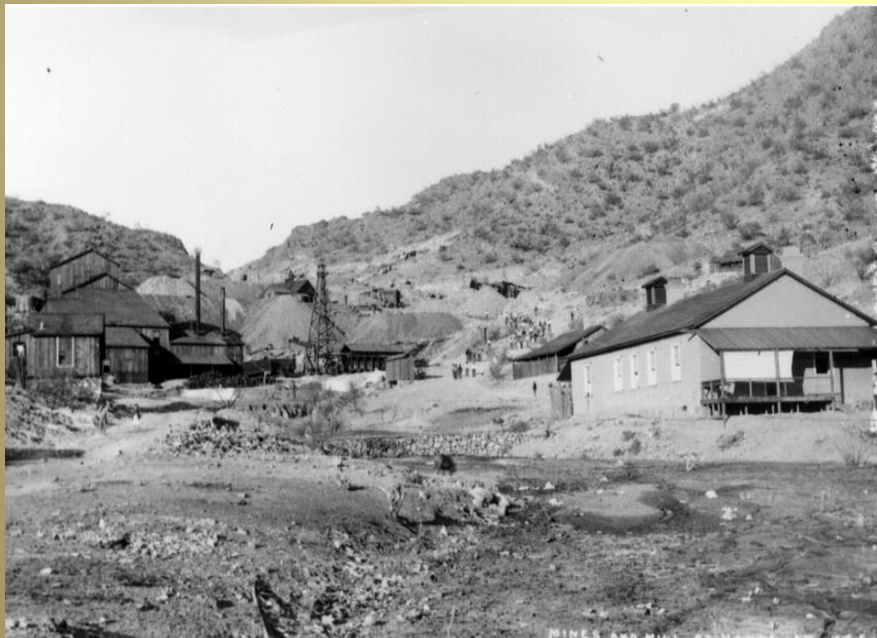
ID	Name	S	R	Co	Sts	Area (Ac)	Altitude (ft)	Volume (cu yd)	Mining Use	Open	Notes/Address
27	Aetha	12S	08E	STO	Pima	20	432218720	171936	0	Silver Hill	John H. Holsen, 23017 N. Iron Valley Rd, Marana, AZ 85653
28	Carbonate	12S	08E	STO	Pima	20	432218664	171936	0	Silver Hill	
30	Cimax	12S	08E	STO	Pima	20	432218644	171936	0	Silver Hill	
36	Copperton	12S	08E	STO	Pima	20	432218744	171936	0	Silver Hill	
37	Expansion	12S	08E	STO	Pima	20	432218754	171936	0	Silver Hill	
38	Homestake	12S	08E	STO	Pima	20	432218716	171936	0	Silver Hill	
39	Indiana	12S	08E	STO	Pima	20	432218726	171936	0	Silver Hill	
54	Kokomo	12S	08E	STO	Pima	20	432218688	171936	0	Silver Hill	
55	Paddy Woods	12S	08E	STO	Pima	20	432218706	171936	0	Silver Hill	
56	Poland	12S	08E	STO	Pima	20	432218776	171936	0	Silver Hill	
57	Portland	12S	08E	STO	Pima	20	432218676	171936	0	Silver Hill	
58	Souvenir	12S	08E	STO	Pima	20	432218726	171936	0	Silver Hill	
59	Summit	12S	08E	STO	Pima	20	432218726	171936	0	Silver Hill	
60	Tomahole	12S	08E	STO	Pima	20	432218726	171936	0	Silver Hill	
64	Silver Hill West	12S	08E	STO	Pima	14	432218688	38303	87,545.00	0	Claim John A. B. Zahn Company V.A. Zahn James E. 501 N. Dryden Ave. Albuquer Heights 87004
46	Silver Hill	12S	08E	STO	Pima	20	23806918	38303	510,650.00	0	
45	Magnetic Copper	12S	08E	STO	Pima	20	29836168	38303	613,260.00	0	
47	Metallic Beauty	12S	08E	STO	Pima	20	29836168	38303	613,260.00	0	

After 1955, the Nation was closed to the staking of mining claims, but claims staked from 1872 through 1955 were left in place. ~100 still remain.

LEGACY ABANDONED MINES



Vekol



TASK #4: COMMUNITY OUTREACH ACTIVITIES

FOCUS AREA	APPLICABLE AREA	IMPLEMENTATION STRATEGY
Executive and Legislative Council updates	Educate decision makers.	Create and provide reports and presentations
Community Mining Education and Outreach is needed	Engage local communities and others in an open, honest, and effective discussion concerning mining	Participate in Earth Day April 2016, Youth Edu Mining Days – July 2016; Mining Symposium at the Museum (May 2016), and other tribal events
Post on the DNR intranet webpage - mining info – i.e. links etc.	Educate tribal members.	Get proper approval and permissions to post information on the Nation’s Intranet
District and communities meeting presentations and site visits	Manage Natural Resources.	Provide mining presentations and get info especially on “ mine scarred land” concerns

Mining Day at the Museum



Saturday, April 30th, 2016

Tohono O'odham Nation Cultural Center & Museum - Topawa, AZ

7:30am Fun Run / Walk sponsored by HOPP

Scheduled Sessions Include:
10:00am to 3:30pm

History of Mining on the Tohono O'odham Nation
Presentation by Addison Smith

Historical Mining: How Copper Mining was Done in the Past
Presentation by Harry Winters (Presentation in Oodham and English)

Mining: It's in Everything
*Presentation and Hands-on Activity with Pamela A.K. Wilkinson
Lowell Institute for Mineral Resources, University of Arizona*

Mining: Impacts & Reclamation
*Presentation and Hands-on Activity
University of Arizona's Superfund Program Group*

Mining Equipment Simulators
Activity provided by Treport-McMoran Inc.

...AND Other Activities



TON Mining Office

ALL AGES WELCOME

For more information please contact
Himdag Ki: at (520) 383-0200
or the Mining Office at (520) 383-3031

HIMDAG KI: COMMUNITY ENRICHMENT SERVICES
in collaboration with the TOHONO O'ODHAM NATION MINING OFFICE



Tohono O'odham Nation
Cultural Center & Museum

JEWELKA CIM TASH - Indian Oasis Elementary/Middle School Salls Campus Salls AZ 85654
April 29, 2016

7:50 - 8:00 a.m. In the Gymnasium coordinators comments Mike Henry & Ruben Cu x Ba'ak
8:00 - 9:00 a.m. Blessing by - Mike Juan
Opening Remarks - Tohono O'odham Nation Vice-Chairman Verlon Jose
Remarks by - Principal Julie McHenry
Poster Contest & Stewardship Awards presented by -Tohono O'odham Nation Environmental Protection Office
9:05 - 9:25 a.m. Planting Ceremony located on the playground
9:25 - 10:00 Fun Run / Walk - Healthy O'odham Promotion Program

Class Rooms	10:05 - 10:35 a.m.	10:40 - 11:10 a.m.	11:15 - 11:45 a.m.	LUNCH - EXHIBITS OPEN 11:45 - 1:00 p.m.	1:05 - 1:30 p.m.	1:35 - 2:00 p.m.	2:05 - 2:30 p.m.
104	Soil Conservation, USDA, Gilbert Two-Two & Doug Saunders	Soil Conservation, USDA, Gilbert Two-Two & Doug Saunders	Soil Conservation, USDA, Gilbert Two-Two & Doug Saunders	1. Range Management, Katherine Espino 2. One Stop, Cecilia Lopez 3. T.O. Fire, Dreamland Pfeifer	Soil Conservation, USDA, Gilbert Two-Two & Doug Saunders	Soil Conservation, USDA, Gilbert Two-Two & Doug Saunders	Soil Conservation, USDA, Gilbert Two-Two & Doug Saunders
103	Range Conservation Amos Stevens	Range Conservation Amos Stevens	Range Conservation Amos Stevens	4. Solid Waste Management Program, Rigalee Cobas 5. Southwest Conservation District, Ego Nacho 6. TERO, Clayton Antone & Tiffany Marks	Range Conservation Amos Stevens	Range Conservation Amos Stevens	Range Conservation Amos Stevens
206	One stop, Cecilia Lopez	One stop, Cecilia Lopez	One stop, Cecilia Lopez	7. IHS, Pam Michaelson-Gambrell & Crystal Brunel 8. Water Resources, Justin Manuel 9. Traditional Pottery Demonstration, Kathleen Vazir	One stop, Cecilia Lopez	One stop, Cecilia Lopez	One stop, Cecilia Lopez
201	T.O Nation Mining, Laurie Butler	T.O Nation Mining, Laurie Butler	T.O Nation Mining, Laurie Butler	10. Tohono O'odham Nation Environmental Protection Office 11. Fire Management - Guy Acuna 12. Natural Resources, Holly Barton 13. Desert Museum, Alyssa Killian 14. Desert Museum Live Animals, Javva Garcia	T.O Nation Mining, Laurie Butler	T.O Nation Mining, Laurie Butler	T.O Nation Mining, Laurie Butler
704	Fire Safety, Fire Department Dreamland Pfeifer	Fire Safety, Fire Department Dreamland Pfeifer	Fire Safety, Fire Department Dreamland Pfeifer	15. U of A, Marti Lindsey 16. NOAA, Rob Sparks	Fire Safety, Fire Department Dreamland Pfeifer	Fire Safety, Fire Department Dreamland Pfeifer	Fire Safety, Fire Department Dreamland Pfeifer
705A	Cyprus Tohono, Cody Martinez	Cyprus Tohono, Cody Martinez	Cyprus Tohono, Cody Martinez	17. TOC, David Blona 18. ITOA, Alicia Corrae-Avalos & Shaina White	Cyprus Tohono, Cody Martinez	Cyprus Tohono, Cody Martinez	Cyprus Tohono, Cody Martinez
706	Pizzas & Animals TONNR, Holly Barton	Pizzas & Animals TONNR, Holly Barton	Pizzas & Animals TONNR, Holly Barton	19. Tohono O'odham Cultural Program, Ruby Flores	Pizzas & Animals TONNR, Holly Barton	Pizzas & Animals TONNR, Holly Barton	Pizzas & Animals TONNR, Holly Barton
706B	Cultural Museum, Ana Montoya	Cultural Museum, Ana Montoya	Cultural Museum, Ana Montoya	20. Tohono O'odham Youth Services, Cisamaria Juan	Cultural Museum, Ana Montoya	Cultural Museum, Ana Montoya	Cultural Museum, Ana Montoya
706	Tohono O'odham Youth Services, Cisamaria Juan	Tohono O'odham Youth Services, Cisamaria Juan	Tohono O'odham Youth Services, Cisamaria Juan	21. IHS Diabetes Program, Ruby Flores	Tohono O'odham Youth Services, Cisamaria Juan	Tohono O'odham Youth Services, Cisamaria Juan	Tohono O'odham Youth Services, Cisamaria Juan
900	IHS Diabetes Program, Ruby Flores	IHS Diabetes Program, Ruby Flores	IHS Diabetes Program, Ruby Flores	22. Tribal Warm Line Program, Angel Calder	IHS Diabetes Program, Ruby Flores	IHS Diabetes Program, Ruby Flores	IHS Diabetes Program, Ruby Flores
901	EPO Recycle Program, Labawenta Tso & Morgan Ashby	EPO Recycle Program, Labawenta Tso & Morgan Ashby	EPO Recycle Program, Labawenta Tso & Morgan Ashby	23. U.S. Air Force, Susan Gladstein 24. TOC Traditional Foods	EPO Recycle Program, Labawenta Tso & Morgan Ashby	EPO Recycle Program, Labawenta Tso & Morgan Ashby	EPO Recycle Program, Labawenta Tso & Morgan Ashby
902	U of A, Marti Lindsey	U of A, Marti Lindsey	U of A, Marti Lindsey		U of A, Marti Lindsey	U of A, Marti Lindsey	U of A, Marti Lindsey
Library				LOCATED IN THE GYMNASIUM			

“Quijotoa: Boom and Bust in the Arizona Desert”



The History of Mining on the Tohono O'odham Nation

by Addison Smith

1885-1896

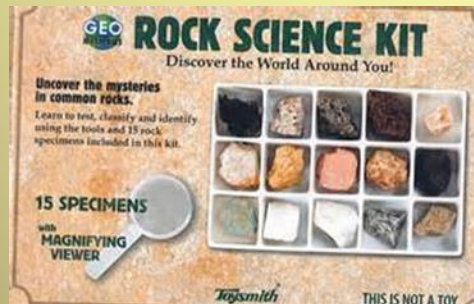
http://www.azgs.az.gov/Mineral%20Scans/gold_bull180_ocr.pdf
<https://archive.org/stream/quijotoaminingdi00step#page/n7/mode/2up>
http://www.statemuseum.arizona.edu/exhibits/goldie/bio_2.shtml
http://www.arizonahistoricalsociety.org/wp-content/uploads/library_QUIJOTOA-MINE.pdf

Mineral – naturally occurring homogeneous solid with definite chemical composition and an ordered atomic arrangement.

Rock – a naturally formed, stable aggregation of minerals

Rocks & Minerals Identification

by Arizona Sonoran Desert Museum



Calcite is a mineral

Limestone is a rock containing calcite

drill + blast + load + haul



Mining Equipment Simulators
by Freeport-McMoRan Inc.

Mining: It's in Everything!

by Pamela A.K. Wilkinson, Lowell Institute for Mineral Resources

So you think you can live without mines?

Hands-on activities will show you the variety of rocks and minerals that go into the things we use every day and teach you by mining BBs out from sand.



 LOWELL INSTITUTE FOR
MINERAL RESOURCES

UA SRP Participates in Tohono O'odham Mining Education Days



Copper Mining and Processing

by UofA Superfund Research Group

Denise Moreno Ramirez, Pam Wilkinson, Karletta Chief, Lydia Jennings, Sarah Wilkinson, Juliana Gil-Loiaza, Laurie Suter, John Hottenstein, Lydia Jennings

New Tribal Mining Module on Copper Available

The UA SRP Community Engagement Core
has released the first module of the
“Mining and Environmental Educational Modules for Tribal Colleges”
collection.

<http://www.superfund.pharmacy.arizona.edu/highlights/new-tribal-mining-module-copper-available>



ACTIVITY!

Introductions:

- ✓ **Your name**
- ✓ **Affiliation**
- ✓ **Brief reason for your interest in mining**
- ✓ **One personal fun fact**

Please sign in on the attendees sheet!

Please fill out session evaluation!

Class Outline:

- Mining on Tohono O'odham Tribal Lands

• **Mining History**

- Basic Mining Concepts
- Life Cycle Of A Mine
- Potential Positive Tribal Gains
- “Multi-media” Environmental Concerns
- Sovereign Involvement
- Discussion

2nd Oldest Industry!

“If it isn't grown, it must be mined”

- ***Mining*** is a part of human advancement
- ***Oldest Mine:*** 20,000-40,000 years ago Red Ochre
 - mined in Africa for use in rock paintings
- ***Native Americans*** mined copper 5000-1200 BC
 - *for knives, arrows, spear heads, and axes*
- ***Copper*** was mined 5000 years ago on Cyprus Island
 - Ancient Greek & Roman mined copper to make armor
 - released trace metals discovered in Greenland ice cores

Federal Mining Laws

- **General Mining Law of 1872**
 - *Valuable mineral deposits in lands belonging to the United States shall be free and open to exploration and purchase by US citizens*
 - *TON = 17,000 claims 1872-1955*
- **Surface Resources Act of 1955**
 - *All Indian reservations are federally closed to location of mining claims (“WITHDRAWN”). Requests must be made directly to Tribes.*
 - *Holders of patented mining claims and sites located within lands later withdrawn from mineral entry (tribal), must prove their right to continue to occupy and use the land for mining purposes. (Prudent Man Rule)*
 - *1960’s TON challenged all claims*
- **Federal Land Policy and Management Act of 1976**
 - *“authorizing and permitting of mineral exploration, mining, and reclamation actions governed by the Bureau of Land Management (BLM)*
 - *BLM supervises exploration, development, and production operations of resources on Indian lands.*

Many Agencies Regulate Mining

- Section 402 NPDES Water Discharge Permit
- Air Quality Permit
- Section 404 Dredge and Fill Permit
- Section 106 Historical and Cultural Resources Protection
- Marine Mammal Protection Act
- Threatened and Endangered Species Act
- Essential Fish Habitat
- Fish and Wildlife Coordination Act
- Bald Eagle Protection Act
- Migratory Bird Protection



Class Outline:

- Mining on Tohono O'odham Tribal Lands
- Mining History

• **Basic Mining Concepts**

- Life Cycle Of A Mine
- Potential Positive Tribal Gains
- “Multi-media” Environmental Concerns
- Sovereign Involvement
- Discussion

Mineral Resources of the Lithosphere, South Africa

"Lithosphere: #1 lesson"

<https://www.youtube.com/watch?v=e0EyZS5rfOU>

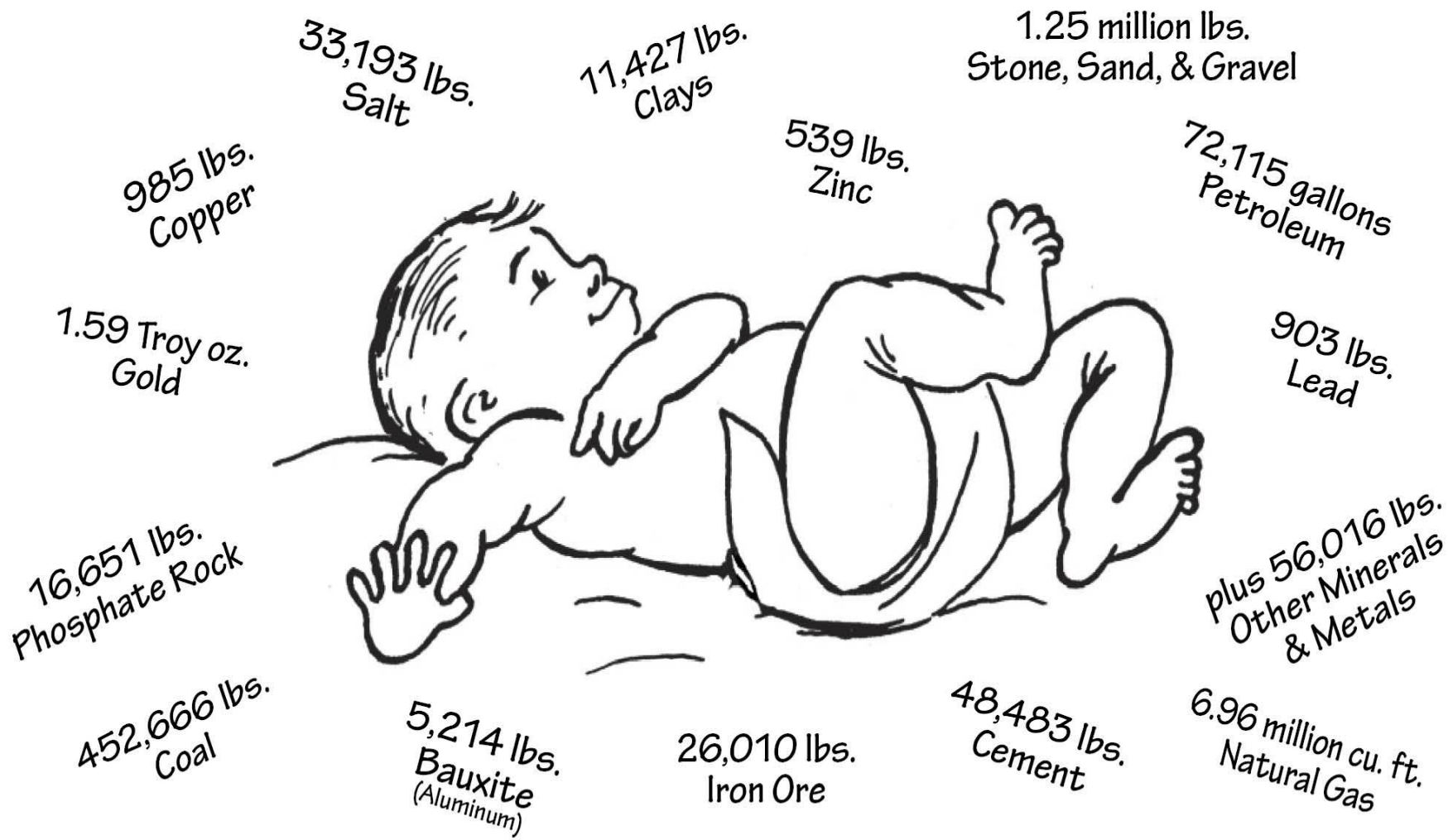
(skip to time 15.19)

Mines are Everywhere



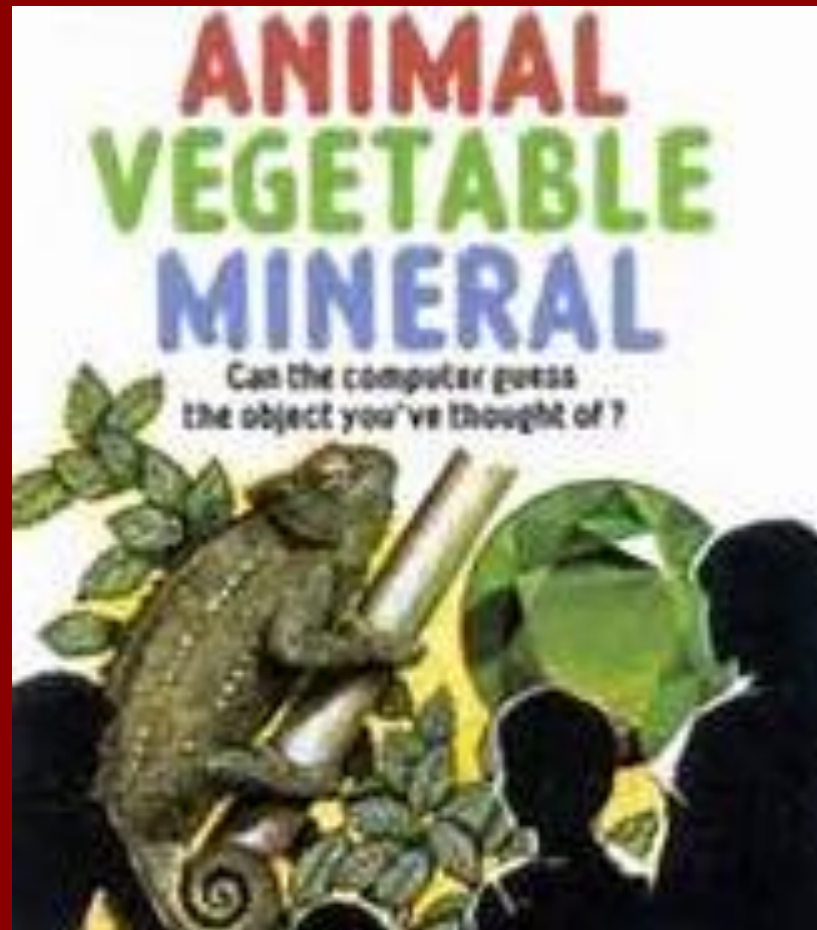
- Mines are in every state
- 500,000 abandoned mines
- 14,000 active mines

Every American Born Will Need...



3.11 million pounds of minerals, metals, and fuels in their lifetime

ACTIVITY!



70% of all metal is used only once and then thrown away



Reduce Reuse Recycle



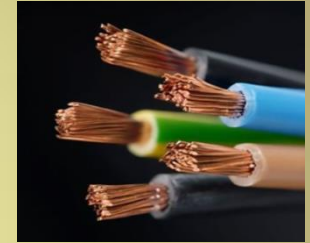
Copper

Copper

29

Cu

63.54

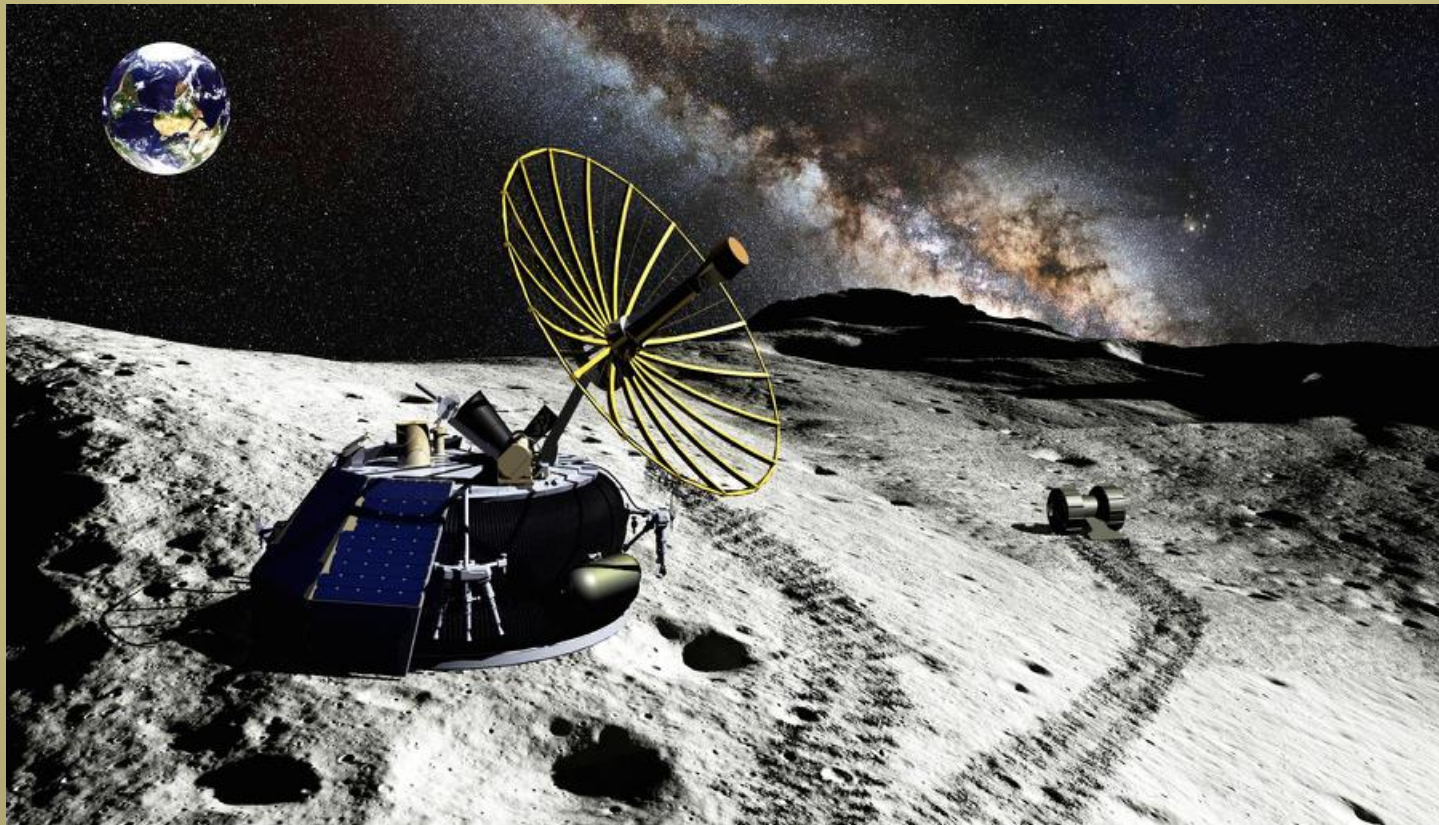


\$8 trillion alternative energy boom is a win for copper



Copper remains an irreplaceable component in our ever-expanding energy needs.

Moon Express believes there is a viable business flying commercial flights to the Earth's only natural satellite and potentially mining its resources.

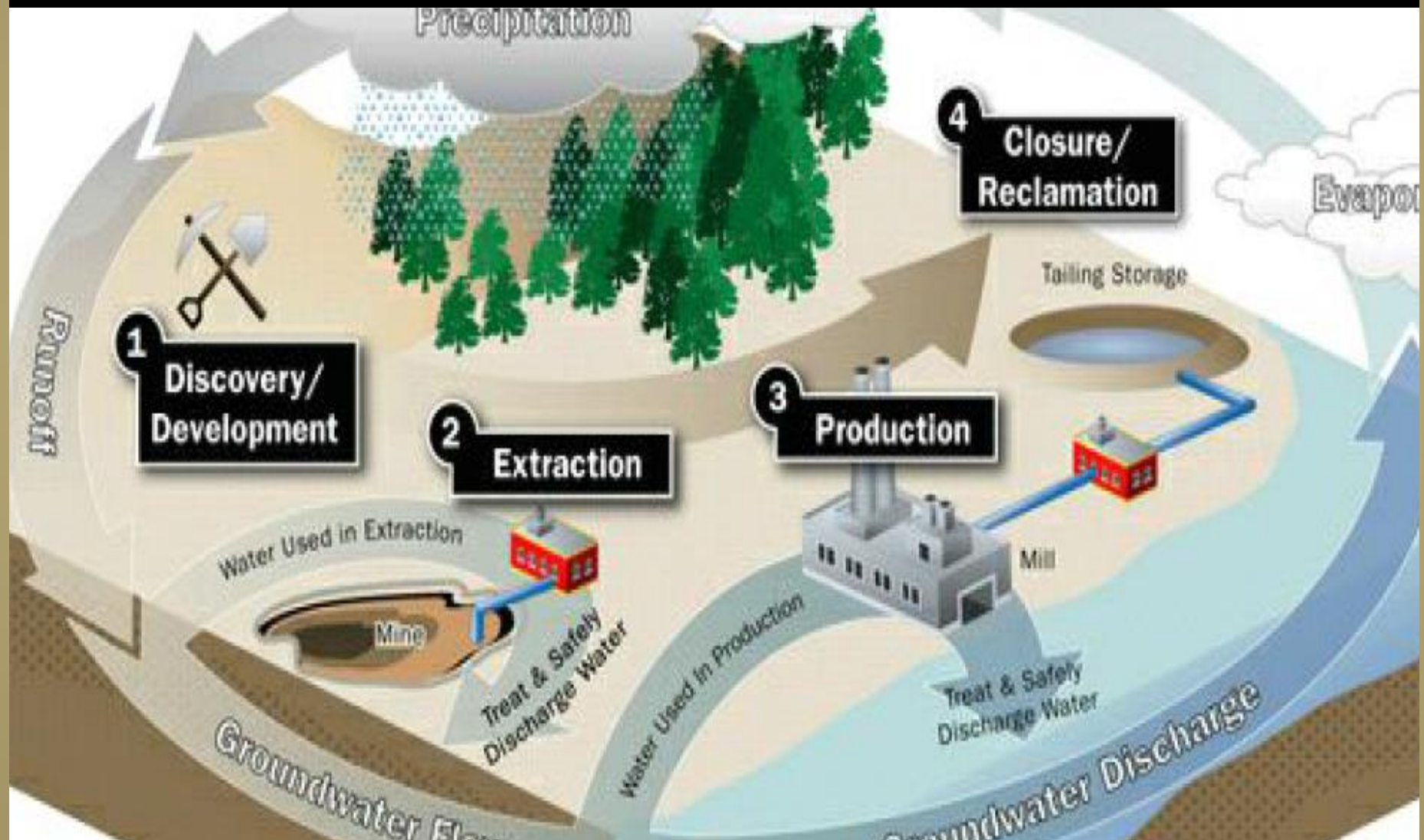


<http://www.mining.com/wp-content/uploads/2016/06/us-government-expected-to-green-light-first-private-moon-mission.jpg>

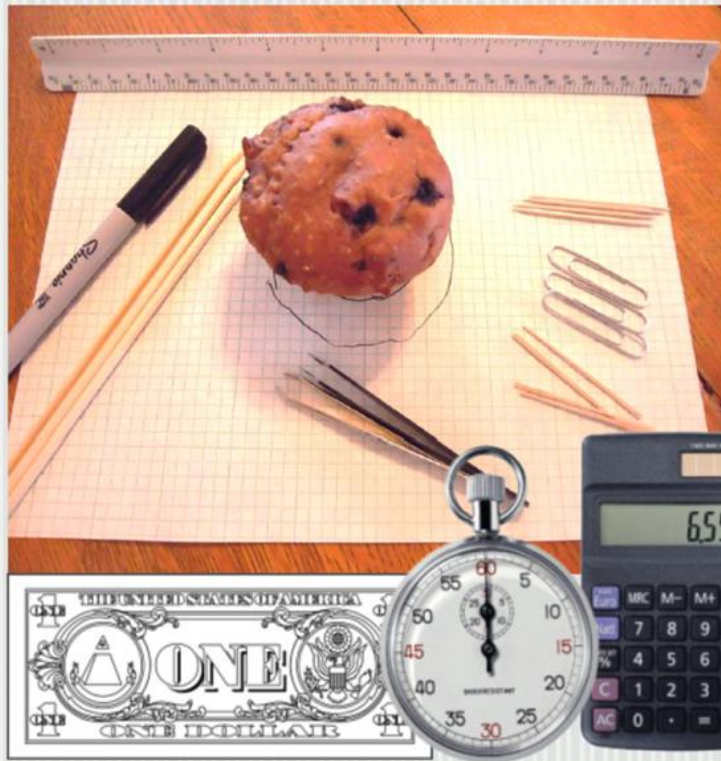
Class Outline:

- Mining on Tohono O'odham Tribal Lands
- Mining History
- Basic Mining Concepts
- **Life Cycle of a Mine**
- Potential Positive Tribal Gains
- "Multi-media" Environmental Concerns
- Sovereign Involvement
- Discussion

Stages of Mining



ACTIVITY!



Mining and Reclamation Worksheet:

Muffin	Beginning	End
Height		
Mine Preparation Costs		
Land Acquisition (Choose 1)		
Muffin A (most amount of fruit)	Price	My Expenses
Muffin B (least amount of fruit)	\$5	\$
	\$4	\$
Tools		
	Price	Number used
Flat toothpicks	\$1 x	
Round toothpicks	\$2 x	
Paperclips	\$3 x	
Screwers	\$4 x	
Tweezers	\$5 x	
Reclamation Approach (Choose 1)		
	Price	My Expenses
Re-vegetation		
(Chocolate icing with green candy)	\$2	\$
Soil Caps (Chocolate Icing)	\$3	\$
Impermeable Cap (White Icing)	\$4	\$
Start Up Total (Must not exceed \$13)		\$
Labor Costs		
	Salary	Number of minutes
Excavation (5 minutes max)	\$1/minute	
Reclamation (2 minutes max)	\$1/minute	
Labor Cost Total		\$
Clean-up Cost		
		Number of squares
Whole squares with remaining muffin crumbs outside the original circle	\$0.50 x	
Clean Up Cost Total		\$
Profits		
	Value	Number excavated
Types of fruits		Money Earned
Cranberries/Raisins	\$0.50 x	
Walnuts	\$1.00 x	
Apricots/Pineapple	\$1.50 x	
Gross Profit		\$
Net Profit/Loss		
- Initial Costs (cannot exceed \$16)		\$
- Labor Costs		\$
- Clean-up Cost		\$
+ Gross Profit		\$
Total Net Profit/Loss		\$

Life Cycle of Mine

- **Prospecting:** *finding it*
- **Exploration:** *defining it*
- **Development:** *planning it*
- **Exploitation:** *mining it*
- **Closure/reclamation:** *cleaning it up*



Oxide Ore Process

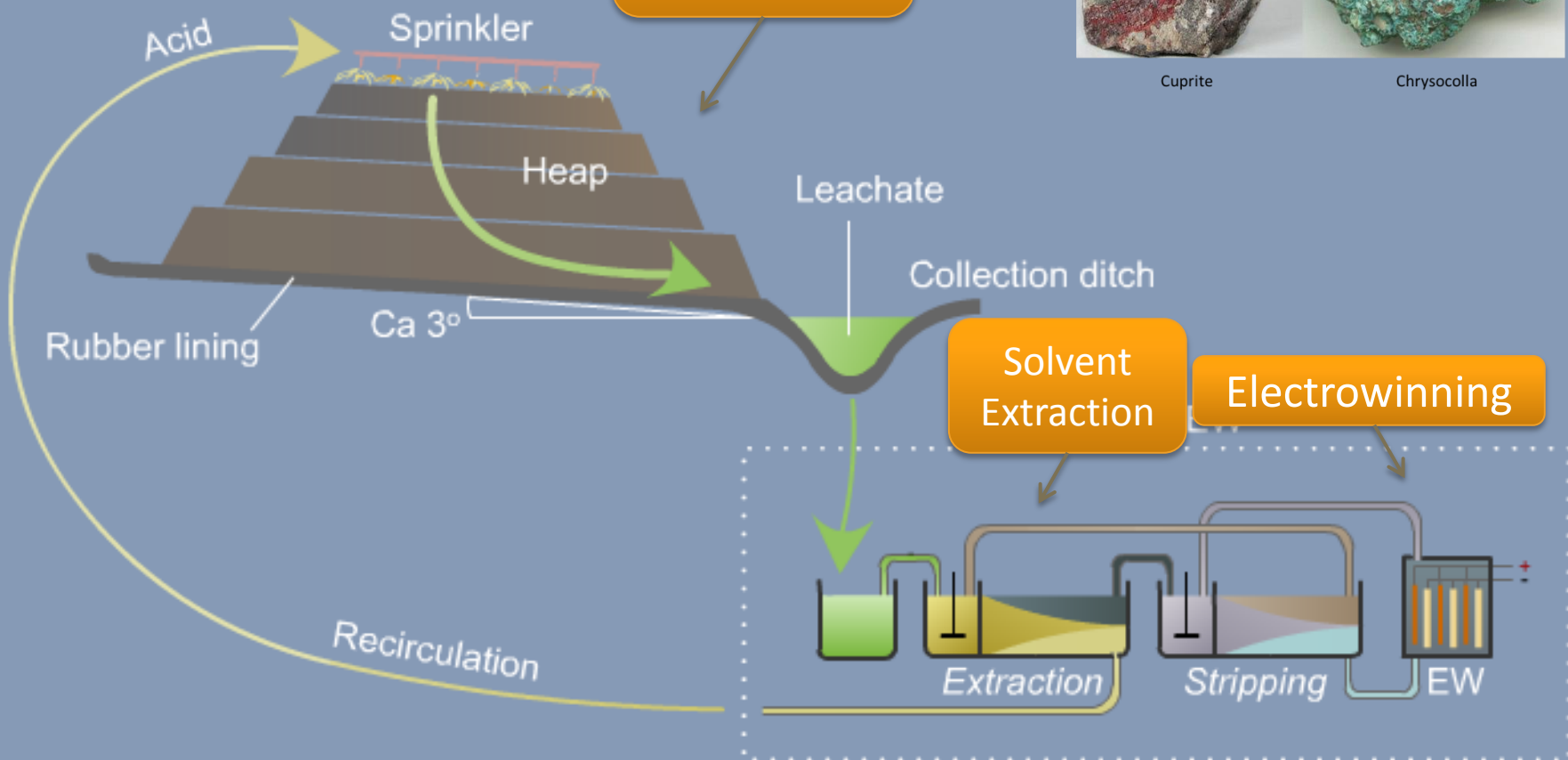
OXIDE ORE



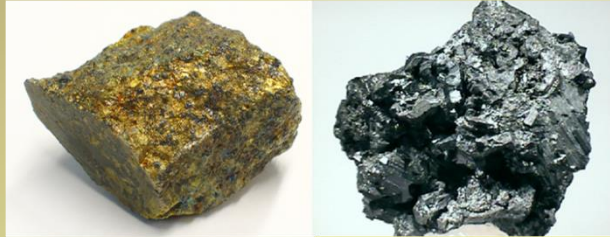
Cuprite

Chrysocolla

Heap Leaching



SULFIDE ORE



Chalcopyrite

Chalcocite



Sulfide Ore

Grinding

Flotation

Thickening

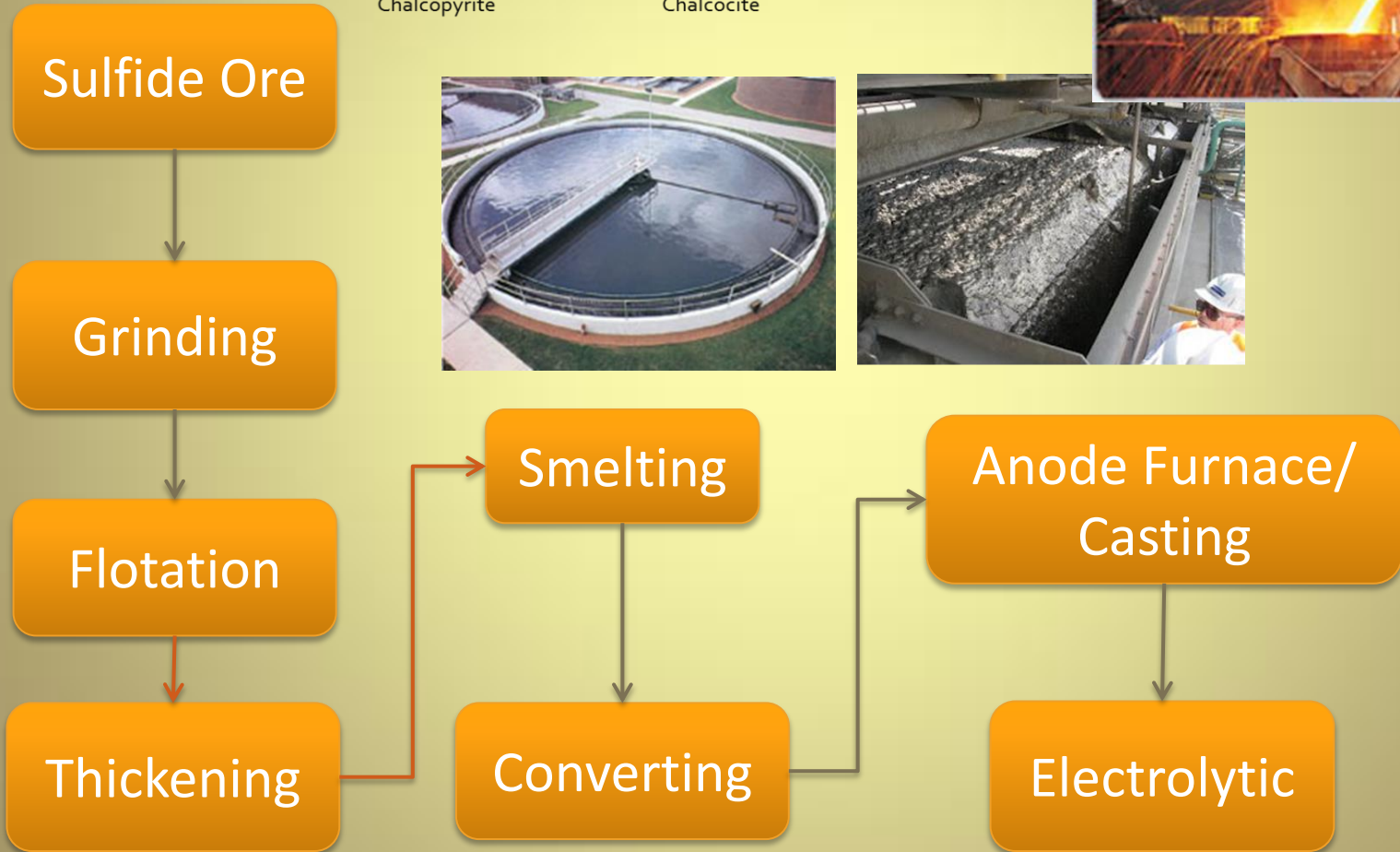


Smelting

Converting

Anode Furnace/
Casting

Electrolytic



RECLAMATION AND CLOSURE GOALS:

- **Physical stability**

Prevent potential failures, collapses, erosion

- **Chemical stability**

Prevent run off, poor quality leachate, air and water quality issues

- **Biological stability**

Vegetated cover

- **Land use**

Safe and productive land

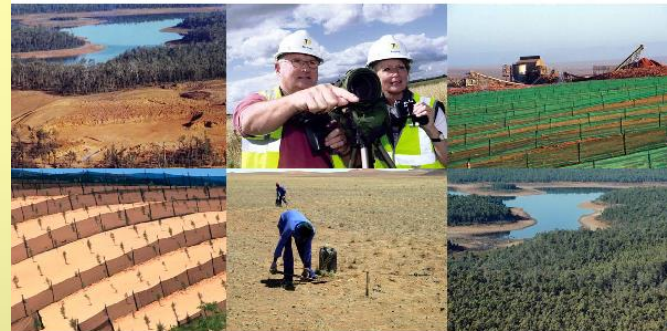
Financial Assurance for Closure and Reclamation

“An important component of mine planning is consideration of how closure and reclamation will be funded....”

ICMM
International Council
on Mining & Metals

Financial Assurance for Mine Closure and Reclamation

February 2005



<http://www.icmm.com/document/282>

Class Outline:

- Mining on Tohono O'odham Tribal Lands
- Mining History
- Basic Mining Concepts
- Life Cycle Of A Mine

• **Potential Positive Tribal Gains**

- “Multi-media” Environmental Concerns
- Sovereign Involvement
- Discussion

MINING IMPACTS

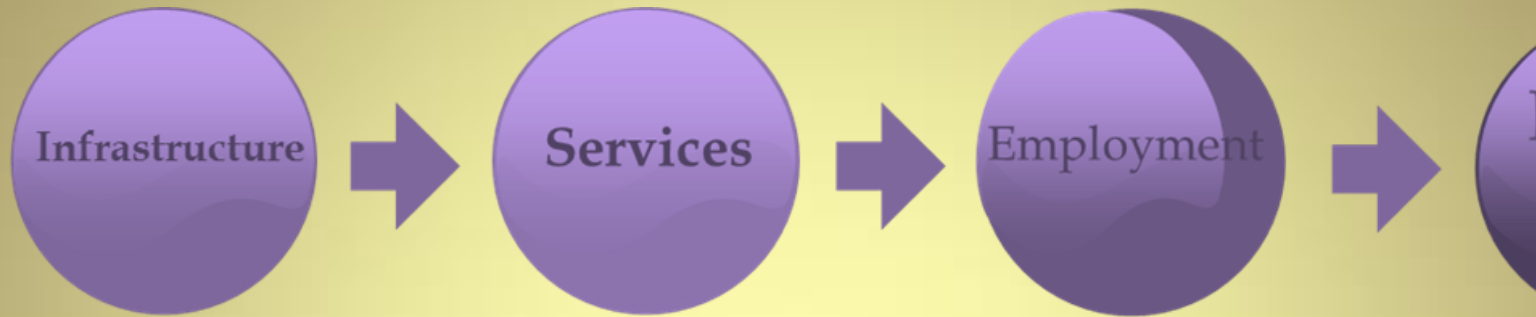


- 1. Land
- 2. Air
- 3. Water

- 4. Community
- 5. Health
- 6. Government

Legal Rights & Protection

Positive Impacts






- Mining contributed \$4.8 billion in 2012 to Arizona
- Worldwide >13 million employed by small mines
- Local Economic Development
 - ✓ Indirectly: 1 mining job = 11 other jobs
- Education, schools, training, hospitals, roads, electricity, clean drinking water, wastewater treatment...
- Access to Mineral Resources




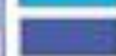


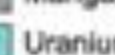

Symbols

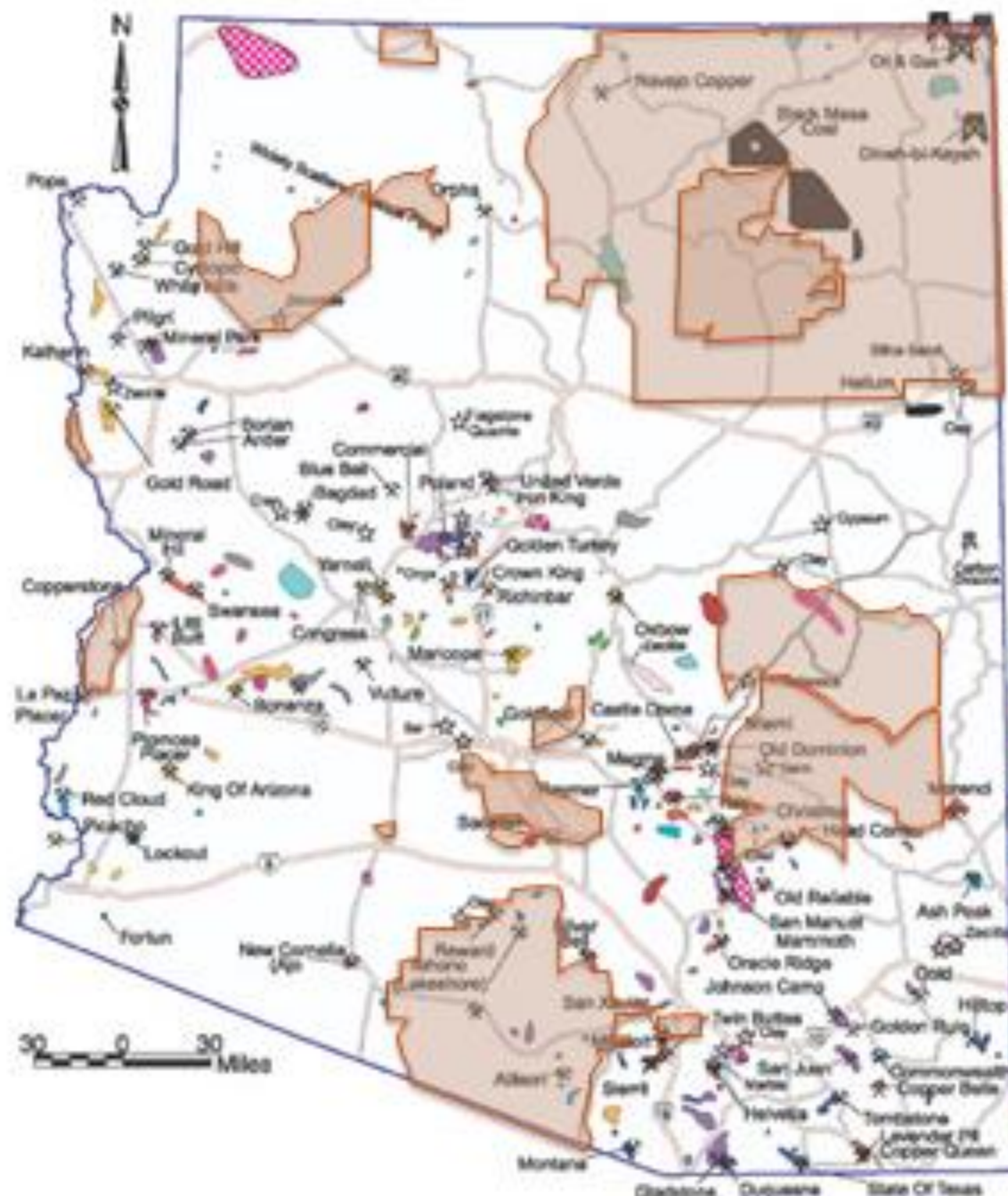
-  Oil or Gas field
-  Major metallic mineral mine
-  Industrial mineral production site

Energy and industrial mineral occurrence districts

-  Coal
-  Gypsum
-  Zeolites
-  Helium

Major metallic mineral mining districts

-  Gold, vein or disseminated
-  Gold, placer
-  Copper
-  Copper, gold
-  Silver
-  Lead, Zinc, Silver
-  Polymetallic
-  Iron
-  Mercury
-  Manganese
-  Uranium
-  Tungsten



TASK #5: MINING WORKFORCE DEVELOPMENT

FOCUS AREA	APPLICABLE AREA	IMPLEMENTATION STRATEGY
Help develop a tribal program to improve the skills of a potential mining workforce	Economic Development. Jobs for Youth and Adults.	Invest time in developing mining education and training programs that improve the skills and productivity of the workforce; talk to UofA, TOCC, TERO, MSHA, BIA & BLM...

AZ Jobs (March 2015)

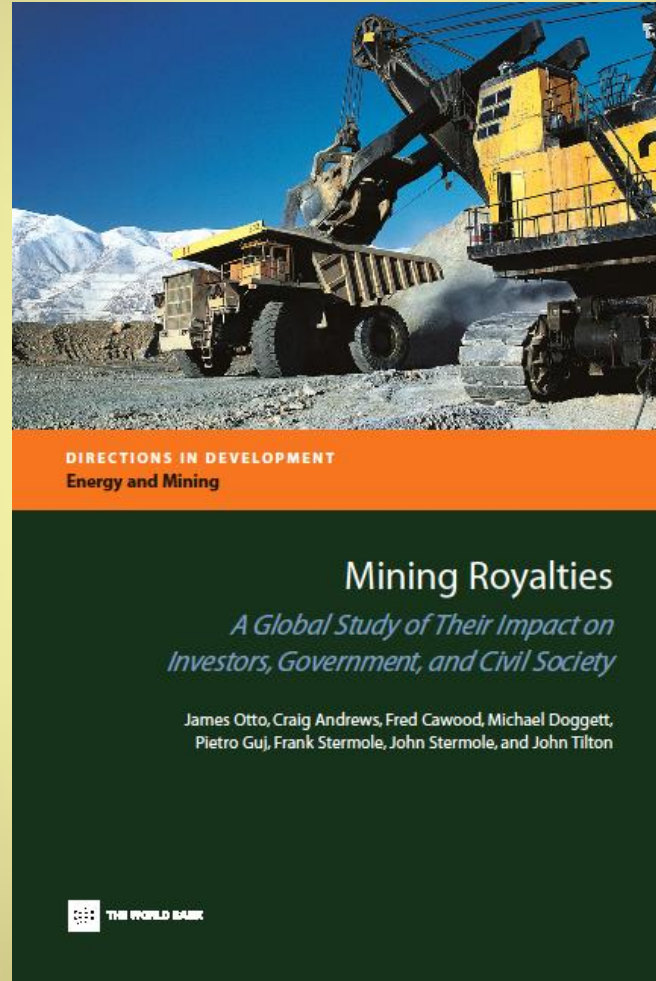
910 Mining jobs :

\$20,000+ (241)
 \$40,000+ (370)
 \$60,000+ (252)
 \$80,000+ (162)
 \$100,000+ (85)
 \$120,000+ (41)

401 Casino jobs:

\$20,000+ (241)
 \$40,000+ (102)
 \$60,000+ (30)
 \$80,000+ (17)
 \$100,000+ (11)

Mining Royalties



<http://siteresources.worldbank.org/INTOGMC/Resources/336099-1156955107170/miningroyaltiespublication.pdf>

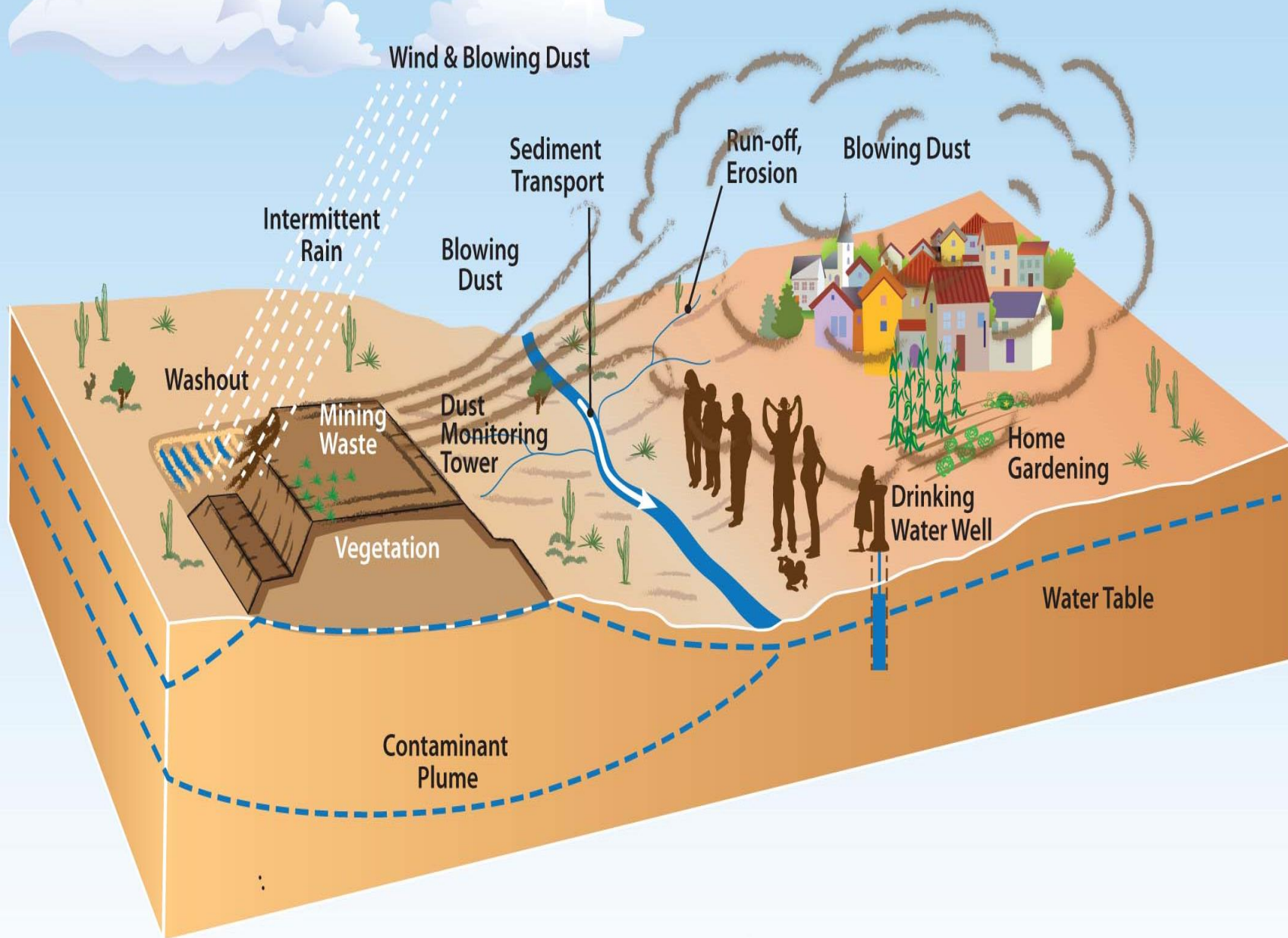
Class Outline:

- Mining on Tohono O'odham Tribal Lands
- Mining History
- Basic Mining Concepts
- Life Cycle Of A Mine
- Potential Positive Tribal Gains

• “Multi-media” Environmental Concerns

- Sovereign Involvement
- Discussion

Environmental Concerns



Air quality is an issue at every mine

- **Monitor:**

- ✓ Collect baseline air quality and climatological data
- ✓ Define potential respiratory health impacts for both mine workers and nearby communities

- **Control:**

- ✓ Direct - using water, binders or wetting agent applications
- ✓ Revegetation of disturbed areas concurrent with operations



Land Impacts

Direct:

- Physical alteration
- loss of habitat and vegetation
- Soil contamination

Indirect:

- Wildlife
- Subsistence users



Water Impacts



Quality



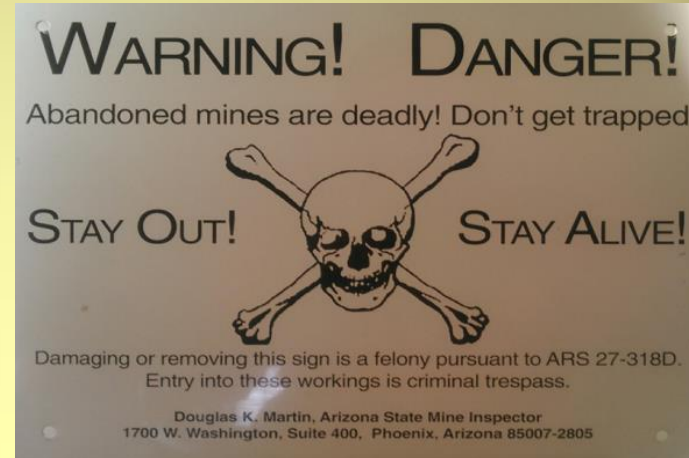
Quantity



Flow

- Control!
- Minimize contact between wastes and water
- Maximize water reuse
- Prevention!

Solid & Hazardous Waste



Class Outline:

- Mining on Tohono O'odham Tribal Lands
- Mining History
- Basic Mining Concepts
- Life Cycle Of A Mine
- Potential Positive Tribal Gains
- "Multi-media" Environmental Concerns

• **Sovereign Involvement**

- Discussion



How can tribes be involved?

- ✓ *Tribal Standards, Policies, Regulations*
- ✓ *Partnerships*
- ✓ *Site Visits*
- ✓ *Early & frequent contact with project components, lead agency & advocates*
- ✓ *Government to Government Consultation*
- ✓ *Participate in Public Hearings & Meetings*
- ✓ *Traditional Knowledge Surveys*
- ✓ *Training / Education*

TASK #6: DOCUMENT NATION'S MINING GOALS

FOCUS AREA	APPLICABLE AREA	IMPLEMENTATION STRATEGY
Mining Environmental Management Plan	Manage Natural Resources.	Draft protocol for potential of prospecting, exploration, and mining
TON Mining Permit Guide	Provide guide to Parties interested in mining minerals on TO Nation's lands.	Arizona has a mine permit guide that can be used as guide to Draft a TON mining guide
Determining Nation's reclamation goals for post-mining land and undertake measures to reduce the footprint of sites	Reduce the mining footprint.	Draft procedures for reclamation of post-mining land. Natural Resources Damage Protection Ordinance?

ROSEMONT


**Tohono O'odham Nation Office of the
Chairman & Vice Chairwoman**


COMPASSION **FAITH** **TRADITION** **RESPECT**
T-NEBAG AM'ED *T-WOHOCUDA* *HIMDAG* *PIEK'EL'ID*

Ned Norris, Jr. Wavalene M. Romero
 Chairman Vice Chairwoman

The Honorable Tom Vilsack
 Secretary
 U.S. Department of Agriculture
 1400 Independence Ave., S.W.
 Washington, D.C. 20256
agsec@usda.gov

Via Email and U.S. Mail

August 20, 2013

RF: Rosemont Mine Project

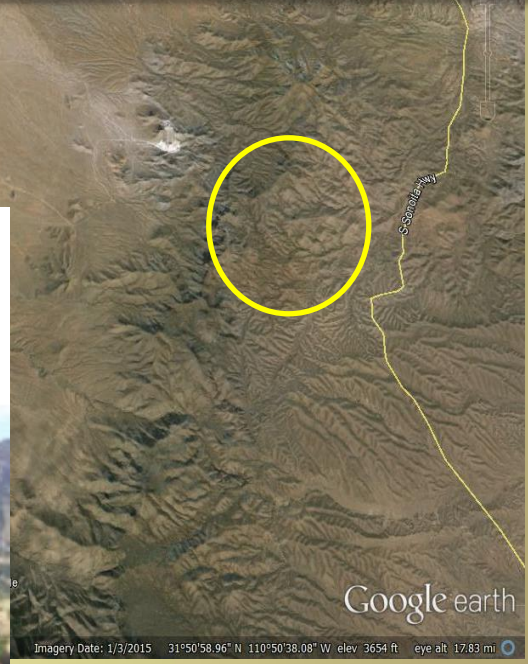
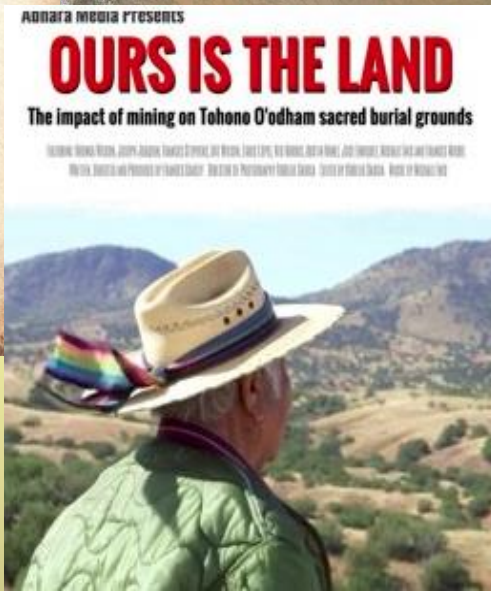
Dear Secretary Vilsack:

We write to you to respectfully request that the expediting of the Final Environmental Impact Statement and associated Record of Decision for the Rosemont Mine Project ("Project") be stopped. The Tohono O'odham Nation recently learned that the Forest Service plans to issue a Record of Decision in this matter at the end of September. This deadline certainly came as a shock to the Nation, as no such date had been previously mentioned. The announcement came when the Forest Service distributed to its Cooperating Agencies the Draft Final Environmental Impact Statement. This arbitrary deadline has apparently been proposed to avoid new regulations that would otherwise apply to this Project, replacing the current administrative appeal process with an objection process.

First, with respect to the new deadline, the Nation takes issue with the late notice of this arbitrary deadline. The new regulations became effective for non-Healthy Forests Restoration Act projects on March 27, 2013. 36 C.F.R. § 218.16(b). The Forest Service knew or should have known then that the new regulations would apply to proposals such as the Project if no decision was rendered prior to September 27, 2013. Yet, the Forest Service did not inform tribes or Cooperating Agencies that they were attempting to shoehorn the Project in under the old regulations. Instead, Cooperating Agencies were informed on July 1, 2013, of this impending deadline. This sudden urgency is simply unwarranted. The regulations provide that the Forest Service merely must notify interested and affected parties that the project will be subject to the new regulations if a decision will be issued after September 27, 2013. Processing this Project under the new regulations rather than rushing a decision under the old regulations will ensure full

P.O. Box 837, Sells, AZ 85634 • (520)583-2028 • Fax (520)583-0379

“Ours is the Land”
 Shown with permission from Frances Causey



<http://www.rosemontminetruth.com/>

“Ours Is The Land”

<https://www.youtube.com/watch?v=l45jawKk4G0>

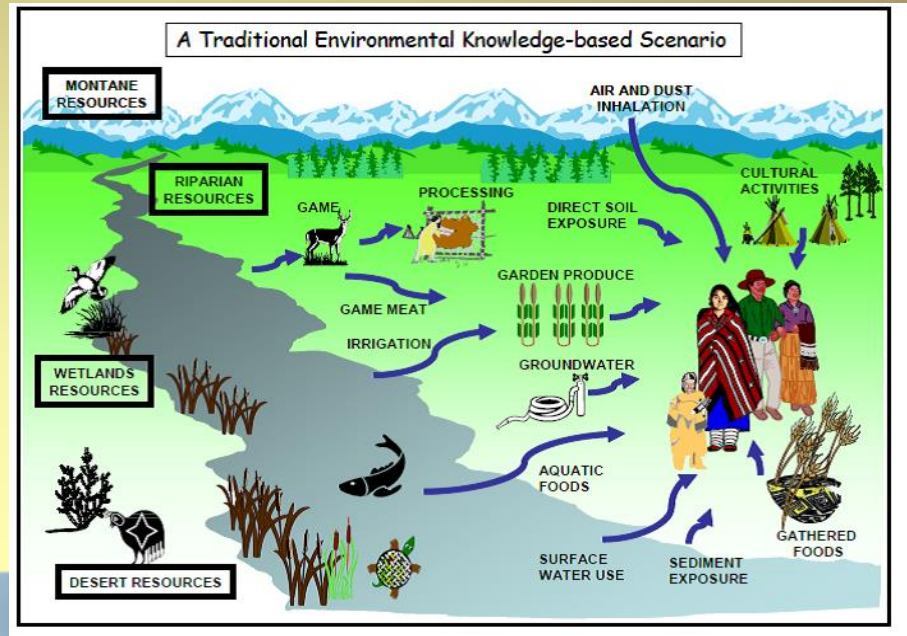
(trailer = 1:51 mins)



Sierrita Mine

- ✓ Historical Sites visit
- ✓ Cultural Landscape

Traditional Ecological Knowledge (TEK) Cultural Landscape Study



"...efforts must start from the perspective of indigenous knowledge of local ecology.

Science magazine (10 June 2016 vol. 352 issue 6291)

TASK #7: ATTEND MINING SYMPOSIUMS, EDUCATIONAL, TRAINING AND CERTIFICATION EVENTS

FOCUS AREA	APPLICABLE AREA	IMPLEMENTATION STRATEGY
Attend meetings on mining issues: SME, Tribal Lands Forum, NTMW	Protect tribal Natural Resources by being informed. Educate Public.	Travel costs currently paid from personal funds; some scholarship reimbursements are provided by sponsoring agencies.
MSHA	Maintain certifications.	Free training available through FCX at CTC.
HAZWOPER	Maintain certifications.	Paid from personal funds; seek free training.



Certificate of Training

Approved OMB Number 1219-0009 Expires July 31, 2014
 U.S. Department of Labor
 Mine Safety and Health Administration

This certificate is required under Public Law 91-173 as amended by Public Law 95-164 and 110, Public Law 91-173 as amended by other sanctions as provided by sections 104 and 110, Public Law 91-173 as amended by Public Law 95-164

➔ Issue Certificate Immediately Upon Completion of Training

1 Print Full Name of Person Trained (first, middle, last) **Laurie Lee Suter** Serial Number (for operator's use) **8939**

2 Check Type of Approved Training Received

Annual Refresher
 New Task (specify below) _____

Experienced Miner
 Newly Employed, Inexperienced Miner

Date _____

Date	Task	Initials (Instr)	Initials (Student)	Date	Task	Initials (Instr)	Initials (Student)

Hazard Training
 Other (specify) **HAZWOPER**

3. Check Type of Operation and Related Industry:
 A Surface
 B Coal

4. Date Training Requirements Completed **2/12/15**

Construction
 Metal
 Underground
 Nonmetal
 Shaft & Slope

➔ If Completed, go to item 6, below. Check if not completed and go to item 5, below

5. Check Subjects Completed (use only for partially completed training):

<input type="checkbox"/> Introduction to Work Environment	<input type="checkbox"/> Roof/Ground Control & Ventilation	<input type="checkbox"/> Health
<input type="checkbox"/> Hazard Recognition	<input type="checkbox"/> Mine Map, Escapeways, Emergency Evacuation, Barricading	<input type="checkbox"/> Electrical Hazards
<input type="checkbox"/> Emergency Medical Procedures	<input type="checkbox"/> Cleanup, Rock Dusting	<input type="checkbox"/> First Aid
<input type="checkbox"/> H&S Aspects of Tasks Assigned	<input type="checkbox"/> Mandatory Health & Safety Standards	<input type="checkbox"/> Mine Gases
<input type="checkbox"/> Statutory Rights of Miners	<input type="checkbox"/> Authority & Responsibility of Supervisors & Miners' Representatives	<input type="checkbox"/> Explosives
<input type="checkbox"/> Self-Rescue & Respiratory Devices	<input type="checkbox"/> Prevention of Accident	<input type="checkbox"/> Other (specify) _____
<input type="checkbox"/> Transport & Communication Systems		

6. False certification is punishable under section 110 (a) and (f) of the Federal Mine Safety & Health Act (P. L. 91-173 as amended by P. L. 95-164).

I certify that the above training has been completed (signature of person responsible for training) **Stanley E. Walkup II** M96867152

7. Mine Name, ID, & Location of Training (if institutional, give name & address)
CYPRUS TOWN AZ 85223

8. Date **2/12/15**

I certify that I have completed the above training (signature of person training) _____

MSHA Form 5000-23, Jan. 99 (revised)

Copy 1 - Employer's Personnel Record

PimaMaps Classes

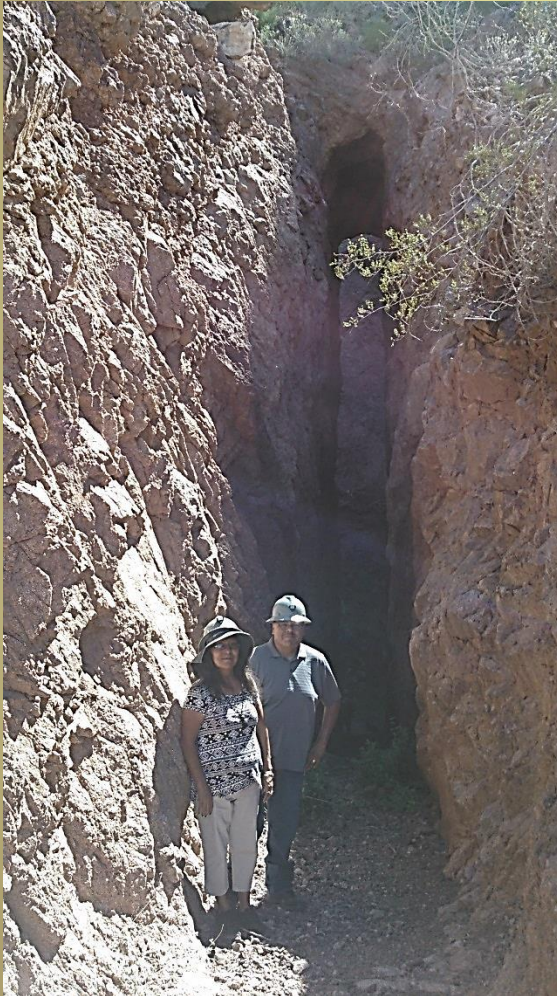
Pima County ITD Geographic Information Systems is presenting classes for P web mapping system. These classes are free and open to both the public an is two hours long. Registration is not required and seating is limited to app

Seven sessions are scheduled for July through October:

- Thursday, July 30th, 9:00 to 11:00 AM
- Tuesday, August 4th, 2:00 to 4:00 PM
- Thursday, August 27th, 9:00 to 11:00 AM
- Tuesday, September 1st, 2:00 to 4:00 PM
- Tuesday, September 22nd, 2:00 to 4:00 PM
- Tuesday, October 20th, 2:00 to 4:00 PM
- Thursday, October 22nd, 9:00 to 11:00AM

All classes will be held in basement conference room C of the Public Works Building, 201 N. Stone Ave. (NW corner of Stone & Alameda). These presentation-style classes review the features of the PimaMaps Main Map available at <http://gis.pima.gov/pimamaps/>

Professional Mineral Property Evaluation Course





THE FUTURE FOR MINING IN A DATA-DRIVEN WORLD
2016 ANNUAL CONFERENCE & EXPO

Environmental: Sustainable Remediation/Reclamation/Reclamation Water Remediation/Reclamation

Chairs: D. Crawford, Golden Associates Inc., Redmond, WA
J. Papp, Golden, Lake Oswego, OR

The University of Arizona Center for Environmentally Sustainable Mining
B. Malar and M. Paulsson, Soil, Water and Environmental Science, University of Arizona, Tucson, AZ and Department of Geosciences, The University of Arizona, Tucson, AZ

Abandoned Mines Rehabilitation - A New Future?
S. Looper, Peabole Engineering and Design, Golden Associates Ltd, Calgary, AB, Canada

Developing Biogeochemical Indicators to Enhance Revegetation Success of Mine Tailings and Waste Rock: An Industry-Academic Research Cooperative Approach
J. Neilson, L. Jeonjeong and R. Malar, Soil, Water and Environmental Science, University of Arizona, Tucson, AZ

Sustainable Remediation Practices for Mine and Reclamation Projects
P. Lear, Envirocon, Inc., Missoula, MT

McKinley Mine: A Commitment to Stable Land utilizing Geomorphic Principles
K. Kotler and S. Molyboka, Golden Associates, Inc., Bluebonnet, CO

Applying the mixture of mine tailings and as construction materials
J. Zhang and Q. Feng, University of Arizona, Tucson, AZ

THE FUTURE FOR MINING IN A DATA-DRIVEN WORLD
2016 ANNUAL CONFERENCE & EXPO

Environmental: Sustainable Outcomes of Effective Stakeholder Engagement

Chairs: S. Fecht, Ramboll ENVIRON, Westford, MA
L. Wong, Lundin Mining, Toronto, Ontario, Canada

Human Rights and Business Procedures: Grievance Mechanisms Using data to improve the relationship with stakeholders: How feedback processes are helping to minimize and avoid conflict while reinforcing engagement
C. Eddine, Public Admin, University of Victoria, Vancouver, BC, Canada

Case Study: Fostering Renewable Energy in Arizona
K. Parameswaran, tfgMM Strategic Consulting, Scottsdale, AZ

Sustainable Outcomes from Effective Stakeholder Engagement
R. Holmes, Energy Mines and Resources, Government of Yukon, Whitehorse, Yukon, Canada

Unravel Social Performance: the Case of Hecla's Cr and Hecla Mining, Washington, DC
J. Forge and L. Russell, Transfert Environment & Society, Montreal, QC, Canada

Resettlement and economic development in Guatemala
M. Thorpe and A. Mallen, Torex Gold Resources, Toronto, ON, Canada

NIH National Institute of Environmental Health Sciences

RESEARCH BUILT 2016 Superfund Research Program

Phytostabilization of Mine Tailings with Copper-Assisted Direct Planting

Abstract: Mining mine waste with copper is a viable and promising alternative to the expensive process of creating an inert waste with a thick soil cap. This study, supported by the University of Arizona Superfund Research Program (SFRP) and the National Institute of Environmental Health Sciences (NIH), aimed to evaluate the effectiveness of mine waste phytostabilization using native plant species. The study was conducted in a semi-arid region of the United States. The results show that the use of native plants, such as the silver cholla, can significantly reduce the bioavailability of copper in mine tailings. This approach offers a cost-effective and sustainable solution for managing mine waste. The study also highlights the importance of selecting appropriate plant species for phytostabilization based on local conditions and the specific characteristics of the mine waste.



THE FUTURE FOR MINING IN A DATA-DRIVEN WORLD
2016 ANNUAL CONFERENCE & EXPO

Minerals Valuation II: Lessons Learned and Fundamental Issues

Chair: D. Collins, BCL Productions, Inc., Laramie, CO
J. Kuehlich, IMA, Aurora, CO

Industrial Mineral Market Entry - A Bear Market or What the Market Will Bear
Proper Season for Mining Companies: Global Affairs During High-Velocity Pricing Change
Presenters: S. G. and S. J. Associates, Inc., Boulder, CO
New World of Mineral Appraisal Report
of Economic Appraisal of Mineral Resources
Mining, Geological, and Environmental
Different Commodity Data for Appraisal
Cyclical Commodities
Valuation in a World of Volatile
Commodity Prices
C. B. Mineral Project Valuations
and the Role of the Appraiser



TRIBAL ENVIRONMENTAL LAW SEMINAR



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“Exercising Tribal Sovereignty to Protect and Preserve Tribal Natural Resources, Foods and Lifeways.”

“Superfund Essentials” Training



**ITEP Superfund Training and Site
Visit: The Bunker Hill Superfund Site**

NATIONAL TRIBAL MINING WORKGROUP (NTMW)



Network with other tribes



EPA

NEPA & Mining 101 Webinar

Three Part Series:
May 12, 24, and June 8
1:00-3:00 EDT



SAVE THE DATE

THE MINING LIFECYCLE:
**Tribal Engagement and
Environmental Responsibility**

**NOVEMBER 2-4, 2016 IN PHOENIX-TEMPE
AT ARIZONA STATE UNIVERSITY**

Registration opens June of 2016
visit www.ntmw.org for more information

Regulatory Permitting Groundwater Contamination
Traditional Ecological Knowledge Cumulative Effects
Air Quality Impacts Reclamation
Protecting Water Resources

Class Outline:

- Mining on Tohono O'odham Tribal Lands
- Mining History
- Basic Mining Concepts
- Life Cycle Of A Mine
- Potential Positive Tribal Gains
- "Multi-media" Environmental Concerns
- Sovereign Involvement

• **Discussion**

ACTIVITY!

- Why is mining controversial? What are some deciding factors for or against mining?



THANKS!

For more information contact:

Laurie Suter

Mineral Resources Administrator, DNR Mining Office

Telephone No. 520-383-3031