

Mining in Baja California Sur: Is It Worth the Risk?

Mark J. Spalding



THE OCEAN FOUNDATION

Overview

- Environmental Impact of Mining
- Mining in Baja California Sur
- Other Issues
- Mining Governance
- Strategies to Protect BCS Water Security and Tourism Economy



Environmental Threats

- Mining poses at least 12 distinct threats to the environment.
- The threats include contamination from spills, cyanide, and leaching as well as the threat of abandoned mines, erosion, and rainfall on tailings dams.
- Effects on biodiversity, local water sources, and downstream marine systems are most concerning for Baja California Sur.



Biodiversity



Acid Drainage



Erosion/
Landslides

Other threats include:

- Air Pollution
- Cyanide Pollution
- Waste Generation
- Heavy Metals
- Abandoned Infrastructure
- Tailings Dams
- Sulfide Seepage
- Weathering
- Hydrothermal Alterations

The Process

- Ore is crushed and ground with fluid
 - Mixed with a slurry of **cyanide**, **arsenic**, and other acids and caustics
- Washed with water, dried out, smelted and thereby separated
- The good stuff is hauled away for sale – the bad stuff is left in the community



Mining Waste

Tailings

- After reagent tanks, liquid waste stored behind dams and particulates can be dry stacked
- Powder waste can be blown by wind, spreading dust filled with arsenic and other toxins, which can also be washed by rain into aquifers
- Ponds can fail or seep acid

Waste Water

- The goal is for water and reagents to be re-used
- Water stored for treatment, but generally remains unusable
- Storage tanks have high propensity to leak, with contaminants percolating into groundwater and aquifers



Mining wastes can leach into rivers, groundwater and
aquifers, and into the sea –
polluting drinking water and habitat

Water

The environmental threats all affect water – from seepage into groundwater, leaching, direct contamination, or the increased risk of rainfall causing erosion and landslides.

Contaminating the waters of BCS threatens its economic future.

Water is already in short supply.

PROTECT WATER TO PROTECT DEVELOPMENT

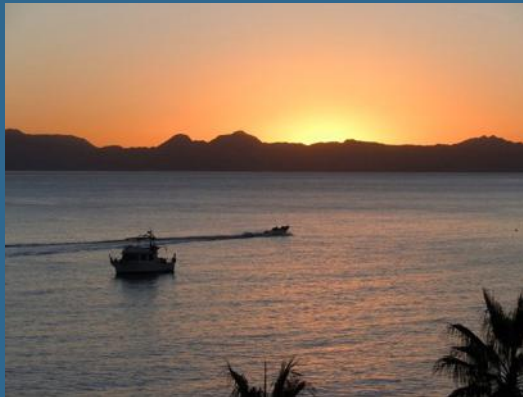


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Mining can put BCS' water resources **at great risk.**



This risk pits two valuable, publicly-owned resources against each other: **minerals and water.**



Access to clean water **opens the door** to other socioeconomic development opportunities that can evolve and grow to meet the needs of future generations.

Access to water in BCS is already limited

- It must meet the needs of existing agriculture, human settlements, tourism, livestock, and other economic activities
- Mining presents a new demand for water at scale
- Mining activities may place at risk existing community water demands



Water supply has always been - and will always be - a determinant in the future of sustainable development in Baja California Sur



Sam Beebe



Dario Lopez-Mills / Associated Press

LORETO



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Overview

Loreto and its surrounding locality is a **mineral rich** area.

Mining projects already in operation include: El Boleo (copper) and El Arco (copper and gold) among others.

Legal research indicates that **16.46% of Loreto's surface** area is under mining concessions. This is more than an **800% increase** since 2010.

There are always concerns that mine operators do not have the long-term interests of the community at core which can lead to shortcuts in process and procedure.

Legal research indicates that Grupo Mexico entered into an agreement in 2010 to aggregate nearly **15,000 hectares** of land for the purpose of establishing a large copper mining operation.

Aggregation of land for mining is not without contention.

Among the issues:

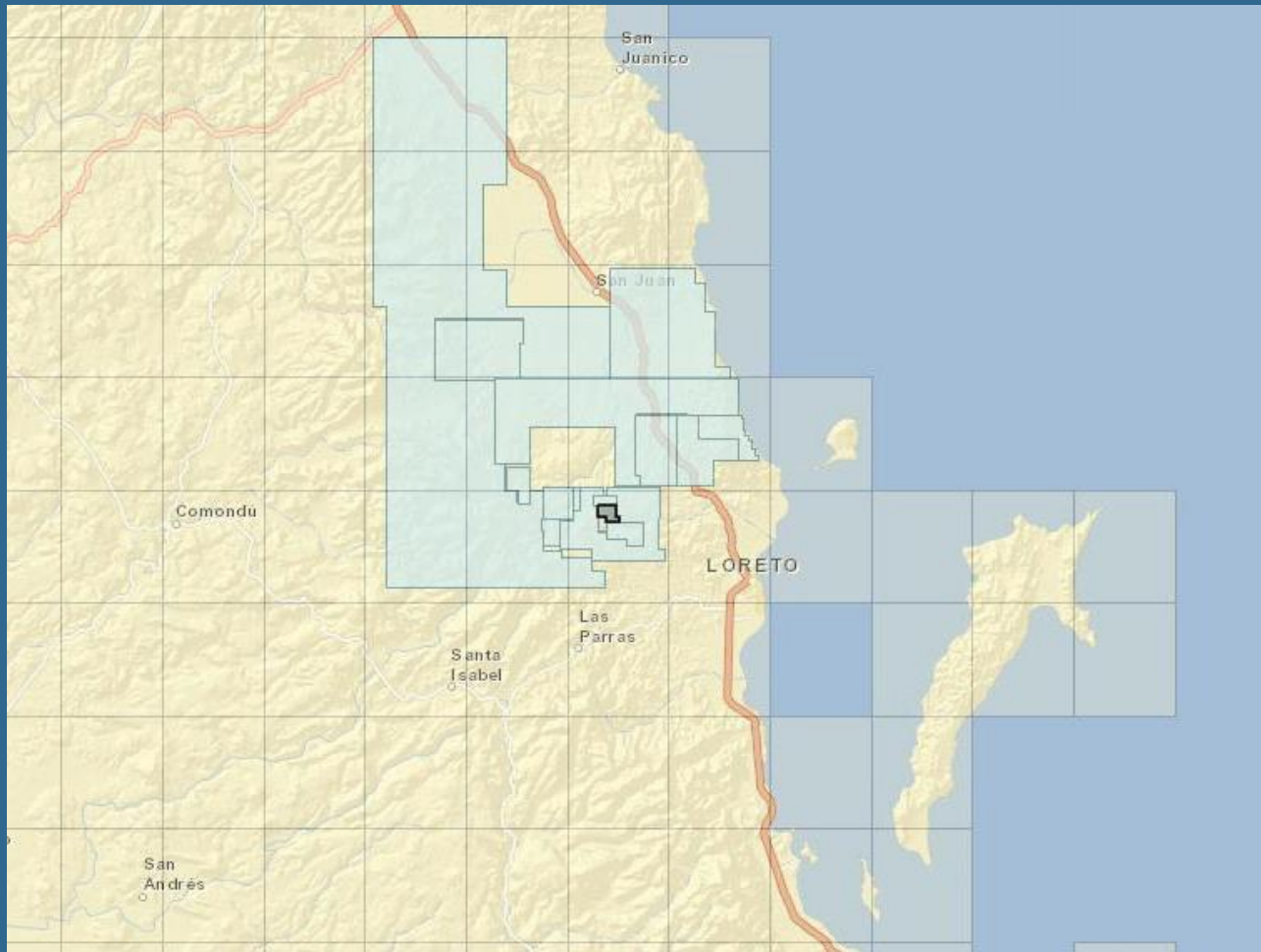
- Lack of due process in acquisition
- Lack of consideration of impacts
- Concern about relationship of owners, decision makers, and mining interests

MINING CONCESSIONS IN LORETO



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Concession Mining Title 236867

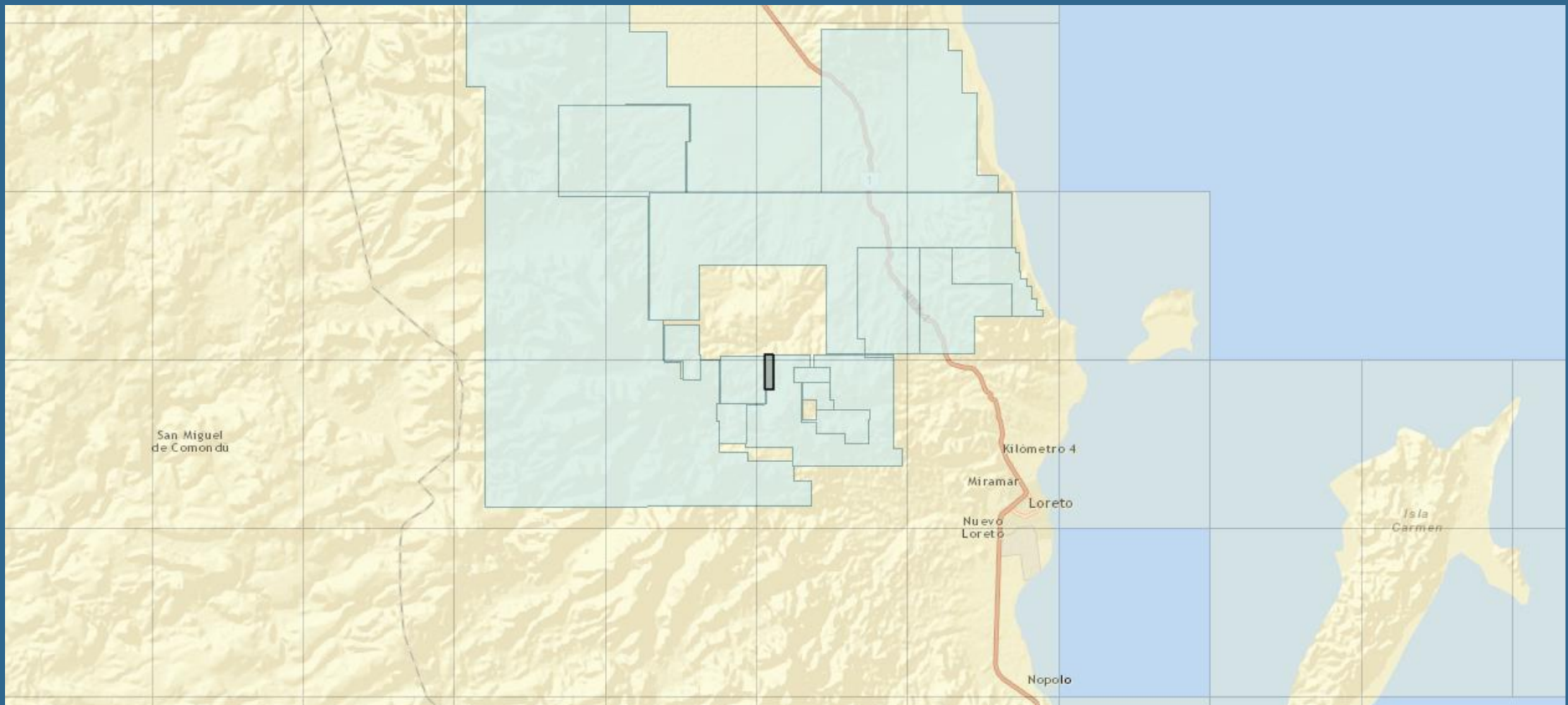


Santa Elena

Surface area: 200 hectares

Duration: 50 years

Concession Mining Title 236988

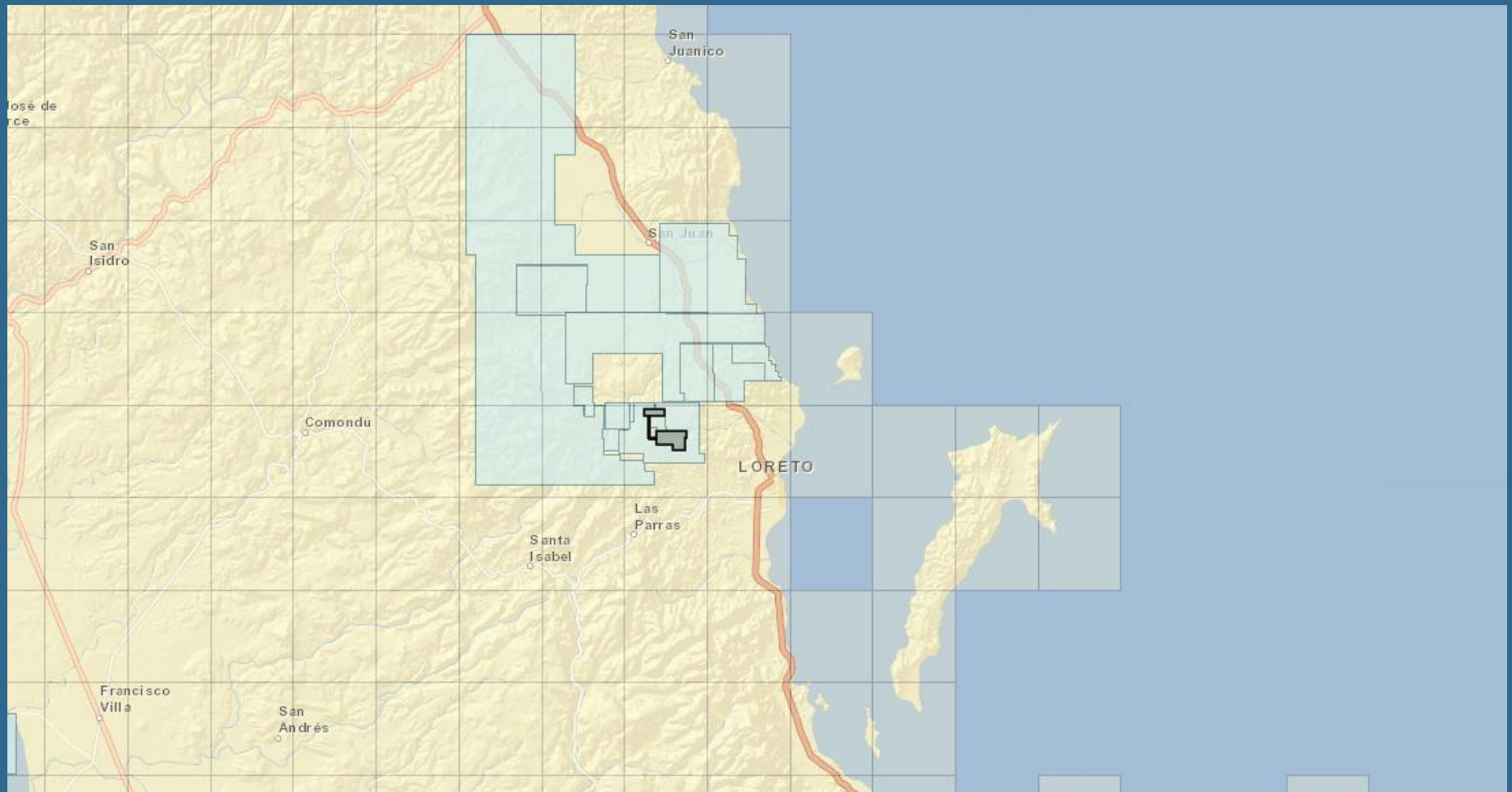


La Misión

Surface area: 94.2051 hectares

Duration: 50 years

Concession Mining Title 236868

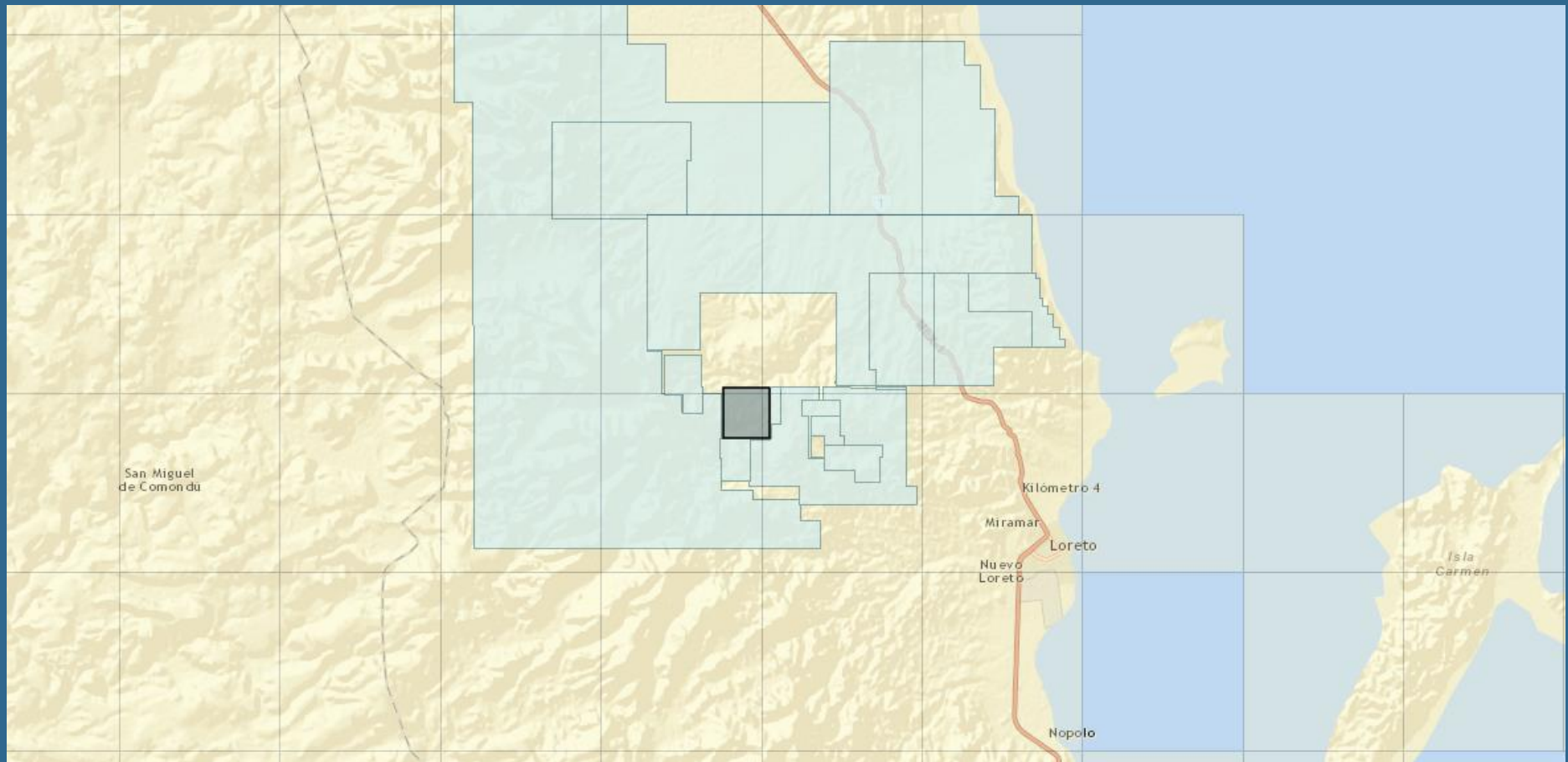


San Judas

Surface area: 650 hectares

Duration: 50 years

Concession Mining Title 236989

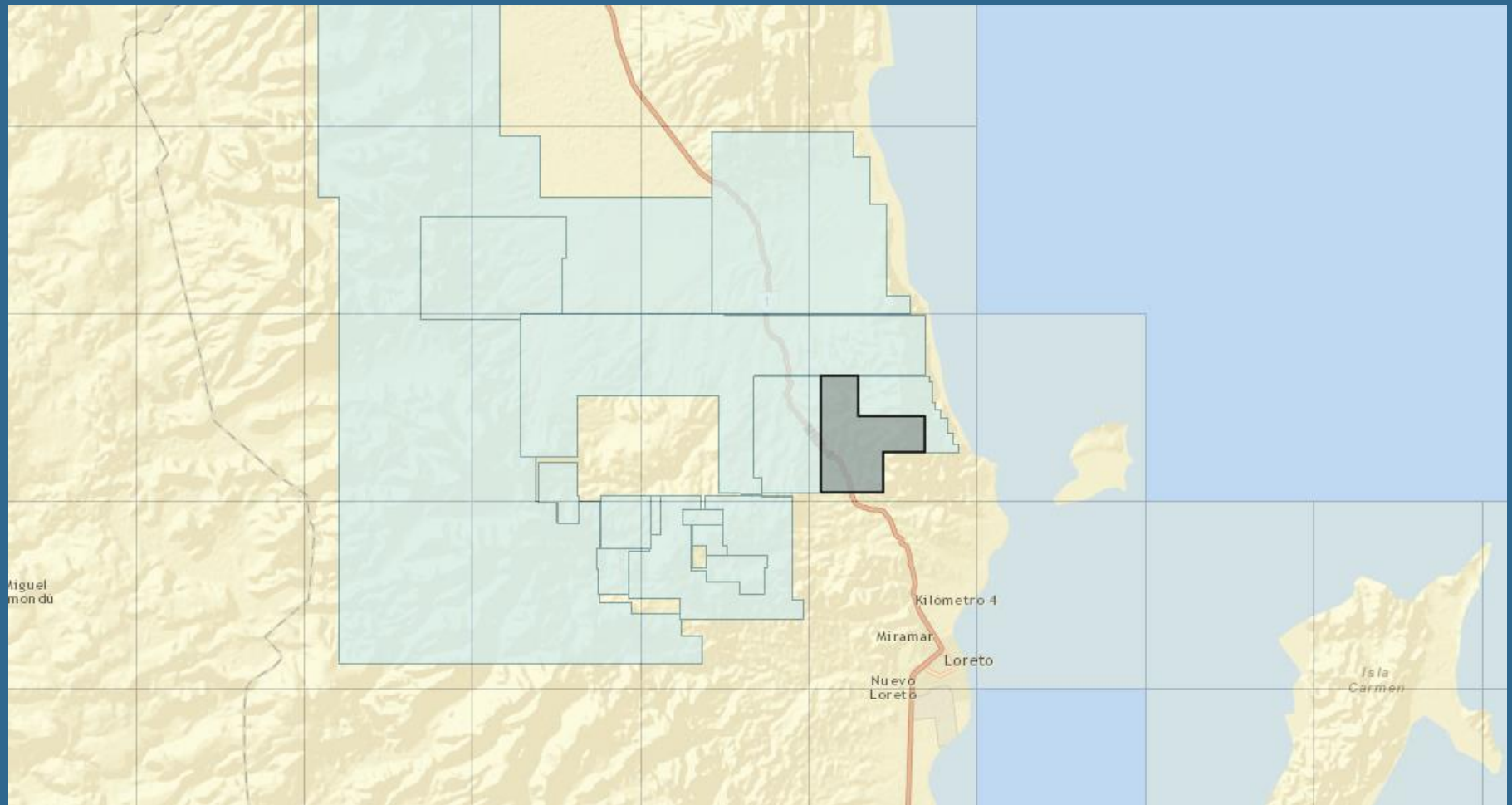


La Trinidad

Surface area: 635.4189 hectares

Duration: 50 years

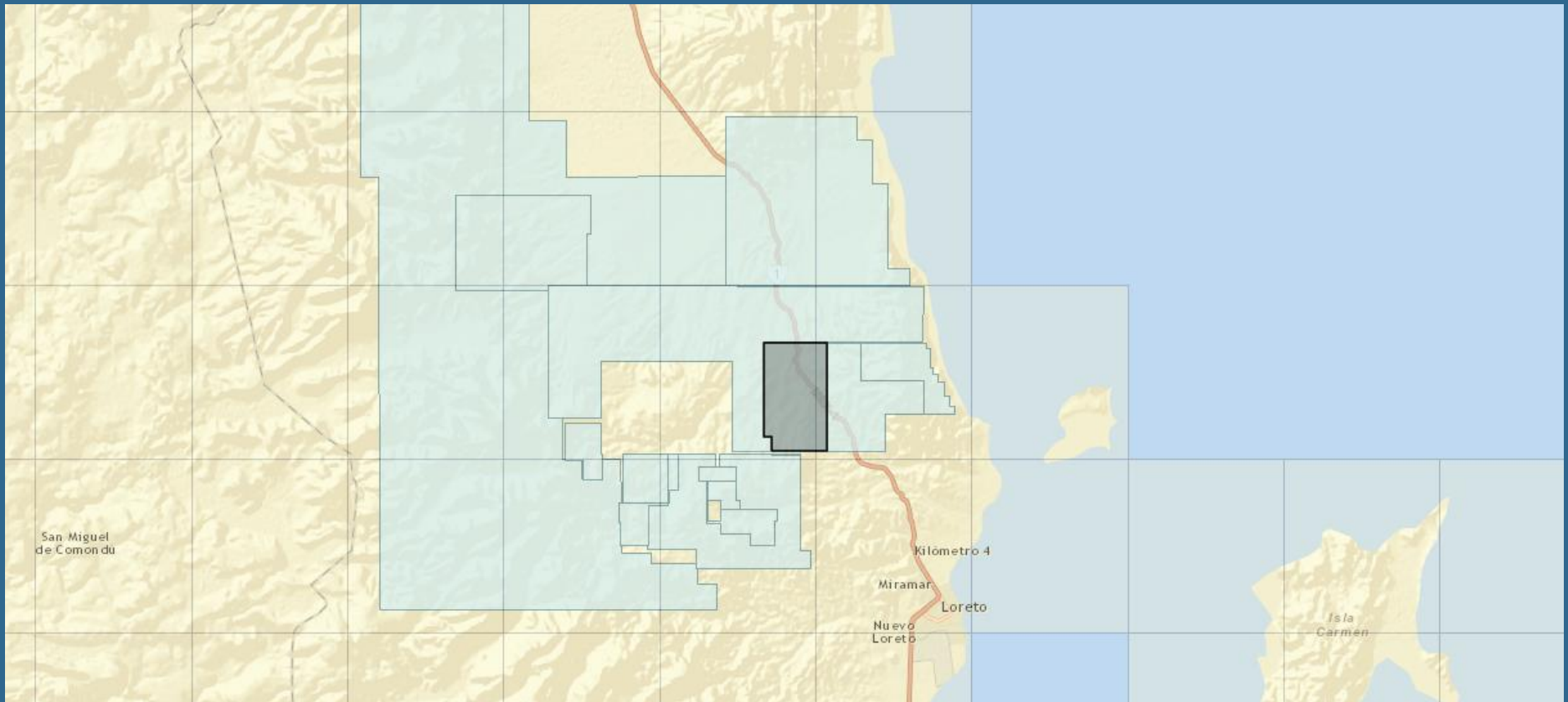
Concession Mining Title 236803



Maryfer

Surface area: 1,891.69 hectares

Duration: 50 years

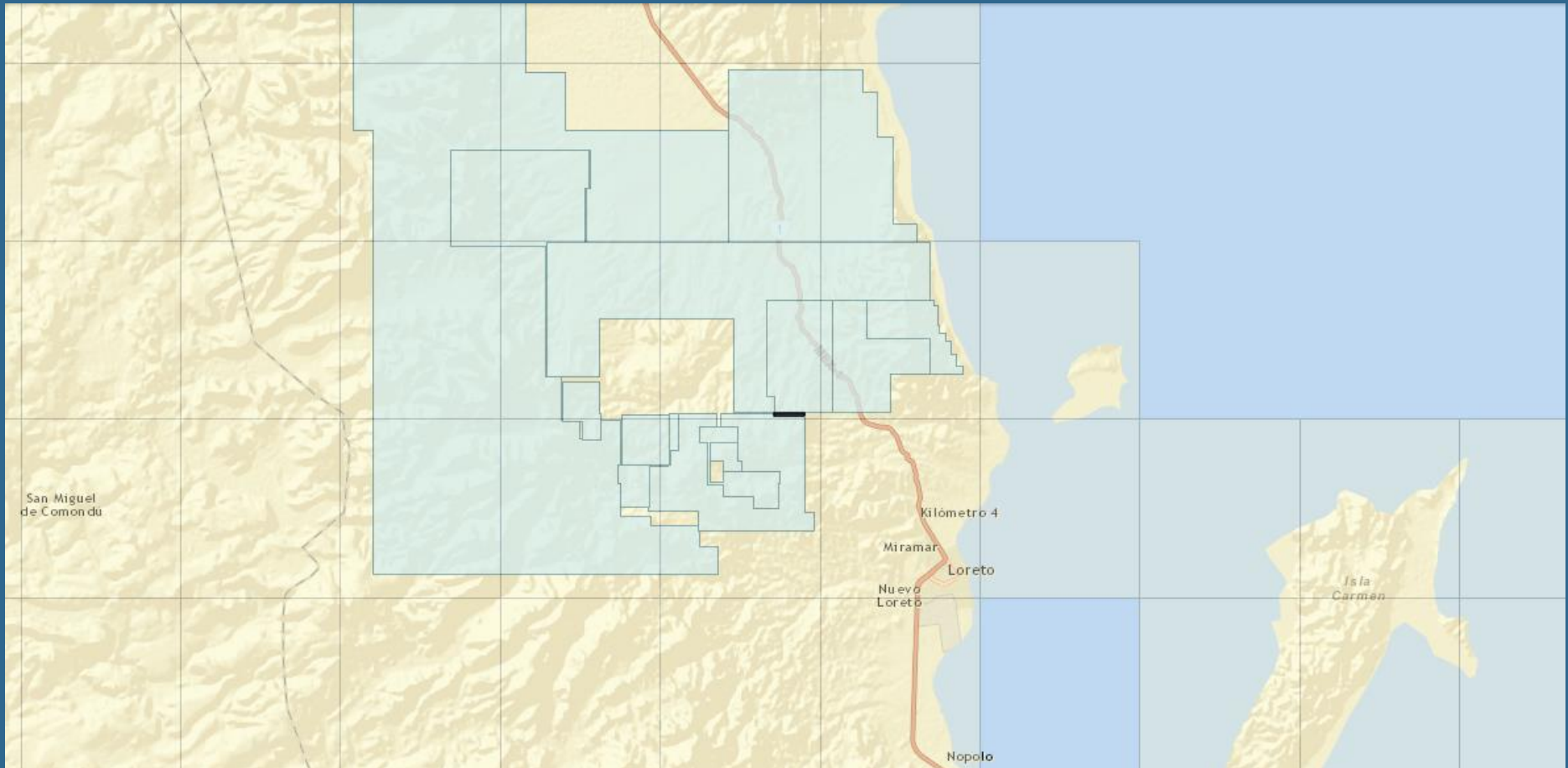


Maryfer Fracc 1

Surface area: 1,940.82 hectares

Duration: 50 years

Concession Mining Title 236805

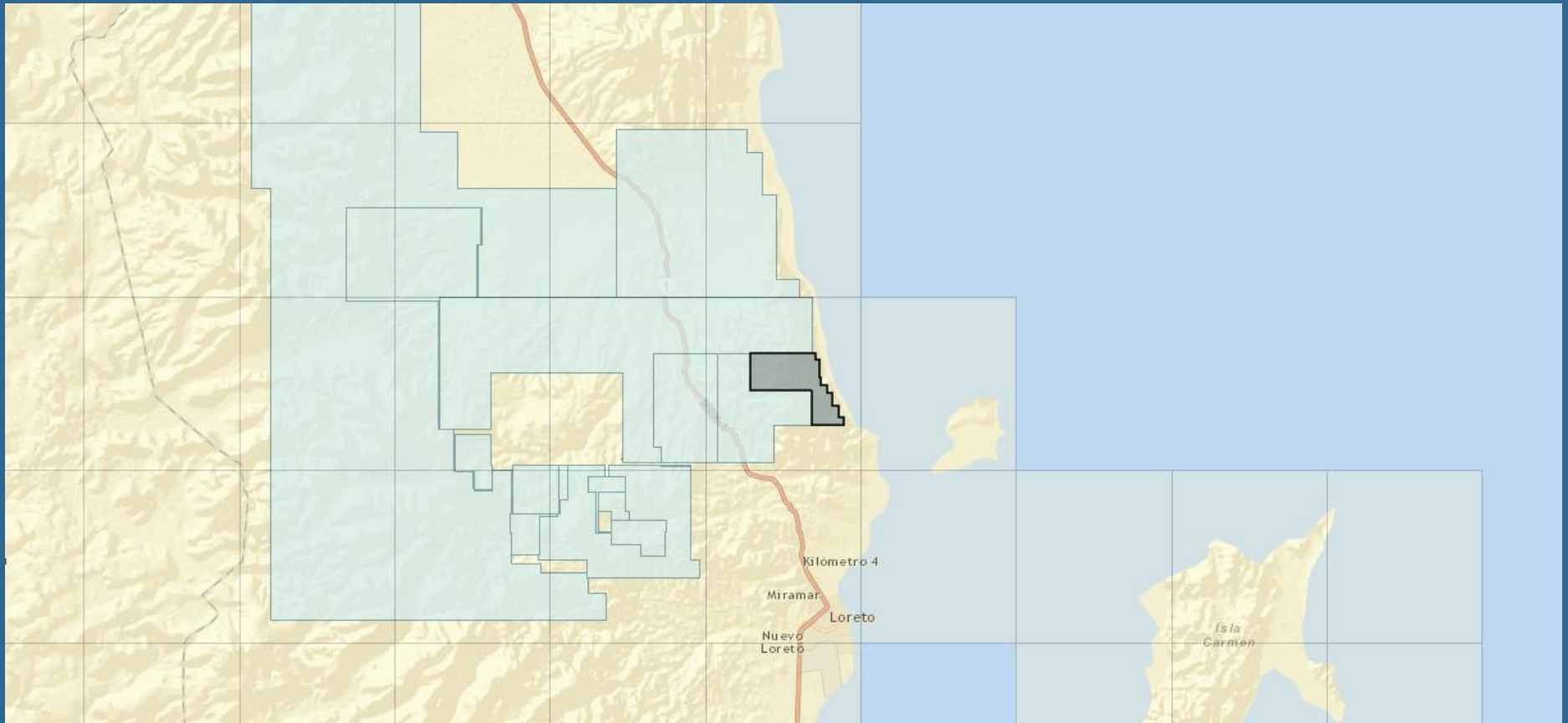


Maryfer Fracc 2

Surface area: 15.2038 hectares

Duration: 50 years

Concession Mining Title 237295

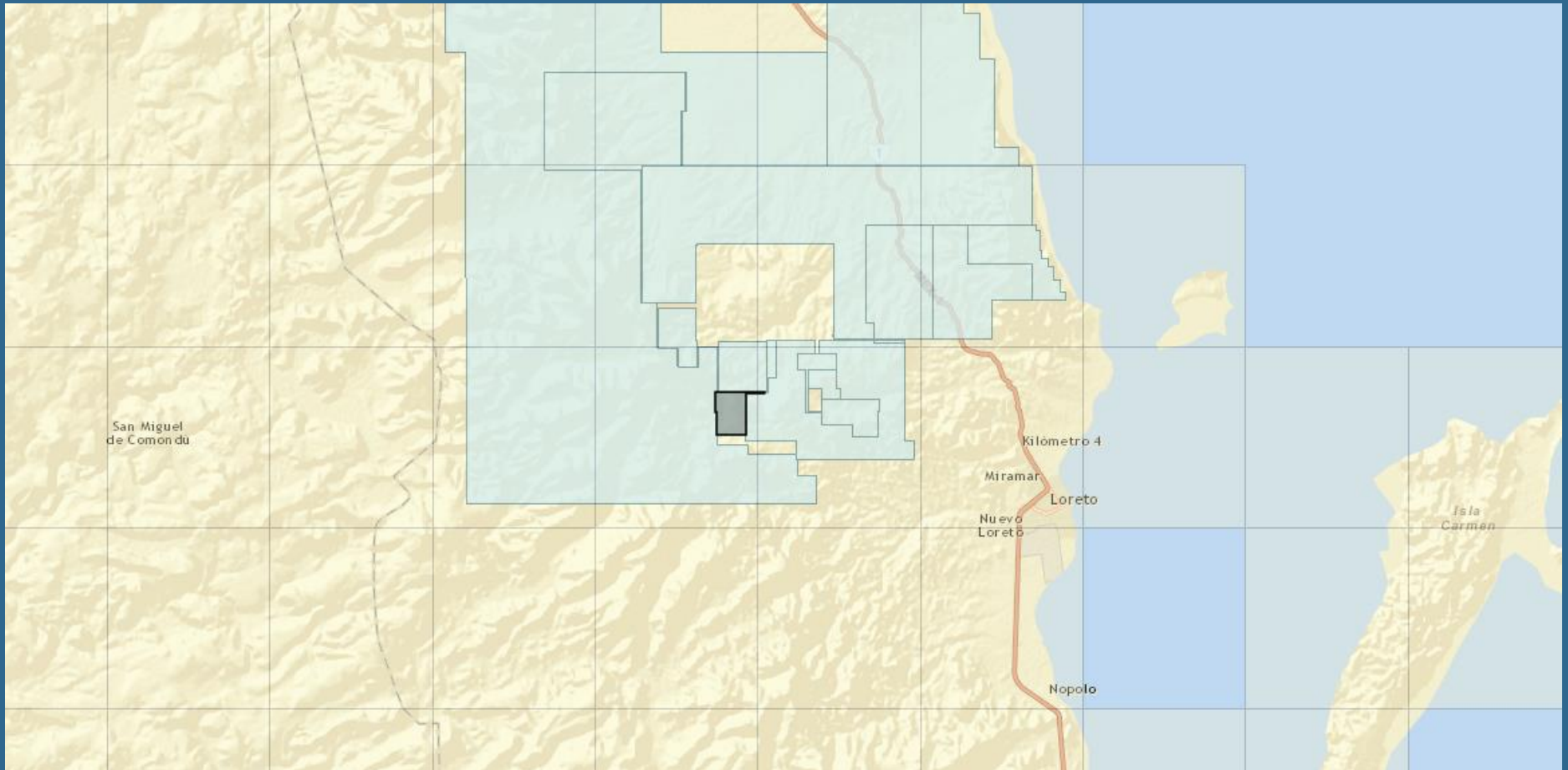


Maryfer I

Surface area: 986.2665 hectares

Duration: 50 years

Concession Mining Title 237402

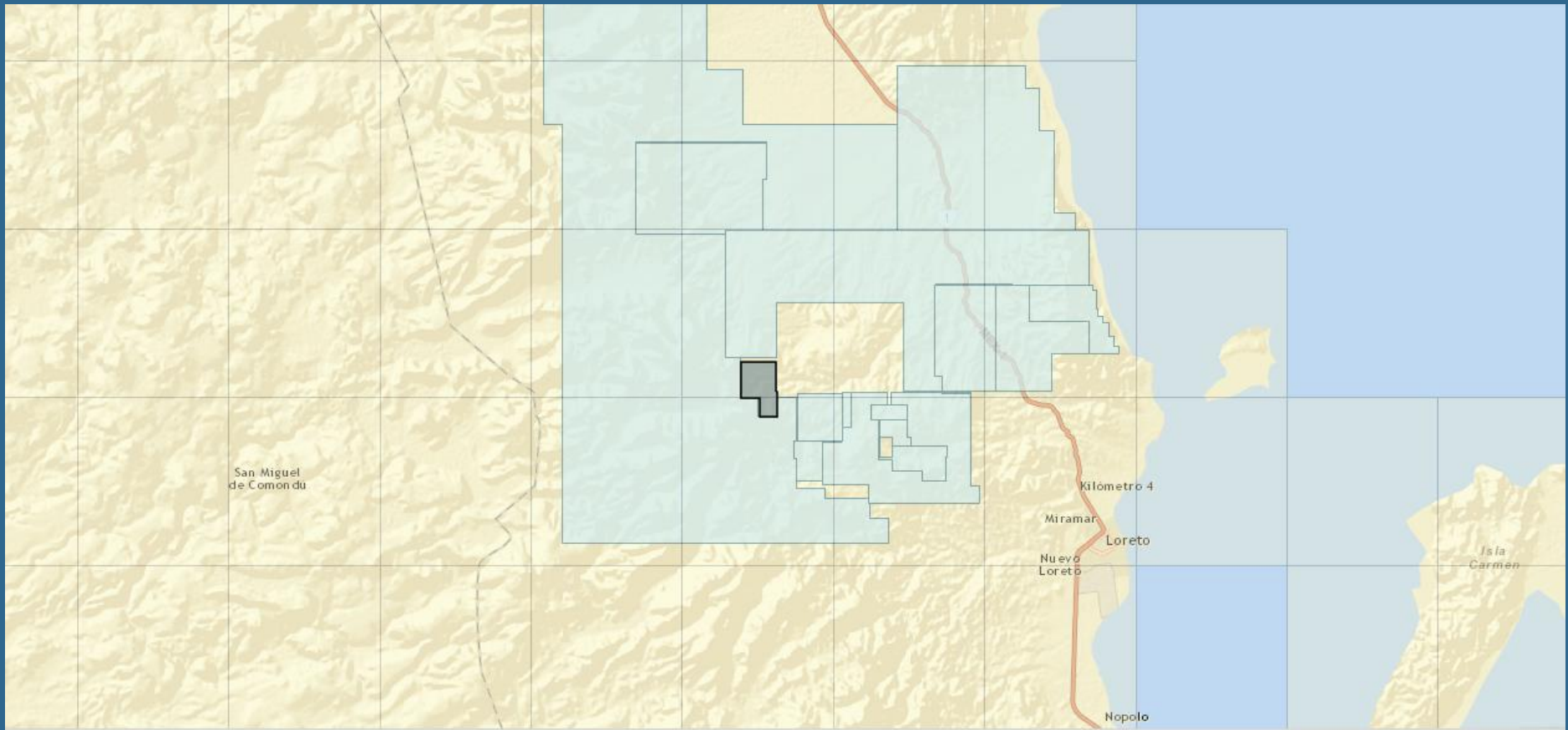


Guadalupe

Surface area: 350 hectares

Duration: 50 years

Concession Mining Title 237779

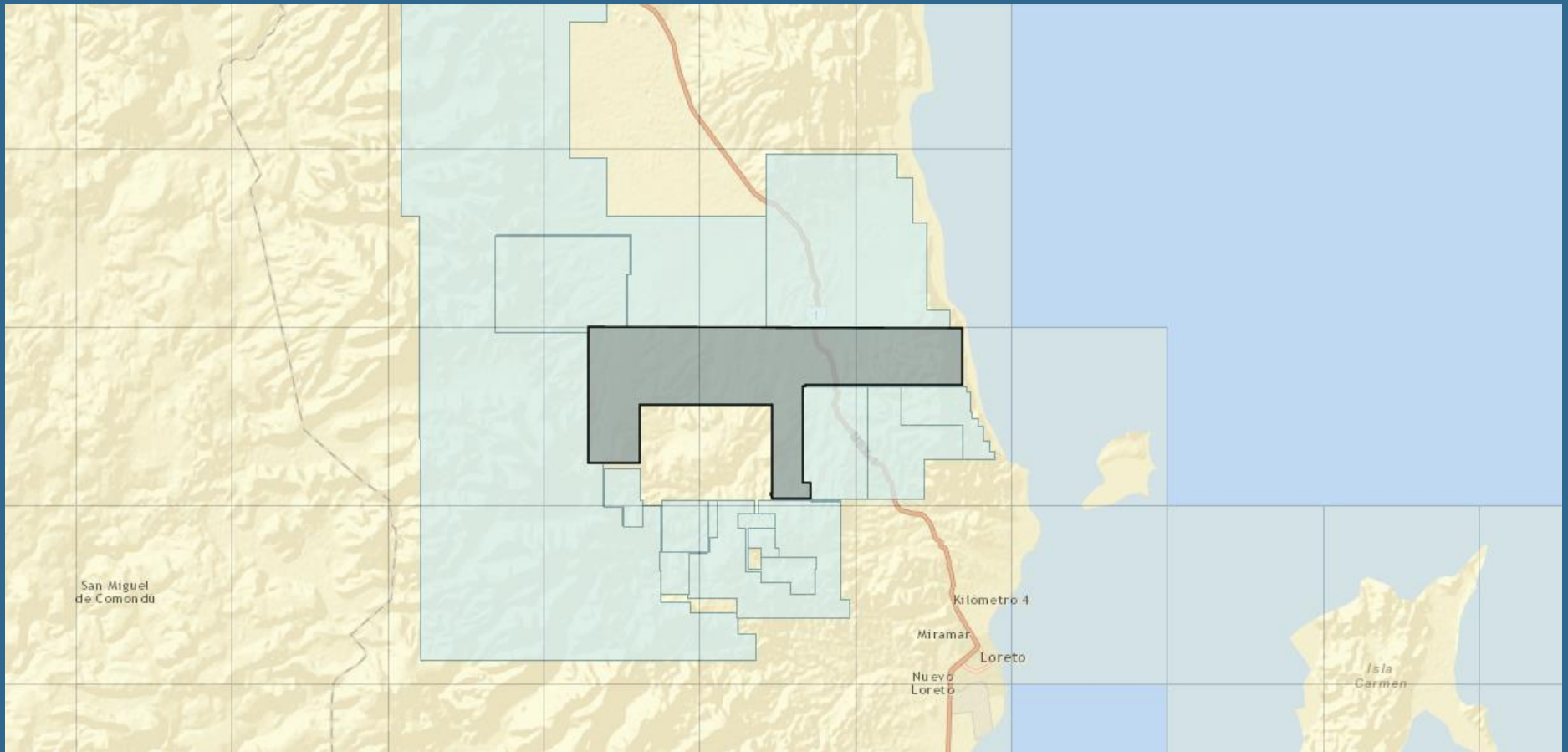


San José

Surface area: 486.2761 hectares

Duration: 50 years

Concession Mining Title 238424

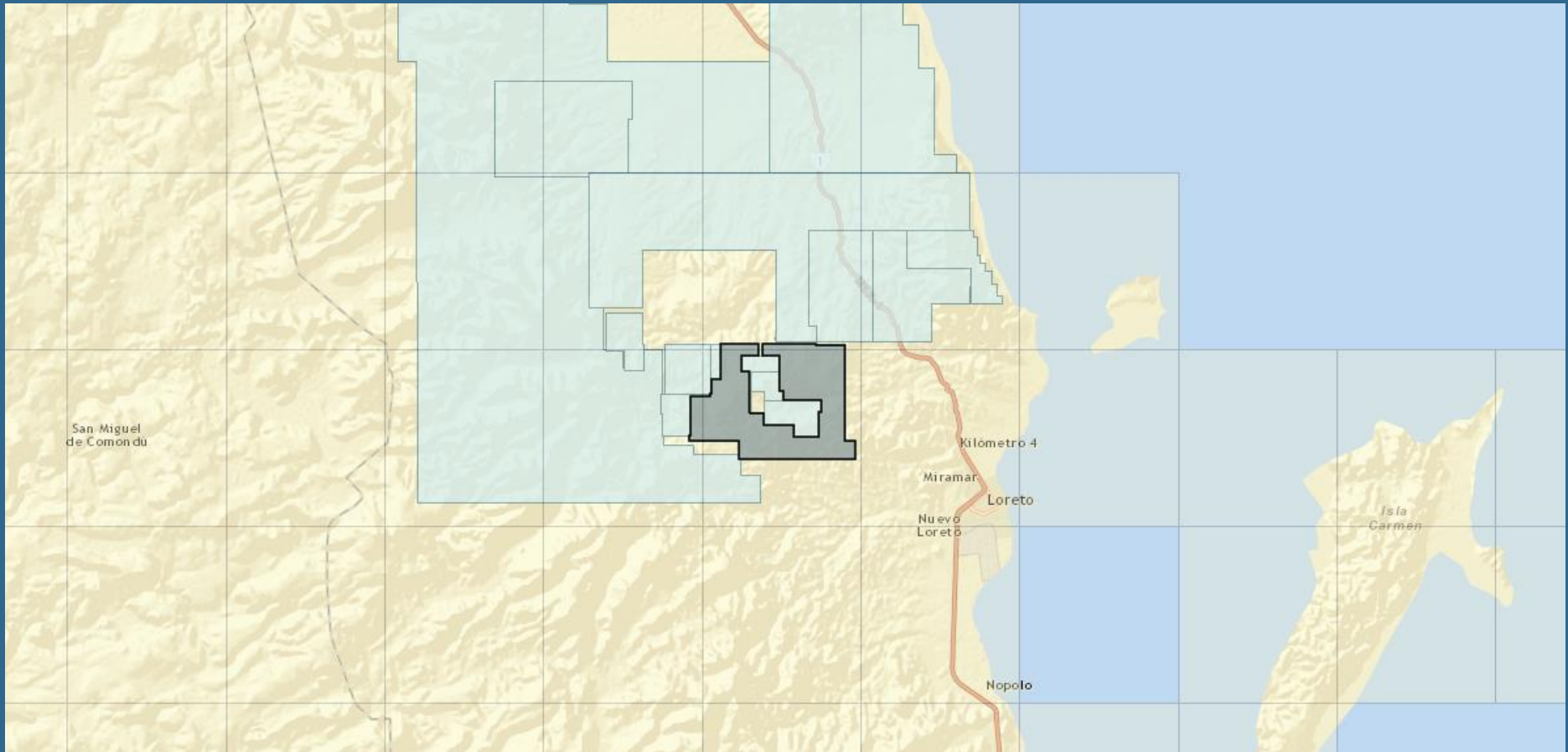


Velma

Surface area: 8,839.17 hectares

Duration: 50 years

Concession Mining Title 239720

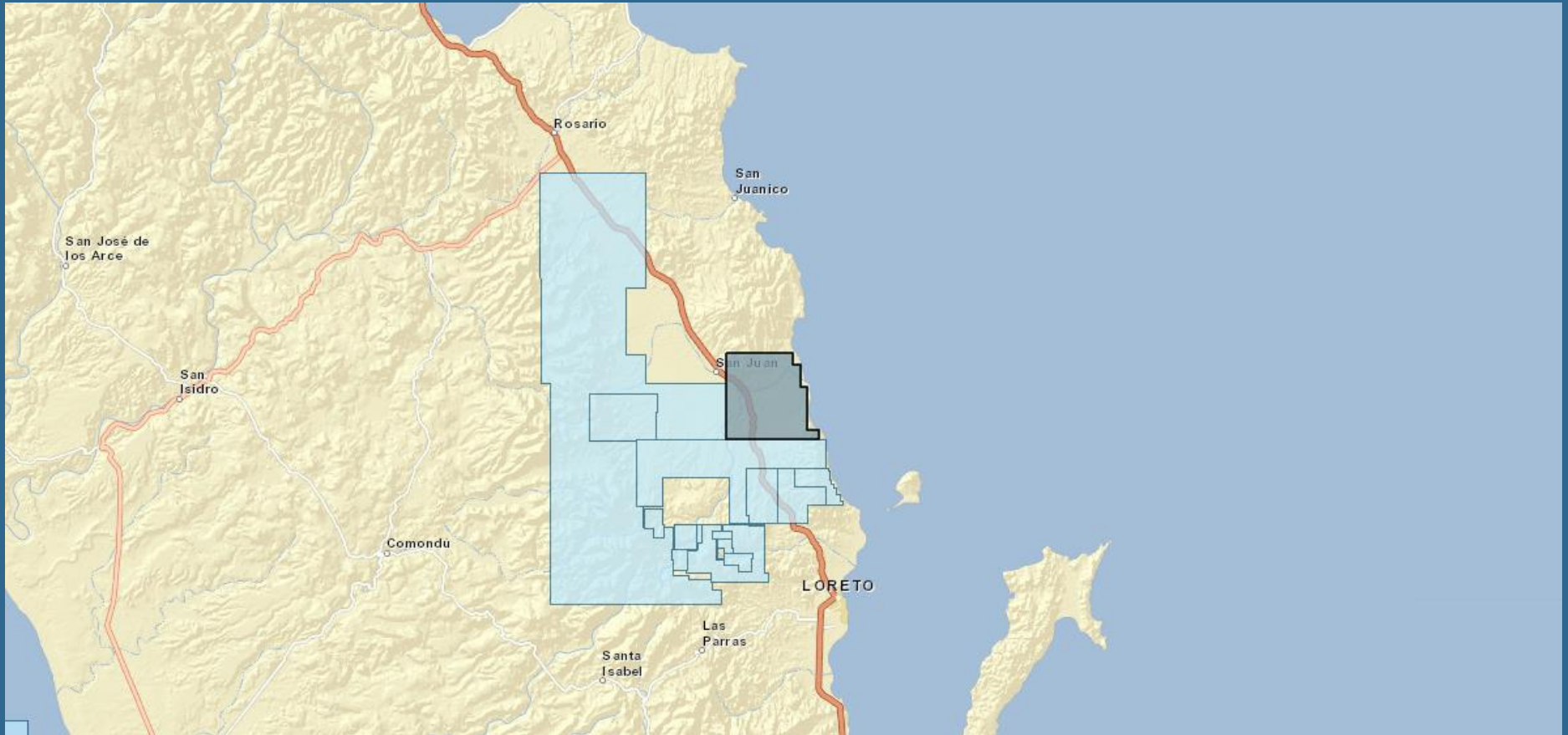


La Giganta

Surface area: 3,381.62 hectares

Duration: 50 years

Concession Mining Title 240380

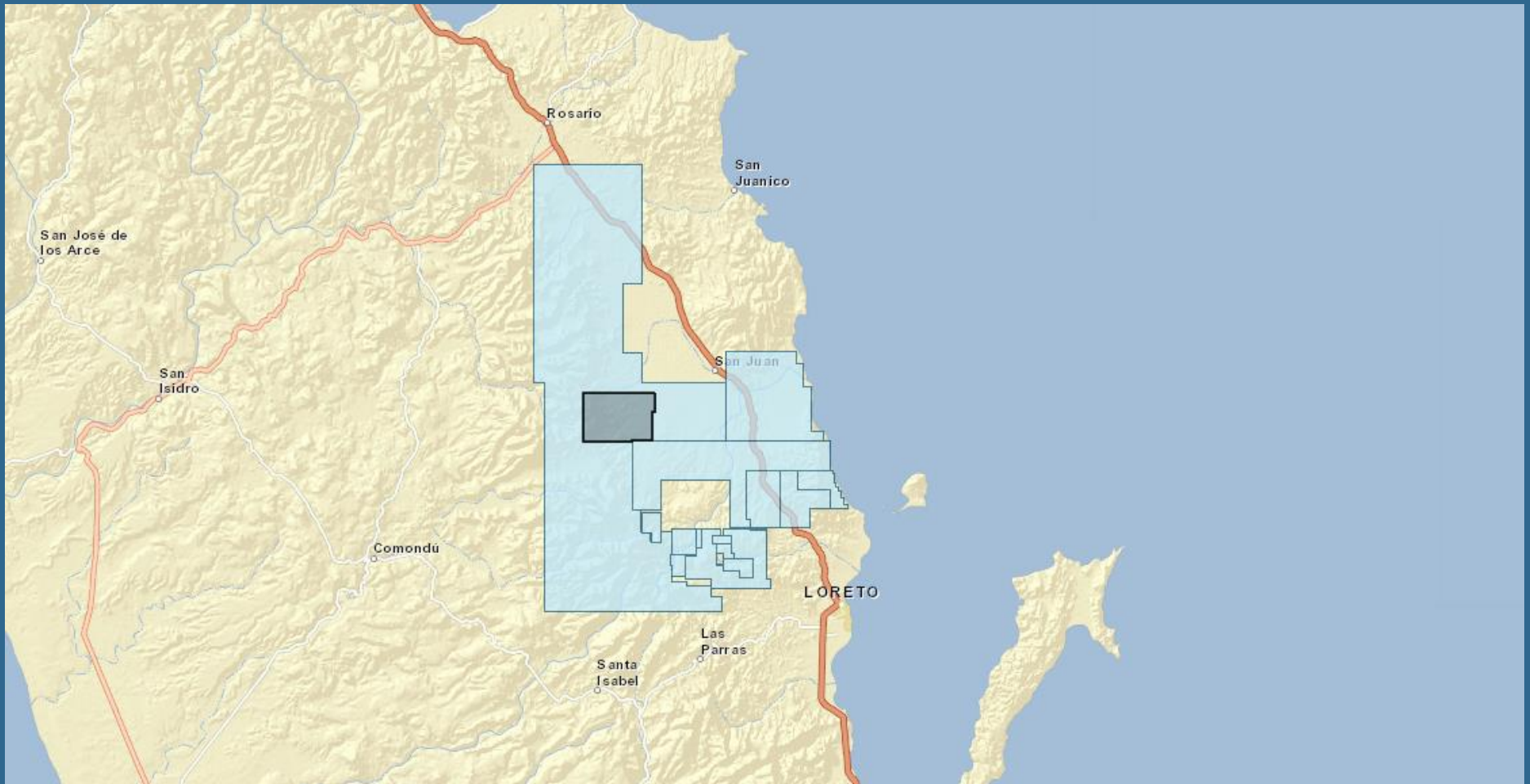


El Triunfo

Surface area: 7,431.11 hectares

Duration: 50 years

Concession Mining Title 241057

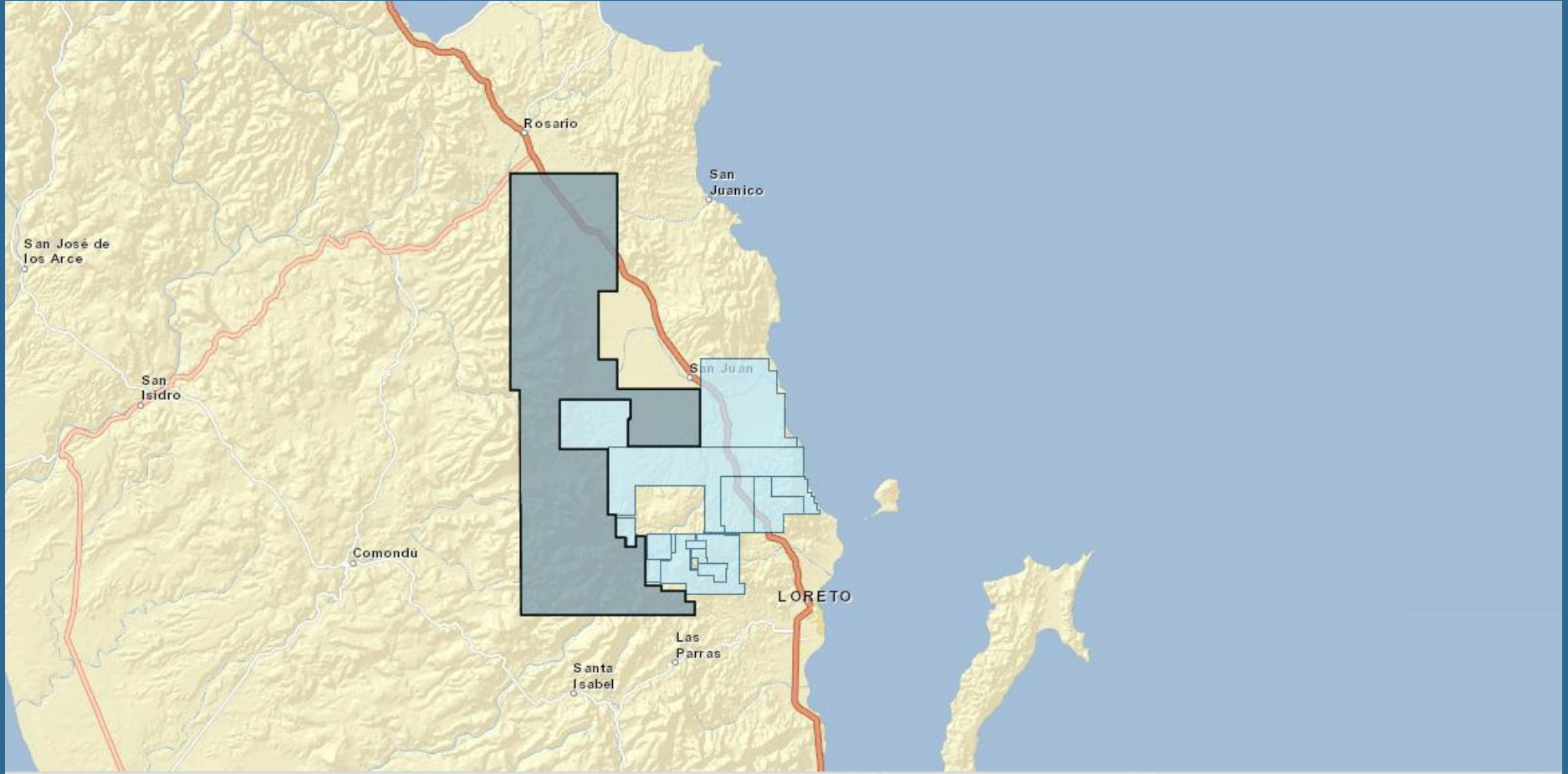


Papiñi

Surface area: 3,494.17 hectares

Duration: 50 years

Concession Mining Title 241631



San Juan

Surface area: 49,896.4 hectares

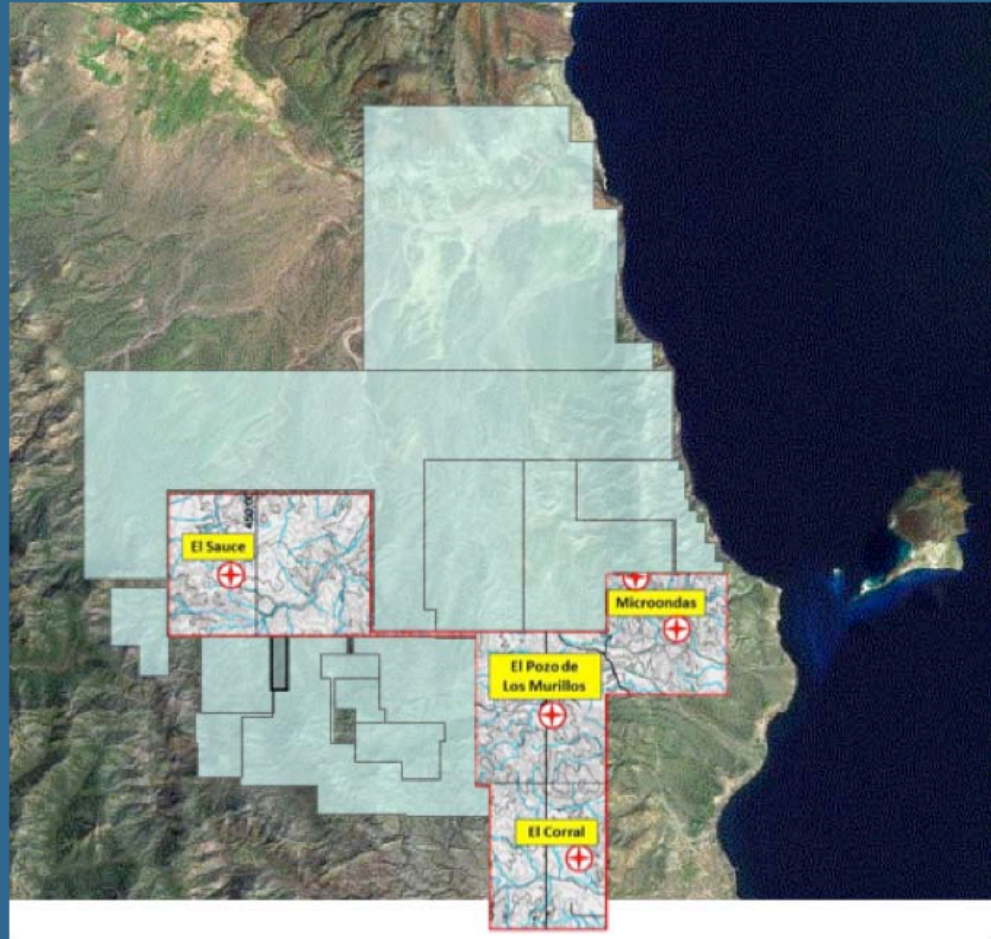
Duration: 50 years

Loreto Copper Project, BCS

Owned by Azure Minerals, Ltd., an Australian company with another nearby concession

Azure has a public relationship with Grupo Mexico

9,571 hectares on the east of the Baja California peninsula

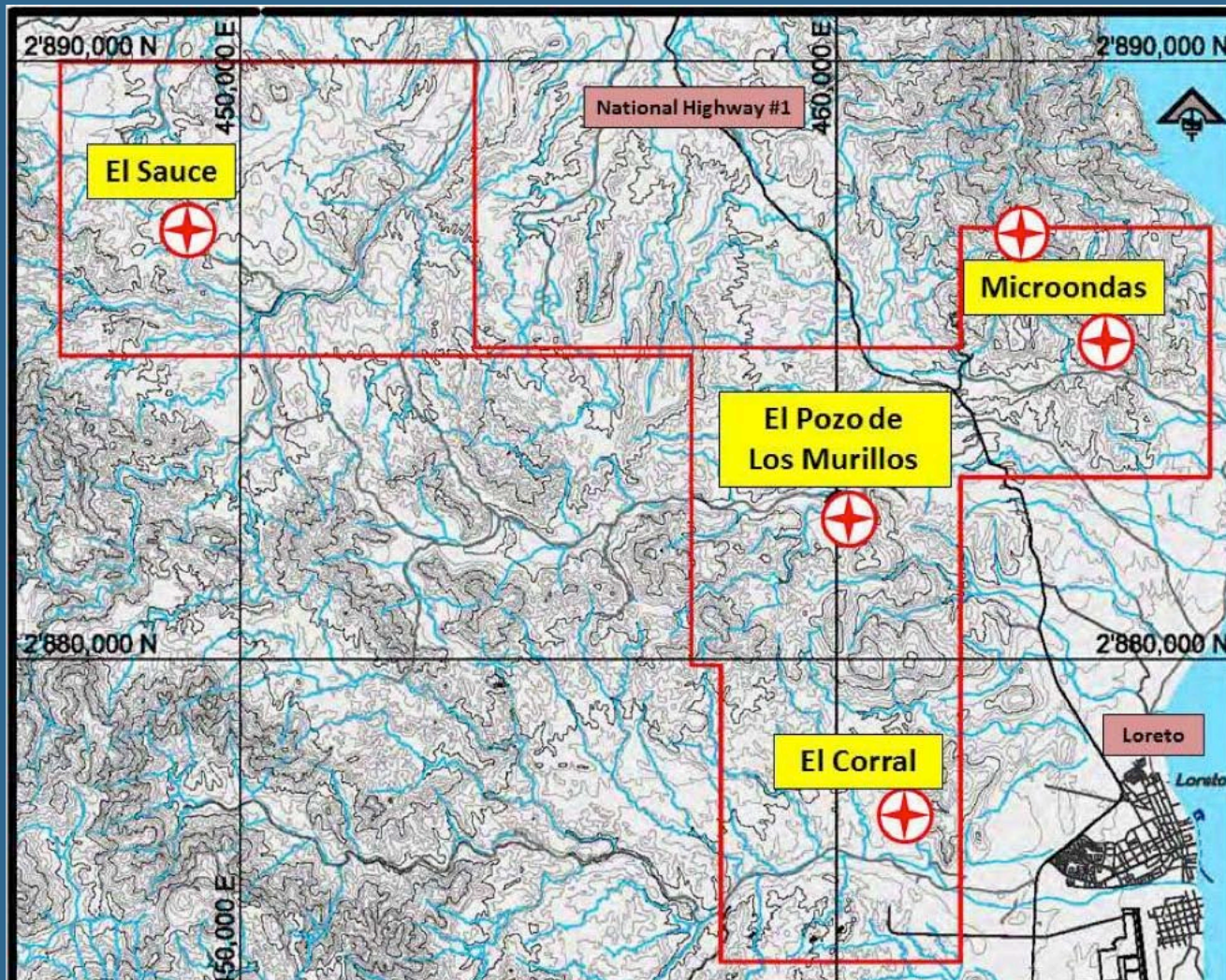


Map of existing concessions in the Loreto area (light green) and the concessions that Azure Minerals purchased in 2013 (El Sauce, Microondas, El Pozo de Los Murillos, and El Corral).



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- Claim they have received several expressions of interest from large mining companies about this Loreto project
- It is not clear whether Azure can open a mine with its existing resources
- Area acquired is only **6 km away** from densely populated town of Loreto



Loreto project plan purchased by Azure

OTHER OPERATIONS



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Buenavista Mine, August 2014

- Sonora, owned by Grupo Mexico
- 40,000 m³ copper sulfate spilled
- Claimed heavy rains to blame
- “This is the worst natural disaster provoked by the mining industry in the history of modern Mexico” – Environment Minister Juan José Guerra Abud





Affected the water
for....

Meaning...

24,000

People

Seven
Communities

322

Wells Shut Down

3 Million
Liters of Drinking
Water Distributed

El Arco, Baja California

- Owned by Grupo Mexico
- Within the Wildlife Protection Area Valle de los Cirios and the **Vizcaíno Biosphere Reserve**, an important aquifer
- Several civil society organizations have opposed this project, as it **puts water resources at high risk**
- Opposition backed by Senator Francisco García Lizardi

Senator notes that if the federal government approves the plans there is not much the locality can do – **federal designation of mining as a public good** would trump his assertion that the mine would not provide any socioeconomic benefit

El Boleo, Baja California Sur

Owned by Baja Mining Corp., a Canada-based company



Canadian mining companies have an abysmal track record on **workers' rights and environmental responsibility**

Gross **financial mismanagement** led to an initial cessation of activity

Also within the **Vizcaíno Biosphere Reserve**

Example of irresponsible financial management paired with foreign interest in Mexico's mineral resources and an **imminent threat to nearby environments**

TODOS SANTOS AND LA PAZ



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Overview

Los Cardones mine has been proposed and rejected numerous times – SEMARNAT recently approved its EIA despite **vague and misleading** language.

Once the project is abandoned there are no regulations in place for remediation or restoration.

Exploration plans in La Paz causing unrest and worries that a new **33,461 ha** mining operation will soon be underway.



Los Cardones, BCS

Was owned by Vista Gold Corp.
(US) and Invecture Gold (MX) and
now operated by Zapal
Development



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Open pit metallic mining project

Two open pits, together equaling
543 hectares

173 million tons of material

135 mn tons in spoil banks of
waste rock

38 mn tons of contaminated
processes material in a tailings
pond

- Presented and **rejected three times** under different names and owners

- August 2014: SEMARNAT approval

> Currently “suspended” but not canceled

- Current owner, Zapal Development, criticized for **forcing ranchers off their lands**, even suing ranchers as trespassers
- Civil society is active in battling this endeavor – proposed site is partly located in a **UNESCO reserve** and threatens the fragile watershed of this region



Los Cardones mine is located within the **UNESCO Biosphere Reserve** **Sierra de la Laguna**





Sierra La Laguna Biosphere Reserve

Mining in this region would seriously **debilitate other economies** dependent on a healthy ecosystem and watershed, including tourism.

Heavy rainfall through this region creates a **beautiful and productive landscape**, supporting incredible biodiversity, recreation, and agriculture.

A recent study done by the Center for Social Responsibility in Mining (CSRM) reported that the “Los Cardones mining project has **a very low potential to bring economic, social, or environmental benefits** to Baja California Sur.”

From CSRM’s “Analysis of a Mining Development in Baja California Sur, México: The Los Cardones Mining Project”

EIA



Superficial:

- Failed to analyze the **effect on local communities** in terms of health, security, housing, public services, and human development

Confusing:

- Gave **incorrect information** regarding the long-term impacts of arsenic contamination while minimizing the noxious composition of the tailings pond

Lacking in-depth analysis:

- Did not adequately analyze the **potential damages** from the desalination plant on the nearby Las Playitas aquifer, or the danger to regional fishing, whale migration and coastal turtle hatcheries, including species that are on the endangered species list

Small Economic Impact for BCS

Tourism in BCS

- Is interconnected and synergistic
- **80%** of jobs
- Contributes to national economy
- Means long-term commitments

Just....

1.8% of state's economic activity,

300 direct jobs and
400 indirect jobs in La Paz,

and only **10 years** in planned operation

Community Reaction

Tourism in BCS

- Is interconnected and synergistic
- **80%** of jobs
- Contributes to national economy
- Means long-term commitments

Los Cardones did not receive a “social license to operate”

- Social license a standard best practice
- Shows engagement with public and communities within the area of influence
- Los Cardones seen as a threat, not an opportunity, to livelihood

Benefits do not justify the risks

Picacho Blanco, BCS



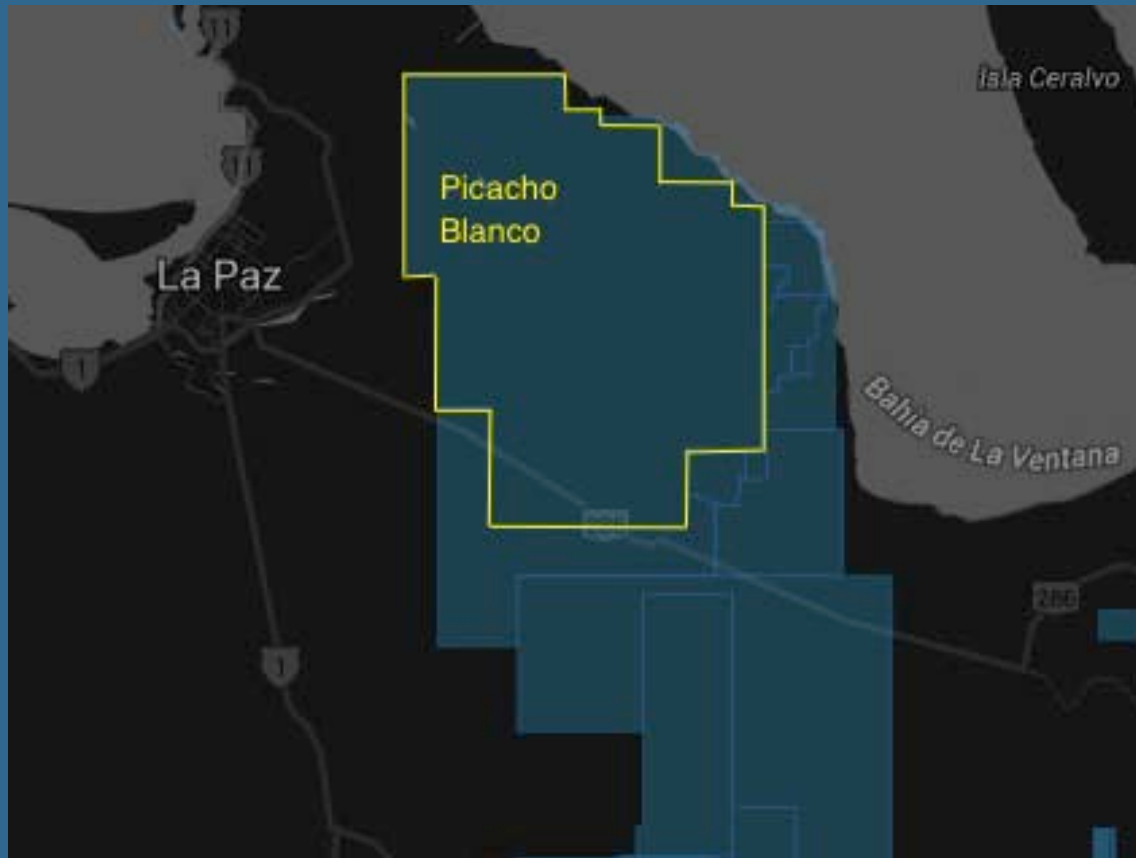
Land owned by Rancho Cacachilas, a “holistic ranch”

33,461 ha: 4th largest viable mining concession in BCS, not including Don Diego

Set to explore 7 hectares

Concerned that if they do not carry out mineral exploration, they will lose the rights to explore and another company will come in with a goal of exploitation

- Rancho Cacachilas relies on **agriculture and eco-tourism**, carrying out mineral explorations to “just see what is there”
- Rancho Cacachilas falls within an environmental protection area
 - Development is allowed, but **no more than 1%** of the total land can be developed
- Claim do not want to exploit, but are not ruling out any future activities
- Civil society is organizing to keep an eye on this development, as it is seen as an environmental and cultural risk



Picacho Blanco concession

Representatives claim that should any mining occur, it will be 13 km away from La Paz. This distance does not satisfy local NGOs, as any accidental leakage would easily contaminate waterways.

OTHER ISSUES



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Overview

Seabed mining (phosphates) projects have been proposed in BCS coastal waters.

Legal intimidation has been at play in other mining development plans, setting a different and dangerous precedent.

Seabed Mining

The biodiversity of BCS' wetlands and marine ecosystems would be greatly threatened if allowed.

Recent international precedent has declared the benefit derived from mining – especially seabed mining – is **not worth the environmental hazards.**



Oceanica, BCS

AKA: “Don Diego”
Project



Owned by Exploraciones Oceánicas, a subsidiary of Odyssey Marine Exploration (OMEX), in turn owned by Florida-based Odyssey Marine

Equipment: Phosphate dredge and a desalination barge

Dredge would operate 24 hours a day, 365 days a year for five years

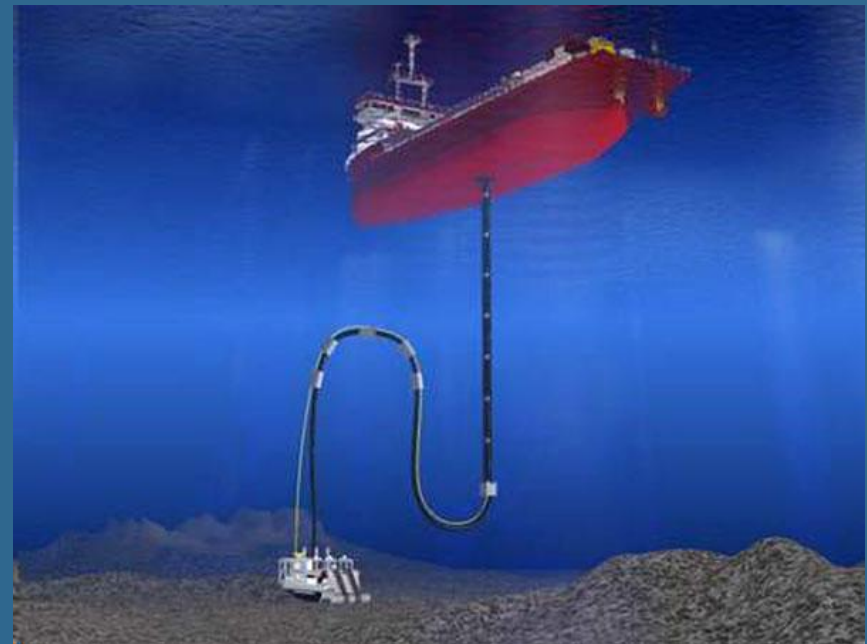
268,238.6159 ha: Largest concession in BCS

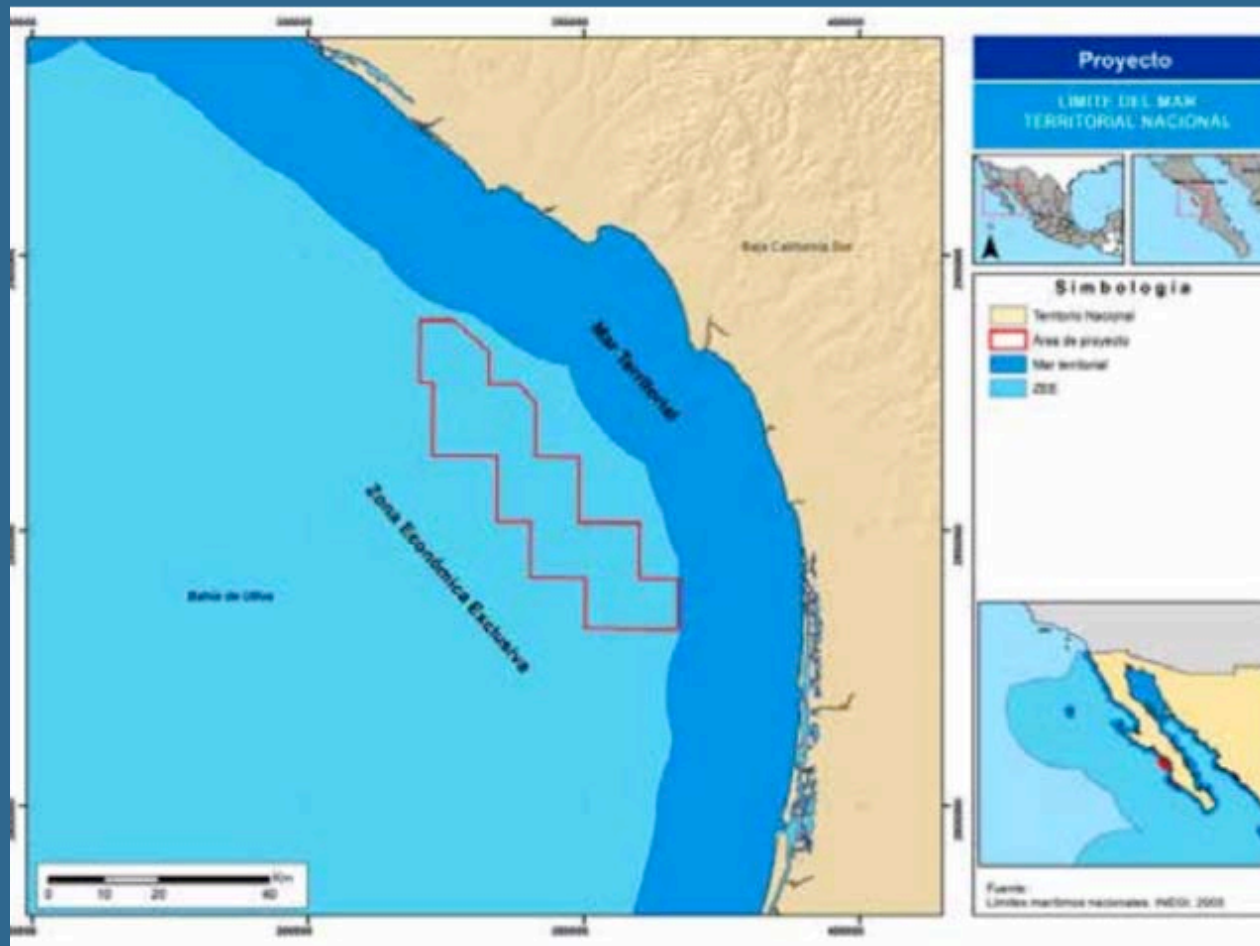
Interested in mining over **34,000 hectares** of ocean floor

Site close to the continental shelf, **overlapping fishing concessions** – two public economic interests going head to head

Not necessarily a viable project
– trying to raise capital

The local fishing cooperative, environmentalists, human rights NGOs, and even pro-mining groups oppose the project





Location of Don Diego project in the Bahía de Ulloa, between Punta Abreojos and San Lázaro

The area is a migrating route for grey whales. The noise generated by a mining project could seriously injure animals, and deter the whales from their usual migration route.



Area is known **sea turtle habitat** where local environmental organizations work

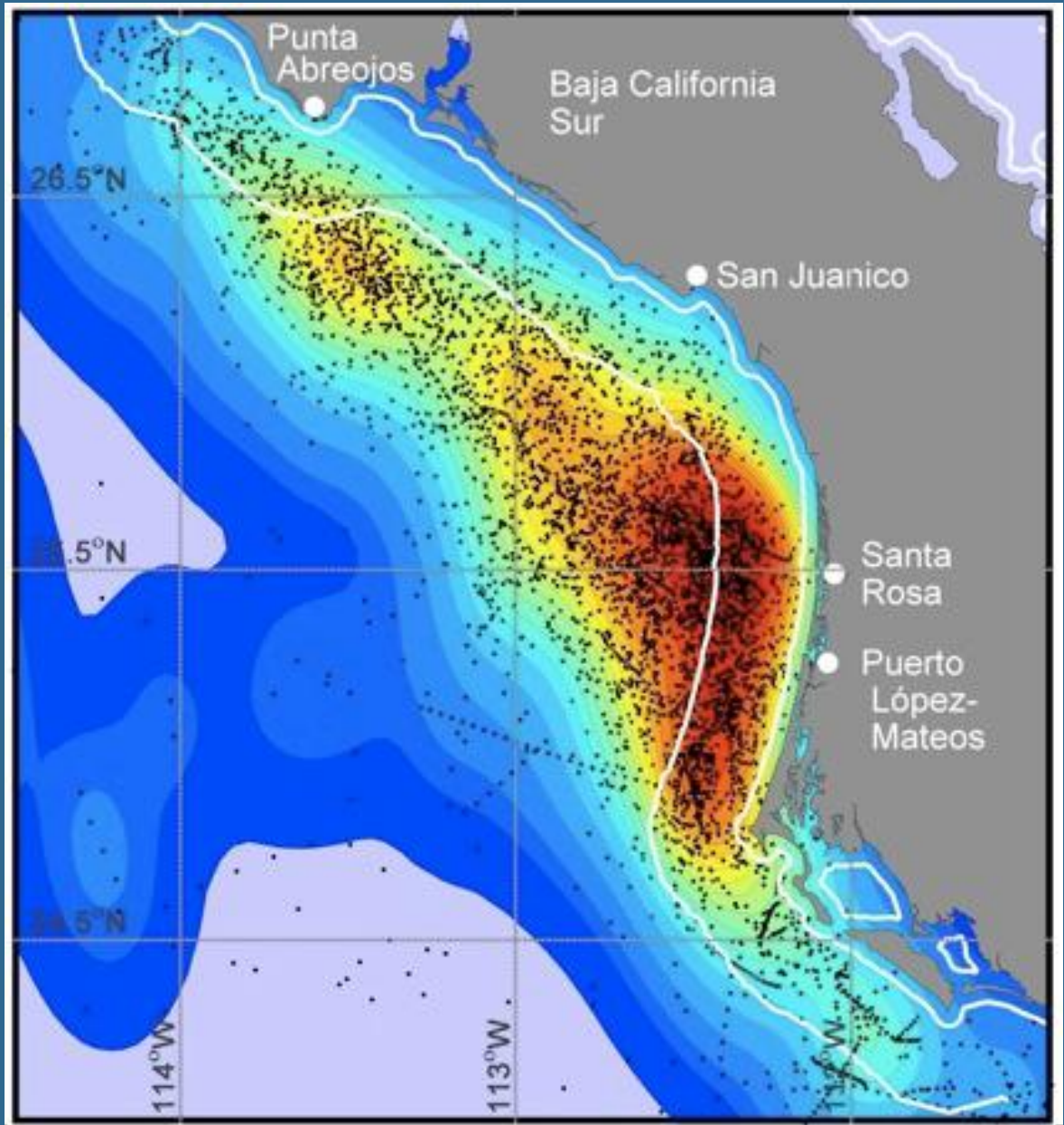
Five species of turtles documented, all IUCN listed “endangered” or “threatened”



Also habitat for whales, black marlin, tuna, and swordfish

EIA cites a 4 km sediment plume, a seabed lowered by 9 – 18 feet, and few to **no organisms surviving** the dredging process

Don Diego project
directly overlaps
well described
critical foraging
habitat for
endangered juvenile
loggerhead turtles



Density plot of habitat use for loggerhead turtles

Peckham et al 2007

Sediment Plume?

Think smog underwater

Cloudy water



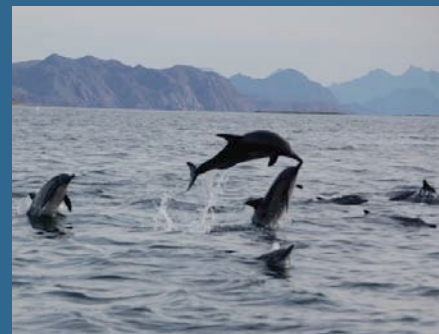
No photosynthesis



No food for whales



No food for
fish, crabs,
lobsters



No food
for
sharks

No food
for
turtles

Impacted
fisheries

Gulf of Ulloa is a nutrient rich, highly productive, biodiverse area



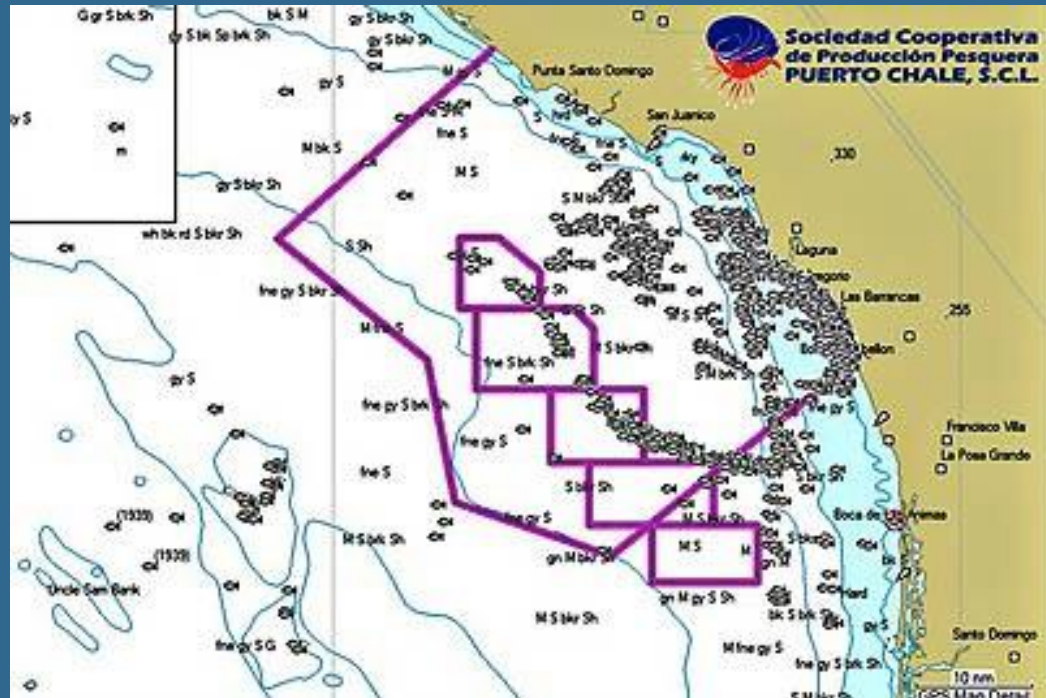
Home to **42% of fishing activity in BCS**



Food Security

Don Diego area overlays fishing grounds for the Puerto Chale fishing cooperative

Plumes and noise would interfere with fishing grounds



Map presented by the Puerto Chale cooperative, showing the proposed mining areas in small purple boxes overlapping their fishing grounds

Legal Intimidation

Intimidation through shows of **physical force** are not uncommon in Mexico, with foreign companies trying to break up unions and aggressively taking land.

For the first time in the history of BCS, companies have begun using **legal intimidation** against reporters, NGOs, and other development industries.

SLAPP

Strategic Lawsuit Against Public Participation

- A reporter, fishing cooperative of Puerto Chale, two members of the former fisheries advisory group to Exploraciones Oceánicas, and Meson Capital
- Article 253 of the Federal Penal Code, Title 14 Crimes Against the Public: denounces any act that “seriously **affect(s) domestic consumption**...any act or procedure that prevents or hinders...free competition in production or commerce.”



Voices of Concern

- Morena political party, several individual politicians
- Healy Group, media conglomerate
- Deputy Jesús Verdugo Salvador Ojeda, president of the Committee for Ecology

“At this point there is **no technical justification** that tells us [the project] will not have an impact on the environment and the resources in the sea”

“I have no doubt that the sole **purpose is to intimidate** and to create the public opinion that you cannot speak out against such projects or you will be criminally sued”

La Platosa, Durango

Owned by Excellon, Canadian
company

Silver mine in agreement with Ejido
La Sierrita

Ejido filed to terminate the agreement
several times



Ejido cited **numerous environmental and human rights violations** in rescissions, but Excellon refused to negotiate

Broke up peaceful protestors with force, trucked in workers from other states to act as “goons” during union votes

Communications show Canadian government and embassy worked with Excellon and Mexican government to quell protests

This case has been brought before the 6th **Agrarian Tribunal**, which has ruled in favor of the Ejido so far by allowing the Ejido to continue accepting rent payments from Excellon while legal procedures are underway.

The La Platosa case could provide sufficient precedent and hope for other landowners in their struggle against illegal land assignments.

THE FRAMEWORKS FOR MINING



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Overview

I. Federal

- A. The Mining Law 1992 and Regulations
- B. The Ley Inversión Extranjera (LIE)

II. State

- A. State Development Program 2011-2015
- B. State Mining Development Program
- C. Mining Board

III. Regional

- A. Programa de Ordenamiento Ecológico Local (POEL)
- B. Sub Programa Regional de Desarrollo Urbano (PSRDU)

I. FEDERAL



The 1992 Law and the LIE

The Mining Law 1992: Mining and exploration are in the public interest, and contribute to the public benefit. Therefore, **exploitation takes precedence over other land use.**

Ley de Inversión Extranjera: Intended to protect Mexican national interests. However, **companies can be 100% foreign owned**, and mining **concessions can be handed over to a third party** at any time.



II. STATE

State Development Program



State Development Program

The State Development Program 2011 – 2015 sets sustainable **mining as a potential “vocation”** for Baja California Sur.

Though **no objectives, actions, or results have been made public**, a State Mining Development Program was also established.

As of 2005 a **Mining Board** has been in operation, yet its members or actions are also **unknown.**

Baja California Sur by Numbers

State economy has grown nearly 42% over the past 7 years – **76% in tourism and service sector**

Economic activity from tourism on a national level:

1. Jalisco
2. Quintana Roo
3. Distrito Federal
4. **Baja California Sur**



72.4% of the population
works in the service sector

80% when considering
construction and energy
sectors

Tourism creates a balanced,
synergistic growth pattern

Tourism provides **long-term
regional commitment**



GDP Structure of BCS

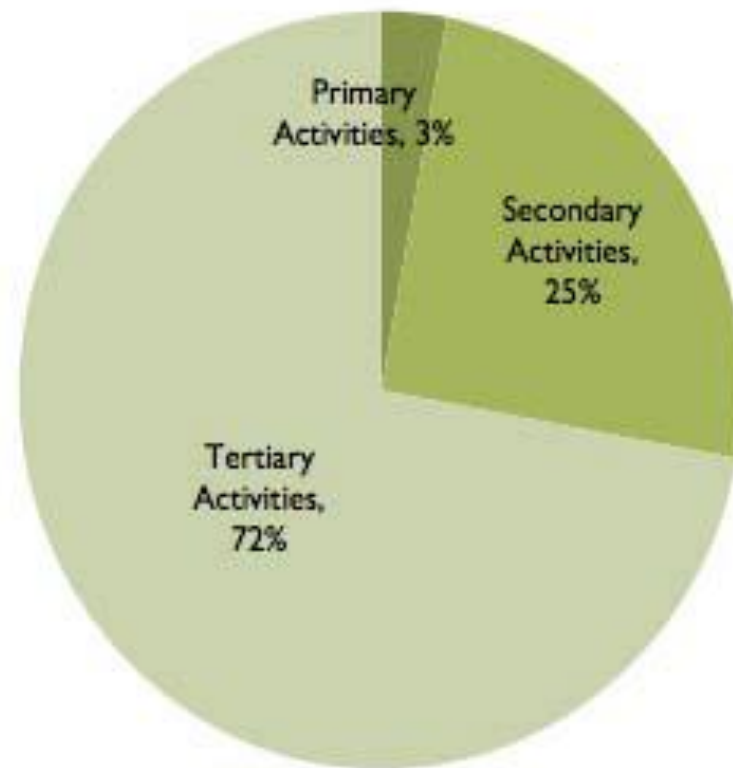
Tertiary activities include, among others:

- Commerce
- Transportation
- Real Estate
- Accommodation and Food Services
- Education
- Health Care

Source: Secretaría de Economía, ProMéxico

Tertiary sector, which includes trade and real estate services, contributed 72% of the state's GDP in 2013.

GDP STRUCTURE OF BAJA CALIFORNIA
SUR, 2013



Source: INEGI

Runaway Mining Development

From 2010 to 2015, the total surface area under a mining concession in BCS **increased from 6% to 12%**

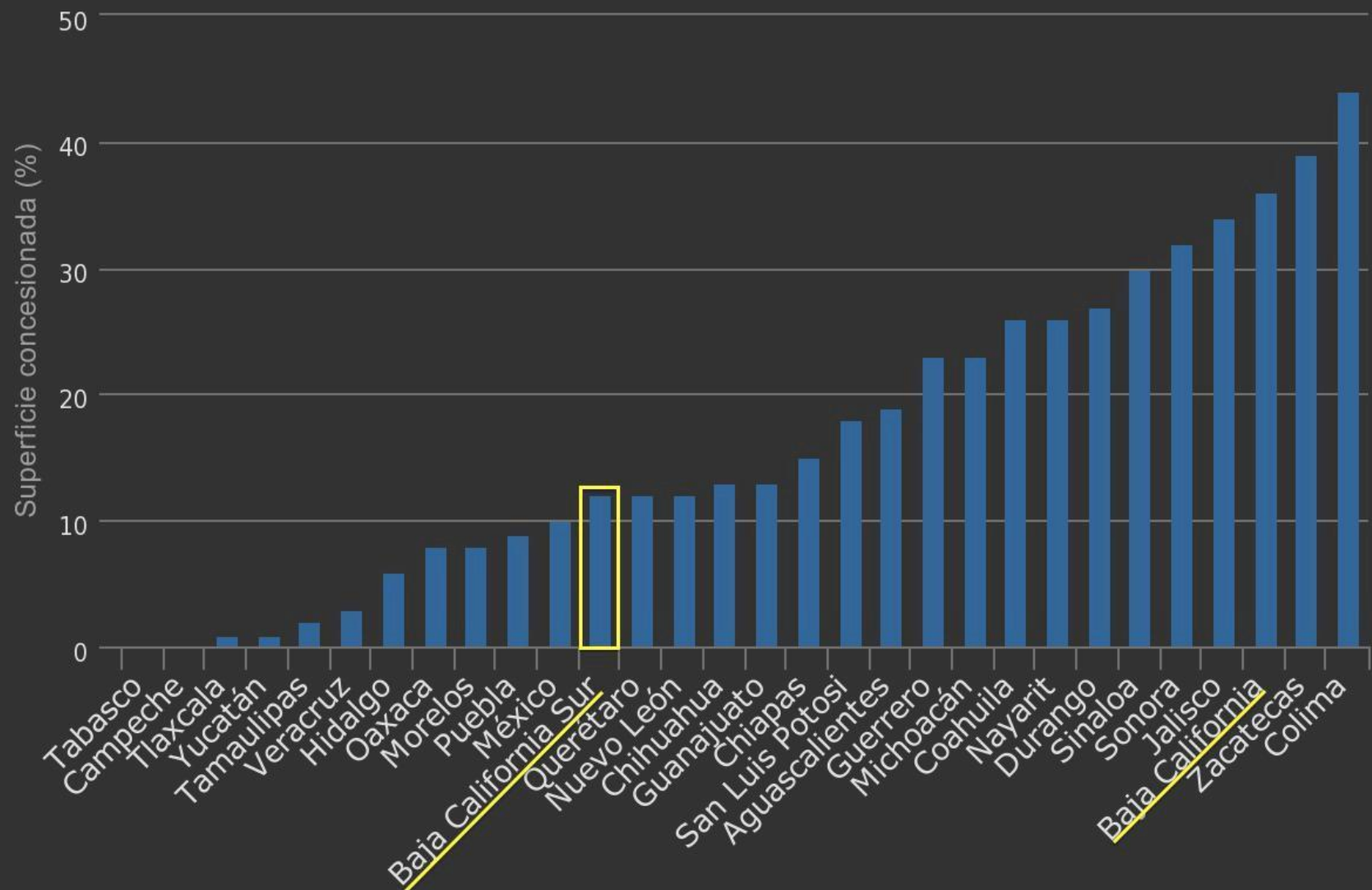


In Loreto alone, mining concessions went from covering less than **2%** of land area in 2010 to **16.46%** in 2014



Nationally, mining concessions cover **19%** of land

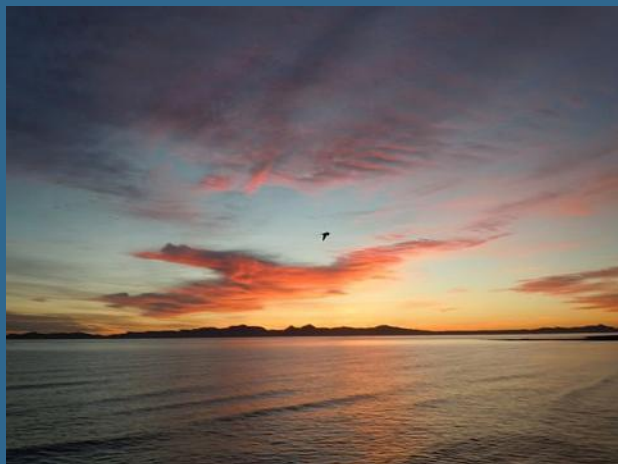
Percentage of land area under mining concessions by state



Compared to Mining States...

Zacatecas, economy 30% mining:

- Highest poverty
- Lowest quality of life



Baja California Sur:

- Lowest poverty rates
- Highest life expectancy
- Highest education levels
- Greatest number of doctors and nurses
- Southern region of BCS has a tourism “vocation”
- Mining “vocation” would threaten BCS’ economy and quality of life





European Economic Review 45 (2001) 827–838

EUROPEAN
ECONOMIC
REVIEW

www.elsevier.com/locate/econbase

Natural Resources and Economic Development

The curse of natural resources

Jeffrey D. Sachs, Andrew M. Warner*

Center for International Development, Harvard University, 79 JFK Street, Cambridge, MA 02138, USA

Extraction of minerals, oil, and gas benefits the extraction companies and their stakeholders more than the communities from which the resources are taken – a “leakage” of economic benefit away from those who bear the burden of both the immediate effects and the costs of remediation and restoration when operations end.

Who Benefits?

In other mining countries,
a tax is paid to the country
of extraction's government

In Mexico, companies are not required
to pay a percentage of their earnings

- Pay about **5 pesos per hectare** in
the first and second year
- Maximum amount **111.27 pesos**
biannually

Oxfam: The Social Impact of Mining



- Undermines access to water and food
- Women's rights can be denied: not consulted regarding access to land, not compensated equally
- Transient male work force can affect community safety

III. REGIONAL

Ecological Ordinance of Loreto



Programa de Ordenamiento Ecológico Local, or POEL

The POEL establishes 94 Environmental
Management Units, or UGAs.

Each has its own ecological criteria and
guidelines, but the design of the UGAs is to
maximize consensus between all industrial
sectors while **minimizing environmental
impact.**

UGAs are divided into 184 sub-units



51 Sustainable
Use

64 Preservation

50
Conservation

10 Restoration

It is important to note that **all UGAs allow mining**

III. REGIONAL Sub-regional Program for Urban Development



Programa Sub Regional de Desarrollo Urbano, PSRDU

The PSRDU regulates urban development for Loreto-Nopoló-Notri-Puerto Escondido-Ligüi-Ensenada Blanca.

Five UGAs are established in the PSRDU, and again **ALL allow mining.**

There are three constraints to mining in these UGAs.

PSRDU Mining Criteria

1. Dumping mining wastes in protected areas, riverbeds, and streams is prohibited
 - All PSRDU UGAs
2. Extracting material from dunes or beaches is prohibited
 - All PSRDU UGAs
3. Areas affected by exploitation must be restored
 - UGAs I and II






Goal of Local Protections: To make mining as prohibitively expensive and challenging as possible

WHY? Because federal authority deems mining a public benefit

HOW? Regulations regarding land and water use to indirectly limit the infrastructure of mining development



Examples

Managing Waste

Criteria limiting dams for the catchment and storage of water would ideally exclude the use of tailings dams in ore processing. Waste storage is also excluded from aquifer recharge zones.

Limitations also placed on waste rock and the use of spoil banks and tailings.



Managing Open Pits

Excavations should not be larger than 1 hectare of area within any of the 50 areas marked for Conservation.

Note: without the option of open pit mining, mining becomes prohibitively expensive.

The Loreto Copper Project could be ruled as against the POEL and PSRDU with its plan for two open pit mines (over size regulations), a spoil bank of waste rock, and a tailings dam.



Goro mine tailings dam



Open pit mine in Germany

Limitations in Frameworks

Regulations are **vague** and **up to interpretation** – legal opinions vary on what the criteria do prohibit.

Five UGAs are established in the PSRDU, and **all allow mining** which could come within 1 km of urban development.

All criteria are still subject to municipal and federal laws, which **defer to mining** development for the benefit of the public.

Federal Law of Ecological Equilibrium and Environmental does not address the actual impacts of mining

Gaps in the Law



Richard Jackson Photography.c

There is **no single, substantive environmental regulation** regime

In order to mine, a company must be in accordance with **a suite of other regulations** and laws

These frequently **do not address the impacts** specifically caused by mining, or need frequent updating

Especially lacking are regulations regarding **soil and water pollution, remediation and restoration**

Environmental permits, licenses, and authorizations needed:

1. Natural Protected Areas
2. Forest Land Use Change
3. Environmental Impact Authorization
4. Land Use License & Construction Permit
5. Permit for the Use of Explosives
6. Several others, including obligation to abide by several NOMs

None
specifically
for mining

Where
mining is
addressed,
impacts are
vague or
incorrect

Suggested Actions

Establishing a **state-wide “vocation”** other than mining might promote more sustainable economic development that allows for long-term community health and greater retention of economic revenue.

Adding regulations to the federal Law of Ecological Equilibrium and Environmental protection that **regulate discharges from, and environmental impacts of**, mining.



Conclusion

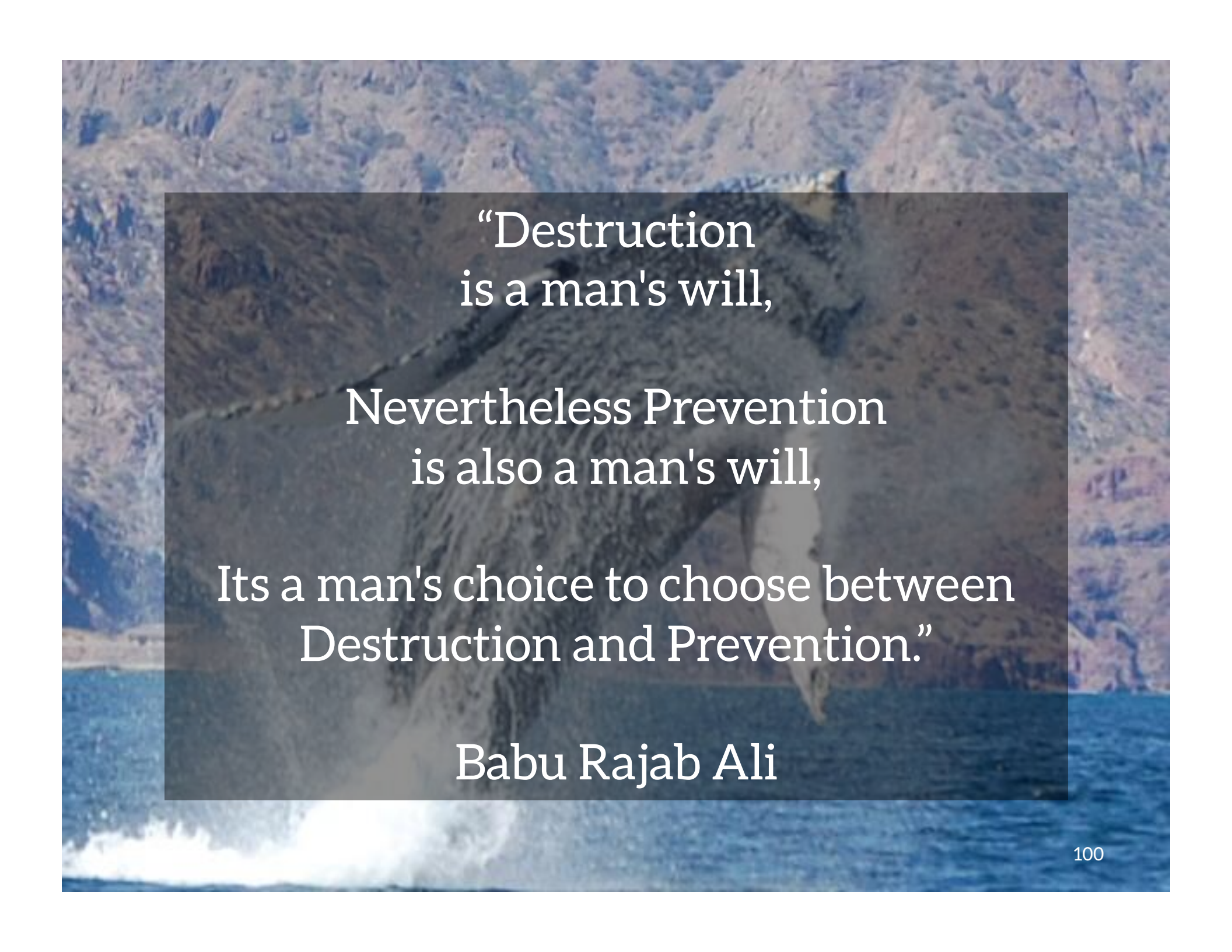
Federal level legislation ranks mining as a public benefit **above** all other land uses, **and yet ...**

- Mining has not been shown to have sufficient economic or social benefit to justify the environmental, social, economic, and health risks to BCS communities
- Local level regulations must be changed to address the actual environmental damages from mining and include provisions for remediation/restoration
- BCS should establish a state-wide vocation to avoid unsustainable, short-term mining interests from overtaking long-term, community building development options
- BCS should thus also recognize the vulnerability of water accessibility and food security for its people and its economy and prioritize those needs.

Conclusion

- Land in Loreto is being aggressively aggregated in order to hand over to Grupo Mexico, a company with numerous environmental violations
- There may be precedent to defend landowners against illegal land assignments
- Weak EIA's are being accepted by SEMARNAT – such as the case with Los Cardones – but this does not mean the mine will be approved
- Seabed mining is a serious – but perhaps not imminent – threat. The EIA's have been very weak, and international precedent is against these concessions
- There are public allies against the use of legal intimidation by mining companies



An aerial photograph of a rugged coastline. The land is dark and rocky, with some lighter patches. A blue body of water is visible at the bottom of the frame. A semi-transparent dark rectangle is overlaid on the image, containing white text.

“Destruction
is a man's will,
Nevertheless Prevention
is also a man's will,
Its a man's choice to choose between
Destruction and Prevention.”

Babu Rajab Ali

The Ocean Foundation has created the
Keep Loreto Magical Fund
to make possible its continued research
and focus on this critical issue.

We appreciate your support.

<http://www.oceanfdn.org/KeepLoretoMagical>



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