Renewed Gold Mining in Planned in Baja California Sur:

Water Supply-Related Information

March 7, 2011

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What is needed to develop a mine? - The development of a mine requires much more than finding a mineral deposit.

Mine development requires: - Land rights

- Water supply
  - Power supply
  - Transportation
  - Financing
    Mine and Waste
    - Management Plans
- Permits

Ore

- "Social License" and

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- Land rights The rights to use the land where the mineral and all mineral development facilities are located.
- Water supply Water is essential to mill operations to recover gold, and also used for equipment cleaning dust control, and drinking and washing
- Power supply Power is needed to operate the mill and mine equipment
- Transportation Transportation is required to move equipment to build the mine and mill, workers and process reagents and refined gold need to enter or leave the site
- Financing Money is needed to explore for and find minerals and fund design, permitting, development and operation the mine before income from gold sales begin

Mine and Waste Management Plans - Mine and Mine Waste management plans are needed to operate the mine economically
- as inexpensively as possible – and to prevent releases of contaminants and other impacts of mining and mine waste management

Permits - Mines need approval of mine plans, water management plans, and a wide range of other permits before construction or operation can begin

"Social License" - Mines need support from political and social institutions on the local, national and international level

Ore - a mineral deposit that can be mined at a profit, more than "just a mineral deposit"

# Concordia Update Vista Gold January 2011 Presentation

## **Concordia Gold Project, Mexico**

#### Bankable feasibility study updated in September 2009

- 10-year mine life
- Avg. annual production of 142,600 oz over first five years
- Avg. cash cost US\$372/oz over first five years
- Avg. annual cash flow of \$47.0M @ \$771/oz gold price
- \$97.0M of annual cash flow at current gold prices
- Vista owns major milling equipment and is ready to move quickly

#### **Permitting Update**

- Waiting for Secretariat of Agrarian Reform to issue resolution formalizing the boundaries of federal land in the project area
- Working on environmental permit modification and extension
- Plan to re-file Change of Land Use permit when appropriate



## Water-Related Information in September 2009 Vista Gold Feasibility Study Update NI43-101 Technical Report -

http://www.vistagold.com/concordia.php?subpage=technical\_study

"Water requirements for the Project will be supplied from the desalination plant located on the Pacific Coast, north of Todos Santos. The desalinization plant will be approximately 45km by pipeline away from the process plant site. The fresh water will be used for process make-up, potable water needs and firewater." P. 10, P. 3-2

"Right of Ways - As part of its contemplated activities, Echo Bay acquired a power line right-of-way and access road right-of-way from the El Triunfo substation and Highway 1 access, respectively. [Echo Bay also acquired a pipeline easement from the site to a planned well field that went past Valle Perdido. Due to changes in the contemplated source of water, Vista will acquire the right-of-way for the new pipeline route.]

"Water Rights - Water supply will be a key component in the success of the Project. Utilization of desalinated water is required in almost all new tourism enterprises in Baja California due to the shortage of water in the peninsula. To insure that sufficient water of acceptable quality would be available when required,Vista has decided to construct a desalination plant on the Pacific Coast, north of Todos Santos, and pump water to the site." P. 2-3

"The water supply pipeline from the desalination plant will extend approximately 38km from the coast to the area near the mine site known as Valle Perdido. From Valle Perdido, this utility corridor will extend approximately 7km to the mine site. Power is available for the desalination plant and pumping stations with minor extensions from existing power lines." P. 17-27

Projected Water Desalinization Plant

Life-of-Mine Process and Infrastructure Costs – P. 17-31

Desalinization-Related Direct Costs	Total
Area Desalinization Plant Desalinization Water Pipeline Water-Related Total	\$5,637,000 \$6,517,000 \$11,154,000
Full Project Total Direct Costs	\$118,688,000
Indirect Costs	
Desalination Plant - Engineering, Procurement and Construction Management	\$846,000
Full Project Indirect Costs	\$23,526,000
Life-of-Mine Process Operating Costs – P. 17-32	
Water Expenses	\$10,128,000
Full Process Life-of-Mine Operating Costs	\$252,122,000

"An Environmental Impact Assessment (EIA) for the Project was approved in 1997. Any significant changes or planned modifications to the approved EIA will be reported in a new EIA when applying for an extension on the current permit.

"Water for the Project is very scarce, and most new businesses supplying water by desalination. Water requirements for the Project will be supplied from the desalination plant located on the Pacific Coast, north of Todos Santos. The desalinization plant will be approximately 45km by pipeline away from the process plant site. The fresh water will be used for process make-up, potable water needs and firewater." P. 18-3

"Recommended Work Plans [include]:

"Evaluation of seawater for process make-up [note: most of this work is planned for Q4 2009]." P. 19-1

Vista Gold's Most Recent Statements about Water Supply for Concordia

January 24, 2011

- Vista's plan to construct a desalination plant is designed to satisfy the project's water needs without compromising the quality and supply of existing sources of water for local communities. Upon closure of the project, the desalination plant is intended to become a long-term, fresh water source for the communities neighboring the project area. The Company continues to work actively with communities in the project area and enjoys strong support from the local community. – Vista Gold January 24, 2011 News Release http://vistagold.investorroom.com/index.php?s=43&item=207

2010 Annual General Meeting – SEC Form 10-K

-We intend to use desalinated sea water from the Pacific Coast, north of Todos Santos. The length of the pipeline to transport desalinated sea water to the project is dependent on the ultimate route chosen; however, 45 kilometers was used in the 2009 feasibility study update. Annual water consumption is estimated to be 1.4 million cubic meters. – P. 29, P. 34, 2009 SEC Form 10-K

Water-Related Statements Regarding Paredones Amarillos Project - 2008-09

- On December 5, 2008, Vista completed another transaction to purchase the land for a desalination plant for the Paredones project. The property is located on the Pacific Coast, 25 kilometers SW of the project. The four-acre parcel of land is zoned for industrial use and approval has been received from the Municipality of La Paz for the installation of the desalination plant.- www.vistagold.com (VG) 2009 Annual General Meeting (AGM) Materials

- Due to the scarcity of surface water and political sensitivities regarding the use of groundwater, the Company has elected to construct and operate a desalination plant on the Pacific Coast. Water would be pumped approximately 45 kilometers to the site. Annual water consumption is estimated to be 1.4 million cubic meters. [3,836 m3/day – 3.836 million liters per day - approximately 1,000,000 gallons per day]. The new Cabo-area desalination plant produces 5 times as much water, about 20 million liters per day] 2008-09-08 VG Update/Press Release

- The desalination plant is to be located on the west coast of Baja California Sur, near the area known as "Boca del Palmerito", about 34km (straight line) from the project site. 2008 VG Technical Report P. 17-26 **Desalination:** 

Baja California Sur (BCS) is an arid sparsely populated coastal state in northwest Mexico. Population growth, agriculture and booming tourism have lead to severe overexploitation of underground aquifers and saline intrusion. This paper reviews the current water and energy situation in BCS. The state enjoys very high levels of solar radiation, typically above 5 kWh/m<sup>2</sup>/day, and the suitability of renewable energy powered desalination for BCS is discussed, including past efforts in BCS and present challenges for this

**technology.** Bermudez-Contreras, A., Thomson, M., Infield, D.G., Renewable energy powered desalination in Baja California Sur, Mexico, CREST (Centre for Renewable Energy Systems Technology), Loughborough University, LE11 3TU, UK, Available online 19 January 2008. <u>http://www.desline.com/articoli/8924.pdf</u>

Cabo San Lucas Desalination Project Parameters:

Capacity 200 liters per second
Investment * \$28 Million US
Cost by m3 \$0.90/m3
Period of concession 20 years
Beginning of construction May 2005
Tests of operation Jan. 2007
Beginning of operations March 2007

Seawater Desalination as an alternative solution for potable water in Mexico: Seawater Desalination Plant Cabo San Lucas, B.C.S., Mexico, 2007

http://www.apwa.net/documents/meetings/congress/2007/handouts/3992.pdf

[Paradones Amarillos Water need projected at 44 lps based on 1.4 million m3/yr.]

Potential Impacts of Seawater Desalination Project on the Marina Environment include:

- Desalination facilities can cause significant adverse effects on marine organisms unless properly designed, sited and operated.
- Reviewing desalination intakes and outfalls both open-water and subsurface – will require evaluating alternative locations and mitigation measures that avoid or minimize adverse effects on marine biological resources and that, where feasible, restore those resources.
- Desalination facilities proposing to co-locate with coastal power plants raise unique issues.

P.65 California Coastal Commission, Seawater Desalination and the California Coastal Act of 2004, http://www.coastal.ca.gov/energy/14a-3-2004-desalination.pdf A Review of a Desalination Project should include descriptions and analysis of:

- Ambient or background conditions, including daily and seasonal variations the existing level of water quality impairment, etc.
- Facility operating rates and discharge constituents of those rates.
- Types and amounts of chemicals and compounds used during the processes and maximum expected concentrations in the discharge
- Plume-modeling to show areal extent of salinity ranges in various conditions (including worst- case).
- Capacity of the wastewater treatment or landfill to allow separation of solids or chemicals from the discharge.
- Fate and transport modeling showing how the discharge would interact with the receiving water.
- The "worst-case" situation i.e. the condition during which the facility would have the greatest adverse effects – for example, when the facility operates at full capacity during an ebb tide and no or low currents so that little mixing occurs.
- -Marine organizations present and how they would be affected by salinity changes, including how the affects vary by life stage.

P. 78 California Coastal Commission, Seawater Desalination and the California Coastal Act of 2004, http://www.coastal.ca.gov/energy/14a-3-2004-desalination.pdf

## Desalination plants for the Baja California Peninsula

February 22, 2011 - <u>http://geo-mexico.com/?p=3779</u>



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The Baja California peninsula is one of the most arid areas in Mexico and water shortages are becoming critical, especially along the southern coastline which has matured into one of the most desirable jet-set locations in the world.

Desalination, which involves removing the salts from seawater or brackish water to provide drinking water, is one viable option to ensure future water security for the region. There are already about 70 desalination plants on the Peninsula, though most are very small (25 liters/second or less) and are powered by conventional electricity. Several larger desalination projects on the Baja California Peninsula, some of which will rely mainly on solar power, are currently in the planning stages.

La Paz, the capital of the state of Baja California Sur, faces a particularly serious water supply problem. The local aquifer is reported to be already overexploited and suffering from salt water intrusions. Because of its greater density, seawater normally underlies freshwater in coastal areas. Salt water intrusions occur when so much fresh water is pumped out of coastal aquifers that it is replaced by the underlying salt water. The water supply issues have led to water rationing, in which almost half of La Paz's 250,000 residents receive water only 12 hours or less each day.

Obtaining water from the desalinization of sea water is more expensive than abstracting water from aquifers via wells, but avoids the possibility of salt water intrusions. A recent Ooska news article provides details of the desalination plants already built or being planned:

Baja California Sur:

Cabo San Lucas, opened in 2007, treats approximately 230 liters a second (60 gallons/s), equivalent to 20 million liters (5 million gallons) a day.

La Paz - Still at the proposal stage is a desalination plant capable of treating 200 liters a second.

Sierra de la Laguna - A Canadian mining company (Vista Gold Corp.) planned a desalination plant to provide water for its proposed Concordia open-pit mine. However, the mining plan was refused an essential mining permit by government.

#### Baja California:

Ensenada - The 28-million-dollar El Salitral desalination plant is a "highly innovative project that would put the region on the map globally for desalination". Construction is due to start later this year, and the plant should be operational by the end of 2012, when it will treat 250 liters of seawater a second. The plant would supply 96,000 people with potable water.

Rosarito - Preliminary geological and environmental impact studies are underway for a desalination facility in La Misión large enough to supply the needs of 96,000 people. Still in the concept stage is a second desalination plant which would supply water across the border to San Diego in California.

San Quintín - Plans exist for a desalination plant with a capacity of 150 liters a second.

Main source: <u>http://geo-mexico.com/?p=3779</u>

The OOSKA News Weekly Water Report for Latin America and the Caribbean (16 February 2011)

#### "Irregularities and inconsistencies that scientists, legal experts and an authority of the National Commission of Natural Protected Areas (CONAP) identified in the Environmental Impact Statement (EIS) submitted by the developer, Hansa Baja Investments, for the construction of Cabo Cortés."

"The construction and operation of the desalination plant could have impacts that are not analyzed in EIS. Cabo Cortés plans to meet 65% of their freshwater requirement from the desalination of seawater, for which they plan to build a desalination plant that will produce 750 liters of freshwater per second. The operation of a plant of this magnitude, if not planned with great care and under adequate environmental criteria, can cause enormous damage to marine ecosystems, particularly those organisms that cannot move to escape the pollution, such as coral.

The EIS acknowledges that the desalination plant could be the source of greatest impact to the marine ecosystem, given the high salt content in the effluent. In the EIS, the developer offers only general explanations of the criteria used to build the desalination plant.

Of even greater concern is that even these explanations are based on false assumptions and misinformation about the ocean currents in the area. Due to the direction of prevailing ocean currents, the brine will be transported to the protected area. The area most affected would be the North end of the park, including the site known as the Las Tachuelas. This is part of the park's core area and is the region with the greatest coral cover.

In the technical opinion we have quoted above, CONANP also makes this point (p.6):"A major concern is that studies to determine patterns of salt plume are not significant or representative of the hydrodynamics of the area. Also, the assertion that the currents are just to the North is very weak and lacks supporting data. ".-

http://www.cabopulmovivo.org/portal/index.php?option=com\_content&view=article&id=6&Itemid=124&lang=en