FACT SHEET
(Pursuant to Nevada Administrative Code (NAC) 445A.401)

Permittee Name: **Zephyr Minerals, Inc.**

Project Name: **Thomas Mine Project**

Permit Number: **NEV2013104 (New 2014, Revision 01)**

A. Location and General Description

Location: The Thomas Mine Project is located on private land in Pershing County between the Humboldt Range and the Buena Vista Hills in Sections 29 and 31, Township 26 North, Range 34 East, Mount Diablo Baseline and Meridian. The site is approximately 15 miles southeast of the town of Lovelock.

Site Access: The site can be accessed by taking the Coal Canyon Road exit off Interstate 80 just north of Lovelock. Continue east on Coal Canyon Road for approximately 15 miles and turn south on Iron Mine Road. After approximately 2.5 miles, turn east on the paved road leading to the mine entrance.

General Description: The Thomas Mine Project is a mining and physical separation facility intended to recover iron from existing stockpiles from historic mining activity in the area and open pit mining of new ore. The Thomas Mine Project is permitted as a physical separation facility and, as such, no chemicals are permitted to be used or stored at the facility. Zephyr Minerals, Inc. (Permittee) will process up to 4,000,000 tons of ore per year. This is an increase from the existing permit that authorizes a process rate up to 36,500 tons per year of ore recovered only from the existing stockpiles. The facility is required to be designed, constructed, and must be operated and closed without any discharge or release in excess of those standards established in regulation, except for meteorological events which exceed the design storm event.

B. Synopsis

Site History
The Thomas Mine Project is located within the Buena Vista Hills, an area of historic iron mining activity dating back to the 1880s when approximately 500 tons of ore was shipped to the Union Iron Works in San Francisco. Mining resumed during World War II and continued during the postwar years to supply ore to industrial centers on the west coast and in Japan, continuing through the late 1960s. The specific mine at the Thomas Mine Project operated from the early-1940s until the mid-1960s, leaving several ore stockpiles and three open pits, one of which, the Thomas Pit, is approximately 240 feet deep with a pit lake

having a surface area of approximately 1¼ acres. The other two pits do not penetrate the water table.

Geology

The Buena Vista Hills are underlain by a gabbroic complex of Jurassic age, the host rock for the iron deposits. Remnants of overlying silicic to intermediate volcanic rocks of Tertiary age are found in the southern part of the northern Buena Vista Hills. Basalt of Pliocene or Pleistocene age caps Chocolate Butte and several of the low hills in the saddle between the Buena Vista Hills and the Humboldt Range. Pleistocene Lake Lahontan silt deposits cover much of Buena Vista Valley in the vicinity of the Buena Vista Hills and cover some of the iron deposits to depths of a few tens of feet.

The gabbro host rock is a complex of mafic intrusive and extrusive phases which, in the Buena Vista Hills, has been hydrothermally altered. Only in a few places in the Buena Vista Hills and surrounding area is relatively unaltered rock found. It is now recognized that all the iron deposits occur within the gabbroic complex and are genetically related to deuteric alteration of the complex.

The deposit geology as it pertains to the Thomas Mine Project consists of stockpiles generated by previous operators. The ore was mined primarily from a vein that can be traced at least 2,000 feet along the strike. On the northern end, in the Thomas Pit, the vein is split and horses of waste rock between the vein splays make mining more difficult. To the south, splitting is less common.

Material Characterization

Analyses of ore and waste rock are required to evaluate their potential to release pollutants and to ensure that waters of the State will not be degraded by any proposed mining operation. Acid-base Accounting (ABA) has been conducted to estimate the acid generating and acid neutralizing potentials of these materials. Meteoric Water Mobility Procedure (MWMP) testing has been conducted to determine the potential for release of chemical constituents of the materials exposed to precipitation (rain or snow melt). X-ray Diffraction (XRD) testing was conducted to determine the mineralogical constituents of samples. Four representative samples were collected from the Project. One channel sample was collected from the existing stockpiles, one sample is representative of the overburden waste from the West Pit, one sample is representative of the ore from the West Pit, and one sample is representative of the waste material that will remain as the new pit floor in the West Pit.

One representative material sample from the existing ore stockpiles was characterized using MWMP – Profile I and Acid Neutralizing Potential to Acid Generating Potential (ANP:AGP) methods. The results of ANP:AGP analyses show the material to be strongly acid neutralizing, with Net Neutralizing Potential (NNP) of 42 equivalent tons of calcium carbonate per 1,000 tons of material and with all sample values for acid generating potential below laboratory detection limits. Based on these results, acid generation in the tailings is not expected. Results of MWMP-Profile I analyses of the stockpile sample show all constituent concentrations below the Profile I reference values.

The ABA test results for the three West Pit samples show that the waste and ore samples displayed a greater potential to neutralize than generate acid in a natural environment. The results of ANP:AGP analyses show the material to be strongly acid neutralizing, with a NNP between 113.4 and 199.1 equivalent tons of calcium carbonate per 1000 tons of material and with all sample values for acid generating potential below laboratory detection limits.

MWMP testing results show all the waste rock samples returned elevated levels of arsenic. One waste rock sample showed elevated levels of antimony, arsenic, chloride, and total dissolved solids exceeded drinking water Profile I reference values. MWMP testing results of the ore sample showed elevated levels of arsenic.

ABA testing of in-situ waste and ore and existing stockpiles show that all rock materials have a significantly greater potential to neutralize than to generate acid.

Mining Plan

The Thomas Mine will consist of liberating magnetite from existing low grade stockpile material and from open pit mining of new ore. Both ore sources will be crushed to sand sized particles followed by dry magnetic separation. A wet grinding stage may be added to treat a portion of the ore to produce higher iron content for industrial uses.

Low grade material from existing legacy stockpiles within the Project area will be evaluated for iron content. Material containing economic amounts of magnetite will be loaded and transferred to the ore stockpile for the processing circuit. Non-magnetic material from reprocessing of legacy stockpile material will be transferred to the waste rock facilities (WRF).

New ore material will be mined by expanding the existing mine pit (the West Pit) and creating a new mine pit (the East Pit). Both pits will be mined to a pit floor elevation of 3,940 ft above mean sea level (AMSL). This elevation is approximately 10 feet above the elevation of the existing pit lake in the West Pit. The proposed pits will be mined utilizing drilling and blasting on 40-foot high benches. The ore will be loaded with a front-end loader into end-dump trucks and hauled to the crushing and ore handling area.

Mineral Processing

The circuit as a whole is designed for a maximum throughput of 500 tons per hour. Water sprayers may be used if required for dust control, but no water will be added as part of the process.

Ore from the existing stockpile or from the mine pit is hauled directly to a jaw crusher or to a stockpile staging area adjacent to the crusher prior to being loaded into the jaw crusher. The 6-inch minus crushed ore reports to a coarse ore stockpile and then is conveyed using a feed belt to a secondary crusher (a standard cone crusher). The secondary crusher crushes the ore to a nominal 1 ½ inch minus material that is placed on a conveyor equipped with a magnetic drum pulley separator (#1 Separator). The #1 non-magnetic fraction is conveyed to the WRF. The #1 magnetic fraction is screened to 1 ¼ inch minus material and sent to a tertiary crusher for further crushing. Oversized material is recycled to the secondary crusher.

The tertiary crusher (a shorthead cone crusher) produces a nominal 3/8 inch minus material that is dropped onto a second magnetic drum pulley system (#2 Separator) to produce a magnetic and non-magnetic split. The #2 magnetic fraction is placed on the product belt that stacks the final product for shipment using a radial arm stacker to the coarse iron ore stockpile facility. The #2 non-magnetic fraction is conveyed to the WRF.

The proposed coarse iron ore stockpile facility consists of a compacted clay base layer stockpile pad that is 200 feet long by 100 feet wide. The stockpile pad is constructed with a maximum permeability of 1 x 10^{-6} cm/sec. The stockpile pad is contoured to retain direct precipitation from a 25-year, 24-hour storm event. A 5-foot wide by 18-inch deep gravel filled collection sump is placed at the low end of the pad. A 4-inch diameter perforated polyvinyl chloride (PVC) standpipe will be placed in the center of the sump for monitoring and evacuation purposes. The coarse iron ore is placed at a maximum height of 30 feet. Approximately 2,000 to 3,000 tons per day of ore will be produced and stockpiled prior to transferring the ore off-site. At the end of mining operations, the clay base layer will be removed. The stockpile area will be covered with the stockpiled growth material and reseeded.

Approximately 33 million cubic yards of waste rock will be generated from the mine operations. Two waste rock facilities will be constructed during the mining operation. Non-magnetic fraction waste from the processing facility will be delivered to the WRF via a 36-inch wide conveyor or hauled with mine trucks. Growth material will be cleared and stockpiled prior to placement of the waste rock on the designated WRF. The waste rock side slopes will be graded to a maximum slope of 2.5H:1V (Horizontal:Vertical) and the top will be graded to a minimum 2% slope.

An optional wet grinding stage may be added to treat a portion of the ore to produce higher iron content for industrial uses. This wet grinding option includes conveying the #2 non-magnetic fraction from the initial process to be wet-ground in a closed-circuit 6-foot by 12-foot ball mill that uses a cyclone nest to classify ore for processing. Undersized fine material will report to the magnetic drum separator, which will recover the fine magnetic minerals from the slurry. Oversized fine material will be recycled through the ball mill.

Non-magnetic fraction from the ball mill will report to a final tailings thickener to recover as much water as possible before the thickened solids are placed on the disposal belt and conveyed to the WRFs. The fine magnetic fraction will be stacked in a proposed fine ore bay. The floor of the fine ore bay will be sloped to allow for excess water to drain.

Water Supply

Water used for dust control will be obtained from a water supply well, ZW-1, located on site and installed by the Permittee in 2012. Water for the assay laboratory and the showers will be trucked in using a 4,000-gallon water truck. A 4,000-gallon water tank will be used for the laboratory and a 12,000- gallon tank will be used for the on-site showers and bathroom facility. Both tanks will be filled using Lovelock municipal water. Bottled water will be used for drinking by the mine staff.

Closure / Reclamation

Closure will include the removal of the fuel storage tanks and containment facility, all ancillary facilities and equipment, and the ore stockpile pad. The WRFs and ancillary disturbance areas will be covered with the stockpiled growth material and reseeded.

Ancillary Facilities

Ancillary facilities include the following items:

- Fuel Storage: Diesel fuel will be stored in two (2) single-walled 6,000-gallon above-ground tanks on site to power equipment and generators. The fuel tanks will be located on a 60-mil High Density Polyethylene (HDPE) lined fuel containment pad constructed with berms for secondary containment to provide emergency capture of 110% of the fuel storage volume;
- Explosives Storage: A blasting powder magazine and blasting-cap storage container will be located on-site;
- Office: An office will be located on-site adjacent to the main gate. The office will be composed of a portable trailer. The proposed assay laboratory will be located in the same office building;
- Sanitation Facility: Toilets and showers will be provided in the office area. Septic tanks and leach fields will be permitted for each of the sanitary facilities;

- Assay Laboratory: The laboratory will be located within a portion of the office trailer. The laboratory will consist of small crushers, rollers, and pulverizers. Laboratory chemicals that will need to be stored in the laboratory include but are not limited to small amounts of acids (hydrochloric acid, nitric acid, phosphoric acid, and sulfuric acid), sulfonate, chloride, potassium dichromate solution, and quick lime;
- Truck Scale: A truck scale will be located on-site adjacent to the main gate;
- Shop and Warehouse: A shop and warehouse building 80 feet long by 40 feet wide will be located on site. The building will be used to house tools, equipment maintenance fluids, and spare equipment parts; and
- Wash Pad: An equipment wash pad will be located within a bermed containment area adjacent to the shop and warehouse. The pad will be approximately 60 feet long by 30 feet wide. Compacted native soils will be overlain by a compacted clay layer and 18 inches of compacted aggregate base.

Petroleum Containment
The Permittee is not authorized to dispose or treat Petroleum-Contaminated Soil (PCS) on the mine site without first obtaining from the Division approval of a PCS management plan.

Stormwater Controls
The ore stockpiles, processing area, and fueling area are protected by berms to redirect any surface flow around each area, and general best management practices will be used to prevent stormwater from impacting the mine areas and process equipment.

C. **Receiving Water Characteristics**

One historic mine near the Thomas Mine facility has a pit with a lake with a water surface elevation of 3,930 feet AMSL. The Ford Pit, approximately 1½-miles southwest, along with the Thomas Pit Lake, were surveyed to estimate the elevation of groundwater in the area. Based on the elevations measured, groundwater below the Thomas Mine is estimated to be approximately 240 feet below ground surface (bgs). In addition, a production well, Zephyr Well #1 (ZW-1), was installed at the site to provide water for dust control and general site use. The well encountered water at approximately the same elevation as the Thomas Mine pit lake water surface. Groundwater flow based on the pit lake elevations and measurements of water table elevation of 3,937 ft AMSL in a stock well four (4) miles from the mine suggest that the direction of groundwater flow is from north to south toward the Carson Sink.

Groundwater quality below the site was evaluated by sampling ZW-1 and the pit lake. The well showed exceedances of the Profile I reference values for arsenic

(0.011 milligrams per liter [mg/L]), chloride (4,300 mg/L), magnesium (700 mg/L), total nitrogen (100 mg/L), sulfate (1,300 mg/L), and total dissolved solids (TDS – 9,400 mg/L). The pit lake analysis showed exceedances for chloride (5,900 mg/L), magnesium (1,500 mg/L), sulfate (2,500 mg/L), thallium (0.007 mg/L), and TDS (13,000 mg/L). These results show strong influence of the Carson Sink as well as evapo-concentration in the pit lake. High nitrogen concentrations are thought to be the result of cattle grazing in the area.

No surface streams or springs are found within ½-mile of the mine, the nearest being Antelope Spring approximately 4½ miles northeast (upgradient) of the site. In addition, no drinking water wells are found within five (5) miles of the site.

D. Procedures for Public Comment

The Notice of the Division's intent to issue a Permit authorizing the facility to construct, operate, and close, subject to the conditions within the Permit, is being sent to the **Lovelock Review-Miner** for publication. The Notice is being mailed to interested persons on the Bureau of Mining Regulation and Reclamation mailing list. Anyone wishing to comment on the proposed Permit can do so in writing within a period of 30 days following the date of public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected intrastate agency, or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.403 through NAC 445A.406.

E. Proposed Determination

The Division has made the tentative determination to issue the Permit.

F. Proposed Limitations, Schedule of Compliance, Monitoring, Special Conditions

See Section I of the Permit.

G. Rationale for Permit Requirements

The facility is located in an area where annual evaporation is greater than annual precipitation. Therefore, it must operate under a standard of performance which authorizes no discharge except for those accumulations resulting from a storm event beyond that required by design for containment.

H. Federal Migratory Bird Treaty Act

Under the Federal Migratory Bird Treaty Act, 16 U.S. Code 701-718, it is unlawful to kill migratory birds without license or permit, and no permits are issued to take migratory birds using toxic ponds. The Federal list of migratory birds (50 Code of Federal Regulations 10, 15 April 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service is authorized to enforce the prevention of migratory bird mortalities at ponds and tailings impoundments. Compliance with State permits may not be adequate to ensure protection of migratory birds for compliance with provisions of Federal statutes to protect wildlife.

Open waters attract migratory waterfowl and other avian species. High mortality rates of birds have resulted from contact with toxic ponds at operations utilizing toxic substances. The Service is aware of two approaches that are available to prevent migratory bird mortality: 1) physical isolation of toxic water bodies through barriers (e.g., by covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of the toxic water. Methods which attempt to make uncovered ponds unattractive to wildlife are not always effective. Contact the U.S. Fish and Wildlife Service at 1340 Financial Boulevard, Suite 234, Reno, Nevada 89502-7147, (775) 861-6300, for additional information.

Prepared by: Phil Migliore, P.E.
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Revision 00: New Permit 2014: [PE 2/2014]

Revision 01: Major Modification: expand mining operations to include two (2) pits. Increase processing to 4,000,000 tons per year. [PM 7/2015]