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WILLARD

WILLARD GOLD PROJECT

1 INTRODUCTION

1.1 Purpose of and Need for the Proposed Action

Western States Minerals Corp. (WSM) submitted a Plan of Operations (POO) for the Willard Gold Project to the Winnemucca District Office of the U.S. Department of Interior, Bureau of Land Management (BLM) in October 1988. The proposed project consists of six open pit mines, two mine waste dumps, a 30-acre heap leach pad, and associated solution collection ponds and processing facilities. The purpose of the proposed action is to extract gold-bearing ore from the earth's surface and to process that ore into an economically salable product.

A portion of the lands to be affected by the project are public lands managed by the BLM. In the case of mineral development projects on public lands, "need" is established because the federal government has allowed mining claims to be filed on such lands. U.S. mining laws and the enforcing regulations recognize the statutory right of mining claim holders to develop mineral resources located on federal lands. Furthermore, such development is encouraged and consistent with the Mining and Mineral Policy Act of 1970 and the Federal Land Policy and Management Act of 1976. These regulations require responsible federal agencies to review the applicant's Plan of Operations to ensure that:

1. Adequate provisions are included to minimize, where feasible, adverse environmental impacts to surface resources of public lands;
2. Measures are included to provide for reclamation, where practicable; and
3. The proposed operations will comply with other applicable federal, state, and local laws and regulations.

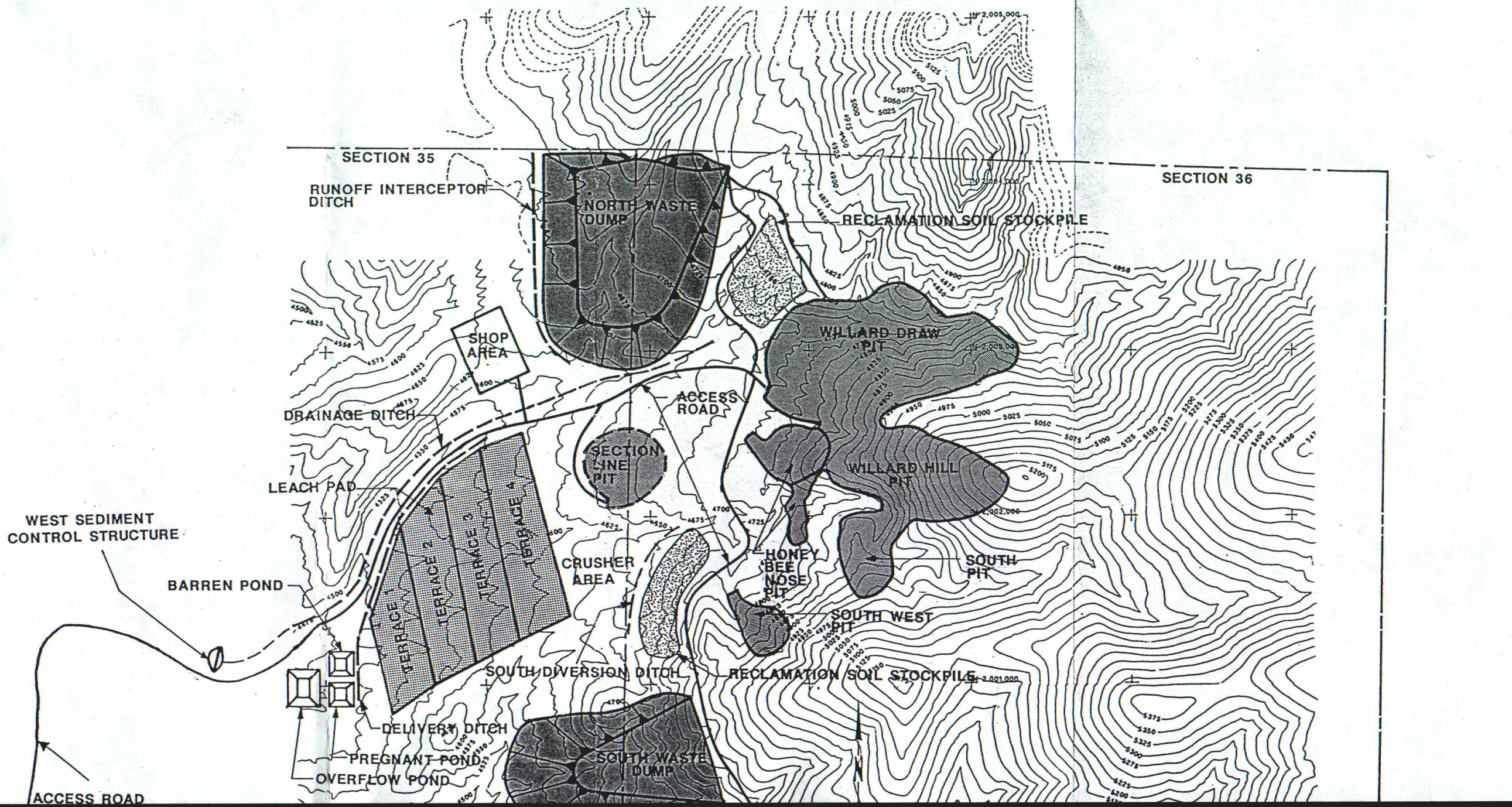
This Environmental Assessment (EA) was prepared in accordance with BLM guidelines for implementing the Council of Environmental Quality Regulations (40 CFR 1500-1508) as required by the National Environmental Policy Act of 1969 (NEPA). The purpose of this EA is:

1. To analyze the environmental consequences of WSM's proposed action and reasonable project alternatives to determine if significant environmental impacts would result;
2. To aid the responsible officials in selecting alternatives, where applicable; and
3. To identify any necessary mitigation measures for the preferred alternative.

1.2 Project Overview

1.2.1 Project Location and Access

The Willard Gold Project is located in the western foothills of the West Humboldt Range in Pershing County, Nevada. A site location map is presented in Figure 1-1. The property consists of fee land and unpatented lode claims in portions of Sections 35 and 36 of T28N, R32E.


SECTION 35
SECTION 36
RUNOFF INTERCEPTOR DITCH
NORTH WASTE DUMP
RECLAMATION SOIL STOCKPILE
SHOP AREA
ACCESS ROAD
WILLARD DRAW PIT
DRAINAGE DITCH
SECTION LINE PIT
WILLARD HILL PIT
LEACH PAD
WEST SEDIMENT CONTROL STRUCTURE
CRUSHER AREA
HONEY BEE NOSE PIT
SOUTH PIT
BARREN POND
SOUTH WEST PIT
TERRACE 1
TERRACE 2
TERRACE 3
TERRACE 4
SOUTH DIVERSION DITCH
RECLAMATION SOIL STOCKPILE
DELIVERY DITCH
SOUTH WASTE DUMP
PREGNANT POND
OVERFLOW POND
ACCESS ROAD

2 DETAILED DESCRIPTION OF THE PREFERRED ALTERNATIVE

This chapter describes the proposed Willard Gold Project operation. Sufficient detail is given to provide an understanding of each project component, as well as an understanding of the overall operation. Figure 2-1 shows the project components and flow.

The project is located in the western foothills of the West Humboldt Range in Pershing County, Nevada. Figure 2-2 shows the layout of the Willard Gold Project mine and facilities. The proposed project permit area is comprised of approximately 600 acres. About 194 acres of this will be disturbed by mining-related activities, of which 97 acres will be reclaimed.

Based on current reserves and the expected mining rate, the active life of the project is estimated to be three years. Mining is scheduled to commence upon receipt of the applicable permits, i.e., by March 1989, and continue for one to two years. Ore leaching will commence in April 1989 and continue for approximately three years (until the summer of 1992). Reclamation and decommissioning will be complete by the fall of 1993.

2.1 Geology of the Resource

The Willard Gold Project is in the Basin and Range physiographic province. At the Willard Mine site both stratigraphy and structure act as ore controls. Lenses of claystone immediately underlie the mineralization in many locations, suggesting cyclical sedimentation. The Willard Mine gold deposits are generally found in siltstone within 100 feet of underlying claystone. The deposits occur where these beds have been sufficiently fractured, brecciated and lie in proximity to feeder fractures. These feeder fractures range in strike from north-northeasterly to easterly.

Gold is closely associated with silicification, drusy quartz veining and microveining according to technical information developed by WSM. The best ore generally displays these features, which usually occur together. The strongly silicified rocks characteristically display drusy quartz-filled vugs and fractures. Drusy quartz has been observed to replace iron oxide boxwork structures in core samples. Argillic alteration is typically absent in ore intervals, although argillization is occasionally found in association with higher grade gold-bearing zones.

Among the hydrothermally emplaced minerals at the Willard Mine site are quartz, fluorite, barite, native gold, electrum, pyrrohotite and pyrite. Syngenetic pyrite and carbon are also present in unoxidized material at deeper levels in the proposed pits. Calcic veining occurs peripheral to gold-bearing areas because calcium carbonate has been leached from the ore host rock.

Ore at the Willard Mine site has been surficially oxidized in the main pit zones. The ore typically exhibits poethite and jarosite staining. Also noted is the frequent occurrence of native gold within goethitic fracture coatings. Carbon is depleted or absent in the oxidized ore, but

sulfide minerals frequently remain in the oxidized material because they are often encapsulated in vein quartz.

Variable gold assay results and historic production all attest to the coarse size of the Willard property gold ore. Because of this coarseness, as well as silica encapsulation of the gold, the ore will be crushed to less than one inch for metallurgical reasons.

Carbon and sulfide minerals are present in the unoxidized material. However, these minerals are not expected to be encountered in large volumes in the main ore zones. If large volumes of these minerals are encountered in the deeper ore zones, they will not be mined. The presence of carbon in the ore may decrease gold recovery during cyanide leaching if large amounts are present.

2.2 Mining Schedule and Work Force

2.2.1 Schedule

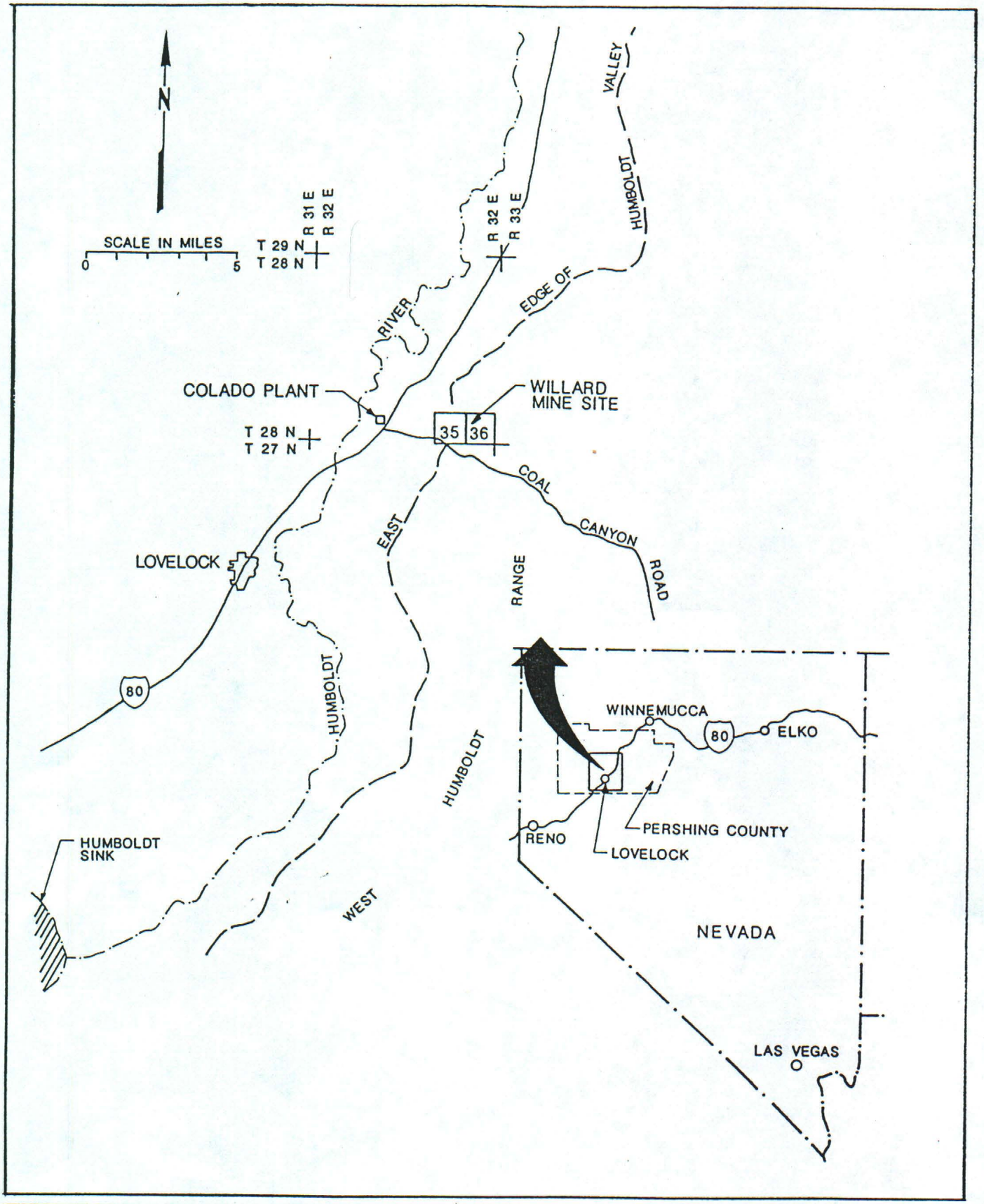
The necessary permits are anticipated to be obtained by March 1989. Upon receipt of the permits, pre-production activities will begin. This phase includes development of mine infrastructure, and construction and installation of the heap leach facilities, crushing and gold recovery systems. During this phase, topsoil would be removed and stored and pre-mine drilling would occur. The duration of this phase is estimated to be 1.5 months.

Active mining and gold recovery activities will then commence. Based on currently proven reserves, mining and processing are expected to be ongoing for one to two years. During this time, WSM will be conducting additional exploration drilling within the permitted area in an attempt to increase the size of reserves. Should WSM be successful in increasing the reserve base, additional information will be developed and submitted to the appropriate agencies in order to extend the project permits to allow mining and recovery of these reserves.

Once all gold reserves have been mined and processed, the project site and facilities will be closed and decommissioned, and reclamation will begin in accordance with applicable regulations.

2.2.2 Work Force

The anticipated project work force is 57. Table 2-1 shows the projected labor requirements for the Willard Gold Project. WSM anticipates hiring approximately 50 employees from the local area to fill hourly positions. Key management and technical personnel will be transferred to the project site from other WSM projects.



WESTERN STATES MINERALS — WILLARD GOLD PROJECT	FIGURE 1-1 SITE LOCATION MAP	DECEMBER 1988

Table 2-3 Mine Production Summary
Willard Gold Project

Pit	Total Ore (MM Tons) (a)	Total Waste (MM Tons) (a)	Stripping Ratio	Ore Volume (MM Cu Yd) (a)	Waste Volume (MM Cu Yd) (a)	Pit Area (Acres)
Willard Draw	1.90	6.17	3.2 : 1	1.41	4.57	21.2
Willard Hill	1.00	0.79	0.8 : 1	0.74	0.58	11.9
Honey Bee Nose	0.47	0.74	1.6 : 1	0.35	0.55	5.3
South	0.09	0.37	4.2 : 1	0.07	0.27	2.7
Southwest	0.15	0.36	2.4 : 1	0.11	0.27	2.3
Section Line	Under development					
Total	3.61	8.43		2.68	6.24	43.4
Average			2.3 : 1			

(a) MM = millions.
Source: Western States Minerals, 1988.

2.4.1 Willard Draw Pit

Maximum dimensions of the Willard Draw Pit are estimated to be 750 feet north-south, 1,500 feet east-west, and 300 feet in depth. This pit will encompass an area of approximately 21.2 acres. Assuming a stripping ratio of 3.2 to 1, a minimum of 1.9 million tons of ore and 6.17 million tons of waste rock will be mined from this pit.

2.4.2 Willard Hill Pit

The Willard Hill Pit will measure an estimated 600 feet north-south, 1,100 feet east-west, and 100 feet deep upon the completion of mining. This pit will cover approximately 11.9 acres. A minimum of 1.0 million tons of ore and 0.79 million tons of waste rock will be mined from this pit. The stripping ratio is estimated to be 0.8 to 1.

2.4.3 Honey Bee Nose Pit

Maximum dimensions of the Honey Bee Nose Pit are estimated to be 800 feet north-south, 400 feet east-west, and 120 feet deep. The pit will cover an estimated 5.3 acres. A minimum of 0.47 million tons of ore and 0.74 million tons of waste rock will be mined. The stripping ratio is estimated to be 1.6 to 1.

2.4.4 South Pit

Maximum dimensions of the South Pit will measure approximately 400 feet north-south, 300 feet east-west, and 120 feet deep. The pit will comprise an estimated 2.7 acres. A minimum of 0.09 million

tons of ore and 0.37 million tons of waste rock will be mined from this pit. The stripping ratio is estimated to be 4.2 to 1.

2.4.5 Southwest Pit

The Southwest Pit will measure an estimated 400 feet north-south, 350 feet east-west, and 200 feet deep upon completion of mining activity. The pit will comprise an estimated 2.3 acres. A minimum of 0.15 million tons of ore and 0.36 million tons of waste rock will be mined. The stripping ratio for this pit is 2.4 to 1.

2.4.6 Section Line Pit

The Section Line Pit is not presently included in the reserves because the ore is of questionable economic value due to the high stripping ratio. Evaluation of this area will continue during mine operation. The surface area of the Section Line Pit has been included in the projected areas of disturbance.

2.5 Drilling, Blasting, and Crushing

2.5.1 Drilling and Blasting

To excavate the ore and waste, a system of drilling and blasting is planned. Blasthole drilling will use either rotary or percussion blasthole drills. The blasthole configuration will be laid out to maximize fracturing. ANFO (Ammonium Nitrate-Fuel Oil) blasting agents and cap-sensitive primers will be used for production blasting to fragment the overburden and ore.

No nighttime blasting will occur. Explosives will be handled by certified personnel and stored in an approved storage facility. There are no ground vibrations, noise, or fly rock problems anticipated from rock blasting.

Ore grade control will occur as each area is drilled and blasted. Waste rock will be loaded into haul trucks using a front-end loader and hauled to one of two waste rock dumps. Ore will be loaded into haul trucks and transported to the crusher. Low grade ore will be hauled directly to the heaps without crushing.

2.5.2 Crushing

Ore will be crushed to less than one inch using a 6,000 TPD crushing and screening system. The crushing system will include one 30-inch by 42-inch jaw crusher and two 54-inch cone crushers with vibrating screens.

Using a 100-foot radial stacking conveyor, the crushed ore will be transferred to the adjacent stockpile. When needed, crushed ore will be moved via a belt loader from the stockpile to trucks that will haul the ore to the leach pads.