

Appendix 2C
Petroleum-Contaminated Soil Management Plan

Petroleum-Contaminated Soil Management Plan for the Pan Mine Project



Report Prepared by



SRK Consulting (U.S.), Inc.
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Petroleum-Contaminated Soil Management Plan for the Pan Project

Midway Gold US Inc.

The Point at Inverness, Suite 280
8310 South Valley Highway
Englewood, Colorado 80112

and

705 Avenue K
Ely, Nevada 80301

SRK Consulting (U.S.), Inc.
Suite 520 - 1250 Lamoille Highway
Elko, NV 89801

e-mail: elko@srk.com
website: www.srk.com
Tel: 1.775.753.4151
Fax: 1.775.753.4152

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1 Introduction and Scope of Report

This document presents a Petroleum-Contaminated Soil Plan for the management of petroleum-contaminated soil incidental to the gold mining operations at the Pan Mine Project. The Pan Mine Project (the Project) is owned by Pan-Nevada Gold Corporation and Midway Gold US Inc. (Midway), both wholly-owned subsidiaries of Midway Gold Corporation. The Project is located in White Pine County, Nevada in the Pancake Range approximately 22 miles southeast of Eureka and 50 miles west of Ely. Figure 1 shows the general Project location.

Although not specifically required by regulation because petroleum-contaminated soil (PCS) will not be treated or disposed at the Pan Mine Project, this Petroleum-Contaminated Soil Plan (Plan) was prepared generally consistent with Nevada Division of Environmental Protection (NDEP) *Guidance for Mine-Site Petroleum-Contaminated Soil (PCS) Management Plans Revision 1, January, 2009*.

Information presented in this Plan is based on Midway's *Water Pollution Control Permit Application for the Pan Project*, dated July 2012, and the *Pan Mine Plan of Operations and Reclamation Permit Application*, submitted in October of 2011.

As discussed in this Plan, Midway will collect PCS in a roll-off bin provided by a licensed contractor prior to sending the material offsite for final disposal in accordance with federal, state, and local regulations. Midway will use a licensed facility to ship PCS off-site, such as Clean Harbors Environmental Services for disposal at their Grassy Mountain Facility, located near Clive, Utah. This PCS Management Plan will address the PCS resulting from accidental spills or leaks of hydrocarbons that include diesel fuel and hydraulic or lubrication oil.

1.1 Background

Midway proposes to develop an open-pit gold mine within the Project Area with two larger pits and four small pits. Ore will be crushed on site and then processed using a central heap leach facility. The projected mining period is 13 years, with associated construction, closure, reclamation, and post-closure monitoring periods, extending the Project life to approximately 28 years. The evapotranspiration cell and associated downgradient monitoring wells will continue to be monitored following construction of the ET cell, bringing the entire Project life to 48 years. The pits, waste rock disposal areas, heap leach facility, roads, and ancillary facilities will result in about 3,140 acres of total disturbance. Upon completion of mining, the operation will be closed and reclaimed. The following activities are proposed:

- Construct, operate, close, and reclaim the following:
 - Two main open pits: the North Pan Pit and the South Pan Pit;
 - Four satellite pits: the Black Stallion, North Syncline, Syncline, and South Syncline pits;
 - Crushing facilities and associated stockpiles;
 - Two waste rock disposal areas;
 - Heap leach pad, conveyors, processing facilities, and ponds;
 - Water supply wells and delivery/storage system;
 - Haul and secondary roads;
 - Additional exploration within the Plan area;

- Ancillary facilities including: power supply; stormwater controls; reagent, fuel, and explosives storage; buildings including administration, laboratory, security, warehouse, coreshed, and parking; potable water supply and septic systems; maintenance shop; ready line; light vehicle wash; communications facilities; helicopter pad; plant growth medium and woody debris stockpiles; Class III-waivered landfill; area for petroleum contaminated soils; monitoring wells; borrow areas; fencing; and yards.

1.2 Limitations and Exceptions

This Plan was prepared for use by Midway at the Pan Mine Project and is intended to be used as a guide for the collection and offsite disposal of PCS that does not meet hazardous waste criteria. Petroleum-contaminated soils determined to be hazardous will be handled, stored, transported, and disposed in accordance with federal, state, and local regulations.

2 PCS Sources

2.1 Summary of PCS Sources

The following were identified as potential sources of PCS at the Pan Mine Project:

- Fuel bay
- Truck wash
- Accidental spills from stationary and mobile equipment.

The primary source of PCS at the Project is anticipated to result from accidental spills. The principal sources of hydrocarbon spills that will be managed under this plan include diesel fuel spills, motor/lube oil spills, and hydraulic fluid. Motor/lube oil and hydraulic fluid spills are associated with equipment failures, such as line ruptures, and thus are relatively infrequent. Midway will transport, store, and use a variety of fuels and reagents. A summary of these materials expected to be present at the site is provided in Table 2-1.

Table 2-1: Summary of Fuels and Reagents

Reagent	Storage	Amount/ Delivery	Anticipated Trucks/ Month	Approximate consumption per day
Off-road Diesel Fuel	2 x 30,000-gallon tanks	6,000 gallons	23	4,400 gallons
Highway Diesel Fuel	2,000-gallon tank	1,800 gallons	0.4	25 gallons
Gasoline	5,000-gallon tank	4,500 gallons	0.8	125 gallons
Automatic Transmission Fluid	1,000-gallon tank	500 gallons	0.9	15 gallons
Engine Oil	1,500-gallon tank	1,000 gallons	0.7	29 gallons
Hydraulic Fluid	1,000-gallon tank	500 gallons	0.5	8 gallons

Reagent	Storage	Amount/ Delivery	Anticipated Trucks/ Month	Approximate consumption per day
Gear Oil	2,000-gallon tank	1,000 gallons	0.7	24 gallons
Used Oil	3,000-gallon tank	2,5000 gallons	0.9	76 gallons

Note: Source – Midway Gold US Inc. “Spill Contingency/Emergency Response Plan”

* Reportable quantities may vary depending on the brand, type, and concentration of the reagents and fuels.

Because the Pan Mine Project is presently in the design and permitting stage, specific products have not yet been identified for use. Once specific products have been identified, Midway will compile Material Safety Data Sheets for each product to further identify constituents that may require special handling.

2.2 Gasoline PCS

Soil contaminated with gasoline will be managed separately from the other PCS sources and as a hazardous waste until the analytical results confirm whether or not the material is characterized as hazardous.

In the event of a spill, liquid gasoline will be recovered by safe and practical means prior to excavating the contaminated soil. Gasoline PCS including the sorbent material will be placed in a roll-off bin labeled to identify the contents and sampled and analyzed according to this Plan. If the analytical results indicate the material is not hazardous, the bin contents will be shipped to the licensed off-site disposal site. If the results show the material to be hazardous, the material will be treated as a hazardous waste and shipped off-site to a licensed facility in accordance with federal, state, and local regulations.

2.3 Hazardous Waste Determination

Petroleum-contaminated soil may be determined to be a characteristic hazardous waste when it exhibits any of the following characteristics as defined in 40 Code of Federal Regulations Section 261: ignitability; corrosivity, reactivity, or toxicity. Midway will determine whether a shipment of PCS meets any of the hazardous waste characteristics during the pre-shipment sampling and route the load to the appropriate final disposal site based on the determination.

3 PCS Management

3.1 Management Strategy

Midway will collect PCS from the identified facilities and accidental spill sites and place the material into a roll-off bin provided by a licensed contractor. The material will be sampled in accordance with federal, state, and local regulations, and contractor requirements to characterize the material prior to shipping offsite.

3.2 PCS Storage Area

The PCS storage area will be located south of the south of the assay lab and west of the fuel bay within the mine fence line, as shown in Figure 2 on public land administered by the U.S. Bureau of Land Management, Egan Field Office. Midway controls the claims associated with the Project. The area will consist of a concrete pad with 6-inch walls to contain the roll-off bin and allow for removal of filled roll-off bins and placement of empty roll-off bins. The PCS storage facility is topographically constrained from naturally draining into nearby surface water bodies or drainages.

The licensed contractor will provide a 20-cubic yard roll-off bin with either a lid or a tarp that seals down to store the PCS on-site. The roll-off bin will be placed on a concrete pad with applicable warning signs to prevent unauthorized placement of materials other than PCS in the bin.

Approximately 10 tons of PCS may be placed in the storage facility as the Department of Transportation limits the transportation capacity to 10 tons. The roll-off bin will be picked up by a licensed contractor and transported off-site for disposal at an appropriate facility.

3.3 Estimated Volume

Midway estimates that up to 20 cubic yards of PCS will be generated over a three-year period.

3.4 NAC 445A.227 A – K Requirements

Item 9 of Appendix 2 in the *Guidance for Mine-Site Petroleum-Contaminated Soil (PCS) Management Plans Revision 1, January, 2009* requires an “A-K” assessment pursuant to Nevada Administrative Code 445A.22705.

(a) *Depth to groundwater:* The PCS storage facility will have an elevation of approximately 6,475 feet above mean sea level. The nearest condemnation borehole (CDM-38) has a similar elevation at 6,426 feet above mean sea level and has a static depth to groundwater of 628 feet below ground surface.

(b) *Distance to irrigation or drinking water wells:* No irrigation or drinking wells are located near the PCS storage area.

(c) *Type of soil that may be contaminated:* The Project site is characterized by thin (6 inches to 25 feet deep) colluvial and alluvial deposits overlying Devonian to Permian carbonate and clastic sedimentary rocks and Tertiary basalt flows and tuffs. The annual precipitation for the PCS storage

facility is estimated by using the data from the nearest meteorological station, the Eureka, Nevada (262708) meteorological station.

(d) *Annual precipitation*: Historical records from 1888 to 2012 from the meteorological station indicate the area receives annual precipitation of 11.83 inches. This data can be accessed by visiting the following website: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv2708>.

(e) *Type of waste released*: Please see Section 2.1 for the types of substances that may be included in the PCS.

(f) *Extent of contamination* – Not applicable

(g) *Present and potential land uses*: The current and potential land uses includes exploration, mining, grazing, wildlife habitat, and dispersed recreation.

(h) *Preferred routes of migration*: No preferred migration routes have been identified. The depth to groundwater exceeds 600 feet below ground surface.

(i) *The location of structures or impediments*: The location of structures and potential impediments are shown on Figure 2.

(j) *Potential for hazard related to fire, vapor, or an explosion*: The potential for a hazard related to fire, vapor, or an explosion is very low as there will be no free liquid.

(k) *Other Information*: - Not applicable

3.5 Best Management Practices (BMPs)

Protection of groundwater infiltration is provided by placing the roll-off bin on a concrete pad. Protection of surface water is provided by situating the PCS storage facility away from stormwater drainage ditches, as well as the nearest jurisdictional surface water. Warning and informative signage will deter unauthorized placement of non-PCS materials.

Good housekeeping BMPs include routine cleanup of PCS accidentally spilled onto the concrete pad containment, as well as cleanup of vehicle track-out, both of which will be placed back into the PCS storage facility.

3.6 Sample Collection and Analytical Protocols

The environmental staff at the Pan Mine Project will conduct the sampling in accordance with established protocols by taking a composite sample comprised of multiple sub-samples of PCS in the roll-off bin. No less than one composite sample will be collected for each 100 cubic yards of PCS. The samples will be placed in a laboratory-prepared container suitable for the collection of soil samples. The containers will be filled to minimize head space and be sealed with an air tight lid. Sampling tools will be decontaminated between each composite interval. The samples will ship under a chain-of-custody to an outside laboratory. Table 3-1 presents a summary of the screening/monitoring activities.

Table 3-1: Summary of Screening and Monitoring Activities

Identification	Parameter	Frequency
PCS screening analysis	Generator knowledge	Prior to removal
PCS Hazardous Waste Determination (Each PCS source)	Hazardous waste determination	When required ¹
PCS Management each roll-off bin by PCS source type	PCS volume added, volume removed, (cubic yards), destination	Quarterly

¹ A hazardous waste determination is required: a) Initially, for each PCS source prior to management under the Plan; b) When a PCS waste stream is suspected to have changed character since the last determination; and c) When a hazardous constituent is detected during screening analyses at a concentration suggestive of hazardous waste. Determinations will be performed pursuant to 40 CFR 262.11 using operator knowledge and/or applicable analytical testing methods described in EPA publication SW-846. Operator knowledge must be adequately described and sufficient to justify the determination.

3.7 Record Keeping

Midway will maintain a record of the hazardous waste determination(s) as applicable. The volume of PCS added to the roll-off bins, the volume transported off-site, and shipping manifests will be recorded quarterly and kept for a minimum of 7 years.

4 Contingency Plan

As the Project does not have an on-site disposal area, a licensed contractor will transport the PCS roll-off bin to an approved disposal facility.

5 Closure and Reclamation

Midway's management strategy is to send PCS for off-site disposal using a licensed contractor. As such, no PCS will remain on-site that will require special closure plans. The concrete pad will be closed in a manner similar to the other concrete pads and foundations that will be constructed at the Project and as described in Section 3.13 of the *Pan Mine Plan of Operations and Reclamation Permit Application*, dated October 2011. The pad will either be left intact or broken. If left intact, the concrete will be covered with 4.0 feet of native fill and at least 0.5 foot of suitable plant growth media. If broken up, the debris will be placed in the North WRDA landfill; and/or, covered in-place with 3 feet of suitable plant growth media or backfilled against cut banks and highwalls throughout the disturbed area. The final plan for permanent closure will be prepared at least 2 years prior to the projected end of operations. Closure of the PCS concrete pad will be addressed in more detail at that time.

6 References

Midway Gold US Inc. *Pan Mine Plan of Operations and Reclamation Permit Application*. October 2011.

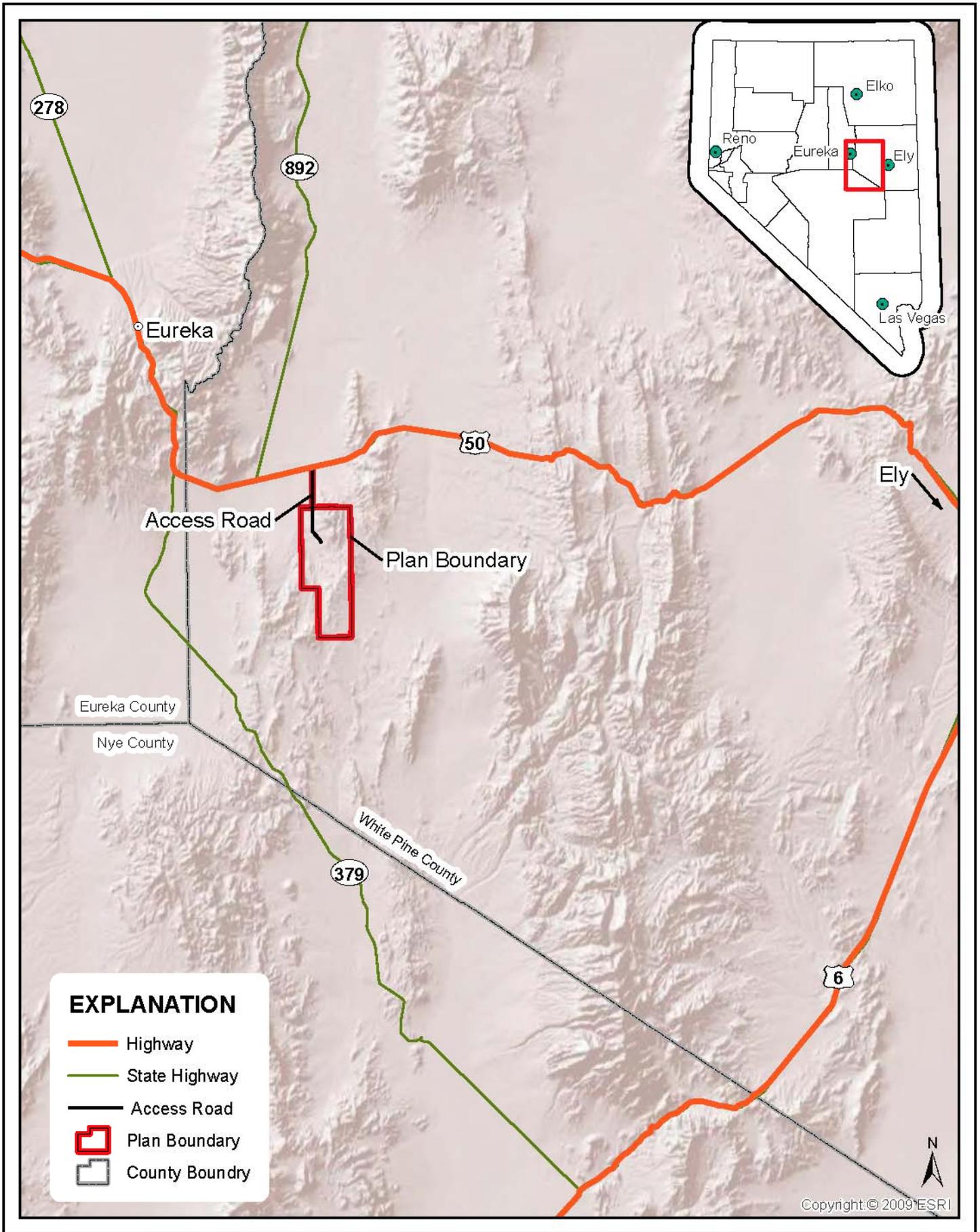
Midway Gold US Inc. *Pan Project Spill Contingency/Emergency Response Plan*. October 2011.

Midway Gold US Inc. *Water Pollution Control Permit Application for the Pan Project, White Pine County, Nevada*. Volume 2: *Assessment of Area Review*. July 2012.

Midway Gold US Inc. *Water Pollution Control Permit Application for the Pan Project, White Pine County, Nevada*. Volume 3: *Meteorological Report*. July 2012.

Western Regional Climate Center. *Period of Record Monthly Climate Summary*. Date accessed: 25 October 2012.

Figures



EXPLANATION

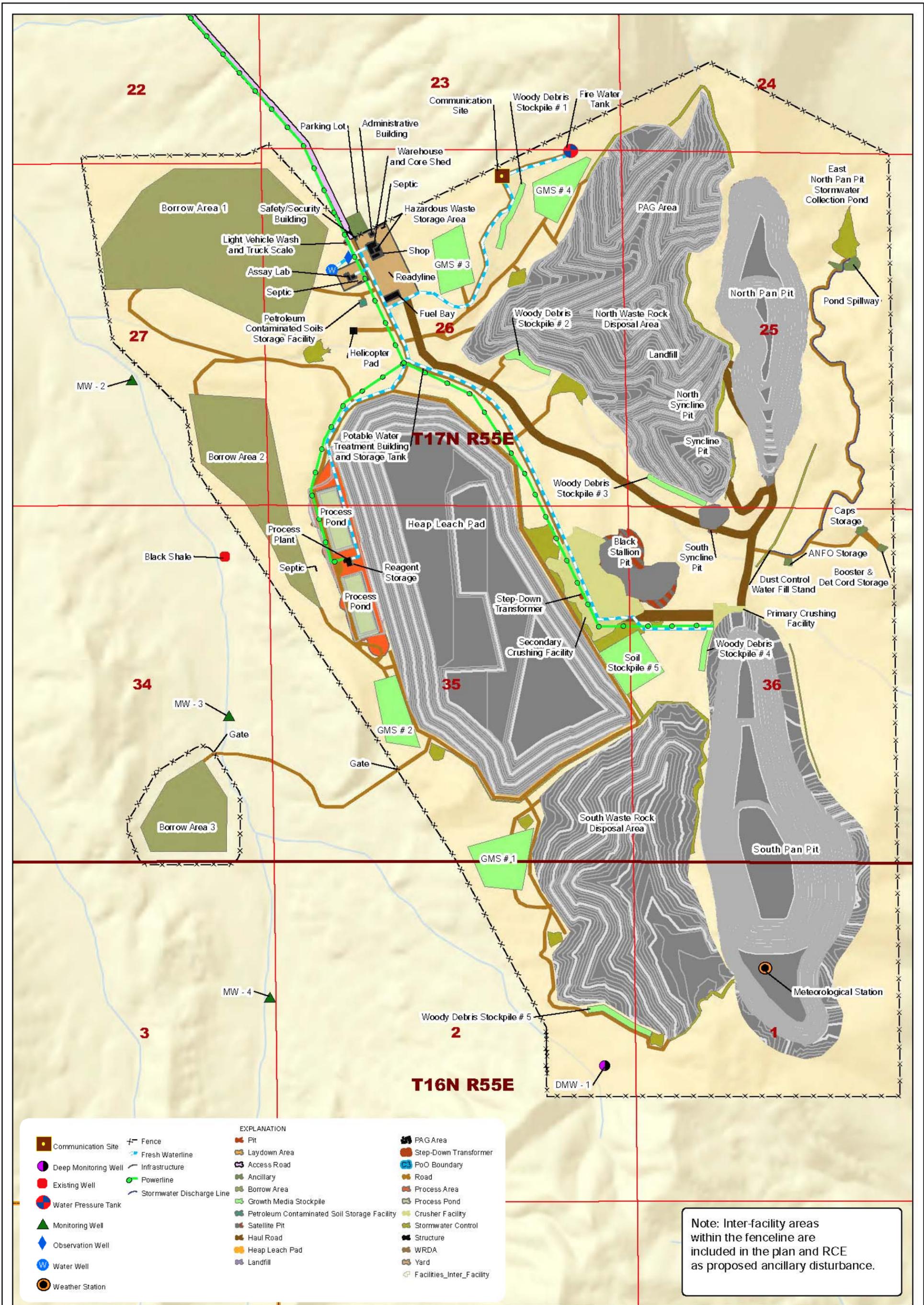
-  Highway
-  State Highway
-  Access Road
-  Plan Boundary
-  County Boundary

			
NAD 1983 UTM Zone 11N			
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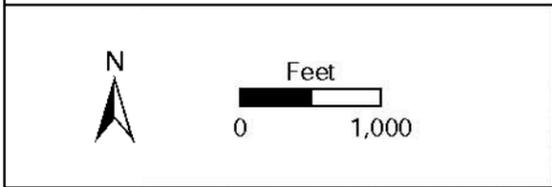

PAN PROJECT

DRAWING TITLE:	
GENERAL LOCATION	
PLAN OF OPERATIONS	
DRAWING NO.	FIGURE 1
JOB NO.	160700.080
REVISION A	

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Note: Inter-facility areas within the fenceline are included in the plan and RCE as proposed ancillary disturbance.



srk consulting				
NAD 1983 UTM Zone 11N Foot US Feet				
DESIGN: VS	DRAWN: ABR	REVIEWED: VS		
SCALE: 1 inch = 1,300 feet	DATE: 1/2/2013			
FILE: PCS_160700_080_Fig02_Pcs_ABR_20130201.mxd				

MIDWAY GOLD

PAN PROJECT

DRAWING TITLE:	
PROPOSED FACILITIES	
ISSUED FOR: PCS MANAGEMENT PLAN	
DRAWING NO. FIGURE 2	REVISION NO.
SRK JOB NO. 160700.080	A

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