DESERT HAWK GOLD CORP.

Leslie
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April 12, 2016

RECEIVED
APR 18 2016
DIV. OF OIL, GAS & MINING

Paul Baker, Minerals Program Manager
Utah Department of Natural Resources
Division of Oil, gas & Mining
1594 West Temple
Suite 1210
Salt Lake City, Utah 84114-5801

RE: Permit # M/045/0078 – Kiewit Project

Dear Mr. Baker,

Enclosed please find form MR-REV detailing the addition of the recently approved Ground Water Discharge Permit from the Department of Environmental Quality. The previous permit expired and this is the renewed permit effective March 30, 2016.

If you have any questions please feel free to contact the undersigned. Thank you for your cooperation.

Sincerely,

Melinda Havenstrite
Desert Hawk Gold Corp.

Enclosures

Cc: Rick Havenstrite, Desert Hawk Gold Corp.
Leslie Heppler, UDOGM
Stephen Allen, BLM

1290 Holcomb Ave Reno, NV 89502 Phone: 775.337.8057 Fax: 775.322.6867

Application for Mineral Mine Plan Revision or Amendment

Operator: Desert Hawk Gold Corp.

Mine Name: Kiewit Project

File Number: M/ 045 /0078

Provide a detailed listing of all changes to the mining and reclamation plan that will be required as a result of this change. Individually list all maps and drawings that are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages, or other information as needed to specifically locate, identify and revise or amend the existing Mining and Reclamation Plan. **Include page, section and drawing numbers as part of the description.**

DETAILED SCHEDULE OF CHANGES TO THE MINING AND RECLAMATION PLAN

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☑ REPLACE	☐ REMOVE	Appendix XV - Ground Water Discharge Permit
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
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☐ ADD	☐ REPLACE	☐ REMOVE	

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments and obligations, herein.

Melinda Havenstrite
Print Name

Sign Name, Position

4/12/16
Date

Return to:

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
Phone: (801) 538-5291 Fax: (801) 359-3940

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FOR DOGM USE ONLY:
File #: M/ /
Approved:
Bond Adjustment: from ($)
to $

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF WATER QUALITY
Walter L. Baker, P.E.
Director

MAR 30 2016

Ms. Linde Havenstrite
Desert Hawk Gold Corp.
1290 Holcomb Ave.
Reno, NV 89502

Dear Ms. Havenstrite:

Subject: Issuance of Ground Water Discharge Permit UGW510004

The 30-day public comment period closed on February 29, 2016 for draft Ground Water Discharge Permit UGW510004 for Desert Hawk Gold Corp. No comments were received during the comment period. The Ground Water Discharge Permit and Statement of Basis are enclosed. An invoice is also enclosed for the legislative mandated fee of $7,470 for 83 hours of staff time preparing the permit. Please remit this fee to Sharon Schofield of the Division of Water Quality.

The Division of Water Quality values your feedback to help us improve the permitting process to better meet your needs. Please go to http://www.waterquality.utah.gov/ and take a few minutes to complete our customer feedback form (*Give Feedback* on the lower left side of the web page).

If you have any questions or comments about the permit, please contact Mark Novak at mnovak@utah.gov or (801) 536-4358.

Sincerely,

Leah Ann Lamb
Acting Director

LL:MTN:ag

Enclosures (1): Transmittal Letter (DWQ-2016-006927)
(2): SOB (DWQ-2016-001206)
(3):Permit (DWQ-2016-001205)

Cc: Tooele County Utah Public Health Department

DWQ-2016-006927

GROUND WATER DISCHARGE PERMIT RENEWAL
PERMIT NO. UGW450011
KIEWIT PROJECT
STATEMENT OF BASIS

Desert Hawk Gold Corporation
1290 Holcomb Ave.
Reno, NV 89502

March, 2016

Mine Process Summary

Desert Hawk Gold Corporation (DHG) has constructed facilities to mine and process approximately 5,000 tons per day of gold and silver ore, 200 days annually, from three deposits having estimated reserves of 2,300,000 tons of ore. Ore is crushed and placed on a cyanide heap leach pad for recovery of gold and silver. Ore is hauled to a crusher then placed on the leach pad in lifts 10 to 20 feet high. Dilute sodium cyanide solution at high pH is sprinkled on the surface of the heap leach pad at rates of approximately 0.003 to 0.005 gallons/ft^2/day and the solution flows through the stacked ore to the leach pad liner. This solution then flows to the process water pond where it is pumped through a four stage carbon column, stripped of dissolved metals and recycled. The facilities were built under a construction permit issued by the Division of Water Quality (DWQ) on January 30, 2014 and modified on April 8, 2014. Under the terms of the previous version of this permit, issued December 6, 2010, leaching began on September 12, 2014.

Hydrogeology

The Kiewit heap leach facility is located in the northern Deep Creek Mountains in the Gold Hill Mining District at an elevation of 5,800 feet. Annual precipitation at the mine site is approximately 10 inches. The geology of the District consists of complexly folded and faulted sedimentary rocks of Paleozoic age, intruded by igneous rocks of Jurassic and Tertiary age. Bedrock at the Kiewit leach pad site is Jurassic granodiorite which is in intrusive contact with the Carboniferous Oquirrh Formation a short distance to the southwest, and the Carboniferous Ochre Mountain Formation a short distance to the northeast. The Oquirrh Formation consists of interbedded limestone, dolomite, and sandstone and the Ochre Mountain Formation consists mostly of limestone. Contact metamorphism may be present at the intrusive contacts.

The leach facility site is located in an area covered with alluvium associated with Rodenhouse Wash, an ephemeral stream bed with rare water flows that occur during extreme weather events. The wash flows past the leach pad site about five miles to the northeast, where it discharges into the Great Salt Lake Desert salt flats. Two monitor wells were drilled at the toe of the leach pad. Well MW-1 was drilled to 50 feet and encountered bedrock at 3 feet. Well MW-2 was drilled to 100 feet and encountered

bedrock at 4 feet. The driller's log reported the bedrock as "granite". Neither of these monitor wells encountered ground water. DHG's water supply well is located near the monitor wells, also downgradient of the leach pad facility, and was drilled to a total depth of 750 feet. Bedrock was encountered at 25 feet and reported as "granite" in the driller's log. Ground water was encountered at a depth of 328 feet. Mine exploration drill holes in the area encountered ground water at depths ranging from 350 to 400 feet below the surface.

Bedrock at the leach pad site is felsic intrusive igneous rock, described as "granite" in driller's logs. As such, it has very low primary porosity and permeability. Ground water encountered in the water supply well in the granitic bedrock is very likely contained in fractures within the rock. The thin layer of alluvium overlying the bedrock is likely significantly more permeable than the fractured bedrock.

Ground Water Quality

The closest site to the leach pad where ground water can be sampled is DHG's water supply well. This well is located at latitude 40° 6' 42.3714" North and longitude 113° 48' 26.8416" West, at a ground surface elevation of 5903.7'. The well has sand pack from 400' to 720' depth and is screened from 520' to 720'. Ground water at the site is classified as Class II Drinking Water Quality Ground Water.

Table 1. Background Water Quality in DHG water supply well

Parameter	Value in mg/1 unless otherwise noted
total dissolved solids	2366
conductivity	3697 µmhos/cm
pH	7.6 (units)
total cyanide	0.01[1]
nitrate + nitrite, as N	0.08[2]
antimony	<0.0025[1]
arsenic	<0.005[1]
barium	0.08
beryllium	0.0009[2]
cadmium	<0.0009[1]
copper	0.01[2]
lead	0.005[2]
mercury	<0.0002[1]
selenium	0.002[2]
silver	0.002[2]
thallium	<0.002[1]
zinc	3.13

1. Limit of Detection
2. Non-detects in background data assigned a value of (0.5 x detection limit) for calculation of background mean.

This well is located downgradient from the leach pad facility and from the driller's log appears to be completed in granitic rock.

Best Available Technology (BAT)

The primary means of assuring that discharges of contaminants to ground water are being prevented under this permit is containment technology, which has the capability of detecting leaks of leach solutions from the facility. The authorized heap leach facilities were constructed in accordance with the engineering design plans and specifications approved by the Construction Permit issued by the DWQ on October 26, 2010, with minor changes to the maximum slope and maximum height approved on January 30, 2014. The process area, process pond, and leach pad cover 19.5 acres and is entirely underlain by a composite liner system consisting of an 80-mil high density polyethylene (HDPE) synthetic liner underlain by a one-foot thick clay liner, sloped at a 1% grade to gravity drain to the process pond. Piping is installed under the HDPE liner of the leach pad at 200 foot intervals, and will conduct leakage to sumps on the north side of the pad. The greatest potential for leakage of process solutions is from the one acre process pond that will contain 100,000 gallons of solution during normal operations, but may have 16 to 19 feet of hydraulic head after a major precipitation event. Therefore, the process pond is underlain by a double liner system with leak detection, and leakage will gravity drain to a collection sump, which will be monitored daily.

Approved construction elements include:

1. <u>Process Area, Process Pond, and Leach Pad</u>

    a. Subgrade Preparation – the surface has been prepared by removing top soil and coarse aggregate.

    b. 12-inch thick Clay Subliner - the clay has been placed in to a thickness of at least 12 inches and compacted to 95% Modified Proctor Scale (ASTM 1557). At least ten (10) compaction tests were conducted during placement of the clay liner.

    c. 80-mil HDPE Primary Liner - an 80-mil HDPE synthetic liner has been installed immediately above the clay subliner across the entire operating area in accordance with the construction quality assurance/quality control (CQA/QC) manual approved by the Construction Permit.

    d. Process Area Protective Fill Layer - a two-foot layer of one-inch minus crushed granodiorite fill has been placed over the 80-mil HDPE liner of the process area for protection during heap leach operations.

    e. Leach Pad Protective Fill Layer - prior to placement of ore, the open HDPE liner of the heap leach pad was covered by a four-foot layer of one-inch minus crushed granodiorite fill to protect the liner from potential perforation and to provide a percolation base for the solutions draining from the heap.

2. Process Pond Leak Detection System – the process pond is underlain by a leak detection system consisting of the following layers from bottom to top:

   a. Clay Subliner - a clay subliner has been placed in to a thickness of at least 12 inches and compacted to 95% Modified Proctor Scale (ASTM 1557). At least ten (10) compaction tests were conducted during placement of the clay liner.

   b. Secondary HDPE Liner - a 40-mil secondary HDPE liner has been installed on top of the clay subliner in accordance with the CQA/QC manual approved by the Construction Permit.

   c. Drainage Layer - a 200-mil Geonet layer was installed on top of the 40-mil secondary HDPE liner to promote leakage through the primary HDPE liner to gravity drain to a leak collection sump.

   d. Leak Detection Sump - a gravel filled leak detection sump has been constructed beneath the lowest section of the process pond between the primary and secondary HDPE liners. A sump pump and collection pipe will allow samples to be collected at the surface if any leakage is detected in the sump.

   e. Primary HDPE Liner – an 80-mil HDPE synthetic liner was installed on top of the Geonet layer in accordance with the CQA/QC manual approved by the Construction Permit.

3. Leach Pad Leak Detection System – 4-inch ADS piping was installed at 200-foot intervals beneath the HDPE liner of the leach pad to collect and convey potential leakage to leak detection sumps on the north side of the pad.

4. Perimeter Containment Berm – a three-foot containment berm has been placed around the outer edge of the pad liner, process facilities, and process pond to provide solution containment.

BAT Performance Monitoring

Best available technology monitoring will include minimum vertical freeboard, maximum allowable leakage rate, and maximum allowable head monitoring. These performance standards are based on the precedence of previous ground water discharge permits and *Action Leakage Rates for Leak Detection Systems* (EPA, January 1992).

1. Minimum Vertical Freeboard – a minimum of two (2) feet of vertical freeboard shall be maintained to ensure total containment of the process pond.

2. Maximum Allowable Leakage Rate – based on a pond area of one acre, the maximum allowable leakage rate through the primary HDPE liner of the process water pond will be 200 gallons per day.

3. Maximum Allowable Head – the maximum head that will be allowed in the leak detection sump is one (1) foot. Any fluids collected in the leak detection sump will be removed and placed into the process pond.

Ground Water Monitoring

Following DWQ recommendations when this permit was first issued, the Permittee drilled two monitor wells as close as possible to the downgradient toe of the leach pad, to 50 feet and 100 feet. Granitic bedrock was encountered in these drill holes at depths of 3 and 4 feet respectively. The wells were screened at depths of 40-50 feet and 90-100 feet respectively. Neither well encountered ground water. DHG also drilled a water supply well to a depth of 750 feet, close to the monitor wells.

Under these conditions, compliance with this permit shall be monitored by checking for the presence of leach fluid in the monitor wells, and by quarterly measurement of field parameters and semiannual analysis of laboratory parameters in the water supply well. Monitoring parameters were chosen to provide unambiguous evidence for leakage of process fluid from the permitted facilities.

Ground water samples from the water supply well and any water sampled from the monitor wells will be analyzed for:

- Field parameters: pH, temperature, specific conductance
- Laboratory parameters: total dissolved solids, total cyanide, and nitrate + nitrite as N, as specified in Part I.E.2.b.3) of the permit.

The Permittee shall also sample process water solutions quarterly according to Part I.E.3 of the permit, for comparison with ground water samples.

Compliance will be demonstrated by meeting ground water protection levels as defined in the permit at monitor wells, and no presence of process water solutions in leak detection sumps.

All water sampling for this permit shall be done according to the most recently-approved sampling and analysis plan.

Permit Application and Renewal Documents

The following documents are considered part of the ground water discharge permit application and will be kept as part of the administrative file.

1. Desert Hawk Gold Corporation, Utah Ground Water Discharge Permit Application, Kiewit Project, Tooele County, UT, September 15, 2010.

2. Report on the Clifton-Gold Hill Property, Gold Hill Mining District, Tooele County, Utah, USA for Dumont Nickel, Inc., June 30, 2003

3. Completeness Review Comments and Request for Information, Ground Water Discharge Permit Application, Kiewit Project, Letter from DWQ to Desert Hawk Gold Corp. dated August 11, 2010, document No. DWQ-2010-005403.

4. Construction Permit for the Kiewit Project, Tooele, Letter from DWQ to Desert Hawk Gold Corp. dated October 26, 2010, document No. DWQ-2010-007488.

5. Desert Hawk Gold Corporation, Monitor Well As-Built Report, Kiewit Mine Project, August 18, 2014, document No. DWQ-2014-010819

6. Desert Hawk Gold Corp., Compliance Monitoring Report dated August 1, 2014, containing Proposed Monitoring Plan, document No. DWQ-2014-011242

7. DWQ, Approval of Proposed Compliance Monitoring Plan, Permit No. UGW450011, dated August 29, 2014, document No. DWQ-2014-011241

8. Desert Hawk Gold Corp., Compliance Report, Third Quarter 2015, containing Compilation of Background Monitoring Data from Water Supply Well, document No. DWQ-2015-013301

DWQ-2016-001206

STATE OF UTAH
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY
WATER QUALITY BOARD
P.O. BOX 144870
SALT LAKE CITY, UTAH 84114-4870

Ground Water Discharge Permit
Kiewit Project
Permit No. UGW450011

In compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 1953, as amended, the Act,

Desert Hawk Gold Corporation
1290 Holcomb Ave.
Reno, NV 89502

hereafter referred to as the Permittee, is granted a Ground Water Discharge Permit for a cyanide heap leach processing operation for extraction of gold and silver near the Kiewit Mine in Tooele County, Utah. The heap leach processing facility is located at Latitude 40° 06' 42" North, Longitude 113° 48' 29" West on the following tracts of land (Salt Lake Base and Meridian):

Section 19, Township 8 South, Range 17 West;
N ½ of Section 30, Township 8 South, Range 17 West;
N 1/2 of Section 25, Township 8 South, Range 18 West;
Section 24, Township 8 South, Range 18 West.

This permit is based on representation made by the Permittee and other information contained in the administrative record. It is the responsibility of the Permittee to read and understand all provisions of this permit.

The facility shall be constructed and operated in accordance with conditions set forth in this permit and the Utah Administrative Rules for Ground Water Quality Protection (UAC R317-6).

This permit shall become effective at midnight on, MAR 30 2016

This permit shall expire at midnight on, MAR 30 2021

Leah Ann Lamb
Acting Director

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I. SPECIFIC CONDITIONS

A. Ground Water Classification

Based on eight samples of ground water quality data from Desert Hawk Gold's (DHG's) water supply well, located at 40 6' 42.3714" N, 113 48' 26.8416" W, ground water at the site is classified as Class II Drinking Water Quality.

B. Background Ground Water Quality

Table 1 provides background ground water quality data from DHG's water supply well. This well has a sand pack from 400-720 feet below ground surface (bgs) and is screened from 520-720 feet bgs. Background data for several metals had a combination of detected values and non-detects in the data set. When this occurred, averages were calculated by assigning a value of one-half the limit of detection for each particular non-detect analysis.

Table 1. Background Water Quality in DHG water supply well

Parameter	Value in mg/1 unless otherwise noted
total dissolved solids	2366
conductivity	3697 µmhos/cm
pH	7.6 (units)
total cyanide	0.01[1]
nitrate + nitrite, as N	0.08[2]
antimony	<0.0025[1]
arsenic	<0.005[1]
barium	0.08
beryllium	0.0009[2]
cadmium	<0.0009[1]
copper	0.01[2]
lead	0.005[2]
mercury	<0.0002[1]
selenium	0.002[2]
silver	0.002[2]
thallium	<0.002[1]
zinc	3.13

1. Limit of Detection
2. Non-detects in background data assigned a value of (0.5 x detection limit) for calculation of background mean.

C. Ground Water Protection Levels

Ground water protection levels for monitoring parameters in DHG's water supply well are listed in Table 2. These parameters were chosen for routine ground water monitoring to provide a dependable indication of influence from process water solutions.

Table 2. Protection Levels for DHG water supply well (Class II Ground Water)

Parameter	Protection level[1]	Source
Conductivity	5315 µmhos/cm	Mean + (2 x standard deviation)
Total dissolved solids	3048	Mean + (2 x standard deviation)
pH	6.5-8.5	Ground water standard
total cyanide	0.01	Limit of detection
nitrate + nitrite	5	0.5 x ground water standard

1. Units in mg/1, except pH

D. <u>Best Available Technology (BAT) Standard</u>

1. Authorized Construction - the Kiewit cyanide heap leach project will consist of an ore crusher area, a leach pad, a process area, and a process pond. The process area will contain a diesel fuel storage tank, a cyanide holding tank, a lime silo, a milk of lime mix tank, and a perimeter containment berm.

2. Design and Construction - the authorized heap leach facilities are constructed in accordance with the engineering design plans and specifications approved by the Construction Permit issued by the Director on October 26, 2010, with minor changes to the maximum slope and maximum height approved on January 30, 2014 and modified on April 8, 2014. The process area, process pond, and leach pad are entirely underlain by a composite liner system consisting of an 80-mil high density polyethylene (HDPE) synthetic liner underlain by a one-foot thick clay liner, sloped at a 1% grade to gravity drain to the process pond. In addition, the process pond is underlain by a double liner system with leak detection, and leakage will gravity drain to a collection sump, which will be monitored daily.

   Approved construction elements include:

   a. Process Area, Process Pond, and Leach Pad

      1) Subgrade Preparation – the surface has been prepared by removing top soil and coarse aggregate.

      2) 12-inch thick Clay Subliner - the clay has been placed in to a thickness of at least 12 inches and compacted to 95% Modified Proctor Scale (ASTM 1557). At least ten (10) compaction tests have been conducted during placement of the clay liner.

      3) 80-mil HDPE Primary Liner - an 80-mil HDPE synthetic liner has been installed immediately above the clay subliner across the entire operating area in accordance with the construction quality assurance/quality control (CQA/QC) manual approved by the Construction Permit.

4) Process Area Protective Fill Layer - a two-foot layer of one-inch minus crushed granodiorite fill has been placed over the 80-mil HDPE liner of the process area for protection during heap leach operations.

5) Leach Pad Protective Fill Layer - prior to placement of ore, the open HDPE liner of the heap leach pad was covered by a four-foot layer of one-inch minus crushed granodiorite fill to protect the liner from potential perforation and to provide a percolation base for the solutions draining from the heap.

b. Process Pond Leak Detection System – the process pond is underlain by a leak detection system consisting of the following layers from bottom to top:

1) Clay Subliner - a clay subliner has been placed in to a thickness of at least 12 inches and compacted to 95% Modified Proctor Scale (ASTM 1557). At least ten (10) compaction tests have been conducted during placement of the clay liner.

2) Secondary HDPE Liner - a 40-mil secondary HDPE liner has been installed on top of the clay subliner in accordance with the CQA/QC manual approved by the Construction Permit.

3) Drainage Layer - a 200-mil Geonet layer was installed on top of the 40-mil secondary HDPE liner to promote leakage through the primary HDPE liner to gravity drain to a leak collection sump.

4) Leak Detection Sump - a gravel filled leak detection sump has been constructed beneath the lowest section of the process pond between the primary and secondary HDPE liners. A sump pump and collection pipe will allow samples to be collected at the surface if any leakage is detected in the sump.

5) Primary HDPE Liner – an 80-mil HDPE synthetic liner has been installed on top of the Geonet layer in accordance with the CQA/QC manual approved by the Construction Permit.

c. Leach Pad Leak Detection System – 4-inch ADS piping has been installed at 200-foot intervals beneath the HDPE liner of the leach pad to collect and convey potential leakage to leak detection sumps on the north side of the pad.

d. Perimeter Containment Berm – a three-foot containment berm has been placed around the outer edge of the pad liner, process facilities, and process pond to provide solution containment.

3. BAT Performance Monitoring - Best available technology monitoring will include minimum vertical freeboard, maximum allowable leakage rate, and maximum allowable head monitoring. These performance standards are based on the precedence of previous ground water discharge permits and *Action Leakage Rates for Leak Detection Systems* (EPA, January 1992).

a. Minimum Vertical Freeboard – a minimum of two (2) feet of vertical freeboard shall be maintained to ensure total containment of the process pond.

b. Maximum Allowable Leakage Rate – based on a pond area of one acre, the maximum allowable leakage rate through the primary HDPE liner of the process pond will be 200 gallons per day.

c. Maximum Allowable Head – the maximum head that will be allowed in the process pond leak detection sump is one (1) foot. Any fluids collected in the leak detection sump will be removed and placed in the process pond.

4. Spill Containment - The Permittee shall design, maintain and construct all pipelines, storage tanks, and mill facilities with a spill containment system that shall:

a. Prevent any spills or leakage from any contact with the ground surface or ground water.

b. Convey all spills or leakage to the process pond.

Any spill that does come into contact with the ground surface or ground water that causes pollution or has the potential to cause pollution to waters of the state shall be reported in accordance with Part II.I.

5. Monitoring Well Construction - Monitoring well construction shall conform to *A Guide to the Selection of Materials for Monitoring Well Construction* (EPA 600/52-84-024, 1983) and *RCRA Groundwater Monitoring Technical Enforcement Guidance Document* (EPA OSWER-99501.1, 1986).

E. <u>Compliance Monitoring Requirements</u>

1. Ground Water Monitoring

a. Ground Water Quality Sampling and Analysis Quality Assurance Project Plan - All water quality monitoring shall be conducted in accordance with the general requirements, hereunder, and the specific requirements of the Ground Water Sampling and Analysis Quality Assurance Project Plan most recently approved by the Director.

b. Compliance Wells – Monitor wells MW-1 and MW-2, and Desert Hawk Gold's water supply well, installed hydraulically downgradient of the process area, will serve as ground water compliance monitoring points.

c. Protection of Monitoring Wells - All compliance monitoring wells must be protected from damage due to surface vehicular traffic or contamination due to surface spills. All compliance monitoring wells shall be maintained in full

operational condition for the life of this permit. Any compliance monitoring well that becomes damaged beyond repair or is rendered unusable for any reason will be replaced by the Permittee within 90 days or as directed by the Director.

2. Compliance Monitoring

Compliance with the terms of this permit shall be evaluated by measuring field parameters in the water supply well quarterly and obtaining samples for laboratory analysis semi-annually. The two downgradient monitor wells were dry at the time of permit issuance, and they shall be checked weekly for the presence of water. If water is present in either of these wells in adequate quantity to obtain a sample, field parameters shall be measured and a sample taken as soon as possible. Samples shall be analyzed for the parameters listed in Part I.E.2b(3)(b). It is not necessary to purge either monitor well if there is not adequate water present in the well to allow it.

a. Water Level Measurements – when feasible, water level measurements shall be made in each monitoring well prior to any well purging or collection of ground water samples, if water is present in the well. These measurements will be made from a surveyed permanent reference point clearly demarcated on the top of the well or surface casing. Water level measurements will be made to the nearest 0.01 foot.

b. Ground Water Quality Samples –grab samples of ground water from the water supply well will be collected for laboratory analysis on a semi-annual basis. Field parameters will be measured quarterly. If water is found to be present in a normally dry monitor well, field parameters shall be measured and a sample taken for laboratory analysis.

1. Analysis by Certified Laboratories - analysis of all ground water samples shall be performed by laboratories certified by the Utah State Health Laboratory.

2. Ground Water Analytical Methods - methods used to analyze ground water samples must comply with the following:

i. Methods cited in UAC R317-6-6.3L, and

ii. Method detection limits are less than Ground Water Protection Levels in Part I.C.

3. Analysis Parameters - the following analyses will be conducted on all ground water samples collected:

4. Field Parameters - pH, temperature, and specific conductance.

5. Laboratory Parameters – including:
   - Total dissolved solids (TDS)
   - Total cyanide
   - Nitrate + nitrite as N.

3. Source Monitoring- beginning with the start of leach operations and quarterly thereafter, the Permittee shall sample the leach solution and analyze it for the parameters listed in Part I.E.2.b.(3), above, as well as: antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, selenium, silver, thallium, zinc, sodium, calcium, magnesium, potassium, chloride, sulfate and alkalinity .

4. Leak Detection Monitoring

   a. Fluid Measurement – the leak detection sump will be monitored daily for the presence of fluids.

   b. Sampling if Fluids Present - if fluids are detected in any leak detection sump, the Permittee shall measure field parameters and collect samples for laboratory analysis according to Part I.E.2.b(3), above.

F. <u>Non-Compliance Status</u>

1. Probable Out-of-Compliance Status due to Exceedance of Protection Levels - the Permittee shall evaluate results of each ground water sampling event to determine any exceedence of the Ground Water Protection Levels found in Part I.C above for the water supply well, MW-1, MW-2 or a leak detection sump. Upon determination that a Ground Water Protection Level has been exceeded at a compliance monitoring point, the Permittee shall:

   a. Immediately measure field parameters and re-sample the well(s) or leak detection sump found to be in probable out-of-compliance status for laboratory analysis of the parameters listed in Part I.E.2.b(3), above. Submit the analytical results thereof, and notify the Director of the probable out-of-compliance status within 30 days of the initial detection.

   b. Upon exceedence of any one parameter listed in Part I.C for two consecutive sampling events at a compliance monitoring point, the Permittee shall immediately implement an accelerated schedule of <u>monthly</u> sampling analysis, consistent with the requirements of this permit. This monthly sampling will continue for at least two months or until the compliance status can be determined by the Director. Reports of the results of this sampling will be submitted to the Director as soon as they are available, but not later than 30 days from each date of sampling.

2. Out-of-Compliance Status Based Upon Leakage of Process Solutions

   a. Out of Compliance Status shall be defined as follows:

1) In DHG's water supply well or in wells MW-1 or MW-2, out-of-compliance shall be defined as two consecutive samples exceeding an established protection level.

2) For the leach pad and process water ponds, out-of-compliance shall be defined as detection of leach fluids in any leak detection sump, by comparison of the chemistry of fluids from the sump with the most recent data on leach fluid chemistry from source monitoring required in Part I.E.3.

b. Notification and Accelerated Monitoring - upon determination by the Permittee or the Director, in accordance with UAC R317-6-6.17, that an out-of-compliance status exists, the Permittee shall:

1) Verbally notify the Director of the out-of-compliance status or acknowledge Director notice that such a status exists within 24 hours of receipt of data, and

2) Provide written notice within 5 days of the determination, and

3) Continue an accelerated schedule of monthly ground water monitoring for at least two months and continue monthly monitoring until the facility is brought into compliance as determined by the Director.

c. Source and Contamination Assessment Study Plan - within 30 days after the written notice to the Director required in Part I.F.2.b(2), above, the Permittee shall submit an assessment study plan and compliance schedule for:

1) Assessment of the source or cause of the contamination, and determination of steps necessary to correct the source.

2) Assessment of the extent of the ground water contamination and any potential dispersion.

3) Evaluation of potential remedial actions to restore and maintain ground water quality, and ensure that the ground water standards will not be exceeded at the compliance monitoring wells.

3. Out-of-Compliance Status Based Upon Failure to Maintain Best Available Technology - In the event that BAT monitoring indicates a violation of any of the construction or performance standards outlined in Part I.D of this permit, the Permittee shall submit to the Director a notification and description of the violation in accordance with Part II.I of this permit.

G. Reporting Requirements

1. Quarterly Ground Water Monitoring - monitoring required in Part I.E.2 above shall be reported according to the schedule in Table 3 below, unless modified by the Director:

Table 3: Quarterly Compliance Monitoring Report Schedule

Quarter		Report Due Date
1st	(January, February, March)	April 30th
2nd	(April, May, June)	July 31st
3rd	(July, August, September)	October 31st
4th	(October, November, December)	January 31st

2. Water Level Measurements - water level measurements from ground water monitoring wells will be reported as measured depth to ground water from the surveyed casing measuring point, and ground water elevations as converted by casing measuring point elevations.

3. Ground Water Quality Sampling - reporting will include:

   a. Field Data Sheets - or copies thereof, including the field measurements, required in Part I.E.2.b(3) above, and other pertinent field data, such as: well name/number, date and time, names of sampling crew, type of sampling pump or bail, volume of water purged before sampling.

   b. Laboratory Analytical Results - including date sampled, date received; and the results of analysis for each parameter, including: value or concentration, units of measurement, reporting limit (minimum detection limit for the analysis), analytical method, and the date of the analysis.

   c. If the approved ground water monitoring plan involves checking for the presence of leach solutions in a normally-dry well, the Permittee shall check the well for the presence of fluids at least weekly. If fluids are present in large enough quantities to sample, the Permittee shall obtain a sample from the well

4. Daily Leak Detection Monitoring- reporting will include:

   a. Dates any fluids were present in the leak detection sump.

   b. Volume of fluid in the leak detection sump, if present.

   c. Results of sampling and analysis of collected fluid. The report of these results will meet the same requirements for ground water samples in Part I.G.3 above.

   d. The disposition of any fluids in the leak detection sump.

5. Electronic Filing Requirements - In addition to submittal of the hard copy data, above, the Permittee will electronically submit analytical data from the required ground water monitoring of the water supply well in Excel spreadsheet format, also containing all previous monitoring data from that well.

6. Monitoring Well As-Built Report - If the Director requires any new monitoring wells to be constructed, the Permittee shall submit diagrams and descriptions of the final completion of the monitoring wells. The report is due within 60 days of the date of well completion. The report shall include:

   a. Casing: depth, diameter, and type of material.

   b. Screen: length, depth interval, diameter, material type, slot size.

   c. Sand Pack: depth interval, material type and grain size.

   d. Annular Seals: depth interval, material type.

   e. Surface Casing and Cap: depth, diameter, material type, protection measures constructed.

   f. Elevation and Location: ground surface elevation, elevation of water level measuring point, latitude and longitude in hours, minutes and seconds.

   g. Well construction description, well completion description, results of well pump tests or slug tests.

H. Compliance Schedule

1. Ground Water Sampling, Analysis and Quality Assurance Plan. Within 60 days of permit issuance, DHG shall submit a revised Sampling, Analysis and Quality Assurance Plan for approval by the Director. The plan shall incorporate procedures to be followed for sampling required under this current version of the permit, including sampling procedures for wells that do not yield enough water to allow for standard purging methods. Upon Director approval, the Plan will become an enforceable appendix to this permit.

2. Final Conceptual Closure Plan and Duty to Reapply. The Permittee shall submit a final conceptual closure plan at least 180 days prior to the expiration date of this permit. Also to be submitted at this time will be a reapplication for the ground water discharge permit which will include an updated operational plan describing the proposed operational and closure activities to occur in the next five-year term of the permit. The Permittee shall resubmit the plan with 60 days of receipt of notice from the Director and correct any deficiencies noted in the agency review.

3. Final Closure Plan. In the event that the Permittee decides to discontinue its operations at the facility, the Permittee shall notify the Director of such a decision and submit a Final Closure Plan within 180 days. The Final Closure Plan shall be submitted no later than 180 days prior to the closure of the facility. The Permittee shall resubmit Final Closure Plans within 60 days of receipt of written notice of deficiencies therein. Any material changes made to the original closure plan shall require approval of the Director.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling

Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity.

B. Analytical Procedures

Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3.L, unless other test procedures have been specified in this permit.

C. Penalties for Tampering

The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Reporting of Monitoring Results

Monitoring results obtained during each reporting period specified in the permit, shall be submitted to the Director, Utah Division of Water Quality at the following address no later than the 15th day of the month following the completed reporting period:

Attention: Ground Water Protection Section
State of Utah
Division of Water Quality
P.O. Box 144870
Salt Lake City, Utah 84114-4870

E. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this permit, using approved test procedures as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.

G. Records Contents

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements:
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

H. Retention of Records

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

I. Twenty-four Hour Notice of Noncompliance Reporting

1. The Permittee shall verbally report any noncompliance which may endanger public health or the environment as soon as possible, but no later than 24 hours from the time the Permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24 hour number, (801) 536-4123, or to the Division of Water Quality, Ground Water Protection Section at (801) 536-4300, during normal business hours (Monday through Thursday 7:00 am - 6:00 pm Mountain Time).

2. A written submission shall also be provided to the Director within five days of the time that the Permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected; and,

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. Reports shall be submitted to the addresses in Part II.D, Reporting of Monitoring Results.

J. Other Noncompliance Reporting

Instances of noncompliance not required to be reported within 24 hours, shall be reported at the time that monitoring reports for Part II.D are submitted.

K. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions

The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under Section 19-5-115(2) of the Act a second time shall be punished by a fine not exceeding $50,000 per day. Nothing in this permit shall be construed to relieve the Permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

IV. GENERAL REQUIREMENTS

A. Planned Changes

The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.

B. Anticipated Noncompliance

The Permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a permit renewal or extension. The application should be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

F. Other Information

When the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

G. Signatory Requirements

All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed as follows:

    a. For a corporation: by a responsible corporate officer;

    b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director, and,

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to Authorization. If an authorization under Part IV.G.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. <u>Penalties for Falsification of Reports</u>

The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports

Except for data determined to be confidential by the Permittee, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director. As required by the Act, permit applications, permits, effluent data, and ground water quality data shall not be considered confidential.

J. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

K. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

L. Transfers

This permit may be automatically transferred to a new Permittee if:

1. The current Permittee notifies the Director at least 30 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new Permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Director does not notify the existing Permittee and the proposed new Permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

M. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-117 of the Act.

N. Reopener Provision

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. If new ground water standards are adopted by the Board, the permit may be reopened and modified to extend the terms of the permit or to include pollutants covered by

new standards. The Permittee may apply for a variance under the conditions outlined in R317-6-6.4.D.

2. If alternative compliance mechanisms are required.

3. If subsequent ground water monitoring data reveals the background water quality values in Part I Table 1 are not accurate.

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Desert Hawk Gold Corporation Kiewit Project
Ground Water Discharge Permit UGW450011
DWQ-2016-001205