

**STATE OF ARIZONA  
AQUIFER PROTECTION PERMIT NO. P501913  
PLACE ID 13769, LTF 94982  
SIGNIFICANT AMENDMENT**

**1.0 AUTHORIZATION**

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Articles 1, 2, and 3, Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 1 and 2, A.A.C. Title 18, Chapter 11, Article 4 and amendments thereto, and the conditions set forth in this permit, the Arizona Department of Environmental Quality (ADEQ) hereby authorizes Arizona Public Service Company to operate surface impoundments at the Redhawk Power Plant, located in Arlington, Maricopa County, Arizona. These units operate over groundwater defined as the Hassayampa Sub-basin within the Phoenix Active Management Area (AMA), in Sections 14 and 23, Township 1 South, Range 6 West of the Gila and Salt River Base Line and Meridian.

This permit becomes effective on the date of the Water Quality Division Director's signature and shall be valid for the life of the facility (operational, closure, and post-closure periods) unless suspended or revoked pursuant to A.A.C. R18-9-A213. The permittee shall construct, operate and maintain the permitted facilities:

1. Following all the conditions of this permit including the design and operational information documented or referenced below, and
2. Such that Aquifer Water Quality Standards (AWQS) are not violated at the applicable point(s) of compliance (POC) set forth below or if an AWQS for a pollutant has been exceeded in an aquifer at the time of permit issuance, that no additional degradation of the aquifer relative to that pollutant and as determined at the applicable POC occurs as a result of the discharge from the facility.

**1.1. PERMITTEE INFORMATION**

**Facility Name:** Redhawk Power Plant - Surface Impoundments  
**Facility Address:** 11600 South 363rd Avenue  
Arlington, AZ 85322  
**County:** Maricopa  
  
**Annual Registration Fee Flow Rate:** 7,000,000 gallons per day (gpd)  
  
**Permittee:** Arizona Public Service Company  
**Permittee Address:** 400 North 5<sup>th</sup> Street  
Phoenix, AZ 85322  
  
**Facility Contact:** Andre Bodrog, Plant Manager  
**Emergency Phone No.:** 928-587-0087  
  
**Latitude/Longitude:** 33° 20' 8.97"/112° 50' 25.86"  
**Legal Description:** 1/2 S of Section 14, and the 1/4 NW of Section 23 of Township 1S, Range 6 W  
of the Gila and Salt River Baseline and Meridian, Maricopa County, Arizona

**1.2. AUTHORIZING SIGNATURE**

\_\_\_\_\_  
**Randall Matas, Deputy Director**  
Water Quality Division  
Arizona Department of Environmental Quality

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

**THIS AMENDED PERMIT SUPERCEDES ALL PREVIOUS PERMITS**

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## 2.0 SPECIFIC CONDITIONS

[A.R.S. §§ 49-203(4), 49-241(A)]

### 2.1. FACILITY / SITE DESCRIPTION

[A.R.S. § 49-243(K)(8)]

The Redhawk Power Plant is a 1060-megawatt (MW) combined cycle power plant developed on 460 acres of land owned by Arizona Public Service Company (APS). Operations at the facility started in 2002. The Redhawk power plant is a natural gas-fired, advanced technology combustion turbine combined cycle power plant that consists of three basic components: a combustion turbine (CT) and electric generator, heat recovery steam generator (HRSG), and a steam turbine and electric generator. The CT produces electric power through the electric generator and supplies hot gases to the HRSG. The steam generated in the HRSG is sent to a condensing steam turbine that produces additional electricity. The steam turbine water is cooled via a wet mechanical draft cooling tower.

The facilities regulated under this permit consists of five lined impoundments (First Makeup Water Surge Pond (MWSP), Second MWSP, East Brine Concentrator Surge Pond (East BCSP), West BCSP, and one cell of the Brine Solids Drying Pond (BSDA) used for plant operations and the temporary disposal of cooling tower blowdown. The MWSPs store makeup water for the plant operations and dust control and suppression on site. This water is received from the Palo Verde Power Plant's reclamation plant that primarily treats the effluent water received from the City of Tolleson Wastewater Treatment Plant and the City of Phoenix's 91st Avenue Wastewater Treatment Plant. The BCSPs are used for temporary disposal of cooling tower blowdown. One of the two BSDA permitted cells (Cell #2) has been constructed. The second permitted BSDA cell (Cell #1) may be constructed in the future, when needed. The BSDA shall be used to manage the discharges from the plant's Zero Liquid Discharge (ZLD) system (brine from the brine concentrator/crystallizer) and cooling tower sludge from the combined cycle power plant and cooling tower system, and from the BCSPs to increase water balancing options. Drainage channels direct stormwater runoff from a 100-year 24-hour storm event away from the impoundments. The domestic sewage is disposed to an on-site septic system operated under a general permit.

The site includes the following permitted discharging facilities:

Table 1: DISCHARGING FACILITIES		
Facility	Latitude	Longitude
First Makeup Water Surge Pond	33° 20' 20.87" North	112° 50' 33.70" West
Second Makeup Water Surge Pond	33° 20' 20.00" North	112° 50' 16.8" West
East Brine Concentrator Surge Pond	33° 19' 46.19" North	112° 50' 19.33" West
West Brine Concentrator Surge Pond	33° 19' 44.96" North	112° 50' 23.00" West
Brine Solids Drying Area (Cell #1) Not constructed	33° 19' 41.70" North	112° 50' 29.73" West
Brine Solids Drying Area (Cell #2)	33° 19' 40.67" North	112° 50' 36.62" West

#### 2.1.1. Annual Registration Fee

[A.R.S. § 49-242 and A.A.C. R18-14-104]

The annual registration fee for this permit is payable to ADEQ each year. The annual registration fee flow rate is established by the permitted flow rate identified in Section 1.1. If the facility is not constructed or is incapable of discharge, the permittee may be eligible for reduced fees pursuant to A.A.C. R18-14-104(A), Table 2. Send all correspondence requesting reduced fees to the Groundwater Protection Value Stream. Please reference the permit number, LTF number, and the reason for requesting reduced fees under this rule.

### **2.1.2. Financial Capability**

[A.R.S. § 49-243(N) and A.A.C. R18-9-A203]

The permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee shall maintain financial capability throughout the life of the facility. The estimated dollar amount for facility closure and post-closure is \$37,895,333. The financial assurance mechanism was demonstrated through a financial test for self-assurance and a statement by the permittee's chief financial officer in accordance with A.A.C. R18-9-A203(C)(1)(b) and (c).

## **2.2. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)**

[A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

Facilities regulated by this permit shall be designed, constructed, operated, and maintained to meet requirements specified by A.R.S. §49-243(B) and A.A.C. R18-9-A202(A)(5).

### **2.2.1. Engineering Design**

BADCT description for the permitted facilities is presented in Table 6: PERMITTED FACILITIES AND BADCT.

### **2.2.2. Site-Specific Characteristics**

Not applicable.

### **2.2.3. Pre-Operational Requirements**

None required by this permit.

### **2.2.4. Process and Operational Methods**

The Redhawk Power Plant is designed to be a zero-discharge plant that will recycle and reuse all the wastewater generated mainly from operation of the cooling towers. The primary source of cooling water used in the plant is coming from the Palo Verde Nuclear Generating Station (PVNGS) reclamation plant. Groundwater from on-site wells will provide a backup source when necessary. Both the treated effluent and the on-site well water are stored in the MWSPs prior to being used by the plant or for dust control and suppression on site. The water utilized in the cooling towers is recycled until the salinity is approximately 15 to 23 times of the source water. All process waters generated within the plant are routed to the brine concentrator/crystallizer for distillation of purified water. The distilled water is returned to the plant's circulating system as feedwater for the cooling towers. Miscellaneous equipment drains are also collected in a piping system and routed to an oil/water separator for primary treatment and then are directed to the brine concentrator/crystallizer for final treatment before being recycled back to the plant. Approximately 95% of the process water is recycled back to the cooling tower and steam water system. Approximately 3% of the process water will be evaporated during the brine concentrator distillation process. Only about 2% of the liquids which remain will then be processed by the crystallizer into a partially dewatered filter cake that will be periodically characterized and removed from the site to a nearby solid waste landfill for disposal.

The East and West BCSPs are constructed as emergency storage to hold approximately seven days of blowdown per year when the brine concentrator/crystallizer is being serviced and non-operational. When the brine concentrator returns to operation, the blowdown water stored in the BCSPs shall be pumped back to the brine concentrator for treatment and recycling.

The BSDA will be used primarily to store brines from the Brine Concentrator, the Crystallizer and cooling tower sludge. For purposes of water balancing and optimizing clean-out of the BSDA, brine and water can be transferred between the BCSPs and the BSDA. As required, the brine in the BSDA will be cleaned out and disposed of in a properly licensed landfill.

### 2.3. DISCHARGE LIMITATIONS

[A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

The permittee shall operate and maintain all permitted facilities to prevent unauthorized discharges pursuant to A.R.S. §§ 49-201(12) resulting from failure or bypassing of BADCT pollutant control technologies including liner failure, uncontrollable leakage, berm breaches that result in an unexpected loss of fluid, accidental spills, or other unauthorized discharges. The discharge limitations in this section are not applicable to any discharge caused by precipitation in excess of a single 100-year/24-hour storm event.

#### 2.3.1. Authorized and Unauthorized Materials

Authorized materials discharged to the MWSPs shall be limited to only the tertiary treated domestic effluent, groundwater, ZLD pure distillate water, or treated water, and the chemicals previously approved by ADEQ. Any new water treatment chemicals may be used with prior approval from ADEQ.

Authorized materials discharged to the East and West BCSPs shall be restricted to cooling tower blowdown and oil/water separator effluent during periods when the brine concentrator is off-line, discharges from the Brine Concentrator (when the crystallizer is off-line), water and brine from the BSDA and shall not contain any sewage, organic solvents, or other hazardous substances that are not associated with the aforementioned operations.

Authorized materials discharged to the BSDA shall be restricted to discharges from the Brine Concentrator (when the crystallizer is off-line), brine from the Crystallizer during upset conditions, cooling tower sludge, water and brine from the East and West BCSPs and shall not contain any sewage, organic solvents, or other hazardous substances that are not associated with the aforementioned operations.

In the event of an unauthorized discharge the permittee shall initiate the contingency requirements in Section 2.6.5.

### 2.4. POINT OF COMPLIANCE (POC)

[A.R.S. § 49-244]

The POCs are established by the following locations:

Table 2: POINTS OF COMPLIANCE			
POC #	POC Location	Latitude	Longitude
1	Northwest corner of the First MWSP	33° 20' 25.84" North	112° 50' 40.97" West
2	Northwest corner of the Second MWSP	33° 20' 26.11" North	112° 50' 23.85" West
3	Northwest corner of the East BCSP	33° 19' 48.28" North	112° 50' 21.70" West
4	Northwest corner of the West BCSP	33° 19' 47.42" North	112° 50' 24.02" West
5	Northwest corner of the BSDA	33° 19' 43.98" North	112° 50' 37.97" West

No groundwater monitoring is required under this permit. The Director may amend this permit to designate additional POCs, if information on groundwater gradients or groundwater usage indicates the need.

#### Perched Groundwater Monitoring

Four groundwater monitoring wells have been installed to monitor the perched groundwater systems. Groundwater monitoring of the perched groundwater monitoring wells is not currently required under this permit. The four monitoring wells are as follows:

Table 3: PERCHED GROUNDWATER MONITORING WELLS			
Monitoring Well	Latitude	Longitude	ADWR Number
MW-14cab	33° 20' 24" North	112° 50' 42" West	55-588913
MW-14dbb1	33° 20' 26" North	112° 50' 29" West	55-588914
MW-14cdb	33° 20' 13" North	112° 50' 41" West	55-588915
MW-14dcb	33° 20' 14" North	112° 50' 25" West	55-588916

**2.5. MONITORING REQUIREMENTS**

[A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

Unless otherwise specified in this permit, all monitoring required in this permit shall continue for the duration of the permit, regardless of the status of the facility. Unless otherwise provided, monitoring shall commence the first full monitoring period following permit issuance. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and Chain-of-Custody procedures shall be followed, in accordance with currently accepted standards of professional practice. Copies of laboratory analyses and Chain-of-Custody forms shall be maintained at the permitted facility. Upon request, these documents shall be made immediately available for review by ADEQ personnel.

**2.5.1. Discharge Monitoring**

None required by this permit.

**2.5.2. Facility / Operational Monitoring**

At a minimum, permitted facilities shall be inspected for performance levels listed in Table 9: FACILITY INSPECTION AND OPERATIONAL MONITORING. If damage is identified during an inspection that could cause or contribute to an unauthorized discharge pursuant to A.R.S. § 49-201(12), proper repairs shall be promptly performed. Results of these inspections and monitoring activities shall be documented and maintained at the facility location for at least 10 years, and as required by Section 2.7.2 of this permit.

**2.5.2.1. Leak Collection and Removal System (LCRS) Monitoring**

The permittee shall monitor the LCRS in the East and West BCSPs in accordance with Table 7: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING, for presence of fluid on a daily basis starting the date that the surge pond receives cooling tower blowdown or discharges from the Brine Concentrator and continuing until three (3) more days after all fluid in the surge pond has been removed.

The permittee shall monitor the LCRS in the BSDA in accordance with Table 7: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING, for presence of fluid on a daily basis starting the date that the pond receives discharges from the Brine Concentrator and continuing until three (3) more days after all fluid in the pond has been removed.

If fluids are collected in the LCRS sumps of the BCSPs or BSDA during the period the ponds are in use, the fluids shall be pumped and quantified as needed to maintain a hydraulic head of no more than one foot on the bottom liner at all times. If the fluid detected exceeds the alert levels established for the leakage rate described in Table 7: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING, the permittee shall initiate the necessary contingency plan described in Section 2.6.2.2 or 2.6.2.3 as appropriate. A log of the monitoring results shall be kept at the facility for ten (10) years from the date of each inspection, available for review by ADEQ personnel

**2.5.2.2. Wastewater Containment Structure Monitoring**

During the operation of the impoundments, the operator shall properly maintain and inspect all wastewater containment structures according to Table 9: FACILITY INSPECTION AND OPERATIONAL MONITORING. A log of these inspections shall be kept at the facility for ten (10) years from the date of each inspection, available for review by ADEQ personnel.



If any damage to the impoundments or the LCRS is identified during inspection, proper repair procedures shall be performed. All repair procedures and material(s) used to return the system(s) to operational status shall be documented as an attachment to the self-monitoring report and submitted annually to the Groundwater Protection Value Stream and made available at the site for review by ADEQ personnel. Results of the pollution control structure monitoring shall be recorded and reported to ADEQ according to Section 2.7.4.

**2.5.3. Groundwater Monitoring and Sampling Protocols**

Routine groundwater monitoring is not required under the terms of this permit.

**2.5.4. Surface Water Monitoring and Sampling Protocols**

Routine surface water monitoring is not required under the terms of this permit.

**2.5.5. Analytical Methodology**

All samples collected for compliance monitoring shall be analyzed using Arizona state-approved methods. If no state-approved method exists, then any appropriate EPA-approved method shall be used. Regardless of the method used, the detection limits must be sufficient to determine compliance with the regulatory limits of the parameters specified in this permit. If all methods have detection limits higher than the applicable limit, the permittee shall follow the applicable contingency requirements of Section 2.6 and may propose “other actions” including amending the permit to set higher limits. Analyses shall be performed by a laboratory licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification unless exempted under A.R.S. § 36-495.02. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods. A list of Arizona state-certified laboratories can be obtained at the address below:

Arizona Department of Health Services  
Office of Laboratory Licensure and Certification  
250 North 17th Avenue  
Phoenix, AZ 85007  
Phone: (602) 364-0720

**2.5.6. Installation and Maintenance of Monitoring Equipment**

Monitoring equipment required by this permit shall be installed and maintained so that representative samples required by the permit can be collected. If new groundwater wells are determined to be necessary, the construction details shall be submitted to the Groundwater Protection Value Stream for approval prior to installation and the permit shall be amended to include any new monitoring points.



## **2.6. CONTINGENCY PLAN REQUIREMENTS**

[A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

### **2.6.1. General Contingency Plan Requirements**

At least one copy of this permit and the approved contingency and emergency response plan submitted in the application shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Any AL exceedance, or violation of an AQL, DL, or other permit condition shall be reported to ADEQ following the reporting requirements in Section 2.7.3, unless more specific reporting requirements are set forth in Section 2.6.2 through 2.6.5.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL or DL. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling had been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit.

## **2.6.2. Exceeding of Alert Levels and Performance Levels**

### **2.6.2.1. Exceeding of Performance Levels Set for Operational Conditions**

#### **2.6.2.1.1. Performance Levels Set for Freeboard**

In the event that freeboard performance levels required by Table 9: FACILITY INSPECTION AND OPERATIONAL MONITORING on a surface impoundment are not maintained, the permittee shall:

1. As soon as practicable, cease or reduce discharging to the impoundment to prevent overtopping. Remove and properly dispose or recycle to other operations the excess fluid in the reservoir until the water level is restored at or below the permitted freeboard limit.
2. Within 5 days of discovery, evaluate the cause of the incident and adjust operational conditions or identify design improvements to the affected system as necessary to avoid future occurrences.
3. Within 30 days of discovery, initiate repairs to the affected system, structure, or other component as necessary to return the system to compliance with this permit, or remove the affected system(s) from service as specified in Section 2.8 and Section 2.9 of this permit. Record any repair procedures, methods, and materials used to restore the facility to operating condition in the facility log/recordkeeping file.
4. If design improvements are necessary, submit an amendment application within 90 days of discovery.
5. The facility is no longer on alert status once the operational indicator no longer indicates that the freeboard performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

#### **2.6.2.1.2. Performance Levels, other than Freeboard**

1. If non-compliance with an operational performance level (PL) listed in Table 9: FACILITY INSPECTION AND OPERATIONAL MONITORING has been observed or noted during required inspection and operational monitoring, such that the result could cause or contribute to an unauthorized discharge, the permittee shall immediately investigate to determine the cause of the condition. The investigation shall include the following:
  - a. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the operational performance condition.
  - b. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences.
2. The PL exceedance, results of the investigation, and any corrective action taken shall be reported to the Groundwater Protection Value Stream, within 30 days of the discovery of the condition. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
3. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 5.0 and any necessary contingency measures to resolve problems identified by the investigation which may have led to a PL being exceeded. To implement any other corrective action the permittee may choose to obtain prior approval from ADEQ according to Section 2.6.6.

### **2.6.2.2. Exceedance of Alert Level #1 for Normal Liner Leakage**

If an Alert Level #1 (AL #1) as specified in Table 7: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING, has been exceeded, the permittee shall take the following actions:

**NOTE:** The notification and reporting identified in this section is in lieu of the reporting requirement in Section 2.7.3 Permit Violation and Alert Level Status Reporting.

1. Within 5 days of AL #1 exceedance, notify Groundwater Protection Value Stream in accordance with Section 2.7.3. Continue monitoring to determine if the leakage rate is increasing.
2. If the leakage rate continues to exceed AL#1 for 15 days following notification of initial AL #1 exceedance, perform a visual inspection of the liner above the solution level, to determine the location of the leaks in the primary liner.
3. Within 45 days of AL #1 exceedance, if liner damage is evident, the permittee shall complete liner repairs.
4. Within 45 days of AL #1 exceedance, if the visual inspection does not identify the location of leaks, formulate a corrective action plan to determine their location and repair them.
5. Within 90 days of AL #1 exceedance and following formulation of a corrective action plan, the permittee shall complete liner repairs.
6. Within 75 days of AL #1 exceedance (if repairs were completed in Step 3), or 120 days of AL #1 exceedance (if corrective action plan was implemented per Steps 4 and 5), if no alert level exceedance is observed for 30 consecutive days, notify Groundwater Protection Value Stream and document assessment and/or repairs in the logbook.
7. Within 120 days of AL #1 exceedance (if repairs were completed in Step 3), or 165 days of AL #1 exceedance (if corrective action plan was implemented per Steps 4 and 5), if 30 consecutive days without an AL #1 exceedance is not achieved, notify Groundwater Protection Value Stream and reassess the entire liner system and complete any necessary repairs as described in Steps 2 and 3 (and if necessary Steps 4 and 5 also). Repeat the assessment and liner repair cycle until requirements of Step No. 6 are attained.
8. A liner leakage assessment and repair report shall be included in the next annual report described in Section 2.7.4.1 of this permit. The permittee may also submit the liner leakage assessment report to the ADEQ prior to the annual report due date. This liner leakage assessment and repair report shall be submitted to Groundwater Protection Value Stream. Upon review of the report, ADEQ may require that the permittee take additional corrective actions to address the problems identified from the assessment of the liner and perform other applicable repair procedures.

#### **2.6.2.3. Exceedance of Alert Level #2 for Liner Failure or Rips**

If the Liner Leakage Discharge Limit (AL #2) specified in Table 7: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING has been exceeded, the permittee shall:

**NOTE:** The notification and reporting identified in this section is in lieu of the reporting requirement in Section 2.7.3.

1. As soon as practicable, cease all discharge to the impoundment, implement control measures to prevent new solution buildup that may subsequently report to the impoundment, and immediately notify Groundwater Protection Value Stream of the AL #2 exceedance.
2. Within 15 days of initial AL #2 exceedance, perform a visual inspection of the liner above the solution level to identify the location of the leak(s). The permittee shall complete liner repairs and discharge to the impoundment shall not be re-initiated until the leak(s) have been identified and repaired.

3. Within 60 days of initial AL #2 exceedance if leaks were found and fixed and if no AL #2 exceedance is observed for 30 consecutive days, submit a liner leakage assessment and repair report to ADEQ. The report shall include the results of the initial liner evaluation, methods used to locate the leak(s), repair procedures and quality assurance/quality control implemented to restore the liner to optimal operational status, and other information necessary to ensure the future occurrence of the incidence will be minimized.
4. Within 30 days of initial AL #2 exceedance if the visual inspection does not identify the location of leaks and AL #2 exceedance continues, formulate a corrective action plan to determine their location and repair them. The corrective action plan will take into account the schedule for a 3rd party contractor to perform electronic leak detection or other methods if required.
5. Within 75 days of initial AL #2 exceedance and following formulation of a corrective action plan, the permittee shall complete liner repairs
6. Within 105 days of AL #2 exceedance and implementation of the corrective action plan per Steps 4 and 5, if no AL #2 exceedance is observed for 30 consecutive days, notify Groundwater Protection Value Stream and document assessment and/or repairs in the logbook.
7. Within 105 days of initial AL #2 exceedance, (if repairs were completed in Step 3), or 150 days of AL #2 exceedance (if corrective action plan was implemented per Steps 4, 5, and 6) if 30 consecutive days without an AL #2 exceedance is not achieved, repeat Steps 1 through 7 until AL #2 is not exceeded for 30 consecutive days. When the Steps 1 through 7 are repeated, the notification date is reset. Discharge to the impoundment shall not be re-initiated until the leak(s) have been identified and repaired.
8. Liner leakage assessment and repair reports required by Section 2.6.2.2, shall be referenced in the next annual report described in Section 2.7.4.1 of this permit.

**2.6.2.4. Exceeding of Alert Levels Set for Discharge Monitoring**

Discharge monitoring is not required.

**2.6.2.5. Exceeding of Alert Levels in Groundwater Monitoring**

Groundwater monitoring is not required.

**2.6.3. Discharge Limit Violation**

**2.6.3.1. Liner Failure, Containment Structure Failure, or Unexpected Loss of Fluid**

In the event of overtopping, liner failure, containment structure failure, or unexpected loss of fluid as described in Section 2.3, the permittee shall take the following actions:

1. As soon as practicable, cease all discharges as necessary to prevent any further releases to the environment, including removal of any fluid remaining in the impoundment as necessary, and capture and containment of all escaped fluids.
2. Within 24 hours of discovery, notify Groundwater Protection Value Stream.
3. Within 24 hours of discovery of a failure estimate the quantity released, collect representative samples of the fluid remaining in affected impoundments and drainage structures, analyze sample(s) according to Table 8: CONTINGENCY DISCHARGE CHARACTERIZATION FOR OVERTOPPING and report in accordance with Section 2.7.3 . In the 30-day report required under Section 2.7.3, include a copy of the analytical results and forward the report to Groundwater Protection Value Stream.

4. Within 15 days of discovery, initiate an evaluation to determine the cause for the incident. Identify the circumstances that resulted in the failure and assess the condition of the discharging facility and liner system. Implement corrective actions as necessary to resolve the problems identified in the evaluation. Initiate repairs to any failed liner, system, structure, or other component as needed to restore proper functioning of the discharging facility. The permittee shall not resume discharge to the facility until repairs of any failed liner or structure are performed.

Repair procedures, methods, and materials used to restore the system(s) to proper operating condition shall be described in the facility log/recordkeeping file and available for ADEQ review. Record in the facility log/recordkeeping file the amount of fluid released, a description of any removal method and volume of any fluid removed from the impoundment and/or captured from the release area. The facility log/recordkeeping file shall be maintained according to Section 2.7.2.

5. Within 30 days of discovery of the incident, submit a report to Groundwater Protection Value Stream as specified in Section 2.7.3. Include a description of the actions performed in Subsections 1 through 4 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
6. Within 60 days of discovery, conduct an assessment of the impacts to soil and/or groundwater resulting from the incident. If soil or groundwater is impacted such that it could or did cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ, for approval, a corrective action plan to address such impacts, including identification of remedial actions and a schedule for completion of activities. At the approval of ADEQ, the permittee shall implement the approved plan.
7. Within 30 days of completion of corrective actions, submit to Groundwater Protection Value Stream, a written report as specified in Section 2.6.6.
8. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

#### **2.6.3.2. Overtopping of a Surface Impoundment**

If overtopping of fluid from a permitted surface impoundment occurs, and results in a discharge pursuant to A.R.S. § 49-201(12), the permittee shall:

1. As soon as practicable, cease all discharges to the surface impoundment to prevent any further releases to the environment.
2. Within 24 hours of discovery, notify Groundwater Protection Value Stream.
3. Within 24 hours, collect representative samples of the fluid contained in the surface impoundment. Samples shall be analyzed for the parameters specified in Table 8: CONTINGENCY DISCHARGE CHARACTERIZATION FOR OVERTOPPING. Within 30 days of the incident, submit a copy of the analytical results to Groundwater Protection Value Stream.

4. As soon as practicable, remove and properly dispose of excess water in the impoundment until the water level is restored at or below the appropriate freeboard as described in Table 9: FACILITY INSPECTION AND OPERATIONAL MONITORING. Record in the facility log/recordkeeping file the amount of fluid released, a description of the removal method and volume of any fluid removed from the impoundment and/or captured from the release area. The facility log/recordkeeping file shall be maintained according to Section 2.7.2.
5. Within 30 days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.
6. Within 30 days of discovery of overtopping, submit a report to ADEQ as specified in Section 2.7.3. Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. Within 60 days of discovery, and based on sampling in Item No. 3 above, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident.
8. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ for approval, a corrective action plan to address such impacts, including identification of remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.
9. Within 30 days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 2.6.6. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

#### **2.6.3.3. Inflows of Unexpected Materials to a Surface Impoundment**

The types of materials that are expected to be placed in the permitted surface impoundments are specified in Section 2.3. If any unexpected materials flow to a permitted surface impoundment, the permittee shall:

1. As soon as practicable, cease all unexpected inflows to the surface impoundment(s).
2. Within 24-hours of discovery, notify Groundwater Protection Value Stream.
3. Within 5 days of the incident, identify the source of the material and determine the cause for the inflow. Characterize the unexpected material and contents of the affected impoundment, and evaluate the volume and concentration of the material to determine if it is compatible with the surface impoundment liner. Based on the evaluation of the incident, repair any systems or equipment and/or adjust operations, as necessary to prevent future occurrences of inflows of unexpected materials.
4. Within 30 days of an inflow of unexpected materials, submit a report to ADEQ as specified in Section 2.7.3. Include a description of the actions performed in Subsections 1 through 3 listed above.
5. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions including remediation.

**2.6.4. Aquifer Quality Limit Exceedances**

Groundwater monitoring is not required.

**2.6.5. Emergency Response and Contingency Requirements for Unauthorized Discharges**

[A.R.S. § 49-201(12) AND PURSUANT TO A.R.S. § 49-241]

**2.6.5.1. Duty to Respond**

The permittee shall act immediately to correct any condition resulting from a discharge pursuant to A.R.S. § 49-201(12) if that condition could pose an imminent and substantial endangerment to public health or the environment.

**2.6.5.2. Discharge of Hazardous Substances or Toxic Pollutants**

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of suspected hazardous substances (A.R.S. § 49-201(19)) or toxic pollutants (A.R.S. § 49-243(I)) on the facility site, the permittee shall promptly isolate the area and attempt to identify the discharged material. The permittee shall record information, including name, nature of exposure and follow-up medical treatment, if necessary, on persons who may have been exposed during the incident. The permittee shall notify the Groundwater Protection Value Stream within 24 hours of discovering the discharge of hazardous material which (a) has the potential to cause an AWQS or AQL exceedance, or (b) could pose an endangerment to public health or the environment.

**2.6.5.3. Discharge of Non-Hazardous Materials**

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of non-hazardous materials from the facility, the permittee shall promptly attempt to cease the discharge and isolate the discharged material. Discharged material shall be removed and the site cleaned up as soon as possible. The permittee shall notify the Groundwater Protection Value Stream within 24 hours of discovering the discharge of non-hazardous material which has the potential to cause an AQL exceedance, or could pose an endangerment to public health or the environment.

**2.6.5.4. Reporting Requirements**

The permittee shall submit a written report for any unauthorized discharges reported under Sections 2.6.5.2 and 2.6.5.3 to the Groundwater Protection Value Stream within 30 days of the discharge or as required by subsequent ADEQ action. The report shall summarize the event, including any human exposure, and facility response activities and include all information specified in Section 2.7.3. If a notice is issued by ADEQ subsequent to the discharge notification, any additional information requested in the notice shall also be submitted within the time frame specified in the notice. Upon review of the submitted report, ADEQ may require additional monitoring or corrective actions.



#### **2.6.6. Corrective Actions**

Specific contingency measures identified in Section 2.6 have already been approved by ADEQ and do not require written approval to implement.

With the exception of emergency response actions taken under Section 2.6.5, the permittee shall obtain written approval from the Groundwater Protection Value Stream prior to implementing a corrective action to accomplish any of the following goals in response to exceedance of an AL, AQL, DL, or other permit condition:

1. Control of the source of an unauthorized discharge;
2. Soil cleanup;
3. Cleanup of affected surface waters;
4. Cleanup of affected parts of the aquifer;
5. Mitigation to limit the impact of pollutants on existing uses of the aquifer.

Within 30 days of completion of any corrective action, the operator shall submit to the Groundwater Protection Value Stream, a written report describing the causes, impacts, and actions taken to resolve the problem.

#### **2.7. REPORTING AND RECORDKEEPING REQUIREMENTS**

[A.R.S. § 49-243(K)(2) and A.A.C. R18-9-A206(B) and R18-9-A207]

##### **2.7.1. Self-Monitoring Report Form**

None of the monitoring is reported on the SMRF.

##### **2.7.2. Operation Inspection / Log Book Recordkeeping**

A signed copy of this permit shall be maintained at all times at the location where day-to-day decisions regarding the operation of the facility are made. A log book (paper copies, forms, or electronic data) of the inspections and measurements required by this permit shall be maintained at the location where day-to-day decisions are made regarding the operation of the facility. The log book shall be retained for ten years from the date of each inspection, and upon request, the permit and the log book shall be made immediately available for review by ADEQ personnel. The information in the log book shall include, but not be limited to, the following information as applicable:

1. Name of inspector;
2. Date and time inspection was conducted;
3. Condition of applicable facility components;
4. Any damage or malfunction, and the date and time any repairs were performed;
5. Documentation of sampling date and time;
6. Any other information required by this permit to be entered in the log book; and
7. Monitoring records for each measurement shall comply with A.A.C. R18-9-A206(B)(2).

**2.7.3. Permit Violation and Alert Level Status Reporting**

1. The permittee shall notify the Groundwater Protection Value Stream within 5 days (except as provided in Section 2.6.5) of becoming aware of an AL exceedance, or violation of any permit condition, AQL, or DL for which notification requirements are not specified in Sections 2.6.2 through 2.6.5.
2. The permittee shall submit a written report to the Groundwater Protection Value Stream within 30 days of becoming aware of the violation of any permit condition, AQL, or DL. The report shall document all of the following:
  - a. Identification and description of the permit condition for which there has been a violation and a description of the cause;
  - b. The period of violation including exact date(s) and time(s), if known, and the anticipated time period during which the violation is expected to continue;
  - c. Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation;
  - d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an AWQS;
  - e. Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring; and
  - f. Description of any malfunction or failure of pollution control devices or other equipment or processes.

**2.7.4. Operational, Other or Miscellaneous Reporting**

The permittee shall record the information as required in Section 4.2 Table 9: FACILITY INSPECTION AND OPERATIONAL MONITORING in the facility log book as per Section 2.7.2, and report to the Groundwater Protection Value Stream any violations or exceedances as per Section 2.7.3.

**2.7.4.1. Annual Report**

If an Alert Level #1 has been exceeded discussed in Section 2.6.2.2, the permittee shall submit an annual report that summarizes the results of the liner assessment. The Liner Leakage Assessment Report shall also include information including but not limited to the following: number and location of holes identified; and a table summarizing alert level exceedances including the frequency and quantity of fluid removed, and corrective actions taken.

**2.7.5. Reporting Location**

All Self-Monitoring Report Forms (SMRFs) shall be submitted through the myDEQ portal accessible on the ADEQ website at: <http://www.azdeq.gov/welcome-mydeq>. Contact at 602-771-4571 for any inquiry related to the SMRFs.

5-day and 30-day contingency notification and reports, laboratory reports, and verification sampling results required by this permit should be submitted through the myDEQ portal accessible on the ADEQ website at: <http://www.azdeq.gov/welcome-mydeq>.

If the required reports cannot be submitted, or require further documentation that cannot be submitted on the myDEQ portal, then submit items to [groundwaterpermits@azdeq.gov](mailto:groundwaterpermits@azdeq.gov) or the address listed below:

The Arizona Department of Environmental Quality  
Groundwater Protection Value Stream  
Mail Code 5415B-3  
1110 West Washington Street

Phoenix, Arizona 85007  
Phone (602) 771-4999

#### **2.7.6. Reporting Deadline**

The following table lists the annual report due date, if applicable:

Table 4: ANNUAL REPORTING DEADLINE	
Monitoring Conducted:	Report Due By:
Annual: January-December	January 30

#### **2.7.7. Changes to Facility Information in Section 1.0**

The Groundwater Protection Value Stream shall be notified within ten days of any change of facility information including Facility Name, Permittee Name, Mailing or Street Address, Facility Contact Person, or Emergency Telephone Number.

#### **2.8. Temporary Cessation**

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A209(A)]

The permittee shall give written notice to the Groundwater Protection Value Stream before ceasing operation of the facility for a period of 60 days or greater. The permittee shall take the following measures upon temporary cessation:

At the time of notification, the permittee shall submit for ADEQ approval a plan for maintenance of discharge control systems and for monitoring during the period of temporary cessation. Immediately following ADEQ approval, the permittee shall implement the approved plan. If necessary, ADEQ shall amend permit conditions to incorporate conditions to address temporary cessation. During the period of temporary cessation, the permittee shall provide written notice to the Groundwater Protection Value Stream of the operational status of the facility every three years. If the permittee intends to permanently cease operation of any facility, the permittee shall submit closure notification, as set forth in Section 2.9 below.

#### **2.9. Closure**

[A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

For a facility addressed under this permit, the permittee shall give written notice of closure to the Groundwater Protection Value Stream of the intent to cease operation without resuming activity for which the facility was designed or operated.

##### **2.9.1. Closure Plan**

Within 90 days following notification of closure, the permittee shall submit for approval to the Groundwater Protection Value Stream, a closure plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3).

If the closure plan achieves clean-closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean-closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

### **2.9.2. Closure Completion**

Upon completion of closure activities, the permittee shall give written notice to the Groundwater Protection Value Stream indicating that the approved closure plan has been implemented fully and providing supporting documentation to demonstrate that clean-closure has been achieved (soil sample results, verification sampling results, groundwater data, as applicable). If clean-closure has been achieved, ADEQ shall issue a letter of approval to the permittee at that time. If any of the following conditions apply, the permittee shall follow the terms of post-closure stated in this permit:

1. Clean-closure cannot be achieved at the time of closure notification or within one year thereafter under a diligent schedule of closure actions;
2. Further action is necessary to keep the facility in compliance with the AWQS at the applicable POC or, for any pollutant for which the AWQS was exceeded at the time this permit was issued, further action is necessary to prevent the facility from further degrading the aquifer at the applicable POC with respect to that pollutant;
3. Remedial, mitigative or corrective actions or controls are necessary to comply with A.R.S. § 49-201(30) and Title 49, Chapter 2, Article 3;
4. Further action is necessary to meet property use restrictions.

### **2.10. Post-Closure**

[A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9 A209(C)]

Post-closure requirements shall be established based on a review of facility closure actions and will be subject to review and approval by the Groundwater Protection Value Stream.

In the event clean-closure cannot be achieved pursuant to A.R.S. § 49-252, the permittee shall submit for approval to the Groundwater Protection Value Stream a post-closure plan that addresses post-closure maintenance and monitoring actions at the facility. The post-closure plan shall meet all requirements of A.R.S. §§ 49-201(30) and 49-252 and A.A.C. R18-9-A209(C). Upon approval of the post-closure plan, this permit shall be amended or a new permit shall be issued to incorporate all post-closure controls and monitoring activities of the post-closure plan.

#### **2.10.1. Post-Closure Plan**

A specific post-closure plan may be required upon the review of the closure plan.

#### **2.10.2. Post-Closure Completion**

Not required at the time of permit issuance.

### **3.0 COMPLIANCE SCHEDULE**

[A.R.S. § 49-243(K)(5) and A.A.C. R18-9-A208]

Unless otherwise indicated, for each compliance schedule item listed below, the permittee shall submit the required information to the Groundwater Protection Value Stream.

**Table 5: COMPLIANCE SCHEDULE ITEMS**

<b>No.</b>	<b>Description</b>	<b>Due By:</b>	<b>Permit Amendment Required?</b>
1	The permittee shall submit a demonstration that the financial assurance mechanism listed in Section 2.1, Financial Capability, is being maintained as per A.R.S. 49-243.N.4 and A.A.C. R18-9-A203(H) for all estimated closure and post-closure costs including updated costs submitted under Section 3.2 below. The demonstration shall include a statement that the closure and post-closure strategy has not changed, the discharging facilities listed in the permit have not been altered in a manner that would affect the closure and post-closure costs, and discharging facilities have not been added. The demonstration shall also include information in support of the self-assurance demonstration as required in A.A.C. R18-9-A203(C)(1).	April 18, 2024 and by April 18 every two years thereafter for the duration of the permit.	No
2	The permittee shall submit updated cost estimates for facility closure and post-closure, as per A.A.C. R18-9-A201(B)(5) and A.R.S. 49-243.N.2.a.	April 18, 2024 and by April 18 every 6 years thereafter for the duration of the permit.	Yes
3	The permittee shall submit construction QA/QC Report and as-built drawings, sealed by an Arizona registered professional engineer for the BSDA Cell #1 as per Sections 2.2.3.	Submit within 60 days of the completion of the BSDA Cell #1	No
4	Submit a minor amendment to update the latitude and longitude for the BSDA Cell #1, LCRS monitoring points: Sampling Point 003-E Sampling Point 003-W	Submit within 60 days of the completion of the BSDA Cell #1	Yes
5	The permittee shall submit construction QA/QC Report and as-built drawings, sealed by an Arizona registered professional engineer, for the re-lined BSDA Cell #2	Submit within 60 days of the completion of the BSDA Cell #2 upgrades	No
6	The permittee shall submit construction QA/QC Report and as-built drawings, sealed by an Arizona registered professional engineer, for the Second MWSP	Submit within 60 days of the completion of the Second MWSP	No
7	The permittee shall submit construction QA/QC Report and as-built drawings, sealed by an Arizona registered professional engineer, for the East BCSP	Submit within 60 days of the completion of the East BCSP	No
8	Submit a minor amendment to update the latitude and longitude for the East BCSP, LCRS monitoring point: Sampling Point 002	Submit within 60 days of the completion of the East BCSP	Yes

9	Submit the Annual Report in accordance with Section 2.7.4.1 of this permit.	January 30 <sup>th</sup> every year	No
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## 4.0 TABLES OF MONITORING REQUIREMENTS

### 4.1. PERMITTED FACILITIES AND BADCT

Table 6: PERMITTED FACILITIES AND BADCT

<b>First Makeup Water Surge Pond (MWSP)</b>
<p>The First MWSP has a surface area of 40 acres and a storage capacity of approximately 500-acre feet. The pond is lined with a single 60-mil high density polyethylene (HDPE) geomembrane liner underlain by a one-foot thick layer of soil compacted to a permeability of less than or equal to <math>6 \times 10^4</math> cm/sec. The liner system is secured in an anchor trench at the top of the slopes and the side slopes at 3H:1V. At least 2.5 feet of freeboard shall be maintained in the pond operation.</p>
<b>Second Makeup Water Surge Pond (MWSP)</b>
<p>The Second MWSP will have a surface area of 40 acres and a storage capacity of approximately 500-acre feet. The pond will be lined with a single 60-mil high density polyethylene (HDPE) geomembrane liner placed over a 10 ounce per square yard (oz/sy) non-woven need punched geotextile fabric. The geotextile fabric will provide some cushioning for the HDPE liner over the prepared pond subgrade. The pond subgrade will be a six-inch (in) layer of 3/8 minus native material compacted to 95% maximum dry density per ASTM D698. The side slopes will be 3H:1V with the liner system secured in an anchor trench at the top of the slopes. At least 2.5 feet of freeboard shall be maintained in the pond operation. The pond will have an inflow energy dissipator structure and a discharge pump structure incorporated into the side slopes.</p>
<b>East Brine Concentrator Surge Pond (East BCSP)</b>
<p>The new East BCSP will have a capacity of approximately 29-acre feet at the operating water level with an operating depth of approximately 13 feet including 2.5 feet of freeboard. The side slopes of the pond will be 3H:1V. The pond will be constructed with a double-liner system consisting of a geosynthetic clay liner below a 60-mil thick HDPE secondary geomembrane liner and a 60-mil thick HDPE primary geomembrane liner, separated by a geonet. The liner system will be placed on top of a six-inch layer of prepared subgrade that will consist of 3/8-inch minus native material compacted to a 95% maximum dry density (standard proctor; ASTM D698) that will result in a hydraulic conductivity of less than <math>10^{-6}</math> cm/second. The liner will be secured in a two-foot x two-foot engineered anchor trench along the perimeter of the pond.</p> <p>A drain pipe, connected to a lift station on top of the berm, will be placed on top of the primary liner to allow the brine to be pumped back to the Plant. The East BCSP bottom will be graded with a minimum 3% slope to the drain pipe to ensure maximum removal of the brine solution.</p> <p>The pond will be equipped with a Leak Collection and Removal Control System (LCRS) that will consist of a perforated pipe that gravity drains to a telltale well on top of the berm. The pipe will be placed below the primary liner and above the secondary liner with a minimum one-foot cover by clean sand. The pipe will be located at the low point of the secondary liner and will have a 3% slope to the telltale well. The telltale well will be equipped with level controls and dedicated, fluid-level actuated pump to maintain minimal head on the secondary liner system. The LCRS will be discharged back into the new pond at a rate of 43 gallons per minute (gpm) and will be equipped with a totalizer to quantitate leachate recovery.</p>
<b>West Brine Concentrator Surge Pond (West BCSP)</b>
<p>The West BCSP has a surface area of approximately 2.77 acres with a maximum storage capacity of 27-acre feet. The BCSP is designed to hold approximately 7 days of cooling tower blowdown and shall be maintained with at least 2.5 feet of freeboard. The liner system consists of a double liner equipped with a leak collection and removal system (LCRS). The impoundment has a 60-mil HDPE geomembrane lower liner overlying a geosynthetic clay liner (GCL) with a hydraulic conductivity of approximately <math>1 \times 10^{-9}</math> cm/sec and a 60-mil HDPE geomembrane upper liner covered by a 12 inch layer of granular soil with riprap on the side slopes. The liner system is secured in an anchor trench at the top of the slopes and the side slopes designed at 3H:1V. The interior side slope and bottom are covered with soil to resist damage due to weathering, animals and vandalism. The exterior slopes are covered with a 6 inch layer of prepared bedding material for erosion protection.</p> <p>The LCRS was constructed in between the two HDPE geomembrane liners and consists of a HDPE geonet, a rock filled trench, and a rock filled collection sump for fluid collection and evacuation. The bottom of the pond slopes at two percent from two sides to promote drainage toward the leak collection sump at the north-central location of the pond. The leak collection trench located in the center of the pond is sloped at 0.5 percent toward the leak collection sump. A four inch diameter, perforated HDPE pipe in the collection trench collects leakage and drains it to the rock filled collection sump. A 16 inch diameter perforated HDPE pipe is</p>

embedded in the rock filled collection sump and connected to a 16 inch HDPE riser pipe. The riser pipe is connected to a flow meter and a pump with a level control sensor for fluid evacuation.

**Brine Solids Drying Area (BSDA)**

The permittee has been authorized to construct two cells, Cell #1 and Cell #2, of the BSDA with a total surface area of approximately 12 acres. Currently, only Cell #2, which is approximately 4.50 acres, has been constructed. Cell #2 holds discharges from the brine concentrator until dry enough for off-site disposal or when the ZLD is not in operation. The liner system consists of a double liner equipped with a LCRS. The permittee has been authorized to replace the existing primary liner with a new HDPE liner. Prior to removal of the primary liner, the permittee shall remove existing pond contents and dispose of at an approved landfill or stockpiled at the site. The existing primary liner shall then be perforated with 4" diameter holes to prevent hydrostatic pressure buildup in the liner system if water were to infiltrate the system. The new liner system from bottom to top shall include all new materials including the following: primary liner composed of 60-mil HDPE geomembrane, geotextile, 4" layer of clean sand, another layer of geotextile, geogrid, 6" layer of aggregate base, and 2" layer of gravel.

Existing layers from top to bottom below the perforated primary liner include: geonet drainage material, secondary 60-mil HDPE liner, a geosynthetic clay liner (GCL) with a hydraulic conductivity of approximately  $1 \times 10^{-9}$  cm/sec, and compacted subgrade. The existing liner system is secured in an anchor trench at the top of the slopes and the side slopes designed at 3H:1V. The interior side slope and bottom shall be covered with soil to resist damage due to weathering, animals and vandalism. The exterior slopes shall be covered with a 6 inch layer of prepared bedding material for erosion protection. The new primary liner shall be anchored in a new anchor trench constructed adjacent to the existing anchor trench.

The sand filled leak collection trench located in the center of the pond is sloped at 0.5 percent toward the leak collection sump. A four inch diameter, perforated HDPE pipe located in the collection trench collects leakage and drains to collection sump. A 16 inch diameter perforated HDPE pipe is embedded in the rock filled collection sump and connected to a four inch collection pipe. The riser pipe is connected to a flow meter and a pump with a level control sensor for fluid evacuation. A sufficient sized pump shall be provided with a level control sensor for fluid evacuation.

To improve existing plant operations and cleaning of the Pond, a fiber-reinforced concrete ramp and unloading pad was installed in the northeast corner of the Cell #2 as per the design drawings submitted in the amendment application dated December 3, 2020.

#### 4.2. COMPLIANCE OR OPERATIONAL MONITORING

**Table 7: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING**

The volume of liquid pumped from the LCRS shall be entered in a facility log book on a daily basis. The Alert Level 1 (AL1) or Alert Level 2 (AL2) shall be exceeded when the amount of leakage pumped from the sump(s) for the pond(s) listed in this table is greater than the applicable quantity. Contingency requirements as per Sections 2.6.2.2 and 2.6.2.3 shall be followed for AL1 and AL2 exceedances, respectively. An exceedance of AL 1 or AL2 is not a violation of the permit unless the permittee fails to perform actions as required under the Sections referenced above

Sampling Point Number		Sampling Point Identification		Latitude (North)	Longitude (West)
002		The LCRS at the East BCSP		TBD <sup>1</sup>	TBD
003		The LCRS at the West BCSP		33° 19' 43"N	112° 50' 22" W
004-N		The LCRS at the BSDA Cell #2		33° 19' 42"N	112° 50' 38"W
004-S		The LCRS at the BSDA Cell #2		33° 19' 39"N	112° 50' 38" W
003-E		The LCRS at the BSDA Cell #1 <sup>2</sup>		TBD <sup>3</sup>	TBD
003-W		The LCRS at the BSDA Cell #1		TBD <sup>4</sup>	TBD
LCRS Sump	Parameter	Alert Level #1 (gpd)	Alert Level #2 (gpd)	Monitoring Method <sup>5</sup>	Monitoring Frequency
002	Liquid Pumped	1,337	28,455	Automated	Daily
003	Liquid Pumped <sup>6</sup>	4,050	39,450	Automated	Daily
004-N	Liquid Pumped	528	16,818	Automated	Daily
004-S	Liquid Pumped	533	16,977	Automated	Daily
003-E	Liquid Pumped	693	22,054	Automated	Daily
003-W	Liquid Pumped	1,011	32,208	Automated	Daily

<sup>1</sup> TBD = To Be Determined (See Section 3.0, Compliance Schedule, item 8).

<sup>2</sup> Cell #1 has not been constructed; however, the alert levels for LCRS monitoring have been provided and approved under a previous amendment.

<sup>3</sup> TBD = To Be Determined (See Section 3.0, Compliance Schedule, item 4).

<sup>4</sup> TBD = To Be Determined (See Section 3.0, Compliance Schedule, item 4).

<sup>5</sup> Monitoring shall be automated. During repairs on the automated system, monitoring may be performed manually.

<sup>6</sup> The "Liquid Pumped" value to be recorded is the amount of liquid pumped from the LCRS sump in gallons per day (gpd).

**Table 8: CONTINGENCY DISCHARGE CHARACTERIZATION FOR OVERTOPPING<sup>7</sup>**

Parameter	Units	Monitoring Frequency <sup>8</sup>	Reporting Frequency
Alkalinity	mg/l <sup>9</sup>	One sample	In accordance with Section 2.7.3 (Permit Violation and AL Status Reporting). In the 30-day report required under Section 2.7.3
pH	mg/l	One sample	
Total Dissolved Solids (TDS)	mg/l	One sample	
Total Nitrogen <sup>10</sup>	mg/l	One sample	
Calcium	mg/l	One sample	
Chloride	mg/l	One sample	
Fluoride	mg/l	One sample	
Magnesium	mg/l	One sample	
Potassium	mg/l	One sample	
Sodium	mg/l	One sample	
Sulfate	mg/l	One sample	
Antimony	mg/l	One sample	
Arsenic	mg/l	One sample	
Barium	mg/l	One sample	
Cadmium	mg/l	One sample	
Chromium	mg/l	One sample	
Lead	mg/l	One sample	
Mercury	mg/l	One sample	
Selenium	mg/l	One sample	
Zinc	mg/l	One sample	
TPH	mg/l	One sample	
Iodine 131	mg/l	One sample	
Tritium	mg/l	One sample	

<sup>7</sup> Monitor under this table per Section 2.6.2.3 Exceeding of AL#2 for LCRS at BCSP or BSDA, Section 2.6.3.1, Liner Failure, Containment Structure Failure, or Unexpected Loss of Fluid and/or Section 2.6.3.2, Overtopping of a Surface Impoundment.

<sup>8</sup> One verification sample shall be taken within 5 days of an event.

<sup>9</sup> mg/l = milligrams per liter

<sup>10</sup> Total Nitrogen includes nitrate-N and TKN-N.

**Table 9: FACILITY INSPECTION AND OPERATIONAL MONITORING**

The permittee shall record the inspection performance levels in a logbook as per Section 2.7.2, and report any violations or exceedances as per Section 2.7.3. In the case of an exceedance, identify which structure exceeds the performance level in the log book.

<b>Facility Name / Pollution Control Structure / Parameter</b>	<b>Operational Requirement / Performance Alert Level<sup>11</sup></b>	<b>Inspection Frequency</b>
First MWSP Impoundment	Minimum of 2.5 feet of Freeboard	Weekly
Second MWSP Impoundment	Minimum of 2.5 feet of Freeboard	Weekly
BCSP Impoundment	Minimum of 2.5 feet of Freeboard	Weekly
BSDA Impoundment	Minimum of 2.0 feet of Freeboard	Weekly
Evidence of overtopping of the impoundments	Discharge to land surface.	Weekly
Fluid Level	No unexpected or sudden loss	Monthly or after a significant rainstorm or other natural disaster
Upper Liner Integrity	No visible tears, punctures or other deformity	Monthly or after a significant rainstorm or other natural disaster
Berm Integrity	No visible structural damage or breach. No erosion of embankment	Weekly or after a significant rainstorm or other natural disaster
Leak Collection and Removal System (LCRS)	No obstruction in the sumps, pumps in good operational condition	Weekly or after a significant rainstorm or other natural disaster
Flow meter, solution- level sensor, and chart recorder (if applicable)	Maintained to be in continual operational condition	Weekly

<sup>11</sup> Performance Standards monitoring method shall be field observation.

## **5.0 REFERENCES AND PERTINENT INFORMATION**

The terms and conditions set forth in this permit have been developed based upon the information contained in the following, which are on file with the Department:

APP Application, dated: January 25, 2023

Contingency Plan, dated: April 12, 2021

## **6.0 NOTIFICATION PROVISIONS**

### **6.1. Annual Registration Fees**

The permittee is notified of the obligation to pay an Annual Registration Fee to ADEQ. The Annual Registration Fee is based on the amount of daily influent or discharge of pollutants in gallons per day (gpd) as established by A.R.S. § 49-242.

### **6.2. Duty to Comply**

[A.R.S. §§ 49-221 through 263]

The permittee is notified of the obligation to comply with all conditions of this permit and all applicable provisions of Title 49, Chapter 2, Articles 1, 2 and 3 of the Arizona Revised Statutes, Title 18, Chapter 9, Articles 1 through 4, and Title 18, Chapter 11, Article 4 of the Arizona Administrative Code. Any permit non-compliance constitutes a violation and is grounds for an enforcement action pursuant to Title 49, Chapter 2, Article 4 or permit amendment, suspension, or revocation.

### **6.3. Duty to Provide Information**

[A.R.S. §§ 49-243(K)(2) and 49-243(K)(8)]

The permittee shall furnish to the Director, or an authorized representative, within a time specified, any information which the Director may request to determine whether cause exists for amending 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.

### **6.4. Compliance with Aquifer Water Quality Standards**

[A.R.S. §§ 49-243(B)(2) and 49-243(B)(3)]

The permittee shall not cause or contribute to a violation of an Aquifer Water Quality Standard (AWQS) at the applicable point of compliance (POC) for the facility. Where, at the time of issuance of the permit, an aquifer already exceeds an AWQS for a pollutant, the permittee shall not discharge that pollutant so as to further degrade, at the applicable point of compliance for the facility, the water quality of any aquifer for that pollutant.

### **6.5. Technical and Financial Capability**

[A.R.S. §§ 49-243(K)(8) and 49-243(N) and A.A.C. R18-9-A202(B) and R18-9-A203(E) and (F)]

The permittee shall have and maintain the technical and financial capability necessary to fully carry out the terms and conditions of this permit. Any bond, insurance policy, trust fund, or other financial assurance mechanism provided as a demonstration of financial capability in the permit application, pursuant to A.A.C. R18-9-A203(C), shall be in effect prior to any discharge authorized by this permit and shall remain in effect for the duration of the permit.

### **6.6. Reporting of Bankruptcy or Environmental Enforcement**

[A.A.C. R18-9-A207(C)]

The permittee shall notify the Director within five days after the occurrence of any one of the following:

1. the filing of bankruptcy by the permittee; or
2. the entry of any order or judgment not issued by the Director against the permittee for the enforcement of any environmental protection statute or rule.

### **6.7. Monitoring and Records**

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A206]

The permittee shall conduct any monitoring activity necessary to assure compliance with this permit, with the applicable water quality standards established pursuant to A.R.S. §§ 49-221 and 49-223 and §§ 49-241 through 49-252.



**6.8. Inspection and Entry**

[A.R.S. §§ 49-1009, 49-203(B), and 49-243(K)(8)]

In accordance with A.R.S. §§ 41-1009 and 49-203(B), 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 enter and inspect the facility as reasonably necessary to ensure compliance with Title 49, Chapter 2, Article 3 of the Arizona Revised Statutes, and Title 18, Chapter 9, Articles 1 through 4 of the Arizona Administrative Code and the terms and conditions of this permit.

**6.9. Duty to Modify**

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A211]

The permittee shall apply for and receive a written amendment before deviating from any of the designs or operational practices authorized by this permit.

**6.10. Permit Action: Amendment, Transfer, Suspension, and Revocation**

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

This permit may be amended, transferred, suspended, or revoked for cause, under the rules of the Department. The permittee shall notify the Groundwater Protection Value Stream in writing within 15 days after any change in the owner or operator of the facility. The notification shall state the permit number, the name of the facility, the date of property transfer, and the name, address, and phone number where the new owner or operator can be reached. The operator shall advise the new owner or operators of the terms of this permit and the need for permit transfer in accordance with the rules.

**7.0 ADDITIONAL PERMIT CONDITIONS**

**7.1. Other Information**

[A.R.S. § 49-243(K)(8)]

Where 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 in any report to the Director, the permittee shall promptly submit the correct facts or information.

**7.2. Severability**

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

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. The filing of a request by the permittee for a permit action does not stay or suspend the effectiveness of any existing permit condition.

**7.3. Permit Transfer**

This permit may not be transferred to any other person except after notice to and approval of the transfer by the Department. No transfer shall be approved until the applicant complies with all transfer requirements as specified in A.A.C. R18-9-A212(B) and (C).