

DRAFT EXECUTIVE SUMMARY

Redhawk Power Plant – Surface Impoundments Aquifer Protection Permit No. P-501913 Place ID 13769, LTF No. 94982 Significant Amendment

I. Introduction:

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards (AWQS) at the Point of Compliance (POC); and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

II. Permittee & Facility Location:

The Arizona Public Service Company Redhawk Power Plant, is located at 11600 South 363rd Avenue in Arlington, Maricopa County, Arizona.

III. Facility Description:

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.

IV. Amendment Description:

The purpose of this amendment is to review and approve the addition of the East Brine Concentrator Surge Pond (East BCSP) to the permit.

The East BCSP will be constructed adjacent to and east of the existing West BCSP. The second pond will provide reliability and flexibility in operations. The new pond will be operated in parallel with the existing pond. The pond will be constructed with a capacity of approximately 29 acre-feet at the operating water level (approximately 13 feet with 2.5 feet of freeboard). The new pond receives inflow from the plant's brine concentrator/crystallizer system and cooling towers.

This is a "significant" amendment pursuant to A.A.C. R18-9-A211(B)(9).

V. Regulatory Status

There are no current enforcement actions.

VI. Best Available Demonstrated Control Technology (BADCT):

The BADCT requirements for the existing discharging facilities are not changing from the current permit. The East BCSP will have a capacity of approximately 29 acre-feet with 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 10-6 cm/second. The liner will be secured in a two-foot by two-foot engineered anchor trench along the perimeter of the pond.

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.

VII. Compliance with Aquifer Water Quality Standards (AWQS):

An additional Point of Compliance location is designated at the northwest corner of the East BCSP. No other changes to the points of compliance or the monitoring requirements are required as part of this amendment. Routine groundwater monitoring is not required under the terms of the permit.