



Fact Sheet

Aquifer Protection Permit P-106095
Place ID 135753, LTF 49572
Coolidge Generating Station

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. This document gives pertinent information concerning the issuance of the permit. 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.

I. FACILITY INFORMATION

Name and Location

Permittee's Name:	Coolidge Power, LLC
Mailing Address:	450 1 st Street S.W. Calgary, Alberta Canada T2P5H1
Facility Name and Location:	Coolidge Generating Station 859 E. Randolph Road Coolidge, Arizona 85228

Regulatory Status

This is a new facility with no prior regulatory history under the Aquifer Protection Permit program. The application for this permit was received by ADEQ on February 20, 2009.

Facility Description

The proposed Coolidge Power, L.L.C., Coolidge Generating Station is located within the city limits of Coolidge, in Pinal County, Arizona. The generating station is a natural gas fired, simple-cycle peaking power plant capable of producing up to 576 megawatts (MW) and will be operated to produce power during periods of peak electricity demand. The project consists of 12 combustion turbine generators (CTG), each capable of producing 48 MW under optimal conditions.

The water required for this project will be supplied from on-site wells. Water use requirements at the facility include: water injection systems to control nitrogen oxide emissions; evaporative cooling system to increase air intake, humidity and reduce temperature; and the turbine Sprint system, which sprays atomized water into the turbine compressor, reducing temperature and further improving efficiency. Process wastewater generated at the facility include: reverse osmosis wastewater; multi media filter backwash; CTG evaporative cooler system blowdown; and a minor amount of contact stormwater that passes through an oil/water separator. Process wastewater will be conveyed to the West Evaporation Ponds. The evaporation ponds are double-lined with a leak collection and removal system (LCRS) and are designed to hold all wastewater generated at the facility.

Site stormwater will be diverted away from the plant area through topographic measures and drainage ditches. The evaporation ponds will provide a raised berm to deter any run-on to the facility.

Geology

The facility's location is within the Basin and Range physiographic province, in which broad alluvial valleys separate mountains, which are generally of igneous or metamorphic origin. Surficial deposits are alluvial or basin-fill sediments. These are underlain by varying thicknesses of Cenozoic evaporites (anhydrite and halite) and consolidated to semi-consolidated sediments of fluvial and lacustrine continental origin, including mudrocks and arkosic fanglomerates representing ancient alluvial fans. A large subsurface salt body is present in the Eloy area to the south but it is not known whether this salt is present at the facility location.

Hydrology

The facility location is in the Eloy Sub-basin of the Pinal Active Management Area (AMA). Groundwater is produced in the area from the basin-fill aquifer. A boring advanced by the applicant in 2008, to a total depth of 2,000 feet indicated that most basin-fill aquifer material at the facility site is sandy clay. Most groundwater in this area is used for agriculture.

Depth to water at the facility is about 105 feet below ground surface (bgs) and ranges from about 65 to 110 feet bgs in the local area. Since intensive groundwater development for agriculture began in the 1940s, water levels steadily declined in the Coolidge area, requiring deepening of many wells. Water levels have been generally rising in the past several years due to the substitution by agricultural users of Central Arizona Project water for groundwater. Water levels in wells in the facility area have exhibited rises of between 32 and 86 feet since the mid-1980s but appear to have recently leveled off. Groundwater flow is to the northwest.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY

Total containment of wastewater will be employed to provide pollution control at this facility. The design of the impoundment system and operational methods for discharge control are included as demonstration of BADCT.

Engineering Design

1. The subgrade shall consist of a minimum of 6 inches of native or natural materials compacted to 95 percent maximum dry density (Standard Proctor).
2. The evaporation ponds shall be constructed as a double liner system consisting of a 60-mil high density polyethylene (HDPE) liner installed above a leak collection and removal system (LCRS) and a second 60-mil HDPE liner installed below the LCRS.
3. The liners will be separated by a geonet drainage layer designed to allow any leakage that may pass through anomalies or leaks in the top liner, to flow to a perforated HDPE drain pipe which will convey the leakage to a leak collection sump. The drainage layer shall achieve a hydraulic conductivity of 10^{-2} cm/sec or greater and shall be designed to promote drainage to the collection sump.

Operational Methods and Processes

The evaporation ponds shall be designed and maintained with sufficient volume to contain and dispose of through evaporation, the total inflow of wastewater into the pond in a typical year with two feet of freeboard maintained to accommodate the storm water expected from a 100-year, 24-hour storm event. Any leakage through the primary liner in the evaporation ponds shall be conveyed through a drainage geonet layer to the collection sump for extraction. The collection sump and leakage removal pump shall be sized and operated to prevent leakage from overflowing the LCRS sump and to maintain flow in the geonet to the LCRS sump. Leakage flow rates shall be calculated based on the amount of liquid removed in gallons per day (gpd) for comparison with alert levels specified in the permit.

III. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

The facility is located within the Pinal Active Management Area. During the advancement of the 2,000-foot boring advanced by the permittee in 2008, the permittee collected groundwater samples at depths of 240, 295, 335, and 520 feet bgs. TDS concentrations steadily increased from 720 milligrams per liter (mg/l) (240 feet) to 8,500 mg/l (520 feet). Nitrate concentrations ranged from <0.50 mg/l to 7.4 mg/l, the maximum being found at 335 feet. Sulfate steadily increased with depth, from 140 mg/l (240 feet) to 1,200 mg/l (520 feet). No exceedances of AWQS were noted in groundwater quality analytical data provided by the applicant.

There are 65 wells located within a 1-mile radius of the Coolidge Generating Station facility. The closest downgradient domestic well is approximately 0.75 miles southwest of the facility. The facility is designed to have zero or at least minimal discharge to the groundwater. The Pollutant Management Area (PMA) for this facility is defined as the contiguous facility area including the ponds and power generating equipment. The Discharge Impact Area (DIA) is defined as the boundaries of the evaporation ponds themselves.

Monitoring and Reporting Requirements

Routine effluent discharge and groundwater monitoring are not required in this permit. In accordance with the Compliance Schedule in Section 3.0 of the APP, the permittee shall collect an effluent characterization sample at the discharge pipe to the

West Evaporation Ponds and analyze this sample for the parameters listed in Table 3 in Section 4.2 of the permit. The sample shall be collected 60 days following commencement of discharge to the pond. The permittee shall submit the results from this sample to the Groundwater Section within 60 days of sample collection.

Operational monitoring will include inspection of the impoundment structures and LCRS. The evaporation pond will be inspected weekly for various performance levels specified in the permit, including freeboard, structural damage, and liner integrity. During pond operation, the leakage collection system shall be monitored daily for fluid. Fluids collected from the sump shall be quantified to determine leakage rates through the upper liner for comparison with alert levels (leakage rates) specified in the APP. A leakage alert level 1 (AL1) of 417 gallons per day (gpd) and an alert level 2 (AL2) of 13,124 gpd has been established for the West Evaporation Ponds and an AL1 of 531 gallons per day (gpd) and an AL2 of 17,118 gpd has been established for the future proposed East Evaporation Ponds.

Point(s) of Compliance (P.O.C)

The Coolidge Generating Station has proposed an existing well at the northern boundary of the property at latitude 32° 55' 08.15" N, longitude 111° 30' 26.90" W as a POC. The well's location is appropriate for a POC, but its construction is not. However, the well's construction is not an issue at this time because groundwater monitoring will not initially be required. The facility shall be built to prescriptive BADCT, therefore, groundwater monitoring shall not be required at the Coolidge Generating Station. POC monitoring may be required by ADEQ if an accidental release from the surface impoundment occurs or a violation of AL2 in the LCRS is identified. The evaporation ponds shall be double-lined and will include a LCRS equipped with a monitoring manhole.

IV. STORM WATER AND SURFACE WATER CONSIDERATIONS

The facility lies outside of the 100-year floodplain, as indicated by a FEMA map included in the application as Attachment D. The Gila River is located about 3 miles north of the facility location.

V. COMPLIANCE SCHEDULE

A representative characterization of the wastewater that could potentially discharge to the evaporation pond is required at the start of operations. The initial characterization will include general inorganic water quality parameters, metals, total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs). In addition, a Final Construction Report and QA/QC documentation or as-built plans shall be submitted to ADEQ within 90 days of completion of construction of the evaporation ponds and LCRS.

VI. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

The Coolidge Power L.L.C. has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B). A contractual joint venture consisting of TIC-The Industrial Company and PB Americas, Inc. is responsible for the design, construction and construction quality assurance for the installation of the proposed evaporation pond.

ADEQ requires that appropriate documents be sealed by an Arizona-registered geologist or professional engineer. This requirement is a part of an ongoing demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

The Coolidge Power L.L.C. has demonstrated the financial responsibility necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee is expected to maintain financial capability throughout the life of the facility.

The estimated closure and post-closure cost is \$7,367,900. The financial capability was demonstrated through A.A.C. R18-9-A203(C)(3).

Zoning Requirements

The Coolidge Generating Station has been properly zoned for the permitted use and the permittee has complied with all Pinal County zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(B)(3).

VII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

Public Comment Period (A.A.C. R18-9-109(A))

The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C. R18-9-109(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

VIII.ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – APP & Drywell Unit
Attn: Kathryn Boland, Project Manager
1110 W. Washington St., Mail Code: 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771- 4618

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