ADEQ Arizona Department of Environmental Quality

DRAFT FACT SHEET

Aquifer Protection Permit 105202
Place ID #16908, LTF #63314
SIGNIFICANT AMENDMENT
Verrado Water Reclamation Facility

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an amendment to the 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. Currently, treated effluent is discharged to either recharge through vadose zone wells or for beneficial reuse. Under this amendment it is proposed that a third discharge point be added in the event that during wet weather events, there is an excess of treated effluent (i.e., if/when effluent production levels exceed reuse and/or recharge demands).

I. FACILITY INFORMATION

Name and Location

Name of Permittee:	EPCOR Water Arizona Inc.
Mailing Address:	2355 West Pinnacle Peak Road, Suite #300 Phoenix, Arizona 85027
Facility Name and Location:	Verrado Water Reclamation Facility 1871 North Lancaster Street Buckeye, Arizona 85326

Regulatory Status

EPCOR Water Arizona Inc. was issued an individual Aquifer Protection Permit (APP) on August 11, 2004, a "other" permit amendment was issued on May 29, 2007, and a "significant" permit amendment was issued on March 15th, 2012. The application for this Significant Permit Amendment was received by the Department on November 15, 2015.

Facility Description

The EPCOR Water Arizona is authorized to operate the Verrado Water Reclamation Facility (WRF), which is permitted to collect and treat a maximum average monthly flow of 0.83 million gallons per day (mgd). The treatment process consists of an upgraded influent pump station, a new mechanical step screen, a new equalization basin, a modification to the aeration basin, an anoxic basin for nitrification and denitrification, two (2) clarifiers, four disk filters, chemical feed, two (2) chlorine contact basins, de-chlorination, and a pump station.

The WRF produces reclaimed water meeting Class A+ Reclaimed Water Standards as per Title 18, Chapter 9, Article 3. The effluent may be delivered for beneficial purposes (reuse) under a valid reclaimed water permit or to the two (2) vadose zone wells at the aquifer recharge facility (ARF), located approximately one mile north-northwest of the facility, or to the outfall within the Lost Creek Wash. When discharged only for reuse, the effluent is delivered directly from the chlorine contact chamber and will not be dechlorinated. When discharged to the ARF and/or to the AZPDES outfall within the Lost Creek Wash, the effluent shall be dechlorinated. However, during times in which the effluent is discharged and simultaneously utilized for reuse and outfall, reuse and ARF, or reuse, outfall and ARF, the effluent is required to be dechlorinated. The sludge will be stored in the modified sludge holding tank, and then pumped to a belt press for dewatering. The dewatered sludge is disposed off-site at an approved landfill.

The depth to groundwater is approximately 230 feet below ground surface (bgs) at the WRF and 330 feet bgs at the ARF. Groundwater at the WRF appears to flow south-southeastward, and at the ARF it appears to flow north-northeastward toward a hydraulic sink.

All industrial hookups and other non-residential hookups to the treatment system shall be authorized according to the applicable federal, state or local regulations.

Amendment Description

ADEQ has reviewed and approved the following changes under this amendment:
Add a new discharge point to an outfall within the Lost Creek Wash.

Listed below are the changes to the permit as a result of this amendment:

1. Section 2.1, Facility/Site Description:
   Adding the new proposed outfall to the Lost Creek Wash

AZPDES Outfall 001	33º 29' 23.39" N	112º 30 ' 38.73" W

2. Section 2.4, Point of Compliance: Add a new conceptual POC location.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY

The Verrado WRF is designed to achieve tertiary treatment standards, and to produce Class A+ reclaimed water. The effluent is used for beneficial purposes under a valid reclaimed water permit (A.A.C. R18-9, Article 7), recharged using vadose zone wells and a new discharge point to an outfall within the Lost Creek Wash. The WRF uses conventional activated sludge technology to achieve tertiary quality effluent. All process tanks are constructed of reinforced concrete.

Effluent is monitored for nitrogen, metals, coliforms and volatile organic compounds (VOCs). In addition, the reclaimed water is monitored for the Class A+ reclaimed water quality standards, which include fecal coliform, total nitrogen, and turbidity.

III. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

Depth to groundwater at the site is approximately 336 ft bls and the direction of groundwater flow is to the east. Groundwater monitoring is required by the permit.

Monitoring and Reporting Requirements

ADEQ has determined that effluent monitoring is required for this facility. Effluent monitoring will be monitored per the current permit.

Groundwater Monitoring

The locations of the POCs were determined by an analysis of the PMA, the DIA, and locations and uses of groundwater wells in the area. The POC locations are selected to protect off-site uses of groundwater, to verify BADCT performance, and to allow early detection of potential impact from VWRF discharges. Three hazardous/non-hazardous points of compliance have been designated for this facility as identified below:

POC #	Screen Interval (ft bgs)	Gravel Pack (ft bgs)	Latitude	Longitude
1	N/A	N/A	33° 28' 02" N	112° 29' 52" W
2	343-373 383-403 413-433 443-473 483-530	198-505	33° 28' 46" N	112° 30' 28" W
3	N/A	N/A	33° 29' 19.11" N	112° 30' 17.08" W

N/A – Not applicable

Groundwater will be monitored at the hazardous/non-hazardous Points of Compliance POC 2 only.

Point of Compliance

The POCs for this facility are designated at the following locations:

Well Name	Well Type	Latitude	Longitude	Descriptive Location	Well Purpose
1	Groundwater Monitoring	33° 28' 02" N	112° 29' 52" W	Southeast corner of the WRF	Point of Compliance
2	Groundwater Monitoring	33° 28' 46" N	112° 30' 28" W	MW #1, within 300 feet east of the vadose zone recharge wells	Point of Compliance
3	Conceptual Location	33° 29' 19.11" N	112° 30' 17.08" W	Approximately 650 feet southeast of the PMA of the new outfall	Compliance

Well Name	Well Type	Latitude	Longitude	Descriptive Location	Well Purpose
				location	

Groundwater monitoring is required at POC # 2 per Section 4.2, Table II. Groundwater monitoring is not required at POC#1 or POC #3 unless an additional point of compliance is required. POC #1 is used to monitor reuse flow. The Director may amend this permit to require the installation of monitoring well POC#1, POC#3, or to designate additional POCs if information on groundwater gradients or groundwater usage indicates the need.

IV. HYDROGEOLOGIC SETTING

Hydrogeologic information was provided in a Geotechnical Investigation report prepared by Geotechnical and Environmental Consultants, Inc. (GEC) and the Summary Report for Well Construction and Pilot Testing of the Verrado Recharge Facility prepared by HydroSystems, Inc. in support of the APP application.

The VWRF is located within the Basin and Range Physiographic Province. The Basin and Range Physiographic Province is primarily defined by uplifted blocks or mountain ranges with intervening alluvial basins or valleys. These intervening basins were created by extensional faulting. The basins and ranges are primarily elongated with a northwest to southeast trend and typically parallel one another. The VWRF is located within the West Salt River Valley (WSRV) of the Phoenix Active Management Area (AMA). The White Tank Mountains are located to the west and northwest of the VWRF. East of the VWRF is the Luke Basin.

Three alluvial units are present within the WSRV. These units are referred to as the Upper Alluvial Unit (UAU), Middle Alluvial Unit (MAU), and the Lower Alluvial Unit (LAU). The UAU is composed of gravel, sand and silt. The MAU is composed of silt, clay, siltstone, and silty sand and gravel. The LAU is composed of two parts. The upper part is silt, clay, mudstone, siltstone, gypsum, sand and gravel. The lower part is mudstone, siltstone, sand, gravel, conglomerate, halite, gypsum, and anhydrite. Based upon drillers logs the depth to bedrock in the area of the VWRF ranges from approximately 54 feet below land surface (ft bls) to over 1,200 ft bls. In alluvial fans near the mountain fronts, the UAU of the basin fill tends to be strongly cemented with caliche. The depth of the UAU and MAU contact is approximately at 245 ft bls based upon the lithologic log (increase in fine grained content) and geophysical logs (changes in gamma log and electric log) of POC well MW-1. The MAU and LAU contact is not as apparent in the MW-1 logs, but is likely to be near 383 ft bls, based upon other nearby soil boring logs. The depth to groundwater in MW-1 in 2003 was at 336 ft bls, within the MAU.

The PMA for the new outfall is located approximately 1,849 feet east of the discharge point/outfall as this is the calculated distance that the reclaimed water will travel before infiltrating into the ground. The extent of the discharge impact areas (DIAs) was determined by using Darcy's velocity equation. Using Darcy's velocity equation, the travel distance of a particle of water over a 20 year period was calculated based on two different scenarios

including intermittent discharge and Continuous discharge. The estimated travel distance for the intermittent discharge is 14 feet, whereas the estimated travel distance for the continuous discharge is 724 feet. During intermittent discharge, the DIA can be approximated to be equivalent to the PMA.

V. SURFACE WATER CONSIDERATIONS

Stormwater/surface water considerations included whether the facility was located within the 100-year flood plain and whether the discharge had the potential to impact surface water drainages located down-stream of the WWTP and vadose zone injection wells.

The ephemeral washes convey stormwater away from the White Tank Mountains toward the south toward the Gila River. The eastern portion of the VWRF site is located within the 100-year flood plain located on Tuthill Dike Wash which runs north-south. The VWRF has been graded and the Tuthill Dike Wash has channelized to modify and take the VWRF out of the 100-year flood plain. The Maricopa County Flood Control District issued a Flood Plain Use Permit to perform flood control improvements to raise the entire VWRF site out of the 100-year flood plain. Neither of the recharge components (recharge or monitor wells) are constructed within the 100-year flood plain. Both sites are graded to ensure local surface drainage away from the facilities due to direct precipitation.

VI. COMPLIANCE SCHEDULE

The compliance schedule requires the submittal of an updated cost estimates for facility closure and post closure every 6 years from the date of permit signature, for the duration of the permit.

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

EPCOR Water Arizona Inc. 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).

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

Financial Capability

EPCOR Water Arizona Inc. 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.

ADEQ currently holds a $220,800.00 surety bond for all the facilities operated by EPCOR Water Arizona Inc., which includes the estimated cost of $56,500 for closure of the Verrado WRF.

Zoning Requirements

The WRF has been properly zoned for the permitted use, and the permittee has complied with all Maricopa County zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(A)(2)(c).

VIII. 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 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. 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.

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

The Department shall accept written comments from the public before a significant permit amendment is made. The written public comment period begins on the publication date of the public notice and extends for 30 calendar days. 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.

IX. ADDITIONAL INFORMATION

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

Arizona Department of Environmental Quality
Water Quality Division - APP and Reuse Unit
Attn: Wael Hassinan
1110 W. Washington Street
Phoenix, Arizona 85007
Phone: (602) 771-2253