

Aquifer Protection Permit #P-511440

Place ID 145828, LTF 63190

Significant Amendment

City of Goodyear – Vadose Injection Project

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to 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 at the Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). The purpose of BADCT is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., local subsurface geology) to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer, or to keep pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

Name of Permittee:	The City of Goodyear
Mailing Address:	Public Works Department P.O. Box 5100 Goodyear, Arizona 85338
Facility Name and Location:	City of Goodyear – Vadose Injection Project 15500 West Yuma Road Goodyear, Arizona 85338 Maricopa County

Regulatory Status

This is an existing facility. An Individual APP was issued for this facility on June 30, 2015. An application for this Significant Permit Amendment was received on June 22, 2016. At the time of permit issuance, there are no active Notices of Violation (NOVs).

Facility Description

The City of Goodyear is authorized to operate the City of Goodyear – Vadose Injection Project (VIP) a 7.4 million-gallons-per-day (mgd) groundwater recharge facility. The VIP shall receive Class A+ Reclaimed water conveyed via an underground pipeline from the City of Goodyear 157th Avenue Water Reclamation Facility (157th WRF) permitted under APP P-101324. The City of Goodyear 157th Avenue WRF produces effluent that is denitrified, filtered, and disinfected to meet Best Available Demonstrated Control Technology (BADCT) standards for new facilities, as per A.A.C. R18-9-B204. The permittee has an underground Storage Facility and Water Storage Permits issued by Arizona Department of Water Resources (ADWR) for this facility.

The VIP shall consist of a Soil Aquifer Treatment (SAT) Site, 15 active vadose injection wells and two contingency wells to be drilled as needed.

The SAT Site shall consist of four recharge basins with a total area of 13.94 acres and a maximum disposal limit of 4.0mgd. Recharge will be accomplished through four (4) earthen basins on a 34.15 acre site. The basins will be operated with alternating wet and dry cycles, which will achieve additional denitrification and optimize the recharge performance of the basins. The SAT Site was originally permitted under a Temporary Individual APP P-511420 issued May 22, 2014.

Five of the 15 vadose injection wells shall be located within the city right of way, in a pattern proceeding to the east of the intersection along West Yuma Road. The remaining 10 vadose injection wells shall be located within the city right of way in a pattern proceeding to the north of the intersection along South Estrella Parkway.

SAT Site	Latitude	Longitude	Basin Size
Recharge Basin 1	33° 26' 11.86" N	112° 23' 38.67" W	2.50 acres
Recharge Basin 2	33° 26' 17.32" N	112° 23' 38.67" W	2.66 acres
Recharge Basin 3	33° 26' 17.32" N	112° 23' 44.51" W	5.38 acres
Recharge Basin 4	33° 26' 13.11" N	112° 23' 44.51" W	3.40 acres

The vadose injection wells shall be installed in four phases:

Phase	Number of years	Number of well installations	Maximum Volume acre-feet per year (AFY)
Phase I	5	9	5,000
Phase II	5	2	6,000
Phase III	4	2	7,000
Phase IV	6	2	8,300

The preliminary design plan well construction specifications indicate a screened interval from 30 feet to 100 feet below ground surface for the injection wells. Depth to groundwater at the VIP site is approximately 81 feet below ground surface (bgs) and the direction of groundwater flow is to the west.

The site includes the following Vadose Injection Wells that shall be installed in four phase:

ADWR Well No. ¹	Phase No.	Well ID No.	Cadastral Location ²	Latitude	Longitude
55-226077	I	GY-VZ- 1	B (01-01) 8BBB	33°26' 56.199"N	112° 23' 33.062"W
55-226082	I	GY-VZ- 2	B (01-01)8BBC	33°26' 51.375"N	112° 23' 33.115"W
55-226079	I	GY-VZ- 3	B (01-01)8BBC2	33°26' 46.598"N	112° 23' 33.084"W
55-226078	I	GY-VZ- 4	B (01-01) 8BCB	33°26' 42.333"N	112° 23' 33.141"W

¹ The Arizona Department of Water Resources well number shall be provided upon completion of the wells

² Locations are approximate, actual vadose zone well locations are dependent on the field conditions and could be located on either side of Yuma Road or Estrella Parkway.

TBD	I	GY-VZ- 5	B (01-01) 8BCC	33°26' 37.585"N	112° 23' 33.177"W
TBD	I	GY-VZ- 6	B (01-01) 8CBB	33°26' 32.488"N	112° 23' 33.116"W
TBD	I	GY-VZ- 7	B (01-01)8CBB2	33°26' 27.175"N	112° 23' 33.115"W
TBD	I	GY-VZ- 8	B (01-01) 8CBC	33°26' 22.644"N	112° 23' 32.999"W
TBD	I	GY-VZ- 9	B (01-01) 8CCB	33°26' 17.530"N	112° 23' 33.023"W
TBD	II	GY-VZ- 10	B (01-01) 8CCC	33°26' 12.789"N	112° 23' 33.071"W
TBD	II	GY-VZ- 11	B (01-01)17BBB	33°26' 7.821" N	112° 23' 28.906"W
TBD	III	GY-VZ- 12	B (01-01)17BBA	33°26' 7.782" N	112° 23' 23.405"W
TBD	III	GY-VZ- 13	B (01-01)17BAB	33°26' 7.685" N	112° 23' 17.940"W
TBD	IV	GY-VZ- 14	B (0101)17BAB2	33°26' 7.762" N	112° 23' 13.048"W
TBD	IV	GY-VZ- 15	B (01-01) 17BAA	33°26' 7.622" N	112° 23' 8.053" W
TBD	Contingency ³	GY-VZ- 16	Within the USF Boundary	TBD	TBD
TBD	Contingency	GY-VZ- 17	Within the USF Boundary	TBD	TBD

Amendment Description

ADEQ has reviewed and approved this amendment to include the Soil Aquifer Treatment (SAT) Site permitted under APP P-511420 as an optional facility for the disposal of 157th WRF reclaimed water. As a result of this amendment the SAT site was added to the permit description and the Discharge Monitoring Tables. Other changes include updating the permit language to conform to the most current permit format.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The Class A+ reclaimed water being injected at the VIP is conveyed from the 157th WRF. The 157th WRF was designed, constructed, operated, and maintained to meet the treatment performance criteria for new facilities as specified in A.A.C. R18-9-B204 per APP P-101324.

III. HYDROGEOLOGIC SETTING

The site is located within the West Salt River Valley (W-SRV) sub-basin in the Phoenix Active Management Area (AMA). The immediate area exhibits little topographic variance. The site recharges into the Upper Alluvial Unit (UAU), composed primarily of fluvial deposits of silt, clay, siltstone, silty sand, and gravel deposited by the Gila River and its tributaries.

Aquifer characteristics within the sub-basin vary both laterally and vertically. Historically, groundwater flows have been toward the basin outflow to the west. The extensive cone of depression in the Luke Air Force Base - Litchfield Park area has resulted in groundwater flows diverging northward and southwestward. The Goodyear Vadose Injection Project is located

³ Contingency Vadose Zone Injection Wells consist of wells approved for installation as replacement wells and/or to increase recharge in this well field.

approximately at the apex of the divide with the groundwater flow direction east of the site being to the north and east, and the flow direction to the west of the site is to the west.

The existing injection well construction reports indicate a screened interval from 30 feet to 100 feet below ground surface for the injection wells. The VIP injects into both the vadose zone and the shallow aquifer.

The primary water-bearing unit beneath the site is the UAU. The current depth to groundwater beneath the facility is 81 feet below ground surface, and groundwater flows toward the west.

IV. STORM WATER/SURFACE WATER CONSIDERATIONS

The site lies approximately 3.5 miles west of the ephemeral Agua Fria River and three miles north of the Gila River. The recharge wells are not located within the 100-year floodplain.

V. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

Monitoring and Reporting Requirements

To ensure that site operations do not violate Aquifer Water Quality Standards at the point of compliance, City of Goodyear 157th Avenue WRF effluent is required to meet the Discharge Limits in Section 4.2, Table IA, of APP No. P-101324 prior to discharge to the vadose injection wells.

The permittee will monitor the effluent daily for flow rate (see Section 4.2, Tables IA, IB, IC, or ID, in the permit). Monitoring under Tables IA, IB, IC, or ID is only required when the effluent from City of Goodyear 157th Avenue WRF is sent to the VIP site.

Routine groundwater monitoring shall be performed monthly for nitrogen species and total coliform, quarterly for metals, and semi-annually for volatile and semi-volatile organic compounds (VOCs and SVOCs), as per Section 4.2, Table II.

Point of Compliance (POC)

The POC for this facility is located as follows:

POC #	Descriptive Location	Latitude	Longitude	ADWR No.	Screened Interval
1	Approximately 600 feet north-northwest of the intersection of West Yuma Road and South Estrella Parkway	33° 26' 14.7" N	112° 23' 36.8" W	55-916673	35-100 ft

POC #	Descriptive Location	Latitude	Longitude	ADWR No.	Screened Interval
2	Downgradient of SAT site recharge basins-located approximately 75 feet northwest of SAT Basin #3	33° 26' 17.6" N	112° 23' 47.5" W	55-916671	30-105 ft

Routine groundwater monitoring is required at the POC wells as per Section 4.2, Table II. These wells will serve as a POC for hazardous and for non-hazardous constituents.

VI. COMPLIANCE SCHEDULE

A compliance schedule is included in Section 3.0 of the permit. The compliance schedule includes requirements for the submittal of the Engineer’s Certificate of Completion for the 15 vadose zone wells installed in four phases, the submittal of the Engineer’s Certificate of Completion for the two Contingency wells, and the submittal of the Engineer’s Certificate of Completion for recharge basins # 3 and #4.

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

The City of Goodyear 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). The Recharge Basins were designed as per the design drawings prepared and stamped, dated, and signed (sealed) by Keith Drunasky, P.E. (Civil), Ritoch-Powell and Associates dated August 24, 2016. The VIP was designed as per the design report prepared and stamped, dated and signed (sealed) by the Brown and Caldwell APP team, dated July 28, 2014. The SAT Site was designed as per the design report prepared, signed and dated (sealed) by Gordon R. Stephenson, RG, of Burgess & Niple, Inc., dated May 18, 1996.

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 permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9- A203 (B)(1)and(2). The estimated dollar amount for the closure/post closure cost of the Injection Wells is \$446,000.00. The estimated dollar amount for the closure/post closure cost of the SAT Site is \$35,000.00. The total estimated closure/post closure cost for the facilities under this permit is \$481,000.00 and is covered under the City of Goodyear 157th Avenue WRF APP (Inventory No. P-101324).

Zoning Requirements

The City of Goodyear VIP has been properly zoned for the permitted use and the permittee has complied with all zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(B)(3).

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 permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – Groundwater Section – APP Unit 1
Attn: Monica Phillips
1110 West Washington Street, Mail Code 5600D-3
Phoenix, Arizona 85007
Phone: (602) 771-2253