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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Henry R. Darwin
Director

August 31, 2012

SROSPUI2:119

Ms. Nancy Petersen
Interim Director
City of Tucson
Environmental Services
PO Box 27210
Tucson, Arizona 85726

RE: Broadway-Pantano Water Quality Assurance Revolving Fund (WQARF) Site
Western Containment System (WCS) Shutdown

Dear Ms. Petersen:

The purpose of this letter is to present the Arizona Department of Environmental Quality's (ADEQ's) plan for shutting down the WCS and to increase groundwater sampling in select monitoring wells at the Broadway-Pantano WQARF Site (Site). These changes will remain in effect until a final groundwater remedy is selected for the Site, or Site conditions change that require a re-evaluation of WCS operations. ADEQ will continue to closely coordinate with the City of Tucson (COT) on all matters concerning the WCS.

Background

The WCS is an Early Response Action (ERA) which became operational at the Site in 2003. The WCS was designed by the COT Environmental Services (COT-ES) and built by COT-ES with ADEQ funding and oversight pursuant to the ADEQ/COT 2001 work share agreement. Under this agreement, COT-ES operates and maintains the WCS with ADEQ funding and oversight.

When the WCS was first turned on in 2003, the tetrachloroethene (PCE) concentration in extraction well R-092A well was above the AWQS of 5 micrograms per liter (ug/L), and the PCE concentration in the C-026B well was detectable but below the AWQS. Within a year, the PCE concentration in the R-092A well dropped below the AWQS. The concentrations in both wells have continued to drop over the past eight years. During the past three years, the WCS has been treating water that contains only about 1 or 2 ug/L of PCE.

Given the low PCE concentrations at the extraction wells, high annual WCS operation and maintenance costs, and significant cuts to the WQARF budget, ADEQ decided to reassess the

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effectiveness of the WCS. In December 2011, ADEQ contracted with Clear Creek Associates (CCA) to run computer simulations of several WCS operating scenarios using the Site groundwater fate-and-transport computer model. ADEQ met with COT-ES and COT Water Department [Tucson Water (COT-TW)] staff in February 2012 to discuss the simulations. At this meeting, it was agreed which scenarios would be used for the simulations. COT-TW staff also provided input regarding assumed pumping rates for water supply wells surrounding the Site. The scenarios selected are shown below:

Pumping Scenario	R-092A	C-026B	Pumping Duration
1 – Base Case (current operations)	400 gpm	400 gpm	Continuous
2 – C-026B Off	400 gpm	0 gpm	Continuous
3 – WCS – 3 Month On/Off Schedule	400 gpm	400 gpm	3 months on, 3 months off, etc.
4 – WCS Off	0 gpm	0 gpm	Continuous

CCA completed its evaluation and published its findings in a report entitled *Submittal of Future Simulation Model Run Results—Groundwater Model Study for Feasibility Study, Broadway-Pantano WQARF Site*, dated June 1, 2012. ADEQ then met with COT-ES and COT-TW staff on June 11, 2012 to present and discuss the simulation results. At this meeting, all parties agreed that the simulation results for all four scenarios show negligible difference in predicted outcomes for plume containment and PCE concentrations in key monitoring wells over the next 5 to 10 years.

Shutdown of WCS

Based on current Site conditions, the annual cost to operate the WCS, and predicted outcomes from the modeling study, ADEQ has determined that present and near-future operation of the WCS is not necessary, reasonable, or cost effective as required by WQARF statute [A.R.S. § 49-282.06(A)(3)]. Therefore, ADEQ requests that your Department begin preparations for turning off the WCS no later than September 30, 2012.

Planned Protective Measures

To provide an extra measure of safety, the shutdown of the WCS will be accompanied by enhanced monitoring of the groundwater, and by maintenance of the WCS so that it will be available, if needed. ADEQ will prepare a change order to cover depth-specific sampling of the WCS extraction and injection wells and nine months of revised WCS O&M.

- Enhanced Groundwater Monitoring:

The table below shows the wells and sampling frequencies that ADEQ proposes for enhanced monitoring to accompany the WCS shutdown. These recommendations were developed with coordination from CCA, COT-TW, and ADEQ staff.

Well Name	Location/Vicinity	Sampling Frequency
Catalina Village ⁽¹⁾	West of Western Plume (beyond WCS capture)	Quarterly
C-051B ⁽²⁾	West of Western Plume (beyond WCS capture)	Quarterly
C-124A ⁽²⁾	West of Western Plume (beyond WCS capture)	Annually
C-125A ⁽²⁾	West of Western Plume (beyond WCS capture)	Annually
BP-21 ⁽¹⁾	Western Plume (beyond WCS capture)	Quarterly
WR-702A ⁽¹⁾	Western Plume (beyond WCS capture)	Quarterly
WR-703A ⁽¹⁾	Western Plume (beyond WCS capture)	Quarterly
WR-704A ⁽¹⁾	Western Plume (beyond WCS capture)	Quarterly
BP-2 ⁽³⁾	Between Central and Western Plume (within WCS capture)	Quarterly
BP-3 ⁽³⁾⁽⁵⁾	Between Central and Western Plume (beyond WCS capture)	Quarterly
C-026A ⁽⁴⁾	Between Central and Western Plume (within WCS capture)	Quarterly
BP-4 ⁽⁵⁾	Between Central and Western Plume (within WCS capture)	Quarterly
BP-5 ⁽¹⁾	Central (within WCS capture—cross-gradient)	Quarterly
R-090A or R-091A ⁽⁴⁾	Between Central and Western Plume (within WCS capture)	Quarterly
R-092A ⁽⁴⁾	Central Plume (within WCS capture)	Quarterly
SJ-001 ⁽¹⁾	Central Plume (within WCS capture—upgradient)	Quarterly
SJ-002 ⁽¹⁾	Central Plume (within WCS capture—upgradient)	Quarterly
WR-178A ⁽³⁾⁽⁵⁾	Central Plume (within WCS capture)	Quarterly
WR-180A ⁽⁵⁾	Central Plume (within WCS capture—cross-gradient)	Annually
WR-352A ⁽³⁾⁽⁵⁾	Central Plume (within WCS capture)	Quarterly
WR-354A ⁽³⁾⁽⁵⁾	Central Plume (near southwestern edge of WCS capture—cross-gradient)	Quarterly
St. Joseph's Hospital water supply well (to-be-constructed in FY2013) ⁽³⁾	Central Plume	ADEQ will seek access to this well for sampling

Table Footnotes:

- (1) These eight wells are already being sampled quarterly by TW under the COT/ADEQ work share agreement.
- (2) COT-TW already samples this well as part of their water supply well monitoring.
- (3) Per CCA recommendation.
- (4) COT-ES' WCS O&M contractor, URS, has indicated that URS can perform depth-specific sampling of the R-090A, R-091A, and R-092A wells without well adaptation.
- (5) To be sampled by COT-TW if ADEQ does not perform site-wide sampling that year.

ADEQ requests that COT-ES/TW staff conduct this enhanced monitoring pursuant to the 2001 ADEQ/COT settlement agreement. ADEQ will continue to perform annual gauging of the Site

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wells and provide the data, hydrographs, and well water elevation figure to COT-ES/TW. However, WQARF budget limitations do not allow for Site-wide groundwater monitoring by ADEQ in FY2013.

- Maintenance of WCS Operational Capability

The WCS must be maintained in a state of readiness in case Site conditions change and it must be restarted. To ensure its readiness, ADEQ approves the June 29, 2012 revised WCS operation and maintenance (O&M) plan produced by COT-ES' contractor, URS. The plan includes exercising (pumping) the system one day per month, continued water quality sampling of the WCS wells (including depth-specific sampling), back-flushing of the injection wells, weekly site inspections of the WCS, and continued system repairs as needed.

Summary

ADEQ is requesting that COT-ES begin preparations to shut down the WCS no later than September 30, 2012. Unless Site conditions change, this shutdown will remain in effect until the final groundwater remedy is selected – estimated to occur within the next three to five years. ADEQ's groundwater feasibility study (FS), which should be completed within the next two years, will include another evaluation of the WCS to determine what role it may have in the final groundwater remedy. During the FS, ADEQ will continue to consult with COT as a key stakeholder.

If you have any questions regarding these changes to WCS operations and monitoring, please contact me at (520) 628-6714.

Sincerely,



William J. Ellett, Manager
Superfund Programs Unit
ADEQ Southern Regional Office

cc: Wally Wilson, Chief Hydrologist, City of Tucson Water Department
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ADEQ/SRO Reading file