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## QUARTERLY PROGRESS REPORT NO. 2

### Victoria ASR Demonstration Project

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From:  
Lynn Short (City of Victoria)—Project Manager

Date:  
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ARCADIS Project No.:  
25963002.0000

Subject:  
Quarterly Progress Report for the Victoria ASR Demonstration Project (**Contract No. 1600011958**) for **January 1, 2017 through March 31, 2017**.

### Introduction:

The Victoria Aquifer Storage and Recovery (ASR) Demonstration Project is being partially funded by the Texas Water Development Board (TWDB) under Rider 25 to HB 1 (General Appropriations Act) of the 84<sup>th</sup> Legislature. The “Project” generally consists of: permitting, designing, and constructing an ASR retrofit to an existing City of Victoria groundwater production well (Well No. 19); constructing a potable water pipeline for recharge and recovery purposes; conducting training and preparing an operation and maintenance (O&M) manual; cycle testing and assessment of the operational ASR well; and making presentations summarizing results. The Project Contractor is the Victoria County Groundwater Conservation District (the “Victoria County GCD”) and the primary Project Participant is the City of Victoria, Texas (the “City”). The Project consulting and engineering team consists of Arcadis U.S., Inc.; ASR Systems, LLC; and INTERA, Inc. (the “Arcadis Team”).

The purposes of this Quarterly Progress Report are to explain what work has been accomplished during the reporting period, and to describe any potential or anticipated challenges.



Figure 1: Existing Well 19 Pumphouse and Piping

## Work Completed:

Task 1: Project Management. During this reporting period the Arcadis Team continued with project management activities. Arcadis began work on the second quarterly invoice which will be reviewed and commented upon by the City of Victoria and the Victoria County GCD. The second invoice will be submitted to the TWDB in April 2017.

Since the kickoff meeting, the Arcadis Team has held conference calls every two weeks to review progress on the various tasks. The Project participants also continued to hold monthly progress conference calls. The latest group call was held on March 16, 2017.

Task 2: Permitting. During this reporting period the Arcadis team assembled data, prepared and submitted on behalf of the City of Victoria the application for a Class V authorization for Well 19. The completed application was hand delivered to TCEQ on March 1, 2017. As requested by TCEQ, the entire application was submitted as one hard-copy original, one hard copy, and a digital version. The application package totaled over 700 hard copy pages. The effort required to prepare the application package was significantly greater than anticipated when the scope of work was prepared.

Task 3: ASR Facilities Design. The Arcadis Team completed the final version of the Preliminary Design Technical Memorandum (PDTM). The final PDTM was provided to the City, the Victoria County GCD and the TWDB in January 2017. The Arcadis Team then began work on the detailed design and bid documents. The draft documents were submitted to the City for review and comment. Several iterations of the plans and specifications were reviewed. The final detailed design and bid package was submitted to the City in March 2017.

Task 4: Retrofit of Well No. 19. No work on this task has been completed in this reporting period.

Task 5: Potable Water Line Construction. No work on this task has been completed in this reporting period.

Task 6: Training and Preparation of O&M Manual. No work on this task has been completed in this reporting period.

Task 7: Cycle Testing and Assessment. During the previous reporting period, the Arcadis Team developed and provided to the City a list of the water quality parameters that were sampled and analyzed during the cycle testing task. In this reporting period the City collected and provided existing data and water quality samples for the baseline analysis needed for the permitting and cycle testing. The City engaged a private laboratory to analyze samples that could not be done in the City's laboratory.

Task 8: Draft and Final Reports. No work has been completed on this task in this reporting period.

Task 9: Presentations. David Pyne (ASR Systems) and Fred Blumberg (Arcadis) participated in the ASR panel discussion at the TWDB's *Water for Texas 2017* Conference on January 25, 2017. The Project was included by reference in the panel discussion.



Figure 2: Existing Well 19 Motor

Fred Blumberg and Matthew Webb (TWDB) gave a presentation on the Victoria and NBU ASR demonstration projects at the 2017 Project Management Seminar in San Antonio, Texas on February 24, 2017. The seminar is sponsored annually by the San Antonio chapters of the Texas Section of the American Water Works Association and the Water Environment Association of Texas.

Fred Blumberg and Ashley Evans (Arcadis) submitted an abstract for a presentation on the Victoria ASR demonstration project to the North Texas Chapter of the American Water Works Association.

### **Challenges Identified:**

Task 2 UIC Permitting Effort. As discussed in the previous progress report, significantly more information was required to complete the TCEQ Class V application package than the team expected. This additional effort resulted in the need to revise the project schedule. Also, the additional effort to gather data, and to prepare and produce the application package resulted in the actual expenses for Task 2 exceeding the proposed budget for that task.

Task 3 Facilities Design. The detailed design for the retrofit of Well 19 required more effort and took more time than anticipated when the initial budget was prepared. Most of this additional effort was related to researching the best approach to storing the chemicals required for re-disinfection of the water recovered from ASR storage. Therefore, the actual expenses for Task 3 exceeded the budget for that task.

Task 7 Water Quality Sampling. The laboratory results from the initial round of water quality samples from Wells 19 and 21 had unusual results for dissolved oxygen (DO) and oxidation reduction potential (ORP). The results were higher than expected for a groundwater sample from a deep, confined aquifer. The team suspected that the person collecting the samples did not use a flow-through cell for sampling. DO and ORP are important data for any geochemical analysis of what may or may not be going on underground. Additional samples were collected and the results from the second round of samples were more reasonable.