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**ASR LL #016 Renewal Request – City of Lafayette**

**To:** Jennifer Woody, RG / Oregon Water Resources Department

**From:** Kenny Janssen, RG / GSI Water Solutions, Inc.

**CC:** Preston Polasek, City Administrator / City of Lafayette  
 Kevin Perkins, Assistant City Administrator / City of Lafayette  
 Konrad Dimmitt, Public Works Supervisor / City of Lafayette

**Date:** May 7, 2020

Ms. Woody:

On behalf of the City of Lafayette (City), GSI Water Solutions, Inc. (GSI) is submitting this letter to request a five-year renewal of ASR Limited License #016 (ASR LL #016) and to provide a statement of compliance with each condition of the limited license. ASR LL #016 was issued to the City on May 24, 2010 for developing ASR in the basalt aquifer in the City watershed, and renewed for an additional five-year term on June 29, 2015. The City is using ASR to recharge the basalt aquifer and maintain and/or improve the capacity of existing City wells located in the watershed. This letter requests only a renewal of ASR LL #016 – no major or minor modifications are proposed at this time.

Enclosed is a check in the amount of \$575.00 to cover the renewal processing and review fee.

**Request for Renewal**

The City requests that ASR LL #016 be renewed to allow for an additional five-year testing period, pursuant to OAR 690-350-0020 (5)(c) and Condition 1 of ASR LL #016. The City is requesting renewal to continue developing its ASR program and evaluate the storage capacity of the basalt aquifer system.

**Background**

The City began ASR pilot testing operations at its Well 10 facility during February 2012, approximately seven months after construction of the ASR facility and initial shakedown testing of the system were complete. The City has continued ASR testing operations since initiation in 2012 and piloting at Well 10 is currently in its ninth year. ASR cycle testing to date has shown positive results and operation of the City’s ASR facility has been essential to the City’s management of its water resources.

Results from all pilot test cycles completed to date (Cycles 1 through 8) are presented and discussed in the City’s annual ASR reports (GSI 2013, 2014a, 2015, 2016a, 2017, 2019, and 2020). The annual reports were prepared and submitted to OWRD after each year of piloting, as required by Condition 10 and 11 of ASR LL

#016, with the exception of Cycle 6<sup>1</sup>. Results from Cycle 6 (Water Year 2017) pilot testing were included in the annual report for Cycle 7 (Water Year 2018; GSI 2019). System operation summaries and monitoring results provided in the reports demonstrate general compliance with the provisions and conditions of ASR LL #016 and support this renewal request.

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The City submitted a request for a five-year time renewal for ASR LL#016 during April 2015. The OWRD concluded that the request to renew was consistent with the requirements of Oregon Administrative Rule (OAR) 690-350-0020(5)(c) and Condition 1 of ASR LL#016, and subsequently order the limited license valid through June 29, 2015.

## Compliance with the Conditions of Renewed ASR LL #016

Several conditions have been defined relative to ASR pilot testing as authorized by renewed ASR LL #016. These conditions have been issued to regulate the activities associated with ASR pilot testing, such as license renewal, notifications, compliance with relevant laws and statutory rules, monitoring, and reporting.

It is our opinion that the City has predominately complied with all conditions outlined in renewed ASR LL #016 and that ASR pilot testing activities have been conducted in accordance with the monitoring activities outlined in the approved ASR Pilot Test Work Plan (GSI 2016b)<sup>2</sup>. The City continues to invest in their ASR program and considers it as an essential water management tool to help meet summer peak demands.

To facilitate your review of the City's second renewal request, we have listed the conditions associated with the 2015 renewed ASR LL #016 below and have included a statement of compliance for each condition.

### Condition 1 – License Renewal

This City herein requests a five-year extension to ASR LL#016.

### Condition 2 – Notice Prior to Injection and Recovery

The City provided watermaster notice before initiating injection and recovery operations for Cycles 4 through 9, with the exception of Cycle 6 recovery (see Footnote 1 on page 1) and Cycle 9 recovery. Cycle 9 injection operations are currently underway. The City intends to notify the watermaster before initiating Cycle 9 recovery operations this spring.

### Condition 3 – Record of Use

The City has kept records of the injection and recovery rates, durations, and volumes during all testing years. These records have been reported in the ASR annual reports (as required by Condition 10) and in digital files presented in OWRD-specified formats (as required by Condition 11).

### Condition 4 – Modification/Revocation

The City has not received any correspondence from OWRD informing the City of any modifications or revocations to the limited license, nor has the City requested any modifications to the limited license. The City understands that any requests to modify the limited license will be done in writing and submitted to OWRD for review.

<sup>1</sup> During Cycle 6 (Water Year 2017) pilot testing, the City had been adjusting to frequent staff turnover in their Public Works Department and had experienced some extraordinary events (i.e., fire, burglary, and theft at their public works facilities), all of which resulted in (1) ongoing training of new staff on the operations and monitoring provisions of the City's ASR Limited License, (2) minor oversight of some monitoring requirements (e.g., missed sampling and water-level monitoring events and watermaster notification) and/or loss of these data, and (3) a delay in submitting ASR piloting results from Water Year 2017 (Cycle 6) testing.

<sup>2</sup> Accepted July 2016 and replaces the earlier test plan dated October 2009.

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**Condition 5 – Priority/Protection**

The City understands that the limited license does not receive a priority date like a water right.

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**Condition 6 – Compliance with Other Laws**

The City has complied with local, state, and federal permits and laws where applicable with regard to injecting acceptable water into the aquifer. The City's ASR well (Well 10) was registered with Oregon Department of Environmental Quality's (ODEQs) Underground Injection Control (UIC) program before any injection activities took place (UIC #11412, approved September 21, 2010). Compliance with the requirements of UIC #11412 have been met since pilot testing activities began in February 2012. No discharge to waterways takes place as part of the City's ASR pilot testing activities and no ODEQ National Pollution Discharge Elimination System (NPDES) permit is needed.

**Condition 7 – Water Quality Conditions and Limits**

The injection source water quality has met all state and federal drinking water standards and OAR 690-350-0010(6) water quality standards for ASR systems, with the occasional exceptions of corrosivity, total coliform, and aluminum. All known exceedances were communicated to OWRD immediately after receipt of laboratory analytical data and/or documented and discussed in the annual reports. Summaries are provided in the paragraphs below.

Analytical test results from baseline (pre-recharge) source water samples exhibit negative Langelier Saturation Index (LSI) values, which suggest somewhat corrosive conditions. LSI levels not in agreement with the non-corrosive secondary maximum contaminant level (SMCL) may contribute to color or objectionable taste in water.

Total coliform was detected in baseline source water samples collected at the start of Cycles 4-6 and 8. Recharge operations during these cycles began after follow-up bacteriological samples were absent for total coliform or according to the steps outlined in the *Total Coliform Persistence Evaluation* memorandum (GSI, 2014b). All source water and follow-up bacteriological samples were negative for *E. coli* and fecal coliform.

Aluminum was detected in a Cycle 6 (Water Year 2017) source water sample at a concentration of 0.07 milligrams per liter (mg/L), slightly above the lower limit of the SMCL range (0.05 – 0.20 mg/L). Aluminum concentrations above the SMCL may contribute to color in water. Aluminum concentrations in all other baseline and recharge samples pre- and post-Cycle 6 have been either below the SMCL range or below the method detection limit of 0.01 mg/L.

Agricultural contaminants have not been detected in any of the baseline source water recharge samples since routine screening began in Cycle 5 (Water Year 2016).

**Condition 8 – Water Quality Sampling**

The City has collected (and continues to collect) injection, storage, and recovery water quality samples as described in the approved ASR Pilot Test Work Plan (GSI 2016b), with occasional deviations. Water quality sampling deviations have been rare. Deviations from the test plan are identified below:

- Cycle 6 – Records containing the field parameter data for Cycle 6 were destroyed in a fire at one of the City's public works facilities and are not available.
- Cycle 6 – Analysis of bacteriological contaminants was not completed for one recovered water sample (0 percent recovered; see Footnote 1 on page 1).
- Cycle 6 – No storage water quality sample was collected and submitted for analysis despite a storage period of greater than 30 days, though a 0% recovered sample was collected at the start of Cycle 6 recovery pumping.

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- Cycle 8 – The water quality laboratory did not analyze for sulfentrazone and no results are available. Sulfentrazone is one of the 17 agricultural contaminants monitored in baseline source water pre-recharge.

### Condition 9 – Recovery

The City has recovered up to 95 percent of the stored volume each year, and has utilized its existing water right at Well 10 (authorized by T-8178) to pump groundwater after the ASR storage has been depleted, as needed. As required by this condition, water withdrawn from Well 10 is first debited against the quantity available by virtue of ASR storage before being considered a draft of natural groundwater. Annual reporting to OWRD has documented the amount of recovered water; both ASR water and native groundwater.

### Condition 10 – Annual Reporting

Annual ASR reports for Cycles 1 through 3 were submitted to OWRD for each year of pilot testing under the original term of ASR LL#016 (GSI 2013, 2014a, and 2015).

Under the first renewed term, annual reports documenting results of Cycles 4 through 8 were submitted to OWRD prior to February 15 of each reporting year (GSI 2016a, 2017, 2019, and 2020), with the exception of Cycle 6, which was included in the annual report for Cycle 7 (GSI 2019; see Footnote 1 on page 1).

### Condition 11 – Special Reporting Condition

Hydrogeologic and water-level data collected and annual ASR reports developed as part of pilot testing have been submitted to OWRD in digital and OWRD-specified formats. The digital data and electronic copies of the reports have been submitted on a compact disc included with each annual report and/or submitted directly via electronic mail. The project well data submitted provide reference to Well ID Number, Well Log ID Number and project Well Name when available. No changes in well construction have been made to Well 10.

### Condition 12 – Well Tag Condition for Licensee Wells

The City identified Wells 1, 2, and 8 as not having identification numbers or attached tags. Well Identification Numbers were assigned to each well by OWRD (see Table 1) and tags attached by the City during summer 2019.

**Table 1. OWRD Well Identification Numbers for City Wells 1, 2, and 8**

City Well No.	Well Report No.	Well Identification No.
Well 1	YAMH 4623	L-130714
Well 2	YAMH 4622	L-130715
Well 8	YAMH 154	L-130716

### Condition 13 – Protection for Existing Users

No injuries to existing groundwater users have been reported since the start of ASR activities.

### Condition 14 – Use of Recovered Water

Water recovered from storage has been put to beneficial municipal use as described in water right certificate 16623.

### Condition 15 – Additional Conditions on an Informal Basis

OWRD has not suggested additional conditions to the limited license since its issue date.

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**Condition 16 - Publicity**

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The City has kept the public informed of its ASR program and recovered water quality through its annual Consumer Confidence Report and through other presentations, publications, and community meetings (e.g., City Council and Water Resources Committee meetings).

**Condition 17 - Other Measures**

No adverse effects related to ASR operations or activities have been observed or reported since the start of ASR pilot testing operations in February 2012. The City continues to monitor for adverse effects resulting from ASR activities based on the approach and monitoring outlined in the approved ASR Pilot Test Work Plan (GSI 2016b).

**Condition 18 - Carryover Storage**

A running account of the amount of recovered ASR water has been submitted to OWRD each year as part of the ASR annual reporting. The City has recovered 95 percent of the volume injected during each year and has not carried any residual storage from year-to-year.

**Condition 19 - Water Level Monitoring**

Water-level monitoring has been conducted in accordance with the approved ASR Pilot Test Work Plan (GSI 2016b), with the exception of routine manual water-level measurements. The City has attempted to collect manual water-level measurements from Wells 1, 2, 8, and 10, but have been unsuccessful at times (particularly at Wells 1, 2, and 8) because of obstructions inside the well casings. All wells are equipped with pumping systems and none have dedicated drop tubes for clear access to the water level. The City will continue routine manual water-level monitoring, and will plan to install dedicated drop tubes in the wells for reliable access when opportunities arise.

**Closing**

Thank you for considering this request. Should you have any questions or require additional information during your review, please call me at 971-200-8530 or email me at [kjanssen@gsiws.com](mailto:kjanssen@gsiws.com).

Regards,



Kenny Janssen, RG  
Principal Hydrogeologist  
GSI Water Solutions, Inc.

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**References**

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- GSI, 2013, Aquifer Storage and Recovery Water Year 2012 (Cycle 1) Report, prepared on behalf of the City of Lafayette for the Oregon Water Resources Department, February 2013.
- GSI, 2014a, Aquifer Storage and Recovery Water Year 2013 (Cycle 2) Report, prepared on behalf of the City of Lafayette for the Oregon Water Resources Department, February 2014.
- GSI, 2014b, Total Coliforms Persistence Evaluation — City of Lafayette ASR Project. Prepared for Oregon Water Resources Department and Oregon Health Authority. April 1, 2014.
- GSI, 2015, Aquifer Storage and Recovery Water Year 2014 (Cycle 3) Report, prepared on behalf of the City of Lafayette for the Oregon Water Resources Department, February 2015.
- GSI, 2016a, Aquifer Storage and Recovery Water Year 2015 (Cycle 4) Report, prepared on behalf of the City of Lafayette for the Oregon Water Resources Department, February 2016.
- GSI, 2016b, City of Lafayette ASR Pilot Testing Work Plan Update, ASR LL #016, prepared by GSI Water Solutions, Inc., June 2016.
- GSI, 2017, Aquifer Storage and Recovery Water Year 2016 (Cycle 5) Report, prepared on behalf of the City of Lafayette for the Oregon Water Resources Department, February 2017.
- GSI, 2019, Aquifer Storage and Recovery Water Years 2017 and 2018 (Cycles 6 and 7) Report, prepared on behalf of the City of Lafayette for the Oregon Water Resources Department, February 2019.
- GSI, 2020, Aquifer Storage and Recovery Water Year 2019 (Cycle 8) Report, prepared on behalf of the City of Lafayette for the Oregon Water Resources Department, February 2020.