Community Outreach Report
Reclaimed Water Infiltration Study

Overview

LOTT conducted a rigorous, multi-year scientific study to answer community questions and concerns about residual chemicals that may remain in reclaimed water, and what happens to them when reclaimed water is infiltrated into the ground. The goal of the Reclaimed Water Infiltration Study was to provide local scientific data and community perspectives to help policymakers make informed decisions about future reclaimed water treatment and uses.

The key question the Reclaimed Water Infiltration Study was intended to answer:

> *What are the risks from infiltrating reclaimed water into groundwater because of chemicals that may remain in the water from products people use every day, and what can be done to reduce those risks?*

The Reclaimed Water Infiltration Study began with a scoping process that included active public engagement. A Community Advisory Group was formed in 2012, consisting of local residents with diverse backgrounds and interests. This group was heavily involved in the scoping process, and has provided feedback and insights throughout the study effort. Scoping was informed by public feedback gathered through stakeholder interviews, a phone survey, focus groups, and public workshops. This feedback provided the framework to structure the study.

Work plans for each element of the study were developed based on accepted scientific practices, with expertise of the study team. Each work plan was carefully reviewed and refined based on input from two groups: the Science Task Force made up of technical staff from LOTT's partner jurisdictions, the Squaxin Island Tribe, and the State Departments of Health and Ecology; and the Peer Review Panel, a group of national experts in health, toxicology, hydrogeology, and wastewater treatment. These groups, along with the Community Advisory Group, LOTT's Technical Sub-committee, and the LOTT Board of Directors, reviewed study progress and draft findings as each task of the study was completed.

The study entailed extensive field work and analysis, including identifying and testing for 134 residual chemicals in wastewater, reclaimed water, surface water, and groundwater. Toxicologists predicted possible risk for humans and wildlife, based on computer modeling and toxicology information for each chemical. Alternative treatment options that could reduce residual chemicals in reclaimed water were evaluated, comparing costs to risk reduction.

The study concluded with final technical reporting and community outreach in 2022. LOTT's efforts to inform the community about study milestones and results and to engage them in conversations about future uses of reclaimed water is outlined below.

Public Involvement and Communication Strategy

The goals of communication and engagement included:

- Inform: Raise the awareness and understanding of LOTT's Class A reclaimed water – its production, uses, value, and importance to the long range strategy for treating our communities' wastewater.
- Involve: Gather community input on decisions about future treatment and uses of reclaimed water.

One of the first steps involved identifying questions and concerns the community had regarding infiltration of reclaimed water to help guide the study design. Through meetings of the Community Advisory Group, public opinion surveys and interviews, meetings of the Science Task Force, and other interactions with the public, a list of more than 85 questions was developed. These questions generally fell into one of four key questions that formed the basis for the study framework.

Study Framework

Task 1: Water Quality Characterization
What is the current quality of our local waters: groundwater, surface waters, drinking water, wastewater, and reclaimed water?

Task 2: Treatment Effectiveness Evaluation
What happens to reclaimed water that is infiltrated to groundwater: where does it travel and how quickly, and how does the quality of water change over time?

Task 3: Risk Assessment
What are the relative risks of replenishing groundwater with reclaimed water?

Task 4:
What are the costs and benefits of various approaches for treating and using reclaimed water?

Given the 10-year duration of the study, it was challenging to keep the pubic consistently engaged. Instead, outreach efforts focused on study milestones, as tasks were completed and new information became available, and on ensuring transparency and open access to study information. This included creating an email distribution list for individuals interested in the study, making nearly all study-related meetings open to the public, posting all study-related documents to the web page, and sending updates to the distribution list with notice of study activities, upcoming meetings, and new publications. As the study progressed, information was also available as an exhibit in the WET Science Center, and routinely provided as part of public presentations and tours. As the study concluded in 2022, communication and public involvement efforts were ramped up to present results to key audiences and stakeholders. These efforts, detailed in Table 2 below included a Community Forum, an online Open House with survey, media releases, posting to social media and online calendars, paid advertising, presentations to jurisdictional partners and community groups, and a video production. All along the way, updates were provided periodically to the LOTT Board of Directors at meetings that are open to the public, video-recorded, and posted to LOTT's website.

Audiences and Stakeholders

- LOTT staff
- Elected officials
    - LOTT Board
    - Olympia, Lacey, Tumwater City Councils, and Thurston County Commission
- City/County partners
    - Public Works/utilities
    - County Environmental Health Department
- Water providers and support services (public and private)
- Water users (public and private, group and individual)
- Reclaimed water users
- State agencies
    - Dept. of Ecology
    - Dept. of Health
- Squaxin Island Tribe
- Neighbors within Hawks Prairie study area
- Media
    - Local print news, radio, on-line news, etc.
- Community groups
    - Olympia Utilities Advisory Committee
    - League of Women Voters
    - Neighborhood associations, including Coalition of Neighborhood Associations
    - Faith-based organizations
- Environmental groups
    - Eco Network
    - Audubon Society
    - Puget Sound Partnership
    - Oly Ecosystems
- Business groups
    - Thurston County Chamber of Commerce
- Civic groups
    - Rotary (Gateway, Downtown, South Sound, and more)
- Professional groups
- College professors and students
    - The Evergreen State College
    - St. Martin's University
    - South Puget Sound Community College
- Scientists

Communication Strategies and Public Involvement Activities

Communicating about the study was a complex endeavor, for many reasons. Challenges and considerations identified in the study's Public Communications Plan (2013), such as the multi-year and technical nature of the study and competing demands for the public's attention, were taken into account as outreach and involvement strategies were developed. One challenge that was certainly not anticipated was the COVID-19 pandemic that started in spring of 2020, and limited our in-person outreach opportunities through the end of the study in 2022. We adapted our strategy to conduct meetings remotely and use on-line tools during that timeframe.

Ultimately, a variety of communication tools were used to inform community members about study results and involve them in conversations about future uses of reclaimed water. The following lists outreach activities and a brief description.

Outreach Activities Completed	
Activity	**Description**
1. Email Update List	The email distribution list was created early in the process.
2. Visual Identity	Used consistent fact sheet format and established graphics as design elements in outreach materials.
3. Community Advisory Group (CAG)	The Community Advisory Group was used as a sounding board throughout the process.
4. Terminology	Used refined, consistent terminology in outreach materials.
5. Summary Statements	Developed and used summary statements for study tasks as they were completed.
6. Informational Materials Library	All study-related technical memos, reports, fact sheets, and other publications were posted on LOTT's website as they became available. Hard copies were available on request.
7. WET Science Center Program and Exhibits	Installed two exhibits in the WET Science Center – one about the study and a second about how to prevent chemicals from entering wastewater. Displayed study fact sheets.
8. Outreach Calendar	Built outreach activities into the project calendar.
9. Public Meetings	Public meetings #1 and #2 were done pre-scoping. Community Advisory Group, and joint Science Task Force / Peer Review Panel meetings were opened to the public in the implementation phase of the study. A virtual Community Forum and online Open House were conducted at the conclusion of the study.
10. Internal Board and Staff Updates	Provided updates as new information became available, prior to public release.
11. Partner City / Agency Communications	Invited partner/agency staff to public meetings. Included the study as a topic in annual LOTT updates to City Councils/County Commission and in annual partner presentation and Budd Inlet Treatment Plant tour.

12. Community Events and Group Presentations	Shared study information at numerous speaking engagements at community group meetings; see list in Table 3.
13. Newsletter Notices / Articles	Used partner/media outlets to promote engagement opportunities.
14. Mass Mailings	Included the study as a topic in LOTT's annual direct mail publication for ratepayers.
15. Media Outreach	Provided news releases, interviews, and articles to promote engagement and inform about study results.
16. Record Keeping and Reporting	Developed a comprehensive list of completed outreach activities, included in Table 3.
17. Source Control Education	Continued efforts for source control education through WET Center exhibits and community outreach.
18. Tours	Provided tour of Hawks Prairie Ponds to the Community Advisory Group and other interested individuals. The study was routinely discussed as part of public tours at the Budd Inlet Treatment Plant.
19. Youth Engagement and Student Education	Included outreach to science teachers and college students during scoping. Routinely included study information during tours/presentations to these groups.
20. Social Media	Promoted events and engagement opportunities through LOTT's Facebook page.
21. Public Opinion Research	Completed as part of study scoping.
22. Networking with Professional Organizations	Presented at professional meetings and conferences as appropriate.
23. Summary Statements	The Summary Statement list developed prior to scoping was updated and revised over time; see appendix B.
24. Fact Sheets	LOTT developed fact sheets for each phase of the study as completed. • Reclaimed Water Infiltration Study Overview • Task 1: Water Quality Characterization • Task 2: Treatment Effectiveness Evaluation • Task 3: Risk Assessment • Task 4: Cost/Benefit Analysis • Reclaimed Water Infiltration Study Summary
25. Presentations	Created presentation materials appropriate for different audiences. Presentations conveyed key information points using text and graphics.
26. Display Advertisements	Display advertisements publicized public involvement opportunities and links to online resources.

27. Posters	Posters with simple concepts and images displaying information about the study were developed for use at open house, professional and community meetings.
28. Comment Cards	Hard copy comment forms and an email commenting option were used throughout the study to gather public input.
29. Online Engagement	Developed a virtual Community Forum, online storymap and survey to provide study results in engaging, viewer-friendly format.
30. Video	Worked with professional video company to produce a 10-minute video to explain the study and results and a one-minute overview of the study.

Outreach and Involvement Activities Completed	
Updates to Technical Steering Committee	May 2, 2012 Sept. 12, 2012 September 4, 2013 October 2, 2013 November 6, 2013 December 4, 2013 January 8, 2014 October 7, 2014 January 15, 2015 February 10, 2015 April 7, 2015 September 9, 2015 February 10, 2016 August 10, 2016 May 2, 2017 July 12, 2017 February 6, 2018 April 4, 2019 October 3, 2019 November 7, 2019 May 7, 2020 September 2, 2021 November 4, 2021 April 7, 2022 May 5, 2022 August 2, 2022
Updates to Board of Directors	February 8, 2012 April 11, 2012 June 13, 2012 July 11, 2012 August 8, 2012

	September 12, 2012 October 29, 2012 November 14, 2012 January 9, 2013 February 13, 2013 March 13, 2013 April 10, 2013 May 8, 2013 June 12, 2013 July 10, 2013 August 14, 2013 September 11, 2013 October 9, 2013 November 13, 2013 December 11, 2013 January 8, 2014 February 12, 2014 March 12, 2014 April 9, 2014 May 14, 2014 July 9, 2014 August 13, 2014 August 12, 2015 April 13, 2016 October 12, 2016 March 8, 2017 July 12, 2017 February 14, 2018 May 8, 2019
Board member Tye Menser toured Martin Way Reclaimed water Plant and Hawks Prairie Ponds and Recharge Basins	August 9, 2019 November 8, 2019 September 8, 2021 November 10, 2021 May 11, 2022 August 10, 2022
Study Updates in Program Report 2013 Updates	April 10, 2013 May 8, 2013 June 12, 2013 July 10, 2013 August 14, 2013 September 11, 2013 October 9, 2013 November 13, 2013

	December 11, 2013
2014 Updates	January 8, 2014 February 12, 2014 March 12, 2014 April 9,2014 May 14, 2014 June 11, 2014 July 9, 2014 August 13, 2014 September 10, 2014 October 8, 2014 November 12, 2014 December 10, 2014
2015 Updates	January 14, 2015 February 11, 2015 March 11, 2015 April 8, 2015 May 13, 2015 June 10, 2015 July 8, 2015 August 12, 2015 September 9,2015 November 4, 2015 December 9, 2015
2016 Updates	January 13, 2016 February 10, 2016 March 9, 2016 April 13, 2016 May 11, 2016 June 8, 2016 July 13, 2016 August 10, 2016 September 14, 2016 October 12, 2016 November 9, 2016 December 14, 2016
2017 Updates	January 11, 2017 February 8, 2017 March 8, 2017 April 12, 2017 May 10, 2017 June 14, 2017 July 12, 2017 August 9, 2017 September 13, 2017 October 11, 2017

	November 8, 2017 December 13, 2017
2018 Updates	January 10, 2018 February 14, 2018 March 14, 2018 April 11, 2018 May 9, 2018 June 13, 2018 July 11, 2018 August 8, 2018 September 12, 2018 October 10, 2018 November 14, 2018 December 12, 2018
2019 Updates	January 9, 2019 February 13, 2019 March 13, 2019 April 10, 2019 May 8, 2019 June 12, 2019 July 10, 2019 August 14, 2019 September 11, 2019 October 9, 2019 November 13,2019 December 11, 2019
2020 Updates	January 8, 2020 February 12, 2020 March 11, 2020 April 8, 2020 May 13, 2020 June 10, 2020 July 8, 2020 August 12, 2020 September 9, 2020
2021 Updates	January 13, 2021 February 10, 2021 June 9, 2021 July 14, 2021 September 8, 2021 October 13, 2021 November 10, 2021 December 8, 2021

2022 Updates	January 12, 2022 February 9, 2022 March 9, 2022 April 13, 2022 May 11, 2022 June 8, 2022 August 10, 2022 September 14, 2022 November 9, 2022
Email Updates	May 2015 May 2016 October 2017 January 2018 January 2019 November 2019 June 2020 May 2021 June 2021 October 2021 March 18, 2022 March 28, 2022 July 2022 October 2022
LOTT Publications State of the Utility Report – 2012 State of the Utility Report – 2013 State of the Utility Report – 2014 State of the Utility Report – 2015 State of the Utility Report – 2016 State of the Utility Report – 2017 Annual Report for 2017 Annual Report for 2018 Annual Report for 2019 Annual Report for 2020 Annual Report for 2021 Fact Sheets • Reclaimed Water Infiltration Study Overview • Task 1: Water Quality Characterization • Task 2: Treatment Effectiveness Evaluation • Task 3: Risk Assessment • Task 4: Cost/Benefit Analysis • Reclaimed Water Infiltration Study Summary	 April, 13, 2012 April 26, 2013 May 22, 2014 July 9, 2015 June 28, 2016 May 26, 2017 February 2, 2018 April, 2, 2019 April 13, 2020 April 20, 2021 March 5, 2022 April 2013 September 2017 May 2022 June 2022 July 2022 July 2022

Industry Peer Publications World Water: Water Reuse & Desalination *Residual Chemicals in Reclaimed Water and the Environment*	Spring 2017
Pacific Northwest Clean Water Association newsletter *Residual Chemicals in Reclaimed Water and the Environment*	Summer/Fall 2018
Groundwater; National Groundwater Association *Sulfur hexafluoride and Potassium Bromide as Groundwater Tracers for Managed Aquifer Recharge* (Sarah Gerenday, et al)	2020; Vol 58, issue 5 March 2, 2021
WateReuse Pacific Northwest Quarterly newsletter *LOTT and King County are addressing community questions about reuse with independent research*	4th Quarter, 2021
NACWA's Winter edition of the Clean Water Advocate Magazine *Scientific Study Answers Community Questions About Chemicals in Reclaimed Water*	Submitted December 5, 2022
Media Outreach Feature story about LOTT's Groundwater Recharge Scientific Study appeared in the Business Examiner	April 30, 2012
Olympian story about search for Community Advisory Group applicants for the study	August 24, 2012
LOTT's search for Community Advisory Group members was posted in the Business Examiner	August. 22, 2012
A story was posted on Janineslittlehollywood.blogspot.com about formation of the Community Advisory Committee, including interviews with some of the members	November 15, 2012
The first meeting of the new Community Advisory Group was the subject of a small story in the Olympian	December 8, 2012
Article about the study appeared in South Sound Green Pages	Spring issue
An extensive story about the study's Community Advisory Group was posted on the blog janineslittlehollywood.blogspot.com	June 15, 2012
A 2-page article about the study appeared in the South Sound Green	Summer issue
Thurston County cable television, Art Starry and Karla Fowler were interviewed about the study	September 12, 2013
Radio interview including Karla Fowler and Ben McConkey talking about the study	Aired October 20, 2013
TCTV Thurston County Connections program with Commissioner Romero highlighted the study.	Aired October through mid-November, 2013

A feature story about the RWIS appeared on ThurstonTalk.com	December 3, 2013
Executive Director was interviewed on KGY Radio. Audio recording posted on KGY's website.	Aired on live January 7, 2014
KGY Radio interviewed LOTT and consulting staff. An audio recording was available on the KGY website.	July 22, 2014
The Journal of Olympia, Lacey & Tumwater (JOLT) article summarized LOTT presentation about study findings to Olympia City Council	July 20, 2022
JOLT article summarized LOTT presentation about study findings to the Lacey City Council	July 29, 2022
JOLT article summarized study findings and invited the public to the online Open House	August 8, 2022
Olympian article, in print and online provided a summary of the study and invited the public to participate in the Community Forum	August 9, 2022
Radio interview with Ken Balsley, KGY	November 9, 2022
Reclaimed Water Infiltration Study Web Page Created and updated. Includes all study materials and opportunity to comment and sign up for email updates.	January 10, 2013 Continually updated
Community Advisory Group The Community Advisory Group was convened in 2012 to work closely with the LOTT Board of Directors and the study team, helping identify community perspectives and questions the study should address, as well as recommending effective ways to engage the public in the study. The Advisory Group continued work for the duration of the study, serving as a sounding board representing diverse community perspectives. All Advisory Group meeting materials are available on the study webpage.	**Task 1** Meeting 1: December 11, 2012 Meeting 2: January 7, 2013 Meeting 3: February 6, 2013 Meeting 4: April 9, 2013 Meeting 5: June 5, 2013 **Task 2** Meeting 1: July 30, 2013 Meeting 2: October 8, 2013 Meeting 3: December 4, 2013 Meeting 4: April 2, 2014 **Task 3/4** Meeting 1: July 29, 2014 Meeting 2: June 9, 2015 Meeting 3: October 11, 2016 Meeting 4: November 6, 2017 Meeting 5: April 17, 2019 Meeting 6: October 3, 2019 Meeting 7: June 14, 2021 Meeting 8: March 31, 2022

	Meeting 9: July 11, 2022 Meeting 10: October 20, 2022
Public Opinion Research Initial public opinion research was conducted in early 2013 to gain an understanding of existing public awareness, knowledge, interest, and perceptions regarding water, wastewater, reclaimed water, groundwater recharge through infiltration, and related issues. The research involved extensive data collection via 53 one-on-one stakeholder interviews and a random sample telephone survey of 400 people. Public opinion results available on the study webpage.	March, April 2013

Public Workshop #1 - Scoping
• A few brief presentations to provide study background
• Presentation from Jeff Hansen with HDR, lead consultant on the study, about the draft study framework
• Information stations: Why Study/Study Structure, Study Framework, Public Engagement, Reclaimed Water, Infiltration, Residual Chemicals
• Small groups discussion – discussion questions:
  o Do you have any other questions or concerns to add to the current list of community questions?
  o Does the draft framework address your questions and concerns?
  o Are there specific activities you like to see included in the study?
• Opportunities for input, in small groups, at information stations, on a comment card, or on LOTT's website
	October 23, 2013

Public Workshop #2 – Scoping
• Open House with information stations
• Presentations
  • Introduction to the study
  • Overview of draft study design
• Discussion Sessions
  o Does the draft study design/scope address your questions and concerns about infiltrating reclaimed water to groundwater?
  o Are there specific activities you would like to see included in the study that you do not see included in the draft scope?
  o What are the most effective ways to update the community about the study as it progresses?
• Open House
	December 9, 2013

Videos Presentation videos from Workshop 1 • Infiltration of Reclaimed Water	Published December 11, 2013

• Key Questions • Relation of the study Components Professional videos to wrap up the study • Reclaimed Water Infiltration Study (10 minutes) • Reclaimed Water Infiltration Study Overview (1 minute)	 Posted November 14, 2022
Governmental agencies, tribes, environmental groups, educators, water and wastewater utilities Pharmaceuticals and Personal Care Products / Endocrine Disrupting Compounds Science Workshop Science Café Thurston County Planning Commission Thurston County Chamber B &E Committee State of the Utility presentations • Tumwater City Council • Olympia City Council • Lacey City Council • Thurston County Board of Commissioners South Sound Science Symposium Environmental Education Technical Advisory Committee Toxics in Personal Care Products Workshop State of the Utility presentations • Tumwater City Council • Olympia City Council • Lacey City Council • Board of County Commissioners State of the Utility presentations • Tumwater City Council • Olympia City Council • Lacey City Council Pacific Northwest Clean Water Association Communication Camp Pacific Northwest Section- American Water Works Association Meeting with Squaxin Island Tribe's Natural Resources staff State Geologist Licensing Board	 February 8, 2012 February 14, 2012 February 15, 2012 February 17, 2012 April 17, 2012 May 3, 2012 May 21, 2012 October 30, 2012 May 8, 2013 May 29, 2013 October 1, 2013 October 15, 2013 October 15, 2013 October 23, 2013 June 17, 2014 September 23, 2014 September 18, 2014 April 11, 2014 May 9, 2014 October 30, 2014 December 2, 2014

Department of Natural Resources Aquatic Division Sierra Club	December 17, 2014 June 2, 2015
State of the Utility presentations • Olympia City Council • Lacey City Council • Tumwater City Council • Board of County Commissioners	 August 11, 2015 August 20, 2015 September 22, 2015 October 29, 2015
State of the Utility presentations • Olympia City Council • Board of County Commissioners • Tumwater City Council • Lacey City Council	 October 18, 2016 October 19, 2016 December 13, 2016 January 5, 2017
Thurston Regional Planning Council	November 4, 2016 November 17, 2016 October 10 and 12, 2017
Deschutes Advisory Group	April 23, 2018
USDA Forest Service's Natural Resource Conservation Service and Rural Development offices	June 28, 2018
Washington State Environmental Health Association	September 11 and 13, 2018
Dept. of Ecology Southwest Regional Director and administrative staff	August 6, 2019
Partner jurisdiction staff presentations and tours	May 8, 2018 September 26, 2019 November 18, 2021
Joint Base Lewis-McChord, Environmental Division Stormwater Program	August 6, 2019
Annual report presentations • Olympia City Council • Thurston County Commission • Tumwater City Council • Lacey City Council	 May 18, 2021 April 15, 2021 June 1, 2021 July 18, 2021
Nisqually River Council	July 15, 2022
Squaxin Island Tribe staff	July 20, 2022
RWIS, Overview and Next Steps • Tumwater City Council	July 12, 2022

• Olympia City Council • Lacey City Council • Thurston County Commission	July 19, 2022 July 28, 2022 August 4, 2022
LOTT staff	September 8, 2022
King County Wastewater Treatment Division	November 3, 2022
Thurston Regional Planning Council	October 7, 2022
Dept. of Ecology, Water Program	October 19, 2022
South Sound Science Symposium	October 20, 2022
EcoNet	November 9, 2022
Presentations to Water Professional Groups	
Pacific Northwest Clean Water Association	September 17, 2013
28th Annual WateReuse Symposium, Denver CO Advisory Groups, Surveys, and Other Adventures in Community Dialogue: Groundwater Recharge and Compounds of Potential Concern; Lisa Dennis-Perez, Karla Fowler, Ben McConkey, Patricia Tennyson, Jeff Hansen	September 18, 2013
National Water Research Institute / National Science Foundation workshop	February 25, 2014
American WaterWorks Association Conference, Pacific Northwest Section Adventures in Studying the Fate of Residual Chemicals in Reclaimed Water Infiltrated to Groundwater; Ben McConkey, Jeff Hansen	May 9, 2014
Idaho Water Reuse Conference	May 22, 2014
WateReuse Pacific Northwest Annual Meeting Cleaning and Restoring Water for our Communities: LOTT's Reclaimed Water Program; Karla Fowler	November 19, 2014
Olympic Subsection of Pacific Northwest Clean Water Association Adventures in Studying the Fate of Residual Chemicals in Reclaimed Water Infiltrated to Groundwater: LOTT Case Study; Ben McConkey, Jeff Hansen	May 7, 2015
Idaho Water Reuse Conference	May 28, 2015

Pacific Northwest Clean Water Association, South Sound section Microconstituents; Treatment Effectiveness and Human/ Ecological Health Risks; Ben McConkey, Jeff Hansen	December 17, 2015
Texas Water Conference	April 20, 2016
31st Annual WateReuse Symposium, Tampa, FL Residual Chemicals in Reclaimed Water and the Environment A Pacific Northwest Perspective; Wendy Steffensen, Jeff Hansen	September 11, 2016
Washington State Environmental Health Association, Olympia LOTT's Reclaimed Water Infiltration Study; Wendy Steffensen	May 8, 2018
Kitsap County Recycled Water Workshop	June 26, 2018
Pacific Northwest Clean Water Association - Olympic Section Residual Chemicals in Reclaimed Water and the Environment; Jeff Hansen, HDR	March 19, 2019
Joint Pacific Northwest Clean Water Association and WateReuse Symposium (Joint presentation with King County; Using Research to Inform Community Decisions about Reclaimed Water Use)	September 9, 2019
National Groundwater Association; Poster Sulfur hexafluoride and potassium bromide as groundwater tracers for managed aquifer recharge; Sarah Gerenday, et al	December 2019
PNCWA and WateReuse Conference A joint presentation with King County: Using research to inform community decisions about reclaimed water use, Boise, ID/ Virtual; Wendy Steffensen, Jeff Hansen , Jacque Klug	September 14, 2021
WateReuse Annual Conference, San Antonio, TX Environmental Chemicals and impacts in Pacific Northwest Reclaimed Water Infiltration; Jeff Hansen, HDR	March 6-9 2022
11th International Symposium on Managed Aquifer Recharge, Long Beach, CA RWIS: Effectiveness of residual chemical removal through sediment aquifer treatment in a glacial aquifer system; Shane McDonald; HDR RWIS: Determining attenuation factors and exposure point concentrations for chemicals of emerging concern; Brittany Duarte, HDR	April 11-15, 2022
Society for Environmental Toxicology and Chemistry, Durham, NC	May 2022

Ecological Risk Assessment for Chemicals of Emerging Concern in reclaimed water infiltrated into groundwater; Kate McPeek, May 2022	
Coalition for Clean Water RWIS Overview and Findings, Recommendations, Next Steps	June 1, 2022
Pacific Northwest Clean Water Association Conference LOTT Reclaimed Water Infiltration Study – Start to Finish	September 13, 2022
American Water Resources Association Preparing for the Future: Water Reuse in the PNW	November 9, 2022
Groundwater Week, Las Vegas, NV National Groundwater Association Using a groundwater model and empirically derived attenuation factors to estimate exposure point concentration: Shane McDonald HDR	December 6, 2022
Public Presentations and Outreach	
Olympia Rotary Club	April 1, 2013
Leadership Thurston County Environment Day	May 15, 2013
West Olympia Rotary Club	November 19, 2013
Leadership Thurston County Environment Day	April 16, 2014
Lacey Rotary Club	August 28, 2014
WET Science Center pubic presentation	December 27, 2014
First United Methodist Church Breakfast Program	March 2, 2015
Letters to Hawks Prairie area homeowners with private wells	March, 2015
Tumwater Rotary Club	March 25, 2015
Lacey Gateway Rotary	April 1, 2015
Capital Centennial Rotary Club	April 20, 2015
Leadership Thurston County Environment Day	May 20, 2015
LOTT Open House	October 26, 2015
Leadership Thurston County Environment Day	May 18, 2016
SPSCC Lacey Campus	March 1, 2017
Capital Centennial Rotary Club	March 13, 2017
Panorama/Gateway Rotary	April 17, 2017
Unity Church of Olympia	May 5, 2017
The Evergreen State College students	May 5 and 6, 2017

Leadership Thurston County Environment Day	May 11, 2017
Gateway Rotary	June 21, 2017
Panorama Retirement Community	February 21, 2018
Salish Middle School	March 6-7, 2014
Puget Sound Estuarium Discovery Speaker Series	March 15, 2018
Leadership Thurston County Environment Day	May 3, 2018
Wright Runstad & Company sustainability team	December 11, 2018
Ratepayer direct mail	March, 2019
South Puget Sound Rotary	April 19, 2019
Daughters of Pioneers	May 9, 2019
Panorama Retirement Community	July 2, 2019
Leadership Thurston County Environment Day	May 2, 2019
Leadership Thurston County Environment Day	May 7, 2020
Leadership Thurston County Environment Day	May 6, 2021
Leadership Thurston County Environment Day	May 5, 2022
Real Estate Group - MLSA Thurston County	October 18, 2022
WET Center Exhibits Reclaimed Water Infiltration Study Source Control: What You Can Do to Keep Chemicals Out of the Water	Installed December 2015
Community Forum – Study Results The Reclaimed Water Study team hosted an online Community Forum that covered: • Background/context • Study tasks and results • Where do we go next? • Questions and answers	August 20, 2022
Online Open House The Online Open House consisted of a StoryMap that outlined the study in a visual format with links to more detail. After the Forum, video segments of the presentations were added to the Online Open House.	August 15, 2022
Feedback Survey The Online Open House included a link to a feedback survey that was available for a month. The open house continued after the survey closed.	August 15 – September 15, 2022

Conclusion / Next Steps

The involvement and outreach activities described in this report spanned ten years and utilized a variety of communication channels to reach numerous stakeholder groups. Given the long duration of the study, an effective strategy was to conduct outreach periodically, providing updates as milestones were reached and new information became available.

During the final two years of the study, the Covid-19 pandemic changed how participation could occur. The project team employed new virtual tools to continue connecting with key audiences. This included virtual public meetings, a web-based storymap with online survey, and a video production.

Overall, outreach and engagement efforts were successful at providing transparency and open access to study information. Community engagement was high during the scoping phase of the study, with steady yet modest participation during study implementation and wrap up. The Community Advisory Committee was active throughout the process, serving as public watchdogs and offering invaluable review and input. While the number of participants was modest for the final community forum, those attending were highly engaged, well informed, and provided valuable feedback and perspectives.

After the study was completed, the focus of outreach shifted to the master planning process, including discussions about how study results and community feedback inform future plans for treatment and uses of reclaimed water. The master planning process included public presentations, a second Community Forum, and an environmental evaluation with associated public comment.

Appendix A: Terminology

The use of consistent and easily-understood terminology makes communications clear and effective. The following standard set of terms has been established for use in association with the Study and public involvement efforts.

"Residual Chemicals"

The Study refers to "medicines and household and personal care products" or "residual chemicals". Initially, the Study team chose the phrase "compounds of potential concern" to refer to medicines and chemicals from personal care and household products that may be present in water, wastewater, reclaimed water and the environment. This phrase was selected out of a long list of phrases used in literature and the industry. However, it became clear through public communications that the phrase may raise more questions than it answers. It does not provide any indication of where these compounds come from, only that these mystery compounds should be of concern.

Through focus group research during Study scoping, various terms and phrases were tested. Participants indicated preference for the term "residual chemicals" over "compounds of potential concern" and other terminology. They also suggested indicating the origin of residual chemicals.

Phrases such as "medicines and household and personal care products" are objective and provide the listener with a better sense of the origin of the compounds in question. Use of similar phrases is fairly common in literature and the industry. Study materials use various derivatives of the phrases "residual chemicals from personal care and household products" or "residual chemicals from medicines, shampoos, cleaners, and other products". These tell a story about which compounds are being discussed, are inclusive of the variety of compounds in question, and meet the plain speak test. The phrases are long, but once introduced, can be shortened to "residual chemicals".

"Risk Management" or "Safety Assurance"

The Study uses the term "risk assessment". The research report "*Talking About Water*" (WateReuse Research Foundation, 2011) recommends considering use of "safety assurance" rather than "risk management." However, both of these terms could be considered jargon, and may be translated into simpler statements related to safety or risk.

"Groundwater Infiltration" or "Groundwater Recharge"

The preferred term is "groundwater infiltration". Feedback suggests that the term "recharge" can be misinterpreted to mean that direct injection is the method used to introduce reclaimed water into groundwater, whereas "infiltration" makes it clear that the method is not direct injection. Focus groups also preferred the phrase "groundwater replenishment".

"Reclaimed Water" or "Recycled Water"

LOTT has traditionally defaulted to the state-adopted term "reclaimed water" to refer to their tertiary-treated water. The preferred term is "Class A Reclaimed Water".

The use of “reclaimed water” was further supported by results of scoping focus groups. They felt “recycled water” was too generic a term, and lacked any indication that treatment has been done to make the water appropriate for reuse.

Appendix B: Summary Statements

Throughout the study, LOTT provided information not only related to the Study itself, but also related to a number of specific topics raised by stakeholders. The following lists summary statements helpful in framing the technical and complex Study information in a consistent and understandable way.

What is Reclaimed Water?

- Reclaimed water is water that has been used, cleaned, and disinfected, so it can be reused safely. LOTT's reclaimed water facilities mimic nature's processes, filtering and cleaning used water to produce Class A Reclaimed Water.
- About 10% of the wastewater treated by LOTT receives extra treatment to become Class A Reclaimed Water. At Budd Inlet Treatment Plant, we use a sand filtering system. At the Martin Way Reclaimed Water Plant, we use a membrane bioreactor filtration system. Each plant can produce about 1.5 MGD.
- LOTT produces Class A Reclaimed Water, high quality reclaimed water as designated by the state Departments of Ecology and Health. Class A Reclaimed Water is safe for contact and can be re-used for any purpose except drinking. LOTT routinely monitors and tests the water to ensure it meets the state's high quality standards.
- LOTT's Class A Reclaimed water is used in a variety of ways in our communities, including irrigation of golf courses, parks, and landscaping, commercial and industrial processes, decorative fountains and ponds, stream flow and wetland enhancement, and groundwater replenishment at LOTT's Hawks Prairie Ponds and Recharge Basins and at the Woodland Creek Recharge Facility in Lacey.
- Producing reclaimed water for reuse or groundwater replenishment is a key part of our communities' long-range plan for managing wastewater. Most of LOTT's treated water is discharged into Budd Inlet, but as demand for wastewater treatment grows, LOTT will not be permitted to discharge more to Budd Inlet. In fact, LOTT may need to reduce discharge to Budd Inlet in the future. Creating reclaimed water, a valuable resource, provides an alternative to discharging water to the Inlet.

What went into the decision to choose groundwater infiltration using reclaimed water? *Public values defined as the result of public opinion research at the beginning of LOTT's long range planning included a direction to "treasure LOTT's treated wastewater as a valuable, long-term resource to be cleaned and restored, reused, then ultimately returned to the environment."*

- There are limits to how much treated wastewater can be discharged to Budd Inlet; the region needs additional outlets for the treated water.
- Treating to Class A Reclaimed Water standards allows for beneficial uses in the community, as well as groundwater infiltration or other environmental enhancements.
- Class A Reclaimed Water can be used for non-drinking uses such as water features, toilet flushing, or irrigation, reducing the demand on groundwater supplies.
- Strict state water quality standards apply to the production, distribution, and uses of reclaimed water, including protection of groundwater quality.

- The three local cities have been facing water supply challenges, especially during the summer seasons. Reclaimed water can help them stretch water supplies and/or obtain mitigation credit for additional water rights.

Reclaimed water and groundwater infiltration: *Reclaiming water is increasingly accepted and widely used for providing a high-quality, locally produced, and sustainable water source.*

- Groundwater infiltration using reclaimed water is practiced throughout the country and several communities in Washington.
- Reclaimed water is used for a variety of purposes across the country that range from restoring wetlands, improving streamflow, recharging aquifers, irrigating landscape and agricultural crops, and augmenting drinking water sources.
- Science and technology research continue to provide additional information about the safe use of reclaimed water for infiltration and other purposes.

Residual Chemicals

- Wastewater treatment processes have traditionally been designed to remove nutrients and pathogens. Advances in water testing now allow us to identify other pollutants and chemicals in water even at very low levels. These residual chemicals come from the many household and personal care products we all use, such as medicines, soaps, shampoos, cleaning products, lawn care products, and even some foods. When these chemicals go down the drain, they enter our wastewater systems. Because wastewater treatment was not designed to remove all of these chemicals, some remain, eventually reaching Budd Inlet or local groundwater.
- Most of these chemicals in water are not currently regulated and questions have arisen about potential risks to human health, wildlife, and the environment. The science of what risks these chemicals may pose has not kept pace with the science of being able to detect them.
- We can all help reduce the amount of residual chemicals that find their way into water: Be a smart shopper – read labels and choose the least toxic products. Properly dispose of hazardous products at HazoHouse, located at the Thurston County Waste and Recovery Center. Never flush medicine down the toilet or sink. Instead, drop off unused medicines at secure drop boxes, like the ones located at the Thurston County Courthouse, Lacey Police Department, and the Tumwater Police Department.

Reclaimed Water Infiltration Study – General

- The Reclaimed Water Infiltration Study was initiated in response to community questions and concerns about residual chemicals that may remain in water after treatment. While current scientific research indicates it is safe to infiltrate reclaimed water, local data was needed to answer concerns and make informed decisions.
- The Reclaimed Water Infiltration Study is being conducted by LOTT with help from nationally-recognized and local experts in water, wastewater, toxicology, hydrology, engineering, and related fields.
- Public involvement is a fundamental part of the entire Study process.
- The best available science from other studies will be reviewed, as will case studies of related facilities in other communities.

- It is recognized that treatment processes remove some, but not all residual chemicals. We need more information about what level of treatment is right for groundwater infiltration in the north Thurston County area.
- The Study will take years to complete, and answers will not come quickly. LOTT is committed to engaging interested groups and individuals and sharing Study findings.
- The Reclaimed Water Infiltration Study focuses on collecting data about the quality of our local groundwater, surface water, wastewater, and reclaimed water. It looks at the presence of residual chemicals, and analyzes potential risks to human health and the environment.
- The Study will provide local scientific data and community perspectives to help policymakers make informed decisions about future reclaimed water treatment and uses.

Study scoping: *Community input is essential to ensure the Study answers the right questions.*

- Study scoping considered topics including identification of what's in the environment now; what sites should be included in field work; which pharmaceuticals, hormones, and other compounds should be included in lab testing; how water moves through the local groundwater; and more.
- The Community Advisory Group, which represents a variety of community interests, was involved in review of the Study scope of work and every phase of the study.
- Interested individuals and groups can learn more about the Study and provide input in a variety of ways, including signing up for email updates, reading information on the Study web page, and/or attending a public meeting.

LOTT's role in the scientific study: *LOTT is the right agency to lead a complex and comprehensive study focused on wastewater and reclaimed water issues affecting the region.*

- LOTT's mission is to preserve and protect public health and the environment by cleaning and restoring water resources for our communities.
- LOTT understands and shares the public's desire to protect our groundwater, consistent with its mission.
- LOTT is the agency responsible for wastewater management throughout the urban growth areas of Lacey, Olympia, and Tumwater.
- LOTT's team of 90 dedicated and skilled employees have an excellent track record for providing high quality, innovative wastewater treatment and reclaimed water production for the region.
- Like their neighbors, the men and women who work at LOTT want a healthy environment and safe water supply for families.

Study focus on pharmaceuticals and personal care products: *Increasingly sensitive laboratory processes that allow measurement of parts per trillion or even smaller amounts of a substance in water have resulted in awareness that everyday compounds may be present in wastewater effluent, reclaimed water and drinking water at very low levels. The Study will provide more information about local conditions and analyze implications to local water resource management efforts.*

- All of us use household and personal care products and many of these are flushed down the drain or toilet and into wastewater.

- Residual chemicals from personal care, pharmaceutical, and household products can be found throughout the environment. This is not new - these chemicals have been entering the environment for as long as people have been using the many medicines and products available on the market.
- Advances in science have allowed pharmaceuticals and other residual chemicals to be measured at smaller and smaller concentrations. While science can measure minute traces of various compounds in water, we do not yet know the significance of their presence at such levels on human or environmental health.
- Wastewater is only one avenue for these compounds to move from people to the environment. Septic systems and stormwater runoff are other pathways. Wastewater can be treated and cleaned to different levels so that it is safe for a variety of purposes.

Costs: *This Study is an investment in the future of our region.*

- LOTT is tasked with managing wastewater for the region, and investing in appropriate planning to ensure high quality, safe and affordable wastewater treatment and disposition that protects public health and the environment.
- The Study is a critical investment to answer emerging questions and to ensure current, local information is available for making appropriate decisions for managing wastewater and reclaimed water in the future.

Task 1: Water Quality Characterization

- Findings from Task 1, Water Quality Characterization, show that residual chemicals are present in local wastewater, reclaimed water, surface water, and groundwater, usually at very low levels (parts per billion and parts per trillion). They are found in our environment in areas where reclaimed water is used for infiltration and in areas where it is not, indicating there are multiple sources of these chemicals.

- Groundwater, surface water, wastewater, and reclaimed water were tested for 134 residual chemicals. These chemicals are not regulated in water, and wastewater treatment processes are not designed specifically to remove them. LOTT also tested for nutrients, bacteria, metals, and other chemicals that are regulated.

- The residual chemicals detected most frequently in reclaimed water were of four types:
  - Artificial sweeteners (sucralose and acesulfame-K)
  - Flame retardants (including TCPP and TCEP)
  - Anti-seizure medications (such as carbamazepine)
  - Pesticides (including herbicide cyanazine and the mosquito repellent DEET)

- LOTT's treatment processes were found to be effective at removing many residual chemicals in wastewater and reclaimed water, but some chemicals remain after treatment. Residual chemicals decrease in number and concentration as water advances through the treatment process from untreated wastewater, to advanced secondary water, to Class A Reclaimed Water.

- LOTT's treatment processes were highly effective at removing some common chemicals such as acetaminophen, ibuprofen, caffeine, and triclosa (antibacterial agent added to soaps) to levels too low to be detected in reclaimed water.
- For the 14 chemicals consistently found in reclaimed water, some were removed by 85% or more through LOTT's treatment process, but others showed little to no removal.

- Findings are consistent with similar studies conducted in other places in the country and the world.

Task 2: Treatment Effectiveness Evaluation

- Reclaimed water infiltrated at the Hawks Prairie site flows south and west in the shallow aquifer and some flows into the deeper aquifer, which flows to the east.

- Most residual chemicals decrease with time and distance as reclaimed water moves away from the site. This decrease can be primarily attributed to three mechanisms:
  - Biodegradation occurs when microorganisms in the soil help break down some residual chemicals – this is also referred to as soil aquifer treatment. Evidence of biodegradation was indicated by a decrease in dissolved organic carbon.
  - Sorption is where residual chemicals stick to soil particles.
  - Dispersion is where the reclaimed water and residual chemicals mix with groundwater.

- In Task 2, 113 residual chemicals were tested; 24 of these were consistently detected in reclaimed water. Residual chemicals attenuate or decrease at different rates and to different concentrations in groundwater.
  - Ten of these residual chemicals showed good attenuation, in which they could not be detected after one month of travel time.
  - Four of these showed moderate attenuation.
  - Ten of these exhibited poor attenuation, in which they were routinely detected after one month of travel time. These included 5 PFAS chemicals, 2 artificial sweeteners, 2 pharmaceuticals, and 1,4 –dioxane.

- Some residual chemicals remain at low concentrations in water that may be used by people or wildlife, as indicated by a groundwater model designed to predict concentrations 100 years into the future.

Task 3: Risk Assessment

- Risks to human health from using reclaimed water to replenish groundwater are quite low. Out of 134 chemicals analyzed, 132 were found to be below levels of concern. Two were slightly above the minimum level of concern, though the risk level for both was very low.
  - N-Nitrosodimethylamine (NDMA) is a potential cancer risk posing an excess cancer risk to 2.9 persons in one million, where the threshold risk is set at 1 one million. NDMA is found in cured

meats, beer, and cheese. It can also be formed by some disinfection processes and internally in the gut.
    - Perfluoropentanoic acid (PFPeA), one of the PFAS chemicals, is a non-cancer risk with a Hazard Index of 1.3, where threshold risk is set at 1. PFPeA is a breakdown product of some common PFAS chemicals.
    - Both calculated risk levels are above EPA's minimum risk level but within the range of risk considered acceptable by EPA.

- No risks to ecological health were identified. None of the residual chemicals were predicted to pose a risk to wildlife in watersheds influenced by reclaimed water.

- Risk assessments followed a step-wise process and accepted methods and used conservative assumptions to ensure that results were defensible and health-protective.

- The Peer Review Panel, a group of national experts who have reviewed each step of the study, indicated the assessments were well designed and protective of human and ecological health.

Task 4: Cost/Benefit Analysis

- Advanced treatment technologies are capable of further reducing levels of residual chemicals in reclaimed water.
    - Granular Activated Carbon technology would reduce PFAS and NDMA precursors to levels below the risk thresholds. The cost would be $19.2 million over the course of 20 years for 5 million gallons per day.
    - The treatment train of ozone, biological activated carbon, and granular activated carbon would reduce PFAS, NDMA, and NDMA precursors to levels below the risk thresholds. The cost would be $48.3 million over the course of 20 years for 5 million gallons per day.
    - The treatment train of reverse osmosis, ultraviolet light, and hydrogen peroxide would reduce PFAS, NDMA, and NDMA precursors to levels below the risk thresholds, and to a greater extent than the ozone train. The cost would be $218.7 million over the course of 20 years for 5 million gallons per day.

- Costs of these technologies are substantial compared to their risk reduction benefit.

- Study findings indicate the current level of treatment results in a risk level that is very low.

- Other actions, such as targeted monitoring and source control, are appropriate next steps to further understand and address risks.

Summary Findings

- Under current conditions, risks from infiltrating reclaimed water into groundwater are low and the water is safe.

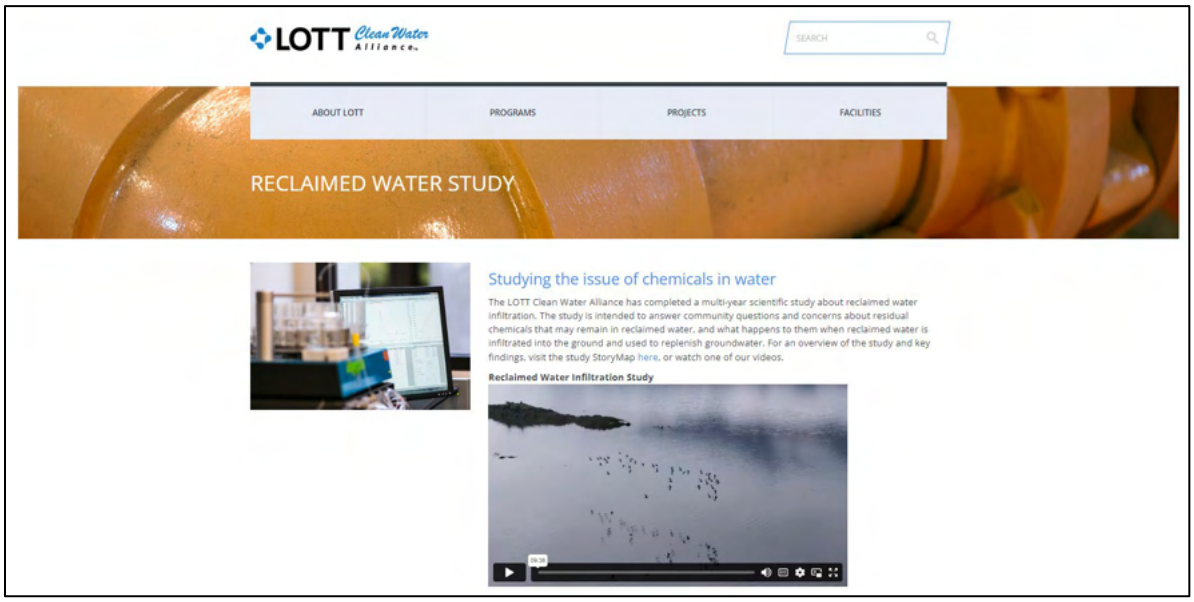
  - Risk to human health is very low.
  - No risks to ecological health were identified.

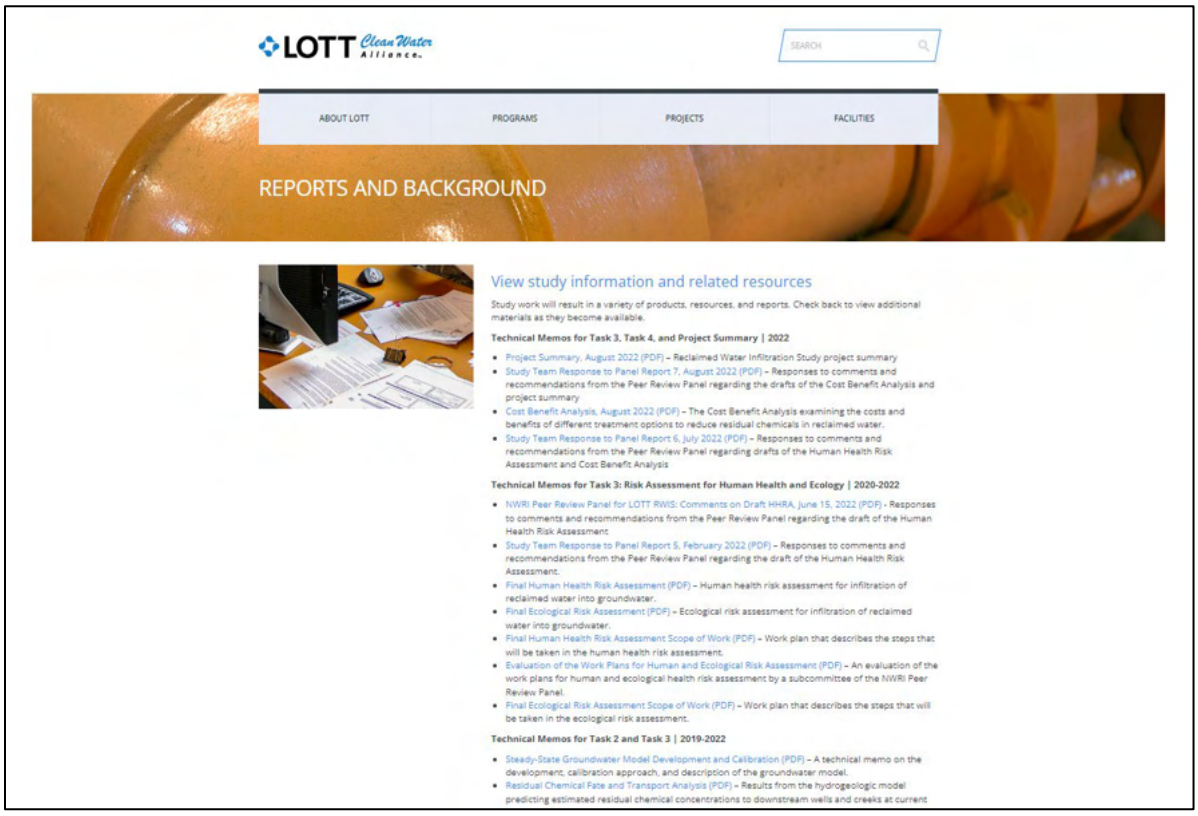
- Because risks are low, there is no immediate need to change current practices or the level of treatment.

- Conditions are expected to change over time and study results will likely need to be revisited in the future.

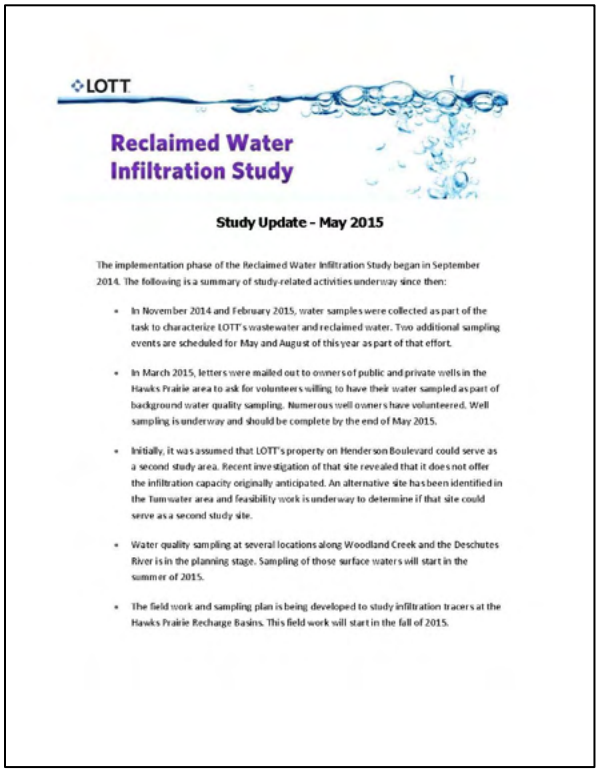
Appendix C: Example Webpages

These are examples the Reclaimed Water Infiltration Study web pages.





Appendix D: Sample Email Updates



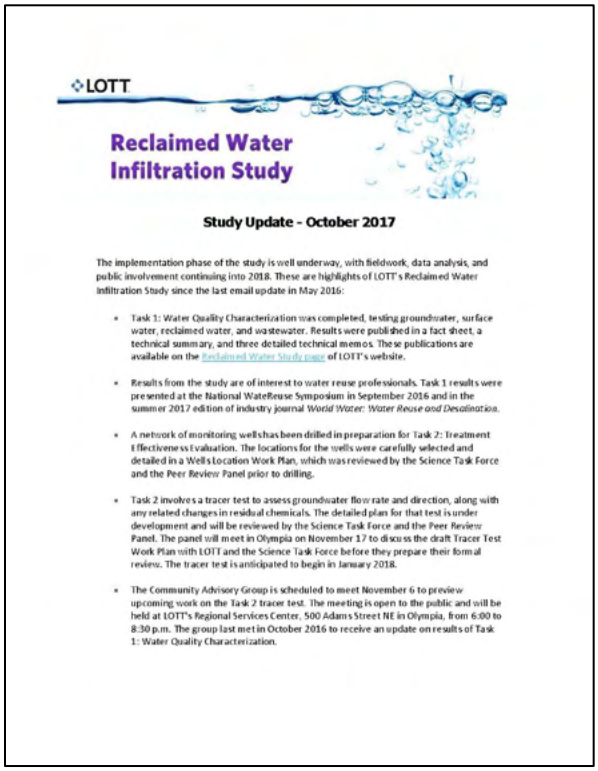
LOTT

Reclaimed Water Infiltration Study

Study Update - May 2015

The implementation phase of the Reclaimed Water Infiltration Study began in September 2014. The following is a summary of study-related activities underway since then:

- In November 2014 and February 2015, water samples were collected as part of the task to characterize LOTT's wastewater and reclaimed water. Two additional sampling events are scheduled for May and August of this year as part of that effort.
- In March 2015, letters were mailed out to owners of public and private wells in the Hawks Prairie area to ask for volunteers willing to have their water sampled as part of background water quality sampling. Numerous well owners have volunteered. Well sampling is underway and should be complete by the end of May 2015.
- Initially, it was assumed that LOTT's property on Henderson Boulevard could serve as a second study area. Recent investigation of that site revealed that it does not offer the infiltration capacity originally anticipated. An alternative site has been identified in the Tumwater area and feasibility work is underway to determine if that site could serve as a second study site.
- Water quality sampling at several locations along Woodland Creek and the Deschutes River is in the planning stage. Sampling of those surface waters will start in the summer of 2015.
- The field work and sampling plan is being developed to study infiltration tracers at the Hawks Prairie Recharge Basins. This field work will start in the fall of 2015.



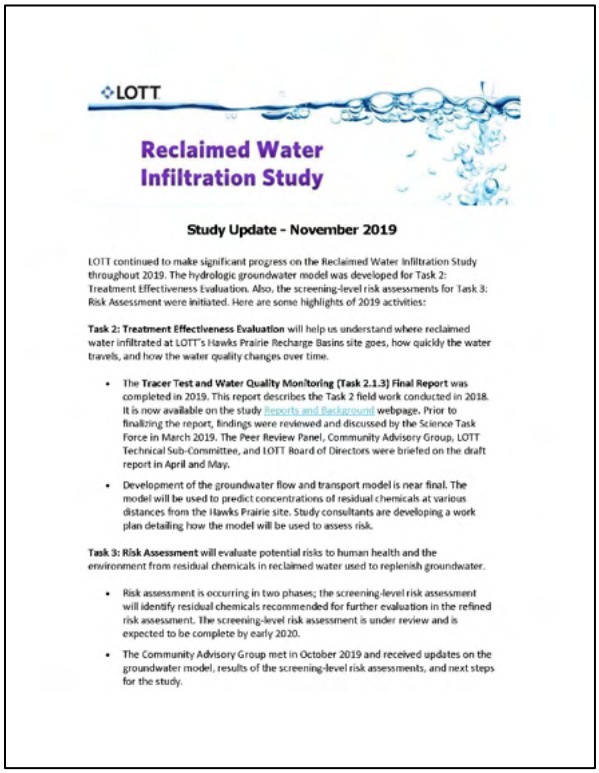
LOTT

Reclaimed Water Infiltration Study

Study Update - October 2017

The implementation phase of the study is well underway, with fieldwork, data analysis, and public involvement continuing into 2018. These are highlights of LOTT's Reclaimed Water Infiltration Study since the last email update in May 2016:

- Task 1: Water Quality Characterization was completed, testing groundwater, surface water, reclaimed water, and wastewater. Results were published in a fact sheet, a technical summary, and three detailed technical memos. These publications are available on the Reclaimed Water Study page of LOTT's website.
- Results from the study are of interest to water reuse professionals. Task 1 results were presented at the National WateReuse Symposium in September 2016 and in the summer 2017 edition of industry journal *World Water: Water Reuse and Desalination*.
- A network of monitoring wells has been drilled in preparation for Task 2: Treatment Effectiveness Evaluation. The locations for the wells were carefully selected and detailed in a Wells Location Work Plan, which was reviewed by the Science Task Force and the Peer Review Panel prior to drilling.
- Task 2 involves a tracer test to assess groundwater flow rate and direction, along with any related changes in residual chemicals. The detailed plan for that test is under development and will be reviewed by the Science Task Force and the Peer Review Panel. The panel will meet in Olympia on November 17 to discuss the draft Tracer Test Work Plan with LOTT and the Science Task Force before they prepare their formal review. The tracer test is anticipated to begin in January 2018.
- The Community Advisory Group is scheduled to meet November 6 to preview upcoming work on the Task 2 tracer test. The meeting is open to the public and will be held at LOTT's Regional Services Center, 500 Adams Street NE in Olympia, from 6:00 to 8:30 p.m. The group last met in October 2016 to receive an update on results of Task 1: Water Quality Characterization.



LOTT

Reclaimed Water Infiltration Study

Study Update - November 2019

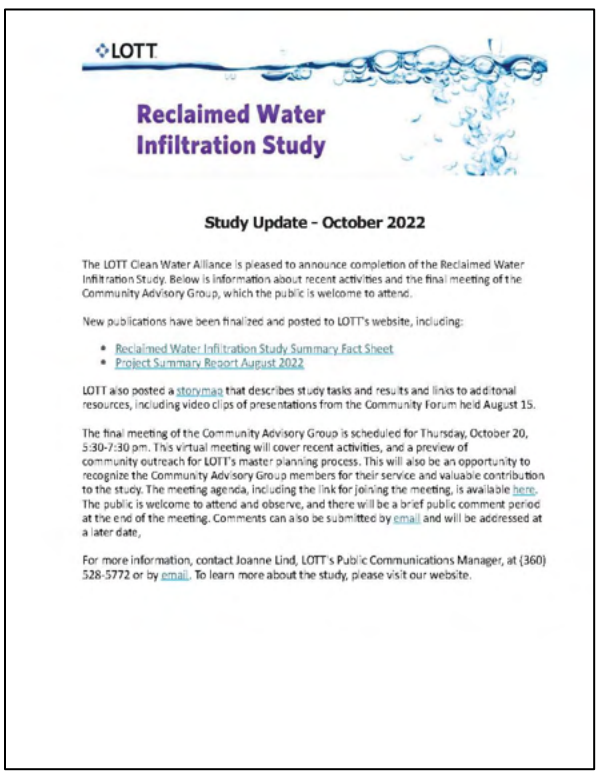
LOTT continued to make significant progress on the Reclaimed Water Infiltration Study throughout 2019. The hydrologic groundwater model was developed for Task 2: Treatment Effectiveness Evaluation. Also, the screening-level risk assessments for Task 3: Risk Assessment were initiated. Here are some highlights of 2019 activities:

Task 2: Treatment Effectiveness Evaluation will help us understand where reclaimed water infiltrated at LOTT's Hawks Prairie Recharge Basins site goes, how quickly the water travels, and how the water quality changes over time.

- The **Tracer Test and Water Quality Monitoring (Task 2.1.3) Final Report** was completed in 2019. This report describes the Task 2 field work conducted in 2018. It is now available on the study Reports and Background webpage. Prior to finalizing the report, findings were reviewed and discussed by the Science Task Force in March 2019. The Peer Review Panel, Community Advisory Group, LOTT Technical Sub-Committee, and LOTT Board of Directors were briefed on the draft report in April and May.
- Development of the groundwater flow and transport model is near final. The model will be used to predict concentrations of residual chemicals at various distances from the Hawks Prairie site. Study consultants are developing a work plan detailing how the model will be used to assess risk.

Task 3: Risk Assessment will evaluate potential risks to human health and the environment from residual chemicals in reclaimed water used to replenish groundwater.

- Risk assessment is occurring in two phases; the screening-level risk assessment will identify residual chemicals recommended for further evaluation in the refined risk assessment. The screening-level risk assessment is under review and is expected to be complete by early 2020.
- The Community Advisory Group met in October 2019 and received updates on the groundwater model, results of the screening-level risk assessments, and next steps for the study.



LOTT

Reclaimed Water Infiltration Study

Study Update - October 2022

The LOTT Clean Water Alliance is pleased to announce completion of the Reclaimed Water Infiltration Study. Below is information about recent activities and the final meeting of the Community Advisory Group, which the public is welcome to attend.

New publications have been finalized and posted to LOTT's website, including:

- Reclaimed Water Infiltration Study Summary Fact Sheet
- Project Summary Report August 2022

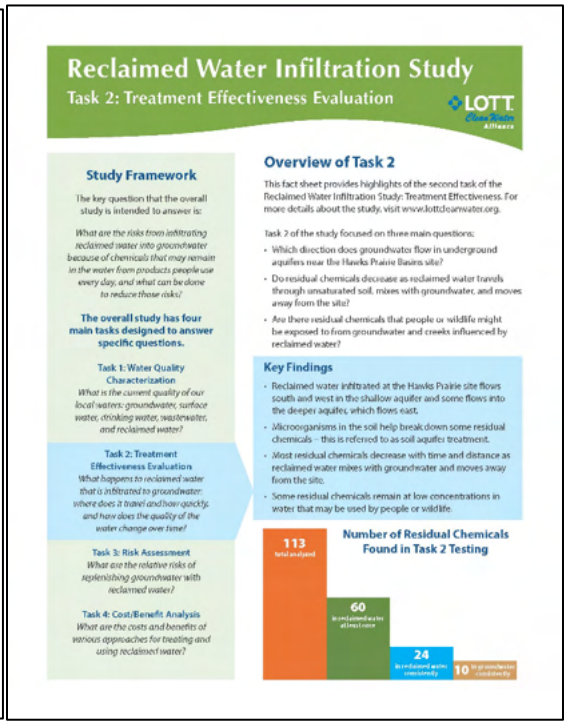
LOTT also posted a storymap that describes study tasks and results and links to additional resources, including video clips of presentations from the Community Forum held August 15.

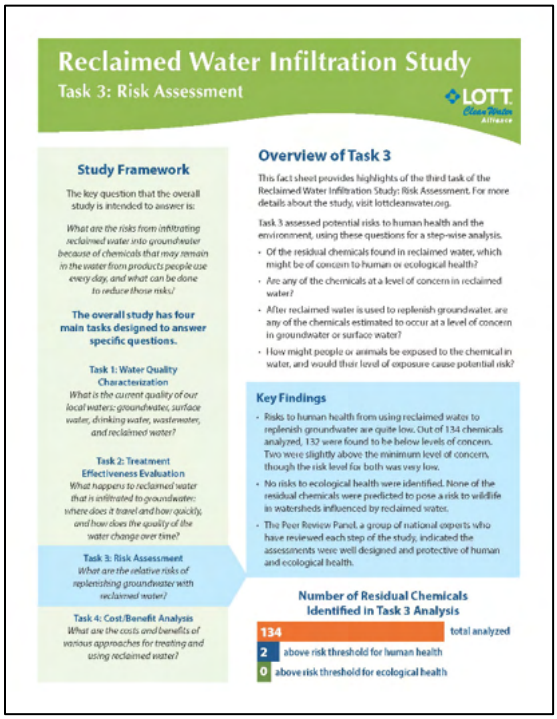
The final meeting of the Community Advisory Group is scheduled for Thursday, October 20, 5:30-7:30 pm. This virtual meeting will cover recent activities, and a preview of community outreach for LOTT's master planning process. This will also be an opportunity to recognize the Community Advisory Group members for their service and valuable contribution to the study. The meeting agenda, including the link for joining the meeting, is available here. The public is welcome to attend and observe, and there will be a brief public comment period at the end of the meeting. Comments can also be submitted by email and will be addressed at a later date.

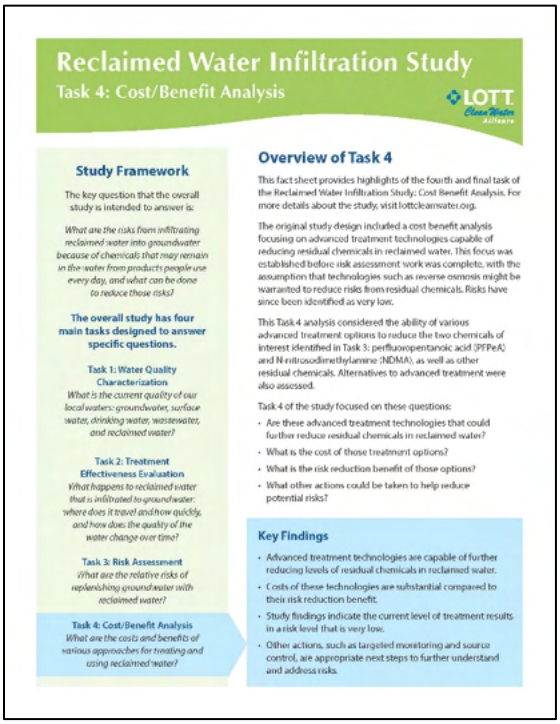
For more information, contact Joanne Lind, LOTT's Public Communications Manager, at (360) 528-5772 or by email. To learn more about the study, please visit our website.

Appendix E: Study Fact Sheets

A series of 6 fact sheets were created, including an introduction, one for each task, and a summary. The cover sheets for the four task fact sheets are shown below as examples.

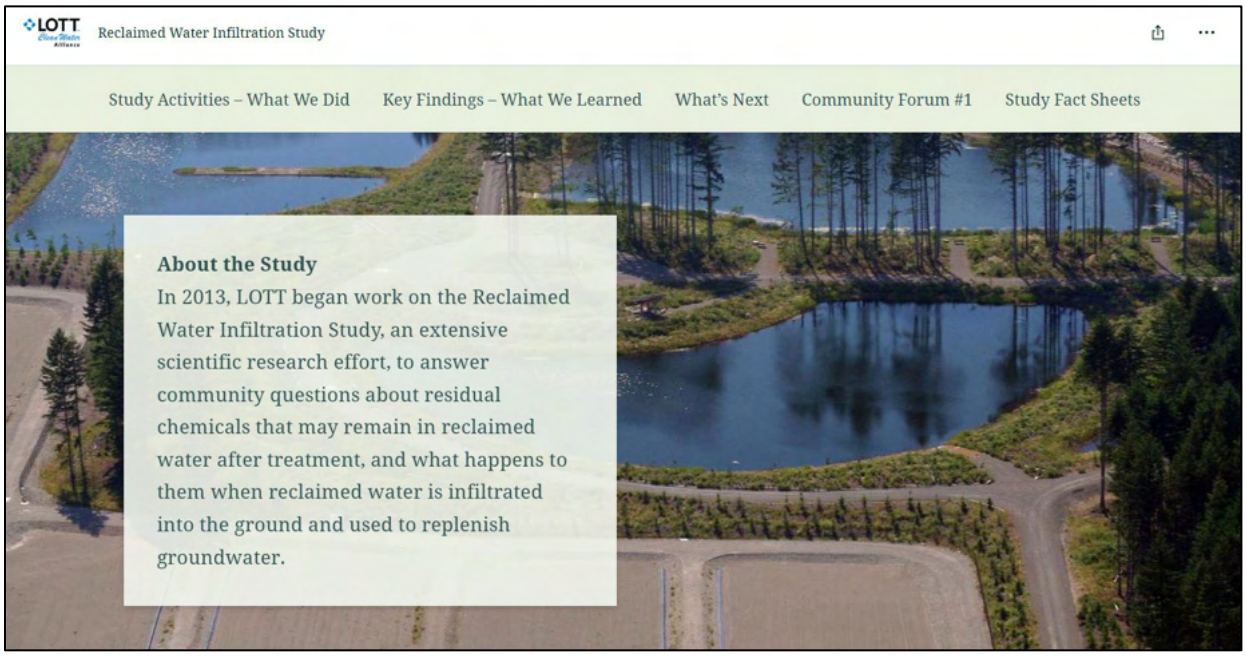






Appendix F: Storymap

An online storymap explained the study and linked to resources and a feedback survey.



Appendix G: Video

LOTT contracted with a professional video company to produce a 10 minute video that explained about the study and results.