

LOTT Clean Water Alliance

LOTT Reclaimed Water Infiltration Study Community Advisory Group

Second Phase of Work Final Report

May 5, 2014

Introduction

This document summarizes the work of the Community Advisory Group during Phase 2 of LOTT's Reclaimed Water Infiltration Study. The study is a multi-year effort to learn about potential risks from infiltrating reclaimed water into groundwater because of chemicals that remain in the water from products that people use every day, and what can be done to reduce those risks. The Community Advisory Group was formed to assist the LOTT Board of Directors and the study team by helping to identify community concerns and act as a sounding-board reflecting a variety of community perspectives.

During the initial phase of the study, the role of the advisory group was to assist with preparations for public opinion research and development of a public involvement plan. For Phase 2, the role of the group shifted to serve more as a sounding-board for the draft study framework, scope of work, and public outreach materials and activities. The group also played an active role in engaging the public in discussions about the draft study framework and proposed study activities.

The LOTT Board recognized early on that serving on the Community Advisory Group represents a significant commitment of time and effort on the part of group members. For that reason, members of the advisory group are asked at each phase of the study if they are willing to continue their service. Thirteen of the original sixteen members agreed to serve on the advisory group for Phase 2 of the Study:

Maureen Canny
John Cusick
Marissa Dallaire
Holly Gadbow
Lyle Fogg
Karen Janowitz
Bill Liechty

Scott Morgan
Pixie Needham
Tina Peterson
Ruth Shearer
Edward Steinweg
Richard Wallace

Community Advisory Group members were asked to participate in four meetings during Phase 2, as well as to participate in two public workshops that were held in the fall of 2013. In general, meetings of the group followed this format:

- responses from staff or the study team to previous questions raised by the group,
- informational presentations by study team members, and
- feedback from Community Advisory Group members related to specific issues or upcoming activities.

Members had the opportunity to ask questions and provide feedback at each meeting. (See Appendix B for the meeting schedule, agendas, and meeting summaries.) Members also were asked to review materials and provide feedback periodically by email. Four members also volunteered to attend a meeting of the LOTT Board of Directors to provide the Board with an update following each Community Advisory Group meeting.

Phase 2 Work Plan and Products

The Community Advisory Group was asked to serve various roles during Phase 2, including:

- 1) Act as a sounding board for the LOTT Board of Directors and the study team, providing feedback and input on materials and programs related to study scoping and public communications, including:
 - Draft framework for the study scope of work
 - Draft scope of work
 - Presentations, website content and informational materials about the study
- 2) Provide a critical eye for the study effort, questioning approaches and materials, and pushing the study team to effectively address public interests and concerns
- 3) Continue to recommend ways to effectively engage the public both in the development of the scope for the study and on a continuing basis throughout the study
- 4) Support public involvement efforts by encouraging others to get involved in the study and by participating in public involvement activities, such as public workshops
- 5) Continue to learn about wastewater treatment, reclaimed water production and use, LOTT's long-range Wastewater Resource Management Plan concepts, related water quality requirements and issues, and the regulatory context for wastewater management in Washington and the local area.

Act as a Sounding Board

Members of the Community Advisory Group provided feedback on a wide variety of topics related to the study. Among these were the study goal and primary study question. Draft revisions with simplified language were presented to the group for comment and group members concurred with the revised goal and study question. Members also reviewed feedback from a series of focus groups conducted to test the concepts and terminology being used to explain the study and related topics. The advisory group members found this feedback very valuable, as did LOTT staff, and agreed with the key findings from the focus groups regarding preferred terminology and a new name for the study itself.

Provide a Critical Eye to the Study Effort

The Community Advisory Group members provided a critical eye for the development of the draft study framework, scope of work, and the information materials developed to engage the public in the study scoping effort. The draft study framework was developed around four main question areas: water quality characterization, treatment effectiveness evaluation, risk assessment, and cost/benefit analysis. Community Advisory Group members reviewed the framework and asked probing questions that helped hone it for presentation at a public workshop. Members also reviewed the draft study scope of work, questioning aspects of the study (particularly around monitoring for treatment effectiveness, hydraulic modeling, and human health risk assessment). Several members provided detailed comments on the draft scope. Some of their questions were referred directly to the independent Peer Review Panel for consideration and others were considered by the study team as revisions to the scope were made.

Early on, Community Advisory Group members expressed concerns about source control and urged the study team to recognize its importance in ensuring the quality of the water LOTT produces and uses for infiltration. One outgrowth of the group's interest in this area is an inter-jurisdictional source control campaign. LOTT is working with its four government partners – the cities of Lacey, Olympia, and

Tumwater and Thurston County – to promote source control awareness and behavior change through several initial efforts:

- Interactive exhibit in WET Science Center
- Free “TakeAway” medicine disposal kits
- Promotion of occasional National Prescription Take-Back days
- Promotion of area prescription drop-off boxes
- Continued support for county outreach programs

Recommend Ways to Effectively Engage the Public

The draft study framework and scope of work were shared with the public at two public workshops. Before each workshop, the Community Advisory Group was asked to review the workshop outline, discuss how to let members of the public know about the workshop, and provide general advice about the content of the workshop, including workshop advertisements, a series of display boards for use at open house information stations, presentations, and key questions for use in small group discussions. After the first workshop, the advisory group discussed what went well and how to improve the next public outreach event.

Support Public Involvement Efforts

Members of the Community Advisory Group played an active role in staffing the two public workshops. They served as greeters, helped to staff information stations, recorded public comments and questions, and participated in small group discussions. All of these activities helped engage other members of the public in active participation at the workshops. Advisory group members who helped to staff the events also helped to review and refine summaries of public input that were developed after each of the events.

Continue to Learn about Study Related Topics

A portion of each Community Advisory Group meeting was dedicated to answering technical questions of the group and learning more about scientific concepts related to the study. Topics addressed included:

- Use of reclaimed water for infiltration and how it differs from irrigation
- Overview of the State of the Science report and case studies
- Risk assessment concepts and how acceptable levels of exposure are defined
- Levels of treatment used for infiltration in other areas of the world
- Role of soil temperature in treatment effectiveness
- How to assess cumulative or synergistic effects of combinations of residual chemicals
- Hydrogeology concepts and how they apply to proposed study activities

Continuing Role of the Community Advisory Group

It is important to the LOTT Board of Directors that the Community Advisory Group assist throughout the Reclaimed Water Infiltration Study. At the final Phase 2 meeting of the Community Advisory Group, members were asked if they were willing to continue their service into Phase 3 of the study, the implementation phase, which may take up to three years to complete. One group member, Marissa

Dallaire, chose not to continue her service, due to conflicting demands on her time as an active high school student. The other twelve group members have agreed to continue their service:

Maureen Canny
John Cusick
Holly Gadbow
Lyle Fogg
Karen Janowitz
Bill Liechty

Scott Morgan
Pixie Needham
Tina Peterson
Ruth Shearer
Edward Steinweg
Richard Wallace

Appendices

Community Advisory Group

Second Phase of Work Final Report

Community Advisory Group – Reclaimed Water Infiltration Study

Mission and Roles – Phase 2

Purpose and Mission Statement

The mission statement for the Community Advisory Group remains unchanged from the original statement developed in the first phase of the group's work:

The LOTT Clean Water Alliance is conducting a multi-year study, called the Groundwater Recharge Scientific Study, to help LOTT and the community understand how best to protect local water resources while treating and recharging reclaimed water. A Community Advisory Group has been formed for the study with a mission to assist the LOTT Alliance Board of Directors and study team to gain an understanding of community perspectives and questions and ensure the study is designed to address community concerns. The Community Advisory Group will also help identify effective ways to engage the public throughout the study.

Role of the Community Advisory Group Members

Community Advisory Group members are asked to:

- Act as a sounding board for the LOTT Board of Directors and the study team, providing feedback and input on materials and programs related to study scoping and public communications, including:
 - Draft framework for the study scope of work
 - Draft scope of work
 - Presentations, website content, and informational materials about the study
- Provide a critical eye for the study effort, questioning approaches and materials, and pushing the study team to effectively address public interests and concerns
- Continue to recommend ways to effectively engage the public both in the development of the scope for the scientific study and on a continuing basis throughout the study
- Support public involvement efforts by encouraging others to get involved in the study and by participating in public involvement activities, such as public workshops
- Continue to learn about wastewater treatment, reclaimed water production and use, LOTT's long-range Wastewater Resource Management Plan concepts, related water quality requirements and issues, and the regulatory context for wastewater management in Washington and the local area.

Meeting Frequency

For Phase 2, advisory group members will be asked to attend a minimum of three evening meetings, each three hours in duration, to complete the work required. Meetings will be held roughly every two months between July 2013 and January 2014. Members are also encouraged to participate in public

involvement events, such as occasional public meetings or workshops. Following the Scoping Phase, group members will be invited to continue their work into remaining phases of the study.

Principles of Participation – Phase 2

Discussion Process

Community Advisory Group members agree to abide by the following discussion process:

- * Value all perspectives.
- * Listen openly and actively to perspectives of others.
- * Treat other group members with respect.
- * Participate and encourage participation of other group members.
- * Empower the facilitator to moderate discussions.
- * Limit discussion to one person speaking at a time.
- * Make every effort to present perspectives succinctly and avoid repetition.
- * Use collaborative problem solving as the preferred deliberation process.
- * Avoid lengthy discussions on items in which a majority consensus cannot be made or where differing positions impede the process of the group as a whole.
- * Record alternative perspectives when the group does not reach consensus.

Meeting Attendance and Participation

In order for the process to work effectively, full participation of members will be essential. Community Advisory Group members are asked to commit to attend meetings consistently, arrive on time, and remain for the scheduled duration of the meeting. If a group member is unable to attend a meeting, he or she may send an alternate to monitor that meeting. The alternate should be briefed by the group member regarding the status of prior discussions and decisions, and should be able and willing to represent that member and the perspectives the member represents. Active participation by the alternate is encouraged as long as the alternate does not impede the progress of the group.

In addition to the Community Advisory Group meetings, members of the group may be asked to volunteer to attend an occasional meeting of the LOTT Board of Directors as a representative of the group to provide updates on the group's activities and to participate occasionally in public involvement activities, such as public workshops.

Meeting Support

A neutral third-party professional from Katz & Associates, Inc. will facilitate all meetings. The role of the facilitator is to ensure all perspectives are heard through a collaborative discussion process. Study team members will provide technical and logistical support, including making presentations, answering questions, researching questions raised by members, coordinating meeting logistics, and documenting meeting content. Meeting discussions may be audio taped to aid in the preparation of meeting summaries. It is not anticipated that meetings of the advisory group will be video-recorded during Phase 2, however, LOTT may have the ability to video-record meetings for future phases of the study.

Meeting Agendas, Notes, and Material Review

Meeting agendas will be distributed by e-mail in advance of each meeting. Draft summaries from the previous meeting will also be distributed by email for review by advisory group members. Once members have had an opportunity to review and revise draft meeting summaries, they will be posted on the LOTT website for public review. Members of the advisory group may also be asked to review reference material or draft documents in preparation for upcoming advisory group meetings or other activities. These materials will often be distributed to group members via email, with comments to be returned to the Study Team by email or discussed at the next advisory group meeting.

Observers

Observers are welcome at Community Advisory Group meetings. However, meetings are intended as working meetings of the advisory group, for the benefit of the group members to promote balanced, constructive interaction. Observers will be asked to refrain from commenting during the proceedings. There will be an opportunity for public comment at the beginning of each meeting. Public comment will be limited to a maximum length of 5 minutes per speaker due to time constraints.

Sharing Opinions and Information Outside of Advisory Group Meetings

Members of the Community Advisory Group are welcome to share information about the Groundwater Recharge Scientific Study, the Community Advisory Group, and related topics outside of the advisory group meetings. In fact, one of the roles of advisory group members is to encourage other members of the public to learn about and get involved in the study. However, advisory group members should always make it clear that the thoughts, opinions, and information that they are sharing reflect their personal viewpoints and that they are not speaking on behalf of the advisory group as a whole.

Issues and Concerns

Members of the Community Advisory Group are encouraged to bring any issues or concerns to the attention of the Study Team as they arise. Study Team members will do whatever is possible to address concerns in a timely manner. The primary staff contact for the advisory group is Lisa Dennis-Perez, LOTT's Project Manager for public involvement activities related to the Groundwater Recharge Scientific Study. She can be reached at lisadennis-perez@lottcleanwater.org or 360.528.5719.

Community Advisory Group – Reclaimed Water Infiltration Study

Phase 2 Schedule

Advisory Group Meeting 1: Tuesday, July 30

- Learn about background technical work done so far
- Discussion on draft study framework

Advisory Group Meeting 2: Tuesday, October 8

- Review results from focus group work
- Review plans and materials for Public Workshop 1
- Discuss study framework

Public Workshop 1: Wednesday, October 23

Advisory Group Meeting 3: Wednesday, December 4

- Review public comment from Public Workshop 1
- Discuss revisions made to study framework
- Review draft scope of work
- Review plans for Public Workshop 2

Public Workshop 2: Monday, December 9

Advisory Group Meeting 4: Monday, April 2

- Review public comment from Public Workshop 2
- Review input from Peer Review Panel
- Discuss revisions to study framework and scope of work
- Final review of scope of work

Community Advisory Group – Reclaimed Water Infiltration Study

Meeting 2.1 Agenda

July 30, 2013

LOTT Board Room, 500 Adams Street NE, Olympia

- 5:30 pm **Informal Meet and Greet** (Light Dinner Provided)
- 6:00 pm **Advisory Group Business/Logistics**
Patsy Tennyson, Facilitator & Consultant, Katz & Associates
- 6:05 pm **Public Comment**
Patsy Tennyson, Facilitator
- Each speaker has a maximum of 5 minutes to comment
- 6:20 pm **Presentation: Chipping Away at Big Questions**
Karla Fowler, LOTT Community Relations and Environmental Policy Director
- How does recharge with reclaimed water differ from irrigation or other surface uses of reclaimed water?
 - What is the role of the Community Advisory Group?
- 6:30 pm **Presentation: Introduction to State of the Science and Case Studies**
Jeff Hansen, Lead Consultant, HDR Engineering, Inc.
- 7:10 pm **Break**
- 7:20 pm **Discussion: Draft Study Framework**
Jeff Hansen, Lead Consultant, HDR Engineering, Inc.
Patsy Tennyson, Facilitator
- 8:10 pm **Update: Public Involvement Activities**
Lisa Dennis-Perez, LOTT Public Communications Manager
- 8:25 pm **Discussion: Planning for Public Workshop 1**
Patsy Tennyson, Facilitator
- 8:50 pm **Next Steps**
Patsy Tennyson, Facilitator
- 9:00 pm **Adjourn**

Community Advisory Group – Reclaimed Water Infiltration Study

Meeting 2.2 Agenda

October 8, 2013

LOTT Board Room, 500 Adams Street NE, Olympia

- 5:30 pm **Informal Meet and Greet** (Light Dinner Provided)
- 6:00 pm **Advisory Group Business/Logistics**
Patsy Tennyson, Facilitator & Consultant, Katz & Associates
- 6:05 pm **Public Comment**
Patsy Tennyson, Facilitator
- Each speaker has a maximum of 5 minutes to comment
- 6:20 pm **Presentation: Chipping Away at Big Questions**
Jeff Hansen, Lead Consultant, HDR Engineering, Inc.
- How do risk assessments define acceptable levels of exposure?
 - What levels of treatment are used for groundwater recharge in other areas?
- 6:35 pm **Update: Focus Group Results**
*Lisa Dennis-Perez, LOTT Public Communications Manager or
Karla Fowler, Community Relations and Environmental Policy Director*
- 7:00 pm **Break**
- 7:10 pm **Discussion: Planning for Public Workshop 1**
Patsy Tennyson, Facilitator
- 8:00 pm **Presentation: Advancing the Framework**
Jeff Hansen, Lead Consultant, HDR Engineering, Inc.
- 8:40 pm **Outline of Videos for Website**
*Lisa Dennis-Perez, LOTT Public Communications Manager or
Karla Fowler, Community Relations and Environmental Policy Director*
- 8:50 pm **Next Steps**
Patsy Tennyson, Facilitator
- 9:00 pm **Adjourn**

Community Advisory Group – Reclaimed Water Infiltration Study

Meeting 2.3 Agenda

December 4, 2013

LOTT Board Room, 500 Adams Street NE, Olympia

- 5:30 pm **Informal Meet and Greet** (Light Dinner Provided)
- 6:00 pm **Advisory Group Business/Logistics**
Patsy Tennyson, Facilitator & Consultant, Katz & Associates
- 6: 05 pm **Public Comment**
Patsy Tennyson, Facilitator
- Each speaker has a maximum of 5 minutes to comment
- 6:20 pm **Presentation: Chipping Away at Big Questions**
Jeff Hansen, Lead Consultant, HDR Engineering, Inc.
- What does current research suggest about the role of temperature in treatment effectiveness?
 - Will the study address potential cumulative or synergistic effects of combinations of residual chemicals?
- 6:35 pm **Debrief: Public Workshop 1**
Patsy Tennyson, Facilitator and
Lisa Dennis-Perez, LOTT Public Communications Manager
- 7:00 pm **Break**
- 7:10 pm **Presentation: Overview of the draft Scope of Work**
Jeff Hansen, Lead Consultant, HDR Engineering, Inc.
- 8:10 pm **Discussion: Planning for Public Workshop 2**
Patsy Tennyson, Facilitator
- 8:30 pm **Discussion: Finalizing the Scope**
Lisa Dennis-Perez, LOTT Public Communications Manager or
Karla Fowler, Community Relations and Environmental Policy Director
- 8:40 pm **Next Steps: Role of Community Advisory Group in Phase 3**
Patsy Tennyson, Facilitator
- 9:00 pm **Adjourn**

Community Advisory Group – Reclaimed Water Infiltration Study

Meeting 2.4 Agenda

April 2, 2014

LOTT Board Room, 500 Adams Street NE, Olympia

- 5:30 pm **Informal Meet and Greet** (Light Dinner Provided)
- 6:00 pm **Advisory Group Business/Logistics**
Patsy Tennyson, Facilitator & Consultant, Katz & Associates
- 6:05 pm **Public Comment**
Patsy Tennyson, Facilitator
- 6:20 pm **Presentation: Chipping Away at Big Questions**
Jeff Hansen, Lead Consultant, HDR Engineering, Inc.
- Basics of hydrogeology 101
 - How it relates to study field work and modeling
- 6:40 pm **Update: Review of Scoping Work since Last Meeting**
Lisa Dennis-Perez, Ben McConkey, Jeff Hansen
- 7:00 pm **Break**
- 7:10 pm **Update: Overview of Peer Review Panel Meeting**
Ben McConkey and Jeff Hansen
- 7:30 pm **Discussion: Input on Phase 3 Scope of Work**
Patsy Tennyson, Facilitator
- 7:55 pm **Update: Next Steps for Finalizing the Scope**
Ben McConkey, Project Manager
- 8:00 pm **Discussion: Review of Public Involvement Plan Activities**
Lisa Dennis-Perez, Public Communications Manager
- 8:35 pm **Discussion: Phase 3 Role of Community Advisory Group**
Patsy Tennyson, Facilitator
- 8:50 pm **Wrapping Up Phase 2: Celebration and Thank You**
- Adjourn**

Community Advisory Group – Reclaimed Water Infiltration Study

Meeting 2.1 – July 30, 2013 – Summary

Welcome and Initial Business

The meeting opened at 6:00 pm with Patricia Tennyson of Katz & Associates acting as the meeting facilitator. She stated that each Community Advisory Group member has received a new binder to mark the start of Phase 2 work, and that the meetings will be numbered from here on as phase number, meeting number, with this meeting being 2.1. She then asked the group if they had any comments or changes for the Phase 2 Mission, Principles, and Meeting Schedule document that was distributed last week for review. The group had no changes, and the document was considered complete.

Community Advisory Group member Scott Morgan stated that he attended the LOTT Board meeting on June 12. Patricia then asked for a volunteer to attend the next Board meeting on August 14, and Ruth Shearer volunteered.

Public Comment

Members of the public in attendance were invited to make comments. To leave adequate time to complete all the business on the meeting agenda, members of the public were asked to limit their comments to five minutes. One member of the public chose to make comments:

Dennis Burke:

Mr. Burke provided a hand-out to the advisory group. He then stated that he felt the information provided at the last meeting was not true regarding why LOTT's management plan includes groundwater recharge with reclaimed water. He went on to highlight several of the points from his written document, as well as his view that LOTT had the option to create a new marine discharge, which he believes would have been preferable to recharging to groundwater. He stated that LOTT's Highly Managed Plan is a farce and that he would be glad to debate it with anybody.

Presentation: Chipping Away at Big Questions

Karla Fowler, LOTT's Community Relations and Environmental Policy Director, explained that this presentation is a continuation from last meeting, with the idea that we will spend some time at each meeting addressing a few of the big questions that the group has been wrestling with and that have come up in discussion several times. She then addressed two questions, which follow:

Question 1:

How does recharge with reclaimed water differ from irrigation or other surface uses of reclaimed water? *Recharge involves a much greater volume of water, with the expectation that*

the water will interact with groundwater. Irrigation and other surface uses are designed and permitted specifically to prevent interaction with groundwater or surface waters.

Question 2:

What is the role of the advisory group?

Karla referred advisory group members to the description of their role in the updated Mission, Principles, and Schedule document that is in their binders. She also reminded the group that they have heard, and will continue to hear, opinions from many sources about these issues, and many people who have already drawn conclusions about these issues. She encouraged group members to keep in mind that the study hasn't gotten started yet. The intent of the study is to collect information about our local environment, apply the state of the science to our specific conditions, and come to informed conclusions about our local area. She also asked members to remember that we are early in this process and much more information will be available over the course of the study to inform decisions. The group was also reminded that at the last meeting they agreed that members are welcome to share their thoughts and opinions outside of these meetings, but they should always make clear that they are expressing their own opinions and are not speaking on behalf of the advisory group.

Bill Liechty:

Has there been research about the fate of compounds of potential concern when reclaimed water is used for irrigation?

Jeff Hansen replied that King County has done research on those issues. A summary of those research efforts was provided to the advisory group at their last meeting, however, staff will follow up and get updated information about that research for the group.

Karen Janowitz:

What about the use of reclaimed water for the wading stream in the East Bay Public Plaza?

Karla explained that the State Department of Health and the Thurston County Public Health Department both reviewed the water quality data and permitted the water feature as safe for wading and recreational use.

Presentation: Introduction of the State of the Science and Case Studies

Jeff Hansen, lead consultant with HDR Engineering, Inc., presented a summary of the work that was completed in Phase 1 on the science side of the study. He reviewed each of four key points from the State of the Science document:

- Compounds of potential concern (CPCs) include a wide suite of chemicals, some of which are present at low concentrations in wastewater and reclaimed water
- Wastewater and reclaimed water treatment processes have varying effectiveness at removing CPCs
- Soil aquifer treatment (SAT) removes remaining CPCs to varying degrees. Biodegradation is the primary mechanism for removal. Travel time is a key variable in the degree of removal of CPCs.

- To assess risk regarding reclaimed water and CPCs, researchers often use a comparative, or relative, risk assessment approach

Jeff went on to explain that these points are being used to help guide development of the study framework.

Bill Liechty:

Is this risk assessment approach similar to that used by the EPA to set Maximum Contaminant Levels? *Jeff replied that the EPA generally looks at each individual CPC and sets a maximum threshold for Acceptable Daily Intake or similar standard. The risk assessment approach allows us to look at a combination of CPCs within a scenario, comparing one scenario against the next, to develop a Margin of Safety.*

Ruth Shearer:

How were the acceptable levels established? Were they developed in the lab based on their effect on animals or based on their impacts to human health?

They were based on toxicological data, not epidemiological data.

Jeff then briefly reviewed the case studies developed during Phase 1 for six locations throughout the country. Many of the case studies are locations from the arid southwest in California and Arizona, but several were chosen specifically because their climates were more like our region. Jeff then presented a summary of one of the case studies - Montebello Forebay in California.

Ed Steinweg:

Do the case studies consider soil temperatures as well as air temperatures?

Yes, each case study includes that data. The Prairie Waters project in Colorado has soil temperatures most similar to ours, but it is fundamentally different from the other projects, as the water comes from the South Platte River, which is dominated by discharge from wastewater treatment facilities upstream.

Marissa Dallaire:

You mentioned that there is no one treatment process to remove all CPCs. Could you use a combination of treatment processes to remove more CPCs?

Yes, that is referred to as a multi-barrier approach.

Bill Liechty:

Can you speak to why Colorado uses this approach for drinking water sources? What was the tipping point that said that advanced treatment was necessary?

Water rights law in Colorado allows for the use of water to full extinction - they can withdraw as much from the river as they put back in the river, in terms of treated wastewater effluent. They withdraw it through riverbank filtration as the first form of treatment, and they don't pump it far before they put it into the aquifer, because they needed to establish that water as theirs per

Colorado's water rights law. They were in a constant state of drought and had increasing conservation requirements, so they needed to obtain more water quickly. They went straight to more advanced treatment, rather than look at alternative treatment technologies.

Lyle Fogg:

The study will establish the level of contamination that already exists in our water sources, and then compare that to what the risk would be after recharge with reclaimed water. I just wanted to be sure that we would not be comparing our situation to background water quality established somewhere else in the country, like the east coast.

Exactly – we need to compare before and after conditions here locally and not use data that was collected in a different part of the country under different conditions.

Pixie Needham:

How long does it take for water to move from the Hawks Prairie basins into groundwater?

It is estimated to take about 5 years for water to move into Woodland Creek, and between 2-5 years to the nearest potable water supply wells. That is modeled information, not field data.

This is something we want to look at in more detail as part of the study. At Montebello Forebay, they examined travel time in great detail, and you will be able to review the full case study. It will be posted to LOTT's website.

Discussion: Draft Study Framework

Jeff began with a presentation on the framework. He explained that this presentation has several objectives - to present the draft study framework, ask if it is understandable as presented, ask if there are other things advisory group members feel should be included in it, and see if the way it is presented will work for the upcoming public workshop. Jeff then explained that all the questions gathered from the group, the public, and the study team during Phase 1 fall into four main question areas. Those areas form the basis of the study framework, as the main study components: water quality characterization, treatment effectiveness evaluation, risk assessment, and cost/benefit analysis. Under each component, there are more specific objectives and a list of activities that would be done as part of the study to meet those objectives.

Ruth Shearer:

Will you be looking only at the upper aquifer, or at other layers of the aquifer?

The study will look at a variety of layers of aquifer, but that level of detail will be developed later in the scoping process.

Bill Liechty:

Have other groups done the same thing, studied the same thing?

The modeling activities have certainly been done in many other locations. The case studies show that other places have looked at similar pieces. However, our study may be unique in terms of the combination of things that we look at.

Scott Morgan:

How important is the hydraulic pressure to travel times?

That depends on other conditions and is highly site-specific.

Is it too soon to get into levels of activity under those activities listed here?

Yes, that detail will come later in the scoping process.

Tina Peterson:

How long have we been putting reclaimed water in the ground at Hawks Prairie? Will there have been enough time for the water to move through into groundwater?

That recharge site started operation in 2006. Enough time has passed that there should be interaction with groundwater.

Bill Liechty:

Will the study identify the potential downstream populations and points of risk?

Yes, that will be part of the risk assessment component.

Ruth Shearer:

I don't believe there are acceptable peer-reviewed risk assessments for all these CPCs. The Water Research Foundation paper on comparative exposure levels is total blarney that disregards basic toxicology. Any risk assessment that assumes that the acceptable levels of exposure are the same for all individuals is flawed.

Karen Janowitz:

A cellular response for people with immune deficiencies or children is going to be different. Also, when presenting to the public, you'll need to use different language - this is very technical.

Jeff then asked the group for any thoughts on how this presentation might be used for the public workshop.

John Cusick:

I thought the outline was very helpful.

Bill Liechty:

It took us a lot of meetings to understand the "what" and "why" of the study. It will be very hard to jump right into the framework.

Karen Janowitz:

You'll need clear, clean definitions posted on the wall and as handouts.

Scott Morgan:

This presentation works if the study is framed up as alternatives for reclaimed water, but you'll need to start with the larger context of drivers behind reclaimed water.

Karen Janowitz:

You'll need to be solid about what things are already decided, what is already in place, so the public doesn't waste time going over things that cannot be changed. The advisory group would like to see how things are going to be presented, so we can have input into that.

Pixie Needham:

The presentation should lead with the fact that we need to make reclaimed water as safe as possible.

Update: Public Involvement Activities

Lisa Dennis-Perez, LOTT Public Communications Manager, provided updates on several activities related to public involvement. Focus groups will be held over the next month to resolve some of the challenges related to terminology and the study description. Also, LOTT's Technical Sub-Committee will be discussing options for an interjurisdictional source control campaign.

Discussion: Planning for Public Workshop 1

Lisa then reviewed the draft planning outline for the upcoming public workshop, and asked the group for comments:

Lyle Fogg:

I would like to post this list of source control options on my Facebook page to get discussion going.

That would be fine, as long as you are sure to indicate that this is a list of possible actions that are being considered. Decisions have not been made yet about which ones will be implemented.

Marissa Dallaire:

Is there a Facebook page for LOTT or for the study? I would be happy to help with a Facebook page.

There is a Facebook page for the WET Science Center, but there isn't one for LOTT as an organization or one for the study. That is something that we will develop in the next few months.

Tina Peterson:

This is not a sexy topic. It is difficult to get people interested in it. Money talks, so keep that in mind. People pay attention if it has to do with their wallet and their utility bills.

Ed Steinweg:

Make sure that this is not presented as LOTT's problem. This is not LOTT's problem. It's everyone's problem.

Pixie Needham:

Put things in perspective - address the "disconnects." It's all of ours - the water is all of ours.

Maureen Canny:

LOTT is "us" - the cities and the county need to be involved. We need a multi-faceted approach to where we start, and an ounce of prevention is worth a pound of cure.

Scott Morgan:

You need to be able to respond definitively in terms of "this is how we approach that..." and not sound wishy-washy. You are getting specific questions "how will you approach risk assessment?" Be prepared with "this is how and this is why we chose this approach."

John Cusick:

Nearly everyone who attends will want to hear the presentation. That should be the first thing on the agenda, or at least make it earlier in the evening. Also, "sex up the advertising" - make it more interesting, attention-getting.

Karen Janowitz:

If the presentation is the first thing on the agenda, then start later, 6:30 at the earliest. Use language like "Your Water" to advertise – make it personal.

Tina Peterson:

The event is too long and deals with a dry topic. Make the event shorter, condense it. Also, make sure people understand they can come and go during the evening by advertising the agenda.

Bill Liechty:

Have a map there that shows recharge properties, direction of groundwater flow, and populations in the area.

Scott Morgan:

Why is the presentation live? Make it a looped video that can go online as well. You'll only have the usual suspects at the meeting, so take the video out to groups rather than depend on them coming to you.

Karen Janowitz:

Have an information station that explains the different types of treatment and a list of CPCs.

Pixie Needham:

Can you include the cost so people have a relative sense of the cost of each type of treatment? Also, be sure to include dates when facilities are scheduled to be on line so people understand impacts in the future.

Ed Steinweg:

Use TCTV to show presentations and get information out further.

Maureen Canny:

Make sure it gets out to non-LOTT people too.

Patricia then explained that there will be a variety of jobs to do to help with the workshop. She asked for volunteers and advisory group members offered to help in the following ways:

Ruth - facilitator

Karen - facilitator and as needed

Bill – any job as needed

Pixie – any job as needed, except facilitator

Tina – any job as needed, except facilitator

Marissa – greeter

Scott – any job as needed, except note-taker

Lyle – any job as needed

Ed and John will be out of country on September 23.

Next Steps

Patricia reminded the group that at each meeting we will continue the segment “Chipping Away at Big Questions”, covering 2 or 3 questions at each meeting. Advisory group members are welcome to suggest questions for that segment – just send them to Lisa.

The group was reminded that the next advisory group meeting is scheduled for October 8. Also, members of advisory group are welcome to attend meetings of the Science Task Force. The next meeting of the task force is August 22 at 1:30 pm, when that group will discuss the framework in detail.

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Community Advisory Group – Reclaimed Water Infiltration Study

Meeting 2.2 – October 8, 2013 – Summary

Welcome and Initial Business

The meeting opened at 6:00 pm with Patricia Tennyson of Katz & Associates acting as the meeting facilitator. Community Advisory Group member Ruth Shearer attended the LOTT Board meeting on August 14. She shared with the group that the Board spent a lot of time talking about our suggestion to prevent pollution, and they are very interested in establishing a source control campaign. Patricia then asked for a volunteer from the group to attend the Board meeting on the following evening, and Lyle Fogg volunteered.

Public Comment

Members of the public in attendance were invited to make comments. To leave adequate time to complete all the business on the meeting agenda, members of the public were asked to limit their comments to five minutes. Two members of the public chose to make comments:

Dennis Burke:

Mr. Burke stated that he has started up a website - save our drinking water.com that is about 10 pages so far. He stated that the site corrects misinformation and errors that he believes LOTT has made. The website will eventually include about 60 articles, and will have a page where visitors can make contributions and comments. He encouraged everyone to visit the site.

Janine Unsoeld:

Ms. Unsoeld explained she is the managing editor of Green Pages, and passed out an issue that contains an article about the advisory group and the study that was reprinted from Janine's blog. She stated that she is disappointed there isn't more coverage of the study in the local media. She recently visited the Woodland Creek Infiltration facility, which was interesting. She stated that televising the advisory group meetings would bring more attention. She expressed concern that she hadn't seen any publicity for the upcoming workshop, and that more should be done to get the word out about the workshop and Phase 2 activities.

Presentation: Chipping Away at Big Questions

Patricia explained this has become a regular agenda item where some of the group's big questions will be addressed, such as why we infiltrate reclaimed water, why we are doing the study, etc. She stated that Jeff Hansen would address a couple more of those questions at this meeting:

Question 1:

How do risk assessments define acceptable levels of exposure?

One of the challenges with risk assessments is that we are talking primarily about unregulated compounds, which do not generally have defined acceptable levels established in regulations. However, there are Acceptable Daily Intake (ADI) levels for some compounds, established using toxicological data, considering cancer and non-cancer risk. These ADIs factor in the most sensitive populations and include additional factors of safety. When compound levels are greater than the ADI, there is the potential for adverse effect; when levels are below the ADI, there is no known adverse effect. He explained that even though there is no known adverse effect, it doesn't mean there is absolutely no risk. There is no such thing as zero risk.

Ruth Shearer:

Many times, these numbers are based on inadequate data, where guesses have to be made and politics sometimes get factored in. This assessment needs to be objective and science based. How conservative is an ADI compared to an MCL and MCLG?
ADIs and MCLGs are based on health information. MCLs are based on other factors also, such as cost, so they are generally less conservative than ADIs and MCLGs.

Ruth Shearer:

The MCLG for nitrates should have been lower based on sensitive populations (children with diarrhea), but politics took over. This makes me suspicious of these types of thresholds. Also, the WasteReuse Research Foundation publication was all about skin absorption, not about ingestion, like we are talking about in drinking water, so it appeared to be propaganda. And there are vast differences in absorption based on the chemicals you are talking about.
That material from the WasteReuse Research Foundation considered skin absorption, but also factored in some ingestion, depending on the means of exposure. However, the research study from which this information was generated was not conducted in the context of infiltration to groundwater. It was focused on irrigation. This information was shared with the group only as an example of risk assessment work and risk communications.

Bill Liechty:

Is there a regulatory body that has accepted the ADIs that have been established? Also, ADIs look at health effects for individual compounds, not the combined effect of numerous chemicals.

There are a variety of agencies and organizations that establish ADIs, following standard approaches. ADIs that have been published in scientific literature are in a sense "accepted", meaning they have been developed according to industry standard methodologies and peer-reviewed. However, in the sense that a regulatory body "accepts" ADIs by using them to establish regulations, no health effects thresholds have been "accepted" for the unregulated contaminants we are discussing. While ADIs are not developed for combinations of chemicals, risk assessments can evaluate cumulative or aggregate effects of multiple chemicals. The risk assessment scope of work we are developing does just this.

Karen Janowitz:

Since LOTT has a combined storm-sewer system, are there ADIs established for things like fertilizers, pesticides, and other compounds that may be introduced from runoff?

There are ADIs for many of those and "reference doses" for others. There is risk-based assessment for pesticides and those types of chemicals.

Dick Wallace:

It would be helpful to see what compounds are present in wastewater that do not have ADIs and which ones do have ADIs, and learn how we will address the ones that do not have ADIs.

We will need to be very clear about which ones have ADIs and, if we use other thresholds, where those came from and how they were established.

Ruth Shearer:

As a toxicologist, I will always object to using therapeutic dose as a basis for safety, because effects vary widely among individuals.

We are not proposing to use therapeutic dose for our risk assessment exactly because of those concerns. We will talk more about how we propose to go about risk assessment this later in the evening.

Question 2:

What levels of treatment are used for groundwater recharge in other areas?

This varies widely, from conventional secondary wastewater treatment to LOTT's process (filtration and disinfection) to reverse osmosis to combinations of these and other treatment processes.

Jeff then reviewed examples of places around the country that infiltrate treated water and what levels of treatment they employ.

Karen Janowitz:

Why do some employ higher, advanced levels of treatment? Is it because of geology and the end uses of water?

Yes, it depends primarily on the end use of the water. Areas that use direct injection to introduce treated water to drinking water sources tend to use reverse osmosis and other advanced treatment processes. Other areas like Aurora, Colorado use the belt and suspenders approach, using soil aquifer treatment and then a variety of other treatment processes so the water can be used for drinking water purposes. The bottom line is that there is no one silver bullet or uniform treatment prescription.

Ruth Shearer:

Temperature is a key factor and we have colder climate, so do you have examples of other cold weather areas and the treatment processes they use?

In Aurora, their soil and water temperatures are similar to ours. There are other areas of the world with similar climates, such as Berlin, Germany. There are examples, but the list is not as long as those areas with more arid, and/or warmer climates.

Presentation: Focus Group Results

Lisa Dennis-Perez, LOTT Public Communications Manager, provided a brief summary of findings from three focus groups that were held in August. There were 34 participants in the focus groups, recruited from local senior centers, neighbourhood associations, and families associated with the Hands On Children's Museum. They were conducted to help resolve some of the challenges related to terminology and how we can talk about the study in a more engaging way. Lisa described the focus group process, which led to several key findings:

- The study title is confusing, unclear, and uninteresting
 - Suggest changing the title to "Reclaimed Water Infiltration Study"
- A combination of terms is needed to describe products that contribute to residual chemicals
 - Suggest "medicines and household and personal care products" to refer to the products and "residual chemicals" to refer to what may be left in the water after treatment
- Reclaimed water is a good term to use for the water produced for reuse by LOTT
 - "Recycled water" is too generic a term to accurately reflect that treatment has occurred
- A phrase is needed to clearly articulate the process of recharge
 - Suggest "infiltration of reclaimed water to groundwater"

Holly Gadbaw:

When I heard about the focus groups, I assumed this would be a waste of time and money. Now, hearing about the input you received, it seems it was a very worthwhile effort. Karen Janowitz agreed, as did other members of the advisory group.

There was general consensus from members of the advisory group in support of the proposed changes to the study title and to the terms and phrases that came out of the focus group work.

Discussion: Planning for the Public Workshop

Karla Fowler, LOTT's Community Relations and Environmental Policy Director, reviewed the efforts that are underway to publicize the upcoming workshop. Publicity efforts have been limited so far because we felt it was important to first check in with this group and the LOTT Board about proposed changes to the study title and terminology. After the October 9 Board meeting, we will be ready to spread word about the workshop far and wide. We have an invitation flyer drafted and plan to distribute it, by both snail and email, to the study mailing list, which includes this group, community members who were interviewed as part of the public opinion research, focus group participants, everyone who has signed up to receive ongoing information about the study, and to the community groups we first contacted when recruiting for this advisory group. We also have a display ad prepared for The Olympian and have contacted John Dodge about a possible Editorial Board meeting. Notice of the workshop will appear on the TCTV reader board and numerous online community calendars. A TCTV segment

about the study was recently filmed in which Commissioner Romero interviewed Karla and Art Starry from the County; it will air for one month, beginning on October 18. Karla and Ben also were interviewed for the It's Your Community segment on KXXO radio. LOTT's Executive Director has been making the rounds to the city council and county commission meetings of each of LOTT's four partners with the annual State of the Utility presentation. This year, the presentation focused on the study and the upcoming workshop. Two of those meetings were televised. Notice of the workshop is also appearing on Thurston Talk, LOTT's website, the WET Science Center Facebook page, and Twitter.

Lyle Fogg:

Is there a place to see a list of interviews? I'd like to include them on Facebook.

LOTT staff will create a Facebook event so others can spread the word.

Karla then asked advisory group members for comments on the draft workshop flyer.

Karen Janowitz:

The graphic here doesn't show where the water is coming from, and that makes the pipe look like a hose. Add a building that says LOTT so it is clear the water is treated at LOTT.

Bill Liechty:

The household products listed here exclude lawn care products and other things used outdoors. Since part of the LOTT system is combined, it seems they should be included in examples of products.

Only a small portion of LOTT's system is combined, so occurrence of those outdoor products in wastewater is not as great as other personal care products, but that is something we can look at as part of the study. We will add outdoor products to the list of example products.

Lyle Fogg:

There are downsides to throwing in every possible product that may contribute to residual chemicals because it makes the message more complicated, but it would be good to mention.

Dick Wallace:

On the back page, the concept of risk is in the header, but isn't mentioned until end of the text on that page. It would flow better to flip the paragraphs or move the tagline down on the page so it is associated with the text about risk.

Bill Liechty:

Are you targeting the county at large? When will you intentionally target people who live near future recharge areas? That effort should start soon, maybe by developing lists of HOAs near recharge sites so you can begin to engage those people. Certainly, there should be outreach for those specific neighbors before field work begins.

Holly Gadbow:

For the display poster about infiltration sites, add the target dates for those future recharge areas. Some are so far out that it may be difficult to get people interested.

Bill Liechty:

What opportunity do citizens at large have to influence design of the study?

The intent of the workshops is to gather public feedback and adjust the study design if feedback indicates that something important is missing.

Scott Morgan:

The flyer needs to include context for why reclaimed water infiltration will be expanded in the future, such as "since we will have more wastewater to deal with in the future, and since we cannot discharge more wastewater to Budd Inlet, we need to expand reclaimed water infiltration".

Karen Janowitz:

Make sure to cover the "why, who, what" on one of the display posters.

Lyle Fogg:

Include the history of how we got to where we are. It is important to explain that we are this far down the road, and we need to determine where to go from here.

Dick Wallace:

Replace all that text on the infiltration display poster with bullets. Will there be staff to answer questions and flip charts to record comments at each station? *Yes.*

Patricia briefly reviewed the agenda for the workshop. Advisory group members offered the following comments:

Karen Janowitz:

Will there be a poster that explains the Community Advisory group? *Yes.*

On the display about LOTT, include context including that flows to LOTT are increasing, here's what LOTT can do and can't do, here is why we recharge...

Scott Morgan:

Where will the event be held? *Here in the Board Room, exhibit gallery, and various meeting rooms.*

Bill Liechty:

How will people be asked for their input and how can they influence study design?

That will be explained at several points in the evening – it is explained on the agenda everyone will receive, mentioned during the presentations, included on written comment cards, with note-

takers at each information station, and it is the main objective of the small group discussions that will be held after the presentations.

Karen Janowitz:

Will we get some instruction on assignments prior to the workshop?

Assignments will be emailed before the workshop, including what time to be there, etc. We will hold training for various assignments that night, before the workshop begins.

The group discussed the timeline and the fact that the second workshop will fall only a few days after the next Community Advisory Group meeting, leaving little time for input from the advisory group to influence planning for the workshop. Patricia explained that advisory group members will be asked by email to debrief and provide input on how workshop #1 went, including suggestions for what could be done better, to help prepare for second workshop. The group then discussed the date for the January advisory group meeting, deciding that January 6 works for most members.

Lyle Fogg:

The display poster with the infiltration site maps doesn't work. The legends are repetitive and too small. It needs to be easier to read.

Holly Gadbaw:

The map in the middle of the poster is easier to understand and provides context. The smaller, separate maps are too confusing. Also, the aerial background is hard to look at and doesn't add value.

Karen Janowitz:

It would be helpful to include arrows to connect the smaller maps to the central map.

Scott Morgan:

If you live in one of those little areas, it'd be helpful to see the additional detail of those little maps.

Maureen Canny:

It is good to be able to see your own area on the small maps. Just get rid of the aerial background.

Bill Liechty:

Will the maps be part of the information stations? *Yes.*

Holly Gadbaw:

This is first time we've talked about other recharge sites. It raises a bunch of questions - how were they chosen? Why? That will be distracting, it's a NIMBY issue.

Maureen Canny:

That's why it's important. It is a NIMBY issue. My neighborhood will be taking on all LOTT's contamination for the next 5 years while this is being studied, so it's important to get people thinking about this.

Karen Janowitz:

It helps give people a reason to think about "what is it that you need to know because you live in one of these areas?"

Presentation: Advancing the Framework

Jeff Hansen, Lead Consultant with HDR Engineering, reviewed work that is ongoing to further develop the study framework and scope. He began by stating that the study goal has been revised and a primary study question has been developed. The new goal is to provide local scientific data and community perspectives to help policymakers make informed decisions about future reclaimed water treatment and uses. The key question that the study is intended to answer is: 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?

Jeff then reviewed some additional detail about water quality characterization - what should we be looking for, including both regulated and unregulated parameters. We have defined a list of 97 unregulated residual chemicals we want to look at. We arrived at this list with the purpose of evaluating treatment removal effectiveness and presence in background waters. The list was developed by looking for compounds that are frequently found in reclaimed water, those that are persistent in the environment, and compounds that other states (primarily California) are requiring utilities to monitor for as health and treatment performance indicators. Jeff then spoke about where sampling would occur for background characterization. For groundwater, three sites would be examined using existing domestic and municipal/community wells: Hawks Prairie (the infiltration site currently in use), LOTT's South Deschutes property (rural), and LOTT's Henderson property (residential). Surface waters will be characterized using samples from several locations along both the Deschutes River and Woodland Creek. It is likely that Puget Sound will not be sampled, but existing data will be gathered from a literature review.

Dick Wallace:

For Puget Sound, it would be good to break out Budd Inlet from the rest of Puget Sound, because of local interest and the location of LOTT's outfall.

Bill Liechty:

What are you budgeting for this sampling? It must be costly.

We are not yet far enough into scope development to provide a total, but for context it is \$1,000 per sample for the lab analysis alone.

Lyle Fogg:

Are there any regulated contaminants that are persistent in these waters?

Data about regulated contaminants already exists, so there may be opportunity to correlate some of this data.

Bill Liechty:

Are we talking 10s or 100s of samples?

We are talking about more than 100 samples.

Holly Gadbow:

We know the Deschutes is pretty polluted already. How would you evaluate the potential impact of recharge on the river – based on travel time to the river?

Although the Deschutes is polluted, we don't know to what extent in terms of unregulated contaminants. So, the Study will look at existing conditions with respect to those parameters, and then evaluate how recharge may alter those conditions. And yes, travel time is the key variable that will be studied at those sites that are in proximity to the Deschutes.

Maureen Canny: Why are we testing surface water? Aren't we most concerned about groundwater and drinking water?

Yes, that is the point of the groundwater background monitoring. But, surface water background monitoring is also important in terms of defining background conditions for the purposes of the ecological risk assessment, since some infiltrated reclaimed water may travel subsurface to surface waters.

Maureen Canny: How does current monitoring at Hawks Prairie compare to this sampling plan?

Current monitoring focuses on regulated parameters and extends only just outside the boundaries of the Hawks Prairie site. By contrast, this sampling plan will look further downgradient from the site.

Karen Janowitz:

How do you determine surface water sampling locations? Are they the ones that are more likely to interact with groundwater?

Yes, these locations are likely influenced by groundwater and provide the added benefit of having some existing data regarding regulated contaminants.

Karen Janowitz:

It may be helpful to make an extra poster about the Hawks Prairie site, including what is currently going on there and what is being sampled for there.

Jeff then briefly reviewed the approach for assessing relative risks to human health. It is proposed that this part of the study be developed as a tiered approach similar to standard EPA risk assessments.

Bill Liechty:

Is this based on how others do this type of assessment? *Yes, it is based on how others do this. Are there ADIs for all compounds? We will need to determine what's in the water and then determine which of those chemicals have ADIs. We expect most that are found will have ADIs.*

Maureen Canny:

What about the non-ADI ones? Do they go into the Tier 2 part of the assessment? *Yes. If we find a chemical and it is above ADI, it moves into Tier 2 for additional assessment. If it doesn't have an ADI, it moves into Tier 2. In Tier 2, we will refine exposure assumptions. In terms of combinations of chemicals, we can combine the risk of multiple chemicals, or combine groups that impact the same organ or system in the body, or that have the same mechanism for impacts.*

Lyle Fogg:

Are we summing the short list (Tier 2) or long list (Tier 1)?
We will defer to the risk assessment experts for their recommendation on that. It can be done both ways, and will likely depend on the nature of the results.

Dick Wallace:

What about environmental health?
The ecological risk assessment component of the study will follow an approach similar to the human health risk assessment, but there isn't as much data that exists on that and it is more complex (e.g., more than just one specie, as is considered in the human health assessment). I am not prepared to speak to that in more depth today.

It will be important to look at the relative risk of different treatment scenarios and also of different types of reclaimed water uses and different types of exposure.

Maureen Canny:

Given the duration of the study and the length of time Hawks Prairie will have been in operation, what about epidemiology studies like incidence of cancer in children in the area surrounding Hawks Prairie? *We do not know whether that type of assessment would be statistically relevant in this case as those types of studies are generally done over a longer period of time.*

Outline of Videos for Website

Karla then shared a draft outline of numerous video segments that will be developed to post on the website, for presentations, for use in the WET Science Center, and for public meetings. This is an early draft of the potential video topics, and the advisory group was asked for their comments.

Dick Wallace:

It is important to cover why we are doing the study.

Bill Liechty:

This group struggled to understand the “why” of the study; that needs to be explained first thing.

Karen Janowitz:

That should be upfront, simple, and taken from the content presented by Karla at meeting 1.5.

Dick Wallace:

Content should not just teach about contaminants, but help people learn how to do something different than business as usual.

Scott Morgan:

There needs to be content upfront, included as part of the description of LOTT, that describes the regulatory framework, who is responsible for decision-making, and the operational parameters.

Holly Gadbow:

Videos should cover where have we been, where are we going, and why.

Karen Janowitz:

People don't care much about who is LOTT, but they may care about what is going on now, what are the issues, and why are we talking about this.

Bill Liechty:

There isn't any content here about economics. That is part of the fourth key question, but it is difficult to discuss in detail now, since we are so early on in the study. It could at least be mentioned that it will be a consideration when we get into question #4.

Maureen Canny:

You need to include content about what we might be drinking and why people should be concerned about what might be in the water. That will get people hooked so they will watch the videos, and get engaged. It would be good to share what the costs might be to clean the water better.

Holly Gadbow:

You will need to answer the question: why not just dump it into Budd Inlet instead of recharging?

Ruth Shearer:

There's nothing in here about water conservation, but it is important to explain that sending less water down the drain means we don't need as much infiltration in the future.

Lyle Fogg:

The segments aren't meant to be sequential, so people will pick and choose.

Bill Liechty:

Will you address site locations in the videos? *Yes.*

Scott Morgan:

What is rough percent of flow that is treated to reclaimed water standards? *It is about 10%.* That should be included on the poster. MGD numbers are intimidating and people need context about the total amount of flow.

Holly Gadbow:

How much water is discharged into Budd Inlet typically? *It is about 10-11 million gallons per day.*

Karen Janowitz:

You need to provide context for MGD – maybe compare to swimming pools?

Karla then offered that staff will look at this outline again and make sure the core issues that need to be addressed are included and that the segments are titled in engaging ways.

Karen Janowitz:

Because the advisory group meeting is in such close proximity to public workshop 2, we will need to have some email review of materials prior to our next meeting, as well as a summary of input collected from public workshop 1.

Next Steps

Patricia reminded the group that more information about their assignments for the workshop will be coming by email. She also reminded the group that their next meeting is December 4, and the second workshop is December 9, so materials will be sent by email for the group's review.

Community Advisory Group – Reclaimed Water Infiltration Study

Meeting 2.3 – December 4, 2013 – Summary

Welcome and Initial Business

The meeting opened at 6:00 pm with Patricia Tennyson of Katz & Associates acting as the meeting facilitator. Patricia asked for a volunteer from the group to attend the Board meeting on December 9, and Scott Morgan volunteered.

Public Comment

Members of the public in attendance were invited to make comments. To leave adequate time to complete all the business on the meeting agenda, members of the public were asked to limit their comments to five minutes. Two members of the public chose to make comments:

Janine Unsoeld:

Ms. Unsoeld handed out last issue of Green Pages, which included a photo of one of the Community Advisory Group members at the first public workshop. Ms. Unsoeld then stated that she attended one of the small group discussion sessions at that workshop and was impressed with the discussion that occurred there.

Dennis Burke:

Mr. Burke provided a handout. He then stated that there are many things that are bothering him about information being provided. One is the fact that the study consultant claimed that it would take 10 years for reclaimed water to travel from the Hawks Prairie infiltration site to Woodland Creek. He compared that very slow rate to the rates travelled underground by moles and worms, which are much quicker. He stated that he checked the hydraulic conductivity rates provided by the U.S. Geological Survey in the area, which suggest flows would travel much more quickly than that stated by the consultant. By his calculations, it appeared that the water would travel to Woodland Creek in 14 days, and that a mistake must have been made in the consultant's work or the data must have been manipulated. He then encouraged the members of the advisory group to look at the information provided by LOTT throughout this process with great skepticism, as it appears to be biased. He then asked LOTT staff to provide him with all the data that was used in their model so that he could review it in more detail.

Presentation: Chipping Away at Big Questions

Jeff Hansen, Lead Consultant with HDR Engineering, reviewed a couple big questions that have been of particular interest to the group:

Question 1:

What does current research suggest about the role of temperature in treatment effectiveness?
Jeff reviewed data from two other areas in the world with cooler temperatures where soil aquifer treatment is used. One is Berlin, Germany and one is Aurora, Colorado. In Berlin, data show that removal effectiveness of residual chemicals, in terms of the percentages removed, is

similar to that of areas in the arid southwestern United States. However, it takes a bit longer in Berlin to reach that same removal level. After a time period of about two months, removal effectiveness in Berlin catches up to that in arid areas.

Maureen Canny:

Please explain riverbank filtration.

In Berlin, treated wastewater is discharged to a river. Then downstream, water is withdrawn through shallow wells that are located near the river, which is known as river bank filtration. The river water (which is comprised in part of treated wastewater) goes through treatment between the river and the wells that is similar to soil aquifer treatment. The water is then treated further, mainly for aesthetic purposes, and sent to taps as drinking water.

Ruth Shearer:

Can you provide the data from Berlin for us to review?

Yes, we can get you that information.

Scott Morgan:

When you say similar, what does that mean?

It means that removal efficiencies are similar; the percent removed is similar.

Jeff then explained that in Aurora, data are available that look at seasonality between summer and winter removal efficiencies. The rate of removal of the studied residual chemicals was greater in the summer than the winter. Removal occurs in both seasons, but it occurs more quickly in the summer. Temperature does have an effect, and that is something we will be looking at as part of the study.

Holly Gadbow:

In Aurora, does it get treated in the ground more than once? How does it differ from LOTT's treatment train?

Aurora's source water is secondary treated effluent, which mixes with river water after the effluent is discharged from Denver Metro's treatment plant. The water seeps into the banks of the river, which is referred to as riverbank filtration. It is pumped out from shallow wells along the riverbank and then put back into the ground a short distance from the wells – this is known as aquifer recharge. After some time has passed, the water is pumped out of the groundwater basin and sent through a pipeline to the Aurora Reservoir where it receives some additional treatment, but it does not go through reverse osmosis. The treated water is sent to one of Aurora's drinking water treatment plants along with other water in the reservoir and becomes part of Aurora's drinking water.

Question 2:

Will the study address potential cumulative or synergistic effects of combinations of residual chemicals?

Jeff explained different types of synergistic effects. Synergistic effects are difficult to predict, but the framework for risk assessment used by EPA is sufficient to allow an assessment of additive effects and produce a conservative evaluation of synergistic effects. He then walked through an example of evaluating additive effects from multiple chemicals that have different mechanisms of action in the human body.

Bill Liechty:

Is this a standard approach that is generally accepted?

There are other approaches, but this is one that is generally accepted. The one we use in the study will depend in part on what we find in the water.

Maureen Canny:

Why is 1.0 the magic number, when the ADI numbers vary widely?

That value is used because 1.0 represents the point where ingested exposure is equal to the threshold concentration (it is a ratio, not a concentration).

Ed Steinweg:

Why were 2 liters used as the dose threshold when this can vary depending on the individual?

That is the standard value that is used in risk assessment. When we get into the Tier 2 level assessment, we can refine that assumption.

Lyle Fogg:

Do you do this in Tier 1 or 2?

We plan to look at this in Tier 1.

These ADIs can refer to all kinds of health breakdowns?

Yes.

Bill Liechty:

How do you handle things that don't have established ADIs?

There is a standard EPA based approach for establishing thresholds for those chemicals, but nearly all of the chemicals we plan to look at have ADIs.

Debrief: Public Workshop 1

Patricia then facilitated a discussion to review the first workshop, gathering feedback from advisory group members regarding what went well and what could have been improved.

Things That Went Well:

- Format worked well
- Small group discussions were insightful
- Presentations were okay
- Posters were good
- Attendees:

- represented a depth of experience in water regulations,
- had a lot of knowledge,
- really enjoyed hearing what they had to say
- refreshing that people without any background knowledge were interested enough to come

Things that Could Have Gone Better:

- Attendance could have been higher
 - It's a very expensive process for only 16 members of the public – lots of expensive consultants
 - Might have been better if it was live but not sure
- Ideas for improving future attendance:
 - List it under What's Happening on second page of Olympian
 - List in the Olympian Power and Light
 - Market to the people who live around the proposed facilities
 - Have a catchy graphic on social media like Facebook
 - Contact high school and college teachers to offer extra credit for attendance
 - Include on Oly Blog calendar, TC ProNet community calendar, SPSCC Faculty Member listserv

Patricia then asked the group to review the handout that listed the comments received at the first workshop and responses to each comment. She asked the group if this approach seemed reasonable for documenting comments. The group suggested that it would be helpful to include the commenter's name, when possible, with the comment, so that they could more easily reference the responses to their particular comments. Overall, they felt that the approach was reasonable and similar to that used for environmental evaluations. Patricia then asked them for feedback on the draft poster to be used at the second workshop. There was some concern that people may not be familiar with terms like "lysimeter" and "tracer." After some discussion, however, it was decided that using these terms is okay since the information stations are staffed with people who can answer those types of questions.

Presentation: Overview of the draft Scope of Work

Jeff provided a presentation on the draft study scope. It began with a review of the study goal and key study questions. He then addressed the four components of the study - Water Quality Characterization, Treatment Effectiveness Evaluation, Risk Assessment, and Cost Benefit Analysis - and the tasks that fall under each of those components.

Bill Liechty:

I understand that lots of technical staff are involved in developing the scope, but what is the background, qualifications of staff who are involved in developing tracer tests and such? *The consultant study team includes experts in these fields. We have a science task force with partner city and county staff that have expertise in these fields that is involved in reviewing and refining the scope. We have another level of review with the LOTT Technical Sub-Committee (Public Works Directors and others). Finally, we have the independent peer review panel, which is made up of six experts representing various fields, including hydrogeology, modeling, and tracer studies.*

There seems to be concern about time of travel and the objectivity of how that will be determined. It is a critical piece of the study. There should be objective third party review of the methodology to ensure it is credible.

That is exactly the role of the independent peer review panel, which includes hydrogeology expertise and other experts in these fields, to review and critique the science being applied in the study.

Ruth Shearer:

Is that brown line in the graphic an aquitard? I am questioning putting an infiltration site over an area with a break in the aquitard and no protection to deeper water supply aquifers.

Yes, the brown line represents a geologic layer that is not as permeable, however, this graphic is intended only to illustrate the concept of infiltration. It is not meant to represent the exact conditions at any one infiltration site.

Maureen Canny:

If Hawks Prairie has been off line for a year, then the sampling will not reflect the continuous use as an infiltration site. It has had a break from reclaimed water for a year.

That is correct. The background sampling cannot be considered 100% free of influence from reclaimed water and it cannot be considered 100% indicative of groundwater under the influence of reclaimed water. However, sampling associated with treatment effectiveness will occur over a period of time in which the site will be on line again, and we will be able to track the movement and treatment effectiveness associated with soil aquifer treatment at that site.

Scott Morgan:

Aurora, Colorado reflects seasonal variation, but this study includes sampling groundwater only once, not seasonally. It does not seem to address seasonality adequately.

Background sampling is only planned to be conducted once, but during the tracer test, sampling will be more frequent and will reflect seasonality.

Maureen Canny:

Will the surface water sampling be subject to other sources of contaminants that are not subject to reclaimed water inputs?

Correct, the surface waters sampled are not subject to influence from reclaimed water, but they are influenced by stormwater and other sources of contamination.

Does the arrow in the graphic between groundwater and surface water mean that reclaimed water can reach our streams after traveling underground? *Yes, it does.* If so, that should be made obvious.

Ed Steinweg:

At the start of this process, we were trying to determine if reclaimed water can be used safely for recharge. Now we are using all this data from other places that may not be applicable to our area. We have a site that is already in existence and being used. This is a gold mine of information that can be provided to policy makers so they can see the true impacts in our local

area. Can you sample upstream and downstream from the Hawks Prairie site and isn't that all the data you need? That would show if there is a problem that needs to be mitigated.
That is the intent – to focus a lot of the study activities at the Hawks Prairie site, both upstream and downstream. We need to better understand the situation at Hawks Prairie, and then understand what the risks are and what can be done about them, and also look at other locations where infiltration is planned.

Holly Gadbaw:

The community has concerns about what's happening at Hawks Prairie, but they also have concerns about the reclaimed water from the Budd Inlet Plant, which has a different treatment process and may have a different composition. Is that being addressed in this study?

The quality of that reclaimed water will be characterized, both from the Martin Way Plant and the Budd Inlet Plant. The water quality from the Budd Inlet Plant needs to be understood to examine the potential risks from future infiltration sites that would utilize that water.

You cannot infiltrate reclaimed water just anywhere - the sites must have certain soil conditions. What are the soil conditions that are necessary for infiltration? People will want to know that. Where does that fit under the scope?

When the sites are purchased, some initial background work is done to assess the soil conditions. As part of the study, we need to advance that work to better understand the soil conditions at the future infiltration sites included in the study so that we can better understand travel times and potential risks. This fits under the Treatment Effectiveness component of the study.

Bill Liechty:

We would all benefit from knowing how LOTT monitors the infiltration sites, how the study will look at travel times, and how that will be applied to other parts of the county. How will data from the study refine the model at Hawks Prairie? Help us better understand that.

Okay, we will plan to spend some time on that topic at the next meeting.

Holly Gadbaw:

What is the purpose of the poster?

The poster will be used at the Study Framework and Design information station.

I wouldn't understand some of the terms on the poster. Also make it clear that costs and benefits are not just financial. We need to consider downsides too.

Lyle Fogg:

Will this be a new station at the workshop?

It will be combined with the Framework Station.

It would be helpful to also provide a handout with the basic scope information. The term "Scope of Work" sounds like jargon to the general public.

Maureen Canny:

Is infiltration planned at the Mullen site?

That is a potential future infiltration site, but it is not currently planned to be online until the 2030s.

Discussion: Planning for Public Workshop 2

Patricia then asked the group who planned to attend the second workshop and help staff the event. Group members discussed their availability and Lisa let them know she would send out more details to those who are available to help.

Discussion: Finalizing the Scope

Ben McConkey, LOTT Project Manager for the study, explained the schedule for review and refinement of the draft scope of work. It will be distributed to interested groups and refined over several iterations over the next few months. The current schedule includes providing the LOTT Board with a proposed scope of work in February, and asking for Board action in March. He then indicated that, because of recent shifts in the schedule, it might be necessary to postpone the next advisory group meeting until February. That way, the advisory group would be reviewing revisions from all the various groups, including the peer review panel.

Lyle Fogg:

Can we review documentation about how the modeling will work or have an educational presentation at the February meeting so we can better understand it?

Ben explained that we can plan to do that, but that reviewing the actual draft scope of work may answer many of the advisory group's questions. It will be available for review this week, and comments will be collected over the next month and a half. He then stated that at next advisory group meeting, we will plan to have an education session on hydrogeology and the modeling effort, as well as a summary of key points that come back from the scope review by the peer review panel and others and how the scope has changed based on that input. The group then discussed possible dates in mid-February for the next advisory group meeting.

Lyle Fogg:

The Board always wants feedback from the advisory group in terms of "how is it going?" We should time our next meeting so that we have a chance to decide how we feel about it and then report that to the Board.

Next Steps: Role of Community Advisory Group in Phase 3

Patricia then encouraged the advisory group members to be thinking about their willingness to continue their work into the next phase of the study. She explained that there would be a period of relatively infrequent meetings while the field work is underway – perhaps once every 3-4 months. The groups’ activities would be expected to ramp up again toward the later phases of the study, when results start to become available and need to be communicated to the public. She indicated that the group would talk more about their role and their willingness to continue their work at the next meeting.

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Community Advisory Group – Reclaimed Water Infiltration Study

Meeting 2.4 – April 2, 2014 – Summary

Welcome and Initial Business

The meeting opened at 6:00 pm with Patricia Tennyson of Katz & Associates acting as the meeting facilitator. Patricia reminded the advisory group members and audience that meetings are intended as working meetings of the advisory group, and for that reason, as much time as possible will be reserved for the members to discuss issues. She then reviewed the scoping activities that have taken place since the last advisory group meeting in December. Patsy asked for a volunteer from the group to attend the Board meeting on April 9, and Karen Janowitz volunteered.

Public Comment

Members of the public in attendance were invited to make comments, and none of the people in attendance chose to do so.

Presentation: Chipping Away at Big Questions

Jeff Hansen, Lead Consultant with HDR Engineering, provided an overview of several basic concepts related to hydrogeology, including velocity, flow paths, and travel time. Ultimately, these concepts define how long it takes water to travel not only vertically, but also horizontally underground from recharge basins to points of interest, like drinking water wells or streams. Time is important to the study because the longer the travel time, the greater the opportunity for residual chemicals to be degraded. Equations for velocity and travel time were reviewed.

Maureen Canny:

If permeable soils result in quicker velocity and shorter travel time, and you are looking for sites with high permeability, doesn't that mean less degradation?

It is a careful balance. When looking for possible infiltration sites, the site must have sufficient permeability so the site can handle a certain amount of water, but must not be so permeable that travel times are brief to sensitive receptors like drinking water wells.

Jeff used the equations for velocity and travel time to explain the modeling work that was completed 10 years ago as part of the original assessment of the Hawks Prairie site. He pointed out the assumptions that were used in those equations as part of that original effort. Jeff then explained the proposed work for the Hawks Prairie site as part of the current study, which will include actual measurements in the field. Those measurements will be plugged into the equations and used to refine and calibrate the model.

Karen Janowitz:

The aerial that shows the area around the site shows all the neighbors. Are the neighbors that have drinking water wells guinea pigs since there are still questions about the safety of the water?

This site has been in use for about 6 years, and its use was approved and permitted by the state Departments of Health and Ecology under strict water quality and monitoring guidelines. Given the information from the original modeling and water quality requirements, the state determined that

infiltration was safe. We also recognize that residual chemicals have not been part of regulatory requirements to date. Because questions about residual chemicals have been asked, LOTT chose to conduct this study.

Dick Wallace:

What types of chemicals will be monitored? Do they include flame retardants and other compounds? A wide array of pharmaceuticals, flame retardants, food additives, and much more will be monitored. The list includes 97 chemicals. We reviewed the proposed list at a previous meeting, but you may have been out of town. We will make that list available on the website, once it is finalized.

Maureen Canny:

Is the tracer tied to the water quality sampling?

The tracer and the water quality sampling are related, but not directly. We are sampling for the tracer and for the suite of residual chemicals. If we know that the water takes one year to travel from point A to point B, and we see that carbamazepine is 100 ng/L at point A and 50 ng/L at point B, we can correlate the degradation and the travel time.

What is your control outside of the flow path?

We will be sampling upgradient from the recharge site to see if there are "background" levels of residual chemicals. If there are, we will know that there are other influences in the area, including septic systems, which may be contributing to concentrations of residual chemicals.

How do we know which way the water is flowing?

We sample the groundwater levels in many wells and map out the levels to determine gradients, and that tells us which direction the water is flowing underground.

And I want to state that Karen, your comment is exactly what I have been worried about, since I live out in that area.

Lyle Fogg:

Is there a plume of reclaimed water?

Yes, there are other graphical representations that come out of the models that can illustrate the area where the reclaimed water signature exists. That may be similar to the "plume" look you are referring to.

Is there a chance there are other surface waters, like wetlands, where the reclaimed water in groundwater can influence the wetland?

Those types of situations, where groundwater emerges, are referred to as seeps. We will look for those. We don't expect to find them at the Hawks Prairie site, though we may find them at the Henderson site.

Are there areas where the water moves into deeper aquifers?

This lower impermeable layer is highly impermeable, so it is assumed that it would take decades for that water to move into the deeper aquifer.

Dick Wallace:

Aren't there surface waters, like Eagle Creek, that are closer to the Hawks Prairie site than Woodland Creek and did the existing model consider that?

Yes, Eagle Creek is closer in distance to the infiltration site, and the model did look at that. Eagle Creek is at a higher elevation than Woodland Creek. The model indicated that infiltrated reclaimed water from the Hawks Prairie site would be traveling underground at an elevation deeper than, or "below", Eagle Creek, so it would not influence Eagle Creek. The model did show that the infiltrated water would interact with Woodland Creek after a travel time of about 10 years.

Karen Janowitz:

Just a statement – real life geology doesn't look as uniform as this graphic. Real geology is not that simple. There are breaks and irregularities in the layers within the aquifer.

That is correct. We have simplified these cartoons to communicate certain concepts, but the geology is not that uniform. In the graphics we prepared for presentations about the draft scope of work, those showed the breaks and irregularities that can exist in the geology, but I don't have those handy now to show you.

Update: Review Scoping Work Since Last Meeting

Lisa Dennis-Perez, LOTT Public Communications Manager, provided highlights of the public discussion at the second public workshop held back in December. Ben McConkey, LOTT's Project Manager for the study, explained some of the changes that have been made to the draft scope since the advisory group last met.

Tina Peterson:

If pocket gophers are an issue at Henderson, they will probably impact LOTT's other site near East Mullen. There are a lot of pocket gophers out there!

John Cusick:

Does the budget estimate for the scope include doing work at a second site?

It includes some work, but not the full site evaluation, which will be done separately from the study.

Maureen Canny:

Are you saying that Hawks Prairie will be the subject of most of the study scope, and you won't be looking at the deep aquifer?

No, the current version of the scope does not include the deep aquifer for background monitoring, but that will change. It will be included in the next version of the revised scope.

If the other sites are not put into use until further into the future, does that mean even more water will be sent to the Hawks Prairie site?

No, we can only produce so much water on that side of our service area. We will need another recharge area in the southwest portion of our service area in the early 2020s.

Tina Peterson:

Is the South Deschutes area forested?

Yes, it is mostly forested, so pocket gophers may not be as much of an issue at that site.

Bill Liechty:

Will we be hearing back regarding individual comments that we've made, in relation to peer review and overall?

Yes, HDR will prepare a document that lists each comment received and responses to each comment.

Ed Steinweg:

What is the limitation to discharging more wastewater into the Inlet?

The limitation is primarily nitrogen, which fuels algae growth and decreases oxygen in the bay.

Is there opportunity to use different technologies to remove more pollutants from the discharge?

Yes, we are always learning about and looking into different technologies. For example, we are getting ready to complete a Process Improvements project which will improve our ability to control the nutrient removal process.

Dick Wallace:

It is likely that there will be building pressure from the state to remove more nitrogen from wastewater plant discharges.

Update: Overview of Peer Review Panel Meeting

Ben McConkey provided an overview of membership on the Peer Review Panel and activities at their first meeting here in mid-February. Ben then shared some initial feedback from the panel, including:

- Hydrogeologic assessment will be needed at Henderson or other alternative study sites.
- Monitoring is needed to determine other influences on groundwater quality, such as septic systems.
- Monitoring is needed across the various aquifer layers to assess migration.
- The length of the tracer study should not be less than 12 months.
- The panel would like to review the tracer study plan and monitoring plan.
- Monitoring for metals should be considered as part of the ecological health assessment.
- The study team should be aware of the challenges associated with human health risk assessment.
- Some additional parameters should be added to the monitoring plan.
- The study team should publish peer-reviewed scientific papers of results of this study.

Bill Liechty:

Is the peer review panel satisfied with the approach to human health risk assessment?

I cannot answer that entirely tonight. The peer review panel and study team are still sharing information back and forth to better understand and assess the approach. We expect to have some recommendations on this topic from the panel, but we don't yet have their final report.

Will we hear about that feedback?

Yes, we will make that available to anyone who is interested in it as soon as we receive the final report.

Karen Janowitz:

Will you send out the final report when it is available? Yes.

Discussion: Input on Phase 3 Scope of Work and Update: Next Steps for Finalizing the Scope

Patsy asked the group members if they had any thoughts or concerns about what they had heard regarding scope changes. There were none. Ben then provided a summary of next steps for finalizing the study scope of work.

Bill Liechty:

What are the next steps for finalizing the scope and will this group have additional opportunity to comment on the scope from this point forward?

Ben McConkey explained next steps for finalizing the scope of work for the study. Once the final report is received from the peer review panel, all the comments that have been received (from the peer review panel and others, including members of the advisory group) will be reviewed and considered and revisions will be discussed with the Science Task Force, Technical Sub-Committee, and Board of Directors.

We expect to have the scope ready for Board action in June and the study field work would then begin. Lisa will speak more to the role of the advisory group.

Scott Morgan:

We have heard that this study is mostly focused on the Hawks Prairie site. We have heard that a thorough assessment of each additional site will be required. How much of this effort will be applicable to those future sites or will you have to repeat this study effort at every future site?

Jeff explained that once this study is done, we'll have more information about degradation of residual chemicals in this part of the world and what travel times are necessary for degradation to occur here. At the point when a future site is assessed for hydrogeologic conditions, which will have to happen as part of permitting of that site, the information about travel times can be applied to that site.

Maureen Canny:

What is Plan B? What if we find out that there is something left in the water that takes 50 years to break down - what do we do?

Part of the study is to consider, in the cost/benefit analysis, ways to reduce risk, which may include adding additional levels of treatment to remove more residual chemicals. That is something that will be looked at as part of the study.

Ruth Shearer:

What seasons will be included in the monitoring plan?

We will do the testing during all seasons of the year.

I am concerned that bacteria in the soil doesn't do any significant degradation below 40 degrees.

Aerobic bacteria are still active in colder temperatures, though it takes them longer to do their work. We see that reflected here at the treatment plant. They still do the work, but it takes them longer and we need more of them. But we will be monitoring to assess that over all the seasons. Also keep in mind that groundwater temperatures are different from air temperatures.

What is the ratio between aerobic and anaerobic bacteria?

It varies by depth. The aerobic bacteria are found in the upper levels of the vadose zone, with more anaerobic bacteria deeper into the vadose zone, nearer to the saturated zone.

Karen Janowitz:

I like what we have seen so far from the peer review panel. They are taking a comprehensive look, and that makes me more confident.

Discussion: Review of Public Involvement Plan Activities

Lisa provided an overview of the document Public Involvement Plan Implementation Summary – Phase 2. She explained that the document summarizes activities completed in preparation for the scoping phase of the study and during the scoping phase. She then reviewed Table 3 of the document in detail, which specified planned activities for Phase 3 of the study and identified lower priority activities that may not be implemented due to budget limitations. She asked advisory group members for their input.

Karen Janowitz:

What about exhibiting at the Thurston County Fair? That is a good way to get the word out about the study.

Tabling at those types of events is very time and staff intensive, especially that event, which lasts several days. That may be a good opportunity to partner with one of the cities or the county and have information about the study at one of their booths.

Maureen Canny:

I like the focus on source control. It would be great to provide local teachers with a mini-curriculum with activities that kids can do to reinforce these messages.

Pixie Needham:

Do you get a lot of public input through the website even though you don't get many people viewing the videos posted on the website?

We have not received input through the website. We created opportunities for people to provide input related to the two public workshops, for those people who might be interested but were unable to attend the workshops, and we did not receive a single comment that way.

Maureen Canny:

One of the best things about the county toxins presentation is that attendees get to make a non-toxic lip balm and take it home with them. A take-home like that reinforces the message and gets people interested.

Discussion: Phase 3 Role of Community Advisory Group

Patsy explained that a draft summary report was put together to document the Community Advisory Group activities of Phase 2. She asked the group members if they had any thoughts or comments on the draft report.

Dick Wallace:

Under bullet #5, the report references learning about related topics. We have heard a lot about many topics, but at this point, it would be helpful to learn more about costs associated with other levels of treatment. That topic will also help get the attention of adults.

We will learn more about the costs and tradeoffs as the study moves into the cost/benefit analysis.

Ruth Shearer:

Are the partners active in source control?

Yes, the county is the most active, providing their Protect Teens from Toxins presentation throughout the community and addressing those issues in their informational materials. The cities are also involved; they host medicine drop-off stations and promote national medication take-back events.

Scott Morgan:

When the partners are mentioned in this report, it would be helpful to list the specific partners, as it is not always clear who you are referencing.

We will make that change.

Maureen Canny:

The public will be more interested in what they can do to help and about findings that are coming out of the study. We should do more outreach about source control and what we already know.

Karen Janowitz:

Can you complete the meeting notes before the Board meeting to help with the report to the Board?
We will try to turn them around but may not have them in time. You can certainly talk with Lisa more about what to cover if the notes are not yet available.

Lisa then presented the “Very Draft” Schedule for Phase 3 Community Advisory Group activities. She explained that the dates listed are tentative, since it is difficult to predict when the study will reach various milestones. She asked advisory group members for their input on the schedule and how they feel about meeting for the sake of meeting (to remember that they are a group) or meeting less frequently, to minimize the burden on their time.

Karen Janowitz:

I think it is good to tour the Hawks Prairie site and other sites too. We should consider having another tour (optional) to look at work that is being done in the field.

Maureen Canny:

Yes, it might be helpful to tour other sites that are being considered for infiltration.

Ben McConkey:

It might be good to have advisory group members participate in presentations to community groups, to help engage other community members.

Scott Morgan:

I hope that advisory group members will still play a role in providing feedback and guidance on informational materials that still need to be developed. There is a lot of work to be done there and advisory group members may be able to help.

John Cusick:

Can the tour of Martin Way and Hawks Prairie be scheduled for sooner in summer?
Yes, we put it on the schedule for fall because we were concerned it would conflict with your summer vacations, but we can certainly move it up in time.

Dick Wallace:

Three years is a long time to commit to as an advisory group member. In this next phase, we should consider succession planning - how do we help the next crew of folks catch up and take over?

Lyle Fogg:

It would be good to have an informal way to communicate and maybe to gather informally to remain cohesive as a group.

Tina Peterson:

“Meet Up” works pretty well to get groups together informally.

Ed Steinweg:

I've appreciated the sharing of information articles that have come from committee members. I'd like to be kept up on studies from other areas and changes in technologies.

Patsy Tennyson:

I will keep you posted on a research project I am working on regarding direct potable reuse and public perception that may be of interest.

Ed Steinweg:

Yes, we are focused narrowly on what we are doing - it'd be good to have a broader view of what is going on elsewhere.

Maureen Canny:

I'd like to know more about legislative efforts at source control and if manufacturers are getting on board with those efforts.

Lisa then asked the advisory group members if they are willing to continue their service into Phase 3 of the study. All of the members in attendance agreed that they would like to continue. That included: Scott Morgan, Karen Janowitz, Tina Peterson, Ruth Shearer, Maureen Canny, Pixie Needham, John Cusick, Dick Wallace, Ed Steinweg, Lyle Fogg, and Bill Liechty. Lisa indicated that she would contact Holly Gadbaw and Marissa Dallaire to ask them if they are willing to continue their service as well. She also shared with the group that as a cost-saving measure, meetings of the group would not be facilitated by Patsy for Phase 3, since that involves expenses associated with her travel from California.

Dick Wallace:

I agree that is a good way to reduce costs. I hope that a facilitator will be provided if it is needed. *Yes, we will look into local facilitators for activities that would benefit from facilitation.*

Wrapping Up Phase 2: Celebration and Thank You

Lisa summed up the next steps for wrapping up Phase 2 work. She will send out the draft Meeting 2.4 Summary for review by the advisory group members. Once their comments are received, the revised Meeting Summary will be added to the appendices for the Phase 2 Final Report, and it will be finalized. Advisory group members will also receive the Final Report from the February Peer Review Panel meeting, the revised Study Scope of Work, and HDR's Response to Comments document, as soon as each is available.

The Study Team then thanked the advisory group members for their service in Phase 2 of the study. They also thanked the audience members, many of whom have been following the work of the advisory group closely. The meeting ended with refreshments and celebration.

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