Reclaimed Water Infiltration Study

Overview

LOTT Clean Water Alliance

Lacey • Olympia • Tumwater • Thurston County

City of Olympia
Utility Advisory Committee
February 6, 2014

Ben McConkey
Project Manager
LOTT Clean Water Alliance

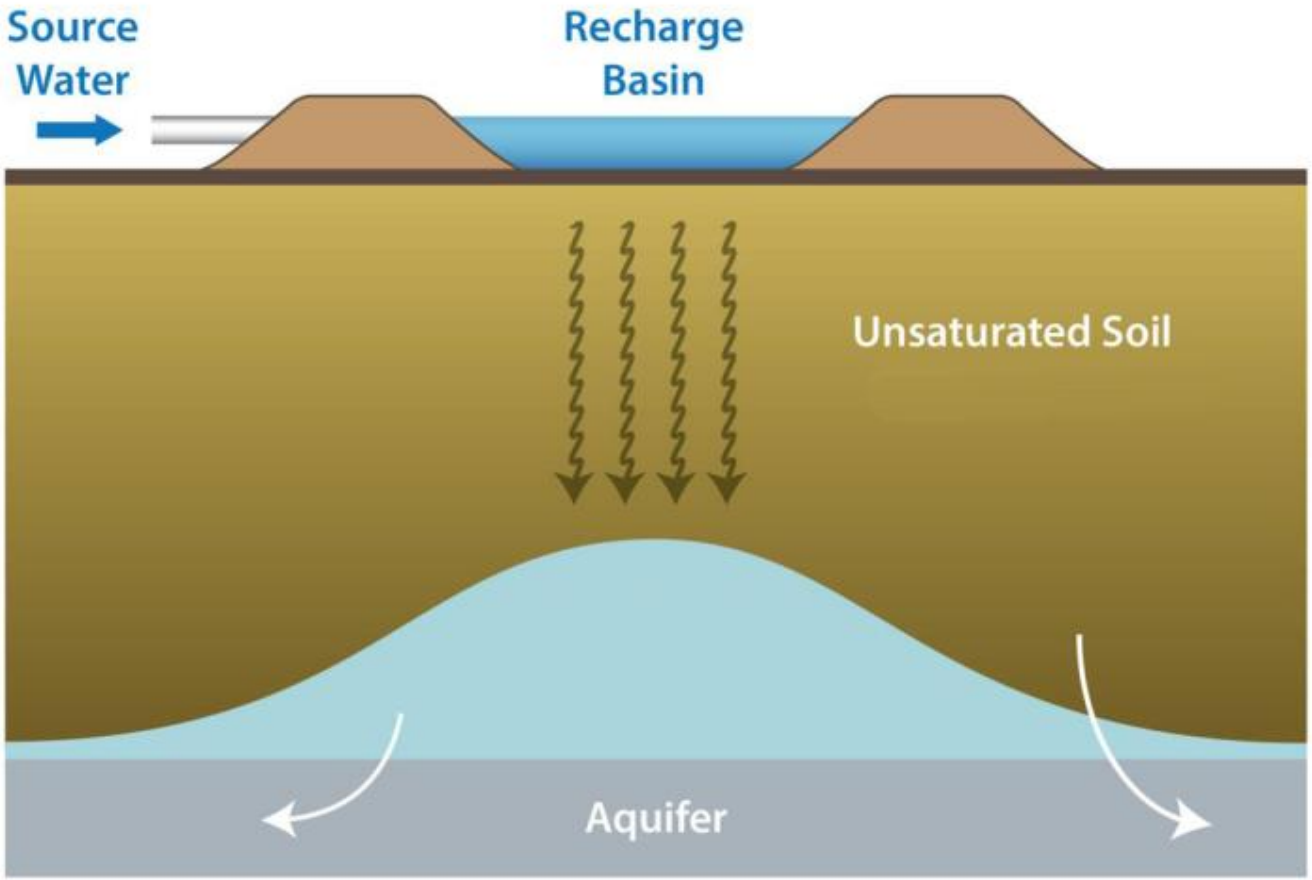

San Giorgio
Thin Spaghetti
Tostitos
JELL-O

Budd Inlet Treatment Plant

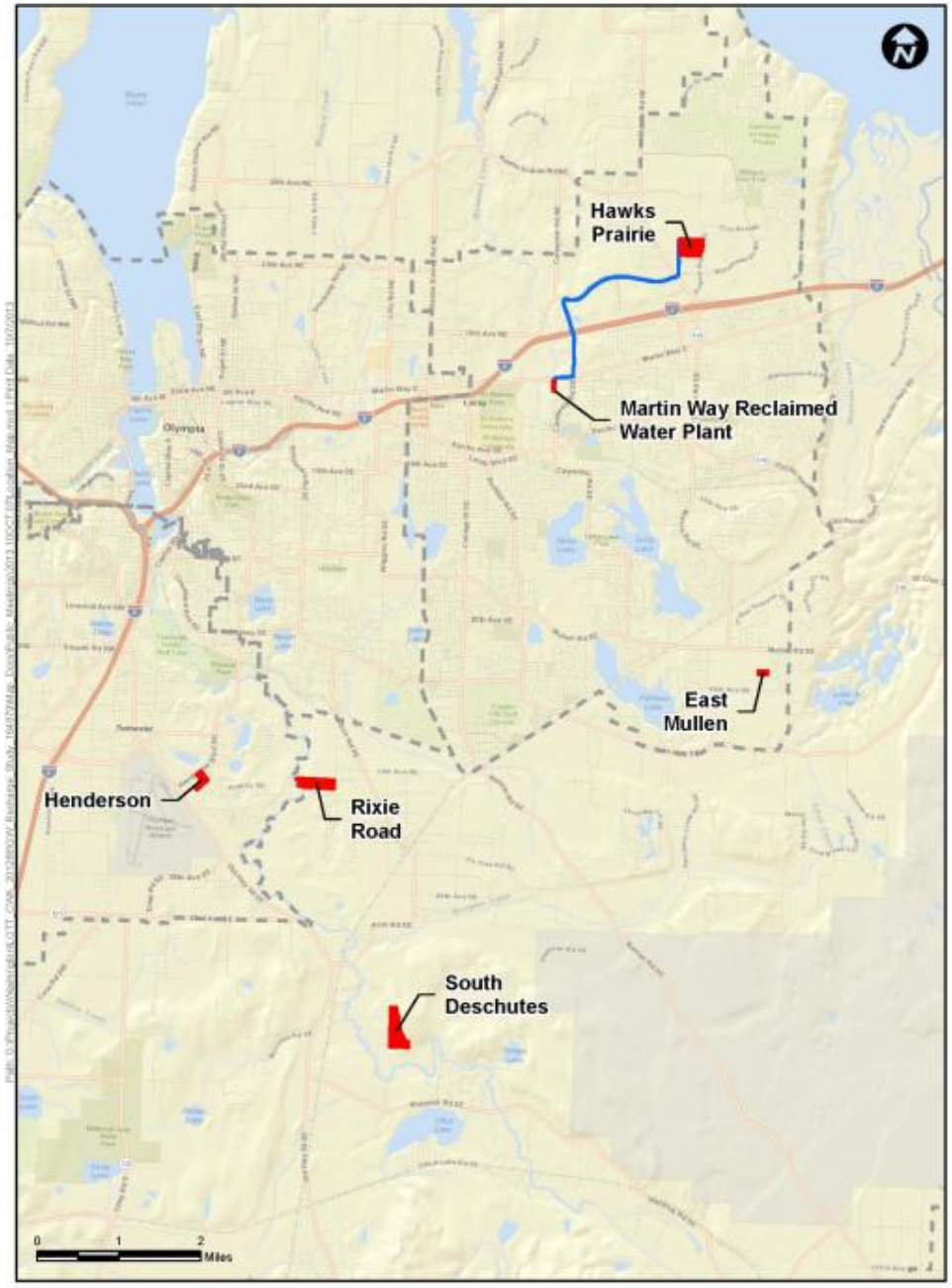
Martin Way Reclaimed Water Plant

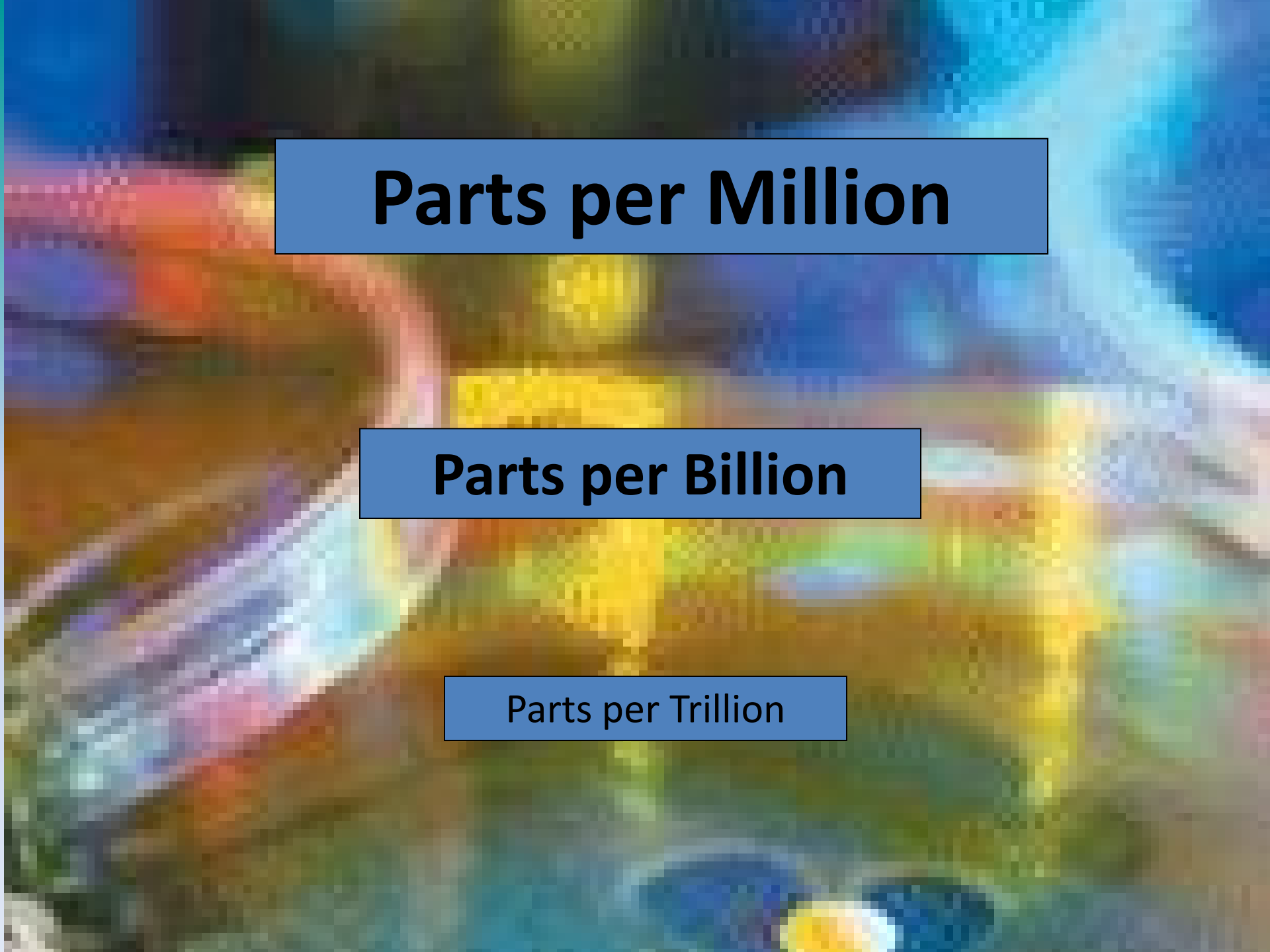

Outfall
Budd Inlet
Treatment Plant

Surface Infiltration

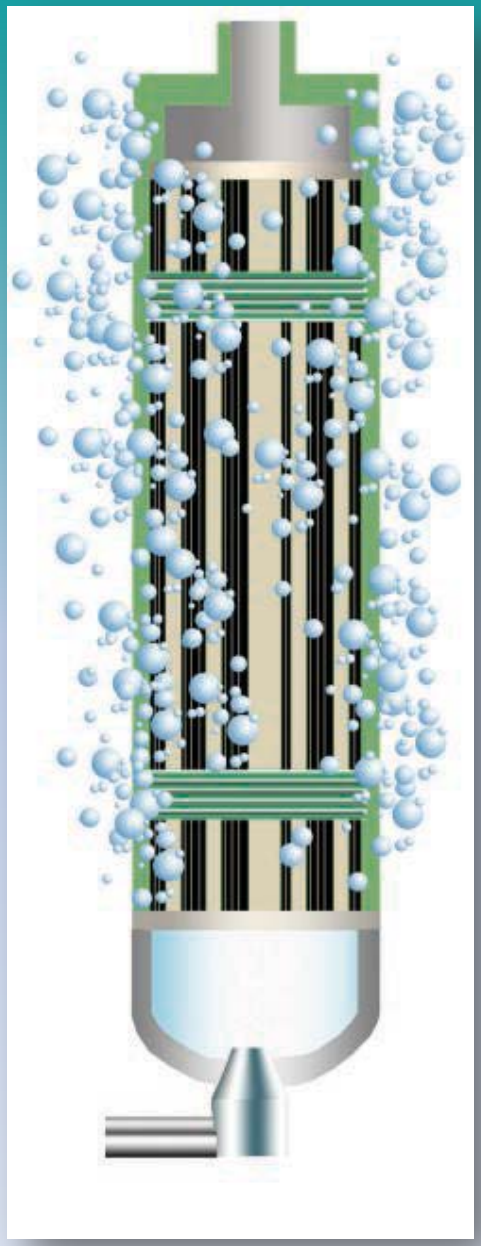


Infiltration Sites




Parts per Million
Parts per Billion
Parts per Trillion

Reclaimed Water Infiltration Study



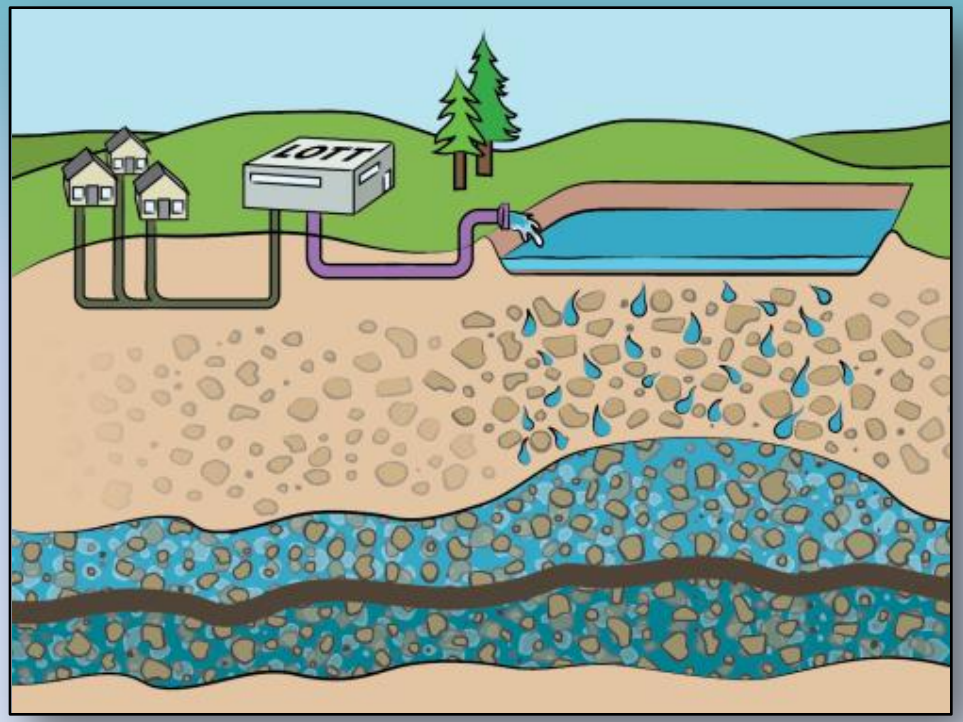
Study Goal

Provide local scientific data and community perspectives to help policymakers make informed decisions about future reclaimed water treatment and uses.

Primary Study Question

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?



Study Framework Questions

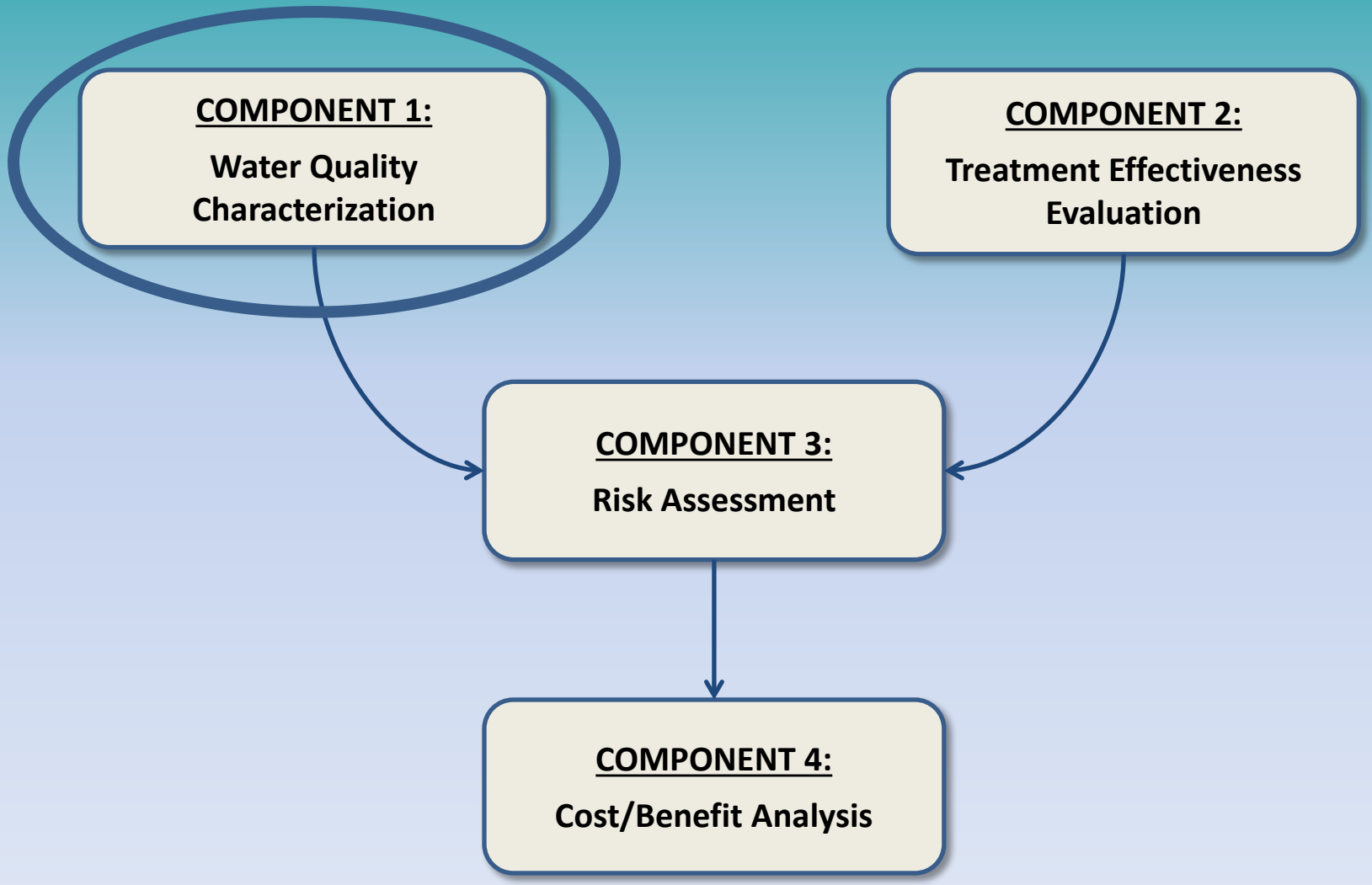
1) What is the current quality of our local waters:
   - groundwater, surface waters, drinking water (HP area)?
   - wastewater and reclaimed water?
2) What happens to reclaimed water that is infiltrated to groundwater: where does it travel and how quickly, and how does the quality change over time?
3) What are the relative risks of replenishing groundwater with reclaimed water?
4) What are the costs and benefits of various approaches for treating and using reclaimed water?

Hawks Prairie as our Living Laboratory

Disclaimer

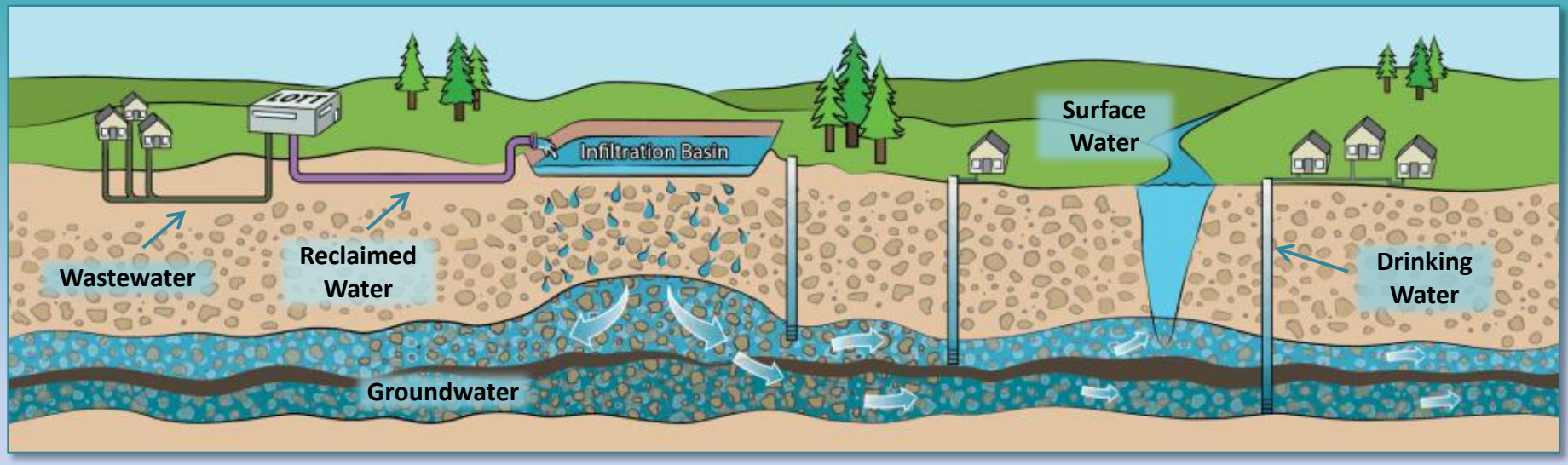
- Scope of work still being developed
- Slides that follow outline the framework and approaches we're currently working with
- Still evolving

Study Framework



Component 1:

Water Quality Characterization



- Measure water quality
- Define existing (background) conditions
- Data will be used in Risk Assessment (Component 3) to evaluate relative risks associated with exposure to current groundwater and surface water compared with exposure to water influenced by reclaimed water infiltration

Water Quality Characterization:

What should we look for?

Water Quality Characterization
Proposed Parameter List

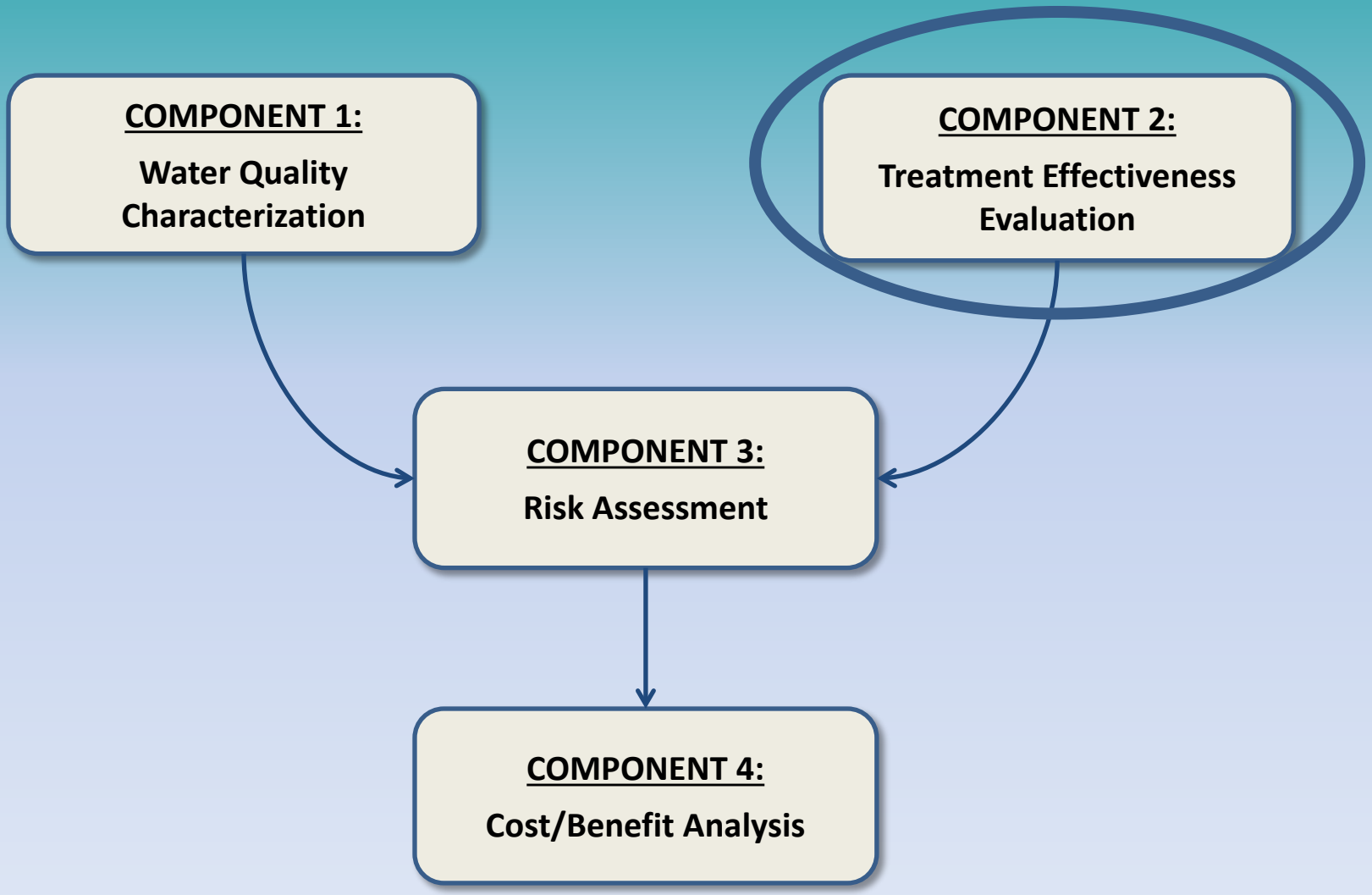
Regulated Parameters

- Pathogens (coliform bacteria, viruses)
- Nutrients (nitrogen, phosphorus)
- Drinking Water Parameters (inorganics, metals, etc.)
- Other (temperature, dissolved oxygen, etc.)

Unregulated Parameters (Residual Chemicals)

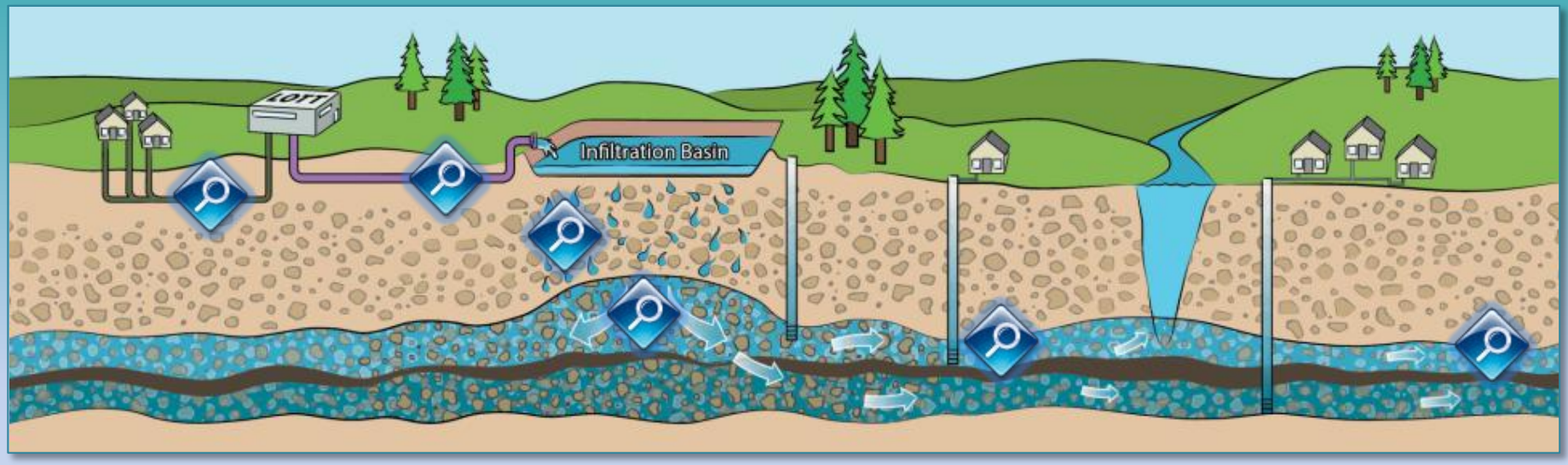
- Medicines (anti-seizure, analgesics, antibiotics)
- Personal Care Products / Foods (sucralose, caffeine, anti-microbials)
- Hormones (estrogenic, steroid)
- Household Chemicals (flame retardants, pesticides)
- 97 unregulated chemicals in total

Study Framework



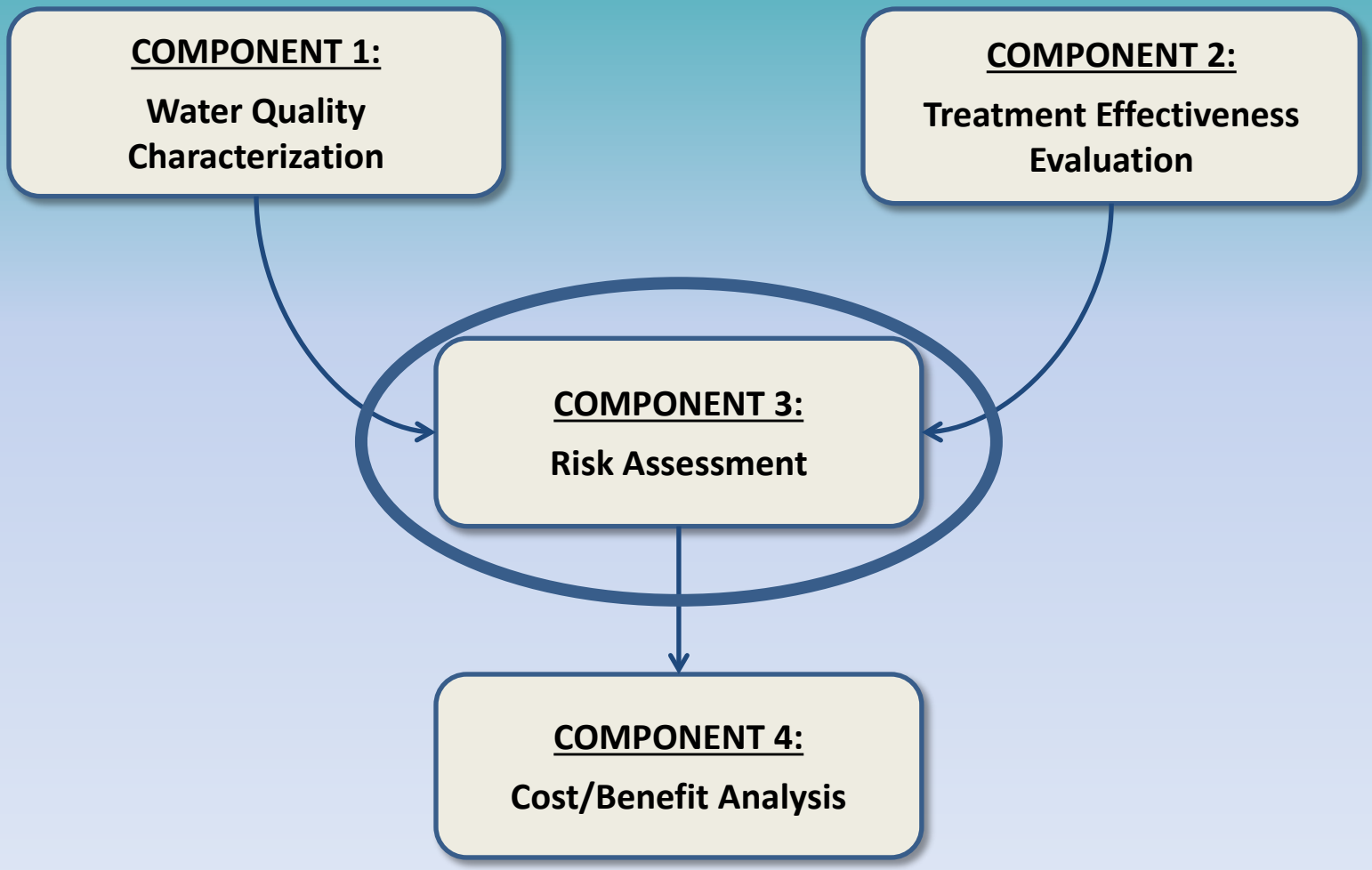
Component 2:

Treatment Effectiveness Evaluation



- Measure water quality at various steps within the treatment process (prior to and after infiltration)
- Identify which residual chemicals remain in reclaimed water that is infiltrated to groundwater
- Requires extensive field work to understand groundwater movement and chemistry

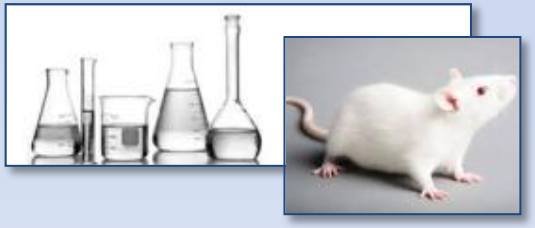
Study Framework



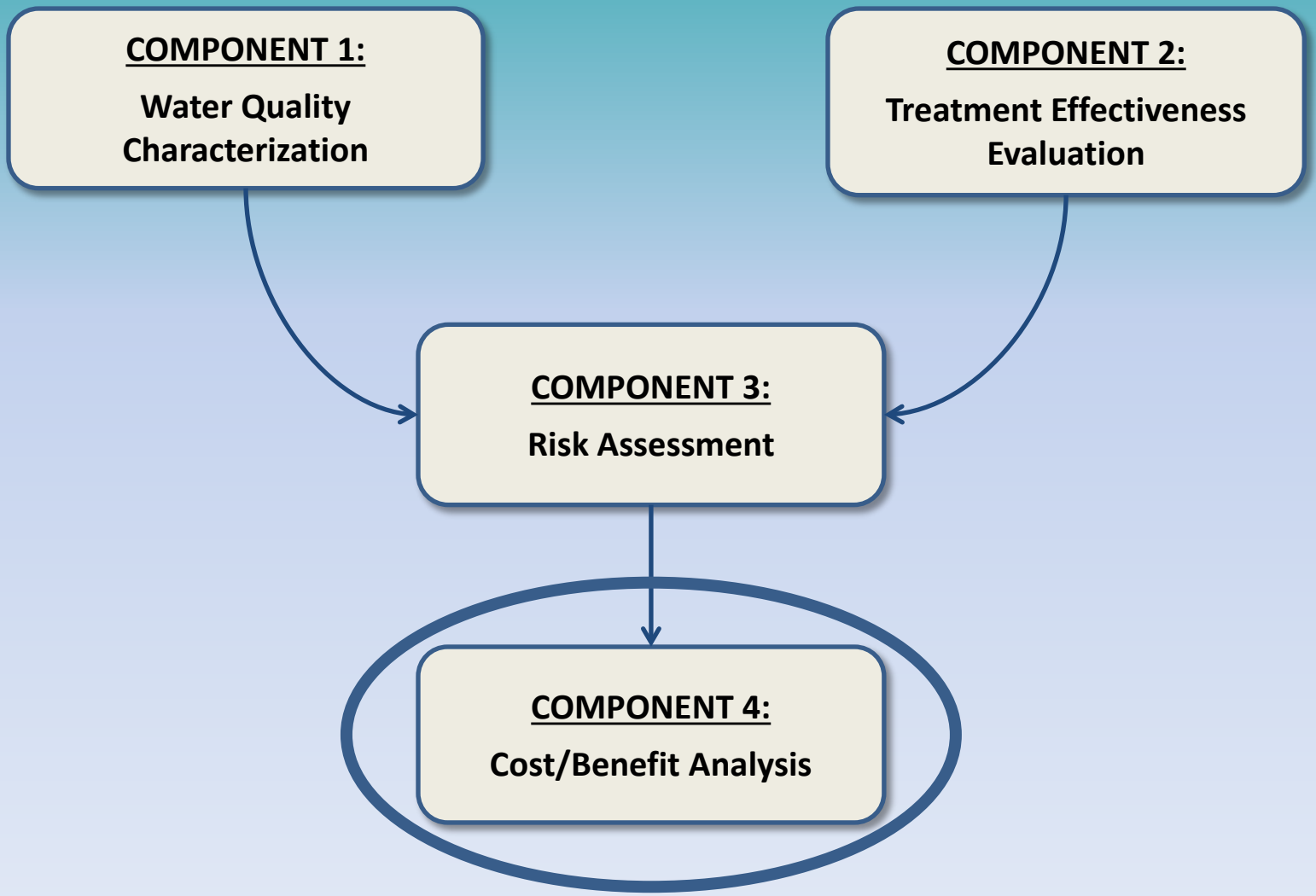
Component 3:

Risk Assessment

1) Determine which residual chemicals pose a risk
2) Identify who is potentially at risk
   - Human Health
   - Ecological Health
3) Identify available toxicological data
4) Compare measured chemical concentrations with threshold levels that define risk
5) Approach is based on USEPA developed risk assessment frameworks



Study Framework



Component 4:

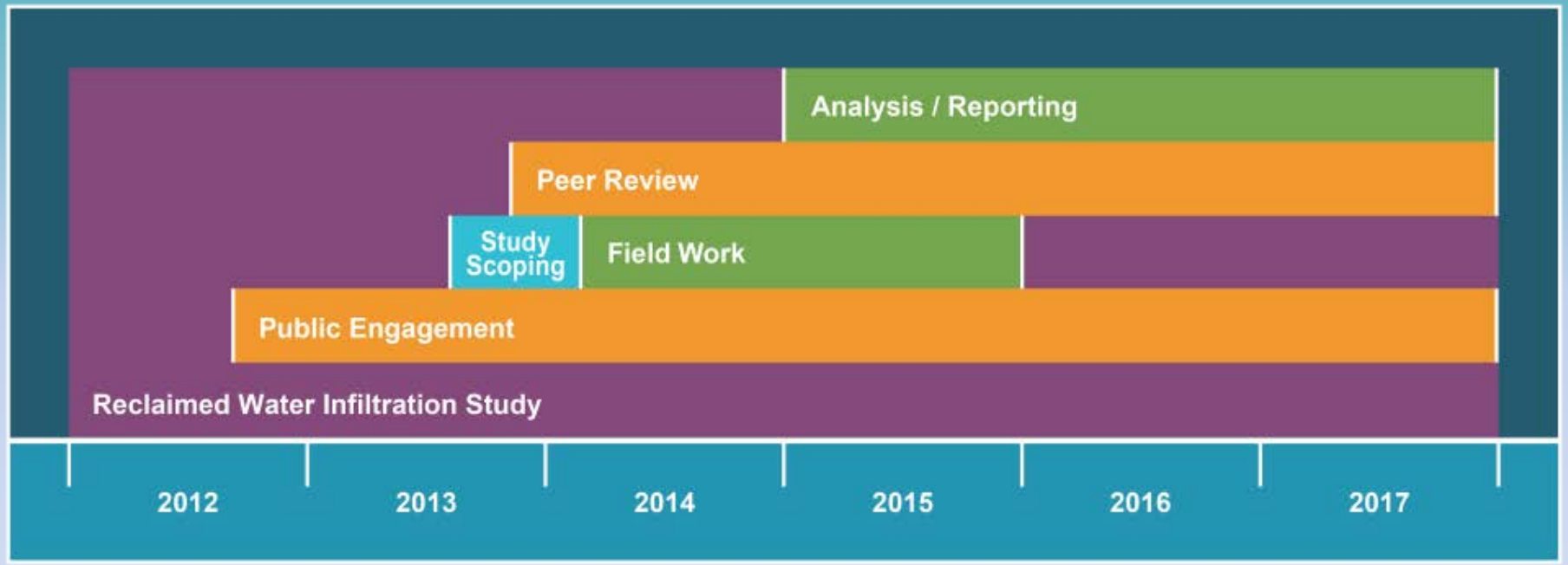
Cost/Benefit Analysis

- Reclaimed water treatment alternatives
  - Class A (current level of treatment)
  - Class A + Advanced Treatment
- Other types of reclaimed water uses
  - Irrigation - Parks / Golf Courses
  - Streamflow Augmentation
  - Recreational Water Features
- Compare life-cycle costs with the risk reduction benefits associated with each treatment alternative

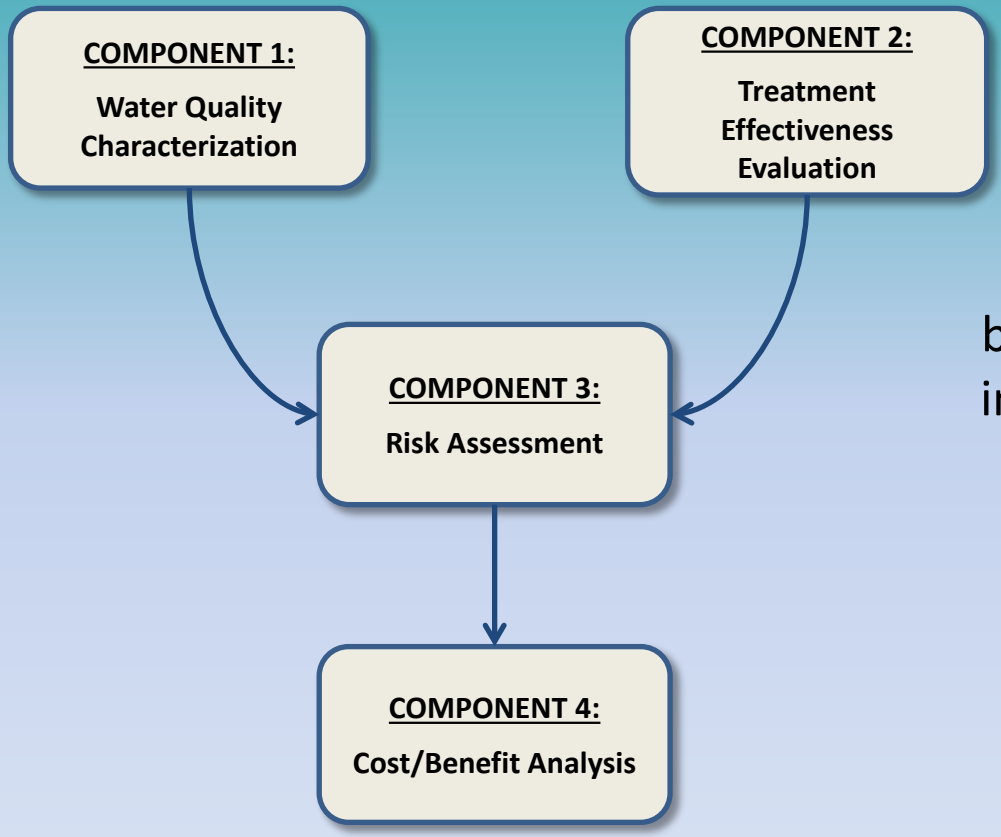
Public Involvement

- Continuing throughout the duration of the Study
- Website, displays, informational materials/reports
- Informational presentations
  - Community Groups
  - Regulators (public and environmental health)
  - Others, as identified/requested
- Workshops, at the conclusion of the Study
  - General public
  - Elected officials
  - Others, to be determined

Schedule


Analysis / Reporting
Peer Review
Study Scoping
Field Work
Public Engagement
Reclaimed Water Infiltration Study
2012
2013
2014
2015
2016
2017

Results will Address the Study Goal



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Next Steps

- Refine/Finalize Scope
- Start field work – Spring


Thank You
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