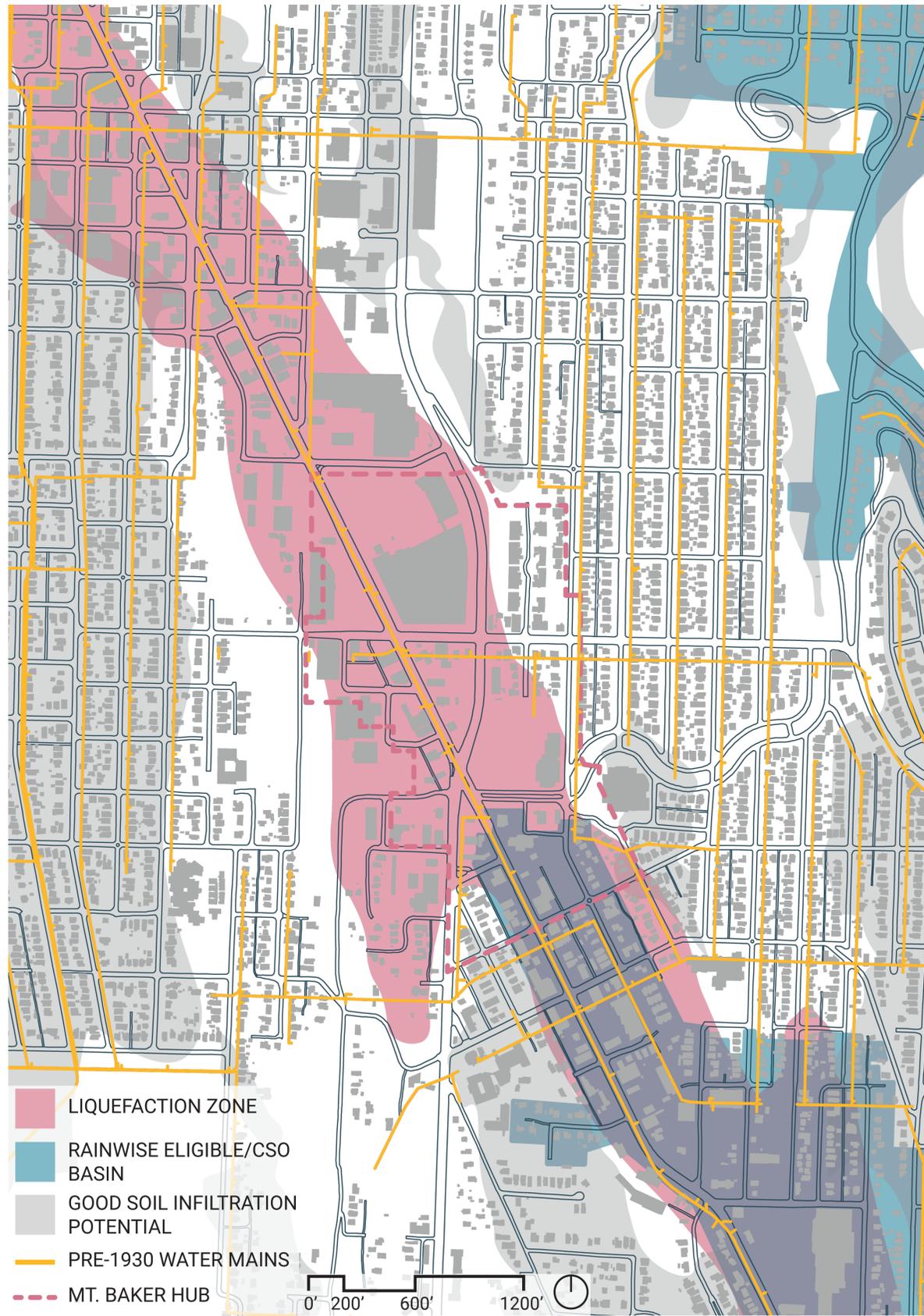


RAIN AND WATER RESILIENCY

Mt. Baker Neighborhood : Staying In Place : BE Studio W18 : Rachel Wells

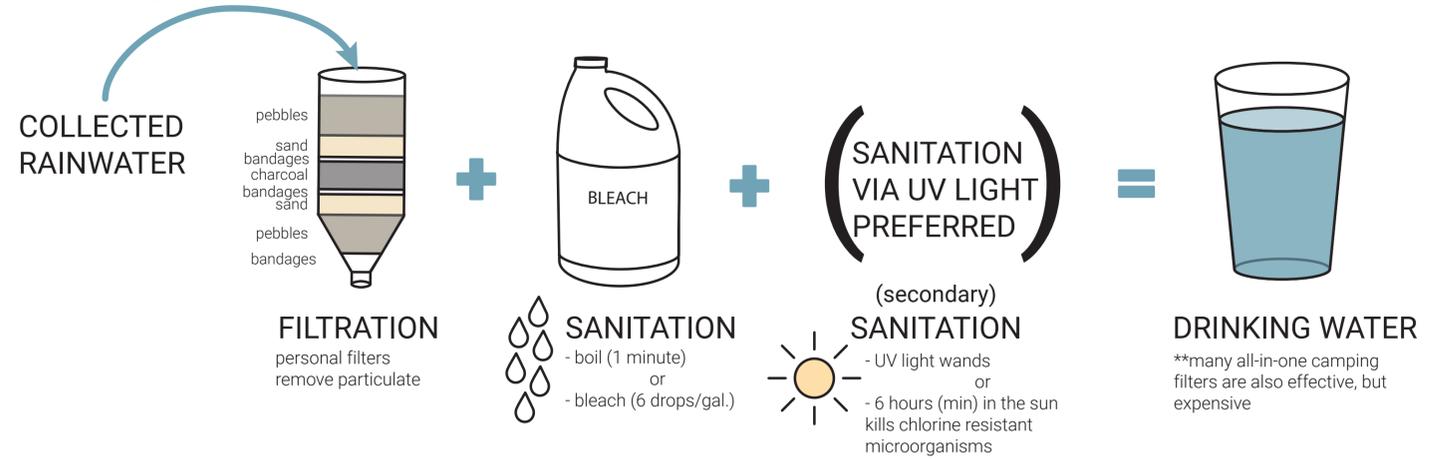
DRINKING WATER RESOURCES AND VULNERABILITIES



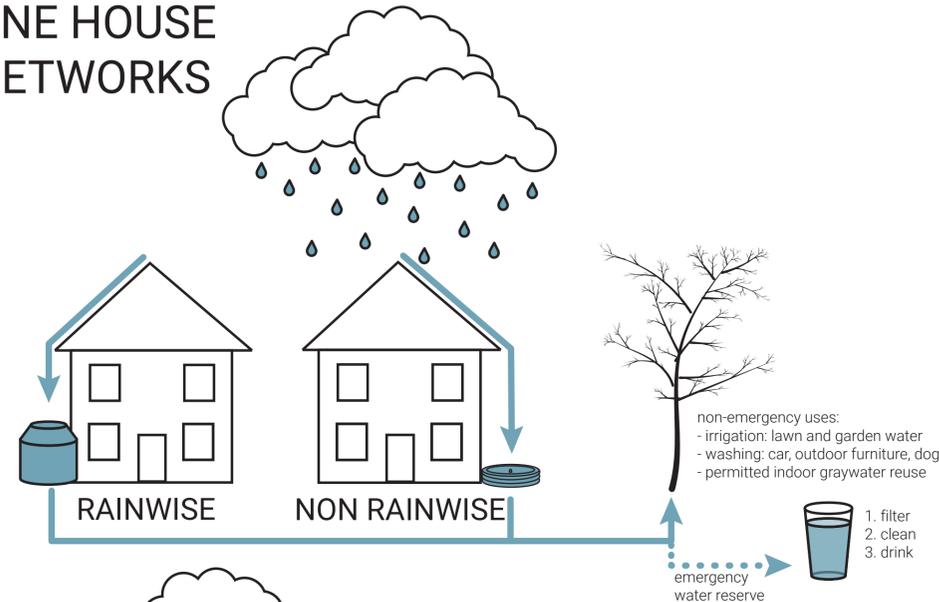
Mt. Baker is a diverse neighborhood, situated on the liquefaction zone of Rainier Valley. Aging infrastructure, budget constraints, and new knowledge of seismic risks show that Mt. Baker needs to diversify its resources. This project focuses on making drinking water resources broader and more resilient.

This project supplements the built capital of water mainlines with additional water resources, adds emergency preparedness to the area's social capital, and uses environment tools to add resiliency to utilities and natural resources.

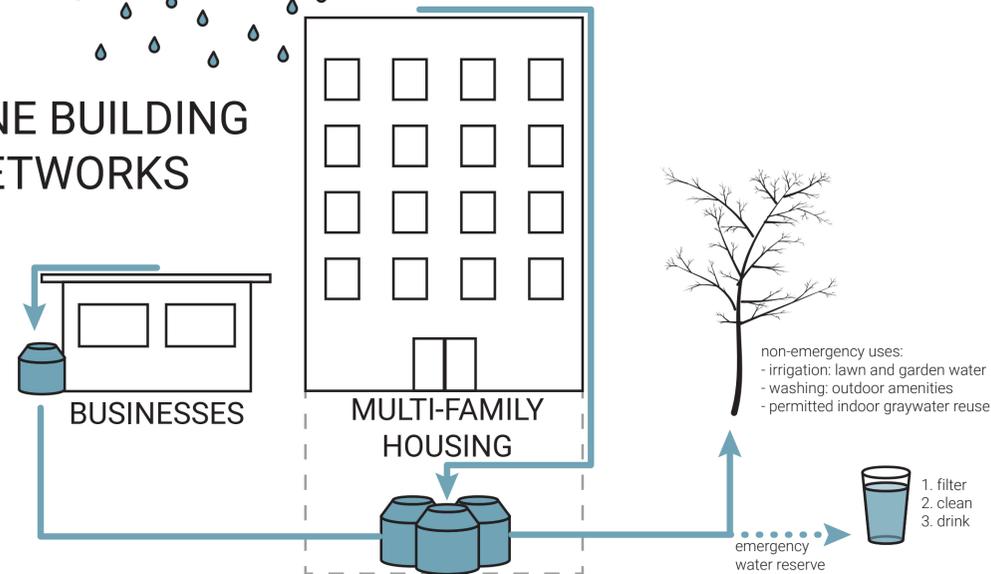
INDIVIDUAL EMERGENCY DRINKING WATER SYSTEM



ONE HOUSE NETWORKS



ONE BUILDING NETWORKS



RAINWISE AREAS

A small portion of the neighborhood is located in a targeted CSO (combined sewer overflow) basin and can be reimbursed for raingardens** and cisterns by the City of Seattle and King County program, RainWise.

** only residents in areas with adequate soil infiltration are eligible for raingarden reimbursement.

NON RAINWISE AREAS

Cisterns can be expensive. Consider RainSaucers' deployable, cost-effective Six-Dollar-Cistern, RainJug, or RainSaucers™ collection methods as a cheaper alternative.

No permits needed if:
 - cisterns are > 600 gallons
 - no water is used indoors (non emergency usage)
 - overflow is connected back to the sewer system above ground

OLD BUILDINGS

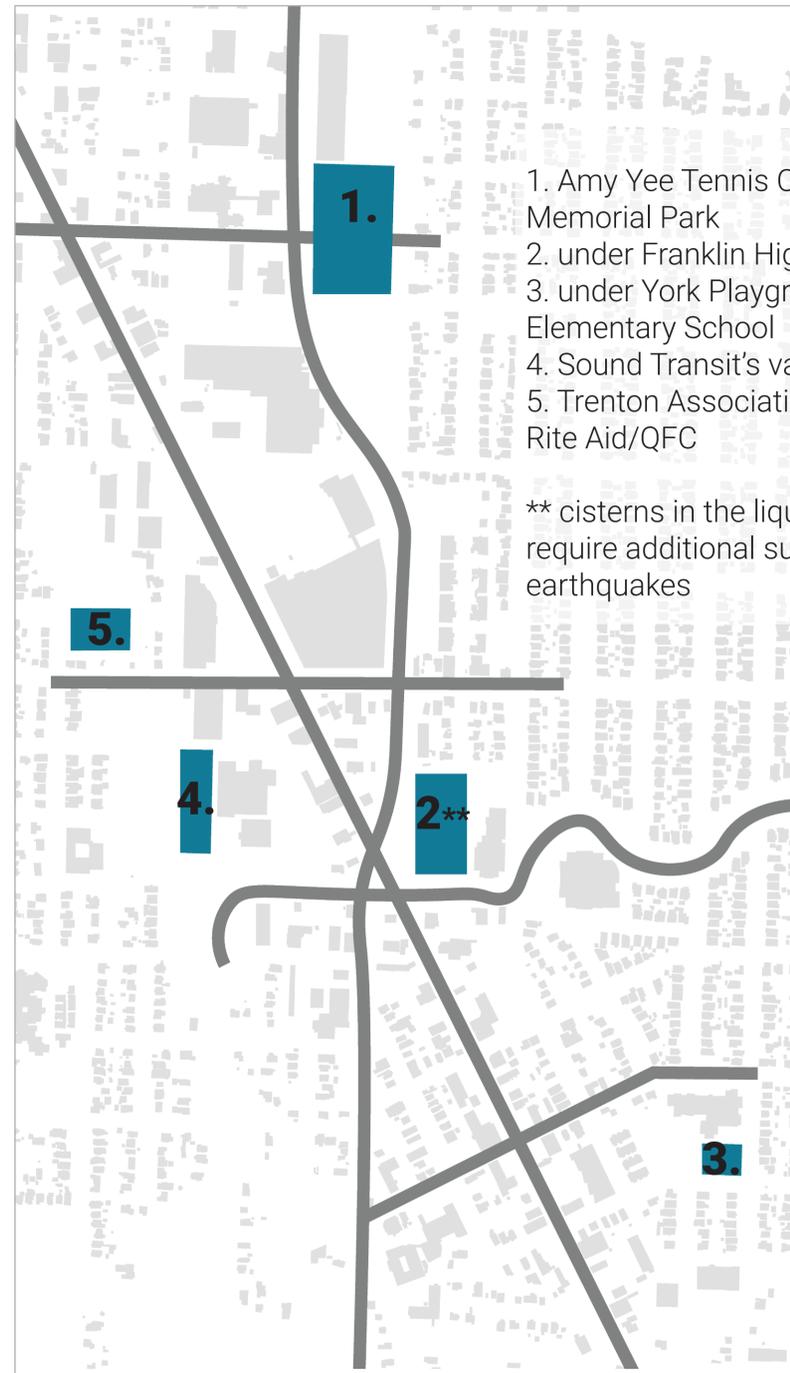
existing buildings may be able to retrofit for rainwater collection using city incentives for stormwater management

NEW BUILDINGS

City of Seattle's 2017 Stormwater Code requires stormwater to be managed on site. Many of these buildings will have cisterns for rainwater reuse.

Thruwater Harvesting for Outdoor Use - King County Department of Permitting and Environmental Review. Published February 2015.
 The Six-Dollar Cistern - RainSaucers Inc. Published February 2015. <http://www.rainsaucers.com/blog/2015/02/02/the-six-dollar-cistern/>
 *Watershed Forest Department Level Planning Map - City of Seattle. Published August 2014. <http://www.seattle.gov/utilities/programs/public/openhouse/2014/08/2014watershedforestplanningmap.pdf>

POSSIBLE LARGE CISTERN LOCATIONS



1. Amy Yee Tennis Center/MLK Jr. Memorial Park
2. under Franklin High School Track**
3. under York Playground at John Muir Elementary School
4. Sound Transit's vacant/parking lot
5. Trenton Association parcel(s) behind Rite Aid/QFC

** cisterns in the liquefaction zone require additional support to withstand earthquakes

RESIDENTIAL NETWORK



PRIVATE STREET OR BLOCK

Neighborhoods come up with a community emergency plan that shares resources and responsibilities among community members.

Non-emergency uses continue as normal or as One Home Networks.

COMMERCIAL NETWORK

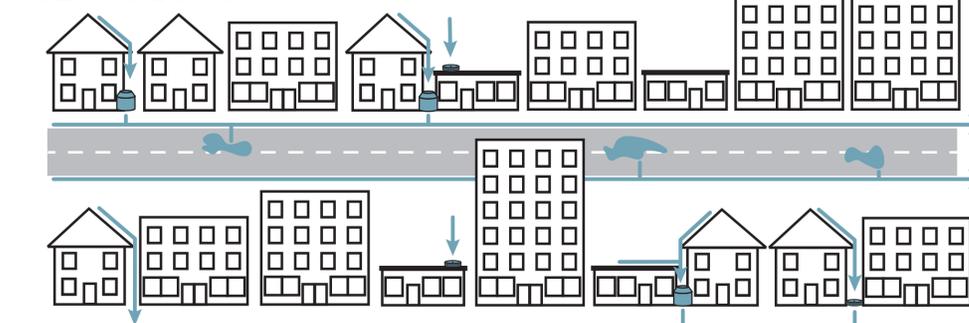


PUBLIC STREET OR BLOCK

Businesses and commercial buildings collect, slow, and treat stormwater. May also involve coordination with city resources. Formulation of a small-scale emergency plan is ideal.

Non-emergency uses continue as normal or as One Building Networks.
PRECEDENT: THE SWALE ON YALE

NEIGHBORHOOD NETWORK



Create and manage a community cistern network for daily and emergency water provisions



CISTERNS AND THE LONG-TERM PLAN

- SPU retrofit of wastewater and potable water lines (aging and earthquake retrofit) according to long-term plans
- Use Living Communities Certification to make Mt. Baker more resilient and sustainable
- Explore involvement in water access rights through neighborhood representation in SPU initiatives.

SAO PAULO, BRAZIL: a city receiving 55+ inches of rain per year.



Sao Paulo also relies on snowpack and the wet season to fill its reservoir to draw on in the dry summer. In 2015, years of successive drought compounded water management problems and caused a severe water shortage. The city had to institute 2 days with water, 4 days without across Sao Paulo.

Though Seattle's reservoirs are much better protected, this case shows that even cities with abundant rainfall must prepare for unexpected water shortages and droughts.

ØSTERBRO, COPENHAGEN: the climate adapted neighborhood

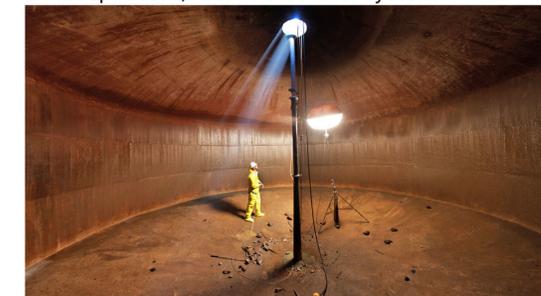


Østerbro uses GSI (green stormwater infrastructure) in addition to normal water pipes to collect and slow down stormwater, preventing flooding.

Seattle's climate will come to experience increasingly heavy rains in the winter, water that could be collected as used as resource, especially in the event of a water shortage caused by a drought or low mountain snowpack.

This water could be collected as runoff, treated, and used in the municipal system as needed.

SAN FRANCISCO, CALIFORNIA: an independent, redundant water system



West Coast secondary water systems :
1. Vancouver, BC (2011)
2. San Francisco, CA (1913)
3. Los Angeles, CA (under consideration)

Designed to handle fires following earthquakes using gravity to pressurize water.

Such a system could also be used to store and supply water during extreme weather events and natural disasters in a similar (but independent) way to current City of Seattle cisterns.