The Value of Decentralized Non-Potable Water Systems for the San Diego Region

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Key Findings From the Advancing Safe, Healthy Non-potable Water Use for the San Diego Region Project
2019

SAN DIEGO Integrated Regional Water Management

UC San Diego

public health alliance™
of southern california
A Partnership for Healthy Places

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1

Water in Our Daily Life

Water Resilience and Climate Adaptation

San Diego County imports ~80% of its water supply

State Water Project (Bay-Delta) 30%

Colorado River 50%

Local Supplies and Conservation 20%

- Diversification
- Decentralization

Increasing San Diego County's Water Supply Reliability through Supply Diversification

2018

- 79 TAF 15%
- 22 TAF 4%
- 27 TAF 5%
- 41 TAF 8%
- 26 TAF 5%
- 44 TAF 9%
- 164 TAF 32%
- 115 TAF 22%

Total = 518 TAF

2020*

- 80 TAF 15%
- 16 TAF 3%
- 43 TAF 8%
- 56 TAF 10%
- 33 TAF 6%
- 52 TAF 10%
- 8 TAF 2%
- 59 TAF 11%
- 190 TAF 35%

Total = 537 TAF

Legend:
- Metropolitan Water District
- Imperial Irrigation District Transfer
- All American & Coachella Canal Lining
- San Luis Rey Water Transfer
- Recycled Water
- Seawater Desalination
- Groundwater
- Local Surface Water
- Potable Reuse

* Based on Interim Demand Forecast Reset and includes verifiable and additional planned local supply projects from 2015 UWMP

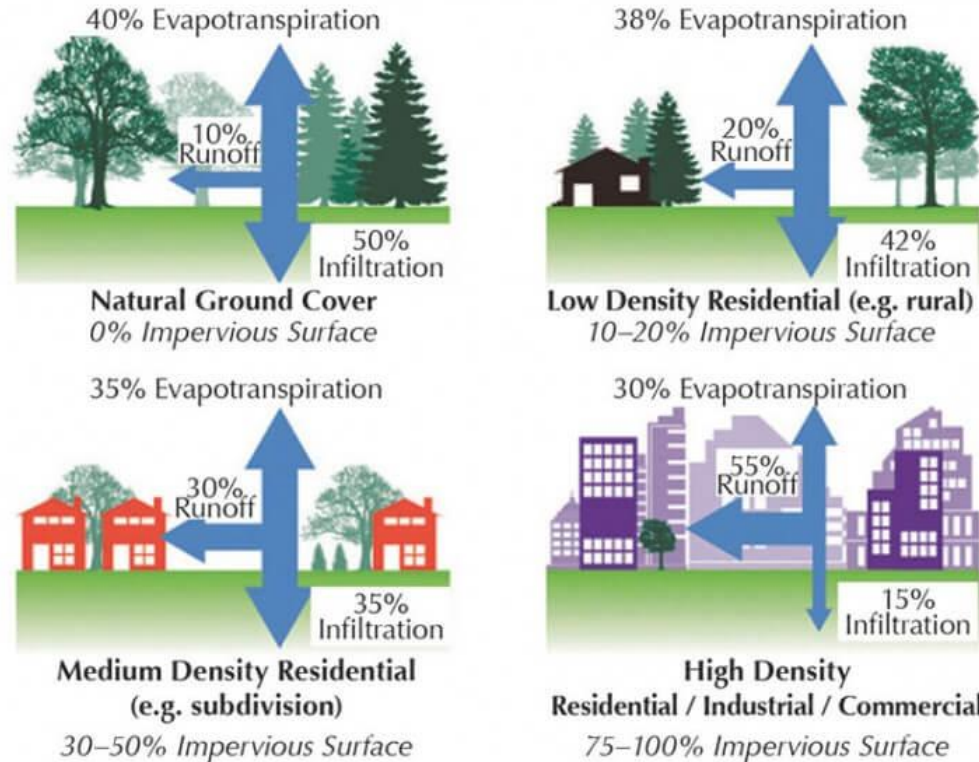(TAF=Thousand Acre-Feet)

Local Food Movement

Energy & Microgrids

Localizing Our Water

The Problem is the Solution

EFFECTS OF IMPERVIOUSNESS ON RUNOFF AND INFILTRATION

40% Evapotranspiration
10% Runoff
50% Infiltration
Natural Ground Cover
0% Impervious Surface

38% Evapotranspiration
20% Runoff
42% Infiltration
Low Density Residential (e.g. rural)
10–20% Impervious Surface

35% Evapotranspiration
30% Runoff
35% Infiltration
Medium Density Residential (e.g. subdivision)
30–50% Impervious Surface

30% Evapotranspiration
55% Runoff
15% Infiltration
High Density Residential / Industrial / Commercial
75–100% Impervious Surface

Decentralized Non-Potable Water Systems

- Greywater
- Rainwater
- Stormwater
- A/C condensate

University of Arizona College of Architecture and Landscape Architecture

San Diego

The Time is Now

- Upcoming State requirements
- Climate change
- Community well-being
- How?
  - Be proactive
  - Start collaboration between agencies and organizations
  - Create multiple benefits
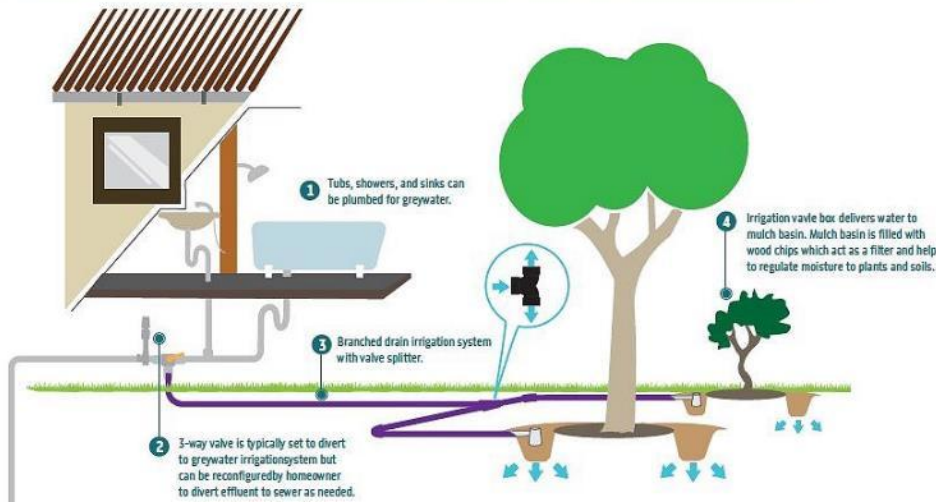
Why aren't we doing it?

Top barriers across all levels:
- Lack of education
- Lack of regulatory clarity
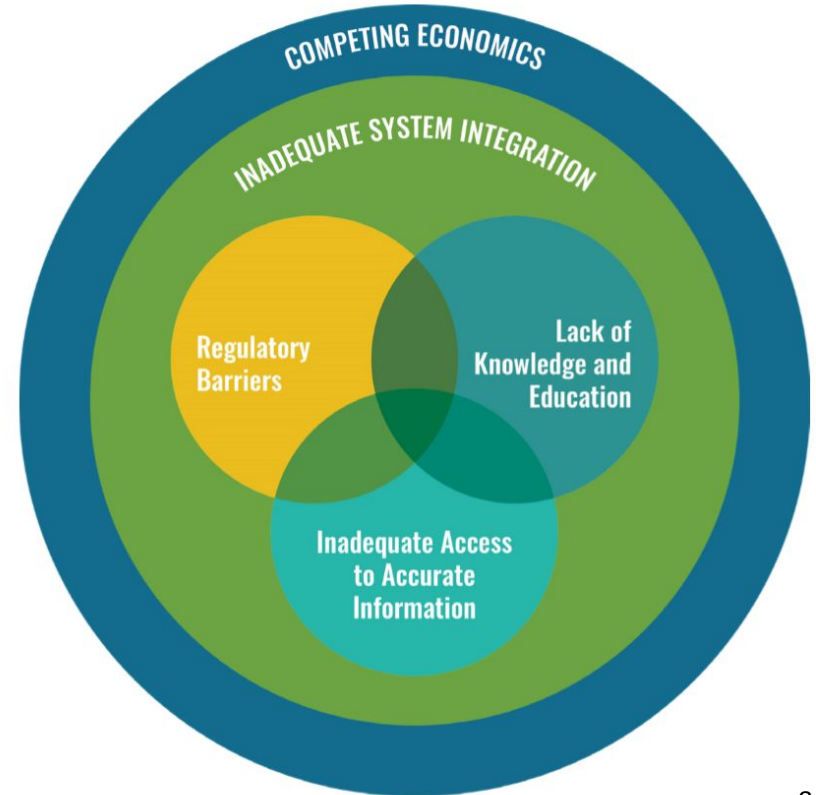
Greywater Reuse

SHOWER/SINK TO LANDSCAPE GREYWATER RE-USE

1. Tubs, showers, and sinks can be plumbed for greywater.

4. Irrigation vavle box delivers water to mulch basin. Mulch basin is filled with wood chips which act as a filter and help to regulate moisture to plants and soils.

3. Branched drain irrigation system with valve splitter.

2. 3-way valve is typically set to divert to greywater irrigationsystem but can be reconfiguredby homeowner to divert effluent to sewer as needed.

- California Plumbing Code
- Thousands of gallons of potential water savings for residential buildings
  - Irrigation
- Potential water savings in commercial buildings
  - Indoor use

Rainwater Capture

Capture from rooftops

- Thousands of gallons of potential water savings for residential buildings
  - Irrigation
- Hundreds of thousands of gallons of potential savings from commercial
  - Indoor use

Stormwater Use & Reuse

Grey Infrastructure

- No infiltration in natural environment.
- Conventional piped drainage and water treatment systems.

Flow-Thru BMPs

- Vegetated swales, media filters, sand filters, dry extended detention basin, etc.

Biofiltration BMPs

- Shallow basins filled with treatment media and drainage rock that treat stormwater runoff by capturing and detaining inflows prior to controlled release

Retention BMPs

- capture, maximize storage and infiltration of stormwater runoff to prevent surface runoff

Stormwater Reuse

- Capture of stormwater for treatment and non-potable water reuse.

Water Supply Augmentation
Multiple Public Benefits

11

San Diego County Regional Airport Authority
Stormwater Reuse and A/C Condensate Capture
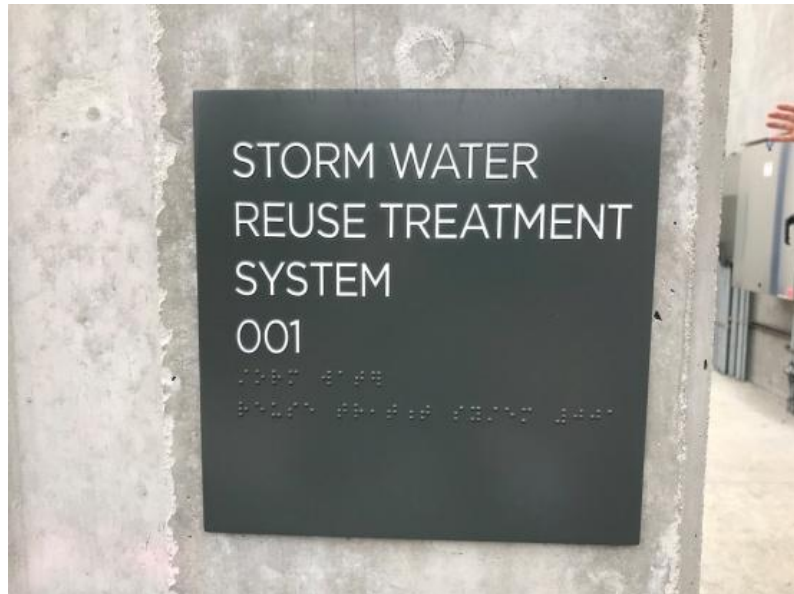
A/C Condensate Capture

UCSD BioMed II

- Building Surface
  - 200,000 ft^2
- Estimated Capture:
  - 3,000 gallons/day
  - 3.4 acre-feet/year

Multiple Benefits

- Supports a healthy tree canopy
- Benefits ecosystems
- Restores water cycle
- Creates local sources
- Supports climate adaptation

Narrow Approach

Fixtures
Collection Plumbing
Distribution Plumbing
Plants

System Approach

Rooftop Rainwater
Efficient Habits
Efficient Fixtures
Produce
Collection Plumbing
Compost
Distribution Plumbing
Well-selected & Located Multifunction Plants
Freshwater Irrigation
Mulch Basins
Yard Waste
Wood Chips
Stormwater
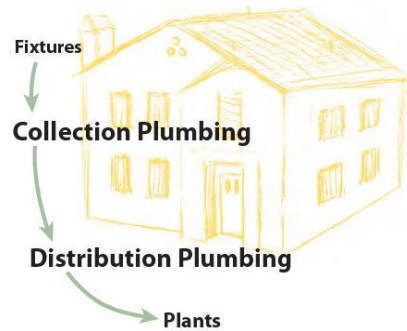
Santa Barbara County Greywater Handbook

Transformative Outcomes

Tucson, AZ
1994 ☐

2006
☐

Water Resilient Landscapes

Groundwork Home Makeover Project

Before

After

After 2 inches of rain fell in less than an hour on high clay soils.

After 4 inches of surface mulch and plant material added. All rain now infiltrates in less than an hour

Why Equity is Important?

- State commitment to water as a Human Right

- Create cumulative positive impact by ensuring material/tools/resources are available to more people

US Water Alliance

AN EQUITABLE WATER FUTURE
A National Briefing Paper

Designing Water Solutions with an Equity Approach
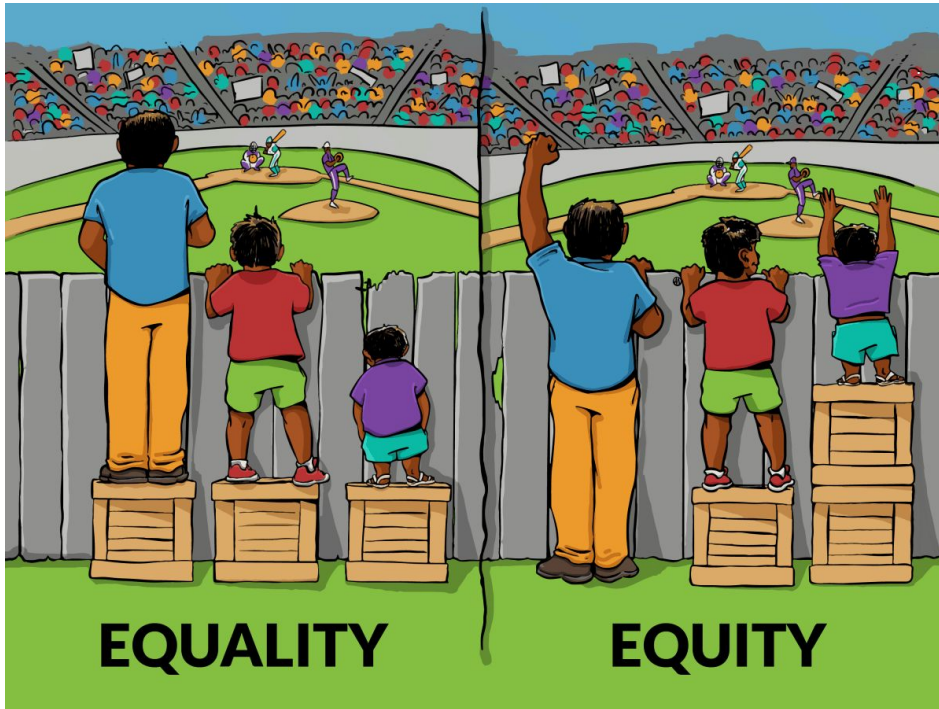
Direct contract rebates vs cost reimbursement

Enhanced community engagement and representation

Health & equity elements in water-related policies and programs

Project Overview

Advancing Safe, Healthy Non-potable Water Use for the San Diego Region

- Core Values
- Barriers
- Recommendations
- Public Health Advisory Committee

"To forge a new paradigm for San Diego – one in which all local water is valued and 80% of water is locally sourced by 2070."

20

Safe and Healthy Best Practices
for Decentralized Non-Potable Water Systems

- Recommendations based on a broad set of best practices
- Ensure health and equity
- Develop consistent best practices throughout the region
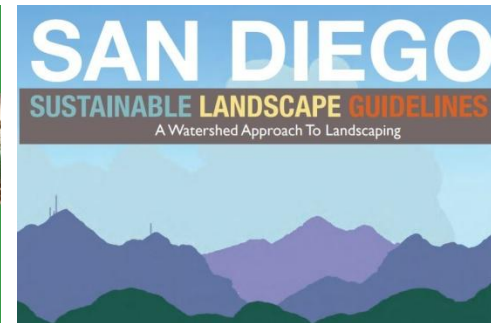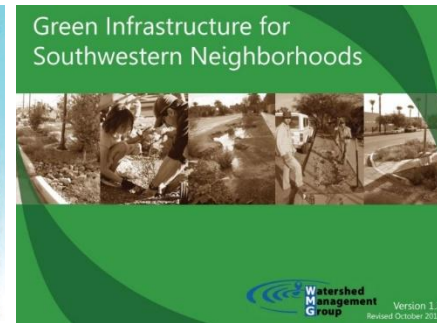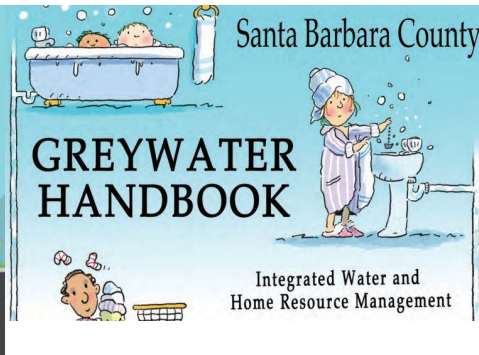
How Can You Be a Water Champion?

Become an advocate for DNPW systems

- Educate the general public
- Have your staff get educated and trained

Ensure all public dollars incorporate multiple benefits and equity elements

Join the National Blue Ribbon Commission for Onsite Non-potable Water Systems

Support a vision of localizing our water

- Participate in interjurisdictional meetings
- Take part in the regional Localizing SD Water conference

How Can You Be a Water Champion?

Asses the code framework for decentralized non-potable water systems

Ensure all codes and permitting are updated with best practices

- Building codes
- Engineering standards
- Greywater systems
- Etc.

Support rebates and funds for decentralized non-potable water systems

23

How Can You Be a Water Champion?

Consult resources

- Typical BMP Landscape Solutions by San Diego Housing Commission
- San Diego Sustainable Landscape Guidelines
- Discovery Document and Blueprint for Advancing Decentralized Non-Potable Water Use in the San Diego Region

Placeholder for contact information

Discovery Document
http://bit.ly/DiscoveryDocumentSD2019

Blueprint
http://bit.ly/BlueprintSD2019

THANK YOU!