

Dahlias, Dishwater, and Illegal Reuse: The North Carolina Case

Henrietta Locklear, MPA
Project Manager
and
Trina Ozer, MPA
Environmental Specialist
AMEC Earth & Environmental, Inc.

Major Topics

- Current Gray Water Regulations in NC
- Public Feedback on NC Regulations
- Recent Changes
- Gray Water in Other States
- Future Research

Background

- 2007-08 drought
- We became interested in public perceptions on drought generally
- And residential gray water use specifically

Making Residential Gray Water Reuse Easy...

Pros

- Can help to meet public policy goal of water conservation
- Increases compliance with the law (eliminates rogue bathwater use)
- Decreases problems with enforcement
- With proper restrictions, is relatively safe
- Saves energy and expense of potable water treatment

Cons

- Sacrifices public policy goal of closed disposal of wastewater
- Other requirements may save as much water, but with no health risks (encouraging reclaimed water use, general water conservation ed)
- No formal permits for small systems may be seen as raising health risks
- Indoor use, in particular, seen as risky for human health

Definitions

- **Gray water** is potable water that was dirtied (made gray) by human use in a bathtub, shower, laundry machine or sink. It is no longer potable. It has been used once, but can be repurposed for another use if treated properly.
- **Black water** is effluent from toilets
- **Reclaimed water** is tertiary treated wastewater effluent that usually is not potable. In NC, it can be used for golf course and landscape irrigation, dust control, car washing, industrial toilet flushing, and a few other non-potable uses.

Gray Water Use



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Gray Water in NC Laws and Regs

- NC General Statutes governing wastewater require residences to “provide an approved wastewater system” (NCGS 130A-335)
- DWQ doesn't regulate gray water (just reclaimed water)
- DEH regulations define sewage as “the liquid and solid human waste and liquid waste generated by water-using fixtures and appliances, including those associated with food handling” (15A NCAC 18A .1935)

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Gray Water in NC Regulations

- Wastewater must be directly discharged to an approved treatment system
- Treatment systems are defined in the NC Plumbing Code
- Code allows for recycled gray water to be used for specific purposes only if it has been filtered and disinfected

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Approved Gray Water Systems

- Gray water can only come from bathtubs, showers, lavatories, clothes washers, and laundry sinks (NO kitchen sinks)
- Can only be used for flushing toilets/urinals in the same building as the recycling system
- Cannot be used for land application
- Recycling system must adhere to Plumbing Code

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Gray Water System Specifications

- Holding capacity
- Filtration system
- Disinfectant
- Prevents cross-connections with potable water
- Draining
- Ventilation
- Coloring (must be dyed blue or green)
- Identification as non-potable

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What's new?

- SL 2008-143 defines gray water: “wastewater removed from household wash basins, bathtubs, and showers”

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SL 2008-143

- Allows for gray water use:
 - In times of drought
 - To water trees, shrubs, and inedible plants on SFR properties
 - Must be used ASAP
 - No harmful solvents
 - Must be used on the site where it originated and can't run off the site
 - Must be applied using a bucket, watering can, or other handheld container
 - Can't be applied within 100 feet of surface waters or well

Public Perceptions on Gray Water

- N&O letters to the editor:
 - “Surely we can do better”
 - “an archaic view of water recycling”
 - “Nonsensical water rule”
 - Using gray water would be “like a Third World country”
- Calls to local health departments about reuse of graywater
- Blogs -

What's needed, then, is a sane, statewide gray water law that puts some basic restrictions on uses that might actually be dangerous, but allows for some sensible uses with some basic, common sense restrictions. –bullinfull

Where does NC fall on the policy spectrum?

- | Before the legislative change | After the legislative change |
|--|--|
| <ul style="list-style-type: none"> • Sanitation wins • Gray water lumped in with sewage except in plumbing code • Uses for gray water limited • Permits required • Recycling required for reuse | <ul style="list-style-type: none"> • Sanitation is still foremost concern • Recognition of need for conservation in times of drought • Incremental change |

Arizona

- Defines gray water as “wastewater collected separately from a sewage flow that originates from a clothes washer, bathtub, shower, and sink, but does not include wastewater from a kitchen sink, dishwasher, or toilet”
- Homes that use less than 400 gallons/day of water can reuse gray water without a permitting process
- Others can get a reclaimed water permit for up to 3000 gpd of water

New Mexico

- Patterned after Arizona
- Residences that use less than 250 gpd of water do not need a gray water permit for flower gardening, composting, or landscaping irrigation

California

- Part of state plumbing code
- All users must apply for a permit
- Permit requires detailed specifications
- Stringency discourages applications
 - “I took one look at the book and decided to bootleg it”

Further Research

- More extensive interviews with state reps and the public: how the legislative changes came to be
- More comparisons with other state regulations and investigation into the implications for gray water reuse
- Quantification of the expense that various regulatory schemes demand of homeowners for installation of systems

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QUESTIONS

Henrietta Locklear
Trina Ozer
AMEC Earth & Environmental, Inc.
4513 Creedmoor Road, Suite 400
Raleigh, NC 27612
(919) 420-0590