DOUGLAS COUNTY
HEALTH DEPARTMENT COLORADO

Request to Provide Input on Graywater Regulation

Staff recommend that your board consider the following presentation on Graywater Regulation and express an opinion on how the county should proceed. It is the recommendation of DCHD staff that your board suggest that Douglas County should Opt-Out of Graywater Regulation at this time.

Graywater Control Regulation 86 and HB 24-1362

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House Bill 24-1362: Measures to Incentivize Graywater Use

Board of County Commissioners or Municipalities can choose to “opt out”, in-full or in-part by adopting a resolution. Was previously an “opt in” program.

Douglas County has the discretion to decide whether to adopt any of the graywater uses along with the minimum design criteria and control measures.

If no action is taken, then Douglas County will automatically be enrolled into standing up a graywater program and meeting the requirements outlined in Reg. 86 by January 1, 2026.

Board of County Commissioners or Municipalities can later choose to “opt in” if previously prohibited.

Regulation 86 adoption encourages the participation of Local Public Health Agencies and the Board of Health prior to adopting an ordinance or resolution.

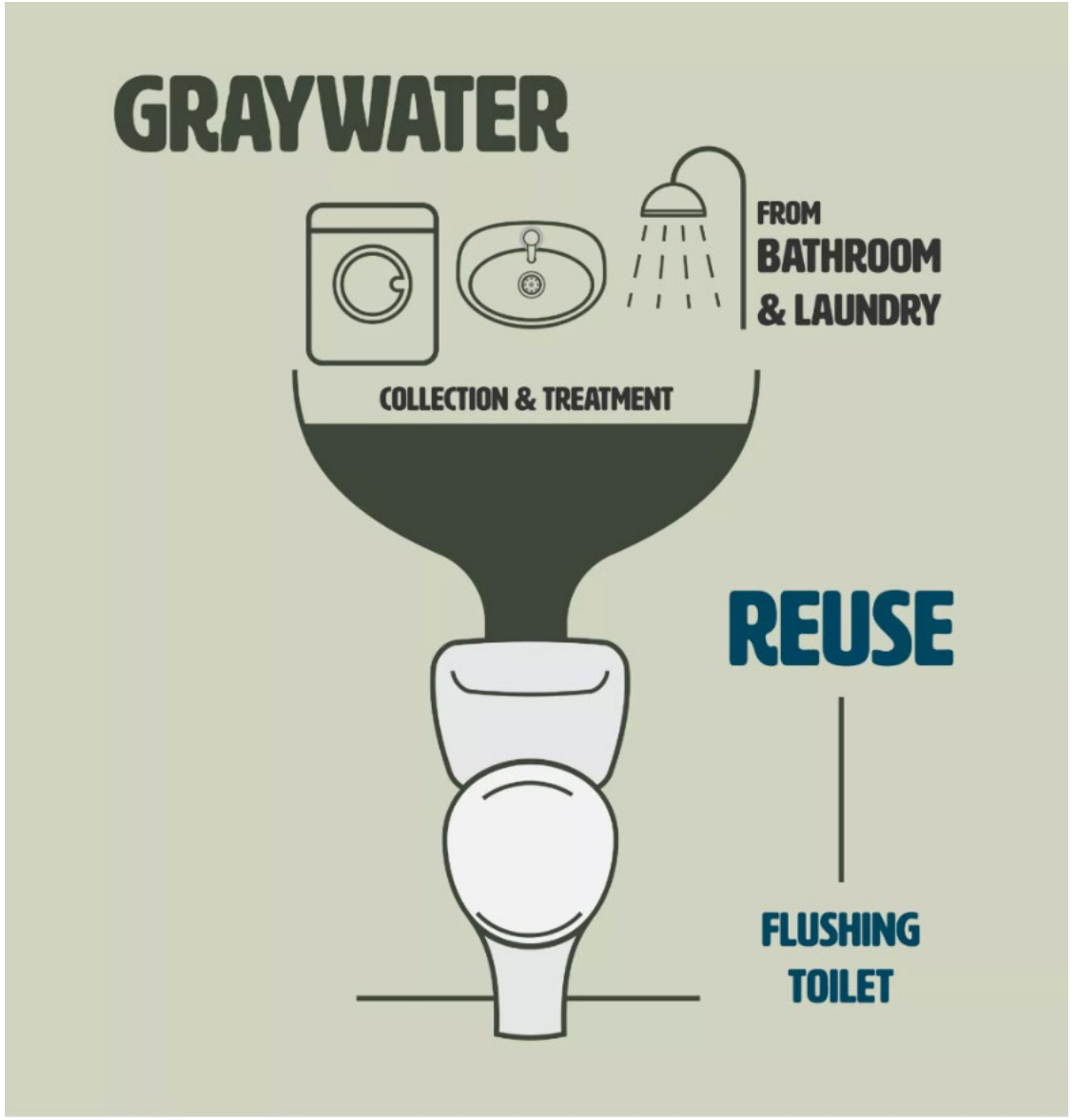
5 CCR 1002-86

Graywater Introduction

Graywater sources include water discharge from:	Graywater sources do not include water discharge from:
• Bathroom and laundry-room sinks • Bathtubs • Showers • Laundry machines	• Toilets • Urinals • Kitchen Sinks • Non-laundry utility sinks

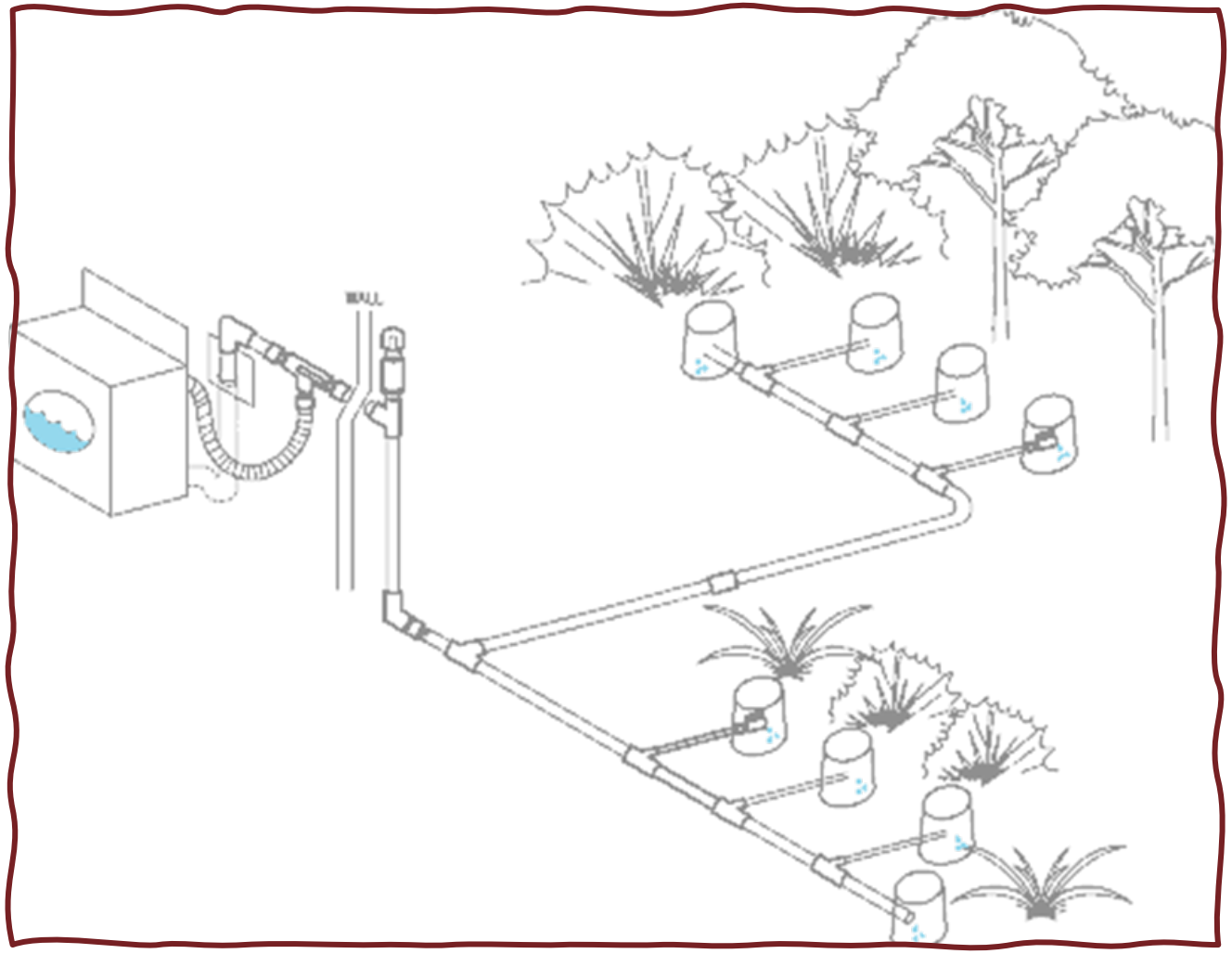
Two Methods for Re-use: *Flush Systems (FS)*

- Water is collected from bathroom sinks, bathtubs/showers, laundry sinks, and laundry machines into holding tanks and treated prior to re-use.
- Can be used to flush toilets which then goes to a septic system or to the water treatment plants.



Two Methods for Re-Use: *Laundry to Landscape (L2L)*

- Water collected from the laundry machine
- Can be used to water plants by pumping through a subsurface irrigation system



Regulatory Framework

Regulation 86

- Decision on creating a formal graywater program
- Meet minimum standards for design, permitting, and public health concerns

Colorado Plumbing Code (3 CCR 720-I)

- Allows for graywater piping within structures

International Building Code

- Building Department's Plumbing Code:
  - Chapter 13 (indoor reuse)
  - Chapter 14 (outdoor subsurface systems)

Water Rights and the Department of Natural Resources

- Program must conform with Colorado Law

Historical Use of Graywater in Douglas County

2015

- State adopted Reg 86 (previous opt-in model)
- Provided framework

2018

- Concept presented to the BOCC
- No regulations developed allowing for use at that time

2020

- Graywater system manufacturer contacted staff
- Research by staff on the current landscape of graywater in Colorado

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Historical Use of Graywater in Douglas County

- Pilot Program under R-022-073 in July 2022
- Allowed the Limited Use of Graywater in New Homes within the Boundaries of Canyons South Planned Development
- Allowed the use of graywater collected from bathtubs and showers for flushing toilets
- 29 re-use flushing systems permitted and installed in the Red Hawk subdivision (Town of Castle Rock)

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Pilot Program Homeowner Feedback

- Homeowners expressed concerns about the noise of the system, maintenance problems, space constraints and other issues.
- Some homeowners requested to have the system removed.
- Town of Castle Rock is looking more toward ultra low flow devices and other water saving considerations such as switching to native, low water landscaping and educating homeowners on watering practices.

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Kohler Study on Graywater Use in Toilets

SYSTEM ONE
FILTRATION & CHLORINATION

Tank walls black when chlorine level was low.

Complaints about odor.

A 12-month study indicated that graywater use in toilets caused black tank walls when chlorine was low and produced complaints of odor.

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Other Counties and Municipalities: Permitted System Numbers

Jurisdiction	Flush System	Laundry to Landscape
Denver	27 (Pilot Program)	0
Pitkin County	0	0
Grand Junction	0	0
Fort Collins	0	-
Golden	-	0
Arapahoe	0	-

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Other Counties and Municipalities: Reported Challenges

- Design complexity, limited contractor familiarity, and unclear return on investment is a reported barrier to participation.
  - One agency estimates a 30-65 year R.O.I.
- Agencies have invested substantial time developing best management practices, hosting workshops, coordinating across departments, and conducting outreach
  - One agency estimated over $100,000 in-kind staff time alone
  - Still experiencing lack of demand.

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Other Counties and Municipalities: Reported Challenges Continued

- Jurisdictions reporting some generalized interest in the program, but very few permitted systems installed statewide.
- Program start-up and implementation costs hard to quantify.
- Funding possible through grants, but fee recovery has been negligible.

Regulation 86 adoption encourages the participation of Local Public Health Agencies and the Board of Health prior to adopting an ordinance or resolution.

5 CCR 1002-86

Graywater is expected to carry human pathogens with various risk levels and pathways that have the potential to be dangerous to public health and water quality.

Each local city, city and county, or county has the discretion to decide whether to adopt any of the graywater uses along with the associated minimum design criteria and control measures set forth in Reg. 86.

Graywater Use Considerations

- Population Exposed
- Potential Health Exposures
- Environmental Risk
- Cross Connections and Other Operational Requirements

Graywater and Health

- Exposure to human excreta
  - Washing cloth diapers, soiled garments, or infectious garments
  - Aerosolization when flushing
  - Maintenance and cleaning activities
  - Pets
- Underlying health conditions could have an increased risk
- Retention for less than 24 hours to prevent microbial growth
- Must take efforts to minimize exposures
- Outbreak Investigations

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Graywater and the Environment

- Introduction of hazardous or toxic chemicals to groundwater
  - Cleaning chemicals and other hazardous household products
  - Pharmaceuticals
  - Home maintenance activities such as rinsing paint brushes or cleaning car parts
  - Pesticides/herbicides
  - Home photo labs and other hobbyist activities
- Likely contains nitrogen, phosphorus, and total dissolved solids (TDS) which are regulated groundwater pollutants
- Odors and Disease Vectors (Mosquitoes)
  - Extended storage of graywater
  - Ponding or runoff on surface following discharge
- Onsite Wastewater Treatment Systems (OWTS)
  - Setbacks for soil treatment area and tank

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Graywater and People

- Understanding operation and maintenance of systems and due diligence.
  - Following all manufacturer recommended activities
  - Disinfection of Flush Systems with chlorine
  - Toilet water must be dyed blue or green to be visibly distinct from clean water
- Deferred maintenance on systems
- Creating unintentional cross connections between clean water and graywater.
- In L2L, implies constant monitoring of weather and ground conditions.
  - No pooling or runoff of water allowed.
  - No watering of agricultural plants or crops for eating.

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Graywater Summary

Pros

- Is one tool to help conserve water, less water use overall
- Potential for less use of potable water for irrigation and less fertilizer needed
- May reduce water costs to consumers
- May ensure future water demands are met

Cons

- Health and environment concerns
- Higher strength wastewater, diminished reclaimed water for municipal use
- Increases plumbing complexity
- Operation and Maintenance requirements
- High cost to benefit ratio
- Water rights

Graywater Summary

Graywater re-use is still an evolving technology.

Education, maintenance and upkeep improvements may make these systems much safer and viable for widespread public use in the foreseeable future.

Demand for these systems continues to be low.

Staff believes that further research, programmatic development, and system improvements are necessary to properly ensure the health and safety of our citizens and their environments prior to implementing a graywater program.

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What's Next for the Board of Health?

Encourages collaboration with public health agencies and Board of Health by January 1, 2026

Policy Option 1: Take No Action

- Becomes legal by default even if a formalized program is not in place
- All systems permitted
- Regulation 86 program still required
  - Permitting, inspections, staff training, and education programs
- Oversight must be assigned to a Department
  - Capacity and Technical Expertise Needed
- Significant costs and coordination needed

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What's Next for the Board of Health?

Encourages collaboration with public health agencies and Board of Health by January 1, 2026

Policy Option 2: Prohibit Laundry to Landscape

- Maintain indoor allowance for toilet flush systems
- Avoid outdoor environmental concerns and complexity
  - Includes setbacks from property lines and well water
  - Soil conditions and absorption capacity
  - Water Rights and legal vulnerability
- Regulation 86 Program still required

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What's Next for the Board of Health?

Encourages collaboration with public health agencies and Board of Health by January 1, 2026

Policy Option 3: Prohibit All Systems

- No Regulation 86 adoption
- Requires Plumbing Code amendments for Chapter 13 and 14
- Simplifies administration
- No new workload or liability
- Can opt back-in later as capacity or demand changes

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