



# CALIFORNIA WATER POLICY CHALLENGE: Bridging the Gap between Water Innovation and Regulation in California

Developing a Statewide Policy for  
Onsite Non-Potable Water Systems



IMAGINE  H<sub>2</sub>O  
WINNER





## Background

In 2016, the Alliance for Water Efficiency (AWE) and the San Francisco Public Utilities Commission (SFPUC) won the Imagine H2O California Water Policy Challenge. The initiative, which seeks to advance the market for water innovation through forward-thinking policy, demonstrates a growing interest in how policy can incentivize water technology adoption. AWE and SFPUC teamed up on the winning proposal to address statewide standards for onsite water systems collecting and treating alternate water sources in commercial, multi-family, and mixed-use buildings in California. The draft model policy prepared by the SFPUC will build on existing plumbing, public health, and building standards and codes in California. The draft model policy will also include guidelines to address key implementation issues such as water quality criteria, monitoring and reporting, and permitting strategies. As part of the Imagine H2O California Water Policy Challenge, AWE and SFPUC conducted stakeholder outreach in regional workshops in California to gather feedback on the model state regulation.

# Developing a Statewide Policy for Onsite Non-Potable Water Systems

## STAKEHOLDER OUTREACH IN THE STATE OF CALIFORNIA

### Introduction

We have a national tradition of treating all water used by consumers to Safe Drinking Water Act standards. This level of safety is only necessary for 30% of indoor uses. Less-intensive treatment is perfectly adequate for outdoor irrigation and for most commercial and industrial purposes. And if the treatment technology is already available, technically feasible, affordable, and safe for public health, why are we not allowing these “fit-for-purpose” water treatment systems to be installed? Well, it is because there is no framework for government approval of these systems, and thus market innovation in on-site water treatment is being stymied<sup>1</sup>. Without policies that provide specific water quality or performance standards, technology can’t excel.

Our vision for California’s long-term water resource sustainability encompasses a strategy whereby public water supply can be designed to fit the specific purpose of its end use, and where water availability will not be a limiting factor to economic growth or ecosystem health. Our vision stretches these supplies by allowing multiple reuse strategies and specifying the parameters of “fit-for-purpose” water, determining what quality of water is needed for what purpose, and removing the policy barriers to continued reuse of water onsite, thus allowing the collection and treatment of graywater, rainwater, stormwater, foundation drainage, and blackwater.

The public policies we propose are meant to be enabling, not mandatory. But for those resource-constrained water systems that wish to pursue this policy option, we believe the governance barriers should be removed to enable them to do so. A regulatory framework must be created to enable the collection and reuse of all water resources and to support decentralized onsite water systems. This regulatory framework would include performance/water quality standards, monitoring regimes, and other strategies specifically designed to protect public health.

“Fit-for-purpose” tailored water systems are already available, using technology that enables the delivery of different water quality levels to safely meet residential, commercial and industrial uses. Currently, the approach is achieved with centralized infrastructure.

However, we must address the public policy barriers to decentralization. Particularly where the treatment systems would be decentralized and operated by the private sector, regulators have resisted allowing the installation of creative and innovative treatment solutions. Local health officers worry about permitting these systems in the absence of federal or state guidance on decentralized models. And investors are reluctant to invest in newer decentralized technologies and approaches if there are perceived regulatory barriers preventing immediate uptake of their product.

Thankfully, California has a water utility leader experienced in this particular issue – The San Francisco Public Utilities Commission (SFPUC) – has already developed a *Blueprint for Onsite Water Systems* for local agencies who want to permit these systems despite limited federal or

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<sup>1</sup> From 2000-2013 \$69 Billion was invested in the US in clean energy, but only \$1.5 billion in water. Clean energy patents were more than 10 times the number of water patents in 2009. “Path to Water Innovation” Discussion Paper 2014-06, Stanford Woods Institute for the Environment.

state guidance. SFPUC further developed consensus criteria with national experts as well as public health agencies and water and wastewater utilities that will serve as guidance for the enabling policy criteria.

That consensus criteria led to the development of the draft Model State Regulation for Onsite Non-potable Water Systems. The draft model state regulation is meant to establish standards for treatment performance and monitoring and reporting requirements for onsite non-potable water systems (ONWS). The draft model state regulation has two primary purposes. The full text of the draft model state regulation can be found in Appendix IV.

- A. To establish standards for treatment performance and monitoring, reporting, design, and operation requirements for ONWS that may collect rainwater, stormwater, graywater, and blackwater for non-potable reuse within and around buildings that will provide for protection of public health and the environment.
- B. To identify the types of procedures included in local oversight ONWS programs developed by local agencies to oversee and manage ONWS.

## Stakeholder Workshops

The Alliance for Water Efficiency (AWE) and SFPUC believe that stakeholders should be engaged in the development of this model state regulation. Thus, we established a forum to convene interested stakeholders, as they are best positioned to help vet the model state regulation developed from the research project and to seek public comment. Stakeholders in the discussion process included water utilities, environmental groups, code groups, local planning officials, national and local public health experts, plumbing trade groups, and builders and developers.

As part of the Imagine H2O Policy Challenge, AWE and SFPUC convened three stakeholder workshops on the topic of decentralized onsite non-potable water systems and the development of a statewide policy. Two of the workshops<sup>2</sup> were 3-hours in length and focused on San Francisco's Non-potable Water Program, recent research, and the aforementioned draft model state regulation for ONWS. The two workshops slated time for Q&A and opportunity for stakeholder inquiry and feedback throughout. The third workshop<sup>3</sup> was an all-day workshop organized and supported by numerous outside partners, and included presentations on the current state and future direction of onsite reuse, highlighting findings from the National Blue Ribbon Commission<sup>4</sup> and others. During this particular workshop, San Francisco's Non-potable Water Program was only briefly highlighted with a review of the draft model regulation for ONWS. Agendas for all three stakeholder workshops are shown in Appendix II.

Feedback garnered during the workshops themselves was minimal—see the following summary write-ups for a recap of each workshop. Following the three workshops, AWE reached out to all workshop attendees as well as additional California-based stakeholders requesting feedback on the draft model state regulation via email. In all, 130 stakeholders attended the three workshops.

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<sup>2</sup> November 7, 2017, San Francisco, CA and November 9, 2017, Sacramento, CA

<sup>3</sup> November 8, 2017, Beverly Hills, CA

<sup>4</sup> <http://uswateralliance.org/initiatives/commission>

Outreach via email included another 536 individual California-based stakeholders. Feedback received via email can be found in Appendix III.

Workshop Location	Date Held	Attendance
San Francisco, CA	November 7, 2017	27
Beverly Hills (Los Angeles), CA	November 8, 2017	83
Sacramento, CA	November 9, 2017	20

### **SAN FRANCISCO, CA – November 7, 2017**

The workshop was convened at 9:30 a.m. Opening remarks were made by speaker and hosts. Self-introductions were made around the room. Speaker presented a PowerPoint presentation entitled, *Onsite Non-potable Water Systems Workshop*. Appendix I includes the attendee list for the workshop.

Following the prescribed workshop agenda, found in Appendix II, the presentation covered the purpose of the workshop; an overview of San Francisco’s Non-potable Water Program; overview of SFPUC’s national partnership; overview of research on public health guidance; and the model policy guidance document.

Throughout the presentation, opportunities for Q&A were given. During the majority of the workshop, questions centered on the work SFPUC had done in setting up their program, and the issues experienced and addressed since they began their work.

Regarding the model policy guidance document specifically, a draft copy was distributed to all attendees and the opportunity for review was given. It was indicated that final *Model State Regulation for Onsite Non-potable Water Systems* would be released in the coming months alongside a model local ordinance and model program rules for state regulations and/or local ordinances.

Stakeholder feedback was requested on the model state regulation with regards to approach and implementation. A brief exchange was held, and the following comments, suggestions, and questions were captured during the workshop:

- Is there a path or option where the state plays a role, in support of local entities (counties)?
- One might look to establish a third-party trainer for local entities (counties), and authorize them to provide oversight to local agencies (counties)?
- Local building departments may become defacto oversight, without involvement of state or regional county involvement.
  - Noted that the State of California does not want to permit—get involved; thusly, the local agencies (counties) will have to burden the heavy-lift.
- There is a flexibility with regard to local ordinances, but seems that there must be oversight by local departments of public health.

## **BEVERLY HILLS (LOS ANGELES), CA – November 7, 2017**

The workshop was convened at 8:30 a.m. Opening remarks were made by the workshop organizers. Appendix I includes the attendee list for the workshop.

Following the prescribed workshop agenda, found in Appendix II, the workshop was broken down into seven sessions, including two panels, and two open discussions. For the purpose of garnering feedback on the draft model regulation, the proposed regulatory approach was highlighted during *Session 4: Regulations and Permitting Strategies*.

During the 20 minute presentation, the draft model regulation was presented along with the local efforts of the SFPUC. It was indicated that final *Model State Regulation for Onsite Non-potable Water Systems* would be released in the coming months alongside a model local ordinance and model program rules for state regulations and/or local ordinances.

At the appropriate time in the agenda, stakeholder feedback was requested on the model state regulation with regards to approach and implementation. A brief exchange was held, and the following comments, suggestions, and questions were captured during the workshop:

- State could establish risk-based Log Reduction Targets (LRTs) via the State Water Resources Control Board (SWRCB)—*recommended strategy for California*. SWRCB to set standards, in conjunction with local ordinance to oversee and permit. SWRCB work with regional water boards.
- Indicated that state division of drinking water will work with undertaking effort, but doesn't want to permit. Instead have it at the local level.
- Do not forget about small or rural locales.

## **SACRAMENTO, CA – November 9, 2017**

The workshop was convened at 9:30 a.m. Opening remarks were made by speaker and hosts. Self-introductions were made around the room. Speaker presented a PowerPoint presentation entitled, *Onsite Non-potable Water Systems Workshop*. Appendix I includes the attendee list for the workshop.

Following the prescribed workshop agenda, found in Appendix II, the presentation covered the purpose of the workshop; an overview of San Francisco's Non-potable Water Program; Overview of SFPUC's national partnership; Overview of research on public health guidance; and the model policy guidance document.

Throughout the presentation, opportunities for Q&A were given. During the majority of the workshop, questions centered on the work SFPUC had done in setting up their program, and the issues experienced and addressed since they began their work.

Regarding the model policy guidance document specifically, a draft copy was distributed to all attendees and the opportunity for review was given. It was indicated that final *Model State Regulation for Onsite Non-potable Water Systems* would be released in the coming months

alongside a model local ordinance and model program rules for state regulations and/or local ordinances.

Stakeholder feedback was requested on the model state regulation with regards to approach and implementation. A brief exchange was held, and the following comments, suggestions, and questions were captured during the workshop:

- How does the cost of water impact implementation? How does it pencil out? Is it cost-effective or is it a barrier to adoption?
- General support for the model state regulation was expressed, noting the cost of water is going up, and ultimately it will be cost-effective to undertake onsite reuse systems.
- Concern expressed with regards to how CA bill *SB-740 Onsite Treated Water* might impact this effort.
- The use of the term “unrestricted” with regards to “unrestricted irrigation” in the draft state model regulation is in conflict with model ordinance in the state already.
- Could single-family fall under districts, at a district scale?
- Further support for the model state regulation was expressed, indicating a preference for the state to set standards, in conjunction with a local ordinance to provide flexibility. State-level institution, but with local authority and oversight.
- Legislation might define, but also via regulations.
- What is situation now, considering NSF International 350 and 350-1 regulation on Onsite Water Reuse? It was noted that you have to have oversight with permitting. For decentralized onsite, need to make it consistent with other codes.

## APPENDIX I: Stakeholder Workshop Attendee Lists

SAN FRANCISCO, CA – November 7, 2017			
1	Eric	Anderson	City of Mountain View
2	Carolina	Balazs	Cal EPA
3	Christopher	Boswell-Donaldson	Sherwood Design Engineers
4	Jonathan	Chavez	City of Mountain View
5	Laura	Ciravolo	Sustainable Silicon valley
6	Cindy	Clark	Sustainable Silicon Valley
7	Jennifer	Clary	Clean Water Action
8	Lisa	Cuellar	CA Water Efficiency Partnership
9	Elizabeth	Dougherty	Wholly H2O
10	Samantha	Engelage	City of Palo Alto
11	Richard	Harris	East Bay Municipal Utility District
12	Zachary	Helsley	Santa Clara Valley Water District
13	Goldy	Herbon	SDCWA
14	Nashelley	Kaplan-Dailey	Imagine H2O
15	Marty	Laporte	ManageWater, Inc.
16	Megan	Maurino	Alameda County Water District
17	Robin	McKillop	MMWD
18	Laura	Meadors	Apple
19	Stephanie	Nevins	Alameda County Water District
20	Maika	Nicholson	Sherwood Design Engineers
21	Karin	North	City of Palo Alto
22	Carrie	Sandahl	City of Mountain View
23	Karina	Sandique	City of Santa Monica
24	Ankit	Sharma	City of Mountain View
25	Sebastien	Tilmans	Codiga Resource Recovery Center
26	Alison	Turner	City of Mountain View
27	Eric	Zickler	Lotus Water

## LOS ANGELES, CA - November 8, 2017

1	Matias	Purcell	BioFiltro
2	Dennis	Calvert	BioLargo, Inc.
3	Justin	Nichols	Bio-Microbics, Inc.
4	Lee	Portillo	Black & Veatch Corporation
5	Joaquin	Esquivel	CA State Water Resources Control Board
6	Ginachi	Amah	CA State Water Resources Control Board
7	Faraz	Asad	CA State Water Resources Control Board
8	Tyler	Durchslag-Richardson	Caltech
9	Peter	Bokor	Carollo Engineers, Inc.
10	Guy	Carpenter	Carollo Engineers, Inc.
11	Rick	Vasilopoulos	Castaic Lake Water Agency
12	Amanda	Heise	CH2M
13	Scott	Kleinrock	Chino Basin Water Conservation District
14	Aladdin	Shaikh	City of Anaheim
15	Aneta	Badalian	City of Glendale
16	Derek	Smith	City of Huntington Beach
17	Jason	Wen	City of Lakewood
18	Michael	Simpson	City of Los Angeles
19	Shieva	Taat	City of Los Angeles
20	Susana	Vargas	City of Los Angeles
21	Anthony	Eulo	City of Morgan Hill
22	Ursula	Schmidt	City of Pasadena
23	Karina	Sandique	City of Santa Monica
24	Kristine	Courdy	City of South Pasadena
25	Jennifer	Shimmin	City of South Pasadena
26	Rachel	Young	Descanso Gardens
27	Danielle	Coats	Eastern Municipal Water District
28	Elizabeth	Lovsted	Eastern Municipal Water District
29	Peter	Haase	Fall Creek Engineering
30	Mark	Gangi	Gangi Architects
31	Karen	Ferguson	Geoflow
32	Leigh	Jerrard	Greywater Corps
33	Joseph	Madden	Greywater Corps
34	Tom	West	Hatch
35	Brian	Herbstrith	Honeywell Corporation
36	Jennifer	Chan	Infiltrator Water Technologies
37	Jamie	Harlan	Kennedy/Jenks Consultants
38	Flor	Burrola	LA County Sanitation Districts
39	Connie	Christian	LA County Sanitation Districts
40	Wing	Tam	LA Sanitation-City of Los Angeles
41	Scott	Abbott	Los Angeles County Public Health
42	Carlos	Borja	Los Angeles County Public Health

Continued

**LOS ANGELES, CA – November 8, 2017**

43	Lusi	Mkhitaryan	Los Angeles County Public Health
44	Jacqueline	Taylor	Los Angeles County Public Health
45	Antony	Karongo	Los Angeles DWP
46	Christine	Tran	Los Angeles DWP
47	Joe	Berg	Metropolitan Water District of OC
48	Raymond	Jay	Metropolitan Water District of So Cal
49	Christl	Tate	National Environmental Health Assoc.
50	Edward	Clerico	Natural Systems Utilities, LLC
51	Eric	Hough	Natural Systems Utilities, LLC
52	Kris	Sellman-Johnson	NS Johnson Company
53	Jesica	Cleaver	Olivenhain Municipal Water District
54	Scott	Heffner	Rain Bird Corporation
55	Nitesh	Dullabh	ReNew Water
56	Jared	Calsing	Riverside City Water Operations
57	Max	Mendoza	Riverside City Water Operations
58	Gabriel	Patron	Rotoplas
59	Vinicius	Ramos	Rotoplas
60	Kristen	Ruffell	LA County Sanitation District
61	Natalie	Mladenov	San Diego State University
62	Matthew	Verbyla	San Diego State University
63	Amelia	Luna	Sherwood Design Engineers
64	Saeedreza	Hafeznezami	State Water Resources Control Board
65	Hugo	Orlando Aguilar	The IAPMO Group
66	Dwight	Perkins	The IAPMO Group
67	Brian	Pecson	Trussell Technologies, Inc.
68	Sarah	Triolo	Trussell Technologies, Inc.
69	Harold	Leverenz	University of California, Davis
70	Elena	Layugan	Upper San Gabriel Valley MWD
71	Kyle	Pickett	Urban Fabrick
72	Amanda	Rupiper	CA Dept. of Public Health/UC Davis
73	Blake	Oleson	Viejas Band of Kumeyaay Indians
74	Jasmine	Diaz	Water Systems Consulting, Inc.
75	Danielle	McPerson	WaterNow Alliance
76	Peter	Brooks	waterTALENT LLC
77	Gus	Meza	West Basin Municipal Water District
78	Mallory	Gandara	Western Municipal Water District
79	Voula	N.D. Becker	Not provided
80	Jeanne	Sabin Davis	Not provided
81	Nicholas	Holmes	Not provided
82	Graham	McCarthy	Not provided
83	Timothy	Shippen	Not provided

**SACRAMENTO, CA – November 9, 2017**

1	Diana	Brooks	CA Department of Water Resources
2	Cheryl	Buckwalter	Landscape Liaisons
3	Leslie	Crenna	EcoAssistant/UC Davis CWEE
4	Roshini	Das	City of Sacramento Utilities
5	Hellan	Dowden	HR Dowden & Assoc./Nexus
6	Charlotte	Ely	U.S. EPA/CA SWRCB
7	Brett	Ewart	City of Sacramento
8	Kathy	Frevert	CA State Water Resources Control Board
9	Mike	Grinstead	Sacramento County Water Agency
10	Jeffrey	Peterson	Rio Linda/Elverta CWD
11	Carrie	Pollard	Sonoma County Water Agency
12	Julie	Saare-Edmonds	CA Department of Water Resources
13	Jim	Schubert	Sacramento County Transportation
14	John	Shannon	City of Roseville
15	Mary	Yang	CA State Water Resources Control Board
16	Gayleen	Darting	Regional San District
17	Frances	Andrews	Cool Davis
18	Christie	Robinson	Brezack & Associates Planning
19	Kent	Thompson	Pipe Dreams Greywater
20	Gwen	Huff	CA Department of Water Resources

### APPENDIX II: STAKEHOLDER WORKSHOP AGENDAS

**November 7, 2017**

**9:30 a.m. – 12:30 p.m.**

**San Francisco, CA**

*and*

**November 9, 2017**

**9:30 a.m. – 12:30 p.m.**

**Sacramento, CA**

- 9:30 Welcome and Introductions
- 9:45 Purpose of Workshop
- 9:50 Overview of San Francisco's Non-potable Water Program
- 10:15 Q & A
- 10:30 Overview of National Partnership
- 10:45 Q & A
- 11:00 Overview of Research on Public Health Guidance
- 11:15 Q & A
- 11:30 Model Policy Guidance Document
- 11:50 Q & A
- 12:15 Next Steps for California Water Policy
- 12:30 Conclude

**November 8, 2017**

**8:30 a.m. – 4:30 p.m.**

**Beverly Hills (Los Angeles), CA**

- 8:30 Workshop Welcome
- 8:45 Session 1: Why Onsite System?
- 9:25 Session 2: Water Quality Criteria, Monitoring, and Treatment for Onsite Systems
- 11:00 Session 3: Public Health and Onsite Systems
- 11:25 Session 4: Regulations and Permitting Strategies
- 12:25 Lunch
- 1:10 Workshop Discussion: What regulatory challenges are you facing?
- 1:30 Session 5: Impacts and Opportunities for Utilities
- 2:45 Break
- 3:00 Session 5: Impacts and Opportunities for Utilities (*continued*)
- 3:25 Session 6: The Future of Onsite Reuse
- 3:25 Listening Session: What are your unanswered questions? Any research needs?
- 3:25 Closing and Thank You

## APPENDIX III: STAKEHOLDER FEEDBACK RECEIVED VIA EMAIL

**\*From a representative of a California-based collaborative of educators, which teaches residents and tradespeople about affordable and simple household water systems that dramatically reduce water use.**

It looks really great! I have one comment.

Since this is meant to be applicable for any state, I think you should amend the definition of graywater and blackwater to reflect the differences among states. For example, a handful of states consider kitchen sink water graywater.

(As an aside....The reason kitchen water is often included in the blackwater definition is not based on any scientifically-backed health and safety reason, it's very arbitrary. I know the literature doesn't present it as arbitrary but I have personally traced these citations back to their sources and they were totally arbitrary but are now stated as facts. And though many designers would decide to exclude kitchen water due to its clogging potential, that is a design issue, not health or safety.)

I would amend the definition in the following way:

- Blackwater: wastewater originating from toilets, urinals, and/or in some states kitchen counters (e.g., kitchen sinks and dishwashers)
- Graywater: wastewater collected from non-blackwater sources, such as bathroom sinks, showers, bathtubs, clothes washers, and laundry sinks. Note that some states consider kitchen sink water graywater while others do not.

**\*From a representative of a beachfront city in western Los Angeles County, California. Situated on Santa Monica Bay, and bordered on three sides by the city of Los Angeles. The population in 2010 was 89,736.**

Below are my comments. Please confirm your receipt:

Page 2: 2<sup>nd</sup> to last paragraph, about SF being the only jurisdiction with ordinance on ONWS, technically, Santa Monica also has an ordinance. We have had one since the mid-1990s to require onsite collection and treatment of rainwater; and this past July we added a new requirement that parcels 15,000 sq. ft. and larger are required to collect and use onsite the rainwater for direct non-potable uses. So I think SF AND SM do, not just SF.

Page 4: I think you should add a definition of Backflow Prevention Device, since you have a reference to it on page 11, and it is an important device for ONWS.

Page 6: I think you need a definition for residential building of 2 dwelling units, since you mention Residential Bldg. of one dwelling, and also MF for 3+ dwelling units. Shouldn't we mention a 2 dwelling unit, and where it falls, into Residential or Multi-family?

Page 7: Under Section SR.5, need to say that this document does NOT apply to single and double residential dwellings, right? To be consistent and not leave out duplexes.

Under Section SR.5, c: need to add "a" between "establish locally"

Page 8: Under Section SR.8: why are 2 tables needed? Why can't 1 table have all 4? Do not understand. Why is stormwater in a separate table when wastewater, blackwater is dirtier than stormwater?

Hope my comments are useful.

**\*From the founder of a Palo Alto company, which provides legal greywater irrigation systems that meet the needs of homeowners, building principals, and others constructing new residences with permanent landscapes.**

I see you are now hoping to regulate the business I've lived, breathed, bled in, and dreamt about for the last 28 years. Rather than try to educate you about all that your draft document shows you still need to know, I will simply say that here in California even those now seeking to write state-wide on-site water recycling regulations agree that systems using untreated greywater underground per existing state law, now found in Chapter 15 of the California Plumbing Code, are exempt from their proposed new body of law.

I will tell you that I've personally spent an absolutely obscene amount of time - many thousands of hours - working with every state, regional, and local regulatory body in California over the last 28 years to get California's now highly evolved body of greywater irrigation law in place and as over-built as California's greywater irrigation code is, it is far better than anything you will come up with for untreated greywater used in underground drip in your career lifetime if you try to put it in the same code as other types of water recycling. Those other types of water recycling are just too dissimilar.

California has already collectively spent easily tens of thousands of man hours evolving its code to allow the underground use of untreated greywater for irrigation. Other states have followed California's lead, many doing a better job as they had the benefit of seeing what works best and adopting that for their states.

You must summarily exclude from your proposed ordinance the underground use of untreated greywater per existing state laws. Any attempt to roll it into a code with other types of water recycling will be immediately fought and soundly defeated.

**\*From a representative from one of the largest water providers in southern California—serving a population of more than 630,000 in a 555 square-mile area.**

Thank you for the opportunity to comment on this Model Regulation. Here are my thoughts:

1. The overall layout of the Model is outstanding, and the intent is clearly communicated to the reader.
2. The content is uneven in its level of accuracy and detail, e.g. the sections covering performance standards and water quality are precise, while the sections on design and operation are not nearly robust enough.
3. The State and Local responsibilities sections would be clearer if the "shall", "may", and "must" phrases were grouped together in a more user friendly way, e.g. I found myself wondering which 'shalls' related to which 'mays' - perhaps use a more nuanced tiered numbering system?

Those are the main points that jumped out at me.

**\*From a representative from a national company that offers water reclamation services, and operates over 200 systems across the United States—a number in California.**

Thank you for the opportunity to provide comment on the draft regulatory framework. Below is a simple comment.

Section SR.4 (Allowed Non-potable End Uses)

- Cooling applications such as cooling tower makeup water should be included in outdoor uses.

**\*From a representative of a Southern California regional sanitation district that serves over four million residents.**

Full local implementation and some local regulation is necessary as systems and needs can vary greatly from region to region and will impact fees, rates, treatment, and management of onsite systems.

Section SR.7

- c. To require a local agency to establish treatment system design criteria, cross connection control, reporting, etc. would necessitate time and resources, which the local agency may not afford. Consider rephrasing “shall” to “may”.
- g. Consider rephrasing to: A local agency must issue a permit for the operation of All ONWS Entities at multi-family, mixed-use and non-residential (including commercial and all private) Buildings—must obtain a permit from for the operation of said Entity from the local agency. A local agency may charge a fee to offset the costs of regulating the ONWS.

Section SR.8

- a. “Project applicants must design and operate the ONWS...” may be misinterpreted as project applicants being required to operate facility when in fact operations may be controlled by local agency.

Additional policy/guidelines/guiding principles for consideration:

- Existing customers will not pay or subsidize, directly or indirectly, in any way the capital cost or operations of privately owned ONWS.
- Wastewater shall not be taken from public sewers. Such removal may impair the operation of the public system, water programs, etc.
- Local agency will not be responsible for the operation or maintenance of privately owned ONWS.
- Owners/Operators of ONWS will be solely responsible and liable for any and all damages incurred.
- ONWS that are implemented should be solutions that are for the greater good of all public customers. Each local agency may develop a criteria framework for evaluating the minimum required benefit. This means that social, environmental, and economic factors will be considered. For example, ONWS will not be allowed to be used for the primary goal of potable water offset where the local agency’s purple pipe system is accessible. Further, all ONWS should consider the long-term feasibility of such a system. The scope of such projects should be linked to a reduction of potable water use.
- Education and outreach are needed for ONWS. New ONWS should communicate with neighbors and provide information regarding potential uses of water treated onsite, which may include irrigation and industrial applications. ONWS should install and maintain proper signage for projects regarding onsite treated water. Citizens should be educated on the proper use of this water.
- Proper operations and maintenance are required for the sustainability of the ONWS. An entity shall submit an operations and maintenance plan with their application. The design, operation, and maintenance are performed by qualified individuals and approved by local agency.
- Local agency will evaluate impacts of proposed ONWS and will specify requirements. Local agency may limit materials that can be returned to the existing sewer, or may assess additional fees. These fees may include a quality surcharge fee or capacity related charge to account for higher costs imposed on local agency that may arise from high solids and/or TDS discharges by the ONWS and the need to maintain treatment and conveyance capacity in case the ONWS are off-line.

**\*From a representative of a city located in Santa Clara County, California, named for its views of the Santa Cruz Mountains. It has a population that is approximately 74,066.**

Thank-you for your program and an opportunity to review the Model Ordinance. I appreciate the opportunity to provide feedback from a smaller community perspective. While the ordinance is commendable effort to establish a common framework across the nation, there is a disconnect/gap between the collaboration across the Federal/State and drilling down to local enforcement. The County is not interested in administrating a program and for local agencies, it is problematic to adopt new programs that are not supported at higher levels and has an implied risk when adoption into city codes. We recognize a paradigm shift in water policy and have identified unintended consequences (that ultimately get passed onto the rate payer). We are working to develop a program and sorting through items included in the ordinance. This is a list of some of the challenges:

- Publically funded capital investments are used to develop water distribution, sewer and storm drain collection and recycled water infrastructure. The establishment of ONWS conflicts with other financial liabilities and rate structures set up for the communities. Long term contracts for water supply and wastewater treatment have been established with financial models. This results in disproportionate higher costs to rate payers to pay for the fixed costs. This especially true when POTW are expanding their production of recycled water.
- The assumption that interruptions in OWNS can discharge into municipal systems needs to be more vetted. A POTW and local infrastructure needs to have the capacity to absorb OWNS interruptions. Spikes in discharges disrupt operations and may not be allowed. The OWNS still rely on the municipality to provide capacity and water supply for fire protection. This fire flow capacity is included into the distribution system, the agency needs to have the water storage and pumping available yet does not see any revenue for the system. (Unlike SFPUC which has its dedicated fire system).
- With the last drought, we experienced changes in the operations due to water conservation, more incidents of sewer system soft plugs, and longer detention times in the water systems, new models need to be developed and studied so managed these changes. The 3-5 gallon per flush and associated flow rate in the sewers has changed. This has impacted operations and ultimately gets passed on to the ratepayer.
- Do diversions to storm water and rainwater affect the local environment? The “natural” replenishment supply will be reduced to watersheds creek and groundwater.
- While we are categorized as a large system from the potable regulatory perspective, we are comparably small with the amount of resources (staffing/ budget) available to a full service municipality. We provide separate storm water and sewer collection services, and deliver both potable and recycled water. Absorbing a new program such as inspection, monitoring and regulation is difficult at best.
- While ensuring public health is an underlying theme it is illusive. The Health Department authority resides at the County, who is generally responsible for a health incident if the County Health. They expressed no interest in monitoring/enforcing these OWNS systems and we don't control the end users. There is inherent enforcement difficulties between Public Works and Building. Public Works is clear at property line. The Building Department enforces building codes which allows for graywater and storm water storage and reuse. Currently we are struggling with inspection, permitting and cross connection responsibilities.
- Like other smaller municipal communities, we do not operate water or sewage treatment plants nor do we have staffed laboratory at our disposal. Many agencies import water supplies and contract for testing, and discharge sewer to regional facilities. The regulatory oversight is belongs to the State.
- Promulgate /exclude food production from onsite systems. The law is clear that no recycled water allowed at food production sites, yet there seems to be confusion when large campuses with large food production is contained on site.
- Blended ONWS systems degrade permitted recycled water and treated water. Establish regulations for detention times and compliance monitoring points.

**\*From a representative of a Silicon Valley collaborative bringing together leading tech companies, cities, counties, research and educational institutions to solve sustainability issues that cannot be solved alone.**

Thank you for your email. Here is our input, gathered from our experience with the current permitting process:

1. Clarity for All Onsite Systems

The regulation should probably pertain to only systems for significant sized commercial and large multi family dwellings, but by not applying to smaller systems it could be construed that the state does not encourage smaller systems currently covered by the building code (like rainwater or condensate for below surface irrigation. ) The regulation should provide guidance by recognizing the range of onsite systems and where the current regulations reside.

2. Reporting Data

One huge issue has been WHO receives the daily, weekly, monthly yearly reports and who is responsible to make sure systems are compliant. We have not identified many agencies that have the experience or the budget to do this (cities and counties tend to be nervous to take on this task). A third party agency could solve this problem, whether it is state run or an existing local agency (SFPUCC?) that could subcontract this service, short term or long term.

3. Fairness to All Applicants

The permitting process should treat all applicants fairly. Charges for permits or sewage fees for these systems must be by the true cost, not by how much a user can pay. Permits must be given out fairly to all who comply.

Please contact me if you need clarification. Thank you.

**\*From a representative of a Southern California company that has developed an in-home water and energy recycling system. Their patented system recycles a claimed 67% of indoor water, reduces energy related to water heating by 80%, and slashes sewer flow by up to 70%.**

I am writing to comment on the recommendations of the National Blue Ribbon Commission in “A GUIDEBOOK FOR DEVELOPING AND IMPLEMENTING REGULATIONS FOR ONSITE NON-POTABLE WATER SYSTEMS.,” which I will refer to here as The Guidebook.

The Guidebook proposes a Model State Regulation for Onsite Non-potable Water Systems. With respect to the on-site reuse of toilet wastes and other blackwater for non-potable applications, the Model Regulation liberalizes existing regulatory schemes by permitting their on-site treatment and reuse. At the same time, and in certain jurisdictions, it adds new restrictions and compliance requirements to the reuse of other types of water, including greywater and harvested rainwater.

My comments are specific to State of California, which has a large urban population and is subject to frequent drought. If implemented, the Model Regulation would overturn years of work and existing regulation related to the reuse of greywater and harvested rain water.

California has 12.8 million occupied residential units, of which about 7.5 million are detached (standalone) single family residences, 0.9 million are attached single family residences, and 4.4 million are Multi-family residences. In recent years, new housing is being constructed in almost equal numbers of single family and multi-family units.

This residential sector accounts for the largest share of urban potable water use, and landscape irrigation — which can use non-potable water — represents the single largest use of water.

The Model Regulation should be appropriate for the sectors where water reuse can occur. In the case of California, consideration must especially be given to the residential sector, and especially to small-scale systems from single-family detached homes up to medium scale multi-family projects with several dozen units.

Here are some specific concerns about how the Guidebook's recommendation directly challenge existing regulation in California. Adoption of Model State Regulation may result in slower adoption of onsite non-potable water systems in California.

1. Application to "Single residential dwelling:" Section SR.5 states that the Model Regulation does not apply to single family dwellings. Why is this the only application to which you do not apply the Model Regulation? Could the principles that allow this exemption be applied to other types of buildings, projects and applications, too?
2. Application to multi-family dwellings: The Model Regulation would impose monitoring and compliance requirements to all onsite non-potable water systems that could be installed in multi-family residential dwellings, from 2 units and up. This compliance burden would effectively close down all implementation of onsite water reuse systems in many of these dwellings (and especially for all smaller applications). This includes both greywater reuse systems as well as rainwater reuse systems (which are referred to in the Model Regulation as "roof runoff.") In California, by far the largest and most impactful use of Onsite Non-potable Water Systems is in residential applications to replace the use of potable water for irrigation. California currently allows the use of NSF350-certified systems to treat greywater for reuse in all kinds of residential irrigation. It also allows the reuse of harvested roof runoff. Is it the recommendation of the Blue Ribbon Commission that monitoring, testing and similar reporting are necessary when on-site water reuse systems are used for irrigation water only? That certainly is the current recommendation.
3. Onsite reuse of untreated greywater: California also currently allows all kinds of buildings to reuse untreated greywater for subsurface irrigation of non-edible landscape plants. Is it a correct understanding that the Model Regulation would not allow the reuse of untreated greywater for any application?
4. Application to small-scale commercial projects: Small-scale commercial projects will be impacted in the same way as multi-family dwellings.

This Model Regulation seems to have an objective of allowing the development of a regulatory framework that will enable the reuse of blackwater etc. in the urban core rather than enabling and empowering solutions in urban and suburban residential neighborhoods where it could have a larger impact on overall water use.

I would ask the Blue Ribbon Commission clarify its recommendations with respect to small scale water reuse systems for both residential and commercial application. In doing this, it should consider if regulation should differ for those systems where the reuse of water will only be outdoors.

I understand and appreciate that this is a "model" regulation that could be applied in any number of states with varying degrees of existing regulation for onsite water treatment for non-potable reuse. That said, in many states, including California where we operate, the recommendations would, if implemented, overturn existing regulations that have been years in the making.

**\*From a representative of a Southern California public agency created under state law to manage wastewater and solid waste on a regional scale and consist of 24 independent special districts serving about 5.6 million people in Los Angeles County.**

Below are comments collected from our staff:

- There may be overreach in the definition of “Onsite Non-potable Water System (ONWS)” on page 5: “a system in which water from local sources is collected, treated, and used for non-potable uses at the building to district/neighborhood-scale, generally at a location near the point of generation.” “On-site” should be restricted to a building or single property and the water generated on-site should be used solely on-site. This should not extend to districts or neighborhood, which are not defined. Using such water off-site then gets into the realm of water recycling, which is separately regulated (at least in CA).
- “Allowable Non-Potable End Uses” on page 7 lists “clothes washing” which may be too restrictive for their intent, as laundry applications for sheets/bedding at hotels/hospitals may be included at some sites. Instead, consider using “laundry.”
- Also in this section, the term “ornamental plant irrigation” may also be too restrictive. At least in our service area, we consider this use to be at commercial nurseries for plants that are for sale. A broader term should be “landscape irrigation”.
- “Allowable Implementation Scale” on page 7 calls for “district-scale projects”. Again, this goes beyond the concept of on-site reuse and extends into water recycling projects. Such an expansion of usage would call for much greater regulation and oversight and could potentially result in much greater culpability for the owner/operator in the event of problems with the system and the quality of water delivered. It should be noted that, while the first three categories are specifically mentioned in paragraph (g) of “Local Agency Responsibilities and Duties” section on page 8, “district-scale projects” are noticeably omitted.
- While the log reduction requirements in Tables 1 and 2 on page 9 appear to be reasonable, there is no practical mechanism for determining compliance. The document uses “surrogate” parameters as a means of determining log removal, but gives no indication as to what those might actually be. It is highly unlikely that such high levels of virus, protozoa or even enteric bacteria would be in some or most of the water sources listed, so direct measuring of compliance would be nearly impossible at these high levels of required removal. It would seem that pilot plant studies would be necessary for each and every proposed ONWS to determine what surrogates would be used and at what levels would be compliant. Furthermore, regulatory agencies in California would want to see absolute limits on at least the more readily measurable bacteria.
- “Design Requirements” on page 10 allows for a potable water back-up to the ONWS if “the connection between the two systems is protected by an air gap or other appropriate backflow device.” At least in California, no simultaneous physical connections are allowed between potable and non-potable supplies. In addition to a backflow device, there must be a “plumbing separation”, or a gap in the piping, that is either on the potable or on the non-potable side. This plumbing separation is physically moved from one side to the other when changing water sources for the site.
- “Use Area Requirements” on pages 11-12 should be expanded to include other provisions, such as a ban on hose bibs on the alternative water use system, marking of above-ground appurtenances of the alternative water system, and other requirements consistent with Title 22.
- The stormwater treatment standards are based on the assumption that stormwater is diluted sewage at either a  $10^{-1}$  or  $10^{-3}$  level. That assumption is inappropriate in many cases. Please add a footnote to Table 2 that highlights the assumption and provides an opportunity for alternate treatment targets based on site-specific information.
- There is a typo in the first paragraph: “OWNS” should be “ONWS.”

# APPENDIX IV: DRAFT MODEL STATE REGULATION FOR ONSITE NON-POTABLE WATER SYSTEMS

## MODEL STATE REGULATION FOR ONSITE NON-POTABLE WATER SYSTEMS

This Model State Regulation is to establish standards for Treatment Performance and Monitoring and Reporting Requirements for Onsite Non-potable Water Systems (ONWS).

Section SR.1	Purpose
Section SR.2	Definitions
Section SR.3	Allowed Alternate Water Sources
Section SR.4	Allowed Non-potable End Uses
Section SR.5	Allowed Building Scale
Section SR.6	State Agency Responsibilities
Section SR.7	Local Agency Responsibilities
Section SR.8	Mandatory Treatment Performance Standards
Section SR.9	Monitoring, Sampling, and Reporting Requirements
Section SR.10	Design Requirements
Section SR.11	Operation Requirements
Section SR.12	Use Area Requirements

### SECTION SR.1 Purpose

- a. The purpose of the Regulation for Onsite Non-Potable Water Systems (Regulation) is to establish standards for Treatment Performance and Monitoring, Reporting, Design, and Operation Requirements for Onsite Non-potable Water Systems (ONWS) that may collect rainwater, stormwater, graywater, and blackwater for non-potable reuse within and around buildings that will provide for protection of public health and the environment.
- b. The purpose of this Regulation is to identify the types of procedures included in local oversight ONWS programs developed by local agencies to oversee and manage ONWS.
- c. It is the intent of this Regulation that all elements are to be interpreted in a manner that fully implements applicable state and federal water quality laws and regulations, in order to protect public health, enhance the environment and put the waters of the state to the fullest use of which they are capable.

### SECTION SR.2 Definitions

For the purposes of this Regulation, the following definitions shall apply:

**Air Gap:** A physical break between a supply pipe and a receiving vessel as set forth in the local or state plumbing code.

**Alternate Water Source:** A source of non-potable water that may include any of the following - graywater, roof runoff, stormwater, blackwater, and any other source approved by the state or local agency.

**Blackwater:** Wastewater originating from toilets, urinals, and/or kitchen counters (i.e., kitchen sinks and dishwashers).

**Certified Laboratory:** An environmental testing laboratory certified by an accepted state accreditation program or the National Environmental Laboratory Accreditation Program. Laboratories must be certified to perform each test for which they are providing results.

**Challenge Test:** The evaluation of a unit treatment process for pathogen  $\log_{10}$  reduction performance using selected surrogate or indigenous constituents. In general, a surrogate is introduced to the process influent, and the process influent and effluent flow are monitored for the concentration of the surrogate.

**Commercial Building:** A building that is used for commercial purposes.

**Continuous Verification Monitoring:** Ongoing confirmation of system performance using sensors for continuous observation of selected parameters, including surrogate parameters that are correlated with pathogen log reduction target requirements.

**Cross-connection:** When a plumbing system allows water from one system (e.g., non-potable) to enter into another system (e.g., potable), resulting in the contamination of potable water.

**District-Scale Project:** An ONWS for a defined service area that covers two or more properties and may cross public rights-of-way.

**Domestic Wastewater:** Wastewater collected from residential uses.

**Field Verification:** Performance confirmation study conducted using challenge testing, including surrogate microorganisms and/or other non-biological surrogates, usually during startup and commissioning and may be repeated as needed. The need for, duration, and extent of the field verification procedure will depend on characteristics of the ONWS.

**Graywater:** Wastewater collected from non-blackwater sources, such as bathroom sinks, showers, bathtubs, clothes washers, and laundry sinks.

**Incidental Runoff:** Unintended small amounts (volume) of runoff from ONWS irrigation use areas, such as unintended, minimal over-spray that escapes the ONWS irrigation use area. Water leaving an ONWS irrigation use area is not incidental if it is part of the facility design, if it is due to excessive application, if it is due to intentional overflow or application, or if it is due to negligence.

**Indoor Use:** Toilet and urinal flush water and clothes washing.

**Local Agency:** Any city, county, town, parish, or city and county with the jurisdictional authority to permit use of ONWS.

**Log<sub>10</sub> Reduction:** The removal of a pathogen or surrogate in a unit process expressed in  $\log_{10}$  units. A 1-log reduction equates to 90% removal, 2-log reduction to 99% removal, 3-log reduction to 99.9% removal, and so on.

**Log<sub>10</sub> Reduction Target:** The  $\log_{10}$  reduction target for the specified pathogen group (i.e., viruses, bacteria, or protozoa) to achieve the identified level of risk to individuals ( $10^{-4}$  infection per year).

**Mixed-Use Building:** A building that contains residential and commercial uses.

**Multi-Family Building:** A residential building containing three or more dwelling units.

**Multi-User Building:** Any building that is not a single residence (e.g., multi-residential apartment, commercial, mixed use, and others).

**Non-Potable Water:** Non-potable water collected from alternate water sources, treated, and intended to be used on the project applicant's site or district-scale project and is suitable for direct beneficial use.

**Onsite Non-Potable Water System (ONWS):** A system in which water from local sources is collected, treated, and used for non-potable uses at the building to district/neighborhood-scale, generally at a location near the point of generation.

**ONWS Engineering Report (Engineering Report):** Report submitted by project applicant to the local agency describing the ONWS in accordance with the program rules adopted by the local agency.

**Operations and Maintenance Manual:** Document providing comprehensive information on the ONWS operation, maintenance, and repair.

**Permit:** Permit to operate an ONWS issued and enforced by the state or local agency.

**Permittee:** The person(s) who holds a valid permit granted by the state or local agency to operate an ONWS. The Permittee is responsible for maintaining a permit, assuring that water collection, treatment, use, and water quality monitoring and reporting are consistent with the approved engineering report, the operations and maintenance manual, the program rules, and applicable state and local laws. A Permittee may also be the supplier and/or user.

**Project Applicant:** The person(s) or entity(s) applying for authorization to install and use an ONWS. The project applicant is responsible for applying for the permit, assuring that the ONWS is installed consistent with the approved engineering report, the operations and maintenance manual, the program rules, and applicable state and local laws.

**Residential Building:** A building that contains only dwelling units.

**Roof Runoff:** Precipitation from a rain or snowmelt event that is collected directly from a roof surface not subject to frequent public access.

**State Agency:** The state agency with legal authority to administer and/or provide oversight to local agencies seeking to implement programs that allow for ONWS.

**Stormwater:** Precipitation runoff from rain or snowmelt events that flows over land and/or impervious surfaces (e.g., streets and parking lots). Stormwater also includes runoff from roofs with frequent public access.

**Supplier:** An entity that supplies an untreated alternate water source to the ONWS for treatment and reuse. A supplier may also be a permittee and/or user.

**Treatment System Manager:** The qualified person or entity responsible for the daily management and oversight of the ONWS.

**Unrestricted Irrigation:** Irrigation of ornamental plants (i.e., non-food) and dust suppression.

**User:** An entity that accepts treated water from an ONWS for beneficial purposes within its area of occupancy. A user may also be a permittee and/or supplier.

**Validation Report:** Report documenting a detailed technology evaluation study that was conducted to challenge the treatment technology over a wide range of operational conditions. The validation report shall include evidence of the treatment technology's ability to reliably and consistently achieve the log reduction value, including information on the required operating conditions and surrogate parameters that require continuous monitoring.

### SECTION SR.3 Allowed Alternate Water Sources for ONWS

The following alternate water sources may be used to supply an ONWS:

- a. Roof Runoff
- b. Stormwater
- c. Graywater
- d. Domestic Wastewater or Blackwater

### SECTION SR.4 Allowed Non-Potable End Uses

The following non-potable end uses may be met by an ONWS:

- a. Indoor Use:
  - i. Toilet and urinal flushing
  - ii. Clothes washing
- b. Unrestricted Irrigation:
  - i. Ornamental plant irrigation
  - ii. Dust suppression

### SECTION SR.5 Allowed Implementation Scale

This Regulation is limited to ONWS that serve the following implementation scales:

- a. Multi-Family Buildings;
- b. Commercial Buildings;
- c. Mixed-Use Buildings; and,
- d. District-Scale Projects.

This Regulation does not apply to ONWS that serve a single residential dwelling.

### SECTION SR.6 State Agency Responsibilities and Duties

- a. The state agency has the principle responsibility of establishing mandatory treatment performance standards and monitoring and reporting requirements in an adopted Regulation for use by local agencies in local programs to protect public health and the environment.
- b. As the state agency charged with the development and adoption of this Regulation, the state agency shall periodically review, amend and/or update this Regulation as required.
- c. *[Optional Element]* The state agency may take any action assigned to the local agency in this Regulation in the event that the local agency fails to establish locally authorized program.
- d. *[Optional Element]* The state agency may require local agencies to periodically report to the State with respect to implementation of local programs.
- e. *[Optional Element]* Primary responsibility for enforcement of this part shall be with the local agency. Nothing in this part shall prevent the State Agency from taking any enforcement actions to protect public health. The State Agency shall provide training and technical assistance to the local agencies to ensure uniform enforcement of this part.

### SECTION SR.7 Local Agency Responsibilities and Duties

- a. A local agency may authorize ONWS for the express purposes set forth in this Regulation as long as the local agency has adopted a local program through a local ordinance that includes the minimum requirements established in this Regulation.
- b. The local ordinance must incorporate the treatment performance standards and monitoring and reporting requirements in Section 8.
- c. The local agency must have the legal authority to control the operation of ONWS and shall establish ONWS treatment system design criteria, permitting, cross connection control, reporting, notification, and enforcement procedures for ONWS.
- d. Local agencies approving ONWS shall retain permanent records of their approval actions and, if required by the state agency, make those records available upon written request for review by the state agency.
- e. A local agency may implement this Regulation, or a portion thereof, using its local authority to enforce the Regulation.
- f. Nothing in this Regulation shall preclude a local agency from adopting or retaining other regulations for ONWS in a local program that are more stringent than those contained in this Regulation.
- g. A local agency must issue a permit for the operation of ONWS at multi-family, mixed use and non-Residential Buildings. A local agency may charge a fee to offset the costs of regulating the ONWS.
- h. *[Optional Element]* If required by the state agency, local agencies allowing ONWS pursuant to this Regulation shall submit an annual report to the state agency. The annual report may include the following information (organized in a tabular spreadsheet format):
  - i. Number, location, and description of permits issued for new and replaced ONWS within the local agencies jurisdictional area;
  - ii. Number and location of complaints and/or malfunctions pertaining to ONWS operation and maintenance, and identification of those which were investigated and how they were resolved; and,
  - iii. Summary of site inspections conducted by the local agency.

### SECTION SR.8 Mandatory Treatment Performance Standards

- a. Project applicants must design and operate the ONWS to achieve the mandatory minimum treatment performance standards for blackwater, graywater and roof runoff as set forth in Table 1 that represent ninety-fifth percentile log reduction targets based on three reference pathogens (enteric viruses, enteric bacteria, parasitic protozoa) and Table 2 for stormwater. Where applicable, project applicants shall validate each of the treatment processes used to meet the requirements in Table 1 and Table 2 for their log reduction by submitting a report to the local agency for review and approval, or by using a challenge test approved by the local agency during field verification that provides evidence of the treatment. The validation report and/or challenge test shall be prepared by an engineer licensed in the state in wastewater treatment and/or public water supply, including the evaluation of treatment processes for pathogen control.
- b. If the log reduction targets are not being met based on approved ongoing surrogate parameter monitoring, the project applicant shall immediately investigate the cause and initiate corrective actions.
- c. When sources of water are blended, the log reduction target for the most contaminated source with respect to human-infectious pathogens shall be the applicable target, regardless of volume.
- d. Water from an ONWS must not create a nuisance, odor, threaten human health, or damage the quality of surface water or groundwater.

Table 1. Log reduction targets for 10<sup>-4</sup> per person per year benchmarks for ONWS using blackwater, graywater, or roof runoff

Water Use Scenario	Enteric Viruses	Parasitic Protozoa	Enteric Bacteria
Domestic Wastewater or Blackwater			
Unrestricted Irrigation	8.0	7.0	6.0
Indoor Use	8.5	7.0	6.0
Graywater			
Unrestricted Irrigation	5.5	4.5	3.5
Indoor Use	6.0	4.5	3.5
Roof runoff			
Unrestricted Irrigation	Not applicable	No data	3.5
Indoor Use	Not applicable	No data	3.5

Table 2. Log reduction targets for 10<sup>-4</sup> per person per year benchmarks for ONWS using stormwater

Water Use Scenario	Enteric Viruses	Parasitic Protozoa	Enteric Bacteria
Stormwater (10 <sup>-1</sup> dilution)			
Unrestricted Irrigation	5.0	4.5	4.0
Indoor Use	5.5	5.5	5.0
Stormwater (10 <sup>-3</sup> dilution)			
Unrestricted Irrigation	3.0	2.5	2.0
Indoor Use	3.5	3.5	3.0

**SECTION SR.9 Monitoring, Sampling, and Reporting Requirements**

- a. During initial system startup, water quality sampling is required quarterly, monthly, weekly, daily or continuously as determined by the local agency, depending on the source water and end use. Sampling requirements may be modified if evidence indicates that the modified requirements maintain public health protection. Subject to the treatment processes utilized in the ONWS, water quality sampling requirements may be minimized or eliminated after conditional startup if the log reduction targets are being met based on approved ongoing surrogate parameter monitoring.
  - i. Water samples must be analyzed by a certified laboratory using methods approved by the Environmental Protection Agency or standard methods for water sampling and analysis. Laboratory reports shall be signed by the laboratory director or a designee.

- b. To meet the log reduction targets on an ongoing basis, the project applicant shall report to the local agency on the type of continuous monitoring to be utilized. The local agency will determine the credited log reduction based on the surrogate parameter utilized for continuous monitoring. ONWS shall perform ongoing continuous monitoring using the pathogenic microorganisms of concern or a microbial, chemical, or physical surrogate parameter(s) that verifies the proper operation and maintenance of each treatment process's ability to achieve its credited log reduction. Instrumentation with continuous monitoring capabilities shall be approved by the local agency and routinely calibrated.
- c. Water quality sampling and continuous monitoring results shall be reported to the local agency at the frequencies listed in Table 3 via an approved report format and be accompanied by data in an approved electronic format. For continuous monitoring, the local agency shall determine the appropriate parameters (i.e. minimum, maximum, average) to be reported. A report shall include:
  - i. System treated water flow (gallons per day, gallons per week or gallons per month);
  - ii. Water quality characteristics in accordance with the permit; and
  - iii. Attachments describing any malfunctions, breakdowns, upsets, bypasses, odors, complaints, or other system operation anomalies.
- d. The project applicant shall submit an annual report to the local agency describing compliance of the ONWS with the Regulation and the limits and conditions of the permit.

Table 3. Routine Reporting Frequency

Alternate Water Source	Routine Reporting Frequency <sup>1</sup>
Domestic Wastewater or Blackwater	Monthly
Graywater	Monthly during Conditional Startup Mode, Annually thereafter
Stormwater	Monthly during Conditional Startup Mode, Annually thereafter
Roof Runoff	Monthly during Conditional Startup Mode, Annually thereafter

Notes:

1. Operational changes, system malfunctions, and/or monitoring results which are outside of the applicable water quality limits shall be reported within 24 hours.

### SECTION SR.10 Design Requirements

A connection to the public potable water supply shall be available in the event that the ONWS needs potable make-up water for indoor uses. The public water supply shall not be used as a backup or supplemental source of water for an ONWS unless the connection between the two systems is protected by an air gap or other appropriate backflow device.

A bypass to the building's sewer shall be available in the event that the treatment system must be taken offline for service. The connection to the sewer must be protected by an air gap or other appropriate backflow prevention device in order to prevent wastewater from entering the ONWS.

**SECTION SR.11 Operation Requirements**

When the local agency determines the project applicant has satisfied all the requirements of this Regulation, the state or local agency may issue a permit to operate the ONWS. Permittees shall timely submit all water quality monitoring information required by the provisions of this Regulation.

Cross-connection testing is completed prior to initial operation of the system and at intervals thereafter as required by the state or local agency. All cross-connection testing must be conducted by a certified cross-connection specialist in the presence of the state or local agency to determine whether a cross-connection has occurred.

ONWS shall immediately divert the alternate water source to the municipal sewer system upon receipt of the results of any water quality test sample that does not meet the water quality requirements of the permit or indication of a process malfunction based on continuous monitoring.

**SECTION SR.12 Use Area Requirements**

- a. All use areas where treated alternate water sources are accessible to the public shall be posted with signs that are visible to the public that include the following wording: "Non-potable water - do not drink".
- b. Use of treated alternate water sources shall comply with the following:
  - i. Water from an ONWS used for irrigation or dust suppression must be applied at a rate that will not result in ponding or pooling, or cause runoff, other than incidental runoff, across the property lines or onto any paved surface.
  - ii. Water from an ONWS is prohibited from entering a municipal stormwater drainage system or other water body, unless otherwise permitted through a local regulation and in compliance with the Clean Water Act.
- c. Water from an ONWS used for unrestricted irrigation of publicly accessible areas must be applied at times when possible contact with the public is minimized.



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