

FINAL STATEMENT OF REASONS
FOR
PROPOSED EMERGENCY BUILDING STANDARDS
OF THE
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
REGARDING THE 2007 CALIFORNIA PLUMBING CODE (CPC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 5, CHAPTER 16A, PART I
(GRAYWATER SYSTEMS)
(HCD EF 01/09)

The Administrative Procedure Act requires that every agency shall maintain a file of each rulemaking that shall be deemed to be the record for that rulemaking proceeding. The rulemaking file shall include a final statement of reasons. The Final Statement of Reasons shall be available to the public upon request when rulemaking action is being undertaken. The following are the reasons for proposing this particular rulemaking action:

UPDATES TO THE INITIAL STATEMENT OF REASONS

(Government Code Section 11346.9(a) (1) requires an update of the information contained in the initial statement of reasons. If the update identifies any data or any technical, theoretical or empirical study, report, or similar document on which the state agency is relying that was not identified in the initial statement of reasons, the state agency shall comply with Government Code Section 11347.1)

No data or any technical, theoretical or empirical study, report, or similar document on which the state agency is relying has been added to the rulemaking file that was not identified in the Initial Statement of Reasons.

During this rulemaking, HCD has made some non-substantive changes. Non-substantive changes address grammatical, editorial language revisions and/or ambiguities.

The following non-substantive revisions were made after the first 45-day comment period that ended on October 19, 2009: Sections 1601A.0, 1602A.0, 1603A.0, 1603A.1.1, 1603A.1.2, 1603A.1.3, 1612A.1 and Table 1603A.1.4.

No changes were made after the subsequent 15-day comment period that ended on December 9, 2009.

MANDATE ON LOCAL AGENCIES OR SCHOOL DISTRICTS

(Pursuant to Government Code Section 11346.9(a) (2), if the determination as to whether the proposed action would impose a mandate, the agency shall state whether the mandate is reimbursable pursuant to Part 7 of Division 4. If the agency finds that the mandate is not reimbursable, it shall state the reasons for the finding(s))

The Department of Housing and Community Development has determined that the proposed regulatory action would not impose a mandate on local agencies or school districts.

OBJECTIONS OR RECOMMENDATIONS MADE REGARDING THE PROPOSED REGULATION(S)

(Government Code Section 11346.9(a) (3))

The following is HCD's summary of and response to comments specifically directed at the agency's proposed action or to the procedures followed by the agency in proposing or adopting the actions or reasons for making no change:

COMMENTS AND RESPONSES EM-1 THROUGH EM-165, L-1 THROUGH L-35 AND F-1 THROUGH F-8 WERE RECEIVED DURING THE FIRST 45-DAY COMMENT PERIOD.

(The text with the proposed changes clearly indicated was made available to the public from September 4, 2009, until October 19, 2009.)

SPECIAL NOTE: This “emergency” rulemaking for the 2007 CPC (HCD EF 01/09) and the “regular” rulemaking for the 2010 CPC (HCD 03/09) contain nearly identical regulations concerning “graywater systems”; therefore, both rulemakings were run concurrently. As a result, Comments and Responses EM-1 through EM-165, L-1 through L-35 and F-1 through F-8 apply to both rulemakings and will appear in the Final Statement of Reasons of each package.

INTRODUCTION TO RESPONSE TO COMMENTS

In preparing the Final Statement of Reasons, HCD has addressed comments both individually or grouped together. In most cases, HCD has grouped the comparable comments addressing graywater together, choosing to provide one global response. Our reasoning is that most comments directed toward a specific topic, idea or section, whether pro or con, made a parallel supposition, remark, or desired the same outcome.

When considering water re-use and efficiency, the proposing agency must always balance the potential benefits against the potential risks. When approving a methodology new to the California Plumbing Code, HCD has an obligation to be reasonably assured that the method does not produce an unreasonable risk to health or safety. If a water efficiency method is excluded from the code, there is undoubtedly an economic consequence to consumers. However, when balancing the interests, HCD resolves close questions in favor of protecting the health and welfare of the public.

In each case, HCD has evaluated the submitted comments as follows:

NOTE: The complete text of each comment and any referenced materials may be reviewed at the following internet address: http://www.bsc.ca.gov/prpsd_chngs/pc_09_comment.htm

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COMMENTS: EM-1 through EM-102, EM-104, EM-105, EM-107, EM-109 through EM-119, EM-122 through EM-128, EM-133, EM-135, EM-136, EM-143, EM-147, EM-150, EM-154, EM-156 through EM-165, L-1 through L-19, L-22 through L-26, L-34, L-35, F-1, F-2 and F-4: The above listed comments support the regulations as written. The commenters appreciated regulations that allow Californians to re-use graywater in an economical manner while protecting the environment and public health.

RESPONSE: HCD appreciates, acknowledges and thanks the commenters for the support of the proposed regulations.

2. COMMENTERS:

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COMMENTS: EM-103, EM-106, EM-108, EM-120, EM-121, L-27, F-6 and F-7: The above listed comments support the proposed regulation with amendments. The comments suggested amending the regulations requiring a mandatory notification of where graywater systems are being installed. Commenters believe notification information to be critical to protect the water supply from contamination and for planning purposes of the water purveyor.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenters.

The requirement for a notification of location regarding a graywater system was an important issue in the development of this regulation, with much input from stakeholders.

Stakeholders expressed a wide variety of opinions on what should be required for notification, if anything. HCD concluded requiring notification is best suited as an option decided at a local level. The resulting language is a balancing of interests.

HCD recognizes the need for some Enforcing Agencies to keep a record of graywater systems installed. At the same time, others did not want the added burden of this bureaucracy without permit fees and felt it would deter users of this code. In addition, the information considered necessary will vary with the geographic location. In order to allow each Enforcing Agency the discretion to require only the information appropriate for that location, the phrase "if required" was used. The phrase "if required" by design raises the question "is notification required in this location?" The intended result is dialog between the user and the Enforcing Agency. This contact will provide an opportunity to guide the user or provide a source of education, if needed.

The goal of SB1258 is water conservation. As individuals add graywater systems, any change in overall water use will be gradual and beneficial. HCD understands water purveyors' need to plan for demand, use and health and safety

concerns. However, HCD understood the need for cross-connection control and included safeguards within the proposed regulations. Title 17, Section 7584 instructs the water purveyor to “conduct surveys” as one of their responsibilities for the cross-connection control program. An unapproved auxiliary water supply requires protection of the water supply (Title 17 Section 7604 B). Graywater systems complying with these regulations are approved and do not fall into this category.

No changes were made as a result of these comments.

3. COMMENTERS: Terry Schmidtbauer (EM-129 and EM-138)
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Victor M. Chan (EM-132)
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COMMENTS: EM-129, EM-132 and EM-138: The above listed commenters support the proposed regulations with amendments. The commenters expressed a few concerns with regard to health and safety. The lack of a required permit or registration on some system types causes difficulty for the local agencies to monitor these systems was mentioned. They also pointed out that language does not encourage using phosphate-free or biodegradable soaps for landscape irrigation, no guideline is included for the Enforcing Agency to determine the competency of a system designer and treated graywater quality standard is not clearly described.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenters.

The requirement for a construction permit or the registration of a graywater system was a significant issue in the development of these regulations. The permitting process is a topic HCD has considered at length, with much input from stakeholders. HCD also received numerous comments during the 45-day comment period opposing the exemption of any graywater system from construction permits. There was significant opposition and after further review, HCD removed the single fixture graywater system from permit exemption. However, the clothes washer system will remain exempt from a construction permit.

It is estimated Californians have installed over a million graywater systems, most without permits. Homeowners do most of these installations. Creating simple guidelines without a permitting process for a clothes washer system installation allows the State of California to guide the installation of these low tech systems much more effectively than the previous lack of control. The intended result is to increase the number of compliant systems. The cost of a clothes washer system is commonly less than the cost of the least expensive building permit; this dissuades compliance in all but the most expensive systems. The proposed language allows the Enforcing Agency to be more restrictive, such as in requiring a permit.

With regard to phosphate-free and biodegradable soaps, this is good practice but it is not within the authority of Title 24 to require or suggest use of certain cleaning products.

The proposed language requires a person to “demonstrate competence to the satisfaction of the Enforcing Agency”. HCD recognizes the lack of specific designers of graywater systems and understands there are a variety of trades and designers capable of this type of design. To put a requirement on the type of engineer/architect or trade that is competent to design graywater systems is not appropriate. The complex graywater system involves technology attainable by most contractors, plumbers, landscapers and many homeowners. The design standards for a graywater system are an emerging technology and will develop as will the complexity of the systems. The Enforcing Agency has the discretion to make a determination of competence of the designer as is common in any plan check.

HCD acknowledges a lack of clarity in regard to the required quality of treated graywater intended for indoor use, flushing toilets and urinals. Section 1612A.1 has been amended to address this concern.

4. COMMENTERS: Bob Adler (EM-130 and EM-141)
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COMMENTS: EM-130 and EM-141: The above listed commenter supports the proposed regulation with amendments. The commenter believes the permit exemption is not acceptable for graywater systems since this exemption poses a threat to the health and safety of users and the public and contends the only means of assuring graywater systems comply with regulation is through the permitting and inspection process. The commenter recommends requiring a permit and allowing local Enforcing Agency to exempt permits.

Also, the commenter noted that the depth of cover from the release point of the graywater to the surface is at two inches and is not adequate protection from contamination. In order to avoid the risk, the coverage depth needs to be expanded to one foot to minimize contact or at least at plant root level.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

The requirement for a construction permit or the registration of a graywater system was a significant issue in the development of these regulations. The permitting process is a topic HCD has considered at length, with much input from stakeholders. HCD also received numerous comments during the 45-day comment period opposing the exemption of any graywater system from construction permits. There was significant opposition and after further review, HCD removed the single fixture graywater system from permit exemption. However, the clothes washer system will remain exempt from a construction permit.

It is estimated Californians have installed over a million graywater systems, most without permits. The homeowners do most of these installations. Creating simple guidelines without a permitting process for a clothes washer system installation allows the State of California to guide the installation of these low tech systems much more effectively than the previous lack of control. The intended result is to increase the number of compliant systems. The cost of a clothes washer system is commonly less than the cost of the least expensive building permit; this dissuades compliance in all but the most expensive systems. The proposed language allows the Enforcing Agency to be more restrictive, such as in requiring a permit.

During this rulemaking, stakeholders presented differing opinions on depth of coverage. The first foot of soil is the most effective portion of the ground regarding filtration of water; this is also where irrigation is needed for most applications. Releasing the graywater close to the surface is more efficient and beneficial than a deeper release and potentially conserves more water. Surface release is a goal of advocates of graywater use. A compliant graywater system does not allow water to come up to the surface, minimizing human contact. The property owner will need to perform maintenance and monitor the graywater system to ensure proper operation. The California Department of Public Health supports these regulations as written.

5. COMMENTER: Thomas A. Enslow (**EM-131 and EM-144**)
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Thomas Enslow (**L-21**)
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COMMENTS: EM-131, EM-144 and L-21: The above listed comments expressed concerns regarding rulemaking procedure and public health and safety. Strong opposition is expressed concerning the permit exemption for any graywater system. To view the entire 16-page comment, go to:
http://www.documents.dgs.ca.gov/bsc/prpsd_chngs/documents/2009/1st%2045-Day%20Pub-Comm/T_Enslow2.pdf

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

HCD considered the health and safety concerns of the commenter and revised the express terms to address such concerns regarding health and safety and the permitting exemption.

The requirement for a construction permit or the registration of a graywater system was a significant issue in the development of these regulations. The permitting process is a topic HCD has considered at length, with much input from stakeholders. HCD also received numerous comments during the 45-day comment period opposing the exemption of any graywater system from construction permits. There was significant opposition and after further review, HCD removed the single fixture graywater system from permit exemption. However, the clothes washer system will remain exempt from a construction permit.

It is estimated Californians have installed over a million graywater systems, most without permits. The homeowners do most of these installations. Creating simple guidelines without a permitting process for a clothes washer system installation allows the State of California to guide the installation of these low tech systems much more effectively than the previous lack of control. The intended result is to increase the number of compliant systems. The cost of a clothes washer system is commonly less than the cost of the least expensive building permit; this dissuades compliance in all but the most expensive systems. The proposed language allows the Enforcing Agency to be more restrictive, such as in requiring a permit.

6. COMMENTERS: Art Ludwig (EM-134 and EM-137)
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COMMENTS: EM-134 and EM-137: The above listed comments are identical and are supportive of the graywater standards. The stakeholder has five recommended amendments to the language:

Revision I: Section 1603A.1.1(1) on notification to the Enforcing Agency, suggests replacing this section with language that allows an inspection of graywater system only when inspector is on-site for another purpose or when property changes ownership.

Revision II: Section 1603A.1.1(3) proposes a strikeout of the phrase “installation, change, alteration or repair of the” to simplify the language. Also, make clear the pump in a washer is not part of the graywater system.

Revision III: Section 1603A.1.3 (3) strikeout all the existing language of this section and replace with “ The Enforcing Agency may require calculations for complex systems.”

Revision IV: Section 1611A.3 Commenter states this design of leach lines in graywater systems has a failure rate of 80% in 5 years. Recommended instead is describing gravel-less infiltration galleys as an approved disposal field.

Revision V: Table 16A -1 add an exception to allow the Enforcing Agency to waive setbacks in cases of existing non-conforming septic or sewer failing from overload and causing a health threat.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

Revision I with regard to notification and allowing discretionary inspections when on-site, the requirement for a notification of location regarding a graywater system was an important issue in the development of this regulation, with much input from stakeholders.

Stakeholders expressed a wide variety of opinions on what should be required for notification, if anything. HCD concluded requiring notification is best suited as an option decided at a local level. The resulting language is a balancing of interests.

HCD recognizes the need for some Enforcing Agencies to keep a record of graywater systems installed. At the same time, others did not want the added burden of this bureaucracy without permit fees and felt it would deter users of this code. In addition, the information considered necessary will vary with the geographic location. In order to allow each Enforcing Agency the discretion to require only the information appropriate for that location, the phrase “if required” was used. The phrase “if required” by design raises the question- “is notification required in this location?” The intended result is dialog between the user and the Enforcing Agency. This contact will provide an opportunity to guide the user or provide a source of education if needed.

The Enforcing Agency, when on a site, has the ability to cite violations other than the called inspection. It is not necessary to include this information in this section. The intent of this section is to allow the Enforcing Agency the discretion to require a notification or more if necessary.

Revision II recommended strikeout and modification of Section 1603A.1.1 (3), the phrase “installation, change, alteration or repair of the” is common code language and similarly used throughout Title 24 in multiple locations. This language is necessary to avoid ambiguity and be inclusive of any work done to a clothes washer system.

HCD agrees with commenter. The proposed language lacks specificity regarding the pump in a clothes washer. HCD has amended Section 1603A.1.1 to reflect this comment.

Revision III suggested a complete strikeout and replacement of Section 1603A.1.3(3). The proposed language allows some latitude due to changes in industry in the future. Graywater technology is something many different design professionals will be capable of designing. Depending on the complex system design and the location, it could require engineering from very complicated to rather simple. For this reason, HCD did not want to exclude a trade or designer that could competently design a complex system. The suggested language includes “may require calculations”. HCD understands calculations will be needed and included on the plans and specifications on complex systems and allows the Enforcing Agency to recognize the competence of the designers calculations. In time, this technology will likely become available to contractors and homeowners to use. HCD proposed this language to allow use of more graywater systems and maintain competent design.

Revision IV suggested strikeout of language Section 1611A.3, disposal field. This language is 2007 CPC Chapter 16 model code language. HCD does not restrict disposal fields to only this design. The alternative of a leaching chamber is included in the current proposal. This existing disposal field language has been included as an option, not a rigid requirement. HCD has brought this language forward and provided for use of any appropriate alternate materials and methods of installation.

Revision V requested an added exception to Table 16A-1. It is not necessary to provide a specific exception for an occurrence that is considered on a case-by-case basis. The Enforcing Agency has the authority and discretion to waive setbacks or allow a variance depending on the situation.

7. **COMMENTS:** Keith Whitman (EM-139)
vdelapiedra@valleywater.org

Keith Whitman Santa Clara Valley Water District (L-31)
5750 Almaden Expwy
San Jose, Ca. 95118-3686

COMMENTS: EM-139 and L-31: These comments are the input from a water purveyor concerned with protecting the ground water supply from contamination. Following are the points of concern:

- Minimum separation from groundwater is not sufficient for protection.
- Recommend no permit exemption. Recommend streamlined permitting process that includes a registration, location of system and ground water elevation with proof of adequate separation from ground water.
- Table 16A-1 setbacks are not sufficient for sewage pits, cesspools and sewage disposal fields to protect ground water from degradation or contamination.
- Suggest a requirement for Enforcing Agencies to confer with local groundwater management agencies.
- A general statement - other agencies might require a permit to discharge subsurface graywater.
- Commenter has not been provided with proof of compliance with SB1258.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

HCD developed the groundwater separation distance at three feet with input from the California Department of Public Health. According to the research (USEPA On-site Wastewater Treatment Systems Manual 2002), between two and three feet of unsaturated soil is necessary for the retention of and die-off of pathogens. Graywater will be released close to the surface. The biological content of the first foot of soil makes it the most effective at removing contaminants from water; this adds to the safety margin. Section 1607A.0 prohibits the contamination of groundwater, ocean water or surface water.

The requirement for a construction permit or the registration of a graywater system was a significant issue in the development of these regulations. The permitting process is a topic HCD has considered at length, with much input from stakeholders. HCD also received numerous comments during the 45-day comment period opposing the exemption of any graywater system from construction permits. There was significant opposition and after further review, HCD removed the single fixture graywater system from permit exemption. However, the clothes washer system will remain exempt from a construction permit.

It is estimated Californians have installed over a million graywater systems, most without permits. The homeowners do most of these installations. Creating simple guidelines without a permitting process for a clothes washer system installation allows the State of California to guide the installation of these low tech systems much more effectively than the previous lack of control. The intended result is to increase the number of compliant systems. The cost of a clothes washer system is commonly less than the cost of the least expensive building permit; this dissuades compliance in all but the most expensive systems. The proposed language allows the Enforcing Agency to be more restrictive, such as in requiring a permit.

A streamlined permitting process is an option the Enforcing Agency may use.

Table 16A-1 controls location of graywater systems for horizontal setbacks. Water supply wells, streams and lakes are protected by a setback of 100 feet. This is more restrictive than model code requirements. With regard to sewage pits, cesspools and sewage disposal fields, the effluent being dispersed by the graywater system would otherwise have been in the sewage system. The same amount of effluent is discharged, whether all in sewage system or divided by the graywater system. In either case, there is no increase of waste effluent so the sewage disposal system will function as designed.

The comment suggests other agencies might require a permit for discharging water. HCD has no authority over other agencies of the State of California. HCD does not object to communication between Enforcing Agencies and water purveyors. The groundwater management agencies with a need for concern regarding groundwater should make known any concerns to the Enforcing Agencies.

Senate Bill 1258 directed HCD very specifically. HCD has followed the directives of SB 1258 as written and has exceeded the expectations of the bill's author. The schedules and agendas for the public meetings HCD conducted are available on HCD's website. The research used in this rulemaking for protection of water quality was not only Water Environment Research Foundation (WERF), but many other sources including other states and other countries, universities, private research and government agencies.

8. COMMENTER: Mark McPherson (**EM-140**)
tom.lambert@sdcounty.ca.gov

Mark McPherson County of San Diego DEH (**L-30**)
5201 Ruffin Road, Suite C
San Diego, Ca. 92123

COMMENT: EM-140: Commenter is not in support of proposed standards and recommends the regulations be held for further study. Following are specific comments in reference to sections listed:

- 1602A.0 Definition of a single fixture system is not definitive for intended use.
- 1603A.0 Suggest HCD clarify that only one of each type of system is allowed by the permit exemption. Removing permit requirement also removes any control of compliance from the Enforcing Agency regarding these exempted systems. This conflicts with local regulation requiring all graywater systems to be permitted by the local authorized agency.
- 1603A.1.1(2) Any cut into the plumbing system is an alteration and should require a permit.
- 1603A.1.1(3) Backflow prevention is required where an auxiliary water supply is on location. Water purveyor should be notified of any graywater system installed.
- 1603A.1.2 This section causes confusion because it does not clearly describe "generally accepted graywater system design".
- 1603A.1.3 The requirement for the designer of the complex system to demonstrate competence to the Enforcing Agency is vague and should include criteria such as a license, registration or certification.
- 1604A.1 Separation from ground water vertically is not sufficient at 3' and conflicts with local requirements. Seasonal groundwater fluctuation in areas served by public sewers is not documented well enough for an estimate on depth of groundwater.
- Table 16A-1 Recommend amending footnotes #1 and #2 to clarify intent.
- Table 16A-2 and 16A-3 Tables do not give guidance to agencies that use percolation testing to determine soil permeability.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

The requirement for a construction permit or the registration of a graywater system was a significant issue in the development of these regulations. The permitting process is a topic HCD has considered at length, with much input from stakeholders. HCD also received numerous comments during the 45-day comment period opposing the exemption of any graywater system from construction permits. There was significant opposition and after further review, HCD removed the single fixture graywater system from permit exemption. However, the clothes washer system will remain exempt from a construction permit.

It is estimated Californians have installed over a million graywater systems, most without permits. The homeowners do most of these installations. Creating simple guidelines without a permitting process for a clothes washer system installation allows the State of California to guide the installation of these low tech systems much more effectively than the previous lack of control. The intended result is to increase the number of compliant systems. The cost of a clothes washer system is commonly less than the cost of the least expensive building permit; this dissuades compliance in all but the most expensive systems. The proposed language allows the Enforcing Agency to be more restrictive, such as in requiring a permit.

The allowed cut into a plumbing system has been reviewed and revised. No cut into any plumbing system will be allowed without the proper permit and inspection.

Graywater systems are separated from the supply by an air gap; all sanitary drains are separated from the supply this way, and this is backflow prevention. The possibility for a cross-connection to contaminate water supply exists when potable make up water is needed in a tank or a pump pressurizes graywater. Both of the aforementioned systems require a permit and inspection, ensuring compliance and avoiding cross-connection. Any system exempt from permit will gravity feed into the soil or mulch from drain lines with no connection to the supply. Drain piping differs from supply, avoiding risk of contamination. This is consistent with landscape irrigation, with no inspection required on sprinklers or drip lines in most jurisdictions.

The design of graywater systems is not new outside of California; there are many proven designs and methods. In order to avoid eliminating some methods of graywater system design, HCD allows design option at the discretion of the Enforcing Agency.

The proposed language requires a person to “demonstrate competence to the satisfaction of the Enforcing Agency”. HCD recognizes the lack of specific designers of graywater systems and understands there are a variety of trades and designers capable of this type of design. To put a requirement on the type of engineer/architect or trade that is competent to design graywater systems is not appropriate. The complex graywater system is technology attainable by most contractors, plumbers, landscapers and many homeowners. The design standards for a graywater system is an emerging technology and will develop as will the complexity of the systems. The Enforcing Agency has the discretion to make a determination of competence as is common in any plan check.

HCD developed the groundwater separation distance at three feet with input from the California Department of Public Health. According to the research (USEPA 2002), between two and three feet of unsaturated soil is necessary for the retention of and die-off of pathogens. Graywater will be released close to the surface; the biological content of the first foot of soil makes it the most effective at removing contaminants from water, this adds to the safety margin. Section 1607A.0 prohibits the contamination of groundwater, ocean water or surface water. The code allows for local regulation, an ordinance or enactment to be more restrictive, such as the 5-foot separation, thus avoiding any potential conflict.

The location of a graywater system must comply with Table 16A-1. The commenter asks if listed structures intentionally have the setback removed. The answer is yes, all of the listed structures will likely need irrigation for landscape plants and might already have a sprinkler system in the same location. The idea is to reuse graywater for landscape irrigation; restricting use for these locations is counter-productive in the effort of water conservation or reuse.

With regard to Tables 16A-2 and 16A-3, Table 16A-2 is a compilation of two tables taken directly out of the 2006 UPC Chapter 16 as model code language and Table 16A-3 is model code language. HCD, in an effort to reduce costly percolation tests, has used this model code language for graywater system design criteria. Soil type is usually common knowledge for a building official, information easily attainable and far less expensive than a percolation test.

9. COMMENTERS:

EM-142 Fady Mattar
fmattar@socal.rr.com

EM-148 Patrick Nejadian
pnejadian@ph.lacounty.gov

EM-153 Patrick Nejadian
pnejadian@ph.lacounty.gov

EM-155 Hadi Tabatabaee
Orange Empire Chapter ICC

L-20 Roy Itani
Los Angeles Basin Chapter ICC
P.O. Box 1855
Glendale, Ca.91209-1855

L-32 Roy Itani
Los Angeles Basin Chapter ICC
P.O. Box 1855
Glendale, Ca.91209-1855

L-33 Patrick Nejadian
County of L.A. Public Health
5050 Commerce Drive
Baldwin Park, Ca. 91706

COMMENTS: EM-142, EM-148, EM-153, EM-155, L-20, L-32 and L-33: This above listed comments are supportive of the concept of conserving water through reuse, with specific concerns for health and safety. Included with comments are suggested amendments. Following are the points of concern:

- Section 1601A.0 (B) The design of a system should require a tank. Allow for an alternate design which works without a tank.
- Section 1601A.0 (D) Authorization for property owner to install graywater system should be required from the Enforcing Agency. The streamlined permit or over-the-counter permit needs to replace the permit exemption. The Enforcing Agency must ensure compliance to avoid surfacing, ponding or runoff.
- Section 1601A.0 (F) Users of a washing machine system will not be mindful enough to switch the diverter valve to drain into the building sewer when washing items such as diapers or infectious garments.
- Section 1601A.0 (G) With no regulatory oversight, systems designed by typical property owners will not be efficiently operated and consequently will not be maintained to prevent surfacing, ponding or runoff of graywater.
- Section 1601A.0 (H) The two-inch minimum coverage of the discharge point is not adequate protection to prevent human contact. Also, remove the solid shield provision. Recommend 9” coverage.
- Section 1601A.0 (I) There is no mechanism in place to ensure that property owners understand - irrigation of root crops or edible parts of food crops with graywater is prohibited.

- Sections 1603A.0, 1603A.1.2, 1603A.1.3 Oppose permit exemption.
- Section 1603A.1.1 Permit exemption. Without the permitting procedure, there is no practical way to ensure that property owners are in compliance with the design, construction, installation and maintenance of graywater systems. Several subsections are recommended for deletion; permits, irrigation field (with additional language describing a disposal field), the 2" depth of release point and provision stating all other provisions of the code must be complied with.
- 1604A.1, 1607A.0 Concern about these provisions is that vertical separation of graywater system to the ground water (3' minimum) will compromise the protection of underlying drinking water supplies.
- 1608A.0 (C) A percolation test could be required; the model language including the acceptable percolation rates has been removed, this leaves no parameters for acceptable percolation rates. Model language should be restated for this purpose.
- 1611A.2 and 1611A.3 The language reads "If an alternate design..." should be changed to read "If an approved alternate design..."
- Table 16A-1 The table does not require any horizontal separation from graywater system and on-site domestic water service. This presents a potential for contamination due to back siphonage into the domestic water supply lines that operate at a low head pressure. Also concerned about the separation to property lines and an irrigation field.
- Throughout the regulation the phrase, "ponding or runoff" is frequently used. For clarity, the word "surfacing" should be added to read "surfacing, ponding or runoff" in all instances.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenters.

The design of a graywater system will vary greatly with the purpose always the same; get the water in the ground considering public health and groundwater quality. To meet the needs of small system users, the tank is an option, not mandatory. A tank is for holding water and graywater needs to be in the ground as soon as possible. In a larger system, a tank may be required. In most smaller systems, a tank may present multiple problems. A pump, a filter, possible contact with graywater, odor and the possibility of water being held too long and turning septic are potential issues.

The requirement for a construction permit or the registration of a graywater system was a significant issue in the development of these regulations. The permitting process is a topic HCD has considered at length, with much input from stakeholders. HCD also received numerous comments during the 45-day comment period opposing the exemption of any graywater system from construction permits. There was significant opposition and after further review, HCD removed the single fixture graywater system from permit exemption. However, the clothes washer system will remain exempt from a construction permit.

It is estimated Californians have installed over a million graywater systems, most without permits. The homeowners do most of these installations. Creating simple guidelines without a permitting process for a clothes washer system installation allows the State of California to guide the installation of these low tech systems much more effectively than the previous lack of control. The intended result is to increase the number of compliant systems. The cost of a clothes washer system is commonly less than the cost of the least expensive building permit; this dissuades compliance in all but the most expensive systems. The proposed language allows the Enforcing Agency to be more restrictive, such as in requiring a permit.

There remains some accountability for the user of the graywater system. Regulations instruct the user not to utilize graywater that has come in contact with diapers or similarly soiled or infectious garments or other prohibited contents.

Graywater systems will require some maintenance to ensure there is no ponding or runoff. If a system is grossly misused and becomes a nuisance, it becomes a code enforcement issue. A graywater system is one of many systems of a building requiring maintenance. The regulation is performance-based, the focus being keeping the water below the surface.

During this rulemaking, stakeholders presented differing opinions on depth of coverage. The first foot of soil is the most effective portion of the ground regarding filtration of water; this is also where irrigation is needed for most applications. Releasing the graywater close to the surface is more efficient and beneficial than a deeper release and potentially conserves more water. Surface release is a goal of advocates of graywater use. A compliant graywater system does not allow water to come up to the surface, minimizing human contact. The property owner will need to perform maintenance and monitor the graywater system to ensure proper operation. The California Department of Public Health supports these regulations as written.

The regulations contain specific language prohibiting the use of graywater for irrigating root crops or food crops that touch the soil. This provision was included both for regulatory use and to educate the user of a graywater system. The language is sufficiently clear in detail and provides the information needed for enforcement and user. HCD developed the groundwater separation distance at three feet with input from the California Department of Public Health. According to the research (USEPA 2002), between two and three feet of unsaturated soil is necessary for the retention of and die-off of pathogens. Graywater will be released close to the surface; the biological content of the first foot of soil makes it the most effective at removing contaminants from water, this adds to the safety margin. Section 1607A.0 prohibits the contamination of groundwater, ocean water or surface water. The building standard allows for local regulation, an ordinance or enactment to be more restrictive, such as the 5-foot separation to ground water, thus avoiding any potential conflict.

Section 1608.A.0.(c) is a performance based regulation that allows the user to benefit from the graywater system almost regardless of soil type. HCD, in an effort to reduce costly percolation tests used this language for graywater system design criteria. Soil type is usually common knowledge for a building official, information easily attainable and far less expensive than a percolation test. Evapotranspiration also plays a role in a system. With various soil types the size of the irrigation or disposal field will be adjusted by the performance of the graywater system. Table 16A-2 gives a guideline for this purpose

The comment is to insert the word "approved" into 1611A.2 and 1611A.3. The suggested amendment was discussed at a focus group meeting and will not go forward in this rulemaking. HCD has reviewed the proposed language and determined the regulation is clear as written. The approval of an alternate design is a function of the Enforcing Agency.

Table 16A-1 Location of Graywater System. The separation distance to property lines has been set at 1.5 feet for irrigation fields. The benefit of irrigating with graywater is not using as much potable water. Plants are most often around the perimeter of a property, next to a structure and even over the water supply piping (such as a front yard). Irrigation is a "controlled use" of water and graywater is prohibited from surfacing or crossing property lines.

In the case of water supply piping, these pipes do not leak or siphon irrigation water unless faulty or improperly installed. A lawn requires irrigation and is often covering water supply piping. After potable water is in contact with the ground, it is no longer potable. This has not presented a problem with supply piping in the past; graywater will be used similarly as controlled irrigation.

The definition of "surface" in 2007 CPC Appendix G is "pond, runoff or other release of water". HCD replaced the word "surface" with "pond or runoff" for usability.

10. COMMENTER: Douglas Kirk (EM-145)
doug@greenplumbersusa.com

COMMENT: EM-145: Concern is expressed about one concept of the proposed code; that being when a user of the single fixture system cuts into the DWV system there is an extreme potential to violate Sections 901.1 and 904.1. In addition, there is a possibility for a novice to leave the abandoned portion of the horizontal branch drain uncapped. Commenter recommends a submittal and approval of an isometric DWV drawing showing the proposed changes, kept on file by the Enforcing Agency.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

The allowed cut into a plumbing system has been reviewed and revised. No cut into any plumbing system will be allowed without the proper permit and inspection. The horizontal branch drain will be re-connected if cut for diverter installation, in order to direct the graywater back to the sanitary drain or building sewer when necessary. Included in the proposal language, a system that qualifies for a permit exemption must not affect other plumbing components including sanitation. DWV system is part of the sanitation and it shall not be affected by the graywater system in order to comply with the exemption. This language is in place to avoid complications caused by changes to the existing system.

The requirement for a construction permit or the registration of a graywater system was a significant issue in the development of these regulations. The permitting process is a topic HCD has considered at length, with much input from stakeholders. HCD also received numerous comments during the 45-day comment period opposing the exemption of any graywater system from construction permits. There was significant opposition and after further review, HCD removed the single fixture graywater system from permit exemption. However, the clothes washer system will remain exempt from a construction permit.

It is estimated Californians have installed over a million graywater systems, most without permits. The homeowners do most of these installations. Creating simple guidelines without a permitting process for a clothes washer system installation allows the State of California to guide the installation of these low tech systems much more effectively than the previous lack of control. The intended result is to increase the number of compliant systems. The cost of a clothes washer system is commonly less than the cost of the least expensive building permit; this dissuades compliance in all but the most expensive systems. The proposed language allows the Enforcing Agency to be more restrictive, such as in requiring a permit.

11. **COMMENTS:** William E. Granger (EM-146 and F-8)
Otay Water District
wgranger@otaywater.gov

COMMENTS: EM-146 and F-8: This water purveyor is opposed to graywater standards as written; support for the proposed language is offered if the following requirements are included:

- Request, during the design and planning stage, property owner submit plans to the water purveyor indicating location of backflow prevention device, which will require inspection.
- The water supply needs protection from contamination by adding a backflow prevention device complying with local requirements from water supplier.
- Add language that no connection is allowed to any public potable or recycled water supply.
- Add language that property owner is responsible for all resulting costs if public water supply becomes polluted due to a graywater system.
- The Enforcing Agencies shall be responsible for monitoring and citations of code violations. The Enforcing Agencies shall not hold the local water suppliers responsible for any violations of other permits or operational requirements of, or for any damages attributable to, any graywater system.
- The district has requested clarification of what state and federal agencies have authority on graywater standards.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

For graywater systems with a pump or a tank, the Enforcing Agency will have plans submitted. These types of systems could require backflow prevention at the discretion of the Enforcing Agency. Local water purveyor requirements are not changed by this regulation, nor are the legal responsibilities of the owner or the water purveyor.

Graywater systems are separated from the supply by an air gap; all sanitary drains are separated from the supply this way, this is backflow prevention. The possibility for a cross-connection to contaminate water supply exists when potable make up water is needed in a tank or a pump pressurizes graywater. Both of the aforementioned systems require a permit and inspection, assuring compliance and avoiding cross-connection. Any system exempt from permit will gravity feed into the soil or mulch from drain lines with no connection to the supply. Drain piping differs from supply, avoiding risk of contamination. This is consistent with landscape irrigation, with no inspection required on sprinklers or drip lines in most jurisdictions.

With regard to connecting to a public water supply, any connection to a water supply for a residential property will require inspection by the Enforcing Agency. Graywater systems reuse water from fixtures within the residence and seldom require make up water from a potable or recycled water source. In a case where make up water is required, the connection is protected by an air gap or other physical device that prevents backflow and is on the property down stream of any public connection.

The civil or other legal aspects of water law do not reside in the California Building Standards. Any legality regarding the responsibility of water agencies is outside the scope of these regulations.

In reference to authority given by law, Senate Bill 1258 added to Health and Safety Code Sections 17922.12 and 18941.7 and amended the Water Code Section 14877.1. The authority to adopt graywater standards for residential occupancy is given to HCD through this legislation. The process included many stakeholders including other State of California agencies. The State Water Resources Control Board and Department of Water Resources are both aware of this regulation with no opposition. No federal law or authority has been breached by this regulation.

The requirement for a notification of location regarding a graywater system was an important issue in the development of this regulation, with much input from stakeholders.

Stakeholders expressed a wide variety of opinions on what should be required for notification, if anything. HCD concluded requiring notification is best suited as an option decided at a local level. The resulting language is a balancing of interests.

HCD recognizes the need for some Enforcing Agencies to keep a record of graywater systems installed. At the same time, others did not want the added burden of this bureaucracy without permit fees and felt it would deter users of this code. In addition, the information considered necessary will vary with the geographic location. In order to allow each Enforcing Agency the discretion to require only the information appropriate for that location, the phrase "if required" was used. The phrase "if required" by design raises the question "is notification required in this location?" The intended result is dialog between the user and the Enforcing Agency. This contact will provide an opportunity to guide the user or provide a source of education if needed.

No changes were made as a result of these comments.

12. COMMENTER: Jon McHugh (EM-149)
jon@mchughenergy.com

COMMENT: EM-149: The above listed comment contains support for the regulations as written. The comment recognizes the regulation will allow Californians to re-use graywater in an economical manner while protecting the environment and public health. The commenter recommends the graywater standards and other water saving measures be a requirement in new construction where calculated water usage by landscaping exceed minimum cost-effective thresholds.

RESPONSE: HCD appreciates, acknowledges and thanks the commenter for the support of the proposed regulations.

With regard to the mandatory use of graywater, as written, this is a voluntary water re-use system. The intent is for users who wish to conserve water in this manner to have a mechanism to allow water re-use. During the rulemaking process, the topic of making graywater standards a mandatory regulation was discussed. HCD concluded graywater systems are not suitable for all residential buildings; therefore, mandatory requirements would not be in place.

No changes were made as a result of these comments.

13. COMMENTERS:

Becky Fraser (EM-151)
CALBO
beckyf@csgengr.com

DeWayne Starnes (L-29)
County of Sonoma
2550 Ventura Ave.
Santa Rosa, Ca. 95403

Martin D. Cooper (F-3)
City of Foster City
610 Foster City Blvd.
Foster City, Ca. 94404

Michael Harrison (F-5)
County Of Santa Clara
70 W. Hedding St.
San Jose, Ca. 95110

COMMENTS: EM-151, L-29, F-3 and F-5: The above listed commenters support the regulations with the exception of the permit exemption. The contention is that without a construction permit, the regulation mechanism that allows the Enforcing Agency the ability to inspect and correct has been eliminated and the lack of enforcement will bring potential health threats. The commenters believe a construction permit is necessary to prevent non-compliance with Sections 901.1 and 904.1 of the CPC causing an improperly vented system or an open vent, which is unsafe and potentially hazardous.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenters.

Included in the proposal language, a system that qualifies for a permit exemption must not affect other plumbing components including sanitation. DWV system is part of the sanitation and shall not be affected by the graywater system in order to comply with the exemption. This language is in place to avoid complications caused by changes to the existing system.

The requirement for a construction permit or the registration of a graywater system was a significant issue in the development of these regulations. The permitting process is a topic HCD has considered at length, with much input from stakeholders. HCD also received numerous comments during the 45-day comment period opposing the exemption of any graywater system from construction permits. There was significant opposition and after further

review, HCD removed the single fixture graywater system from permit exemption. However, the clothes washer system will remain exempt from a construction permit.

It is estimated Californians have installed over a million graywater systems, most without permits. The homeowners do most of these installations. Creating simple guidelines without a permitting process for a clothes washer system installation allows the State of California to guide the installation of these low tech systems much more effectively than the previous lack of control. The intended result is to increase the number of compliant systems. The cost of a clothes washer system is commonly less than the cost of the least expensive building permit; this dissuades compliance in all but the most expensive systems. The proposed language allows the Enforcing Agency to be more restrictive, such as in requiring a permit.

Stakeholders expressed a wide variety of opinions on what should be required for notification, if anything. HCD concluded requiring notification is best suited as an option decided at a local level. The resulting language is a balancing of interests.

HCD recognizes the need for some Enforcing Agencies to keep a record of graywater systems installed. At the same time, others did not want the added burden of this bureaucracy without permit fees and felt it would deter users of this code. In addition, the information considered necessary will vary with the geographic location. In order to allow each Enforcing Agency the discretion to require only the information appropriate for that location, the phrase "if required" was used. The phrase "if required" by design raises the question "is notification required in this location?" The intended result is dialog between the user and the Enforcing Agency. This contact will provide an opportunity to guide the user or provide a source of education, if needed.

14. COMMENTER: Christina Berteza (**EM-152**)
singingwater@jps.net

COMMENT: EM-152: The above listed comment contains support for the regulations as written with one suggested amendment. The comment recognizes the regulation will allow Californians to re-use graywater in an economical manner while protecting the environment and public health. Section 1603A.1.1 (3) excludes any graywater system with a pump, make clear the pump in a washer is not part of the graywater system.

RESPONSE: HCD appreciates, acknowledges and thanks the commenter for the support of the proposed regulations.

HCD agrees with commenter. The proposed language lacks specificity regarding the pump in a clothes washer. HCD has amended Section 1603A.1.1 to reflect this comment.

15. COMMENTER: DeWayne Starnes (**L-28**)
County of Sonoma
2550 Ventura Ave.
Santa Rosa, Ca. 95403

COMMENT: L-28: The definition of "Single Fixture System" is not definitive enough. The unanswered question is how many of these and other systems may be installed on a parcel? The current language is not specific and is misinterpreted to allow multiple systems without permit.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

The single fixture system definition has been removed from the regulation. The only permit exemption remaining is the clothes washer system. The concern is addressed by our revision and clothes washer systems are only allowed at one or two-family dwellings. These types of dwellings typically have a single clothes washer.

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COMMENTS AND RESPONSES EM-A THROUGH EM-G WERE RECEIVED DURING THE SUBSEQUENT 15-DAY COMMENT PERIOD ARE LISTED BELOW.

(The text with the proposed changes clearly indicated was made available to the public from November 25, 2009, until December 9, 2009.)

SPECIAL NOTE: This “emergency” rulemaking for the 2007 CPC (HCD EF 01/09) and the “regular” rulemaking for the 2010 CPC (HCD 03/09) contain nearly identical regulations concerning “graywater systems”; therefore, both rulemakings were run concurrently. As a result, Comments and Responses EM-A through EM-G apply to both rulemakings and will appear in the Final Statement of Reasons of each package.

NOTE: The complete text of each individual comment and any referenced materials may be reviewed at the following internet address: http://www.bsc.ca.gov/prpsd_chngs/pc_09_comment.htm

16. **COMMENTERS:** Fady Mattar (**EM-A**)
fmattar@socal.rr.com
- Patrick Nejadian (**EM-D**)
pnejadian@ph.lacounty.gov

COMMENTS: EM-A and EM-D: The above listed commenters repeat comments sent during the 45-day comment period (see Number 10 above under the 45-day comment period for response) and two new recommendations were added to the revised express terms:

Section 1601A.0(B) Note: Recommends a tank requirement with a capacity determined by soil type and overflow connected to building drain or sewer.

Section 1612A.1 (5) Add a new requirement for owner to provide annual report to Enforcing Agency that tested discharge quality of on-site treatment system meets Title 22 standards, performed by approved certified laboratory.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenters.

HCD added a note to Section 1601A.0 (B) clarifying the irrigation or disposal field does not need to handle all the graywater discharged from the building. The excess graywater may be diverted to the building sewer. In the case of excess graywater, either electronic sensors (moisture sensor to an automatic 3-way) or a tank will be required. These will be design options; any system with tanks will have overflow (Section 1609A.0 (E)) and be designed to minimize holding time (Section 1606A.0(B)). The recommended tank requirements will not be a revision to the current express terms.

The indoor treated graywater quality will comply with Title 22 Section 60301.230 (disinfected tertiary recycled water quality) as required. The requirements for testing and inspection are covered in Section 1620.0 (annual inspection) for the 2007 CPC and in Section 1620A.0 for the 2010 CPC as adopted by Department of Water Resources. Annual water quality testing is not a building standard and out of HCD’s authority. The Enforcing Agency or local health department as part of the approval process could require periodic testing. The revised express terms will remain as written.

The remainder of the comments are duplicative of the 45-day comments submitted. Any comments previously addressed during the 45-day comment period are out of scope for 15-day comment period.

17. **COMMENTER:** Vicki Shidell (**EM-B**)
vicki.shidell@ci.benicia.ca.us

COMMENT: EM-B: The above listed commenter requests HCD reconsider the revisions proposed and prefers the original express terms.

RESPONSE: HCD appreciates, acknowledges and thanks the commenters for the support of the original proposed regulations. After further consideration, HCD will go forward with the proposed revisions in the best interest of the State of California.

18. **COMMENTERS:** Rebecca Ng REHS (**EM-C**)
rng@co.marin.ca.us
- Stephen N. Arakawa (**EM-F**)
svelasco@mwdh2o.com

COMMENTS: EM-C and EM-F: The above listed comments contain support for the regulations as revised. The comments recognize the regulations will allow Californians to re-use graywater in an economical manner while protecting the environment and public health.

RESPONSE: HCD appreciates, acknowledges and thanks the commenters for the support of the proposed regulations.

19. **COMMENTER:** Paul James (**EM-E**)
paul@justwatersaversusa.com

COMMENT: EM-E: The above listed commenter is requesting further explanation on the “no pump” provision in a non-permitted system and suggests a pump in a system for better performance and less soil degradation.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

HCD does not wish to discourage the use of a pump in graywater systems. The requirement of a permit for any system with a pump is nothing out of the ordinary for building standards. The installation of a pump in a graywater system will require electrical connection to operate the pump; also a pump very likely means a tank. Permanent pumps, tanks and electrical connections are components of a graywater system that will require a proper installation to function correctly and avoid any health and safety risk. A permit triggers an inspection of these items after installation, assuring the system complies with regulations.

The clothes washer system is the simplest form of graywater system. The graywater is transferred from the clothes washer into a standpipe, moving by gravity to an irrigation field capable of handling the surge from the machine. Only these low tech systems are exempt from construction permit.

20. **COMMENTER:** Frank Anderson (**EM-G**)
Jolene.fielding@otaywater.gov

COMMENT: EM-G: The above listed commenter expressed concern about the lack of notice requirements to the water purveyors when a graywater system is installed.

RESPONSE: HCD appreciates and acknowledges the concerns of the commenter.

The comments submitted are not related to the revised express terms; therefore, the comments are out of scope for the 15-day comment period and not appropriate for this portion of the rulemaking.

NOTE: See Numbers 2 and 11 above under the 45-day comment period for response.

DETERMINATION OF ALTERNATIVES CONSIDERED AND EFFECT ON PRIVATE PERSONS

(Government Code Section 11346.9(a) (4))

The Department of Housing and Community Development has determined that no alternative considered would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective and less burdensome to affected private persons than the adopted regulation.

REJECTED PROPOSED ALTERNATIVE THAT WOULD LESSEN THE ADVERSE ECONOMIC IMPACT ON SMALL BUSINESSES

(Government Code Section 11346.9(a) (5))

No proposed alternatives were received by the Department of Housing and Community Development that would lessen the adverse economic impact on small businesses.