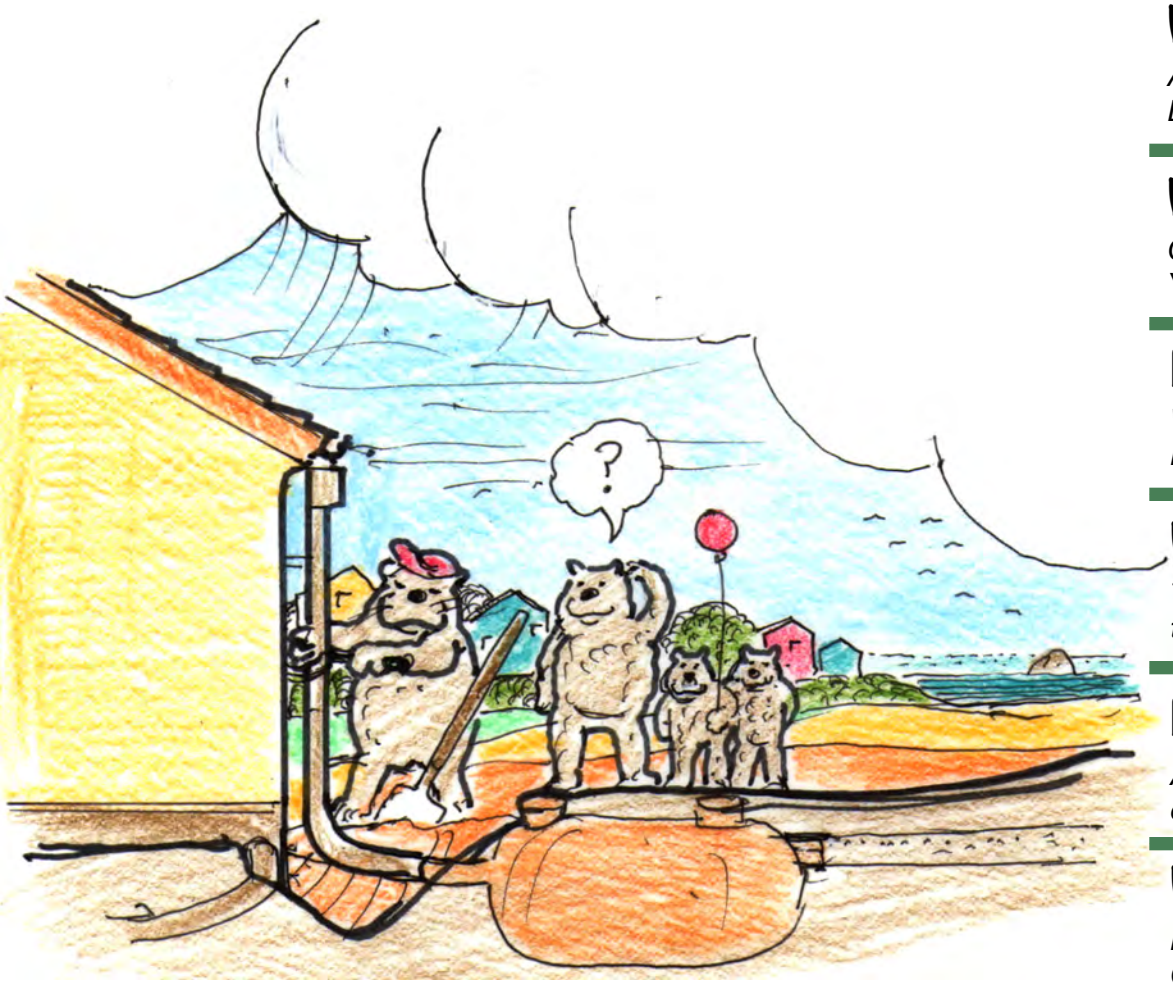
Use That Tank!



Contents:

Beneficial Reuse of Your Septic Tank and Disposal Field

For the Community of Los Osos, California

Preface

Problem Statement

The community of Los Osos overlies a large groundwater basin that can sustainably provide a significant amount of fresh water to the community each year. Unfortunately, nitrate pollution in the upper aquifer has caused over pumping of the lower aquifer to the point where sea water is seeping in and mixing with the fresh water.

Solutions

The new wastewater system will allow most of the community to stop using their septic systems, which are a major source of pollution in the groundwater. The new treatment system will recycle 100% of the wastewater for irrigation uses or to be returned to the groundwater basin. This new water source is a big first step toward maintaining a sustainable and local water supply for Los Osos. However, the wastewater project cannot solve the water supply problem alone. Additional actions by the local water purveyors and you, the residents, are needed as well.

The water purveyors and the County are working on sustainable water use plans including significant water conservation. They have already begun to implement several improvements. A comprehensive plan is needed to ensure a sustainable water supply for the long term and one is currently being developed.

Individual residents can also contribute to the solutions, since they are the largest users of the water supply. Recently, residents have made great progress in water conservation. Once the wastewater system is complete, there will be new opportunities to protect the water by repurposing your septic system.

There are several options for reuse of all or parts of the septic systems. Some options can help recharge the aquifer that is your drinking water supply and reduce storm runoff to streets and Morro Bay. Other options can help you irrigate your yard and save drinking water. If enough people make creative use of their existing septic system, we can realize significant improvements to our water supply.

SAN LUIS OBISPO COUNTY PUBLIC WORKS

U.S. GREEN BUILDING COUNCIL CHAPTER

CENTRAL COAST GREEN BUILDING COUNCIL

appropriate technology
sustainable planning
green architecture

San Luis Sustainability Group

Prepared for the County of San Luis Obispo Public Works Department by the Appropriate Technology Coalition of Central Coast Green Build Council (former SLO Green Build) & San Luis Sustainability Group. July 2015.

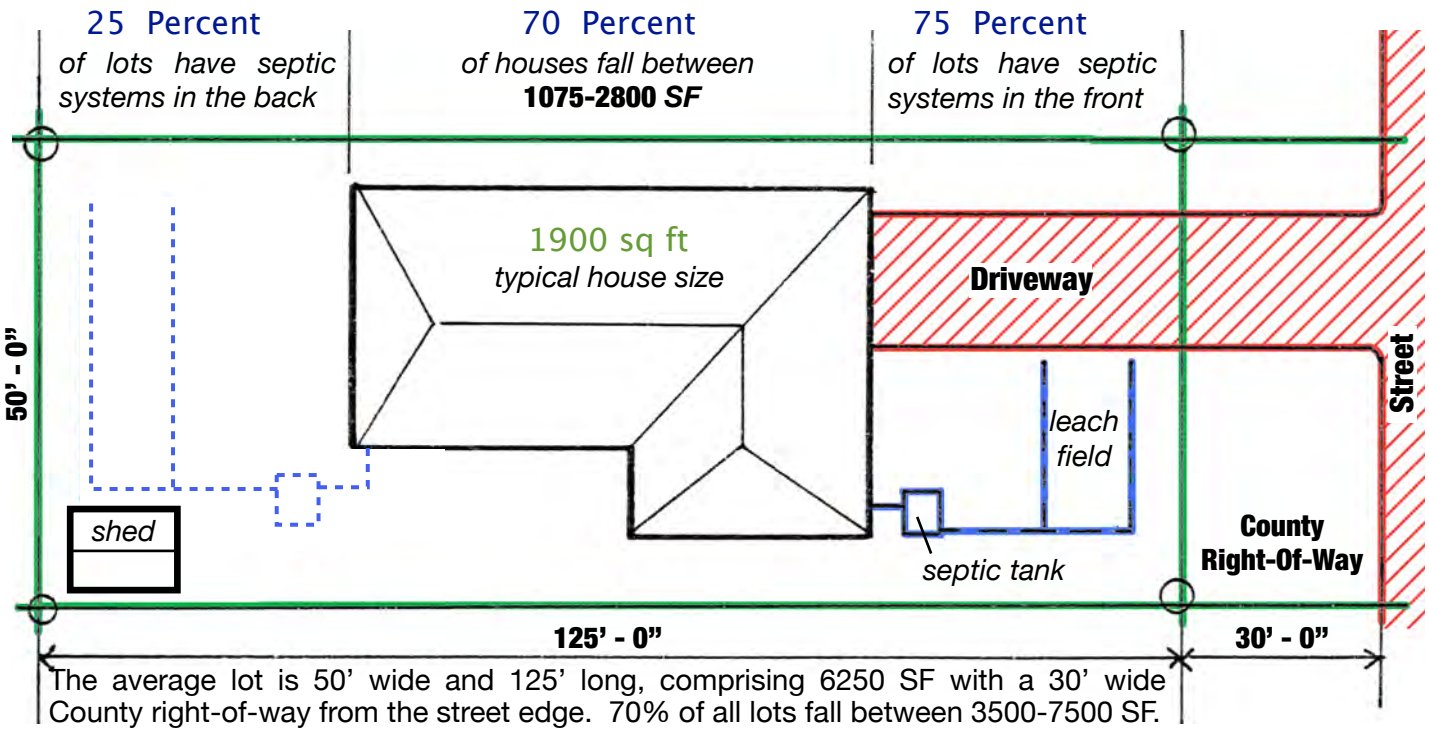
Contents:

HOW TO USE THIS GUIDE:

Most residential septic systems are like the one shown below and can be converted into one of many beneficial uses desirable to property owners and the community of Los Osos. Reuse options are presented from simplest to more complex with greater benefits and cost associated with the more complex options.

Once you understand the range of possibles you can explore some of the more specific details, costs and benefits discussed in the later section of this publication in order to make the best choice for your particular situation.

Average Lot and Septic System in Los Osos

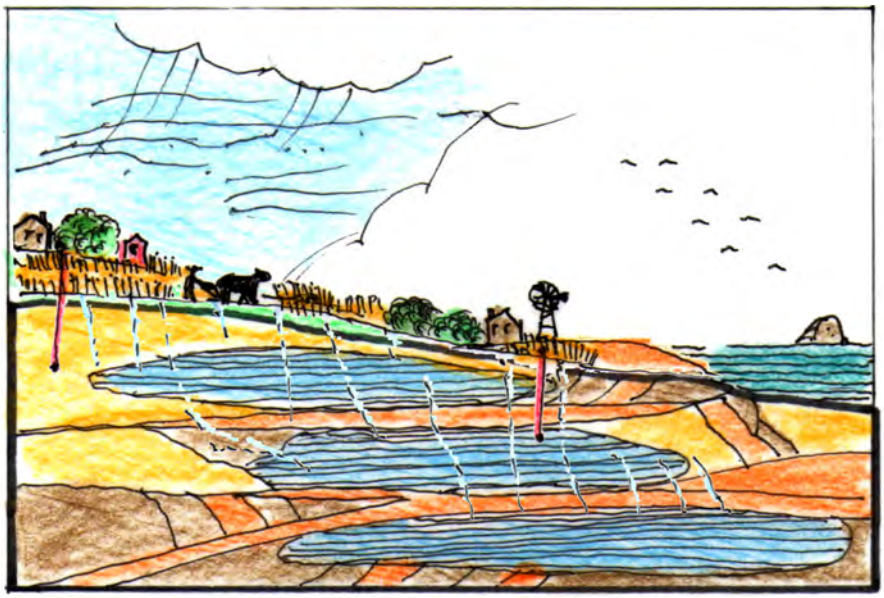


The average lot is 50' wide and 125' long, comprising 6250 SF with a 30' wide County right-of-way from the street edge. 70% of all lots fall between 3500-7500 SF.

A Brief History of Los Osos' Water

Original State
Pre 1770

Rainy winters and wet, foggy summers on extensive sand dunes support large oak forests, marshes, grizzly bears and several villages. No groundwater was used except for plant roots and natural springs.



Agricultural Development
1850-1950

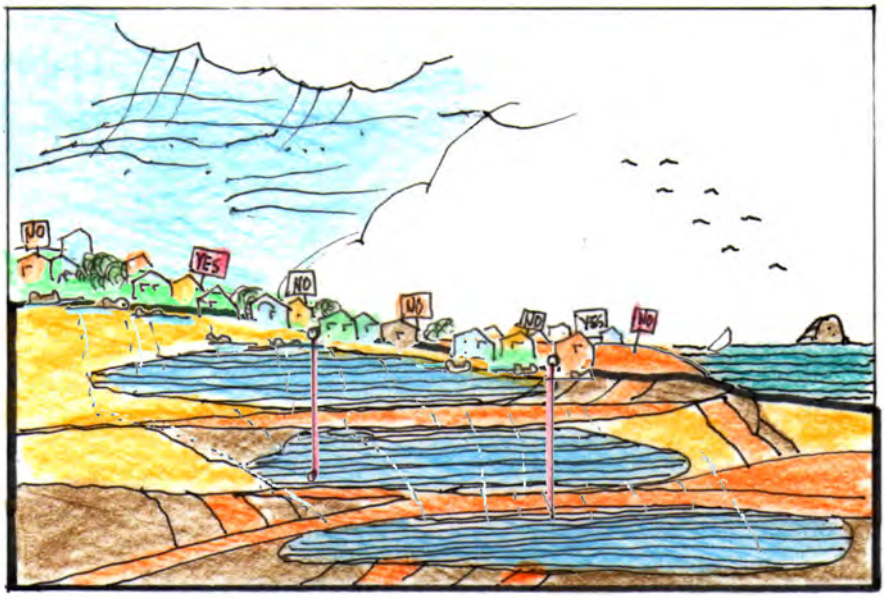
After the Mission developed in San Luis Obispo, agriculture began to encroach on the bears and most of the oak forest in Los Osos.

However, population density remains low so pumping of water from the aquifer and septic disposal in the old dunes has little effect.

Housing Development
1950-1988

Los Osos continues to be a desirable location with cheap land and its close proximity to San Luis Obispo. As more people are attracted to the area, it becomes a pleasant and thriving community

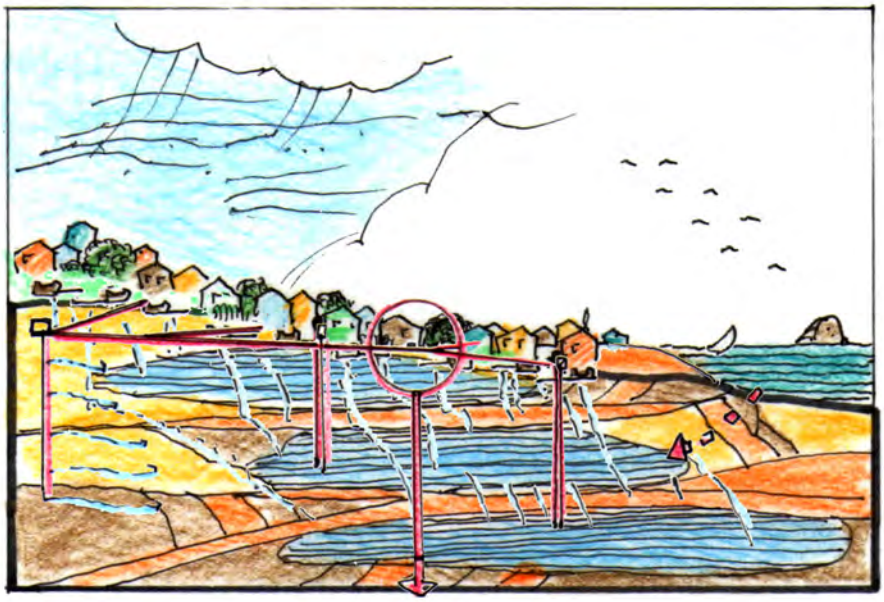
Yet, with increased density, the nitrates from agricultural runoff and septic seepage have begun to effect the aquifers and thus the purity of drinking water.



The Sewer Question 1988-2012

Attempts to resolve the quality of wells have created a host of proposals, a building moratorium by the state and conflicting opinions among the residents.

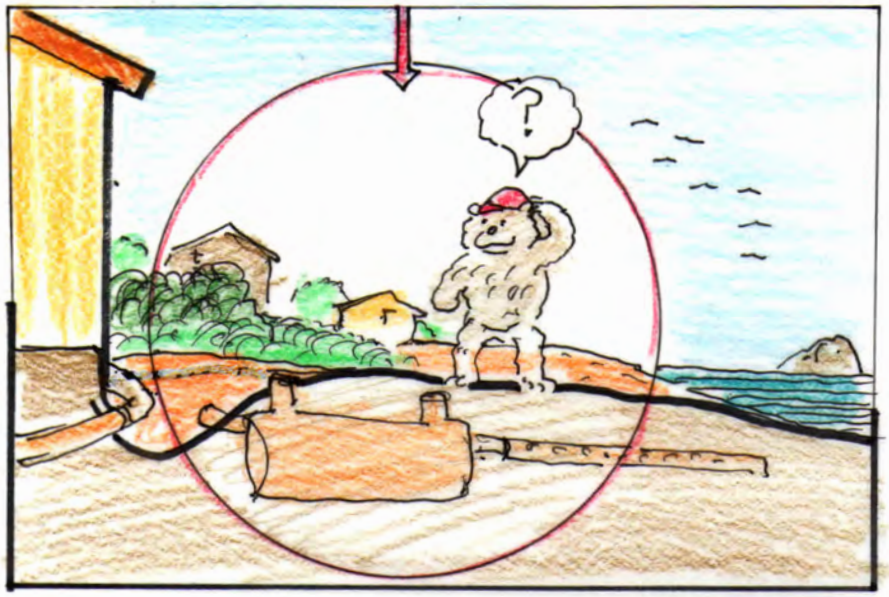
Finally, San Luis Obispo County takes on the task of constructing a town-wide sewer system to resolve the problems.



Sewer Construction 2012-2015

The County's plan is for a new water recycling facility to treat sewage. Recycled water is then returned to the groundwater basin to recharge the aquifers or used for irrigation to directly reduce well pumping.

The water reuse is an important part of a sustainable and local water supply plan and will help to reduce sea water intrusion.



Post-Sewer Opportunities

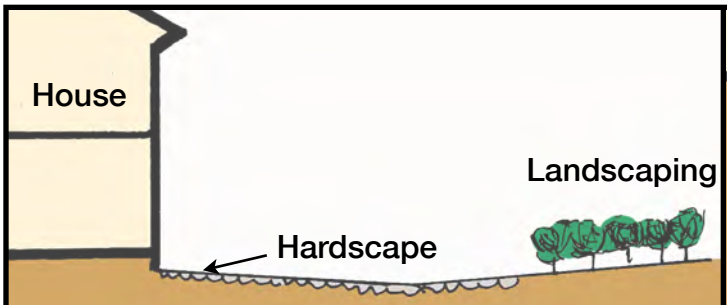
Now!

Once the sewer system is complete, what can you do with your existing septic tank and leach field? There are several choices that are available and presented in this booklet.

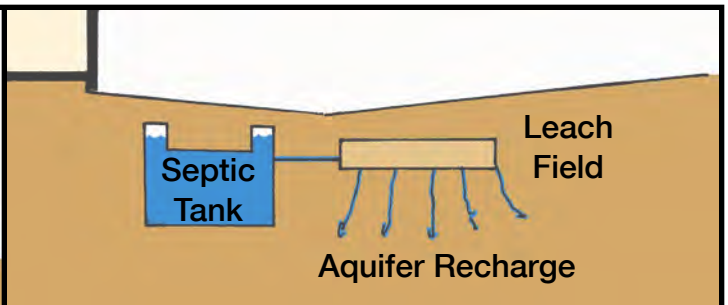
Some can help recharge the aquifers from which you get your drinking water. Some can help you irrigate your landscape during dry periods while saving on your water bills. If enough people made creative use of their tanks & leach fields, we calculate that this could reduce pumping from the aquifers up to 50 percent and reduce the load on the sewer system saving resources for everyone.

Understanding your Options Graphically

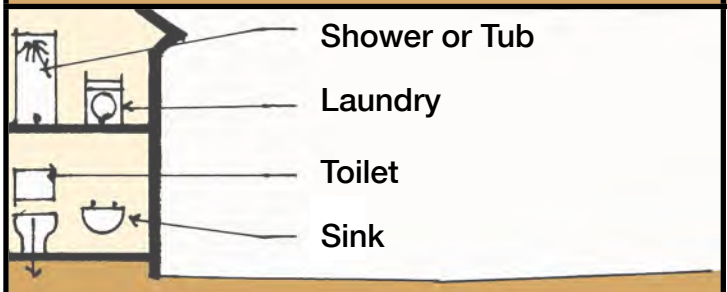
These symbols are used in the diagrams on the following pages.



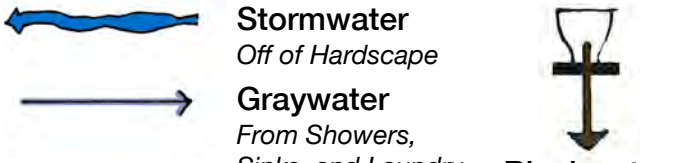
Your House & Lot



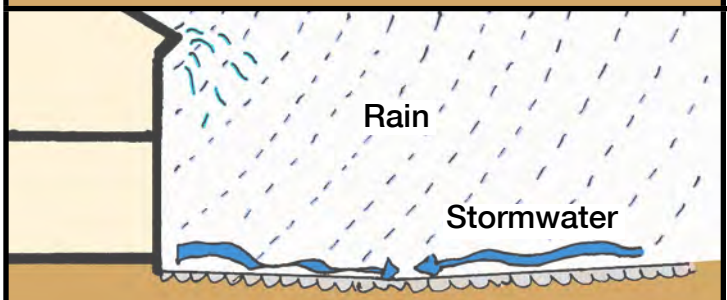
Septic Tank & Leach Field



House w/ Water Fixtures



Water Flows



House w/o Gutters

Components

House w/ Gutters

House w/ Rainwater Harvesting

Every residence will have different opportunities for reuse options based on site plan, floor plan and topography. Property owners, their consultants and contractors should note the location and presence of lot features such as hardscape and landscape areas, water fixtures, gutters, septic system components, etc. before designing a site specific reuse strategy. Appendix 1 located on the inside back cover provides a useful site assessment form.

The following relative rating guide will help you compare the various reuse options, look for these images at the top of the following pages:

LEAST (🌍) TO MOST (🌍 🌍 🌍) ENVIRONMENTALLY SUSTAINABLE

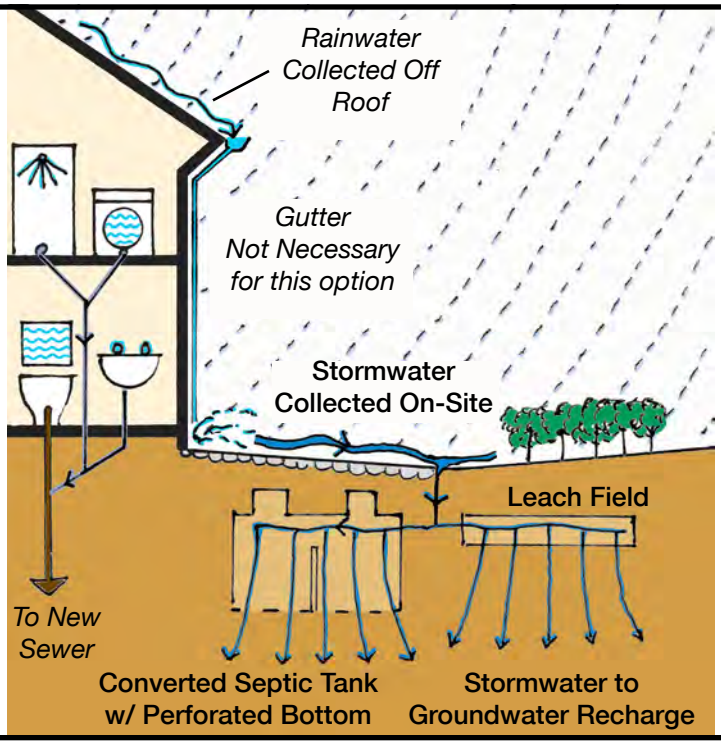
LOW (🛠) TO HIGH (🛠 🛠 🛠) COMPLEXITY OF DESIGN, INSTALLATION OR MAINTENANCE

LOW ($) TO HIGH ($ $ $) COST FOR MATERIALS

Option
1

Stormwater Capture for Infiltration

SUSTAINABILTY:
COMPLEXITY:
MATERIALS COST: $



Benefits	Effectiveness
Reduce Runoff	*Directing stormwater into the tank reduces community drainage cost by minimizing water that flows off your site*
Recharge Ground Water	*Allows greater infiltration on your property, which increases soil moisture and ground water recharge*
Improve Water Quality	*Reduces turbulence and captures sediment and pollution through settlement in tank*
Conserve Water	*Can reduce irrigation needs by increasing soil moisture for appropriate planting near tank & leach field*

Description:

Use your converted tank to increase ground water recharge and reduce stormwater runoff in one of two ways. Either by perforating the bottom or sides of the tank and channeling stormwater into the system, so that it acts as a retention system, or by leaving the tank as is and letting the tank fill and overflow into the leachfield or other appropriate overflow route. You can evaluate both disposal field and tank for reuse in this option.

Applicability:

This strategy is ideal for tanks that are not watertight and have some existing holes or leaks. The holes allow the tank to drain between storm events. If the tank does not have holes, then groundwater recharge will only occur when the tank overflows into the old disposal field.

Limitations:

A saturated disposal field cannot be used for stormwater infiltration. Areas of high ground water are not recommended for this strategy because groundwater can back-up into the system and tanks may be displaced (rise up out of the ground) by hydrostatic pressure if they are not ballasted for buoyancy.

Important Design Criteria:

This is basically a stormwater infiltrator, so drain inlets and points of stormwater entry may contain debris such as leaves, bark, soil and trash. A removable grate and sediment trap should be included to help reduce system clogging. Tanks may be ballasted several different ways. Concrete tanks may be partially filled with gravel and weights can be attached to lighter weight fiberglass tanks. An overflow from the drain inlet should direct water to an approved overflow route away from the house foundation and property lines where an overflow would cause damage to a neighbor. Tank riser and access lid may be installed on only the larger chamber side of the tank since maintenance will be limited.

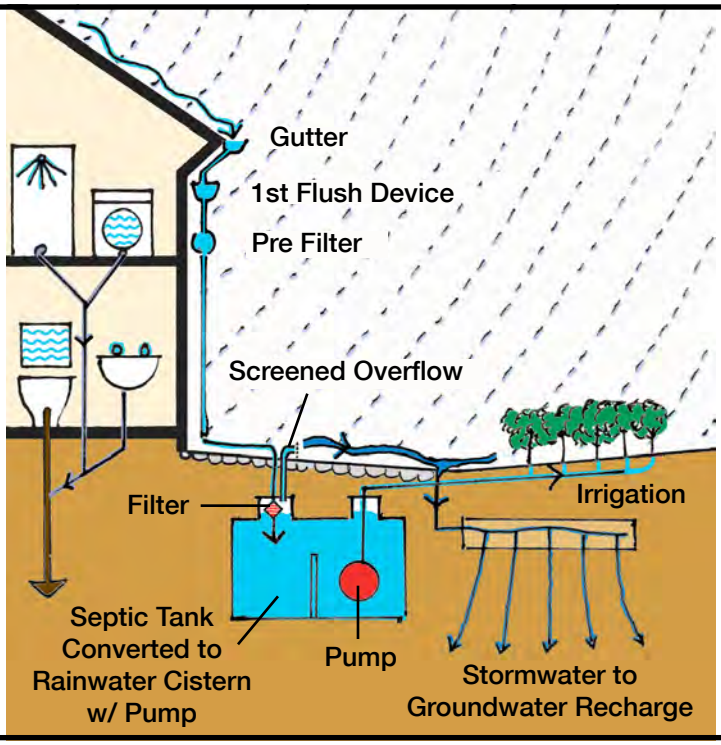
Maintenance:

Periodic cleaning of debris from grates and sediment from drain inlets will be necessary to keep the system from clogging and backing up.

Option
2

Rainwater Harvesting for Irrigation

SUSTAINABILTY:
COMPLEXITY:
MATERIALS COST: $ $



Benefits	*Effectiveness*
Reduce Runoff	*Less turbulent flow on your lot allows greater stormwater capture by directing rainwater from roof to cistern*
Recharge Ground Water	*Water used in irrigation and captured by leach field infiltrates into ground water*
Improve Water Quality	*First flush and filter components increase water quality by eliminating ground contact and blocking debris from roof*
Conserve Water	*Harvested rainwater via the cistern reduces the use of potable water for irrigation*

Description:

Use your converted tank as a cistern to store water to be used for irrigation. The leach field can be used an as overflow route or to infiltrate stormwater. Roof surfaces provide the cleanest, most concentrated and easiest to direct source of water for your cistern.

Applicability:

Sites with even a small amount of landscape that is being water either seasonally or year round will benefit from this option by decreasing outdoor water use.

Limitations:

Gutters should be installed to direct water from specific roof collection surfaces. The maximum capacity of residential septic tanks for single family homes is 1500 gallons. The majority of tanks in Los Osos are 1200 gallons. 1200 gallons can fill up in a relatively small rain event, so this system works best for small areas of landscape that are relatively drought tolerant.

Important Design Criteria:

Sizing collections areas, gutter capacity, and other conveyance and filtering systems is critical to optimizing the performance of these systems. A 1000 sq. ft. roof can catch 620 gallons of water in a 1" rainstorm. If the gutters or downspouts cannot meet the peak flows of rain events, then you will likely have water overflow the gutters, first flush devices or tank inlets. For this reason proper sizing and overflow routes should be considered along the water collection path. For this option you must design for ***buoyancy, bugs and overflow.***

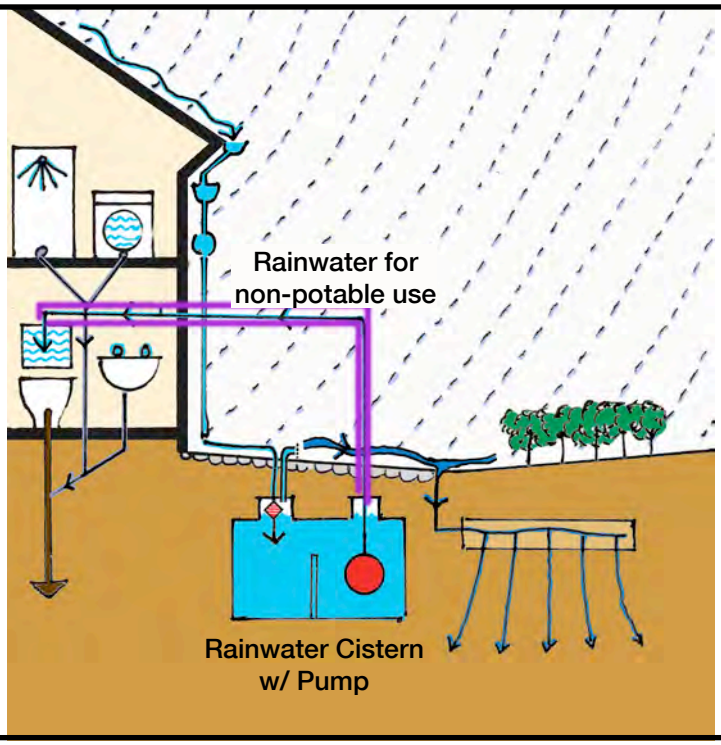
Maintenance:

Pumps, filters, screens and other components require periodic maintenance. Depending on the irrigation system drip emitters may become clogged with particulates and need replacing. First flush devices can be automatic or manual and may need attention every storm event. Tank risers to grade with locking lids may be necessary for access, maintenance and safety.

Option 3

Rainwater Harvesting for Indoor Toilet Use

SUSTAINABILTY:
COMPLEXITY:
MATERIALS COST: $ $ $



Benefits	Effectiveness
Reduce Runoff	*Less turbulent flow on your lot allows greater stormwater capture by directing rainwater from roof to cistern*
Recharge Ground Water	*Stormwater channeled from hardscape into the leach field recharges groundwater*
Improve Water Quality	*First flush and filter components increase water quality by eliminating ground contact and blocking debris from roof*
Conserve Water	*Harvested rainwater via the cistern reduces the use of potable water for non-potable indoor uses*

Description:

Use the tank to store harvested rainwater for indoor, non-potable use in toilet flushing. Possibly reuse the disposal field to infiltrate stormwater.

Applicability:

The location and type of toilet fixture and supply plumbing will limit the applicability to existing construction. This option can easily be integrated into a bathroom addition, remodel or new construction.

Limitations:

Toilets may not be compatible if supply water pressure is not great enough. A holding tank or pressure tank may be required in addition to a potable water supply for make-up water.

Important Design Criteria:

System may require additional filtration and treatment to meet water quality standards for indoor toilet flushing. Minimum treatment includes a debris excluder and a 100 micron filter. Reference current California Plumbing Code, Chapter 17 for Nonpotable Rainwater Catchment Cystems. Cross connection between potable water and rainwater is not allowed and will be tested. Rainwater pipes will be purple or marked to indicate they are non-potable and signs will need to be present at locations where rainwater is used to indicate it is non-potable and not safe to drink. For this option you must design for ***buoyancy, bugs and overflow.***

Maintenance:

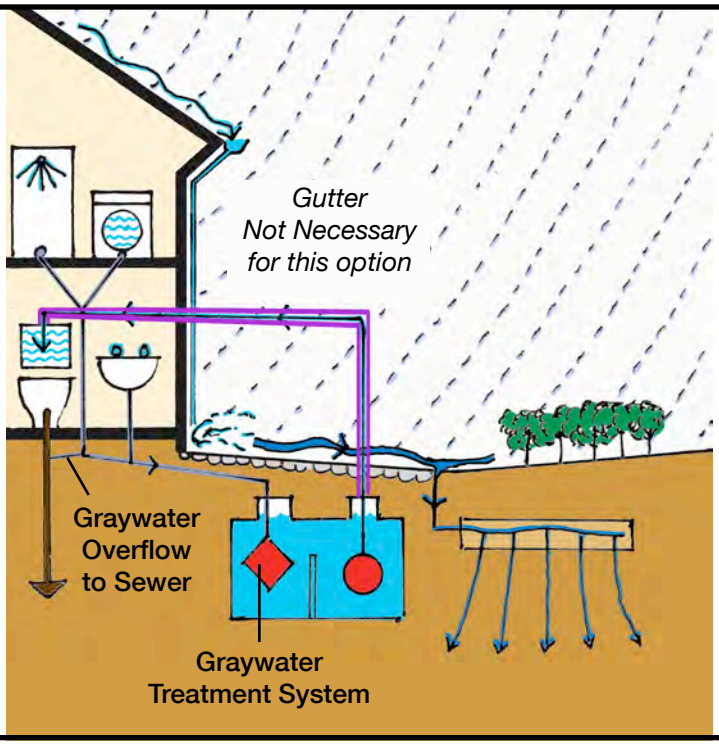
All systems recommend an operations and maintenance manual. Refer to product literature and manufacturer's installation manuals for routine maintenance and replacement instructions.

As with rainwater systems for irrigation purposes, pumps, filters, screens and other components require periodic maintenance. First flush devices can be automatic or manual and may need attention every storm event. Tank risers to grade with locking lids may be necessary for access, maintenance and safety.

Option 4

Treated Graywater for Indoor Toilet Use

SUSTAINABILTY:
COMPLEXITY:
MATERIALS COST: $ $ $



Benefits	Effectiveness
Reduce Runoff	*Directing stormwater into the leach field reduces community drainage cost by minimizing water flowing off your site*
Recharge Ground Water	*Stormwater channeled from roof and hardscape into the leach field recharges groundwater*
Improve Water Quality	*A Filter system improves water quality by active treatment of graywater*
Conserve Water	*Constant source of water via graywater allows greater conservation of indoor use year-round*

Description:

Use the tank to treat and store harvested graywater for indoor, non-potable use in toilet flushing. Possibly reuse the disposal field to infiltrate stormwater.

Applicability:

Accessible pipe from graywater fixtures will determine the quantity of graywater you can harvest. Laundry graywater is almost always accessible, but may be difficult to route to the converted septic tank.

Limitations:

Toilets may not be compatible if supply water pressure is not great enough. A holding tank or pressure tank may be required in addition to a potable water supply for make-up water.

Important Design Criteria:

System may require additional filtration and treatment to meet water quality standards for indoor toilet flushing. Reference current California Plumbing Code, Chapter 16 for Alternate Water Sources for Nonpotable Applications. Cross connection between potable water and treated graywater is not allowed and will be tested. Alternate water source pipes shall be purple or marked to indicate they are non-potable and signs will need to be present at locations where treated graywater is used to indicate it is non-potable and not safe to drink. Only a few products are available at this time which meet NSF/ANSI 350 standards for treating water to reuse for indoor toilet flushing. For this option you must design for ***buoyancy, bugs and overflow.***

Maintenance:

All systems recommend an operations and maintenance manual. Refer to product literature and manufacturer's installation manuals for routine maintenance and replacement instructions.

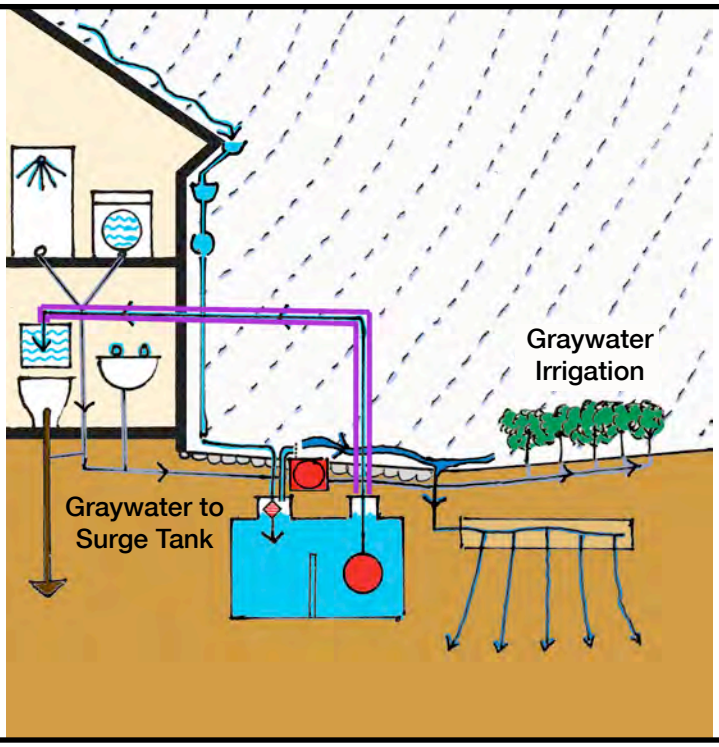
Pumps, filters, screens and other components require periodic maintenance. Tank risers to grade with locking lids may be necessary for access, maintenance and safety.

Combining your septic conversion with supplementary systems can create synergies & greater benefits.

Combo
A

Option 3 + Graywater for Irrigation

SUSTAINABILTY:
COMPLEXITY:
MATERIALS COST: $ $ $



Benefits	Effectiveness
Reduce Runoff	*Less turbulent flow on your lot allows greater stormwater capture by directing rainwater from roof to cistern*
Recharge Ground Water	*Year-round use of graywater irrigation and stormwater captured by leach field infiltrates into ground water*
Improve Water Quality	*Rainwater captured off the roof prevents ground contact and graywater is filtered in-ground through soil biology*
Conserve Water	*Harvested rainwater reduces the use of indoor potable water use and graywater irrigation reduces potable water use for irrigation*

Description:

Use the tank to store harvested rainwater for indoor, non-potable use in toilet flushing. Possibly reuse the disposal field to infiltrate stormwater. Add a graywater system to provide irrigation for your landscape.

Applicability:

The location and type of toilet fixture and supply plumbing will limit the applicability to existing construction. This option can be integrated into a bathroom addition, remodel or new construction.

Limitations:

Toilets may not be compatible if supply water pressure is not great enough. A holding tank or pressure tank may be required in addition to a potable water supply.

Important Design Criteria:

System may require additional filtration and treatment to meet water quality standards for indoor toilet flushing. Minimum treatment includes a debris excluder and a 100 micron filter. Reference current California Plumbing Code, Chapter 17 for Nonpotable Rainwater Catchment Cystems. Cross connection between potable water and rainwater is not allowed and will be tested. Rainwater pipes will be purple or marked to indicate they are non-potable and signs will need to be present at locations where rainwater is used to indicate it is non-potable and not safe to drink. For this option you must design for ***buoyancy, bugs and overflow.***

Maintenance:

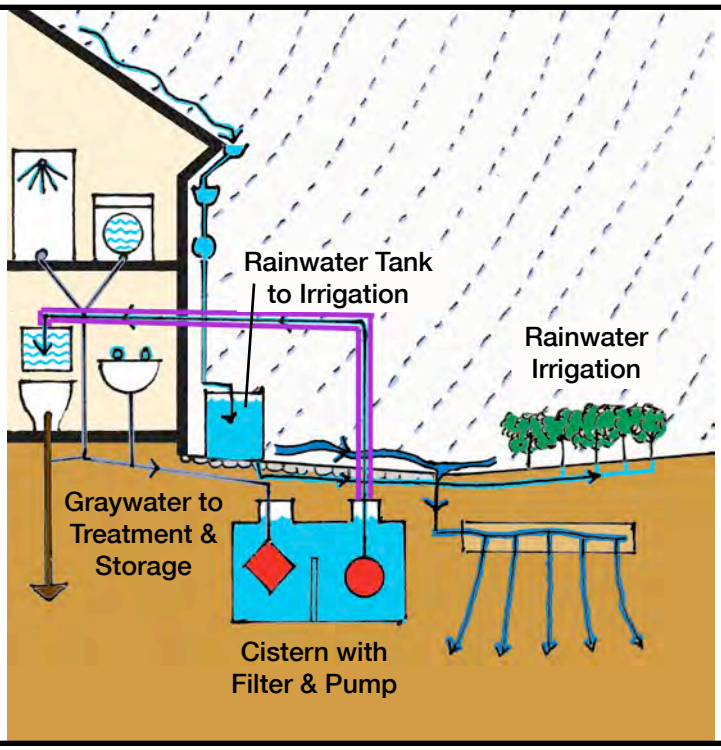
All systems recommend an operations and maintenance manual. Refer to product literature and manufacturer's installation manuals for routine maintenance and replacement instructions.

As with rainwater systems for irrigation purposes, pumps, filters, screens and other components require periodic maintenance. First flush devices can be automatic or manual and may need attention every storm event. Tank risers to grade with locking lids may be necessary for access, maintenance and safety.

Combo
B

Option 4 + Rainwater Harvesting for Irrigation

SUSTAINABILTY:
COMPLEXITY:
MATERIALS COST: $ $ $



Benefits	*Effectiveness*
Reduce Runoff	*Less turbulent flow on your lot allows greater stormwater capture by directing rainwater from roof to tanks*
Recharge Ground Water	*Water used in irrigation and captured by leach field infiltrates into ground water*
Improve Water Quality	*Rainwater captured off the roof prevents ground contact and graywater is actively filtered in the cistern*
Conserve Water	*Constant source via graywater allows greater conservation of indoor use year-round*

Description:

Combining Option 4, which uses treated graywater for indoor, non-potable uses, an additional rainwater harvesting system for landscape irrigation, and reuse of the leach field to infiltrate stormwater makes this 3-way combination the most comprehensive.

Applicability:

Accessible pipe from graywater fixtures will determine the quantity of graywater you can harvest. Laundry graywater is almost always accessible but may be difficult to route to the converted septic tank.

Limitations:

Toilets may not be compatible if supply water pressure is not great enough. A holding tank or pressure tank may be required in addition to a potable water supply.

Important Design Criteria:

System may require additional filtration and treatment to meet water quality standards for indoor toilet flushing. Reference current California Plumbing Code, Chapter 16 for Alternate Water Sources for Non[potable Applications. Cross connection between potable water and treated graywater is not allowed and will be tested. Alternate water source pipes shall be purple or marked to indicate they are non-potable and signs will need to be present at locations where treated graywater is used to indicate it is non-potable and not safe to drink. For this option you must design for ***buoyancy, bugs and overflow.***

Maintenance:

All systems recommend an operations and maintenance manual. Refer to product literature and manufacturer's installation manuals for routine maintenance and replacement instructions.

Pumps, filters, screens and other components require periodic maintenance. Tank risers to grade with locking lids may be necessary for access, maintenance and safety.

Applying Low Impact Development (LID) Techniques to Manage Stormwater On-site

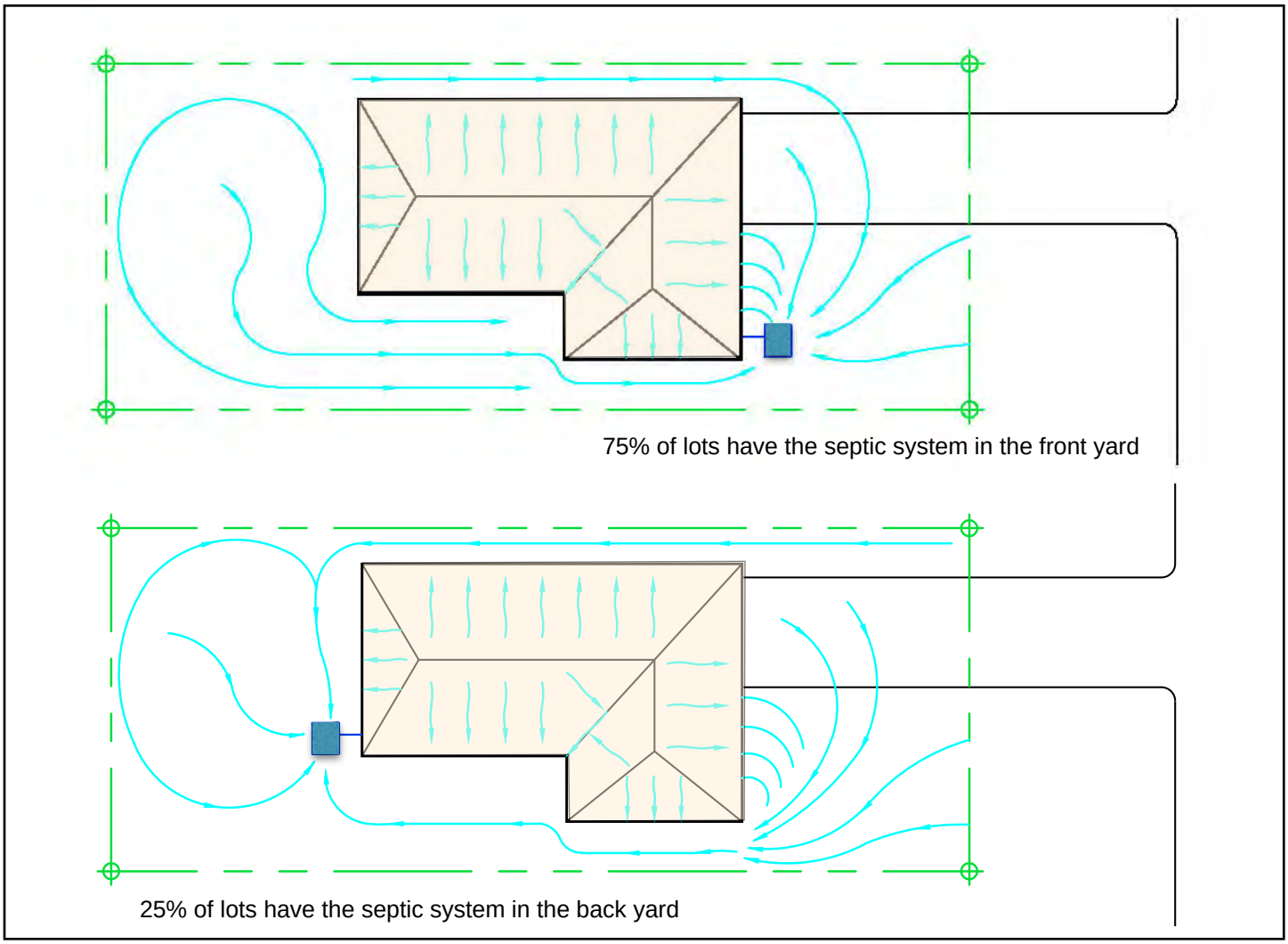
All reuse options for septic system components can collect rainwater from the roof or stormwater from the lot and direct it to the converted tank and/or disposal field. This is done by applying low impact development (LID) techniques on your lot.

LID is a technical term for managing water on your property. LID can help:

1. Maintain soil moisture for your plants
2. Minimize off-site drainage costs
3. Help recharge ground water

For options 1, the LID goal is to slow the flow of stormwater and direct it into the old septic system for groundwater recharge.

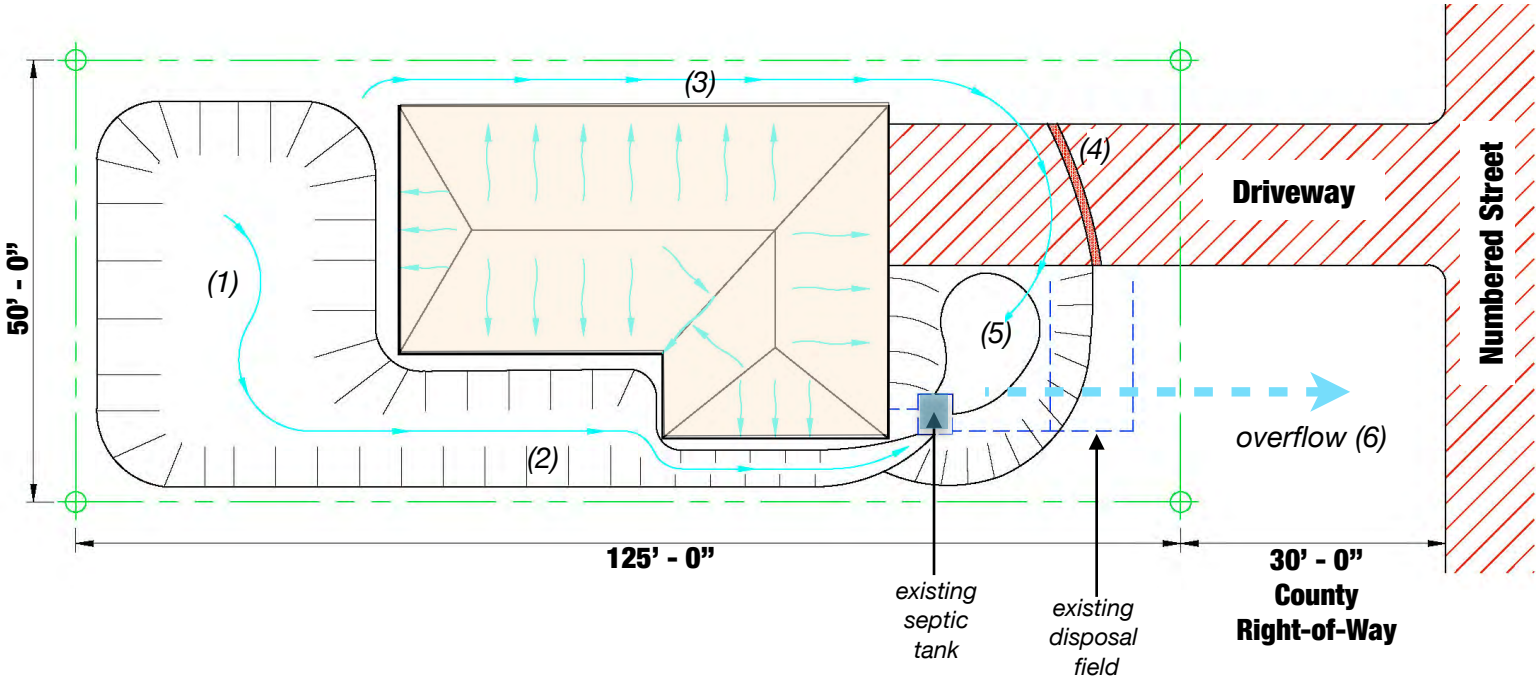
Los Osos lots vary in topography and watershed characteristics from flat to sloping in many different directions. The location of on-site septic system components also varies, but for reuse purposes, the main concern is whether the septic system is in the front yard toward the street or in the back yard. Most properties in Los Osos consist of one of the two variations illustrated below. The light blue water flow arrows direct rainwater and stormwater to the former septic system to accomplish the LID objective. These situations requires different LID strategies to direct water into your new converted septic system. The following pages show how LID techniques can be used on the typical lot example where the septic system is located in the front yard.



Above: The light blue water flow arrows direct rainwater and stormwater to the former septic system to accomplish the Low Impact Development (LID) objective.

Example: Site Plan Utilizing LID to Direct Stormwater

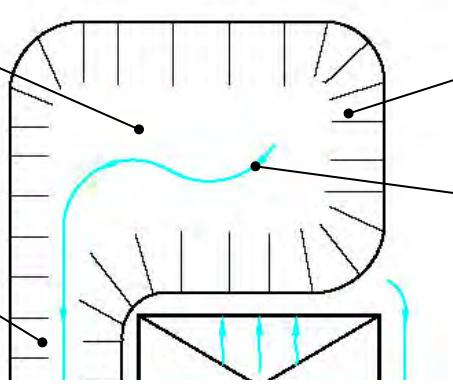
The low impact development strategies illustrated on the next page can be used in this example to direct water to the existing tank and disposal field. An overflow route is also shown.



Backyard	Side Yard (Narrow)	Front Yard/ Driveway
A drainage basin **(1)** collects storm water and directs it to a vegetated swale **(2)** which directs the water toward the front of the lot via a wider side yard.	There are three options to convey stormwater through a narrow side yard to the front yard. Careful attention must be given to narrow side yards to keep water from being directed to building foundations. **3a.** A nonporous sloping surface that transports water toward the front of the lot. **3b.** A subsurface french drain sloping toward the front yard, directed to the tank. **3c.** A gutter attached to the roof overhang sloping toward the front yard with a downspout adapter that connects to the tank system.	There are two methods to prevent the driveway from draining water to the street: **4a.** Use of a rain bar to direct running water across the driveway and toward the tank. **4b.** Construct the driveway with permeable paving so that it becomes part of the drainage system. The front yard is shaped to act as a drainage basin **(5)** which directs most of the collected stormwater into the converted septic system. Overflow **(6)** is the final part which can take excess water to the public street or drainage system.

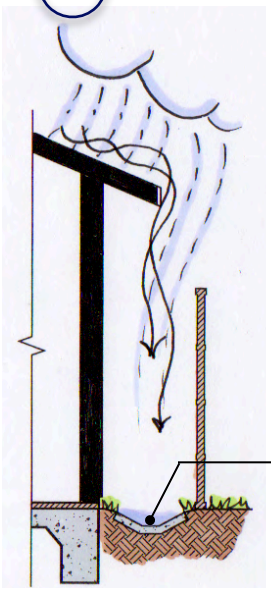
1 **Drainage Basin:** a shallow depression that collects & temporarily retains water which then empties into and is guided by the vegetated swale into the tank system to be stored for irrigation purposed or to percolate back into and recharge ground water.

2 **Vegetated Swale:** a slightly sloping narrow, linear depression that directs storm water from the drainage basin to the front of the lot where the water is then guided through the front rain garden and down into tank system.

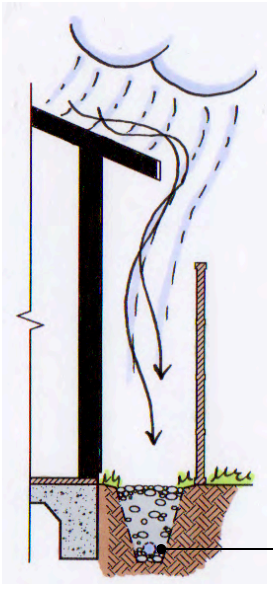


3 Narrow Side Yard

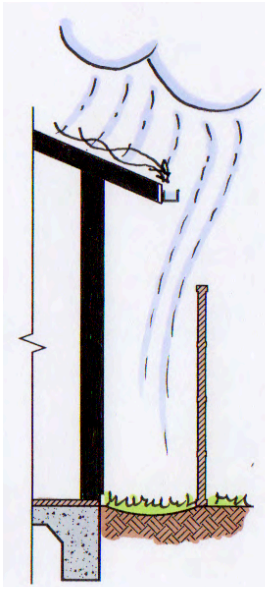
3a **Nonporous surface:** slightly sloping surface, usually paving or concrete, to guide water down the narrow side yard to the front, across driveway & rain bar, into front rain garden/basin and the tank system.



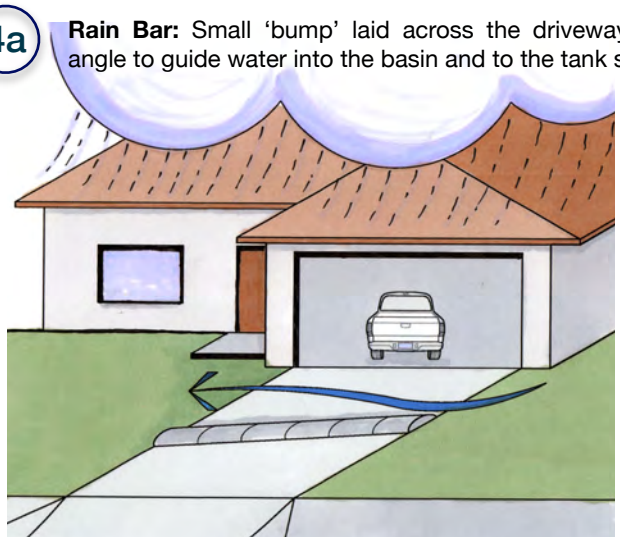
3b **French Drain:** a walkable gravel surface with underground perforated drain pipe, sloping toward front yard, encased in a gravel filled trench to take water toward front yard and into the tank system. This approach may take additional maintenance if piping becomes clogged.



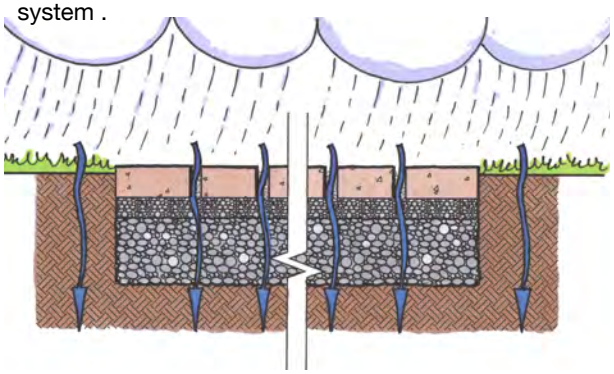
3c **Rain gutter:** Installed at the roof edge to catch water from roof and guide to front and downspout replaced with a rain chain or using a down spout diverter to sloped surface guiding water across driveway to the tank system. A gutter also prolongs the life of the building.

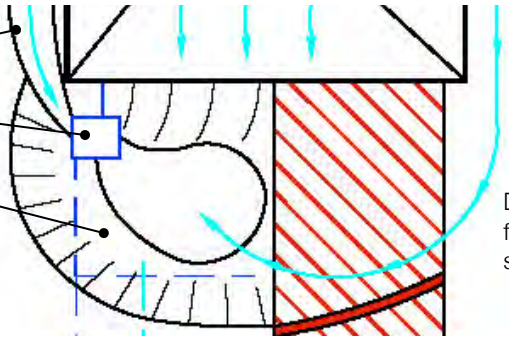


4a **Rain Bar:** Small 'bump' laid across the driveway at an angle to guide water into the basin and to the tank system.



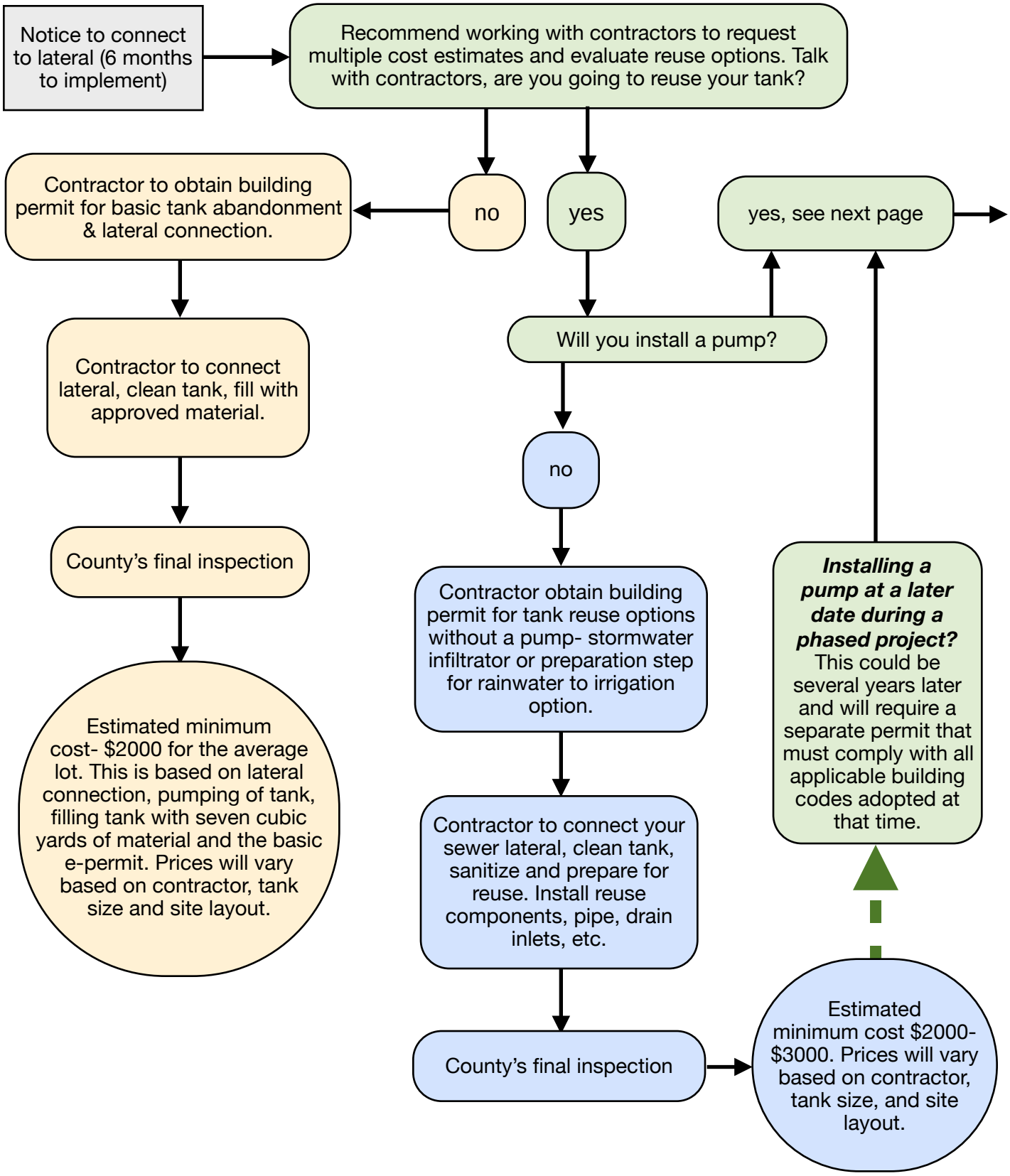
4b **Permeable Surface:** Such as pavers which allows stormwater to recharge ground water or by using an under drain catchment that leads directly to the tank system .





5 **Front Yard:** Can be converted to a rain garden acting as a drainage basin that collects water from all the various points on your lot and guides into the tank system.

Planning & Sequence Flowcharts



Reference Codes -

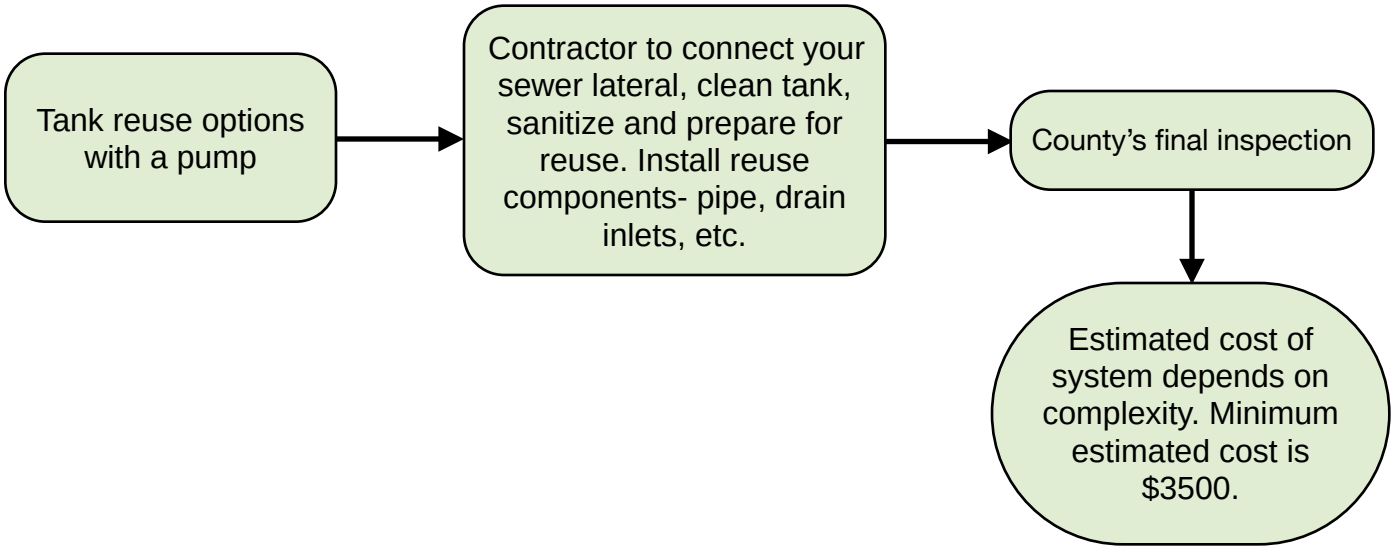
SLO County Building and Construction Ordinance Title 19

SLO County Land Use Ordinance- Inland Title 22 and Coastal Zone- Title 23

SLO County Health & Sanitation Code- Title8

California Plumbing Code 2013 Chapter 17- Nonpotable Rainwater Catchment Systems

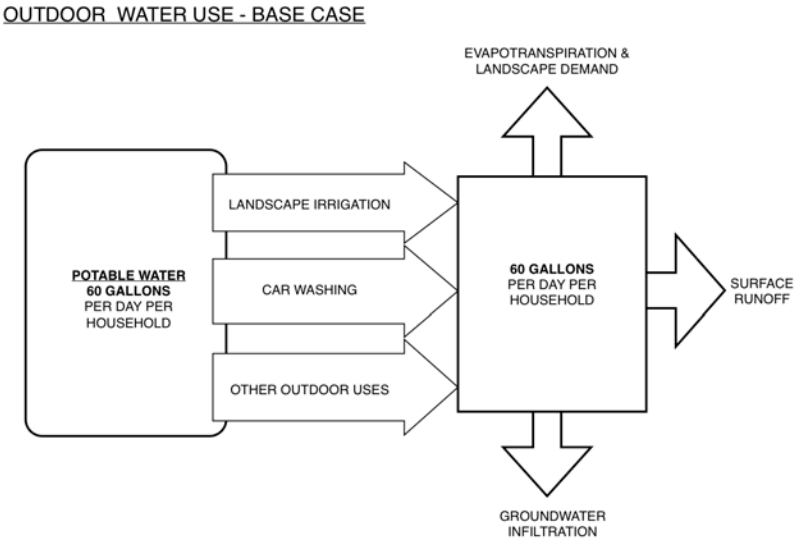
California Plumbing Code 2013 Chapter 16- Alternate Water Sources for Nonpotable Applications



Cost/Benefit Analysis

Note all properties and configurations will be custom, but here we look at the cost benefit of replacing all outdoor water use with rainwater, stormwater or graywater.

California Residential Water Use studies and Los Osos water use data supports an outdoor water use base case of 60 gallons per day per household. This equates to 1800 gallons per month or 2.4 CCF (1 unit = 748 gallons). The base case for indoor use is 185 gallons per day per household. Combined indoor and outdoor use are typically 240 gallons per day or 7200 gallons per month. Some water purveyors bill on a bimonthly service period while others bill on a monthly basis. Los Osos CSD rates are used in this example where the base case consumes 19.65 CCF every two months incurring a cost of $121.56



Cost/Benefit Analysis

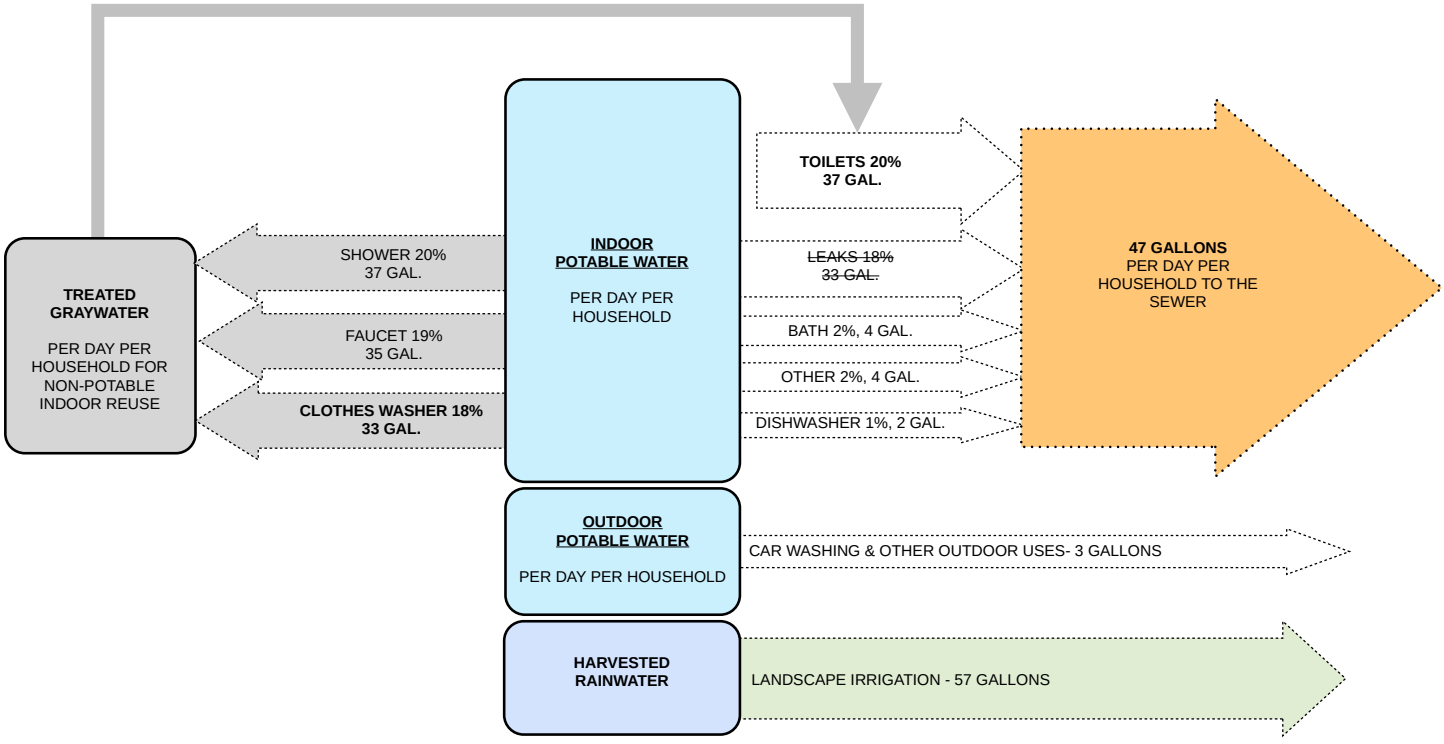
In the first example, if all outdoor use can be met with graywater or rainwater. The potential savings are $157 per year in the base year. The minimum initial cost of simple rainwater and graywater systems using some of the reuse options is in the range of $3500. Depending on future water rate increases, the payback period could be as little as fifteen years for investing in a system to eliminate potable water supplies for outdoor irrigation.

In the second example, if all outdoor use and indoor toilet flushing can be met with graywater or rainwater, the potential water cost savings may be more than $300 per year. Sewer rates will also be tied to water use, so sewer fees are also lowered by reducing water use. Depending on future water and/or sewer rate increases, a complicated system could potentially have a payback period of ten years, but the more complicated systems are likely to cost between $5,000 to $10,000 making their realistic payback 10-20 years.

INTEGRATED SYSTEM:

INDOOR AND OUTDOOR WATER USE WITH

GRAYWATER TREATMENT AND HARVESTED RAINWATER FOR IRRIGATION



Appendix 1: Site Assessment and Project Goals

There are common variables to take into account when designing a septic system component reuse system. Some of these questions may be difficult or impossible to answer—skip over them for now and they may become clear later. If you are working with other people on the project, this form can serve to orient them, along with a site map. This assessment is adapted from Art Ludwig's resources at Oasis Design.

General project goals

What are the guiding philosophies and aesthetic?

What perfection standard are you aiming for?

Hygiene standard?

Landscape goals (check all that apply)

❏ Irrigate/Save water using graywater
❏ Beauty
❏ Food production
❏ Erosion control
❏ Slope stabilization
❏ Fire break
❏ Privacy screen
❏ Windbreak
❏ Outdoor living
❏ Microclimate modification (e.g., windbreak, increased cooling via evapotranspiration, shade)

Landscape and Irrigation

Native vegetation type(s):

Land use(s), existing and planned:

Irrigated area: Current _____
Potential _____
Existing freshwater consumption?

What is the existing/planned irrigation system?

Is the landscape fenced or free of browsing animals?

Important trees to irrigate?

Soil and Groundwater

Soil type(s):
Soil fertility: _____
Digging ease: _____
Permeability (has there been a perk test?)
minutes/in _____ location_____
minutes/in _____ location_____
minutes/in _____ location_____
(Note location(s) and values of perk test on site map)
Minimum seasonal groundwater depth, seasonal variation:
Distance to nearest year-round surface water_____
Distance to nearest seasonal surface water_____
Where does runoff go?

Users and Maintenance

To what degree are the users interested in understanding/maintaining the system?

Will there be a person responsible for maintenance?

What are the maintenance goals or constraints?

Economics

Budget constraints?

Do you own the land where the project is to be built?

How long are you planning to stay there?

Is resale value a concern?

Are there time and money constraints for maintenance, repair, and system replacement?

Site Map and System Elevations

A 1⁄8" = 1' scale, 1' contour map of the site and a 1⁄4" = 1' plan of the structures involved would be ideal, but any sort of sketch is a help. The map or other description ideally would show topography, property lines, septic tanks, leach lines, wells, surface waters, buildings, major vegetation, and irrigated areas, existing and planned. Aerial photos can help for some sites.

If you're sharing this information with people involved in the project off-site, take snapshots showing general feeling of the site and any special features, indicating the location and the direction of each shot with a letter and arrow on the site map.

Make copies of the map and sketch the possible ways to connect the water sources with irrigation/ treatment areas. The elevation relationship between features such as buildings, foundations, walkways, graywater sources, septic or sewer inlet, and irrigated areas is critical.

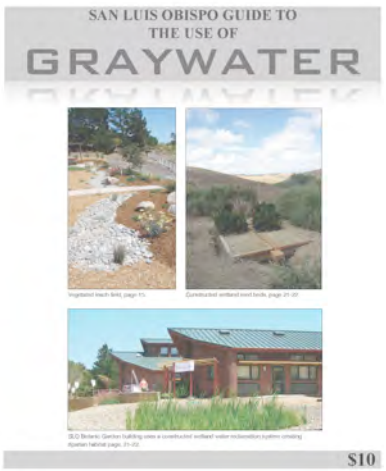
Additional Resources

A note about professionals: Los Osos is a sensitive area in terms of environmental and archaeological resources. For this reason, the County's environmental permits for the wastewater project require that anyone working on a septic decommissioning and reuse project complete training regarding environmentally sensitive areas. The training requirement applies to any licensed contractor, septic pumper and plumber. It is important to ask your contractors about their qualifications to undertake the work you would like to have done. If you have questions about the necessary qualifications and training, please contact SLO County Public Works or refer to the list provided on the LOWWP webpage by SLO County Public Works to determine if you are contracting with qualified professionals.

SLO Green Build worked with San Luis Obispo County and all the cities in SLO County over the past decade to develop informative guides. The intent of the guides is to educate homeowners about appropriate technology and sustainable water practices such as graywater, low impact development (LID) and rainwater. Guides are available online for free at www.slogreenbuild.org.

The Rainwater Management Guide for Low Impact Development (LID) is applicable to directing on-site stormwater. Downspout diverters, bioswales, rainwater harvesting with earthworks and collection tanks are explored. Groundwater recharge and runoff reduction are guiding principles for low impact development to preserve water resources and water quality. "Slow it, spread it, sink it" is the mantra Brock Dolman coined and is explored in this guide.

Harvesting the Rain- Storage and Use was designed to give homeowners an idea of how to calculate water harvesting potential, evaluate collection surfaces and conveyance systems as well as size storage capacity. Large and small scale rainwater harvesting systems are introduced. The back cover includes a list of resources. A list of product manufacturers is included to help connect people with the products they need to implement a rainwater harvesting system. This guide provides a method for estimating water demand for various plants in different climates; for example, you could reference typical dry season water demands per square foot for a native landscape or turf in Paso Robles or the north coast such as Los Osos.



The Use of Graywater was the first publication and is therefore the oldest. Some of the code references are outdated, so please refer to current codes for applicability. In most cases the codes have become more favorable to implementing graywater systems due to the recurring droughts in California. This guide presents a variety of ways to distribute graywater into your landscape. The nest edition will describe graywater treatment for indoor use in toilet flushing with approved treatment units.