PROVIDED TO INFILTRATE MORE STORMWATER RUN-OFF ON SITE, INCREASE GROUNDWATER RECHARGE

THE PLANS ARE DESIGNED TO DEMONSTRATE FIRE SAFER LANDSCAPING APPROACHES WITH LOWER, LESS MOODY PLANTS CLOSE TO BUILDINGS, AND TREES POSITIONED TO ALLOW MAINTENANCE OF BRANCHES 10' AWAY FROM BUILDINGS.

LANDSCAPE DESIGN REQUIREMENTS

2. LOW WATER USE OR CLIMATE-ADAPTED SPECIES THAT REQUIRE LITTLE OR NO SUMMER WATER ARE SELECTED FOR AT LEAST 75 PERCENT OF THE PLANTED AND IRRIGATED AREA

3. HYDROZONE: AN AREA OF THE LANDSCAPE HAVING PLANTS WITH SIMILAR WATER NEEDS AND ROOTING DEPTHS AND THE SAME MICROCLIMATE.

4. MICRO-CLIMATE: THE CLIMATE WITHIN EACH DIFFERENT SUB-AREA OF THE LANDSCAPE WHICH DEPENDS ON ITS SUN AND WIND EXPOSURE, PROXIMITY TO REFLECTIVE SURFACES, PLANT DENSITY AND OTHER FACTORS.

5. INVASIVE PLANTS: CALIFORNIA INVASIVE PLANT COUNCIL ("Cal-IPC") DEFINES INVASIVE PLANTS AS: PLANTS THAT ARE NOT NATIVE TO AN ENVIRONMENT, HAVE BEEN INTRODUCED INTO THAT ENVIRONMENT, AND AS A RESULT OF THEIR UNREGULATED GROWTH AND TO PREVENT RUNOFF.

6. ALL IRRIGATION EMISSION DEVICES MUST MEET THE ANSI STANDARD, ASABE/ICC 802-2014 LANDSCAPE IRRIGATION SPRINKLER AND EMITTER STANDARD. SPRINKLER HEADS MUST DOCUMENT A DISTRIBUTION 

7. ALL AREAS UTILIZE DRIP IRRIGATION ASSEMBLIES TO ENABLE THE SCALING OF PLANS.

8. SPRAY IRRIGATION NOT ALLOWED.

9. ALLOW DEEP ROOT WATERING OF THE ENTIRE TREE ROOT SYSTEM WHICH EXTENDS WELL BEYOND THE POINT OF CONNECTION.

10. ALLOW FOR MOVING THE IRRIGATION DISTRIBUTION LINES AWAY FROM TREE TRUNK AFTER PLANT INSTALLATION TO FURTHER EXPAND THE OUTSIDE COMPOUND DEVELOPMENT.

11. PROVIDE SEPARATE TREE VALUES SO THE TREE VALUE CAN BE LEFT ON DURING PERIODS OF DROUGHT.

SOIL MANAGEMENT REQUIREMENTS

1. ALL PLANTS INSTALLED ARE LISTED ON PLANS OR ON APPROVED PLANT SUBSTITUTION LIST

2. 75% OR MORE OF THE PLANTS ARE LOW WATER USE PER WUCOLS REGION 1

3. NO STANDARD HIGH WATER USE TURF HAS BEEN INSTALLED

4. MULCH CAN BE REDUCED FOR NATIVE GRASS AND/OR WILDFLOWER AREAS.

5. COMPACTED GROUND IN PLANT AREAS IS STABILIZED WITH A TAMPINGできます目

6. ALLOW WEATHER SENSORS TO BE INSTALLED TO MEASURE POWER FAILURE (NON-VOLATILE MEMORY) AND UTILIZES EVAPOTRANSPIRATION OR SOIL MOISTURE DATA.

7. TURF: A GROUND COVER SURFACE OF MOWED GRASS (CONVENTIONAL LAWN)

8. THERMOCOUPLE: A HEAT SENSING DEVICE USED TO MEASURE THE TEMPERATURE OF A SPECIFIC MEDIA (USUALLY WATER) WITHIN A CONTAINER.

9. IMPROVED ECOLOGICAL ENSURING THE WATER USE EFFICIENCY AND WILDFLOWERS ARE INCLUDED IN THE PLANT LIST.

10. HYDROZONE: AN AREA OF THE LANDSCAPE HAVING PLANTS WITH SIMILAR WATER NEEDS AND ROOTING DEPTHS AND THE SAME MICROCLIMATE.

11. SCIENTIFICALLY BASED: CONTROLLER CHARTS THAT ARE BASED ON SCIENTIFIC RESEARCH AND DATA.

12. CONTROLLER CHART CLEARLY INDICATES IRRIGATION SCHEDULE FOR EACH ZONE AND INCLUDES PROGRAM, DAYS AND TIMES, START AND RUN TIMES.

SYMBOLS & DEFINITIONS

1. CLIMATE ADAPTED: NON-NATIVE PLANTS WHICH ARE ADAPTED TO LOCAL, MICROCLIMATES.

2. IMPROVED PLANTS: CALIFORNIA INVASIVE PLANT COUNCIL ("Cal-IPC") DEFINES INVASIVE PLANTS AS: PLANTS THAT ARE NOT NATIVE TO AN ENVIRONMENT, HAVE BEEN INTRODUCED INTO THAT ENVIRONMENT, AND AS A RESULT OF THEIR UNREGULATED GROWTH AND TO PREVENT RUNOFF.

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AGGREGATE PAVING, CHOOSE FROM BRICK OR PERMEABLE PAVER
INSURE LESS THAN 25% OF PLANTED AREA IS MEDIUM WATER USE PLANTINGS.
1G MULCH 2" OR 4"
REFER TO PLANTING DETAILS ON SHEET L3.2.
PLANTING DESIGN FOR FULL COVER WITHIN 3 YEARS.
REVIEW IRRIGATION SHEETS AND INSTALL SLEEVES UNDER PAVING SURFACES IN THEIR CORRECT LOCATION.

1. MEASURE ENTIRE FRONT YARD AREA. SUBTRACT HARDSCAPE AREAS TO GET THE TOTAL SQUARE FEET OF PLANTED AND IRRIGATED AREA. ENTER THIS NUMBER IN THE PLANT WATER USE TABLE ON THIS SHEET.
2. IF NEEDED USE A RED PEN TO ADJUST THE LAYOUT OF DRIVEWAY, PATHS AND PLANTING AREAS TO FIT YOUR YARD.
3. ADJUST ORIENTATION OF NORTH ARROWS TO SITE CONDITION.
4. ADD ANY EXISTING TREES IN RED ON THE PLAN. ADJUST TREE LOCATIONS IF NEEDED TO FIT YOUR SITE.
5. FILL IN PLANT WATER USE TABLE.
6. PLACE COBBLE & STORM DRAIN OUTFALL TYPICAL FOR DETAIL 4 ON SHEET L3.1
7. IN THE LEGEND, CIRCLE THE HARDSCAPE MATERIALS YOU WILL BE USING AND ON DETAIL SHEETS L3.0, L3.1 & L3.2.
8. INDICATE ANY SUBSTITUTIONS TO THE PLANTINGS BY CROSSING OUT THE LISTED PLANTS AND WRITING THE SUBSTITUTION BELOW IN RED INK. MAKE SURE THE PLANTS USED HAVE MATCHING WATER USE AND ARE ROUGHLY THE SAME SIZE (SEE SONOMA-MARIN SAVING WATER PARTNERSHIP WEBSITE: http://www.savingwaterpartnership.org) FOR SUBSTITUTIONS.
9. MOVE TO THE IRRIGATION PLAN AND FILL IN THE AREAS INDICATED ON THAT SHEET.

APPLICANT INSTRUCTIONS:
1. PLANTING DESIGN FOR FULL COVER WITHIN 2 YEARS.
2. THE GARDEN IS DESIGNED TO CAPTURE AND INFILTRATE SOME STORM WATER ON SITE. WHEN THE FLOW IS DIRECTED TO A SWALE OR RAIN GARDEN, IT NEEDS AN OVERFLOW OUTLET THAT MUST EXIST. OPTIONS ARE PROVIDED ON THE DETAIL SHEETS. SPLASH BLOCKS AND OUTLETS IN PLANTING BEDS ARE MEANT TO SPREAD THE FLOW TO SHEETFLOW OVER PLANTING AREAS AND NO OVERFLOW DEVICE IS NEEDED.
3. REVIEW IRRIGATION SHETS AND INSTALL SLEEVES UNDER PAVING SURFACES IN THEIR CORRECT LOCATION.
AGGREGATE PAVING, CHOOSE FROM
IF NEEDED USE A RED PEN TO ADJUST THE LAYOUT OF DRIVEWAY, PATHS AND PLANTING AREAS TO FIT YOUR YARD.

MIC D 4"
INDICATE ANY SUBSTITUTIONS TO THE PLANTINGS BY CROSSING OUT THE LISTED PLANTS AND WRITING THE SUBSTITUTION BELOW IN RED INK. MAKE SURE MULCH
ADD ANY EXISTING TREES IN RED ON THE PLAN. ADJUST TREE LOCATIONS IF NEEDED TO FIT YOUR SITE.

RAIN GARDEN: 3/8" GRAVEL MULCH OR 1G
THE GARDEN IS DESIGNED TO CAPTURE AND INFILTRATE SOME STORM WATER ON SITE. WHEN THE FLOW IS DIRECTED TO A SWALE OR RAIN GARDEN, IT NEEDS AN OVERFLOW OUTLET THAT WON'T ERODE, OPTIONS ARE PROVIDED ON THE DETAIL SHEETS. SPLASHBLOCKS AND OUTLETS IN PLANTING BEDS ARE MEANT TO SPREAD THE FLOW TO SHEETFLOW OVER PLANTING AREAS AND NO OVERFLOW DEVICE IS NEEDED.

REVIEW IRRIGATION SHEETS AND INSTALL SLEEVES UNDER PAVING SURFACES IN THEIR CORRECT LOCATION.

NOTE:
3. PLANTING PLAN
   - INDICATE ALL HARDSCAPING MATERIALS YOU WILL BE USING AND ON DETAIL SHEETS L3.0, L3.1 & L3.2.
   - REVIEW IRRIGATION SHEETS AND INSTALL SLEEVES UNDER PAVING SURFACES IN THEIR CORRECT LOCATION.

APPLICANT INSTRUCTIONS:
- MEASURE ENTIRE FRONT YARD AREA. SUBTRACT HARDSCAPE AREAS TO GET THE TOTAL SQUARE FEET OF PLANTED AND IRRIGATED AREA. ENTER THIS NUMBER IN THE PLANT WATER USE TABLE ON THE SHEET.
- IF NEEDED USE A RED PEN TO ADJUST THE LAYOUT OF DRIVEWAY, PATHS AND PLANTING AREAS TO FIT YOUR YARD.
- ADD ANY EXISTING TREES IN RED ON THE PLAN. ADJUST TREE LOCATIONS IF NEEDED TO FIT YOUR SITE.
- ADD ANY OPTIMIZED TREES TO THE PLANTING BY CROSSING OUT THE LISTED PLANTS AND WRITING THE SUBSTITUTION BELOW IN RED INK. MAKE SURE THE PLANTS USED HAVE MATCHING WATER USE AND ARE ROUGHLY THE SAME SIZE (SEE SONOMA-MARIN SAVING WATER PARTNERSHIP).

**SEE SHEETS L3.0-3.2 FOR MATERIALS OPTIONS**
PLANTING LEGEND: APPLICANT FILL IN PLANT QUANTITY
APPLICANT INSTRUCTIONS:

1. Adjust layout of planting beds if changed on layout sheet 1.0.
2. Review irrigation value tables to adjust if areas of valve zones.
3. If areas exceed max subzone flow (3 GPM), divide into additional subzones and enter under subzone column.
4. If areas exceed max zone flow (7 GPM), add a valve and enter SF area next to new value number (11 or 17).
5. Draw out new subzone and/or valve zone area on plan in new color.
6. Add valve as needed to valve manifold.
7. Review irrigation legend and check off that all components are shown on adjusted plan.
8. Note any equipment substitutions.

IRRIGATION LEGEND

APPLICANT CHECK-OFF COMPONENTS

- SYMBOL
- MANUFACTURER
- MODEL
- NOTES / SIZE / COLOR

EXISTING WATER METER
PROVIDE STATIC PRESSURE VALVE
MED WATER USE

VALVE 1: SHRUBS
VALVE 2: SHRUBS
VALVE 3: TREES

LANDSCAPE PERMIT AREA

1. ADJUST LAYOUT OF PLANTING BEDS IF CHANGED ON LAYOUT SHEET 1.0.
2. REVIEW IRRIGATION VALUE TABLES TO ADJUST IF AREAS OF VALVE ZONES.
3. IF AREAS EXCEED MAX SUBZONE FLOW (3 GPM) DIVIDE INTO ADDITIONAL SUBZONES AND ENTER UNDER SUBZONE COLUMN.
4. IF AREAS EXCEED MAX ZONE FLOW (7 GPM) ADD A VALVE AND ENTER SF AREA NEXT TO NEW VALUE NUMBER (11 OR 17).
5. DRAW OUT NEW SUBZONE AND/OR VALVE ZONE AREA ON PLAN IN NEW COLOR.
6. ADD VALVE AS NEEDED TO VALVE MANIFOLD.
7. REVIEW IRRIGATION LEGEND AND CHECK OFF THAT ALL COMPONENTS ARE SHOWN ON ADJUSTED PLAN.
8. NOTE ANY EQUIPMENT SUBSTITUTIONS.

APPLICANT

NAME:

SITE ADDRESS:

DATE:

SHEET TITLE:
IRRIGATION PLAN
SONOMA-MARIN SAVING WATER PARTNERSHIP
SHEET OF:
L-2.1
RESIDENTIAL LANDSCAPE DESIGN TEMPLATE

PANORAMIC DESIGN GROUP

Landscape Architecture

625 2ND ST., STE 110
PETALUMA, CA 94952
TEL.: (707) 772-5062
EMAIL: landarches@gmail.com

SONOMA-MARIN SAVING WATER PARTNERSHIP
www.savingwaterpartnership.org

APPLICANT CHECK-OFF COMPONENTS

- SYMBOL
- COMPONENT
- MANUFACTURER
- MODEL
- NOTES / SIZE / COLOR

EXISTING WATER METER
PROVIDE STATIC PRESSURE VALVE
MED WATER USE

VALVE 1: SHRUBS
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IRRIGATION LEGEND

APPLICANT CHECK-OFF COMPONENTS

- SYMBOL
- MANUFACTURER
- MODEL
- NOTES / SIZE / COLOR

EXISTING WATER METER
PROVIDE STATIC PRESSURE VALVE
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VALVE 1: SHRUBS
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IRRIGATION LEGEND

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- SYMBOL
- COMPONENT
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PROVIDE STATIC PRESSURE VALVE
MED WATER USE

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6. ADD VALVE AS NEEDED TO VALVE MANIFOLD.
7. REVIEW IRRIGATION LEGEND AND CHECK OFF THAT ALL COMPONENTS ARE SHOWN ON ADJUSTED PLAN.
8. NOTE ANY EQUIPMENT SUBSTITUTIONS.
1. Design Strategy: These Details are provided to create options for permeable paving, retaining walls, and drainage strategies that promote stormwater infiltration into landscapes and creative drainage systems. These strategies help capture water, reduce run off of hot groundwater, and provide more soil moisture availability for landscape plants.

2. These details should be evaluated by the site engineer and adjusted to site conditions.

3. Paving depth, depth of base gravel, sub-base preparation, and concrete reinforcement should all be evaluated and adjusted as needed by a geotechnical engineer.

4. Soil type affects the performance of these details. Clay soils do not infiltrate well, so there is a need to evaluate whether the permeable paving details and appropriate for specific sites and adjust them as appropriate to protect buildings and other improvements.

5. Accessible paving is smooth, firm, and has a cross slope not to exceed 2%. Running slope should be 1.5% or less under drainage paving, ramps with handrails. See Title 24 of California Code for Accessibility Requirements and Standards.
1. MINIMUM SLOPE IN THE DIRECTION OF FLOW TO BE 0.5%. IF SLOPE EXCEEDS 2%, 2% STEP DOWN IN CASCADE PER DETAIL

2. NO WOOD CHIP OR BARK MULCH IN RAINWATER SYSTEMS TO AVOID CLOGGING

3. PONDING WITHIN 72 HRS FOR MOSQUITO CONTROL. TOTAL DEPTH INCLUDING PONDING IS 7". SEE DETAIL 9 FOR ROCK

4. SCARIFY & AMEND NATIVE SOIL AT BOTTOM OF RAIN GARDEN

5. INSTALL LEVEL SPREADER TO RETURN TO FINISH GRADE

6. SITE 10' AWAY FROM FOUNDATION.

7. RAINWATER GARDEN DESIGNED FOR CLAY PURPOSE OR ANY WARRANTY AS TO THE VALIDITY OF ANY

8. PONDING WITHIN 72 HRS FOR MOSQUITO

9. NOTE: WORKMAKER GARDEN DESIGNED FOR CLAY

DRAIN SLEEVE THRU PATH FROM RAINGARDEN

RAINGARDEN OVERFLOWING OVER PAVEMENT SECTION

RAINFALL FROM OVERFLOW MULCH CONNECTED TO

Cobble around outlet pipe [P1]

Min water level: 2" above pea gravel

Pea gravel structure at top grading

3" of pea gravel setting bed under pipe

4" storm drain pipe from roof downspout

Pea gravel outlet to return to 4" max ponding

Pea gravel outlet to return to 4" max ponding

NOTES:

1. RAINWATER GARDEN DESIGNED FOR CLAY, MAX PONDING 2" ABOVE PEA GRAVEL

2. NO WOOD CHIP OR BARK MULCH IN RAINWATER SYSTEMS TO AVOID CLOGGING

3. PONDING WITHIN 72 HRS FOR MOSQUITO CONTROL. TOTAL DEPTH INCLUDING PONDING IS 7". SEE DETAIL 9 FOR ROCK

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1. **Tree Planting**

   - **NOT TO SCALE**
   - **SECTION A**
   - **SECTION B**
   - **Diagram Details**
     - **Tree, Central Leader**
     - **Synthetic Strapping, Loop Around Central Leader Below First Branch, One Strap Per Stake, Attach to Stake by Sheet Metal Screws**
     - **Wood Stakes (2) Per Tree, Set Plumb, Outside of Rootball, Once We Prune, To Protect From Weather, Stakes Should Be Short Enough to Not Touch Branches. Stakes Shall Be Spaced Around Plant, Originating From the Central Leader.
     - **Watering Berm, 2 H**
     - **Topsoil, Native, Use Design For To Remove Compaction, Do Not Till**
     - **Crown of Rootball, Set 3" Above Finish Grade**
     - **Planting Pit Bankfull, Per Specs**
     - **Planting Pit, Scary, Edges, Insure Root Ball Rests On Top Soil and Will Not Sink Over Time**
     - **Watering Basin**
     - **Mulch, Per Specs, 2" Layer, Keep 4" Away From Trunk**
     - **Sheet Mulch, 2 Layers Cardboard, Or 3 Layers 3/4" of Compost Under Paper**
     - **Direction of Presuming Wind**
     - **Rootball, Scary, 1" In**

   **Notes**:
   1. Make Stakes As Short As Possible, But High Enough To Hold The Trees Upright Under Calm Conditions, The Tree Should Return To Vertical After The Wind Has Bent The Top.
   2. Support The Trunk At Just One Level, Near The Tops Of The Stakes.
   3. Provide Flexible Movement At The Point Where Strapping Wraps Locally Around The Central Leader Of The Tree.
   4. Take Care Not To Cause Rubbing Or Gridding Injuries.
   5. Stakes Are For Protection Of The Tree For A Period After Planting, Remove Stakes As Soon As Tree Establishes Its Root System Within 18 Months Max.

2. **Planting - Shrubs, Perennials, Grasses**

   - **NOT TO SCALE**
   - **Diagram Details**
     - **Plug: Tie Out Of Or Resulting From The Use Of This Landscape**
     - **Hold Harmless The Sonoma Marin Saving Water Partnership, Its Members (Sonoma County Water Agency, City of Santa Rosa, Marin Municipal Water District, Petaluma, CA 94952)**
     - **Email: landarches@gmail.com**

3. **Plug Planting**

   - **NOT TO SCALE**
   - **Diagram Details**
     - **Plug Firmly In Hole With Garden Soil, Not Mulch. Free Straw Mulch Or 1-2" Of Less Woody Mulch. Better In Certified Weed Bedding In Winter.**

4. **Groundcover Planting - Tri-Spacing**

   - **NOT TO SCALE**
   - **Diagram Details**
     - **Edge Of Planting Area Translucent C.C. Plant Spacing**
     - **Sheet Mulch As Noted On Plans**

5. **Sheet Mulch**

   - **NOT TO SCALE**
   - **Diagram Details**

6. **Planting Pit and Watering Berm**

   - **NOT TO SCALE**
   - **Diagram Details**
     - **Tabla de Plantas**
     - **Container Size**
     - **Plant Diameter**
     - **Watering Berm Diameter**
     - **Watering Berm Height**

<table>
<thead>
<tr>
<th>Container Size</th>
<th>Plant Diameter</th>
<th>Watering Berm Diameter</th>
<th>Watering Berm Height</th>
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</thead>
<tbody>
<tr>
<td>1 Gal Can</td>
<td>12&quot; Min</td>
<td>10&quot; Min</td>
<td>6&quot; Min</td>
</tr>
<tr>
<td>5 Gal Can</td>
<td>30&quot; Min</td>
<td>48&quot; Min</td>
<td>30&quot; Min</td>
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<tr>
<td>15 Gal Can</td>
<td>3&quot; Min</td>
<td>9&quot; Min</td>
<td>3&quot; Min</td>
</tr>
<tr>
<td>24&quot; Box</td>
<td>5&quot; Min</td>
<td>8&quot; Min</td>
<td>5&quot; Min</td>
</tr>
</tbody>
</table>

**Diagram Sheets**

- **Plan A**
- **Plan B**
- **Section A**
- **Section B**
- **Sheet Mulch**
- **Planting Details**
- **Planting Pit and Watering Berm Table**
- **Watering Berm**
- **Tree Planting**
- **Groundcover Planting - Tri-Spacing**
- **Sheet Mulch**
- **Planting Pit and Watering Berm**

**Details**

- **1. Plant Plug Straight Up With Garden Soil, Not Mulch.**
- **2. Plug: Tie Out Of Or Resulting From The Use Of This Landscape**
- **Hold Harmless The Sonoma Marin Saving Water Partnership, Its Members (Sonoma County Water Agency, City of Santa Rosa, Marin Municipal Water District, Petaluma, CA 94952)**
- **Email: landarches@gmail.com**

**License Agreement**

- **Residential Landscape Design Template**
- **Copyright © 2021, All Rights Reserved.**
- **Sonoma Marin Saving Water Partnership**
- **www.savingwaterpartnership.org**
- **Telp: (707) 772-5062**

**Acknowledgements**

- **District, North Marin Water District, City of Rohnert Park, Sonoma Valley of the Moon Water District, Town of Cotati, City of Petaluma, CA 94952**
- **Names: ________________________**

LANDSCAPE TO LAUNDRY SYSTEM OVERVIEW:

Graywater systems are easy to install for the do-it-yourselfer or a necessary component, allowing you to send discharge water back to the sewer system when needed or be able to redirect it. Outlets covered by at least 2-inches of mulch, rock, or a shield (e.g. valve box lid) Graywater diverted to landscape shall not contain hazardous chemicals.

APPLICANT INFORMATION:

NOTIFY ENFORCING AGENCY

CALCULATIONS SECTION

1. Estimate Daily Domestic Production

2. Determine Minimum Mulch Basin Size

3. Install Graywater Supply Line

4. Design Cleanout System

5. Develop a Site Plan Illustrating the Following:

- Required setbacks, proposed mulch basins, valve locations, piping diagram, and tree and plant locations to benefit from graywater.

- Landscape to laundry systems are easily suitable for decreased piping needs or split pipes.

- Faucets should be labeled every 5 feet as "Caution: Nonpotable Graywater. Do Not Drink."

- **Increase distance if adjacent properly installed graywater system.

- Fruits and vegetables plants are safe to irrigate with graywater so long as the edible portion doesn't touch the ground and/or mulch.

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LANDSCAPE TO LAUNDRY SYSTEM OVERVIEW:

Laundry to landscape graywater systems are easy to install for the do-it-yourselfer or a necessary component, allowing you to send discharge water back to the sewer system when needed or be able to redirect it. Outlets covered by at least 2-inches of mulch, rock, or a shield (e.g. valve box lid) Graywater diverted to landscape shall not contain hazardous chemicals.

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LANDSCAPE VIA MULCH BASIN OUTLETS. PLUMBING FOR GRAYWATER SOURCES MUST BE PERENNIAL PLANTS. THIS IS A SIMPLE SYSTEM AND DOES NOT REQUIRE ELECTRICITY OR A PUMP. FROM SHOWER DRAINS OR SINKS, IT DOES REQUIRE A SIMPLE OVER-THE-COUNTER PLUMBING BRANCHED DRAIN GRAYWATER REQUIREMENTS TO COMPLY WITH CALIFORNIA PLUMBING CODE (HOWEVER, THE LANDSCAPE AREA MUST BE LOWER IN ELEVATION THAN THE GRAYWATER SOURCE, PROXIMITY, A LAUNDRY MACHINE CAN ALSO BE ADDED INTO THE DISTRIBUTION PIPING. THIS SEPARATED FROM BLACK WATER SOURCES (TOILET, KITCHEN SINK). IF POSSIBLE DUE TO CLOSE SEPARATED PLUMBING IN PLAN SETS AND STUB OUT PIPING FOR EXTERIOR GRAYWATER SYSTEM, THE SYSTEM SHALL HAVE A DISCHARGE CAPACITY OF 250 GALLONS PER DAY OR LESS POST OPERATION AND MAINTENANCE MANUAL FOLLOW ALL APPLICABLE CODE OR LAWS MINIMIZE CONTACT WITH HUMANS AND ANIMALS NO PONDING OR RUNOFF BE ABLE TO REDIRECT TO SEWER DIRECT AND CONTAIN GRAYWATER WITHIN MULCH BASINS (IRRIGATION OR DISPOSAL FIELD) NOTIFY ENFORCING AGENCY AND SECURE PERMIT FOR INTERIOR PLUMBING COMPONENTS. INSTALLATION DIFFICULTY DEPENDS ON THE EXISTING HOUSEHOLD PLUMBING, ACCESS TO PIPES HAS NO MOVING PARTS TO BREAK.

INSTALLATION & DESIGN CONSIDERATIONS WITH A HIGHER POTENTIAL VOLUME OF WATER COMING FROM A SHOWER AND SINK, A BRANCHED DRAIN SYSTEM IS BEST SUITED FOR IRRIGATING TREES, BUSHES, SHRUBS, AND OTHER LARGER PERENNIAL PLANTS. THIS IS A SIMPLE SYSTEM AND DOES NOT REQUIRE ELECTRICITY OR A PUMP. HOWEVER, THE LANDSCAPE AREA MUST BE LOWER IN ELEVATION THAN THE GRAYWATER SOURCE, AND THE ENTIRE SYSTEM MUST HAVE A DOWNWARD SLOPE OF 2% (1/2 INCH PER FOOT) TO ENSURE EVEN DISTRIBUTION. INSTALLATION DIFFICULTY DEPENDS ON THE EXISTING HOUSEHOLD PLUMBING, ACCESS TO PIPES AND THE SLOPE OF LANDSCAPE. WHILE OUTDOOR COMPONENTS CAN BE INSTALLED BY A HOMEOWNER, A PROFESSIONAL PLUMBER IS NEEDED FOR INSTALLATION OF 3-WAY DIVERTER VALVE ON THE SEWER LINE. THE HOMEOWNER HAS THE OPTION TO INSTALL AN ACTUATOR, WHICH ALLOWS EASY DIVERSION OF GRAYWATER BETWEEN LANDSCAPE AND THE SEWER LINE.

SYSTEM COSTS & REBATES: THE COSTS CAN RANGE FROM A THOUSAND DOLLARS WHEN PRIMARILY INSTALLED BY A HOMEOWNER TO SEVERAL THOUSAND IF INSTALLED BY A PROFESSIONAL. WHILE MORE COSTLY TO CONSTRUCT THAN A LAUNDRY TO LANDSCAPE SYSTEM, A BRANCHED DRAIN SYSTEM REQUIRES LITTLE MAINTENANCE AND LASTS A LONG TIME. SINCE IT HAS NO MOVING PARTS TO BREAK.

RECOMMENDED SOAPS: MORE SOAPS ARE COMING OUT ALL THE TIME, BUT IT IS ALWAYS IMPORTANT TO READ THE INGREDIENTS LIST BELOW/HERE/EVERY/THAT ARE KNOWN TO BE GRAYWATER COMPLIANT: - OASIS - ALL-PURPOSE CLEANER FOR HAND-WASHING, BODY & SHAMPOO - DR. BRONNER’S MAGIC SOAPS (LIQUID) - AUBREY ORGANICS SHAMPOOS

APPLICANT INSTRUCTIONS:
1. ESTIMATE YOUR GRAYWATER SUPPLY USING THE CALCULATION SECTION THIS SHEET.
2. ESTIMATE MULCH BASIN SIZES, AREA AND VOLUME USING TABLE 3.
3. DEVELOP A GRAYWATER SITE PLAN SHOWING THE PIPING AND SIZE OF THE PIPING SYSTEM PERMITTED FOR THE PIPE PERMIT. SHOW ALL THE PLAN ELEMENTS LISTED IN #1. GRAYWATER PLAN BELOW. REVIEW THE SAMPLE PLAN SHOWN IN DETAIL #1 THIS SHEET. SHOW TREE AND PLANT LOCATIONS TO BENEFIT FROM GRAYWATER.
4. SUBMIT FOR BUILDING PERMIT EITHER WITH FULL SITE DRAWINGS OR AS A SEPARATE SUBMITTAL.
5. REVIEW PIPE AND VALVE LOCATIONS WITH ARCHITECT, ENGINEER AND CONTRACTOR TO INSURE THERE ARE NO CONFLICTS WITH OTHER SITE ELEMENTS. CONFIRM COMPONENTS TO BE INSTALLED AT TIME OF FOUNDATION SYSTEM CONSTRUCTION, INCLUDING PIPE STUB OUT FOR EXTERIOR GRAYWATER SYSTEM DEVELOPMENT.

APPLICATION INFORMATION:
BRANCHED DRAIN SYSTEM OVERVIEW A BRANCHED DRAIN SYSTEM DISTRIBUTES GRAYWATER FROM SHOWERS AND/OR BATHROOM SINKS THROUGH A SERIES OF BRANCHED 1.5-INCH OR 2-INCH PIPES AND IS DISPERSED INTO THE LANDSCAPES VIA MULCH BASIN OUTLETS. PLUMBING FOR GRAYWATER SOURCES MUST BE SEPARATED FROM BLACK WATER SOURCES (TOILET, KITCHEN SINK) IF POSSIBLE DUE TO CLOSE PROXIMITY, A LAUNDRY MACHINE CAN ALSO BE ADDED INTO THE DISTRIBUTION PIPING. THIS SYSTEM IS DRIVEN BY SLOPES AND GRAVITY FLOW AS NO PRESSURE IS PROVIDED BY A WASHING MACHINE OR ANY OTHER PUMP AS THIS SYSTEM REQUIRE CUTTING INTO EXISTING SEWER PIPES FROM SHOWER DRAINS OR SINKS. IT DOES REQUIRE A SIMPLE OVER-THE-COUNTER PLUMBING PLUMBING PERMIT. IF INSTALLING AS PART OF NEW BUILDING CONSTRUCTION OR REMODEL, SHOW SEPARATED PLUMBING IN PLAN SETS AND STUB OUT PIPING FOR EXTERIOR GRAYWATER SYSTEM COMPONENTS DURING BUILDING CONSTRUCTION.

BRANCHED DRAIN GRAYWATER REQUIREMENTS TO COMPLY WITH CALIFORNIA PLUMBING CODE | CERTIFICATIONS:
O NOTIFY ENFORCING AGENCY AND SECURE PERMIT FOR INTERIOR PLUMBING COMPONENTS
O BE ABLE TO REDIRECT TO SEWER
O NO PONDING OR RUNOFF
O CONTAIN GRAYWATER ON SITE
O DIRECT AND CONTAIN GRAYWATER WITHIN MULCH BASINS (IRRIGATION OR DISPOSAL FIELD) BELOW THE GROUND SURFACE
O NO PONDING OR RUNOFF
O OUTLINES COVERED AT LEAST 2 INCHES OF MULCH, ROCK, OR A SHIELD (E.G. VALVE BOX LID)
O MINIMIZE CONTACT WITH HUMANS AND ANIMALS
O DIVERT WATER TO THE SEWER IF IT CONTAINS DIAPERS, OIL, OTHER CHEMICALS
O GRAYWATER DIVERTED TO LANDSCAPE SHALL NOT CONTAIN HAZARDOUS CHEMICALS
O FOLLOW ALL APPLICABLE CODE OR LAWS
O POST OPERATION AND MAINTENANCE MANUAL
O THE SYSTEM SHALL HAVE A DISCHARGE CAPACITY OF 250 GALLONS PER DAY OR LESS

CALCULATIONS SHEET:
1. Estimate Daily Water Production:

| Calculation | Equation | Methodology | Scenario
|-------------|----------|-------------|--------|
| Daily Water Production | \( \text{Daily Water Production} = \text{Shower Use} + \text{Sink Use} + \text{Laundry Use} \) | Standard | Standard
| | | | 1.0

2. Estimate Minimum Mulch Basin Size:

| Calculation | Equation | Methodology | Scenario
|-------------|----------|-------------|--------|
| Minimum Mulch Basin Size | \( \text{Minimum Mulch Basin Size} = \text{Daily Water Production} \times \text{Average Water Use} \times 0.5 \) | Standard | Standard
| | | | 1.0

3. Determine Water Use:

| Calculation | Equation | Methodology | Scenario
|-------------|----------|-------------|--------|
| Water Use | \( \text{Water Use} = \text{Average Water Use} \times \text{Number of Days} \) | Standard | Standard
| | | | 1.0

4. Determine Graywater Supply:

| Calculation | Equation | Methodology | Scenario
|-------------|----------|-------------|--------|
| Graywater Supply | \( \text{Graywater Supply} = \text{Daily Water Production} - \text{Normal Water Use} \) | Standard | Standard
| | | | 1.0

5. Determine Graywater Distribution:

| Calculation | Equation | Methodology | Scenario
|-------------|----------|-------------|--------|
| Graywater Distribution | \( \text{Graywater Distribution} = \text{Graywater Supply} \times \text{Graywater Distribution Factor} \) | Standard | Standard
| | | | 1.0

6. Determine Graywater Volume:

| Calculation | Equation | Methodology | Scenario
|-------------|----------|-------------|--------|
| Graywater Volume | \( \text{Graywater Volume} = \text{Graywater Supply} \times \text{Graywater Volume Factor} \) | Standard | Standard
| | | | 1.0

7. Determine Graywater Size:

| Calculation | Equation | Methodology | Scenario
|-------------|----------|-------------|--------|
| Graywater Size | \( \text{Graywater Size} = \text{Graywater Volume} \times \text{Graywater Size Factor} \) | Standard | Standard
| | | | 1.0

APPLICATION INSTRUCTIONS:
1. ESTIMATE YOUR GRAYWATER SUPPLY USING THE CALCULATION SECTION THIS SHEET.
2. ESTIMATE MULCH BASIN SIZES, AREA AND VOLUME USING TABLE 3.
3. DEVELOP A GRAYWATER SITE PLAN SHOWING THE PIPING AND SIZE OF THE PIPING SYSTEM PERMITTED FOR THE PIPE PERMIT. SHOW ALL THE PLAN ELEMENTS LISTED IN #1. GRAYWATER PLAN BELOW. REVIEW THE SAMPLE PLAN SHOWN IN DETAIL #1 THIS SHEET. SHOW TREE AND PLANT LOCATIONS TO BENEFIT FROM GRAYWATER.
4. SUBMIT FOR BUILDING PERMIT EITHER WITH FULL SITE DRAWINGS OR AS A SEPARATE SUBMITTAL.
5. REVIEW PIPE AND VALVE LOCATIONS WITH ARCHITECT, ENGINEER AND CONTRACTOR TO INSURE THERE ARE NO CONFLICTS WITH OTHER SITE ELEMENTS. CONFIRM COMPONENTS TO BE INSTALLED AT TIME OF FOUNDATION SYSTEM CONSTRUCTION, INCLUDING PIPE STUB OUT FOR EXTERIOR GRAYWATER SYSTEM DEVELOPMENT.

RECOMMENDED SOAPS:
- OASIS - ALL-PURPOSE CLEANER FOR HAND-WASHING, BODY & SHAMPOO
- DR. BRONNER’S MAGIC SOAPS (LIQUID)
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1. A rainwater catchment system may not require a building permit provided all of the following are met (California Plumbing Code 1601.3(I):
   - Maximum storage capacity of 5,000 gallons
   - Ratio of height to diameter or width does not exceed 2 to 1
   - The rainwater harvesting system and domestic water system are not disturbed
   - Maximum storage capacity of 5,000 gallons
   - Ratio of height to diameter or width does not exceed 2 to 1

2. Pump and pressure tank likely require inexpensive, over-the-counter, electrical permit.

3. If city water plumbed to tank for make up using float valve or manually operated valve, then a permit is required and an air gap is required.

4. Tanks can be daisy chained at point "D" using flexible pipe only to reduce chance of leakage in earthquakes.

- Water will be used for outdoor non-spray irrigation.

NOTES:
- Ratio of height to diameter or width does not exceed 2 to 1.
- Between rainwater harvesting system and domestic water system.
- Maximum storage capacity of 5,000 gallons.