COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT

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Rooftop Rainwater Harvesting Permit Application & Inspection Checklist

A building permit is not required for a rainwater harvesting system if all of the following conditions are met:

- The rainwater harvesting system is used only for outdoor, non-spray irrigation.
- The cistern has a maximum capacity of less than 5,000 gallons and is supported directly on grade.
- The ratio of height to diameter (or width) of the cistern does not exceed 2 to 1.
- The rainwater harvesting system does not require electrical power.
- The rainwater harvesting system has no makeup water supply connection from any potable or alternative water source.

Completed applications are accepted Monday- Thursday 8:00am – 11:30am, 1:00pm – 2:30pm by the Building Department located at 701 Ocean St. Santa Cruz, Ca. A total permit fee of $390.90[1] shall accompany the application. Questions may be directed in person or by phone at (831) 454-2260. This checklist is available at http://www.sccoplanning.com/.

An application will be accepted only after completion of the items on this checklist are verified by a Building Permit Specialist. The contents of this checklist are the minimum compliance requirements in Title 24, Part 5, Chapter 17 of the California Plumbing Code (CPC).

Minimum Submittals for a Building Permit Application

Three (3) complete sets of proposed construction plans and information described below:

1. **Building Permit Application:** Complete all required fields and answer all questions. In the project description section, list the intended use(s) of harvested rainwater. Use blue or black ink only.

2. **Property Location/Vicinity Map:** Depict nearest street intersections and north arrow. The property location/vicinity map may be placed on the site plan (see item #3)

3. **Site Plan:** (Minimum scale 1"-20') to include:
   - **a.** North arrow
   - **b.** Official property address and Assessor's Parcel Number (APN)
   - **c.** Parcel lot dimensions and boundaries
   - **d.** Easements including any and all encumbrances; access, public utility, private, etc.
   - **e.** Existing and proposed impervious areas (building rooftops, driveways, sidewalks, etc.)
   - **f.** Parking layout *(if impacted by cistern placement)*
   - **g.** Location of potable water meter *(if applicable)*
   - **h.** Location of proposed rainwater catchment (collection) surface and total rainwater catchment area (ft^2)
   - **i.** Location and height of trees adjacent to the proposed rainwater catchment surface
   - **j.** Existing or proposed location of rainwater harvesting cistern(s)
   - **k.** Approximate slope of landscaped and/or impervious areas adjacent to the existing or proposed location of the cistern(s)
   - **l.** Location of landscaped area to be irrigated with rainwater *(if applicable)*
   - **m.** Flood zones and stormwater drainage discharges on the property *(If applicable: path of seasonal or permanent water flows, stormwater inlets, building downspouts, etc.)*

1. Fees are subject to change and are updated annually in the month of August.

4. **Rainwater Harvesting Plan** (Minimum scale 1"-20') to include:
    - **a.** North arrow
    - **b.** Official property address and APN
    - **c.** List all intended uses of harvested rainwater (irrigation, toilet flushing, clothes washing, etc.)

    Conveyance & Filtration

    The design and size of rainwater conveyance system materials shall comply with Ch. 11 of the CPC. All materials shall be listed for the intended use.

    - **d.** Location and direction of flow of rainwater harvesting conveyance (drainage) system to the cistern. Indicate the material type and size of gutters, downspouts, and conveyance piping to the cistern inlet.
    - **e.** Location and type of required debris excluder and/or roof washer/first-flush device. Attach manufacturer's specifications.

    Cistern

    - **f.** Provide information about the total capacity (gallons) of cistern(s), height, and diameter or width dimensions. Attach cistern manufacturer's specifications.
    - **g.** Location of cistern(s)
        i. If the cistern is to be buried, submit additional construction plans described in section 7.
        ii. If the cistern is above-ground (on grade), more than 5,000 gallons, or the ratio of height to diameter does exceed 2 to 1, submit additional construction plans described in section 7.
        iii. If the cistern is above-ground (on grade), less than 5,000 gallons, and the ratio of height to diameter does not exceed 2 to 1, provide information about:
            - The material type and depth of foundation pad or platform that will accommodate the load of the cistern when full.
            - Screens (vegetative or structural) to shield the cistern from direct sunlight. Indicate height *(if applicable)*

    Cistern Plumbing Details

    All plumbing work must be done in accordance with the CPC. All plumbing materials must be listed. The plumbing system design must include:

    - **h.** Locations of all plumbing equipment entering and existing the cistern(s), including:
        - Pipes for the cistern inlet, outlet, and overflow. Indicate pipe material and size. *(Note: The size of the overflow outlet must be equal to or greater than the aggregate size of all inlet pipes directing rainwater into the cistern).*
        - Location of valves and unions
        - Flow direction, location, material type, and size of rainwater pipes supplying non-potable fixtures listed in building application project description and item 4c.
        - Location of pump and controls. Attach manufacturer's specifications. *(Note: Pumps supplying rainwater for indoor, non-potable uses shall be capable of delivering a minimum of 15 PSI residual pressure at the highest or most remote outlet served.)*
        - Location of filter(s) *(Note: 100 micron minimum filtration required)*
        - If potable water is used to recharge the cistern, the plan must indicate the location and height of an air gap *(Minimum air gap length shall be twice the diameter of the potable water supply pipe, measured from the top of the overflow pipe to the bottom of the potable water pipe inlet)*

Cistern Overflow

i. Indicate how the overflow water from the cistern will be directed to minimize stormwater run-off from the property. Overflow to rain gardens, swales, dry creek beds, or other permeable landscaping is encouraged.

(Note: If the project involves the replacement or addition of more than 5,000ft^2 of impervious area, submit a stormwater drainage plan by a licensed civil engineer. Projects less than 5,000ft^2 shall show best management practices on the plan set. Additional stormwater information: http://www.dpw.co.santa-cruz.ca.us/npdes/Home.html

5. Plumbing Plan Diagram for Indoor, Non-Potable Uses of Rainwater

Required only when existing plumbing is altered or new plumbing is installed to supply rainwater to toilets, urinals and trap primers clothes washers, and other indoor, non-potable uses. All plumbing work must be done in accordance with the CPC. All plumbing materials must be listed. The plumbing plan diagram must include:

- **a.** Floor plan (Indicate the rooms in the building where rainwater will supply fixtures)
- **b.** Location of fixtures that will be supplied with rainwater
- **c.** Location of existing potable water lines
- **d.** Flow direction from the cistern and location of rainwater distribution pipes. Indicate material and size.
- **e.** Location and type of any disinfection systems if proposed (chlorination, ozone, or Ultra-violet) – Attach manufacturer's specifications.
- **f.** Location of valves
- **g.** Location of permanent caps on potable water pipes.
- **h.** Location of a reduced principle backflow preventer. Attach manufacturer's specifications *(Required if the design includes a cross connection between a rainwater pipe and a potable water pipe used for make-up water supply-)*

6. Electrical Plan Diagram

Pumps and controls that plug into existing electrical outlets do not require an electrical plan.
All electrical work must be done in accordance with the California Electrical Code. The electrical diagram must include the locations of any and all electrical equipment installed for the rainwater harvesting system, including but not limited to:

- **a.** Dedicated electrical outlets (indicate voltage)
- **b.** Pumps
- **c.** Controls
- **d.** Float switches
- **e.** Solenoid Valves
- **f.** Over current protection

7. Construction Plans

Required for cisterns > 5,000 gallons and > 2:1 height to width ratio, underground cisterns, and tanks located on slopes)

Above Ground Cisterns

Submit all applicable:

- Foundation plans
- Footing details
- Details for engineered support and anchoring systems
- Concrete retaining structure details *(applicable to cisterns cited on slopes)*

Below Ground Cisterns

Submit drawings demonstrating that:

- Holding tank covers are capable of supporting an earth load of not less than 300 lbs/ft^2
- The combined weight of the tank (when empty) and hold down system meets or exceeds the buoyancy force of the tank.
- A manhole is present that is no less than 24" wide
- The manhole opening is no less than 4" above the surrounding grade that slopes away from the manhole.
- Attach a section of the excavation and indicate the depth and type of backfill material to be used.

8. **Operations and Maintenance Manual**

   Maintenance of the rainwater harvesting system is the responsibility of the property owner. All rainwater harvesting system components shall be inspected and maintained according to the system's operations and maintenance manual and component manufacturer's recommendations. The building inspector will ask to see an operation and maintenance manual at the time of the system inspection. *(See Inspection Checklist below for specific operations and maintenance manual requirements)*

9. **Affidavit for Abandonment**

   If the owner of a rainwater harvesting system elects to cease use of, or fails to properly maintain the system, they shall abandon the system. Rainwater harvesting system abandonment and potable water installations require permit, inspection(s) and approval(s). To abandon the system, one shall:
   Remove the system entirely:

   a. Replace the rainwater harvesting pipe system with an approved potable water supply pipe system. Where in existing potable pipe system is already in place, fixtures may be reconnected to the existing potable pipe system, and

   b. Record the abandonment with *the County Planning Department* staff.

Summary of minimum required attachments

- Manufacturer specifications for debris screens and/or first flush devices
- Manufacturer specifications for cistern
- Manufacturer specifications for pump and controls
- Manufacturer specifications for post-pump filtration
- Manufacturer specifications for disinfection systems *(if applicable)*

Building Inspection Checklist

The following checklist describes items required for a rainwater harvesting system to pass a building permit inspection. These items are in addition to the required items in the rainwater harvesting system plan submitted with the building permit application.

Labels & Safety:

- Cisterns must be marked with the words 'DANGER-CONFINED SPACE'
- Cistern manholes must have a locking device.
- Cisterns must be marked with the words 'NONPOTABLE RAINWATER'
- At each toilet and urinal supplied with rainwater, a sign must be posted with the following text: 'TO CONSERVE WATER, THIS BUILDING USES RAINWATER TO FLUSH TOILETS AND URINALS'
- Equipment rooms containing non-potable rainwater harvesting equipment must have a visible sign posted in 1" letters with the following text: CAUTION NONPOTABLE WATER, DO NOT DRINK. DO NOT CONNECT TO DRINKING WATER SYSTEM. NOTICE: CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM'
- Hose bibs must be marked with the words 'CAUTION, NONPOTABLE WATER, DO NOT DRINK and the following symbol

- Piping shall be purple and marked with yellow uppercase lettering, marked with the words 'CATION NONPOTABLE RAINWATER DO NOT DRINK'.

Screens & Filters

- Tree branches must be trimmed back sufficiently to not drop debris onto the roof catchment surface.
- Gutters must be clean and free of debris.
- Debris excluder and/or first-flush device must be functioning properly.
- Screens with an aperture not greater than 1/16"must be installed on overflow pipes.

Rainwater Harvesting Cistern & Plumbing

- All plumbing components must be water-tight.
- All piping shall be pressure tested at working pressure.
- Rainwater conveyance pipes entering the cistern should terminate in a return bend elbow pointing upward at the bottom of the tank, or an equivalent calming device.
- Cistern foundation and overflow is properly constructed to prevent erosion around the base of the cistern and the surrounding landscape.

Operations and Maintenance Manual

The manual shall include:

- As-built diagrams of the entire rainwater harvesting system showing the location of system components.
- Instructions on operating and maintaining the system to obtain optimal water quality.
- Details on startup, shutdown, and deactivating the system for maintenance, repair, and other purposes.
- Contact information for the installer and/or manufacturer.
- Copies of manufacturer warranties and operation and maintenance information.
- Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
- Testing, inspection, and maintenance frequencies following the table below:

Description	Minimum Frequency

Inspect and clean all filter and screens, and repla necessary)	Every 3 months
Inspect and clear debris from roof, gutters, downspouts, and roof washers/first flush device	Every 3-6 months
Remove tree branches and vegetation overhangi collection surfaces	As needed
Inspect pump systems and valves and verify oper	After initial installation and every 12 months the
Clear debris from and inspect cistern tanks and l devices	After initial installation and every 12 months the
Inspect caution labels and signage	After initial installation and every 12 months the
Backflow and cross connection test (dual plumbi systems only)	After initial installation and every 12 months the