

Drywell Infiltration Systems

Treatment and Infiltration Through the Vadose Zone

Presenters:

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Technical Marketing Engineers

Agenda

Introductions

Infiltration Drivers

Drywell Systems

Drywell Benefits and Versatility

Design Considerations

Installation and Maintenance

Drywell Applications



Infiltration Drivers

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

885 Aerovista Place, Suite 101, California 95670-6114
Phone (805) 549-3147 • Fax (805) 543-0397
[Central Coast Water Board Website](http://www.ccrwb.org)

**ORDER R3-2019-0073
NPDES NO. CA0049981**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
AND WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF SALINAS
MUNICIPAL STORMWATER DISCHARGES**

The municipal discharges of stormwater and non-stormwater by the City of Salinas from all municipal separate storm sewer system (MS4) discharge points within the City of Salinas are subject to waste discharge requirements as set forth in this Order.

Discharger – City of Salinas
Name of Facility – City of Salinas MS4
Facility Address – 200 Lincoln Avenue, Salinas, CA 93901, Monterey County
MS4 Classification – The United States Environmental Protection Agency (USEPA) and the Central Coast Regional Water Quality Control Board (Central Coast Water Board) have classified the City of Salinas MS4 as a medium MS4 pursuant to 40 Code of Federal Regulations section 122.2.
Order Adoption Date – September 20, 2019
Order Effective Date – October 1, 2019
Order Expiration Date – September 30, 2024

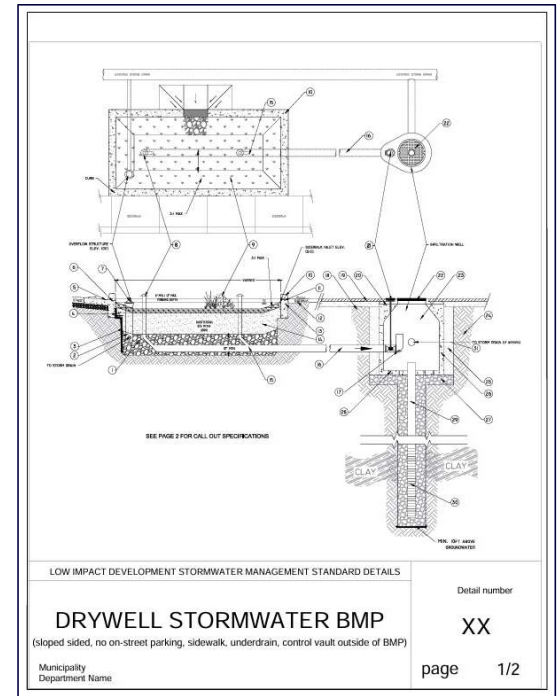
Report of Waste Discharge File Date – The Discharger shall file a Report of Waste Discharge as an application for reissuance of waste discharge requirements in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than 180 days prior to the Order expiration date.

Terms and Conditions for Expired Order – In accordance with section 2235.4 of Title 23 of the California Code of Regulations, the terms and conditions of an expired permit are automatically continued pending issuance of a new permit if all requirements of the federal NPDES regulations regarding continuation of expired permits are complied with.

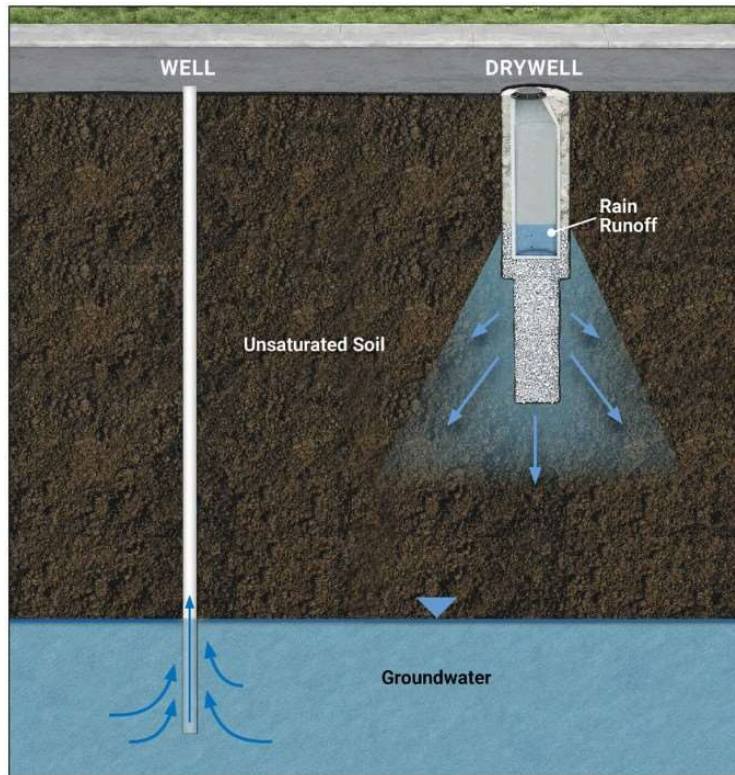
**STORMWATER TECHNICAL GUIDE
FOR LOW IMPACT DEVELOPMENT**

Compliance with
Stormwater
Post-Construction
Requirements for the
Monterey Regional Stormwater Management Program (MRSWMP)

3rd Edition
May 1, 2020



Stormwater Treatment Through The Vadose Zone

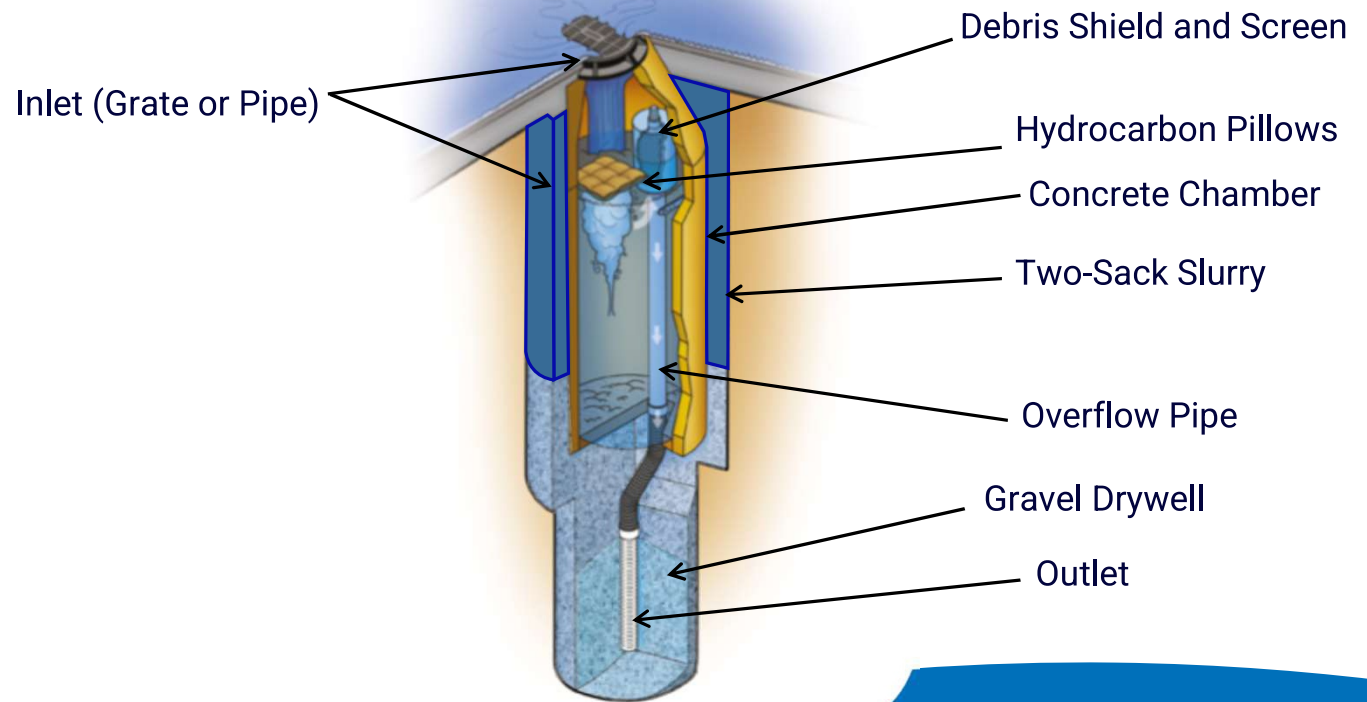


- Filtration
- Adsorption
- Absorption
- Residence Time

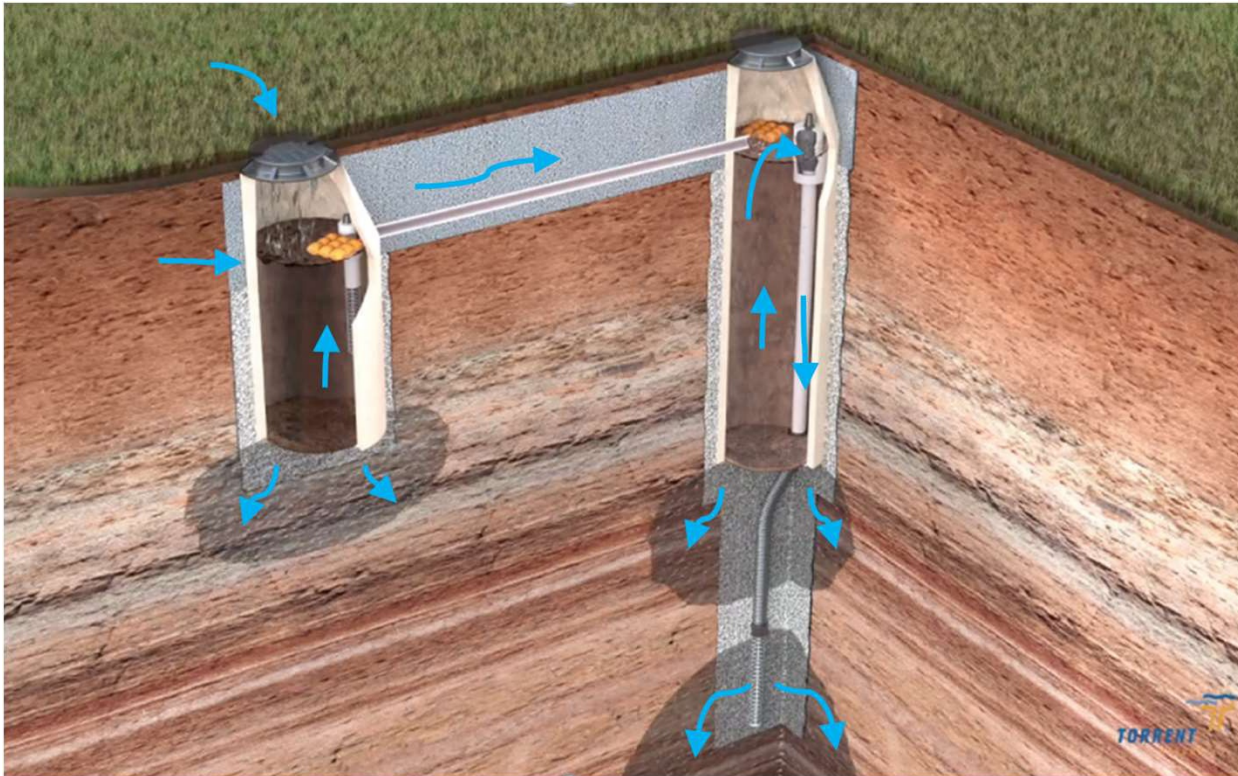
Drywells – Generic Vs Manufactured

Important Drywell Elements:

- Pre-treatment settling chamber
- Hydrocarbon removal
- Easy maintenance
- Protection of the zone of infiltration

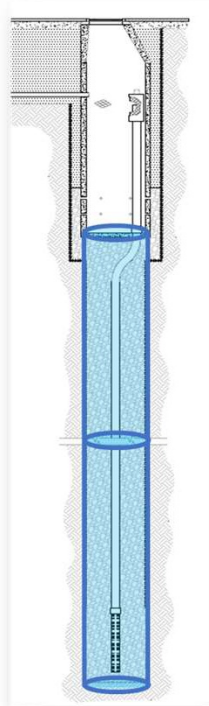


Drywells in Action

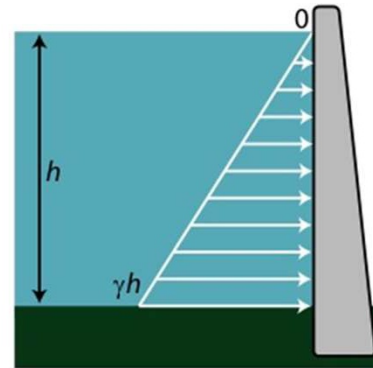


Drywell Benefits

Minimal Footprint



High Infiltration Rates



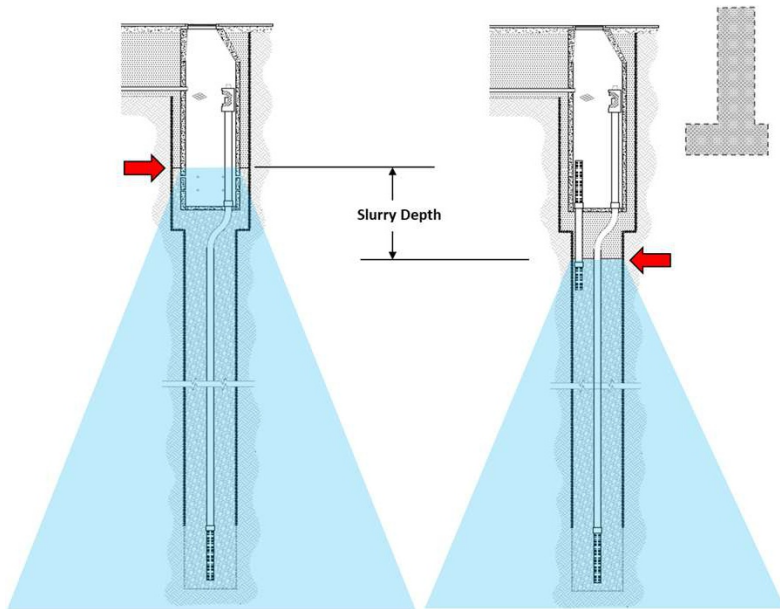
Average Rates:

- 0.20+ CFS per Drywell
- More than 8,000 gallons (1,000 CF) per hour
- More than 387,000 gallons (51,000 CF or 1.2 ac-ft) in 48 hours



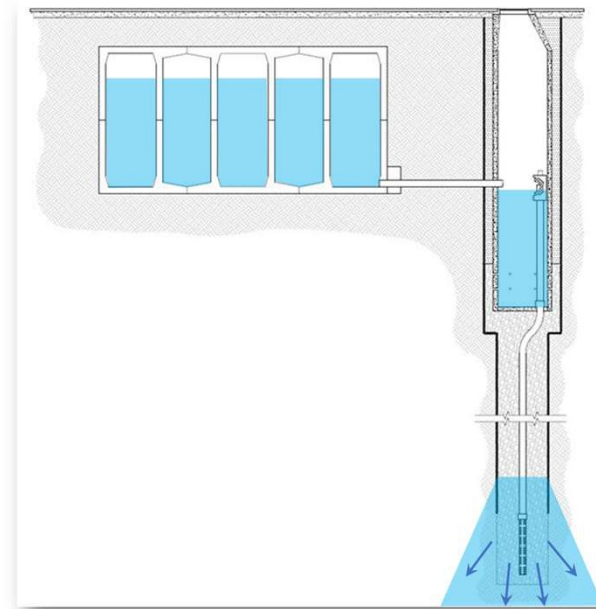
Drywell Versatility

Controllable Depth to Infiltration



- Targeted infiltration to meet site constraints
- Proximity to structures
- Contaminated soils

Integration With Detention



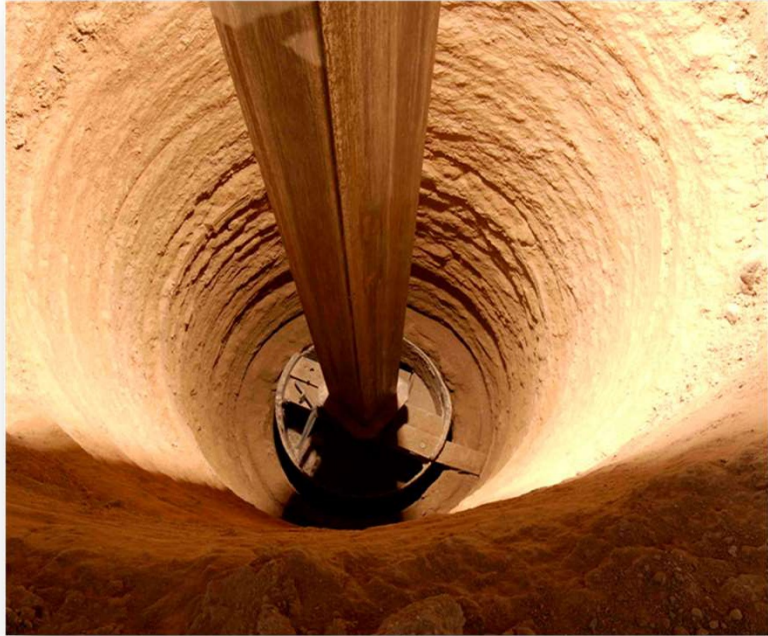
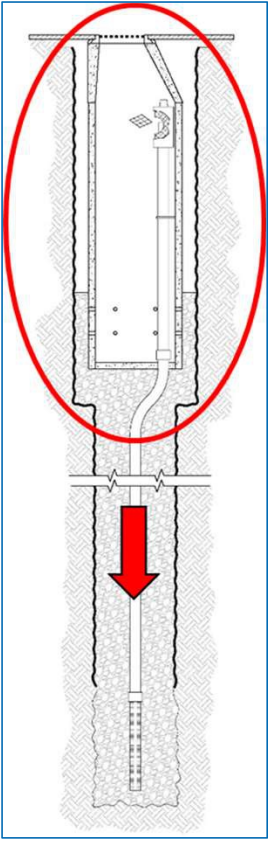
- Integration of shallow and deep systems
- Detention of large design storm volumes
- Optimize with deep infiltration

Drywell Installation

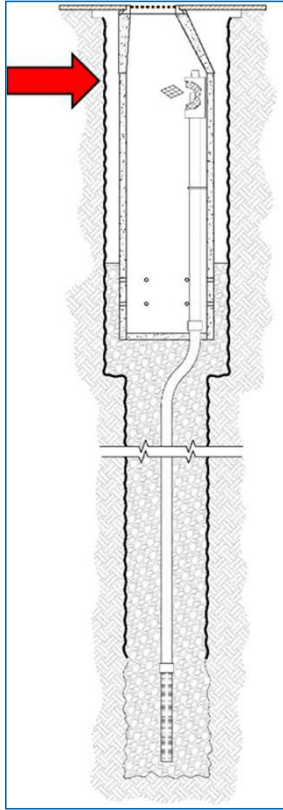
- Mobilize after rough grading
- 2-3 days to drill and install



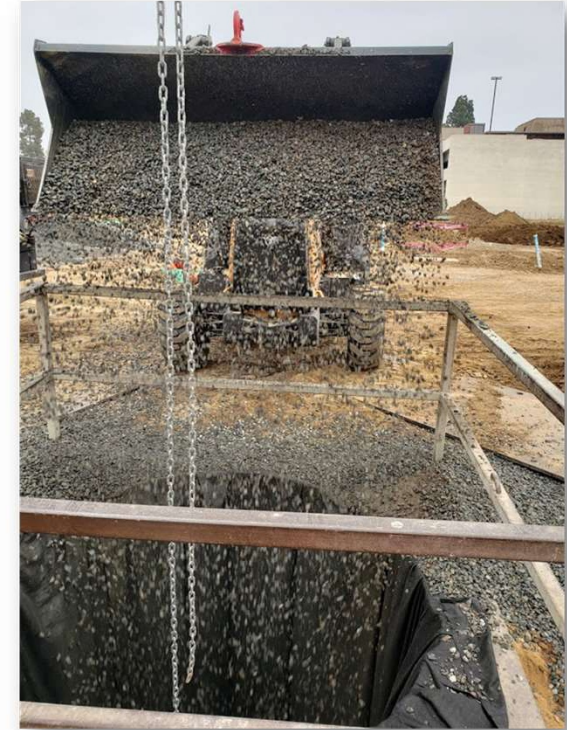
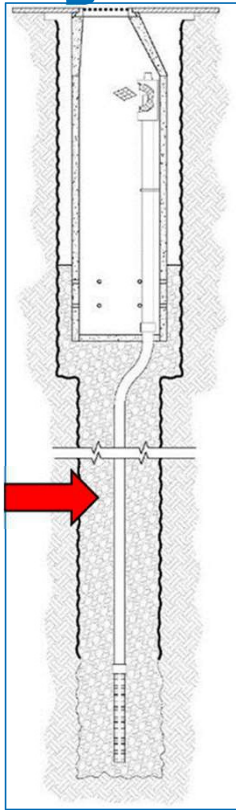
Drywell Installation



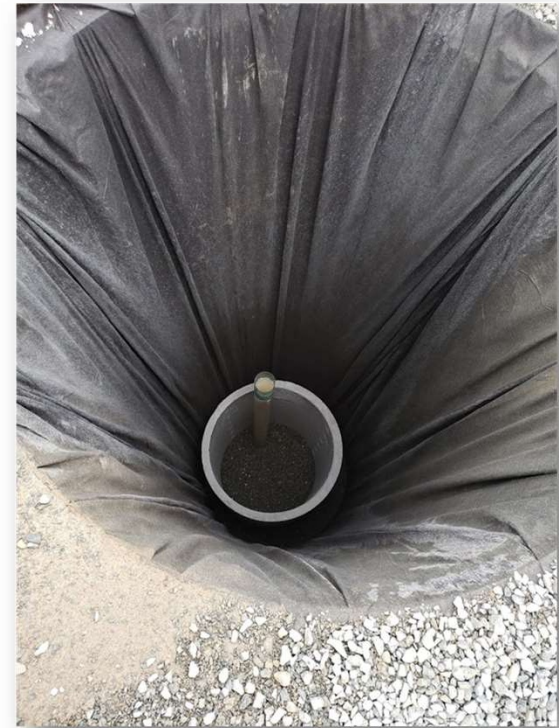
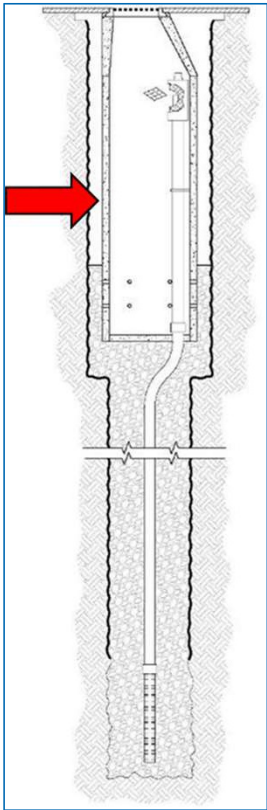
Drywell Installation



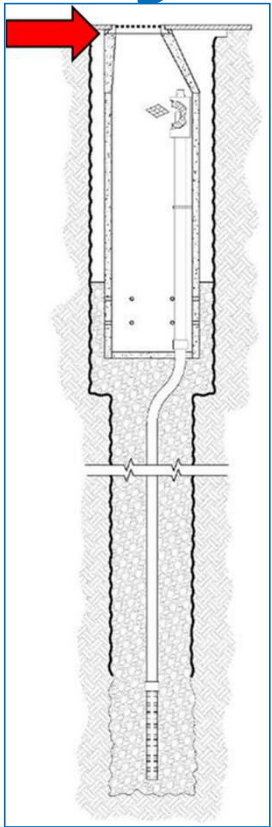
Drywell Installation



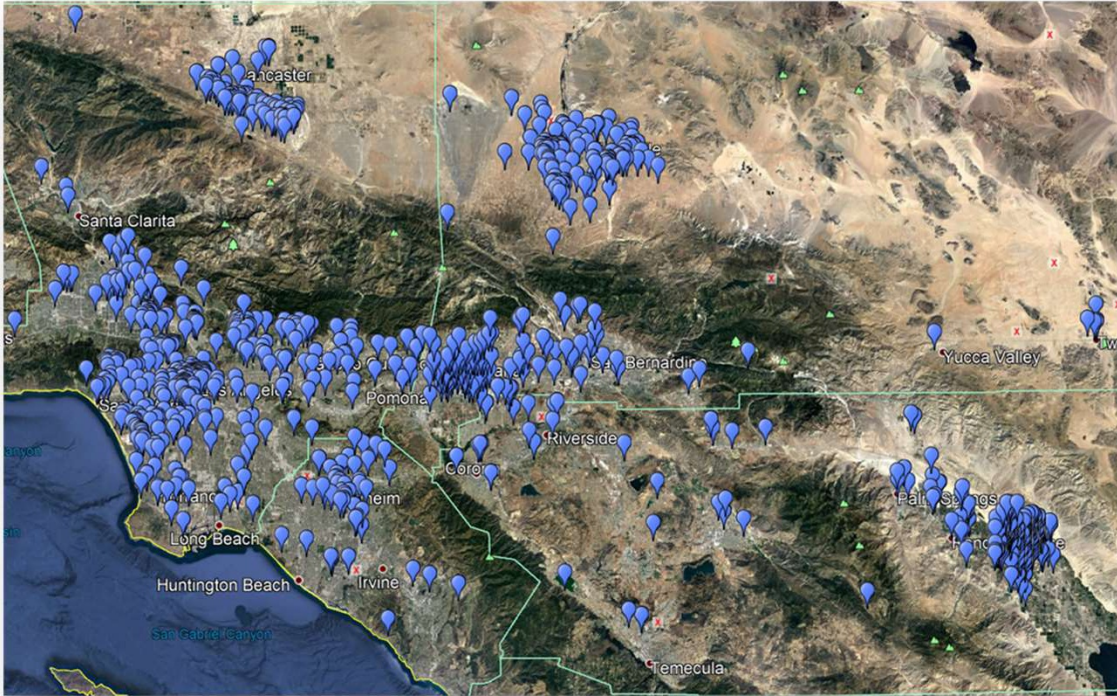
Drywell Installation



Drywell Installation



Drywell Installations:



- Over 1,000 MaxWells installed in SoCal
- Used for decades
- Extensive knowledge to apply to Central Coast

Drywell Maintenance

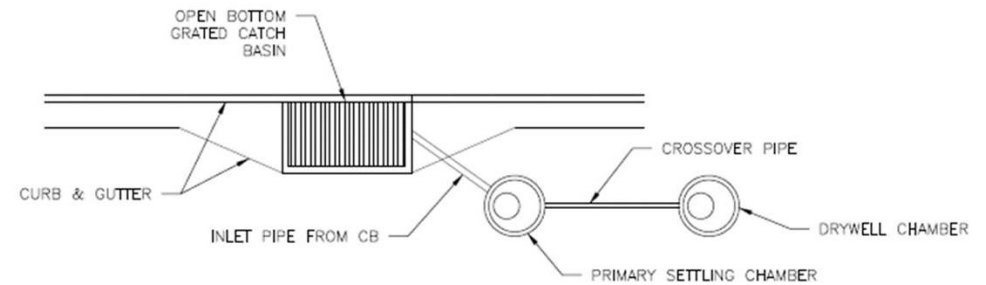
- Regular Annual Inspection
- Vactor Truck Maintenance
- Clean Drywell if 10-20% loss of chamber capacity



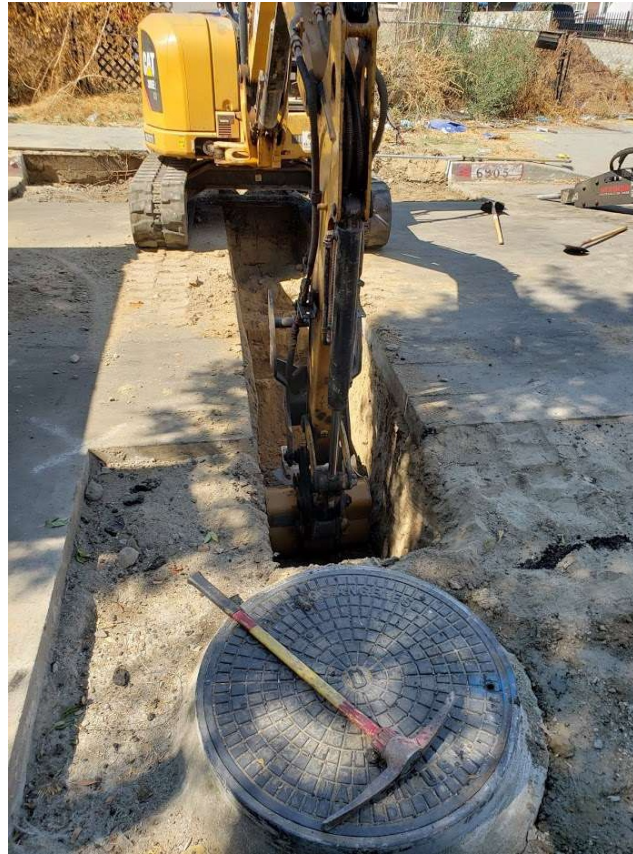
Green Streets

Typical Problem

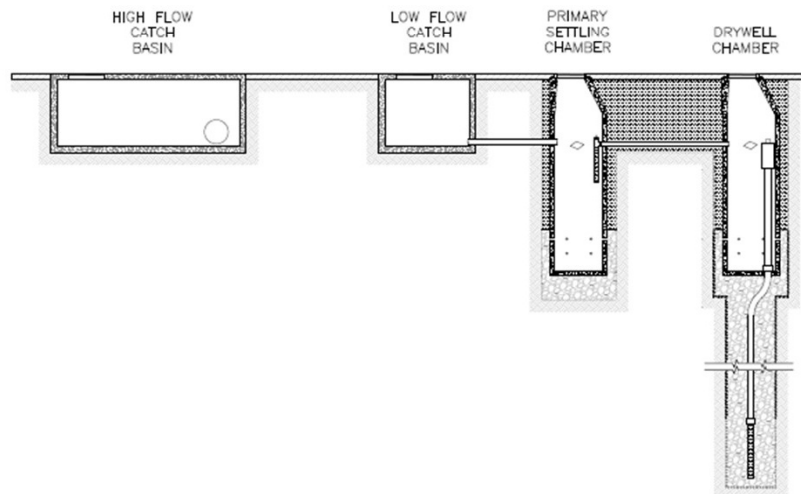
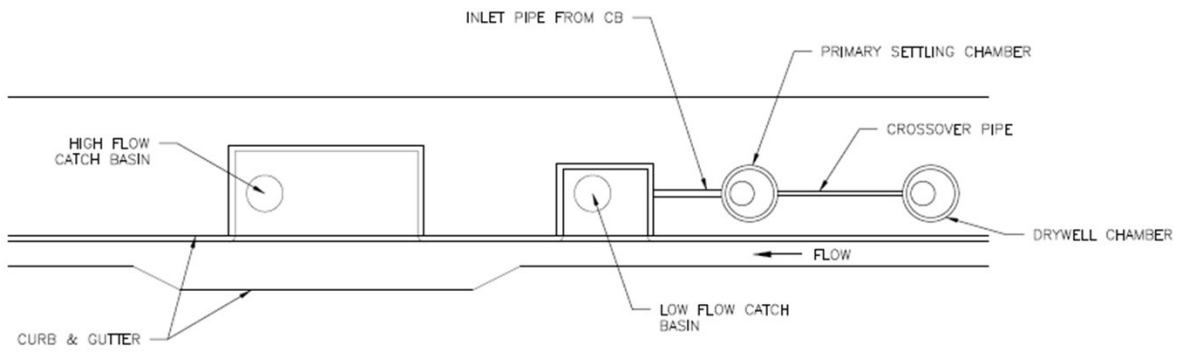
- Little/No Drainage Infrastructure, Flooding
- ROW, Utilities
- Urban Runoff, Stormwater Regulations
- Drought, Groundwater Recharge

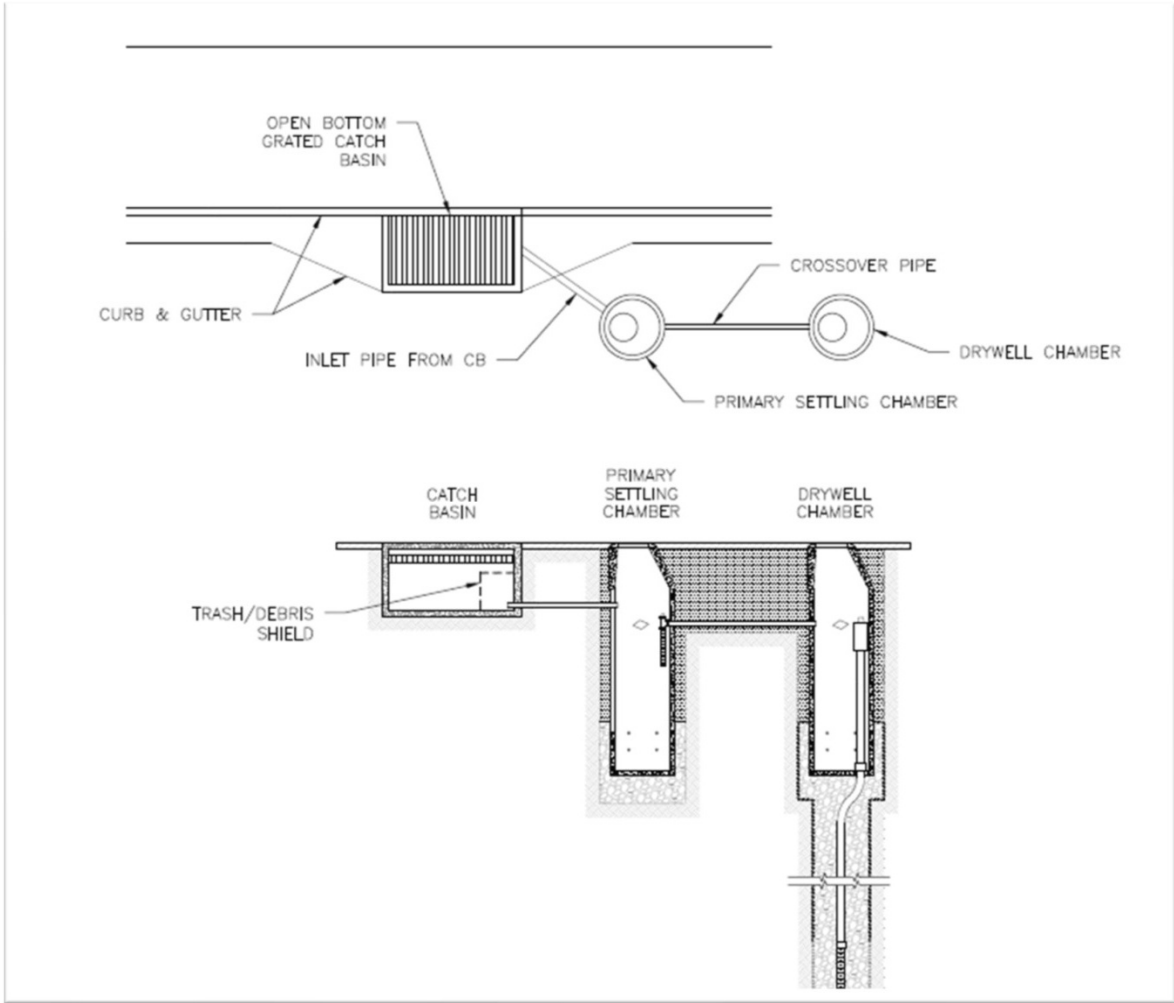


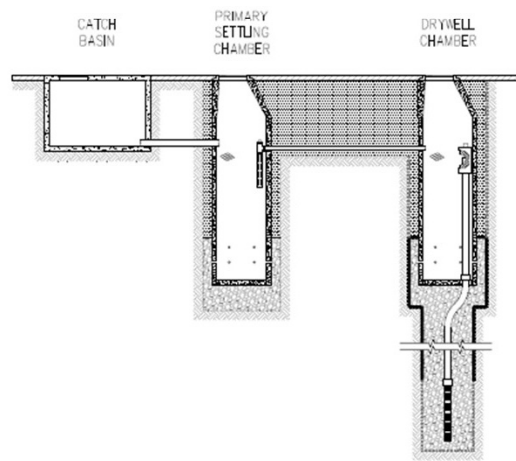
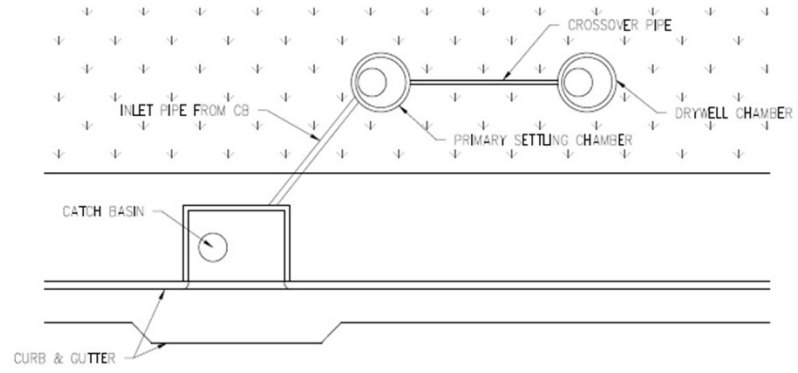
Green Streets



- Minimize disturbance to traffic, residents, and businesses
- Small footprint to avoid utilities
- Can be placed in streets, sidewalks, or medians







Existing BMP Retrofits



Before

After







Thank you!

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