



Only Rain Down the Drain: Engineered Solutions to Used Oil Pollution

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John L. Hunter
AND ASSOCIATES, INC.



John L. Hunter and Associates assists jurisdictions across Southern California achieve improved water quality

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- NPDES
 - Industrial Waste
 - CalRecycle Grants
 - Public Education

Utilizing CalRecycle's OPP grant Program, jurisdictions have the opportunity to reduce oil pollution through engineered solutions





CalRecycle: USED OIL RECYCLING PROGRAM

Public Outreach Campaign and
Pollution Prevention Tools

1

Used motor oil accounts for more than **40%** of pollution in our nation's waterways and harbors



Approximately **28.7 million** automobiles were registered in California In 2014

1/5 households identified as DIY oil-changers



Oil pollution on water prevents the replenishment of dissolved oxygen, impair photosynthetic processes, and block sunlight.

Public Outreach and Education

Educate and motivate the public to recycle their used motor oil and used motor oil filters during community events

Newsletters, PSAs, flyers, brochures, advertisements



Distribute towels, funnels, filter bags, used motor oil recycling containers to decrease used motor oil pollution

Certified Used Oil Collection Centers (CCC)

Partner with local auto shop facilities to be a certified used oil collection center (CCC)

Provide a convenient and safe way for the public to dispose of and recycle used motor oil and used motor oil filters

Work with CCCs to host a Filter Exchange Event
- Exchange used motor oil and used motor oil filters for free used oil recycling kit and free oil filters

State of California Certified
Used Oil



**Collection
Center**

Department of Resources Recycling and Recovery 



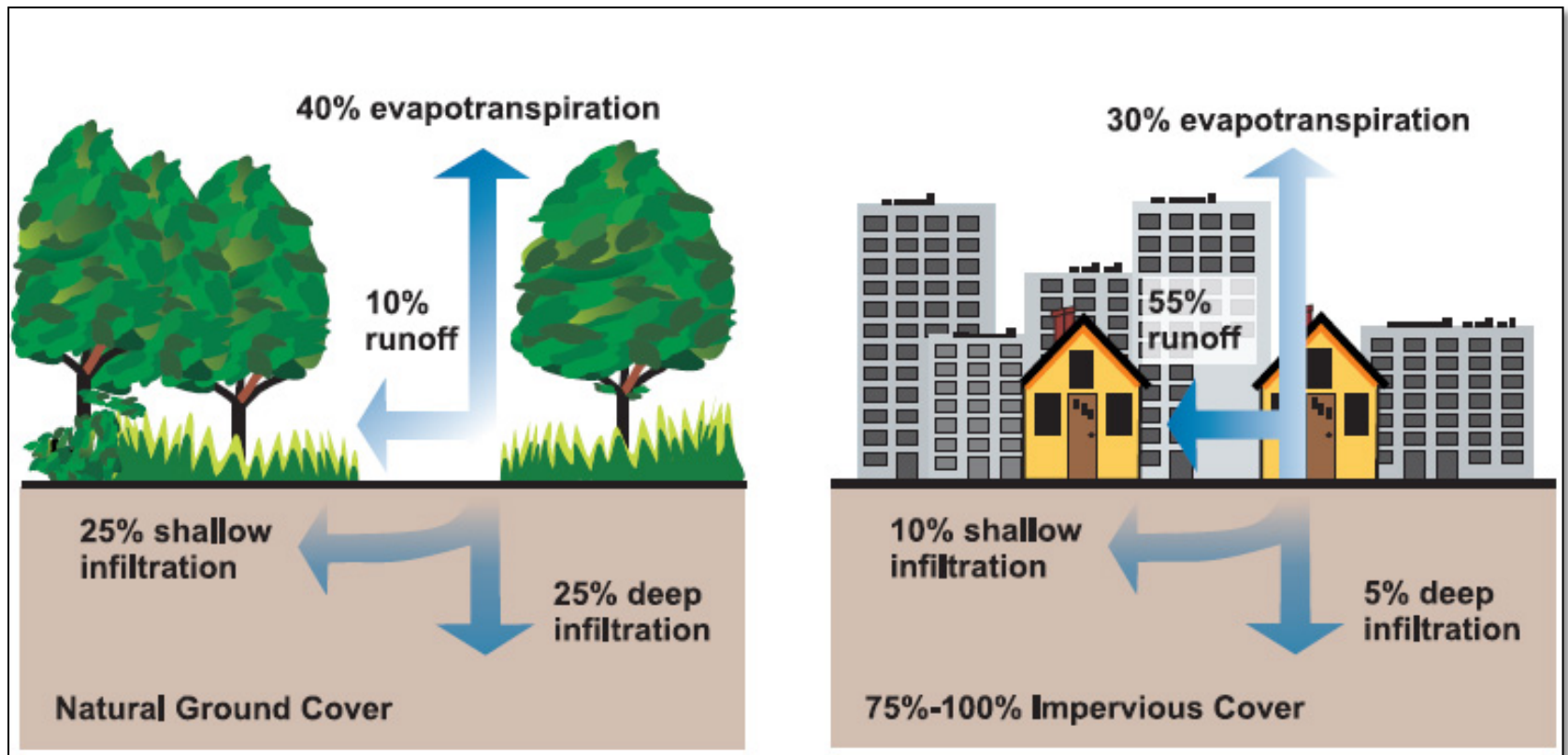
LOW IMPACT DEVELOPMENT

LID, SUSMP, SMR, WQMP, SWQMP

Best Management Practices (BMPs)

2





In urbanized areas, **55%** of rain flows to the storm drain system, carrying stormwater pollution with it

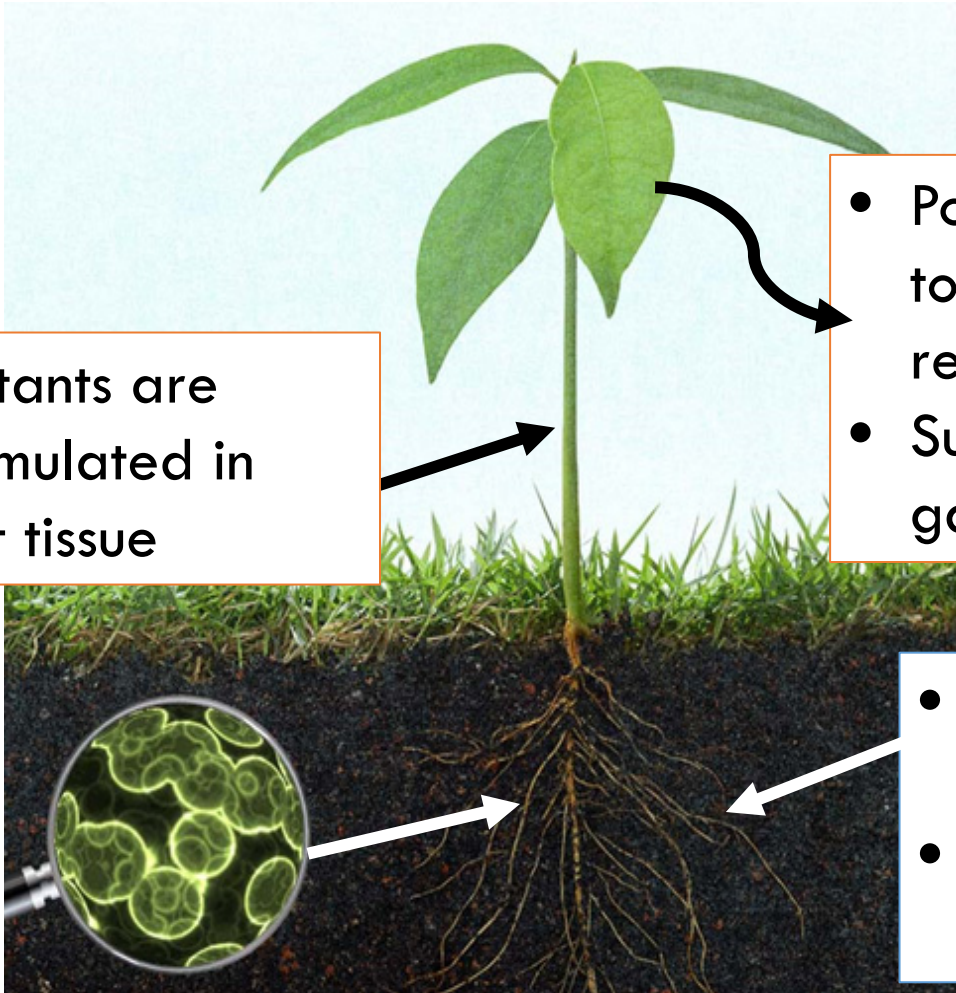
Low Impact Development (LID)

- Engineered systems designed to divert and treat stormwater as close to the source as possible.
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BENEFITS:

- An approach to land development (or redevelopment) that mimics the natural environment
- Mimics natural processes: infiltration, evapotranspiration
- Provide habitat, flood protection, cleaner air, and improved water quality
- Aims to preserve, restore and create green space using soils, vegetation, and rainwater harvest techniques

Phytoremediation



Pollutants are accumulated in plant tissue

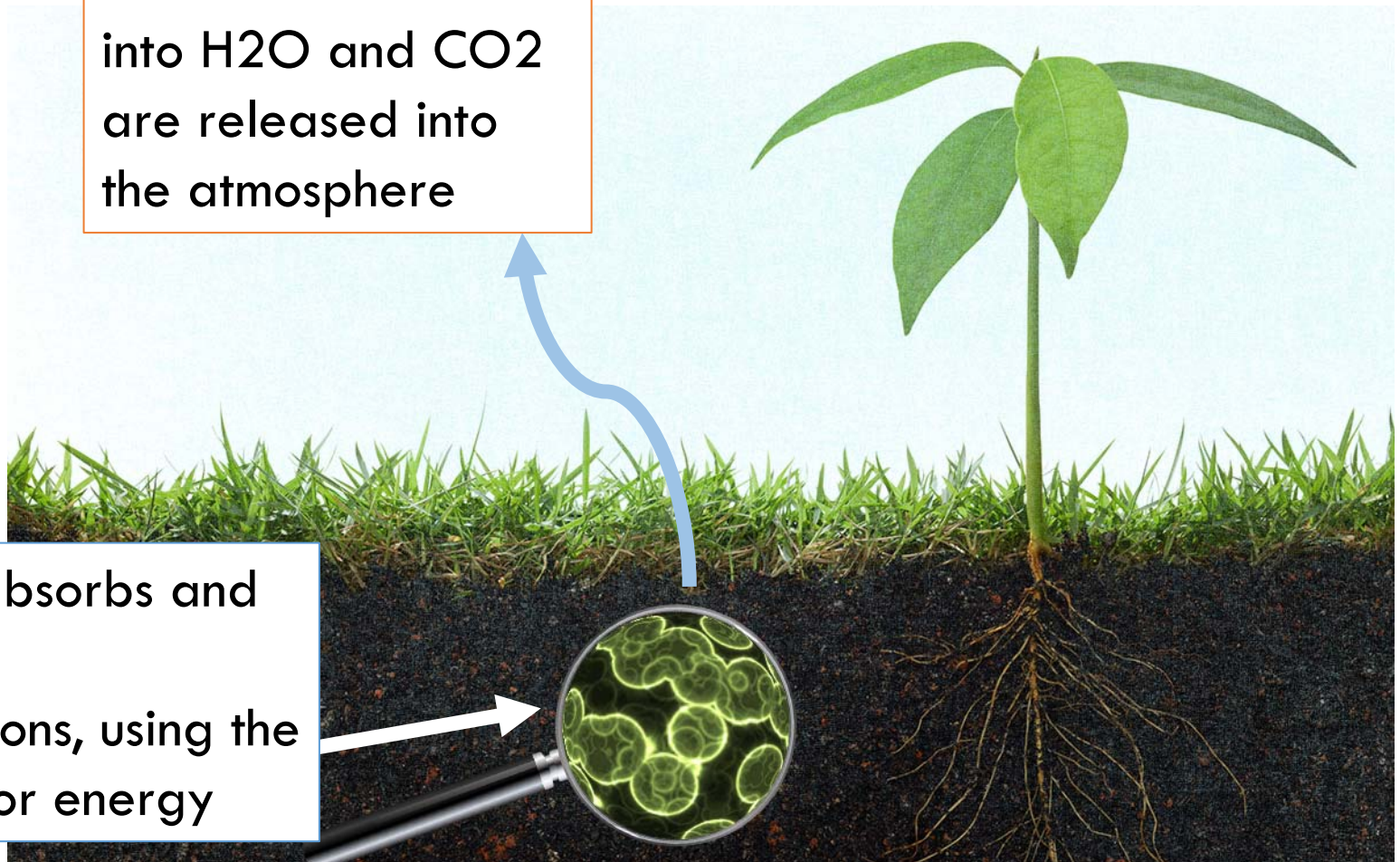
- Pollutants are converted to volatile form and released
- Sunlight breaks down gases

- Roots are the main absorption area
- Microorganisms breakdown pollutants

Bioremediation

Pollutants converted into H₂O and CO₂ are released into the atmosphere

Bacteria absorbs and digests oil hydrocarbons, using the H and C for energy



Statewide Water Quality Control Plans for Trash

Trash Amendments

3



Planning Ahead

- Trash Amendments take effect following approval by the Office of Administrative Law and the US EPA
 - Requires permitting authorities to re-open, re-issue, or newly adopt NPDES permits for MS4 Phase I permittees, MS4 Phase II permittees, and Caltrans permittees, as well as ICP and CGP permittees.
 - Compliance Tracks (Track 1 and Track 2)
 - Track 1: Demonstrate installation, operation, and maintenance of full capture systems (10 years from first implementing permit but not later than 15 years from the effective date of the proposed Trash Amendments).
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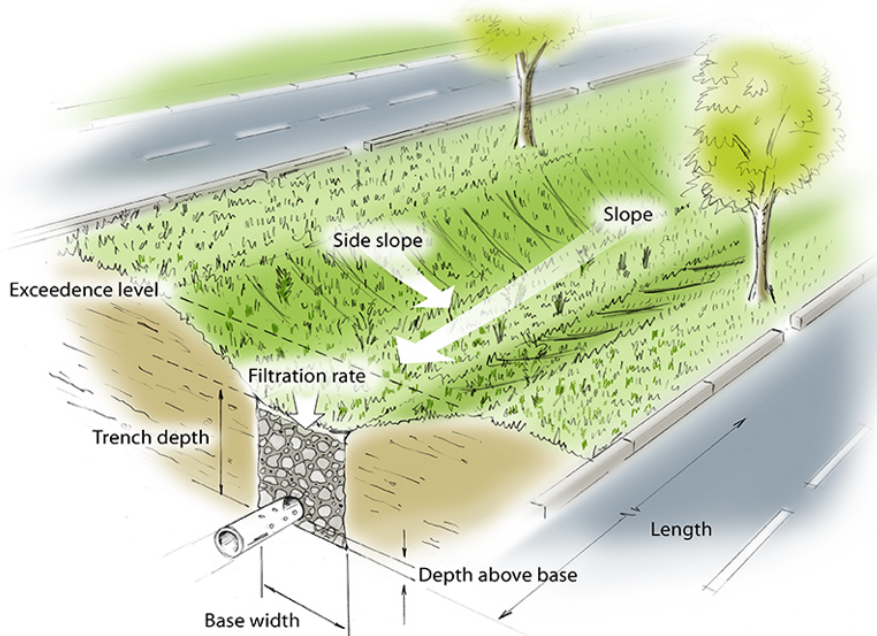
Engineered Solutions

Non-Proprietary
Best Management Practices

4

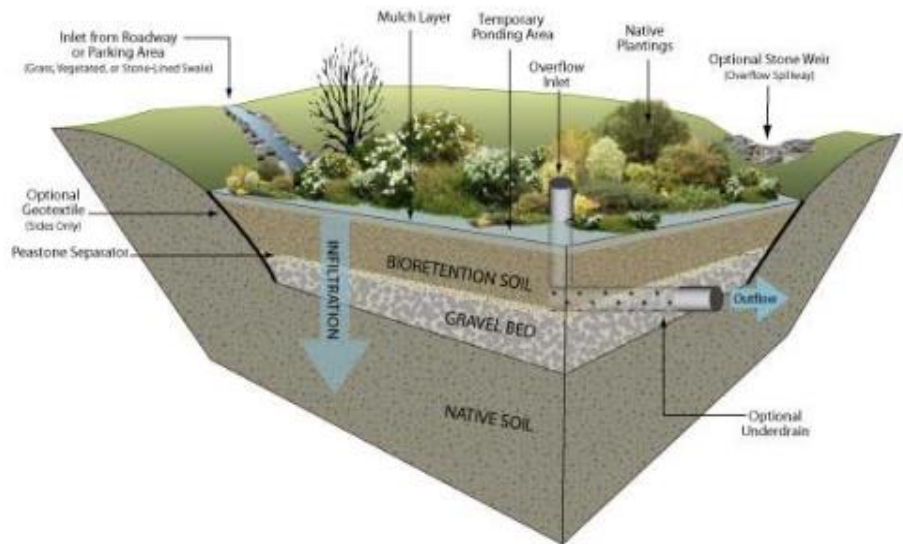
Vegetative Swale (Non-proprietary)

- Open, shallow channels with low-lying vegetation
- The vegetated slope collects and conveys stormwater runoff and provides pollutant removal through settling and filtration
- Estimated oil removal efficiency: **62-75%**



Stormwater Planter (Non-proprietary)

- Landscaped shallow trenches that capture and filter stormwater runoff
- As stormwater passes through the soil, pollutants are filtered, adsorbed, biodegraded, and sequestered by the soil and plants
- Estimated oil removal efficiency: 67%



Engineered Solutions

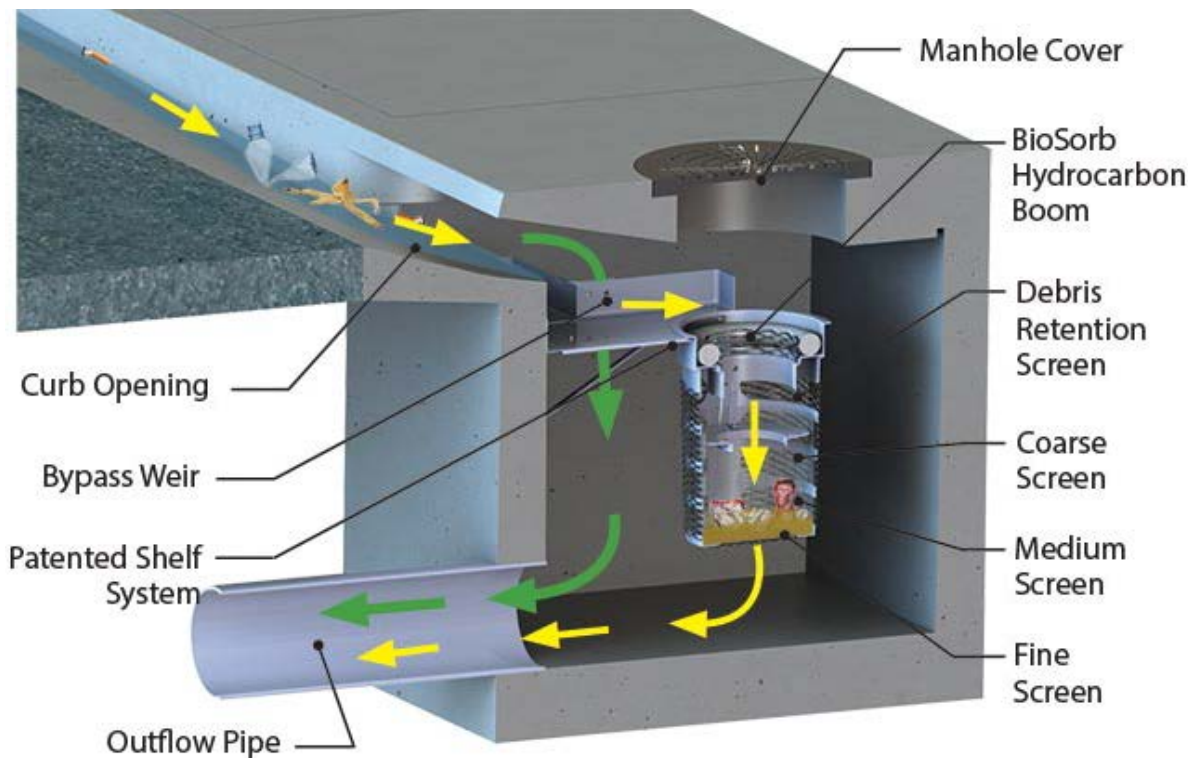
Proprietary
Best Management Practices

5

Catch Basin, Full Capture Device

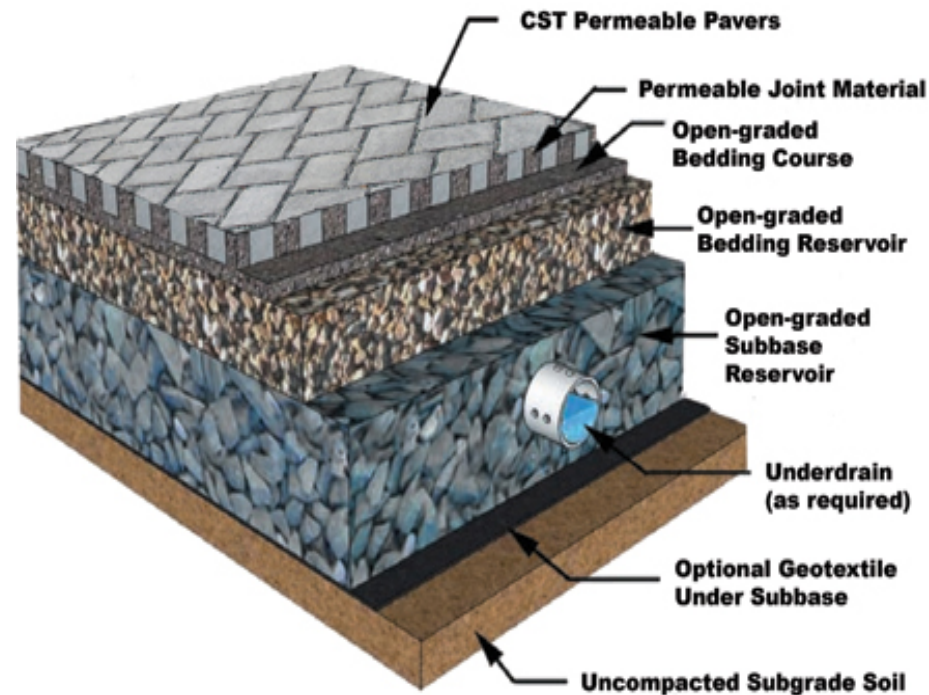
(Proprietary)

- Multi-stage filtration screens allow stormwater to pass through the 5mm screens, multi-layer filter cartridge, and contains a hydrocarbon boom that provides pollutant removal
- Estimated oil removal efficiency (Hydrocarbon Boom): **54%**
- Estimated oil removal efficiency (Filter Cartridge): **90-95%**



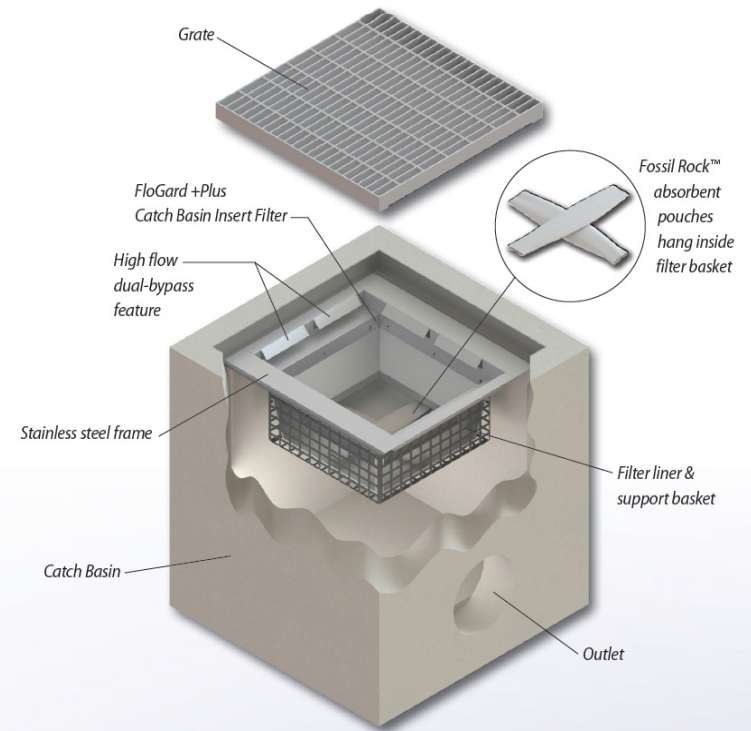
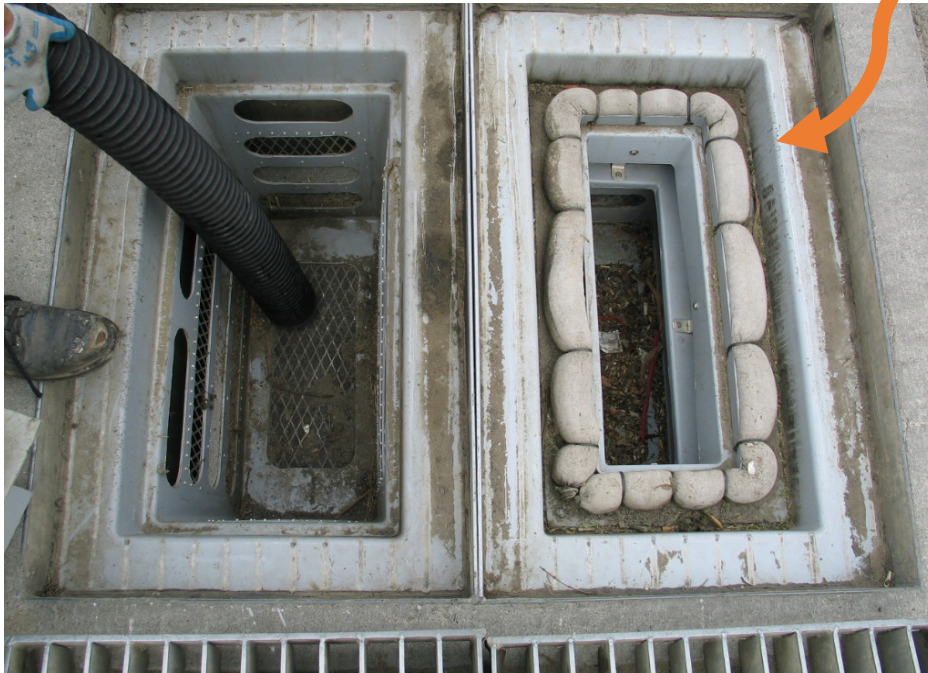
Permeable Pavement (Proprietary)

- Roadways, sidewalks, or parking lots that are layers of porous pavement, asphalt, and gravel
- Stormwater passes through the layers that provide pollutant removal and infiltration
- Estimated oil removal efficiency: **70-90%**



Sock Insert Filter (Proprietary)

- Pre-treatment media filtration used upstream from LID BMP
- Stormwater enters through a curb-inlet or grate, where flows through a oil-absorbent material, then proceeds to LID BMP
- Estimated oil removal efficiency: **54-95%**



Tree Box (Proprietary)

- Landscaped concrete container with soil media mixture
- Stormwater enters through a curb-inlet and flows through specially designed soil media
- Estimated oil removal efficiency: **70-90%**



Wetland Simulator (Proprietary)

- Subterranean system with media filtration and vegetation
- Stormwater enters through a curb-inlet or grate, where flows through a series of media
- Estimated oil removal efficiency: **95%** ←



Questions?

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