

UP3 Project



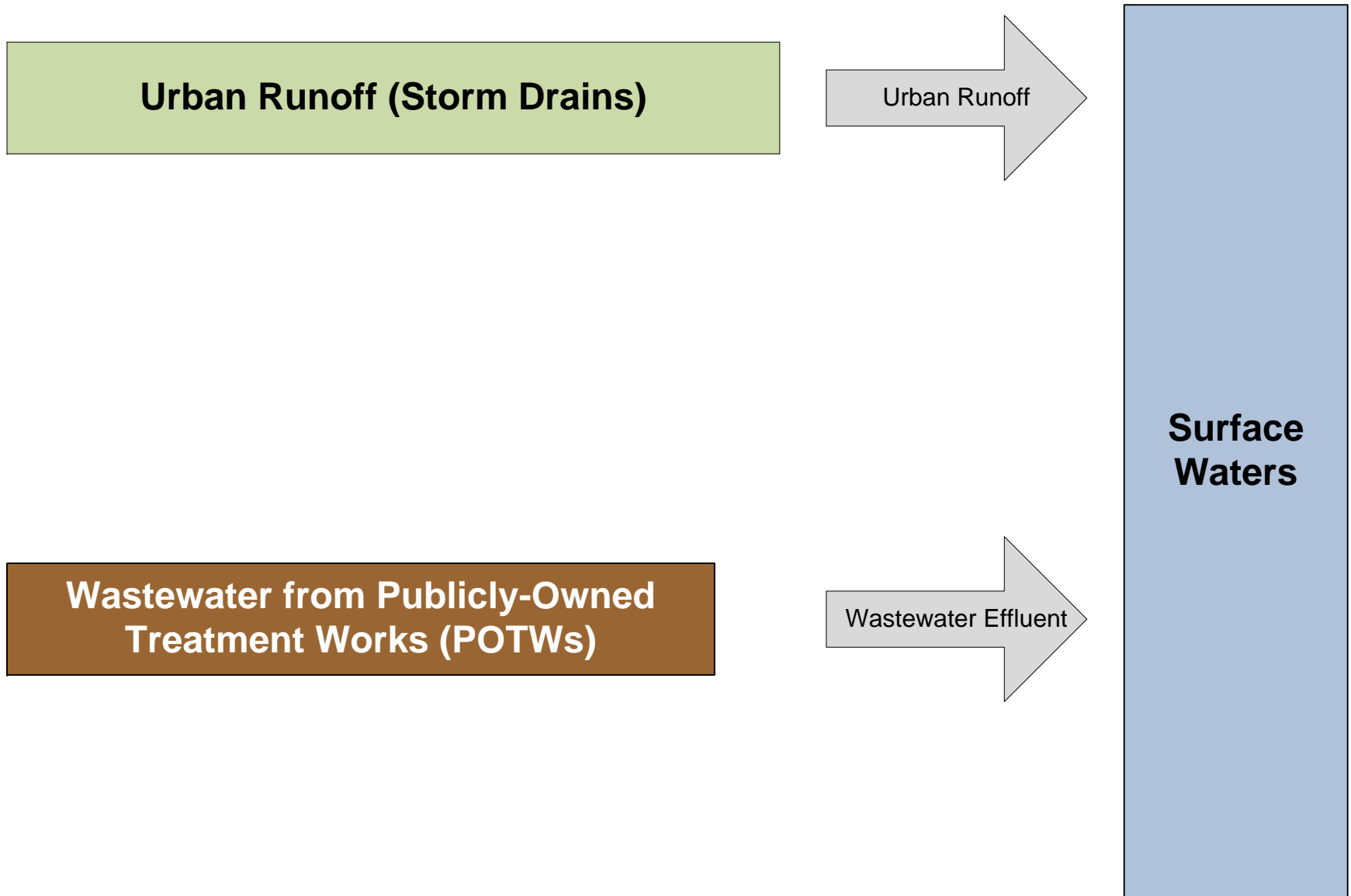
Conceptual Model for Transport of Insecticides Used in Urban Areas into Surface Waters

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TDC Environmental, LLC

Urban Pesticides Pollution Prevention Project

Conceptual Model Overview



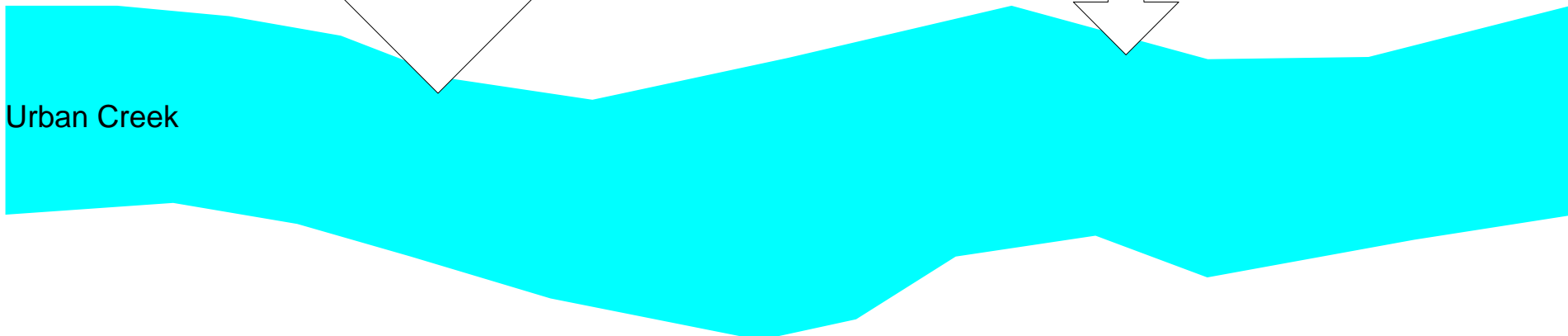
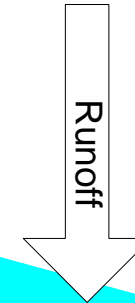
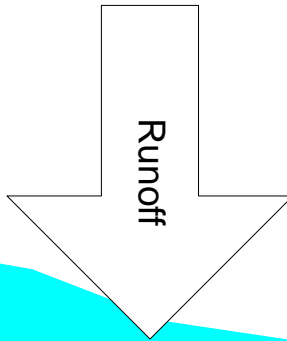
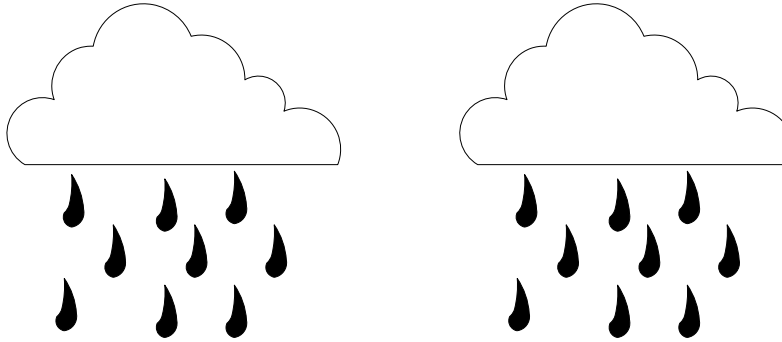
Insecticides in Urban Runoff

Sources:

- (a) Pesticide on impervious surfaces
- (b) Pesticide on lawns/grass
- (c) Pesticide on other pervious surfaces
- (d) Pesticide dumped in storm drain

Outcomes:

- (1) Washed to storm drain/creek
- (2) Remains on land
- (3) Degrades prior to transport (degradates may need consideration)
- (4) Evaporates into air
- (5) Taken up by organisms



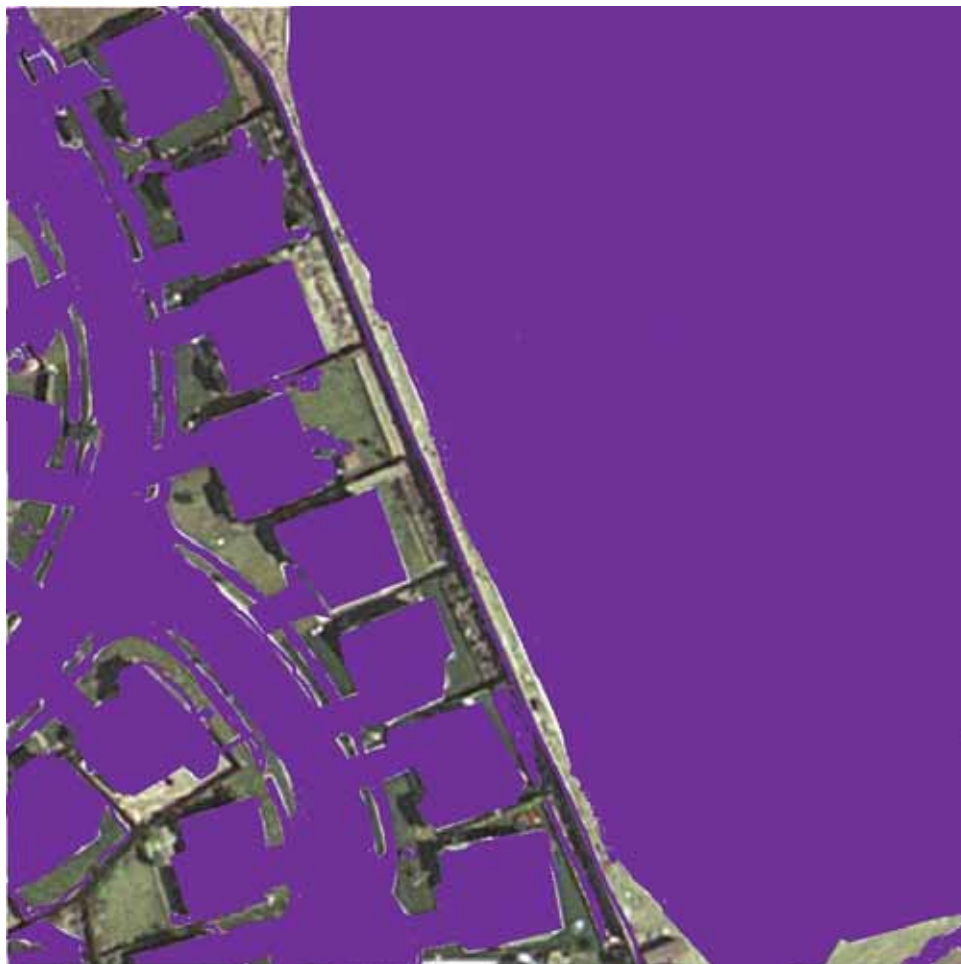
Urban Creek

California Urban Watersheds Are Highly Impervious



Homes and Neighborhood Retail

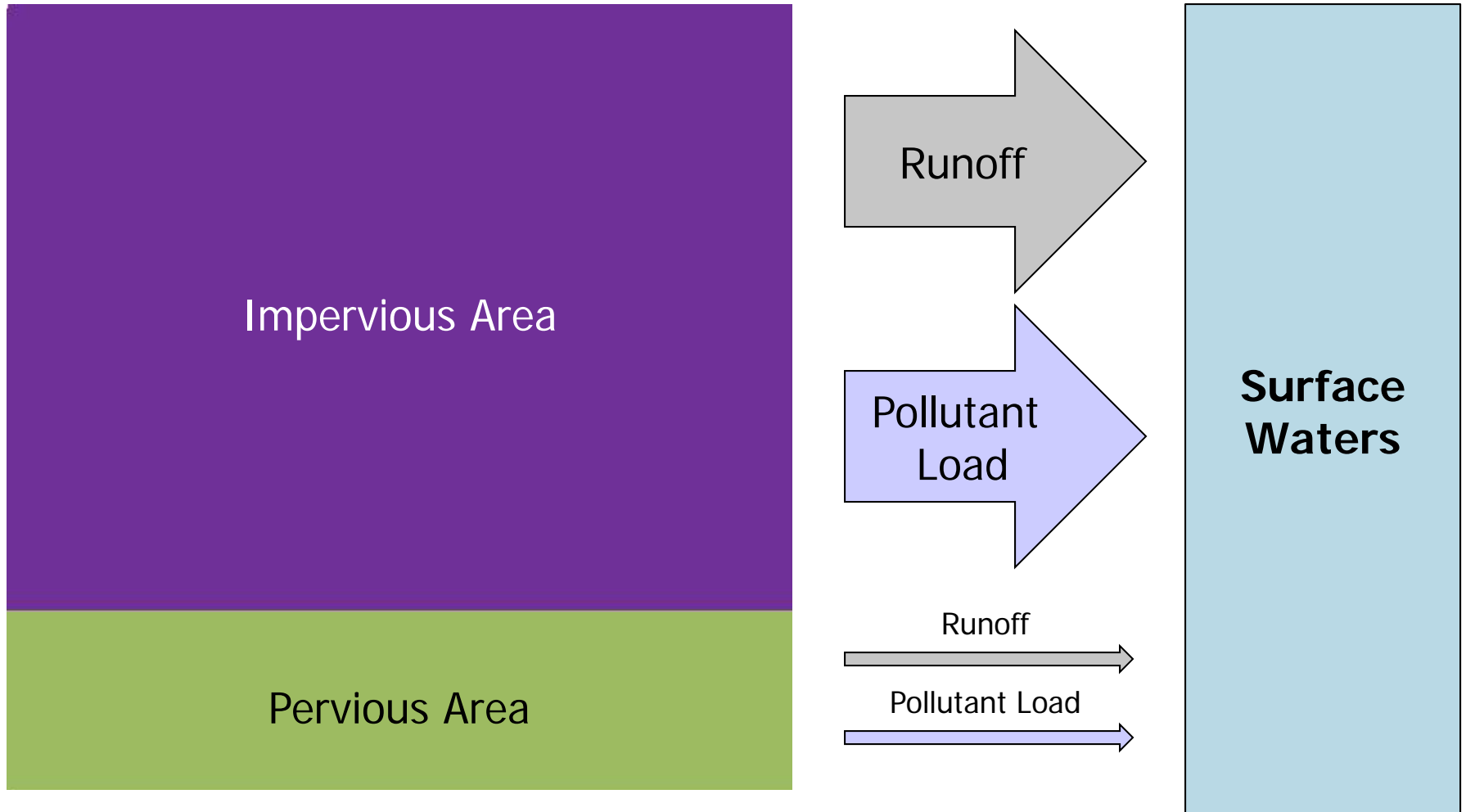
California Urban Watersheds Are Highly Impervious



Shaded Area is Impervious

Land Use	Typical Imperviousness Sacramento CA (%)
Commercial	90
Apartments Condos	70-80
Single-family homes	40-60
Low-density residential	50
Park	10

Most Urban Runoff – and Pollutant Load – From Impervious Surfaces



California Drainage Design Enhances Pollutant Transport



Typical California urban stormwater conveyance system – Street gutter
Water & pollutants efficiently moved to creeks

Time scale of transport – Minutes
Pollutant losses in drainage system during major storm events – Low

Pyrethroid Application to Impervious Surfaces Routine

- Typical 6-10 foot “band around the structure” label instruction for ant control
- Licensed applicators report as “structural pest control”

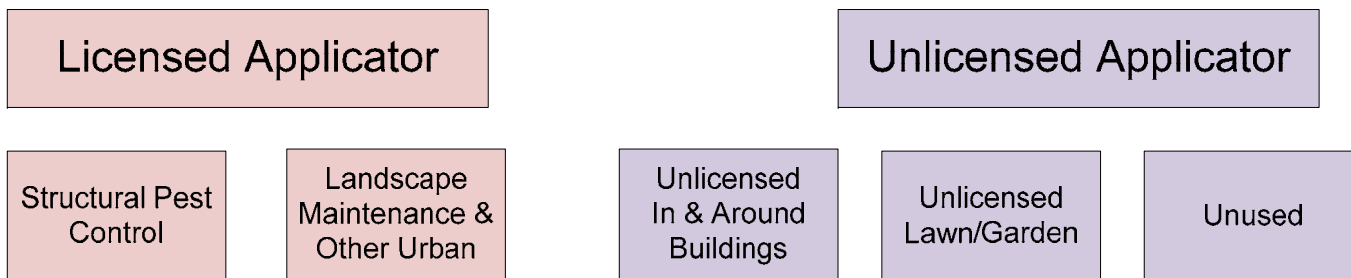


California Non-Agricultural Pyrethroid Use

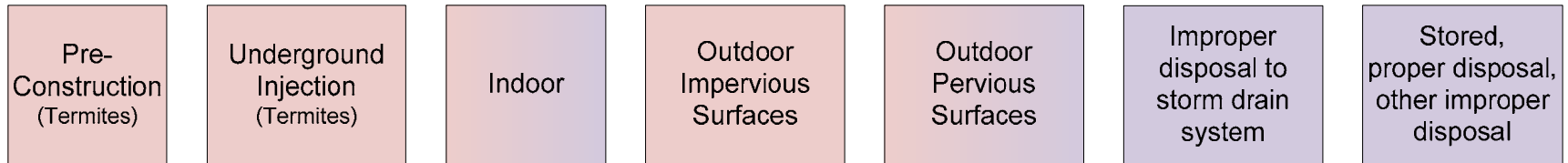
Licensed Applicator

Unlicensed Applicator

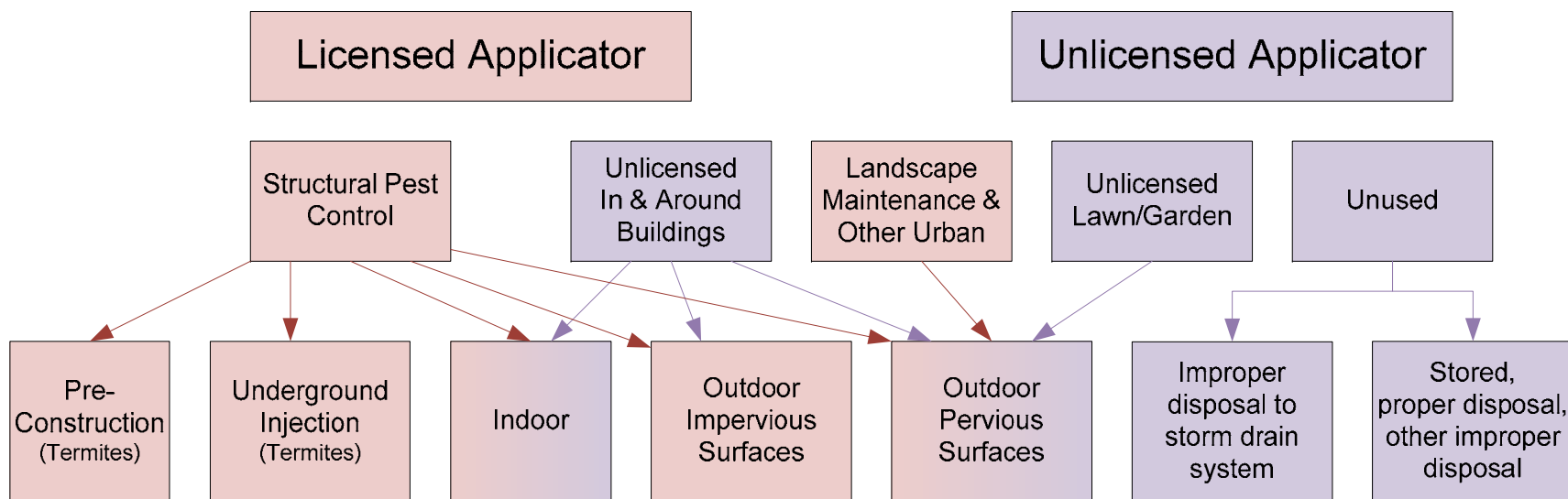
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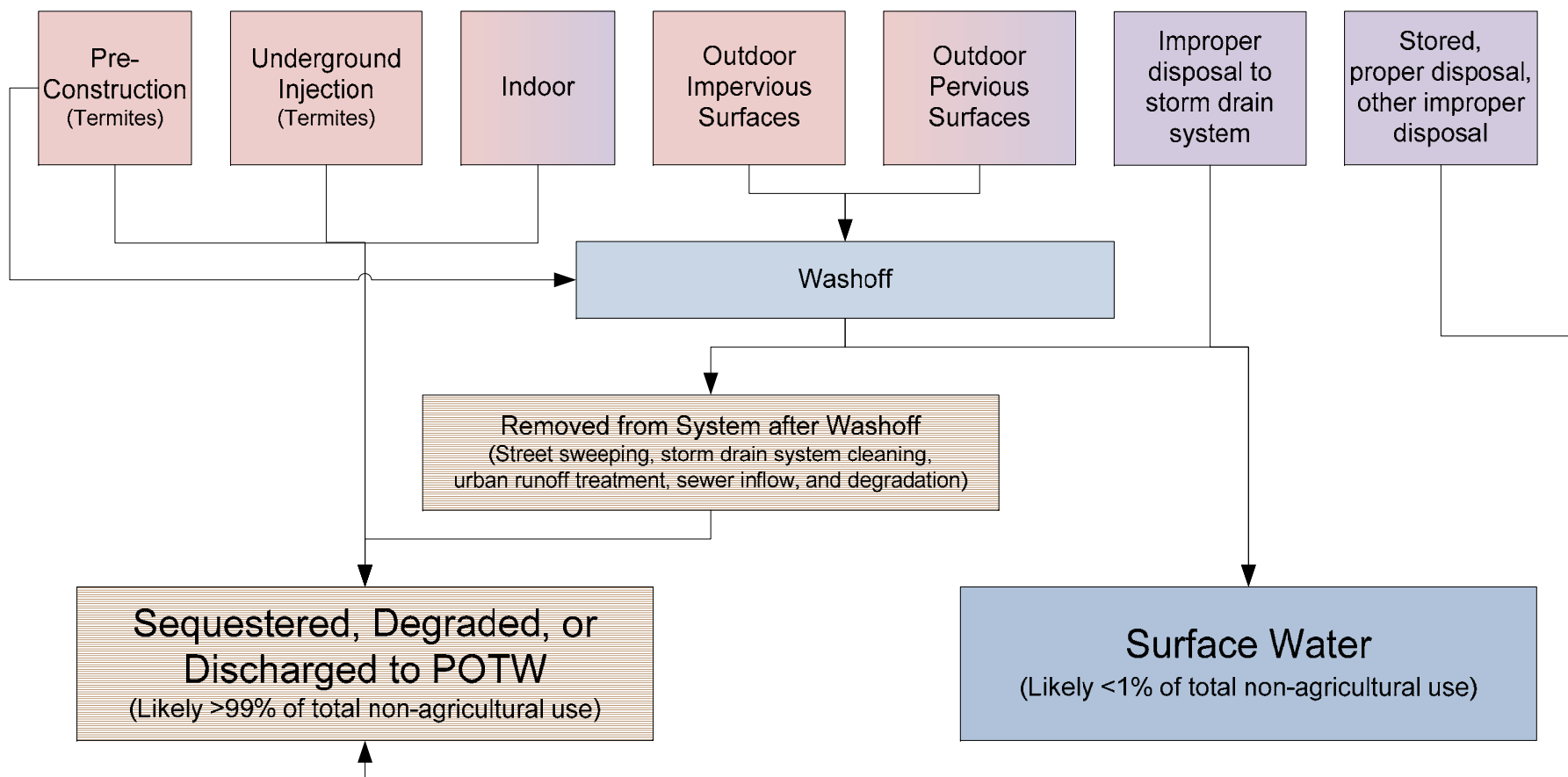
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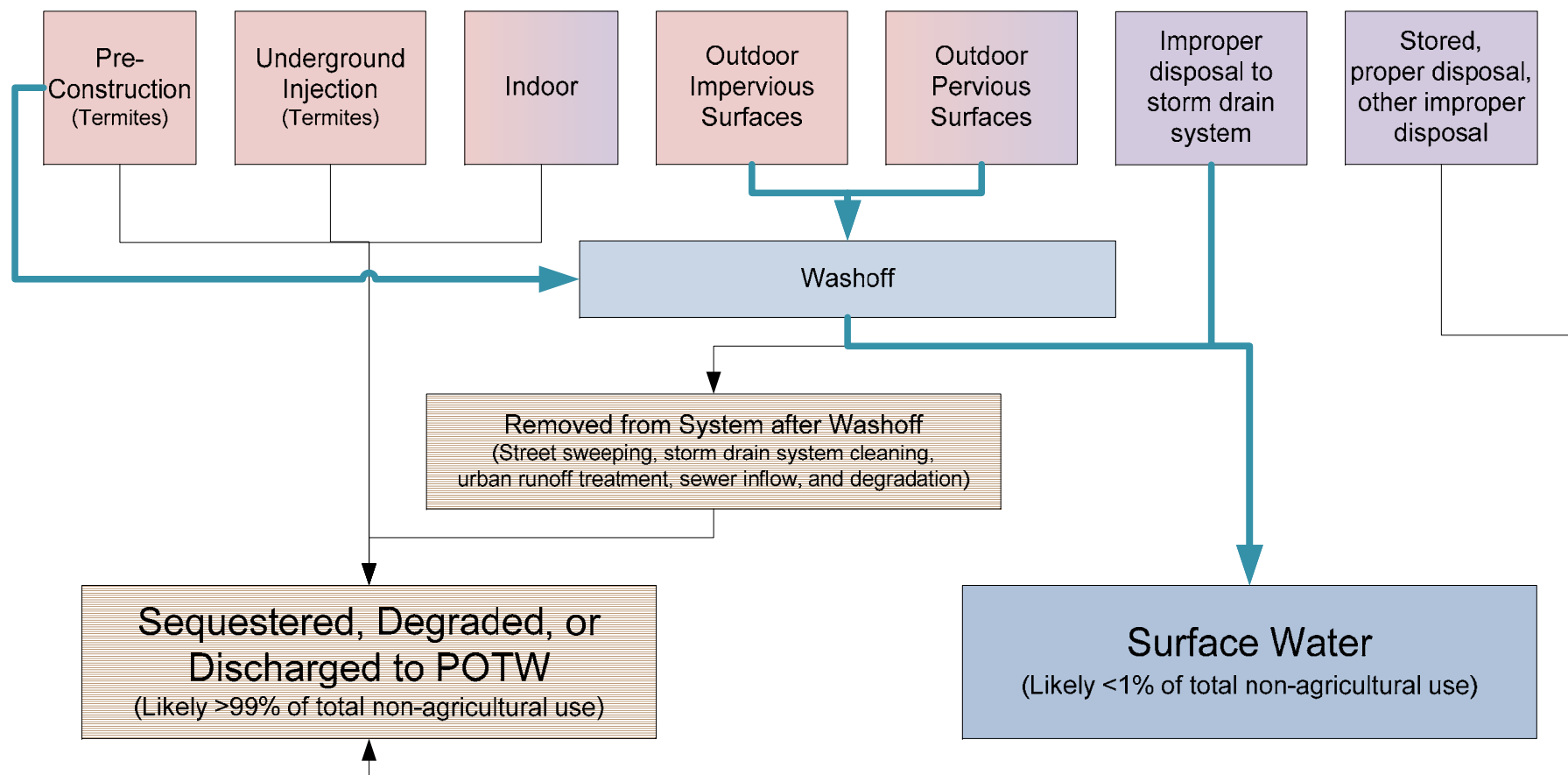
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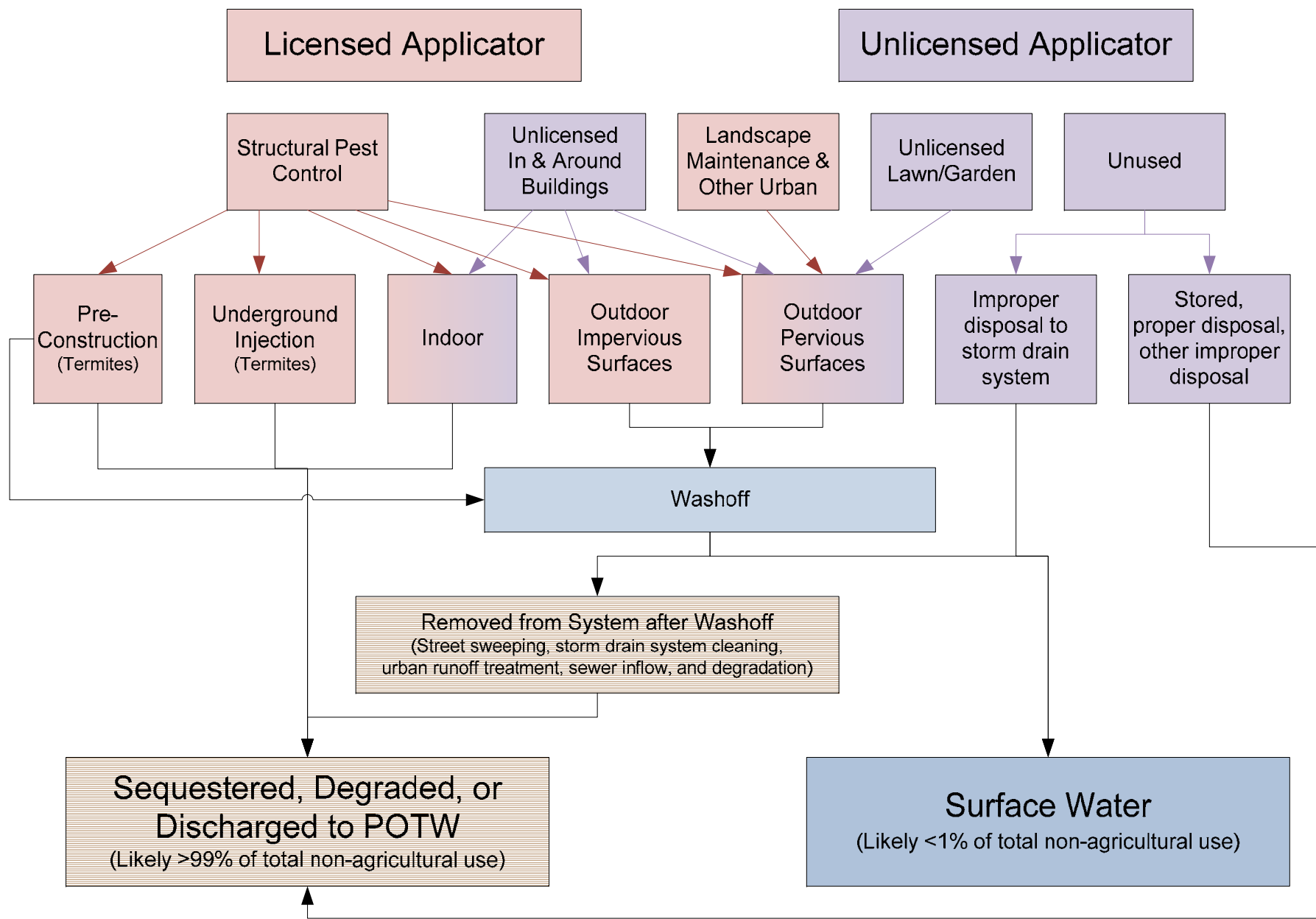
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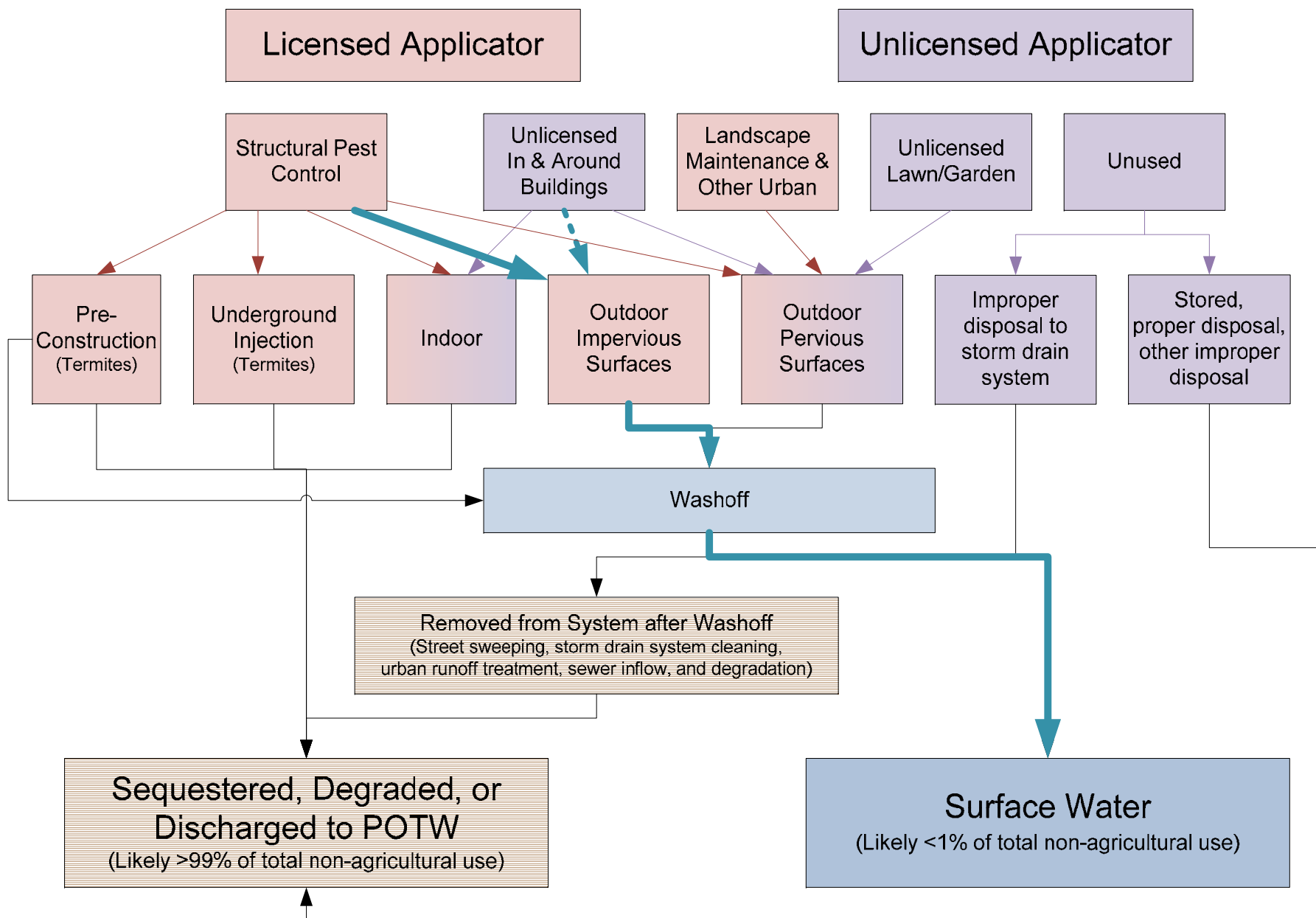
California Non-Agricultural Pyrethroid Use



California Non-Agricultural Pyrethroid Use



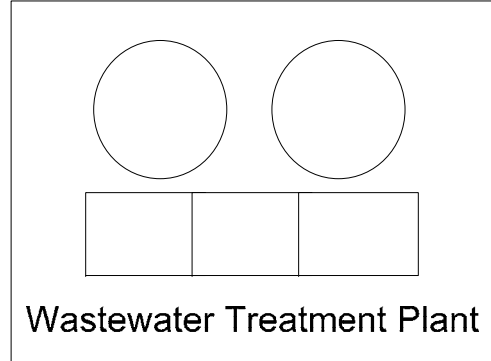
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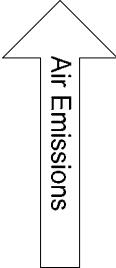
Box 3: Wastewater



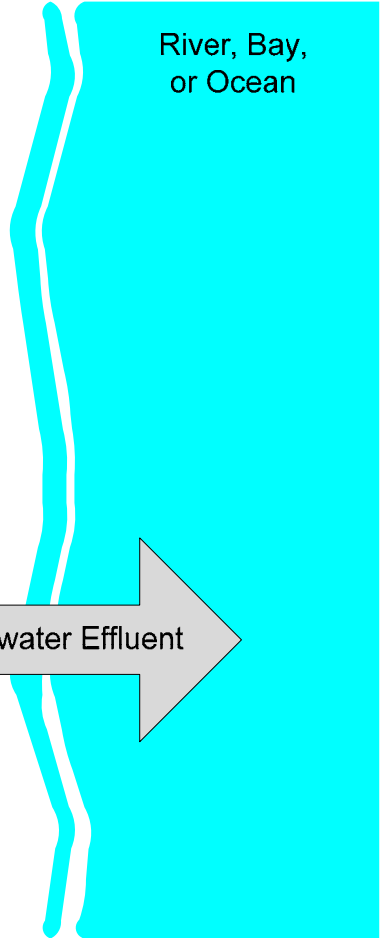
Sewer Main



Wastewater Treatment Plant



Wastewater Effluent



Primary Sources:

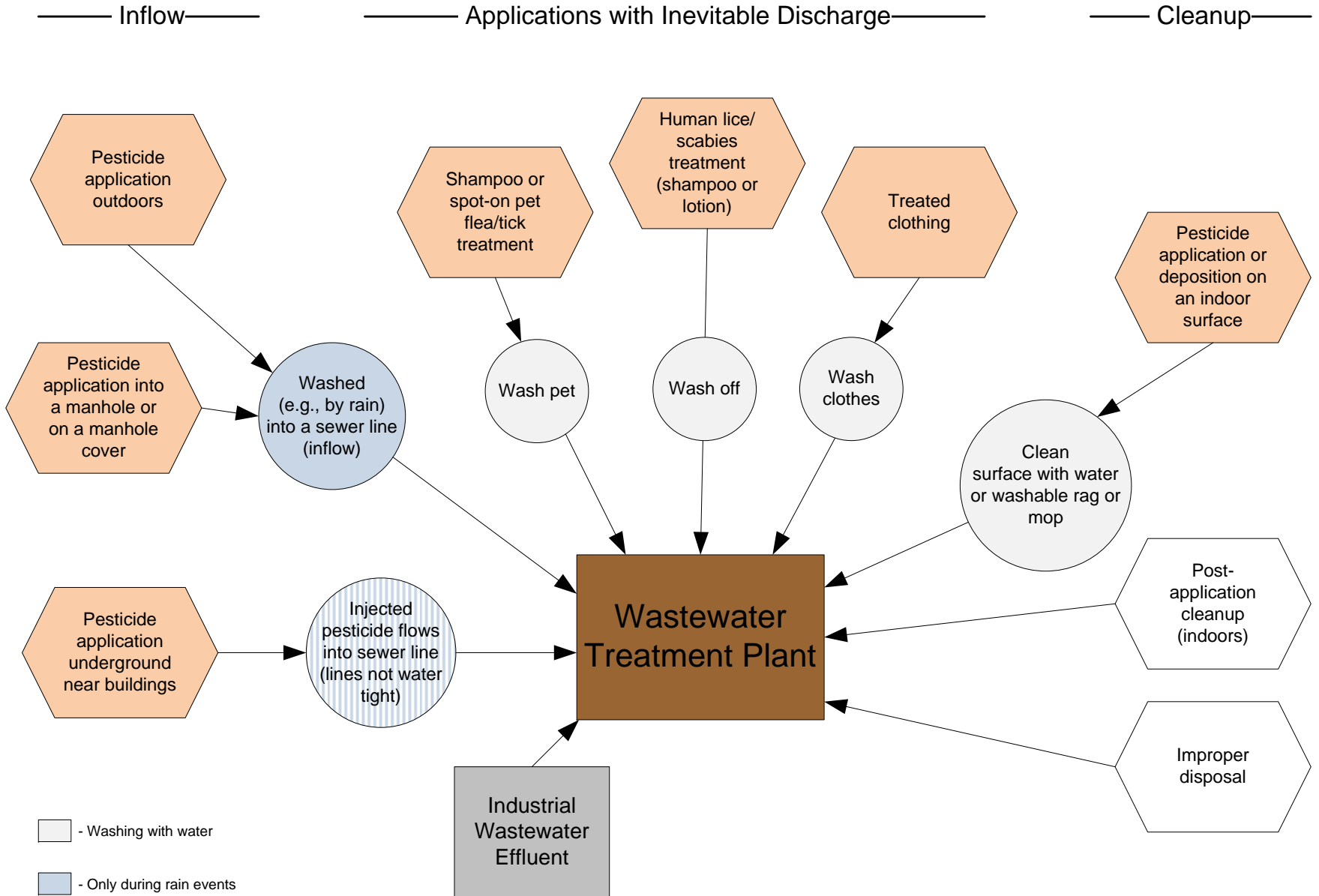
- (a) Use that inevitably creates a discharge
- (b) Cleanup
- (c) Inflow of urban runoff

Outcomes:

- (1) In POTW effluent
- (2) In biosolids (sludge)
- (3) Degrades
- (4) Emitted to air

Primary Pyrethroid Pathways to POTWs

Influent pyrethroid may biodegrade or transfer to biosolids, recycled water & effluent



UP3 Project

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U.S. EPA



American Recovery and Reinvestment Act of 2009



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