
WGR
Development
Standards
Training
City of Lodi

WGR

Today's DSP Training will cover . . .

Part I – DSP Overview

Part II – Determining Applicability

Part III - Evaluation

Part I

What is the DSP?

DSP

Development Standards Plan

Development standards for storm water are design features that are built into the proposed project that either:

1) Prevent pollutants associated with that new development from coming into contact with storm water, or

2) Treat storm water and remove pollutants from the discharge.

Treatment Control Measures

Examples of these include:

(Examples are from the California Stormwater Quality Association BMP Handbook for New Development)

- Vegetated buffer strips
- Vegetated swales
- Extended detention basins
- Wet ponds
- Constructed wetlands
- Infiltration trenches
- Media filter
- Retention / irrigation
- Alternative and proprietary control measures, including wet vaults, oil/water separators, and vortex separators

Vegetated Sv

Vegetated Bu **31**

Design Considerations

- Tributary Area
- Slope
- Water Availability
- Aesthetics

Summary of the City of Lodi's Development Standards Plan

- **Initiated** by the developer during the design phase or as a result of mitigation measures identified during the CEQA review.
- **Implemented** during City of Lodi's Plan Check Process.
- **Identifies** minimum, drainage zone specific, and activity specific best management practices (BMPs).
- **Incorporates** the California Stormwater Quality Association (CASQA) approved design standards and mitigation measures identified during the CEQA review.
- **Involves** Lodi Public Works and Community Development Departments.
- **Integrates** Lodi's overall Storm Water Management Plan.

Implementation Process

Initial Project Receipt and Review

Discretionary Projects
Planning Division

- *Subdivisions*
- *Conditional Use Permits*
- *Development Plans*
- *Annexations*
- *Rezoning*

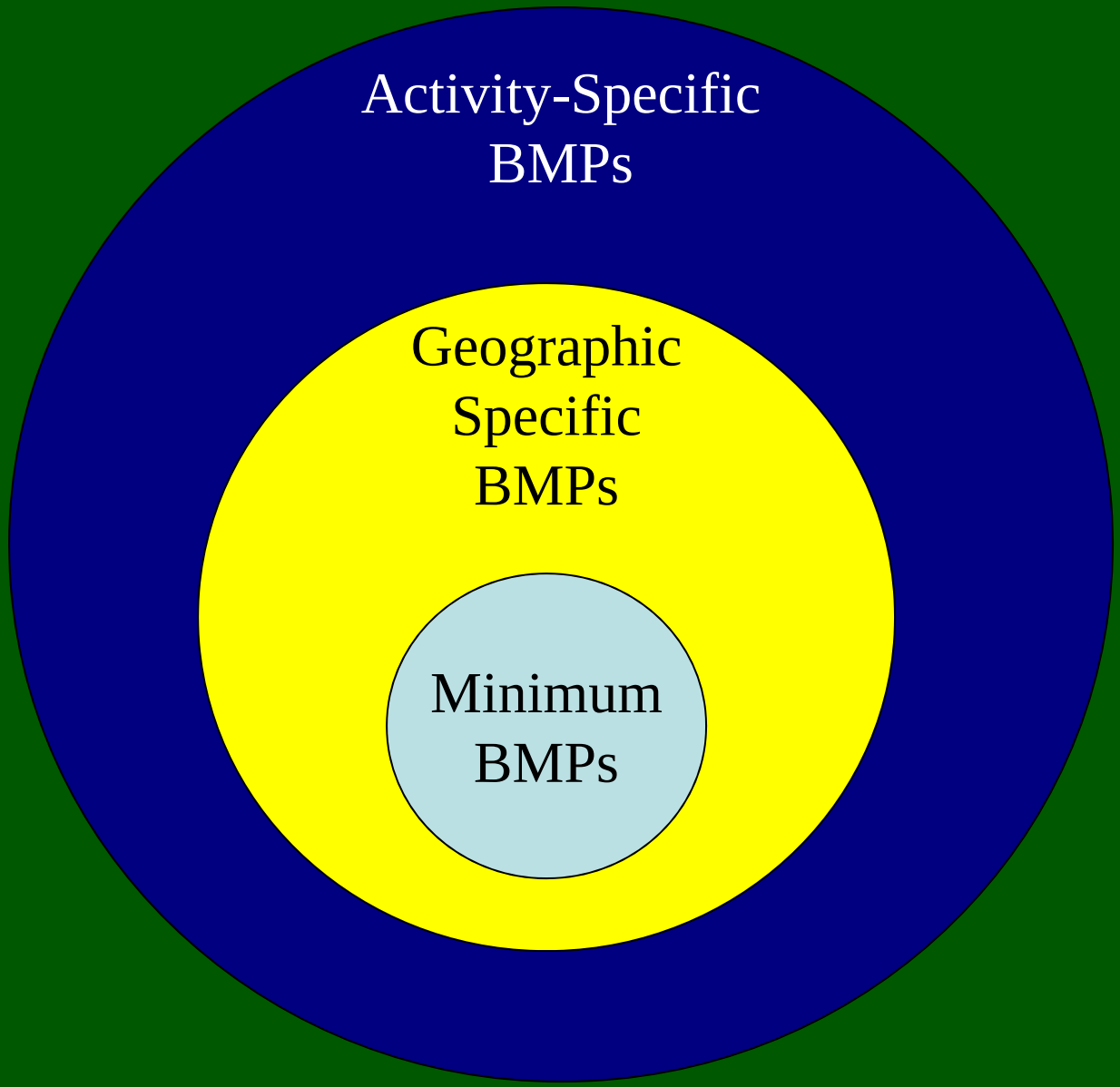
Ministerial Projects
Building Division

- *Building Permits*
- *Tenant Improvements*
- *Remodels*

Figure 2.4

Public Works and/or the Engineering Division review the Development Standards Plan submitted by developer to determine that it incorporates all of the required BMPs; addresses the appropriate potential pollutants; and is adequately designed and sized. Public Works will then communicate its approval or need for revision to the Planning or Building Division.

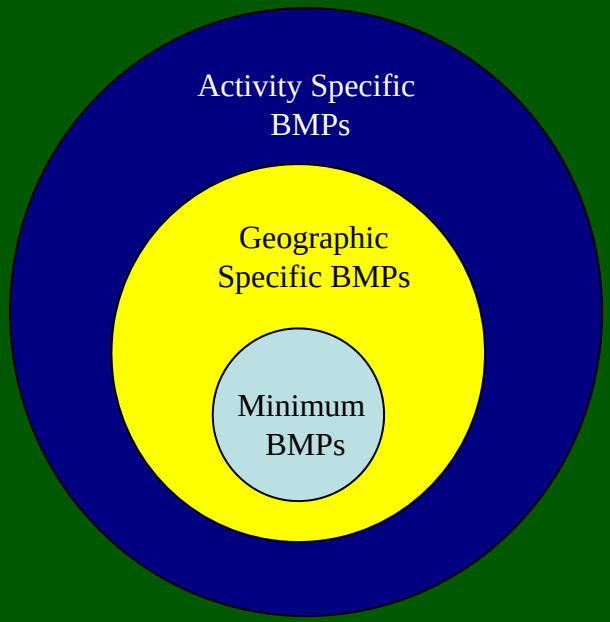
Lodi's BMP Requirements



3 Levels of Control

WGR

BMP Requirements:



Minimum BMPs:

- Are required for all parties subject to the DSP
- Are basic pollution prevention or simple control practices that are universally applicable

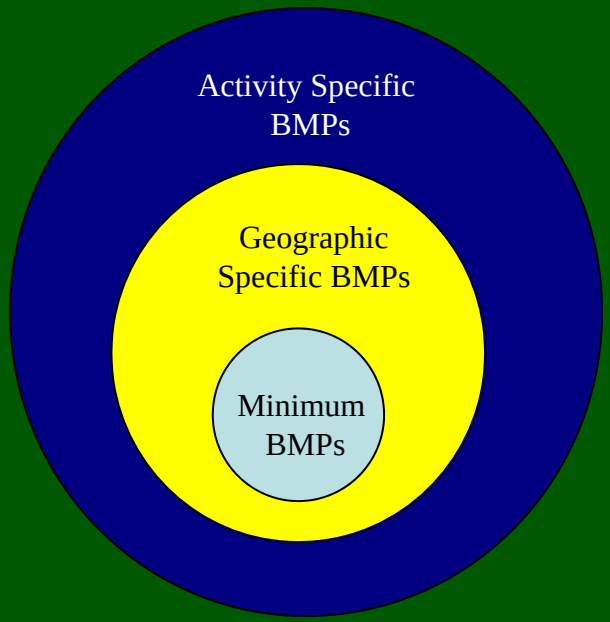
Geographic-Specific BMPs:

- Are minimum BMPs based on the location of the facility and the sensitivities of that location
- Areas that drain straight to the Mokelumne River require more controls than those that flow to a drainage basin.

Activity-Specific BMPs:

- Are treatment control BMPs required for all applicable developments
- State of California has identified types of development requiring treatment controls

BMP Requirements:



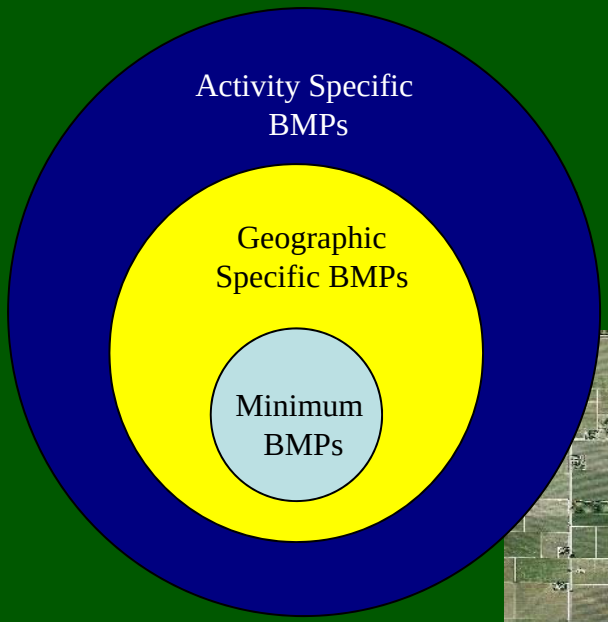
Minimum BMPs:

- Storm drain message and signage
- Roof drain design
- Outdoor material storage area design
- Outdoor trash storage area design
- Outdoor loading / unloading dock area design
- Outdoor repair / maintenance bay design
- Outdoor vehicle, equipment, accessory washing area design
- Swimming pool and fountain filters
- Sample/observation box

WGR

Geographic-Specific BMPs:

BMP Requirements:

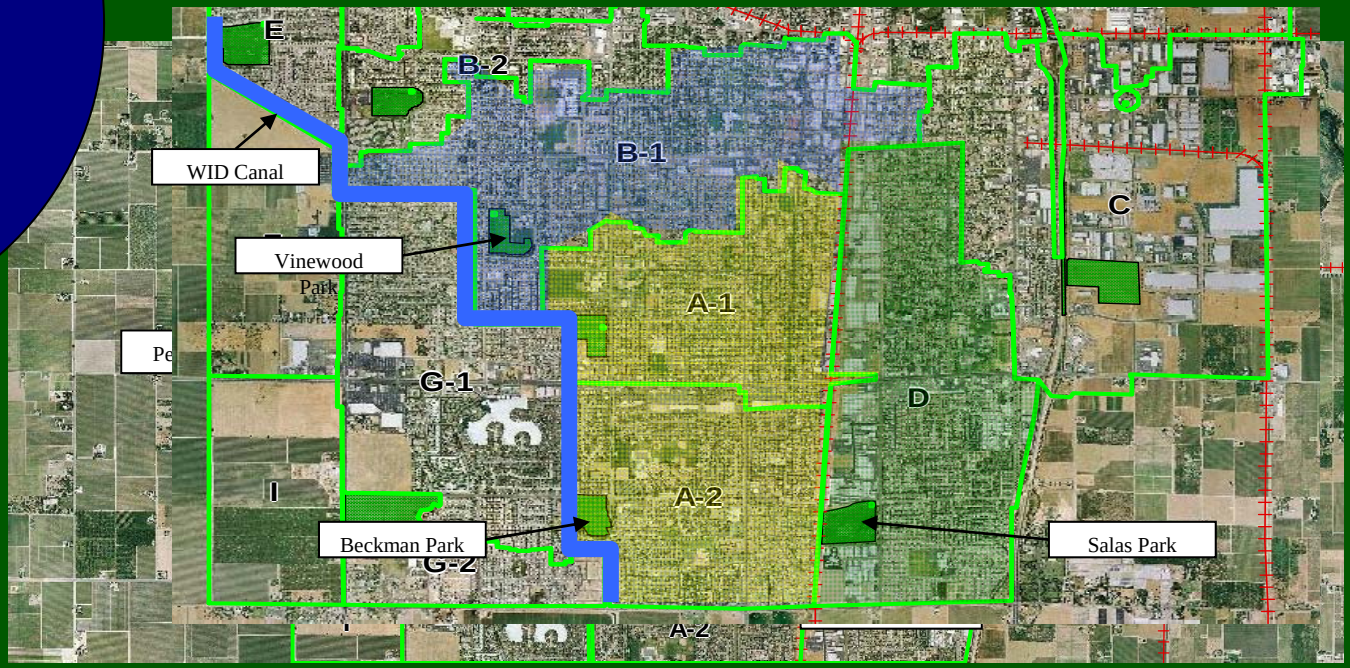


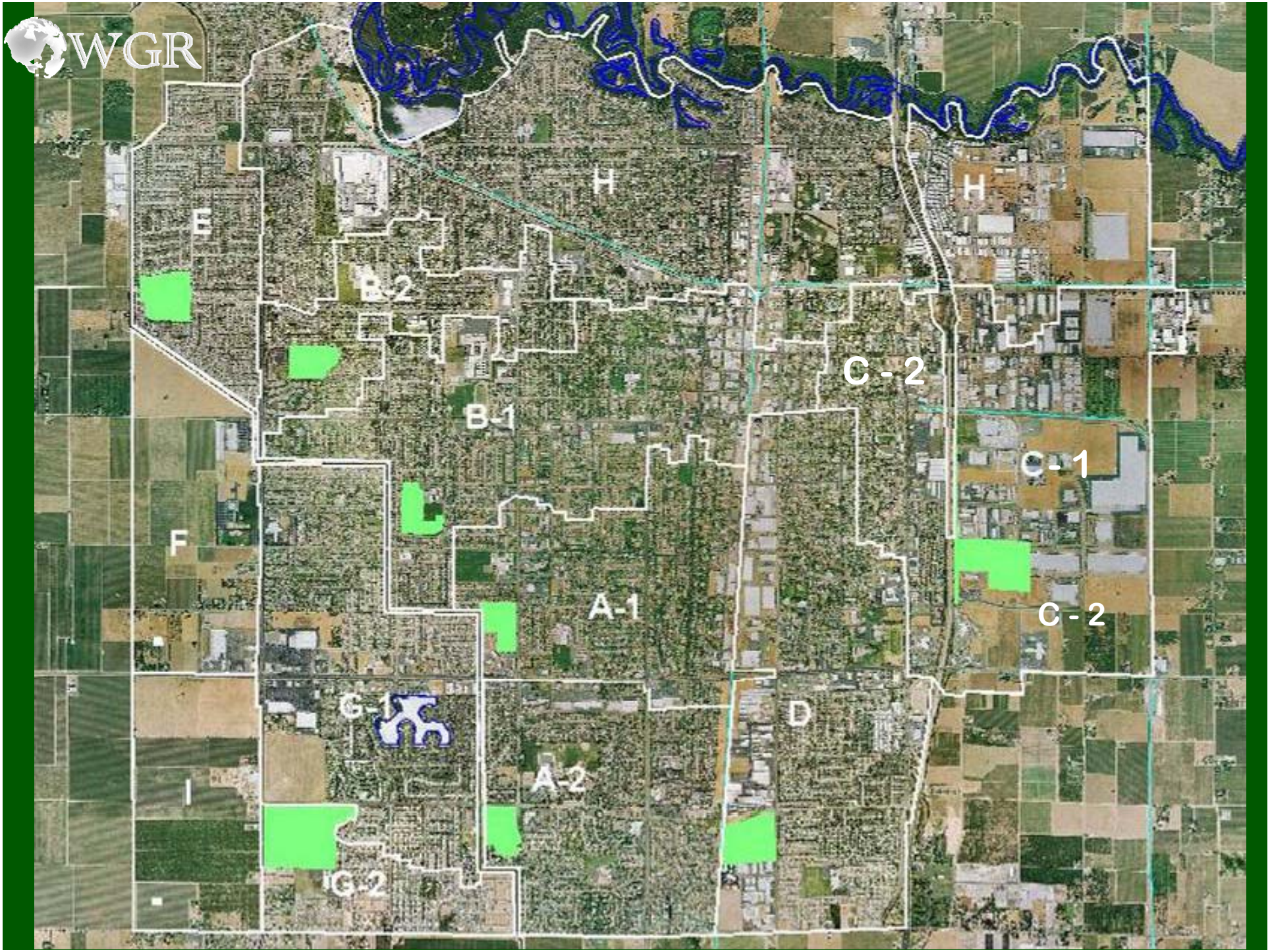
Direct Discharge to Mokelumne River Zone

Discharge to Mokelumne River Zone

- Capture and recovery of nuisance water

- Capture and recovery of nuisance water
- Capture and recovery of nuisance water

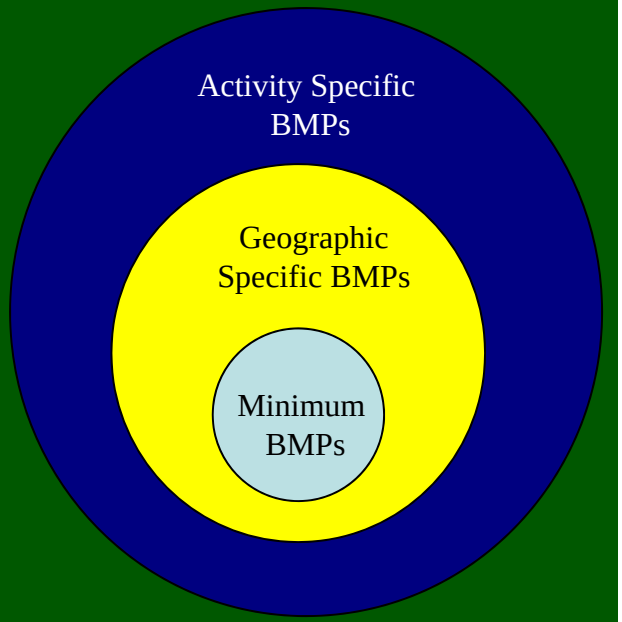



WGR
H
H
E
B-2
C - 2
B-1
C - 1
F
A-1
C - 2
G-1
D
A-2
I
G-2

Basin/Park	Tributary Area (acres)	Site Land Area (acres)	Detention Capacity (ac.ft.)	How low and nuisance flows are handled.
A-1, Kofu	491	12[1]	41.5	Pumped to the WID
A-2, Beckman	564	16.2[2]	60.0	Pumped to the WID
B-1, Vinewood	964	16.0	41.5	Pumped to the WID
B-2, Glaves[3]	450	13.2	31.1	Pumped/flows to Mokelumne R.
C -1	Approx. 591			Pumped/flows to the Mokelumne R.
C-2, *Pixley*[4]	Approx. 500	27.3	128.7	Pumped/flows to Pixley
D, Salas	790	21.0	94.0	Pumped to the WID
E, Peterson	340	20.9	61.0	Pumped/flows to the Mokelumne R.
F (*at Kettleman*)	369	30.0	68.5	Pumped/flows to DeBenedetti
F (*near Tokay*)		30.0	68.5	Pumped/flows to DeBenedetti
G (*DeBenedetti*)	866	46.3	202.0	Detains its own flows
H (Discharge to River)	428			Pumped/flows to the Mokelumne R.
I (*Undeveloped*)	320	25.0		Pumped/flows to DeBenedetti
Total:	**6,673**	**227.9**	**728.3**	

Activity-Specific BMPs:

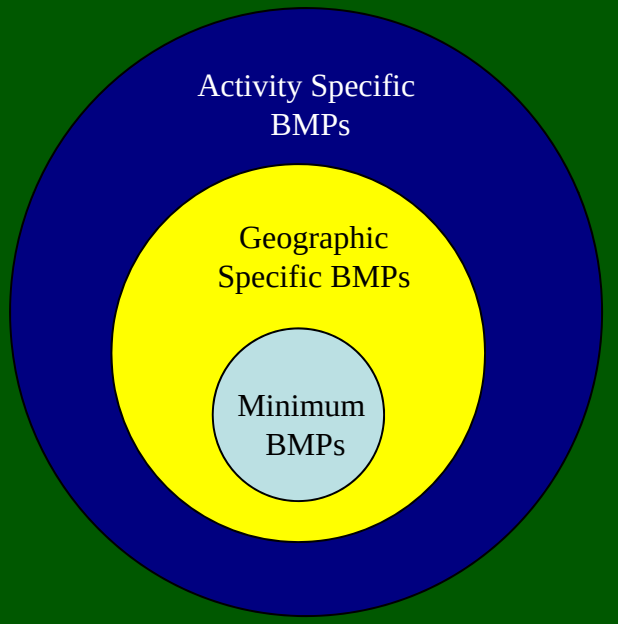
BMP Requirements:



New Development Project Category	Pollutant Category of Concern						
	Sediment	Nutrients	Metals	Trash & Debris	Oxygen Demand	Toxic Organics	Bacteria
Commercial Developments (>=100,000 sf)	X	X	X	X	X	X	X
Automotive Repair Shops	X		X	X	X	X	
Retail Gasoline Outlets	X		X	X	X	X	
Restaurants		X		X	X	X	X
Parking Lots (>=5,000 sf or 25 spaces)	X		X	X	X	X	
Home Subdivisions (>=10 units)	X	X	X	X	X	X	X

Activity-Specific BMPs:

BMP Requirements:



New Development Industrial Activity	Pollutant Category of Concern											
	Toxic Organics	Sulfur, Sulfides, Sulfates	Nutrients	Metals	Trash & Debris	Oxygen Demand	Oil & Grease	Bacteria	pH	Dissolved Solids	Suspended Solids	Sediment
Cement, Concrete, and Aggregate Operations				X	X		X		X	X	X	X
Sulfur Distribution, Storage and Handling		X		X	X	X	X		X	X	X	X
Wineries, wine processing and packaging.			X		X	X			X		X	X
Agricultural Products Storage & Handling	X	X	X	X	X	X	X	X	X	X	X	X
Other Chemical Storage & Handling	X	X	X	X	X	X	X		X	X	X	X
Food Products Processing, Storage & Handling			X	X	X	X	X	X	X	X	X	X
Paper and Plastic Recycling					X	X	X		X		X	X
Auto Wrecking, Dismantling, and Body Shops; Metal Salvage / Recycling	X			X	X		X		X		X	X
Railroad Operations				X	X		X				X	X
Highways and Freeways	X			X	X		X				X	X

What does a DSP submittal require?

- A completed DSP worksheet and the required attachments.
- Plans identifying all of the BMPs and control measures including their locations, type, size, construction detail, and manufacturer information.
- Treatment control specifications and sizing calculations.
- A written BMP Operation & Maintenance Plan
- An executed and recorded BMP maintenance agreement.

Are submittal fees require?

- The review fee is included in the project valuation assessment fee.
- Post-construction BMP inspections will be billed to the property owner.

Part II

Determining Applicability

So, to whom do these design standards apply?

Question 1: Is it a new development?

If no, then go to Question 2.

If yes, then answer Question 1a.

"New development" includes new construction on a vacant property; new construction after a complete demolition; and new construction or a tenant improvement that results in a change-of-use.

Question 1a: Does it fall into one of the following categories? (Tables 2.3.3.1 and 2.3.3.2 of the DSP)

California State Priority Development Project Categories and Lodi-Specified Industrial Categories:

- Commercial developments (>= 100,000 sq.ft.)
- Automotive repair shops
- Retail Gasoline Outlets
- Restaurants
- Parking lots exposed to rainfall >=5,000 sq. ft. or with >= 25 parking spaces.
- Home subdivisions with 10 housing units or more
- Cement, concrete, and aggregate operations
- Sulfur distribution, storage, and handling
- Wineries, wine processing, and packaging
- Agricultural products storage and handling
- Other chemical storage and handling
- Food products processing, storage and handling
- Paper and plastic recycling
- Auto wrecking, dismantling, and body shops; metal salvage and recycling
- Railroad operations
- Highways and freeways

If no, then only Mandatory Minimum BMPs apply.

(Refer to Section 3.1)

If yes, then the following BMPs / control measures apply:

- Mandatory Minimum BMPs (Section 3.1)
- Priority-Category BMPs (Section 3.2)
- Drainage Zone Specific BMPs (Section 3.3)
- Treatment Control (Section 3.4)

Question 2: Is it significant redevelopment development?

If no, then the DSP is not applicable to the proposed project.

If yes, then answer Question 2a.

"Significant Redevelopment" is defined as the creation or addition of at least 5,000 sq. ft. of impervious surfaces on an already developed site. It does not include replacement of impervious surfaces that is a part of routine maintenance, such as the repair and/or replacement of an asphalt parking lot; or the replacement of a building or other structures where the net increase of impervious surface is less than 5,000 sq. ft.

Question 2a: Does the Significant Redevelopment fall into one of the following categories? (Tables 2.3.3.1 and 2.3.3.2 of the DSP)

- Commercial developments (>= 100,000 sq.ft.)
- Automotive repair shops
- Retail Gasoline Outlets
- Restaurants
- Parking lots exposed to rainfall >=5,000 sq. ft. or with >= 25 parking spaces.
- Home subdivisions with 10 housing units or more
- Cement, concrete, and aggregate operations
- Sulfur distribution, storage, and handling
- Wineries, wine processing, and packaging
- Agricultural products storage and handling
- Other chemical storage and handling
- Food products processing, storage and handling
- Paper and plastic recycling
- Auto wrecking, dismantling, and body shops; metal salvage and recycling
- Railroad operations
- Highways and freeways

If no, then only Mandatory Minimum BMPs apply.

(Refer to Section 3.1)

If yes, then the following BMPs / control measures apply:

- Mandatory Minimum BMPs (Section 3.1)
- Priority-Category BMPs (Section 3.2)
- Drainage Zone Specific BMPs (Section 3.3)
- Treatment Control (Section 3.4)

Scenarios

Scenario #1

Housing development with 50 units and a 1-acre park

DSP Applies?

Yes, Priority Category – Home Subdivision >= 10 units

Scenario #2

A large block store and retail complex (>100,000 sf)

DSP Applies?

Yes, Priority Category – Commercial >= 100,000 sq. ft.

WGR

Scenario #3

A concrete & asphalt recycling plant and ready mix distributor

DSP Applies?

Yes, Lodi Specified Industry – Cement, Concrete, & Aggregate

Scenario #4

Tenant Improvement

DSP Applies?

Yes, Priority Category – Parking lot, commercial ?

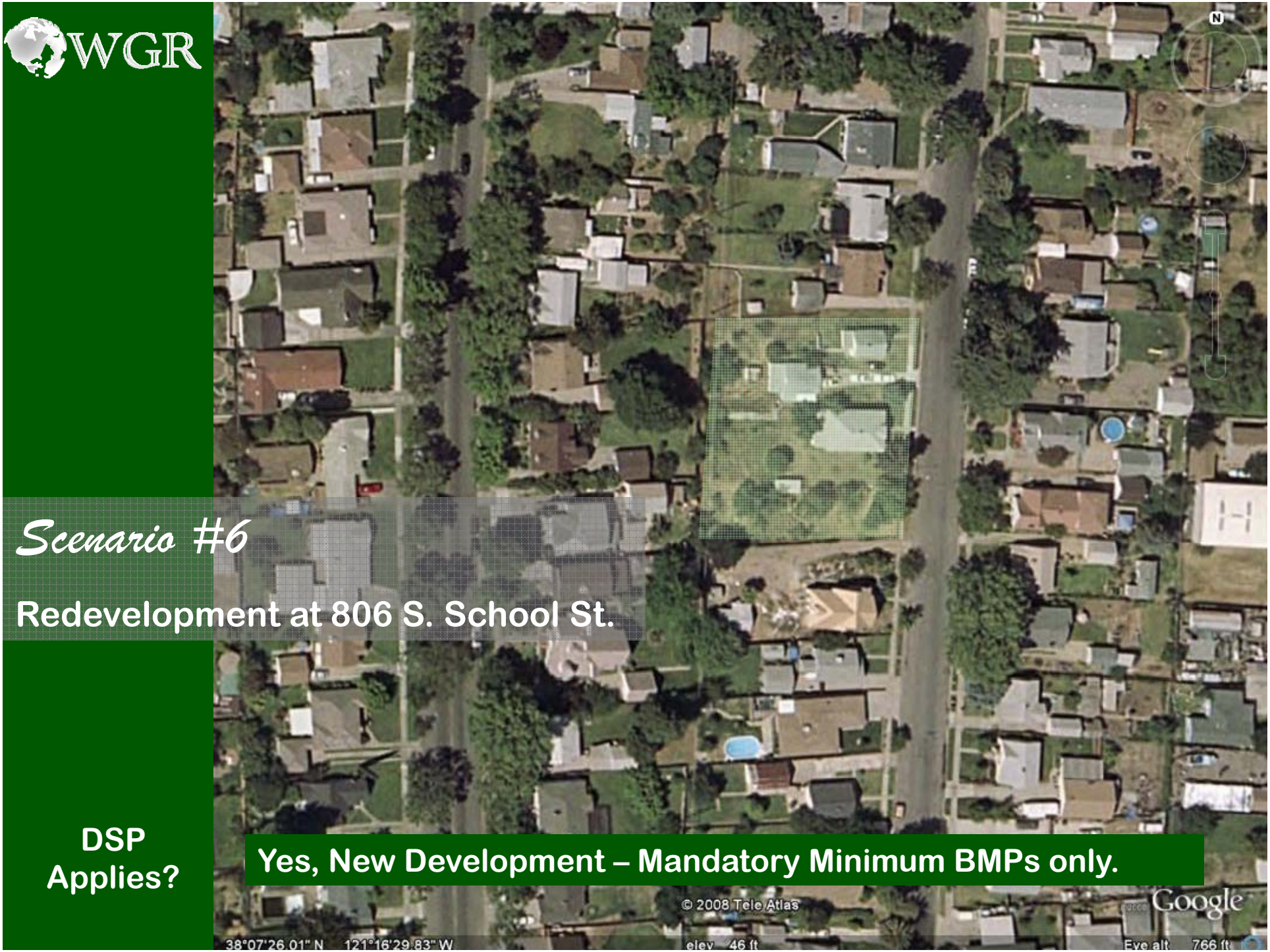
WGR

Scenario #5

The Grape Bowl Renovation

DSP Applies?

Yes, Significant redevelopment - > 5,000 sq. ft. of additional impervious area on an already developed site.


WGR
Scenario #6
Redevelopment at 806 S. School St.
DSP Applies?
Yes, New Development – Mandatory Minimum BMPs only.
© 2008 Tele Atlas
Google
38°07'26.01" N 121°16'29.83" W
elev 46 ft
Eye alt 766 ft

Scenario #7

New gymnasium for Jim Elliot High School

DSP Applies?

Yes, Significant Redevelopment, > 5,000 sq. ft.

WGR

Scenario #8

New road at Lodi High School

DSP Applies?

Yes, Significant Redevelopment, > 5,000 sq. ft.

Part III

DSP Evaluation

WGR

1. **Verify the submittal is complete. It should include the following:**
    - A completed DSP worksheet and the required attachments.
    - Plans identifying all of the BMPs and control measures including their locations, type, size, construction detail, and manufacturer information.
    - Treatment control specifications and sizing calculations.
    - A written BMP Operation & Maintenance Plan
    - An executed and recorded BMP maintenance agreement.

2. **Check to see all appropriate BMP categories have been incorporated into the project including:**
    - Mandatory Minimum BMPs (Section 3.1)
    - Priority-Category BMPs (Section 3.2)
    - Drainage Zone Specific BMPs (Section 3.3)
    - Treatment Control (Section 3.4)

3. **If treatment controls were required, compare the selected treatment controls with the pollutants of concern (on Tables 2.3.3.1 and 2.3.3.2). Make sure the selected controls adequately address all of the pollutants.**

    - Bioretention
    - Vortex Separator
    - Contech StormFilter

4. Review that the appropriate treatment control sizing criteria was used.

- Storm water Quality Design Flow (SQDF)
- Storm water Quality Design Volume (SQDV)

Reference No.	BMP	Design Criteria
TC-31	Vegetated buffer strips	SQDF
TC-30	Vegetated swales	SQDF
TC-22	Extended detention basin	SQDV
TC-20	Wet pond	SQDV
TC-20, MP-20	Constructed wetland	SQDV
TC-40	Detention basin / sand filter	SQDV
TC-40, SD-20	Porous pavement detention	SQDV
TC-32, TC-40	Porous landscape detention	SQDV
TC-11	Infiltration basin	SQDV
TC-10	Infiltration trench	SQDV
TC-40, MP-40	Media filter	SQDV
MP-50, MP-51	Wet vaults, oil/water separators, and vortex separators	SQDF
TC-12	Retention / irrigation	SQDV
LODI-99	Alternative and proprietary control measures	Variable

WGR

5. Verify the control measure was sized to the criteria specifications in the DSP.

- The discharger may size their BMPs on a **volume** determination to capture 80% or more of the volume recommended in the CASQA Handbook **OR** as a **flow rate** determination based on the 85th percentile of the recorded hourly rainfall intensity multiplied by a factor of 2.
- The discharger may also select an equivalent sizing criteria, such as a performance based standard, to achieve the same reduction in pollutant loads.

WGR

So what does this mean for projects in Lodi ? . . .

Numeric & Equivalent Sizing Criteria:

- Dependent upon the runoff coefficient (% of water that flows offsite), the Storm Water Quality Design Volume (SQDV) is approximately 0.4 to 0.8 inches of rain multiplied by the area of the facility to yield a total volume.
- The Storm Water Quality Design Flow (SQDF) criteria is approximately 0.10 inches/hour which is multiplied by 2 to yield a total of 0.2 inches/hour.
- The City of Lodi has specified a SQDF of 0.2 inches/hour and a SQDV calculated by a rainfall storage figure ranging from 0.1 to 0.6 inches (depending upon the % imperviousness) multiplied by the area.

WGR

6. Verify proposed control measures will not cause the following:

- A threat to groundwater or soil quality by the allowing the infiltration of potential contaminates.
- Downstream erosion of slopes, channels, and drainage systems.

WGR

7. Verify appropriate Low Impact Design (LID) features have been incorporated into the project to the Maximum Extent Practicable (MEP).

- Preserve natural areas.
- Use bioretention and infiltration.
- Recover and recycle water.
- Utilize good hydromodification concepts; keep the difference of peak runoff flow rates from pre and post construction to a minimum.
- Use trees as energy dissipaters.

8. **Check to see if the submitted BMP Operation & Maintenance Plan is adequate and in accordance with CASQA or the manufacturer's recommendations.**

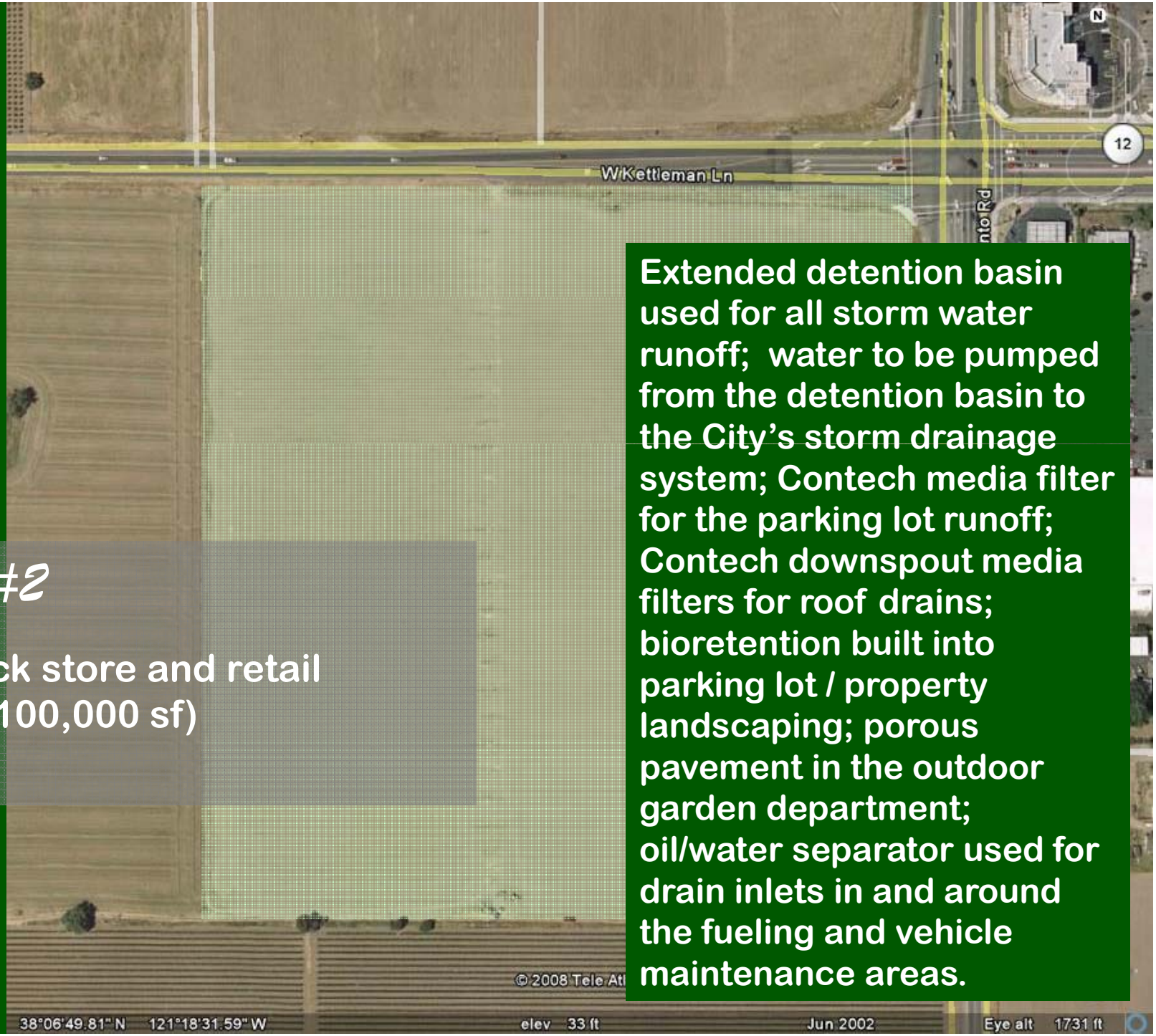
WGR

Scenario #1

Housing development with 50 units and a 1-acre park

Control Measures:

Bioretention and infiltration, built into landscaping for each lot, the park and the club house; vortex separators installed for the street and clubhouse parking lot runoff;



Scenario #2

A large block store and retail complex (>100,000 sf)

Control Measures:

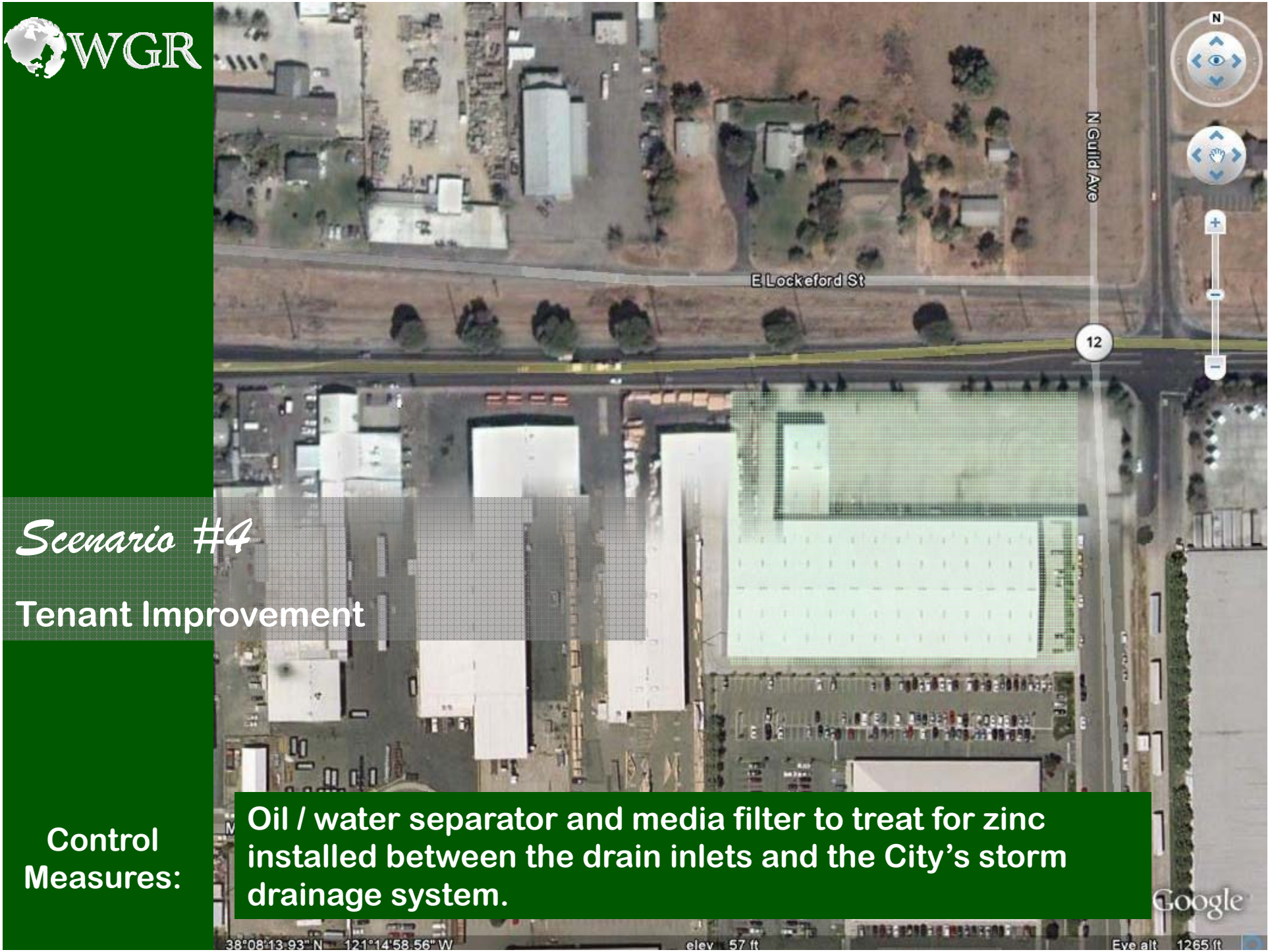
Extended detention basin used for all storm water runoff; water to be pumped from the detention basin to the City's storm drainage system; Contech media filter for the parking lot runoff; Contech downspout media filters for roof drains; bioretention built into parking lot / property landscaping; porous pavement in the outdoor garden department; oil/water separator used for drain inlets in and around the fueling and vehicle maintenance areas.

Scenario #3

A concrete & asphalt recycling plant and ready mix distributor

Control Measures:

Installed a system to capture and reuse the majority of the storm water / washwater; industrial wastewater connection for water than cannot be reused. No storm water discharge.



Scenario #4

Tenant Improvement

Control Measures:

Oil / water separator and media filter to treat for zinc installed between the drain inlets and the City's storm drainage system.

WGR

Scenario #5

The Grape Bowl Renovation

Control Measures:

Area within the stadium: bioretention and infiltration

Area outside the stadium: oil / water separator with a vortex separator.

Scenario #6

Redevelopment at 806 S. School St.

Control Measures:

None required.

WGR

Scenario #7

New gymnasium for Jim Elliot High School

Control Measures:

None required.

WGR

Scenario #8

New road at Lodi High School

Control Measures: None required.

For more information or help with the DSP, contact …

WGR

Not Your Typical Consultant

John M. Teravskis

Regional Manager

jteravskis@wgr-sw.com

(209) 334-5363 ext. 202

315 W. Pine Street, Suite 8

Lodi, CA 95240