

Appendix D
Stakeholder Workshops – Agendas and Presentations

SANTA MONICA BAY BEACHES BACTERIA TMDL - WET WEATHER

IMPLEMENTATION WORKSHOP

**May 29, 2003 8:00 a.m. -
12:00 p.m. Loyola
Marymount University**

Purpose: To provide a forum for jurisdictional groups to discuss responsibilities and strategies and reach unity in complying with the monitoring plan requirements of the wet-weather bacterial TMDL for Santa Monica Bay beaches.

**Sponsored by: City of Los Angeles Bureau of Sanitation
County of Los Angeles Department of Public Works
Regional Water Quality Control Board - Los Angeles Region
Loyola Marymount University**

Facilitated by: Mr. Paul Brown, CH:CDM

AGENDA

8:00	Continental Breakfast	Hosted by LMU
8:30	Welcome & Workshop Overview	Dr. Gerald Jakubowski, LMU Judith A. Wilson, City of LA Rod Kubomoto, LACDPW Jon Bishop, RWQCB
8:45	Structural and Non-structural Compliance Options	Dr. Michael Stenstrom, UCLA
9:30	Presentation on FAQ's	RWQCB: Jon Bishop, Melinda Becker, Renee DeShazo,
10:00	Break	
10:10	Presentation	Dr. Mark Gold, Heal the Bay
10:30	Breakout Session Monitoring Plan Requirements	Breakout Facilitators
11:30	Next Steps	All
12:00 pm	Lunch	Hosted by LMU

DRIVING DIRECTIONS TO LMU FOR MAY 29, 2003 IMPLEMENTATION WORKSHOP

Go to the Loyola Marymount University website (www.lmu.edu) to get general directions to the University

For the best parking:

**From Lincoln Boulevard turn at light onto LMU Drive (in middle of large bluff) overlooking Ballona Wetlands.
Stop and check in with Security Guard**

**Proceed to enormous building just to the right of the guard shack (called University Hall), and enter into the eastern-most underground parking garage entrance (one furthest away from Lincoln)
Park and walk to elevator bank**

**Take elevator to University Hall (elevators only stop at Parking levels and main floor)
Turn right off of elevator bank; walk west to Executive Conference Center (on main floor).**

WELCOME

February 26, 2004

Workshop for Stakeholders

Initial Findings for Santa Monica Bay Beaches

Wet Weather Bacteria TMDL Implementation Plan

Sponsored by:

Cities of Los Angeles, Santa Monica, and El Segundo, County of Los Angeles, and Caltrans



Today's Agenda

- ✓ **Review of Santa Monica Bay Beaches Wet Weather Bacteria TMDL Compliance Requirements**
- ✓ **TMDL Implementation Planning Approach**
- ✓ **Initial Findings**
- ✓ **Feedback, Questions & Answers**
- ✓ **Next Steps**



Santa Monica Bay Beaches Wet Weather Bacteria TMDL Compliance Requirements

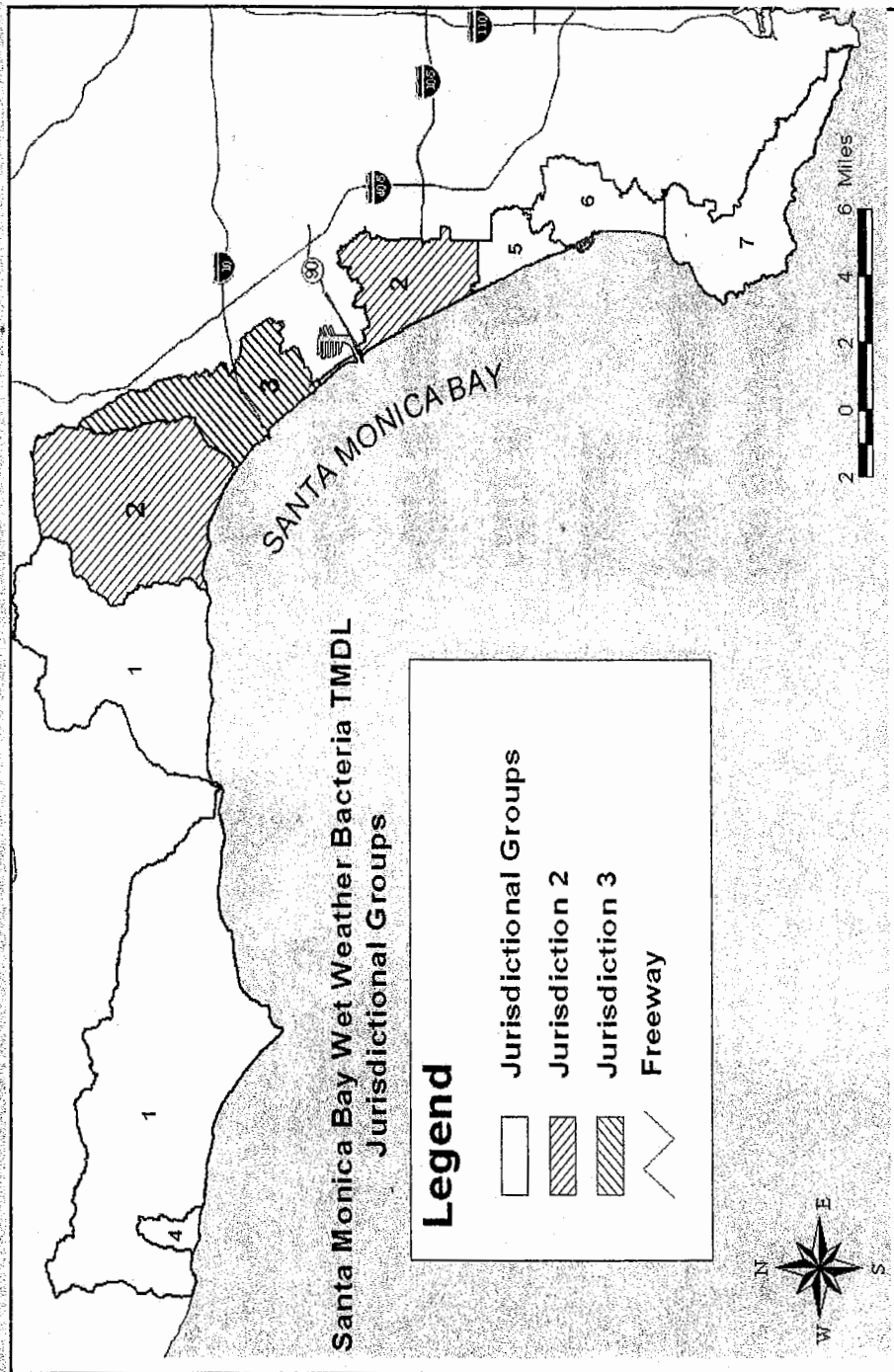


TMDL Compliance Goals and Requirements

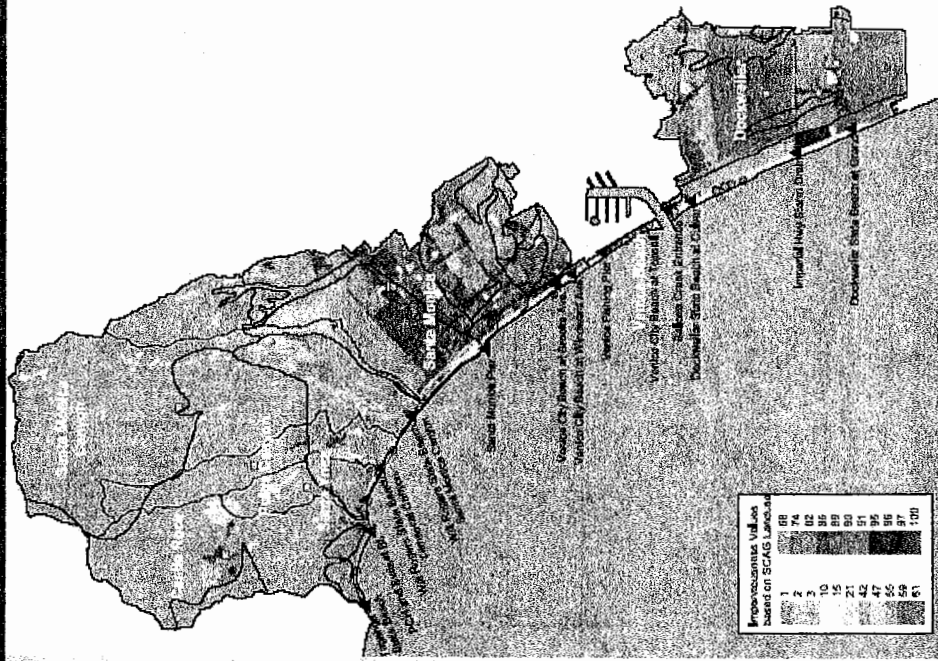
- **Improve water quality in Santa Monica Bay**
- **Reduce health risks for recreational purposes**
- **Compliance requirements include development of an implementation plan and a monitoring plan to meet the TMDL**
- **Reduce exceedance days to 17 or less per year**



TMDL Jurisdictions



TMDL Jurisdictions 2 and 3 Working Together



One Implementation Plan for Both Jurisdictions 2 and 3.

Include:

- City of Los Angeles (J2 lead)
- City of Santa Monica (J3 lead)
- City of El Segundo
- County of Los Angeles
- Caltrans



Implementation Planning Options

Non-integrated approach:

**10 year Implementation
Schedule**

2003: TMDL Effective Date

Non-Integrated Approach

Integrated Water Resources Approach

**Integrated water resources
approach:**

**Up to 18 year Implementation
Schedule**

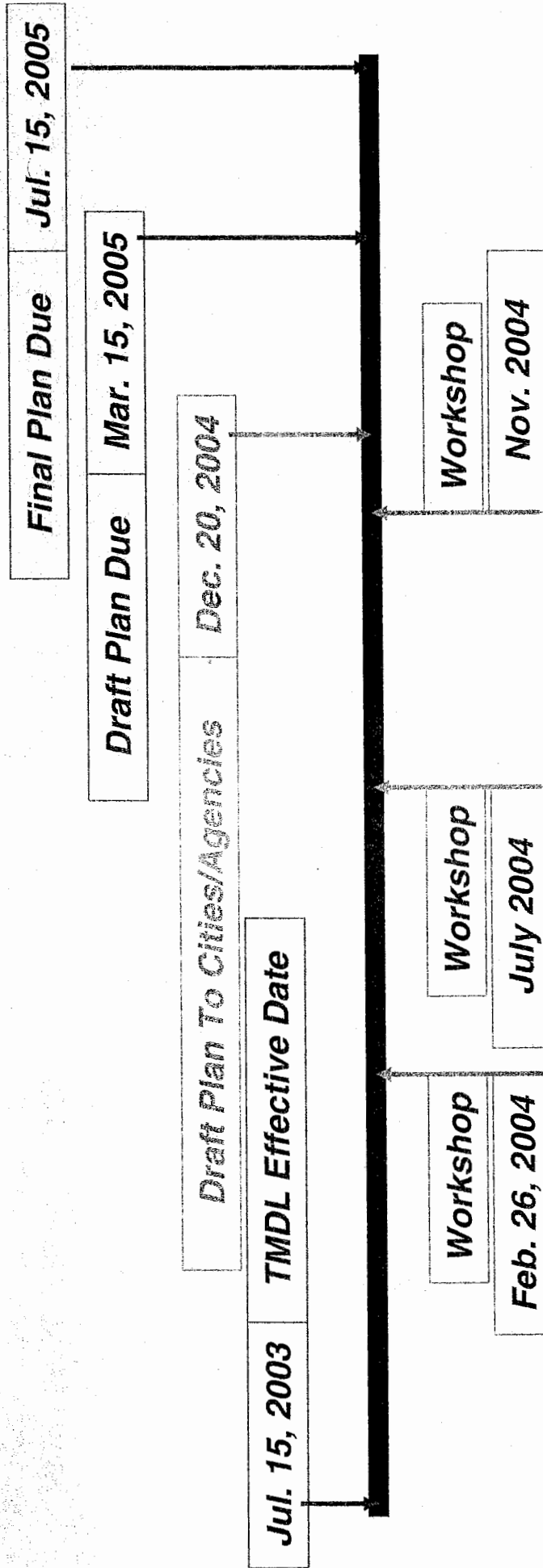
10 Yr

18 Yr



Compliance Requirements: Timeline of Events

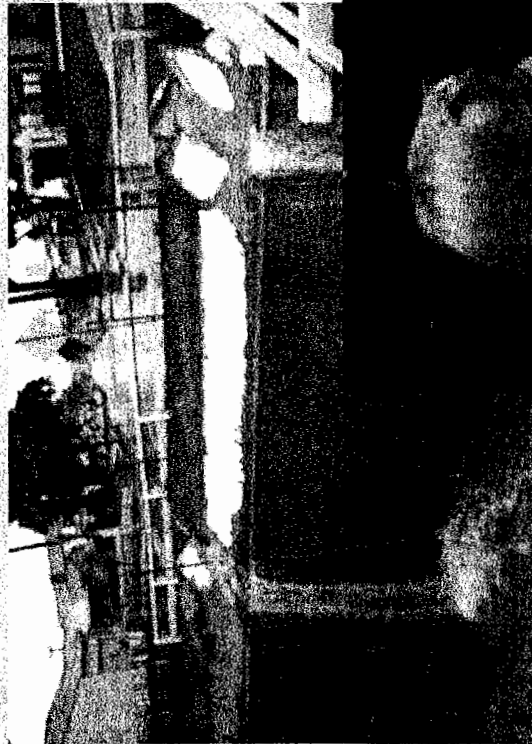
Firm Implementation Plan Due Dates Per TMDL



Santa Monica Bay Beaches Wet Weather Bacteria TMDL Implementation Planning Approach



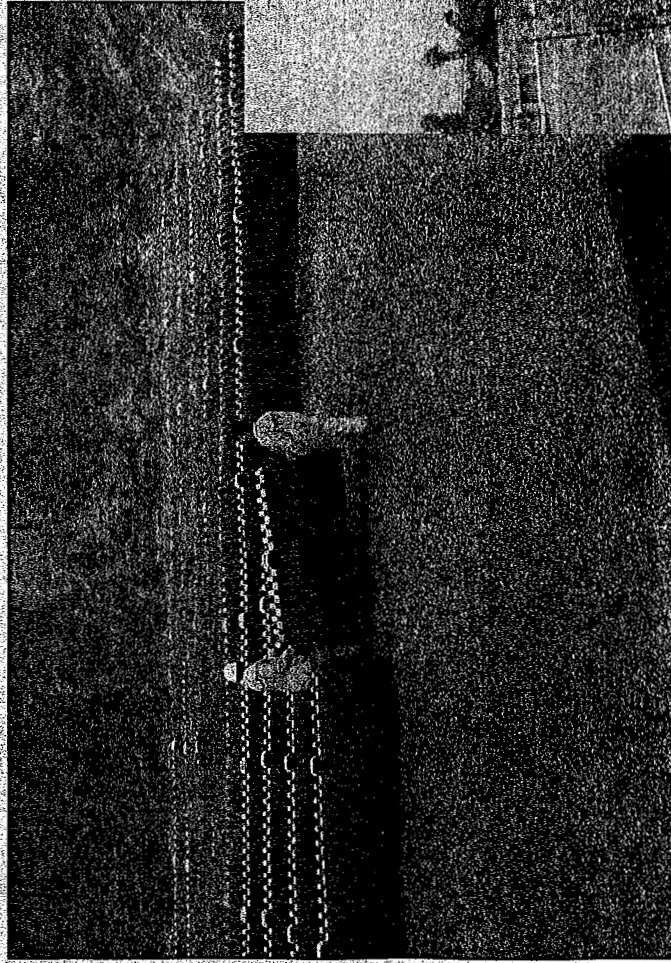
Integrated Water Resources Approach



This Approach Considers Integrating Stormwater, Recycled Water, and Potable Water Needs



Integrated Water Resources Approach



Focuses on Beneficial Use of Runoff

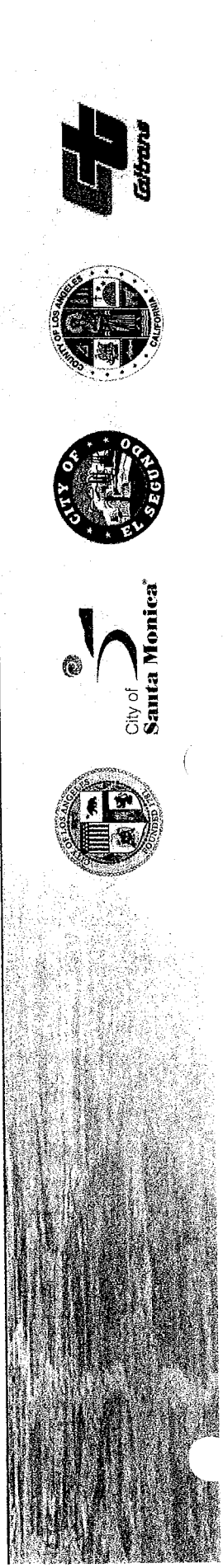
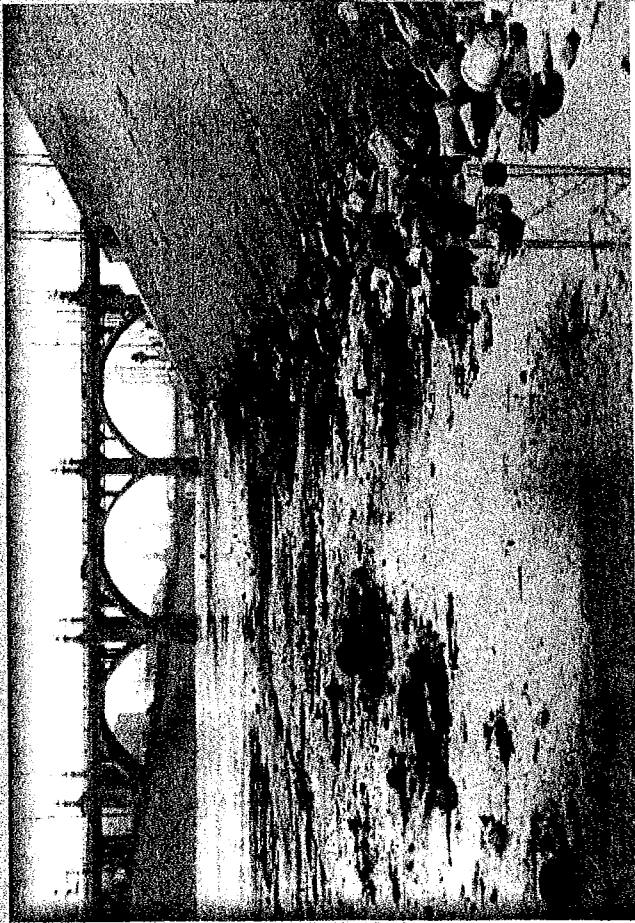


On-site infiltration



Integrated Water Resources Approach

Addresses Multiple Pollutants

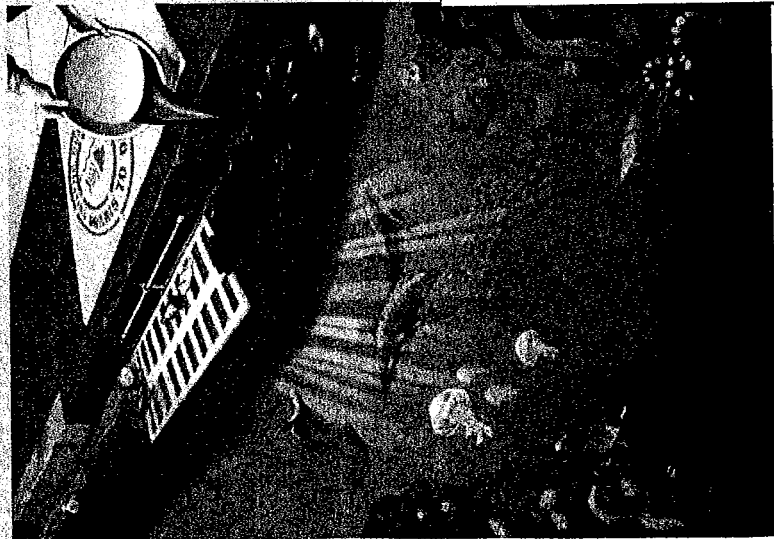


Implementation Methodology

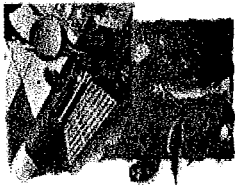
- Institutional solutions
- Local (on-site) solutions
- Regional solutions



Implementation Methodology: Institutional Solutions



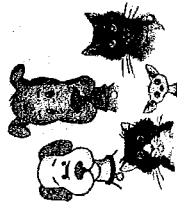
THE OCEAN
BEGINS



In Your
Neighborhood

What's the Scoop?

Tips for a healthy pet
and a healthier environment



GOOD CLEANING PRACTICES

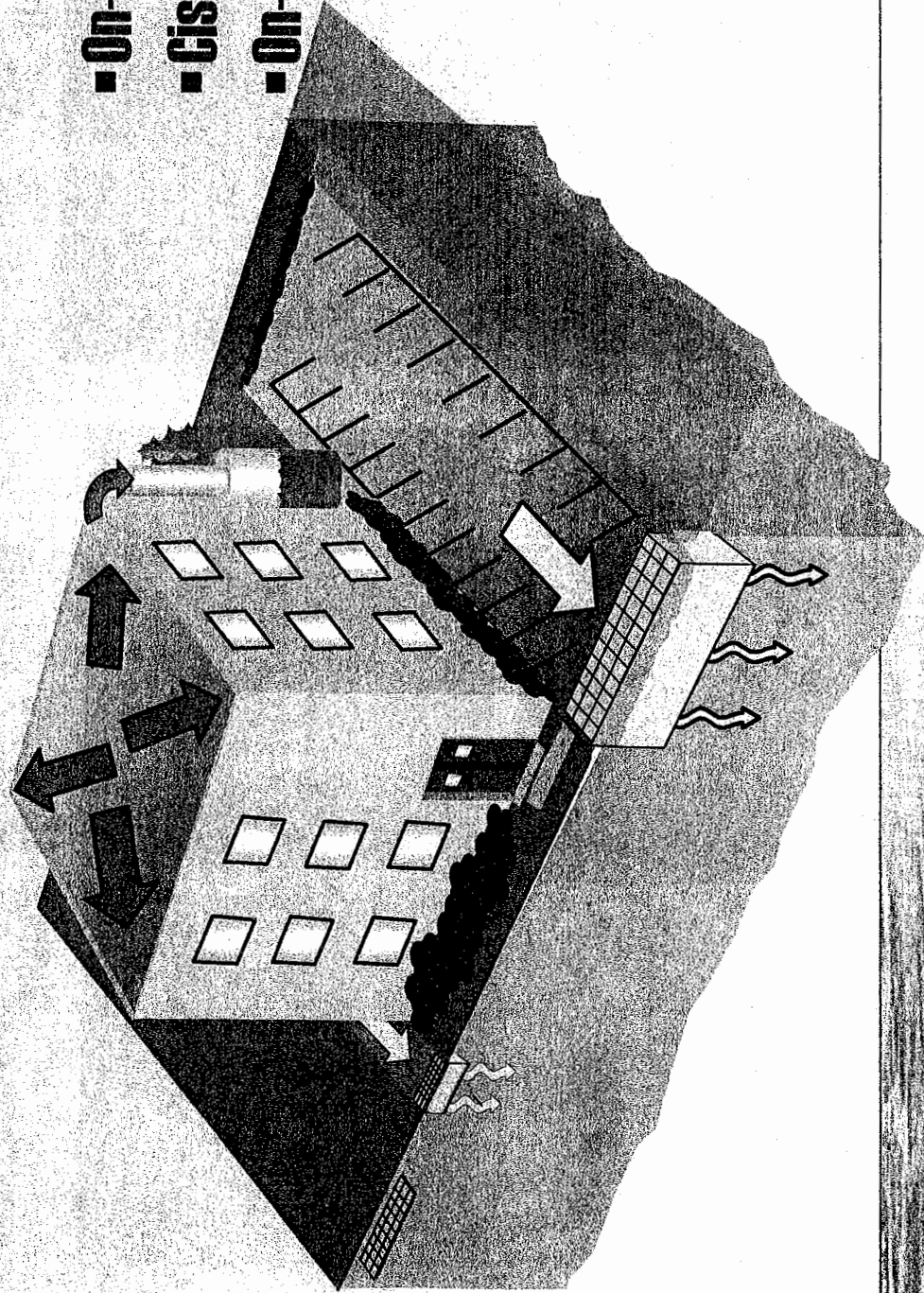
FOR A CLEANER ENVIRONMENT

www.santamonica.org

- Public Outreach
- Education
- Good Housekeeping Practices
- Ordinances/Codes
- Enforcement



Implementation Methodology: Local (on-site) Solutions

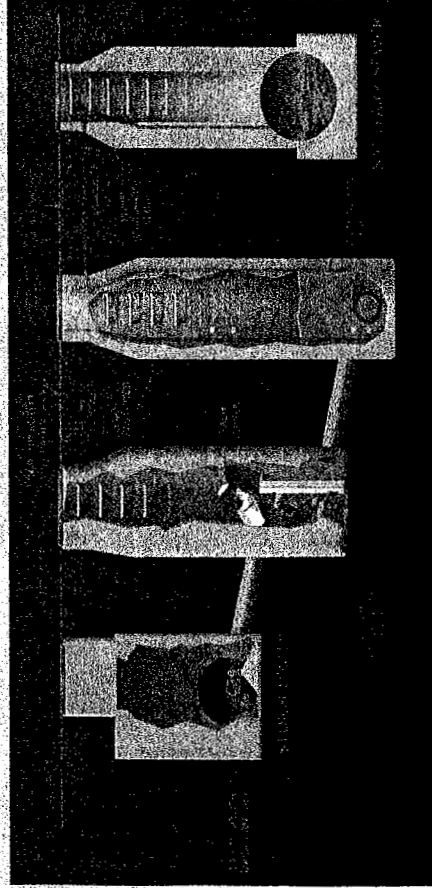
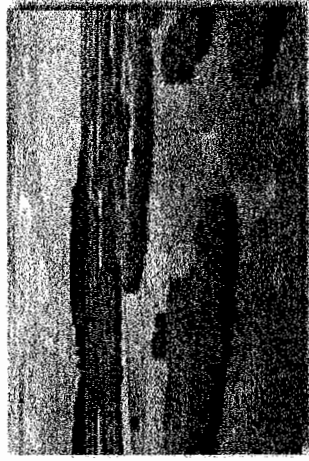


- On-site Infiltration
- Cisterns
- On-site Treatment

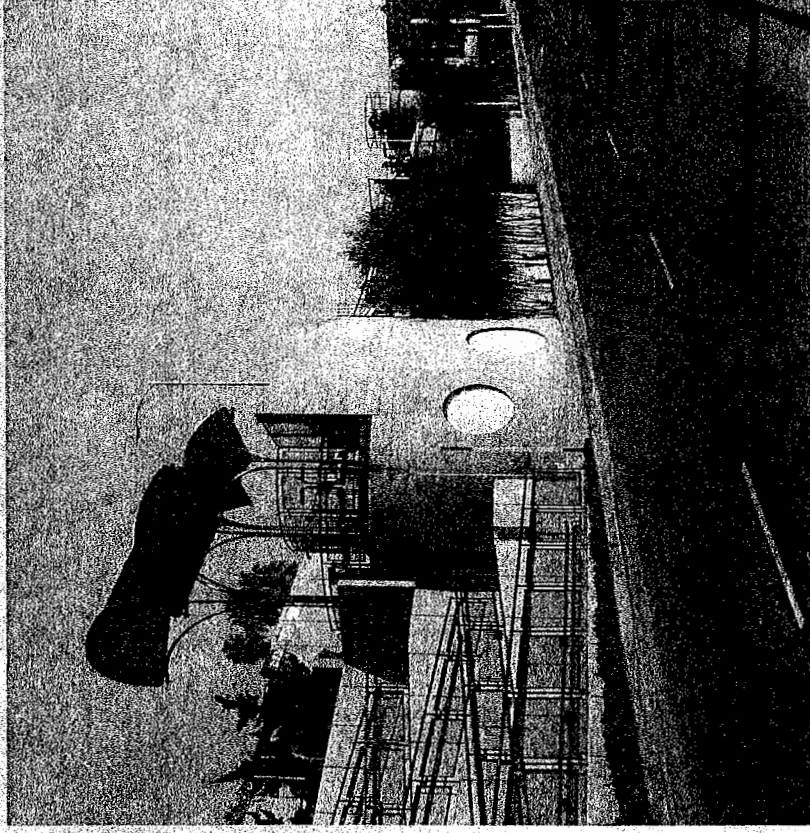


Implementation Methodology: Regional Solutions

- Diversion
- Treatment
- Storage



Diversion Structure

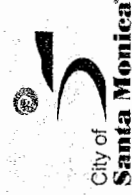


Treatment



Implementation Plan: Monitoring Its Performance

- 1. Initially implement primarily institutional and local solutions**
- 2. Initiate regional solutions planning/siting/environmental documentation activities**
- 3. Evaluate performance of institutional and local solutions**
- 4. Adjust and implement regional solutions based on the performance of institutional and local solutions**



Santa Monica Bay Beaches Wet Weather Bacteria TMDL Implementation Plan: Initial Findings



Initial Findings: Several Parallel Tasks

- **Hydrology Study**
- **Review of Regulatory Requirements**
- **Beneficial Use Options**
- **Treatment and Management Options**
- **Wastewater Collection System Evaluation for Potential Diversions**



Initial Findings: Hydrology Studies

Purpose

- To estimate the volumes of runoff that need to be managed to meet Bacteria TMDL requirements; Potential solutions:

Beneficial Use

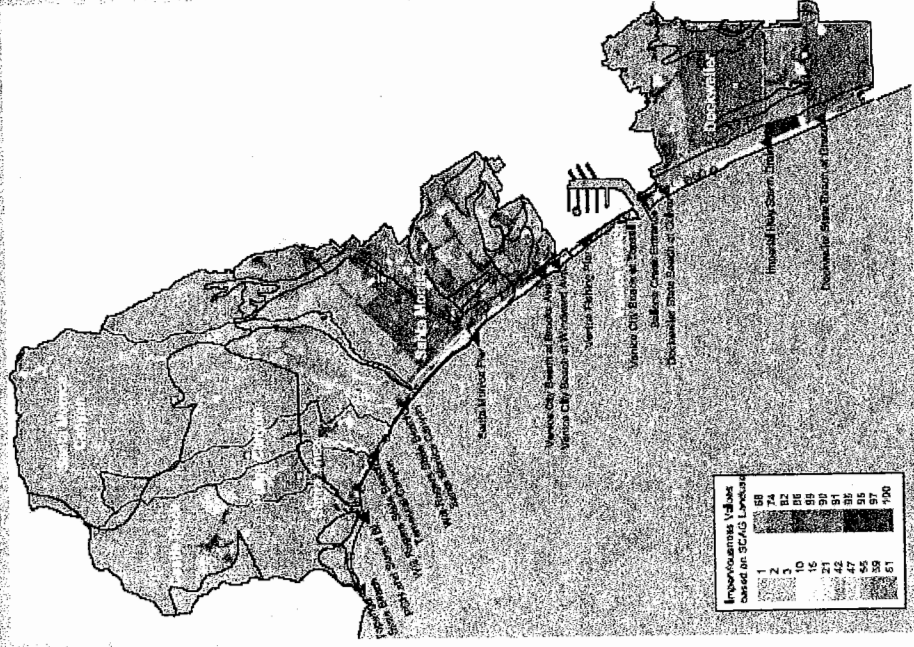
Diversions

Storage

Treatment

- To establish levels of confidence and risk to meet the requirements

Note: numerical results are preliminary



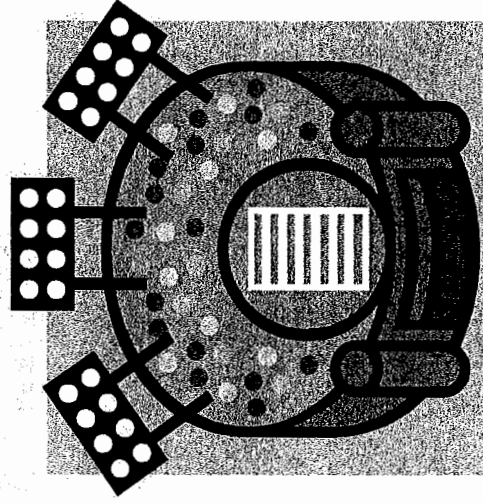
Hydrology Study Observations

- Areas of higher elevation experience more rainfall
- Areas with more development produce more runoff
- Flows naturally and artificially collect to centralized discharge points



Volume Estimates

**16 Million Gallons (MG) =
One football field, 80 feet
deep!**



Subwatershed	Acres	Volume (MG) Estimate
Castle Rock	4,982	16
Santa Ynez	1,226	6
Pulga Canyon	1,984	7
Santa Monica Canyon	10,125	33
Santa Monica	9,152	63
Venice Beach	109	1
Dockweiler	6,879	49
	34,457	174

Estimated runoff volume



Characteristics of Subwatersheds

Watershed Type	Subwatershed Names	Characteristics
Natural, open	Castle Rock, Pulga, Santa Monica Cyn, Venice Beach	Runoff is predominantly from natural sources, minimal urban runoff
Open + Mixed Residential	Santa Ynez	Runoff from urban sources contribute about half of overall runoff
Transportation/ Residential	Dockweiler, Santa Monica	Runoff is predominantly from urban sources



Initial Findings: Regulatory Requirements

Required General Types of Facilities:

■ On-Site Facilities

- Capture
- Infiltration
- Reuse

■ Regional Facilities

- Diversion
- Storage
- Treatment



Four Levels of Regulatory Agencies

■ Local

Health department

Public works

Planning and Building Departments

Coastal agencies

■ Regional

Air District

Water Quality Control Board

■ State

Department of Health Services

Fish and Game

Coastal Commission

■ Federal

EPA

Fish and Wildlife Services

National Marine Fisheries

Army Corps of Engineers



Examples of How Regulations Would Apply

- **On-Site capture and percolation**
Local Planning, Zoning, Building and Plumbing Codes
County Department of Health Services and EPA
- **Time to permit: 3-12 months**
Timeframe excludes environmental documentation, land
acquisition, design, and construction



Examples of How Regulations Would Apply

- **Regional Capture and Treatment Facility (for reuse or discharge)**
 - Local Planning, Zoning, Building and Plumbing Codes
 - Coastal Commission, RWQCB, AQMD, Fish and Game, Department of Health Service
 - Fish and Wildlife and depending on location Army Corps of Engineers and Coastal Zone Management Agency
- **Time to permit : 8-24 months**
 - Timeframe excludes environmental documentation, land acquisition, design, and construction



Other Considerations

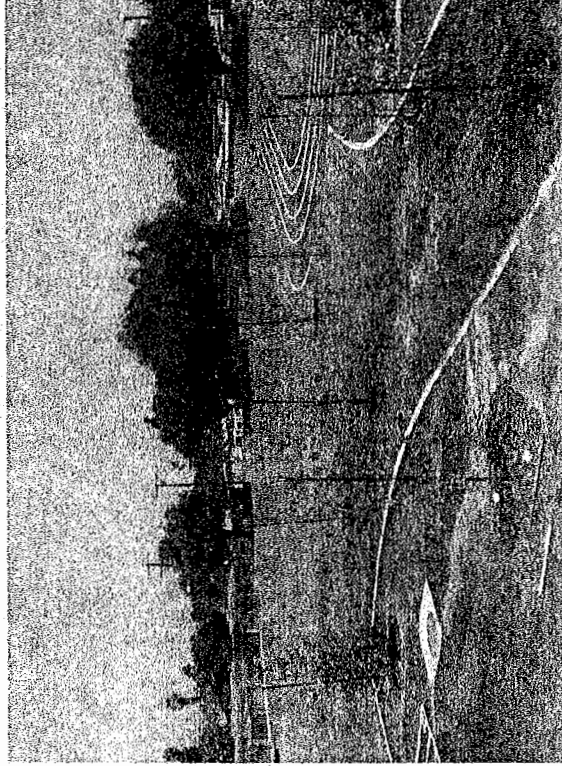
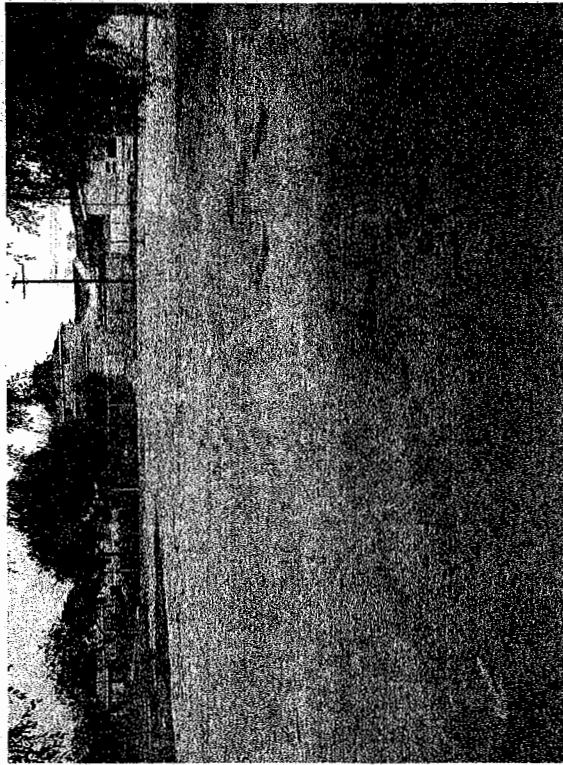
- **Compliance with California Environmental Quality Act**
- **Location and facility type will determine additional permit requirements from:
Caltrans, Army Corps of Engineers, Recreational Departments such as
Beaches and Harbors or Rec and Park Departments**
- **Construction type will have additional permit requirements**



Initial Findings: Beneficial Use Options

Purpose

- To identify specific direct reuse or recharge opportunities
- Goal: Maximize to the extent possible the volume of runoff that is treated and reused



Beneficial Use Options

Local (On-Site) Solutions

What can be done at individual homes and businesses?

Goal: Minimize the volume of wet weather runoff that enters the storm drain system

- ✓ On-site infiltration projects
- ✓ Cisterns



Beneficial Use Options

Regional Solutions

✓ Regional groundwater recharge:

Review of local soil infiltration capabilities

✓ Groundwater injection (example: West Basin Project)

✓ Temporary storage for reuse as irrigation supply:

Identify opportunities at schools, local parks, golf courses, industrial and commercial uses



Initial Findings: Treatment Options

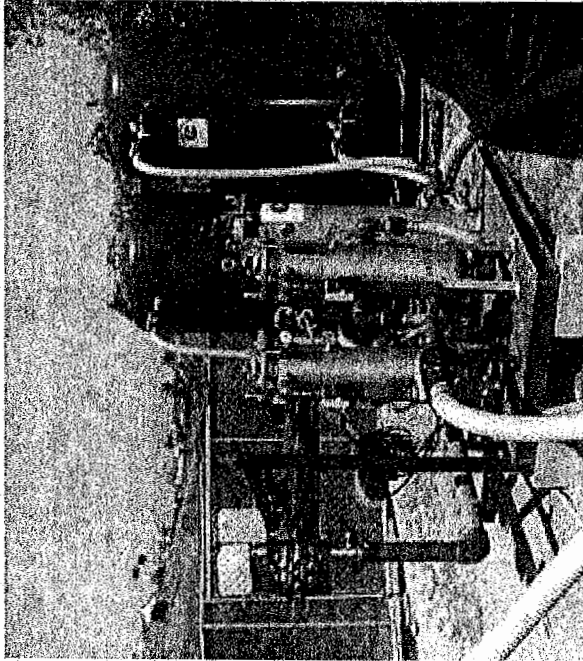
Sample Structural technologies

- New filter media
- Chemical additives, peracetic acids and other disinfectants
- Filterless ozonation
- UV disinfection
- Constructed wetlands
- Combined natural biofiltration systems

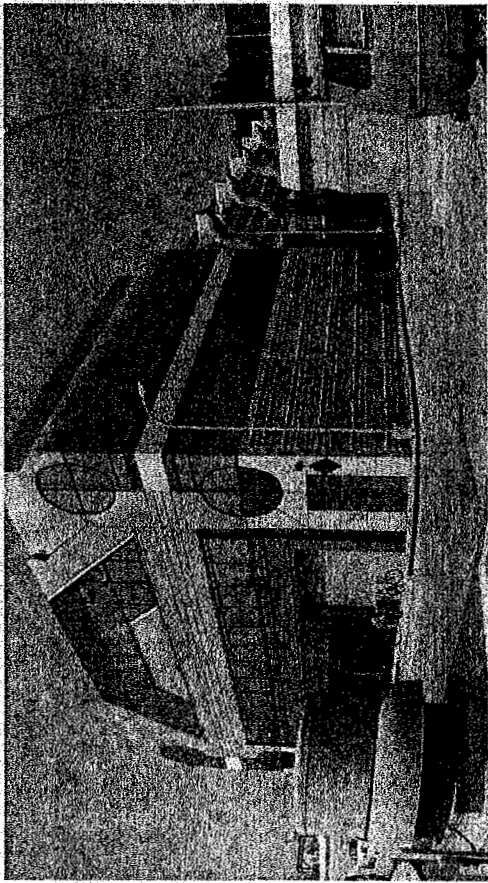


Treatment and Management Evaluation Criteria

- Performance (pollutant removal)
- Cost
- Application history/track record
- Land requirements
- Loading limitations
- Permitting
- Secondary impacts and benefits



Initial Findings: Diversion To Wastewater System



**Issue: Treat wet weather storm
drain flow at Hyperion
Treatment Plant:
How much can we treat?**

Assess:

- ✓ **Collection system capacity**
- ✓ **Hyperion Treatment Plant capacity**



Approach: Diversion To Wastewater System

- Use existing City of Los Angeles wastewater model
 - ✓ Expand with additional pipe information (City of Santa Monica)
 - ✓ Model estimated stormwater flows from hydrology study
 - ✓ Introduce flows into wastewater system at potential stormwater storage locations

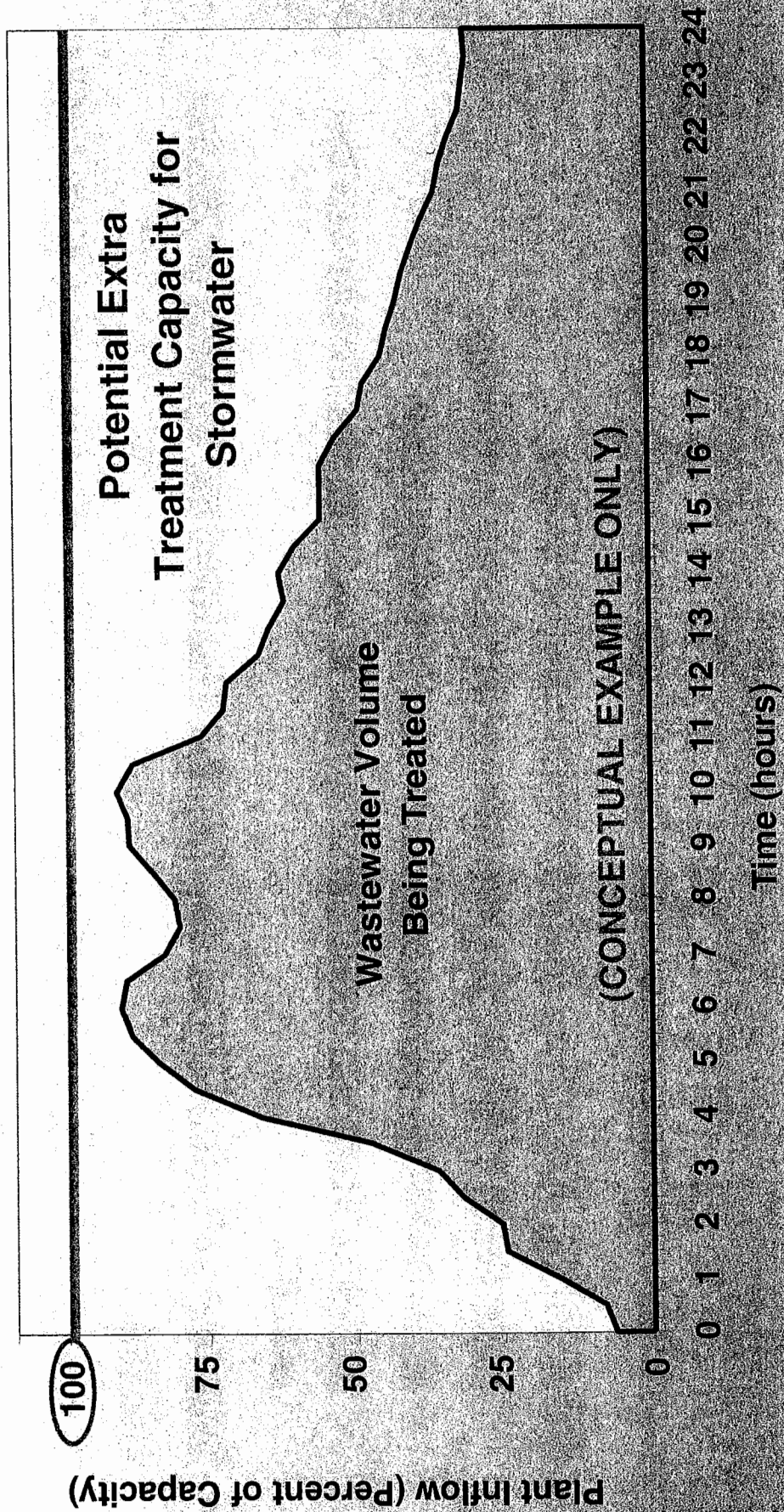
- Consider potential City of Los Angeles wastewater system expansion options

- Determine maximum stormwater volume over time that can be treated at Hyperion treatment plant



Approach: Diversion To Wastewater System

Sample Wastewater Inflow During 24-Hour Storm Event



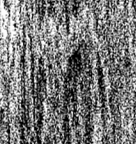
Feedback, Q & A

- ✓ **Santa Monica Bay Beaches Wet Weather Bacteria TMDL Compliance Requirements**
- ✓ **TMDL Implementation Planning Approach**
- ✓ **Initial Findings**



Next Steps

- **Developing Alternatives**
- **Upcoming Workshops**
 - **Workshop 3: Alternatives – July 2004**
 - **Workshop 4: Implementation Plan – November 2004**
- **Project Milestones**
 - **Draft Implementation Plan to J2/3 Cities and Agencies – December 2004**
 - **Draft Implementation Plan to Regional Board – March 2005**
 - **Final Plan to Regional Board – July 2005**
- **Questions and Comments**
 - **Morad Sedrak: Phone: 323-342-1577 or email: Msedrak@san.lacity.org**



**Santa Monica Bay Beaches
Wet Weather Bacteria TMDL
Implementation Plan
Workshop for Stakeholders**

August 12, 2004
8:30 a.m. to 11:30 a.m.

AGENDA

Welcome and introductions

Shahram Kharaghani, Watershed Protection Division Manager

Compliance Requirements and Implementation Methodology

Morad Sedrak, Watershed Protection Division

Task Update

Wing Tam, Watershed Protection Division

Tina Ponce, Consultant team

Dave Jones, Consultant team

Break (10:00 a.m.)

Task Update continued

Alternatives

Hampik Dekermenjian, Consultant team

Summary and Next Steps

Shahram Kharaghani, Watershed Protection Division

WELCOME

August 12, 2004

Workshop for Stakeholders

Alternatives for Santa Monica Bay Beaches

Wet Weather Bacteria TMDL Implementation Plan

Sponsored by:

Cities of Los Angeles, Santa Monica, and El Segundo; County of Los Angeles, and Caltrans



Today's Agenda

- ✓ **Compliance Goals Review**
- ✓ **Jurisdiction Schedule Review**
- ✓ **Implementation Methodology Review**
- ✓ **Task Update:**
 - ✓ **Hydrology Study**
 - ✓ **Beneficial Reuse Options**
 - ✓ **Treatment and Management Options**
 - ✓ **Wastewater Collection System Evaluation for Potential Diversions**
 - ✓ **Facilities Siting Update**



Today's Agenda (cont.)

- ✓ **Alternatives Approach**
- ✓ **Alternatives**
- ✓ **Low Cost**
- ✓ **Maximum Beneficial Reuse**
- ✓ **Low Risk**
- ✓ **Hybrid Alternative**
- ✓ **Next Steps**



Santa Monica Bay Beaches Wet Weather Bacteria TMDL Compliance Requirements

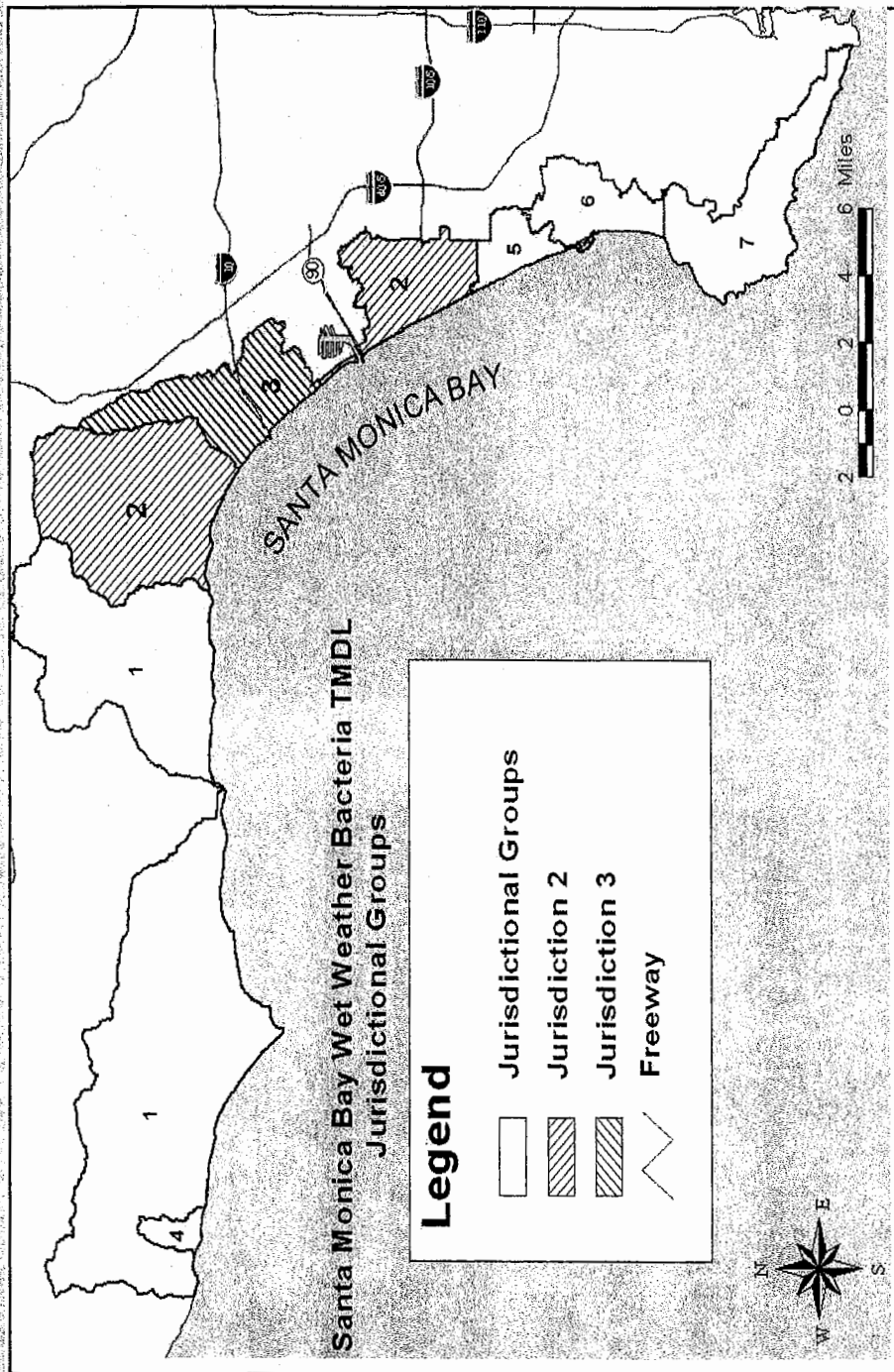


TMDL Compliance Goals and Requirements

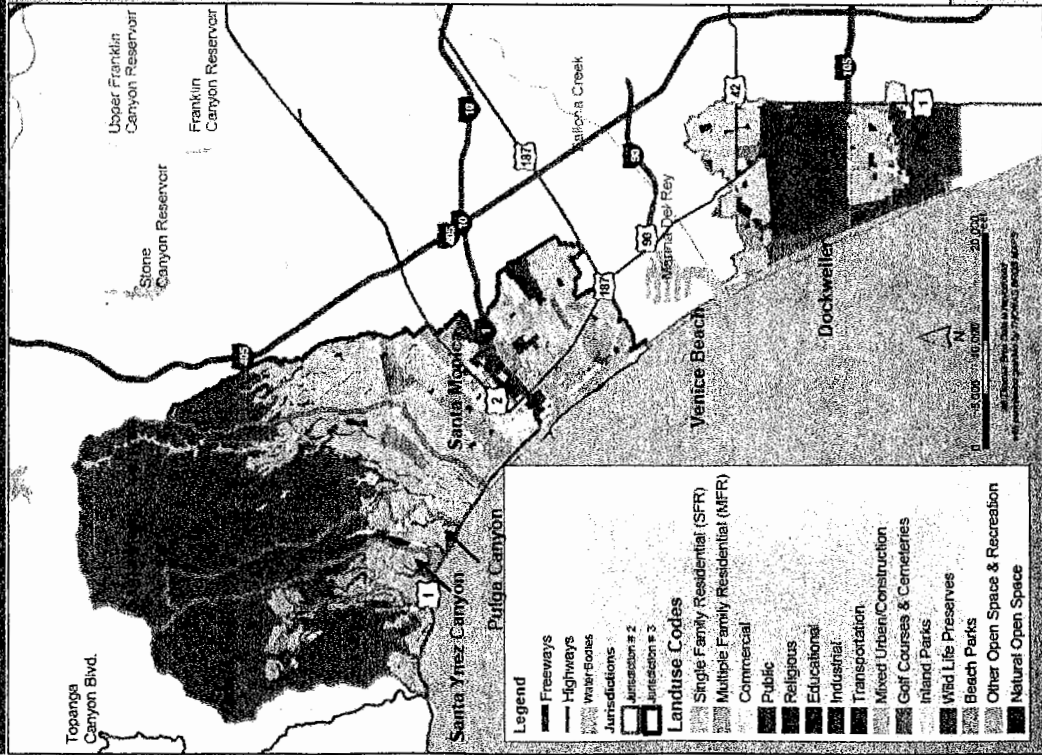
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- **Reduce health risks for recreational purposes**
- **Compliance requirements include development of an implementation plan and a monitoring plan to meet the TMDL**
- **Reduce exceedance days to 17 or less per year**



TMDL Jurisdictions



TMDL Jurisdictions 2 and 3 Working Together



One Implementation Plan for Both Jurisdictions 2 and 3.

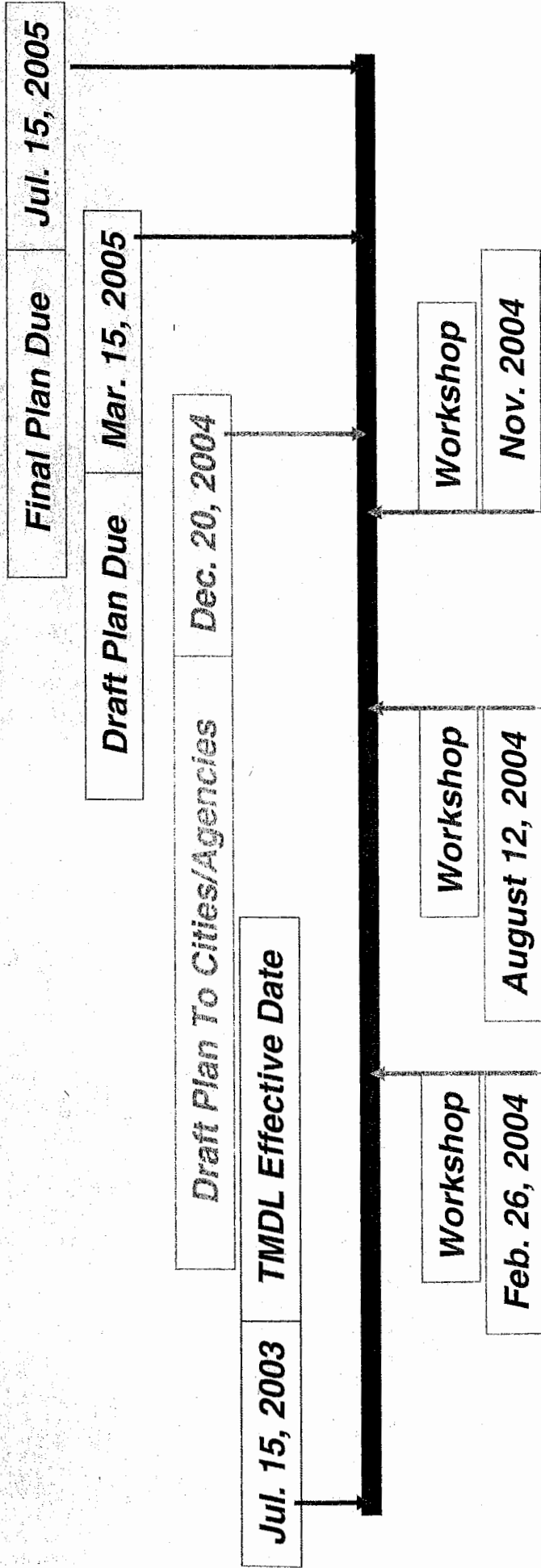
Include:

- **City of Los Angeles (J2 lead)**
- **City of Santa Monica (J3 lead)**
- **City of El Segundo**
- **County of Los Angeles**
- **Caltrans**



Compliance Requirements: Timeline of Events

Firm Implementation Plan Due Dates Per TMDL

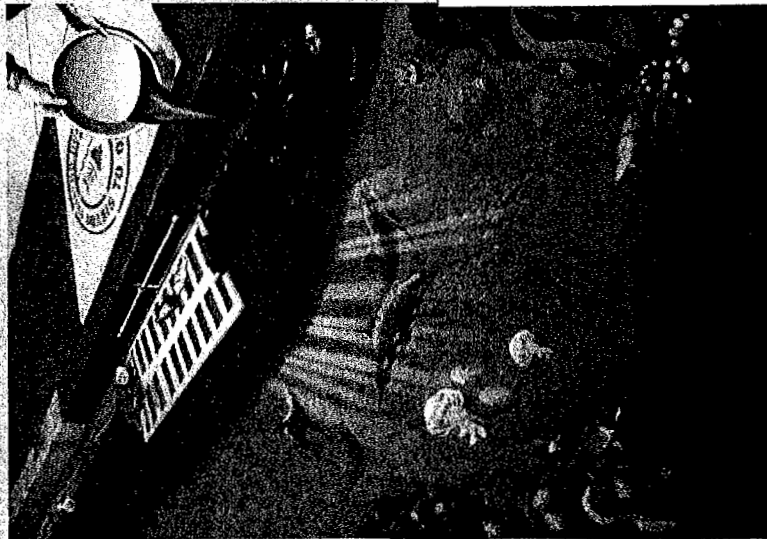


Implementation Methodology

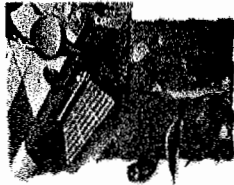
- Institutional solutions
- Local (on-site) solutions
- Regional solutions



Institutional Solutions: Available Options



THE OCEAN
BEGINS



In Your
Neighborhood

What's the Scoop?

Tips for a healthy pet
and a healthier environment



GOOD CLEANING PRACTICES
From the Department of Public Works

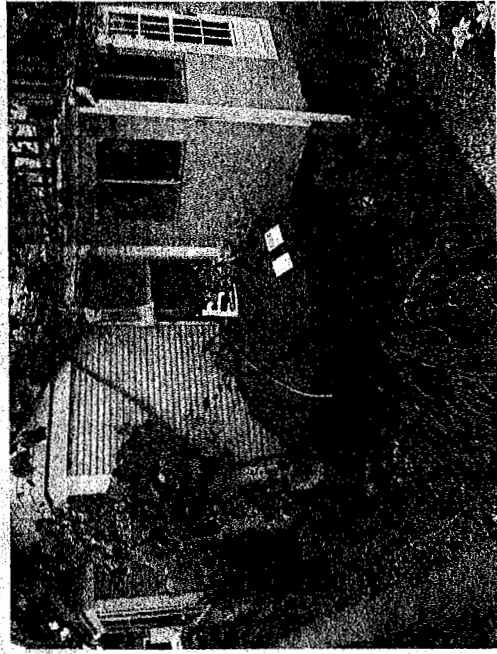
FOR A CLEANER ENVIRONMENT
San Francisco Department of Public Works

- Public Outreach
- Education
- Good Housekeeping Practices
- Ordinances/Codes
- Enforcement



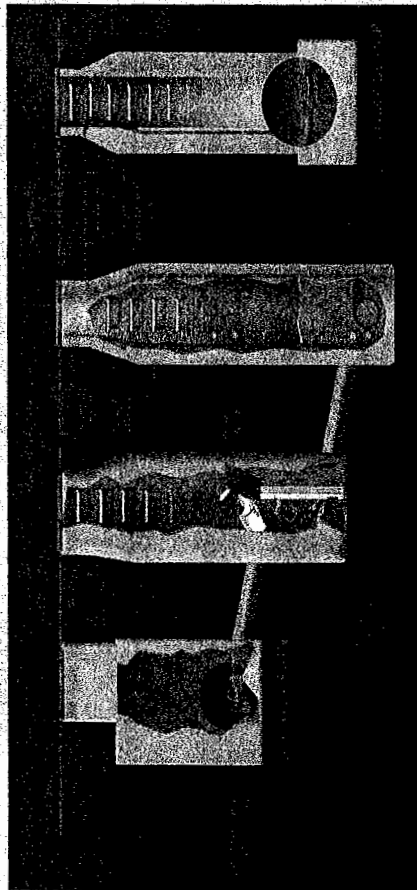
Local Solutions: Available Options

- Diverting downspouts to discharge on green areas
- On-site storage and reuse projects - larger, underground cisterns at public parks, government facilities, vacant lots, schools
- Small-scale capture and infiltration projects
- Cisterns - above ground at single-family/multi-family homes

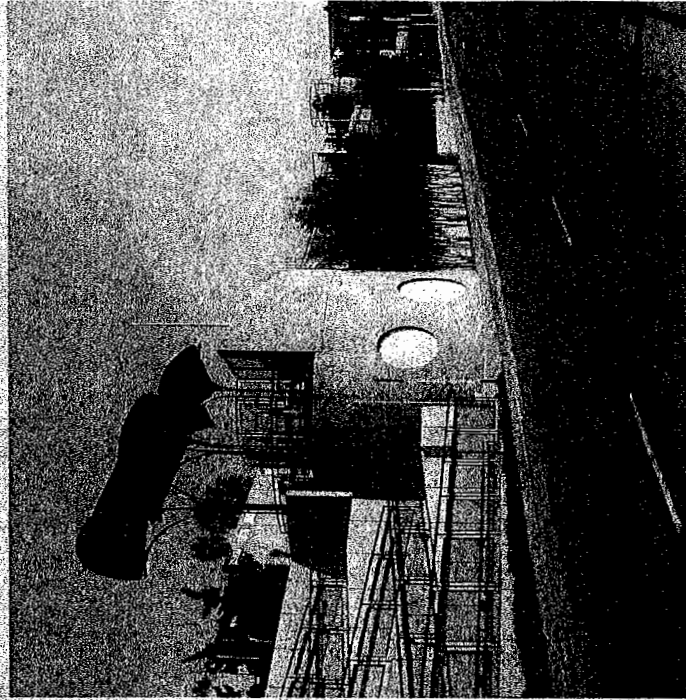


Regional Solutions: Available Options

- Diversion to Wastewater Treatment
- Treatment and Discharge
- Treatment and Beneficial Reuse
- Groundwater Injection
- Discharge Through Hyperion Outfall



Diversion Structure



Treatment



Implementing the Plan: Phased, Iterative Approach

Phase 1 → Phase 2 → Phase 3

Implement institutional solutions

Implement local solutions

Evaluate performance

Regional solutions
preliminary planning

Regional solutions design,
implementation



Santa Monica Bay Beaches Wet Weather Bacteria TMDL Implementation Plan

Task Update



Task Update: Several Parallel Tasks

- **Hydrology Study**
- **Beneficial Reuse Options**
- **Treatment and Management Options**
- **Wastewater Collection System Evaluation for Potential Diversions**
- **Facilities Siting Evaluation**

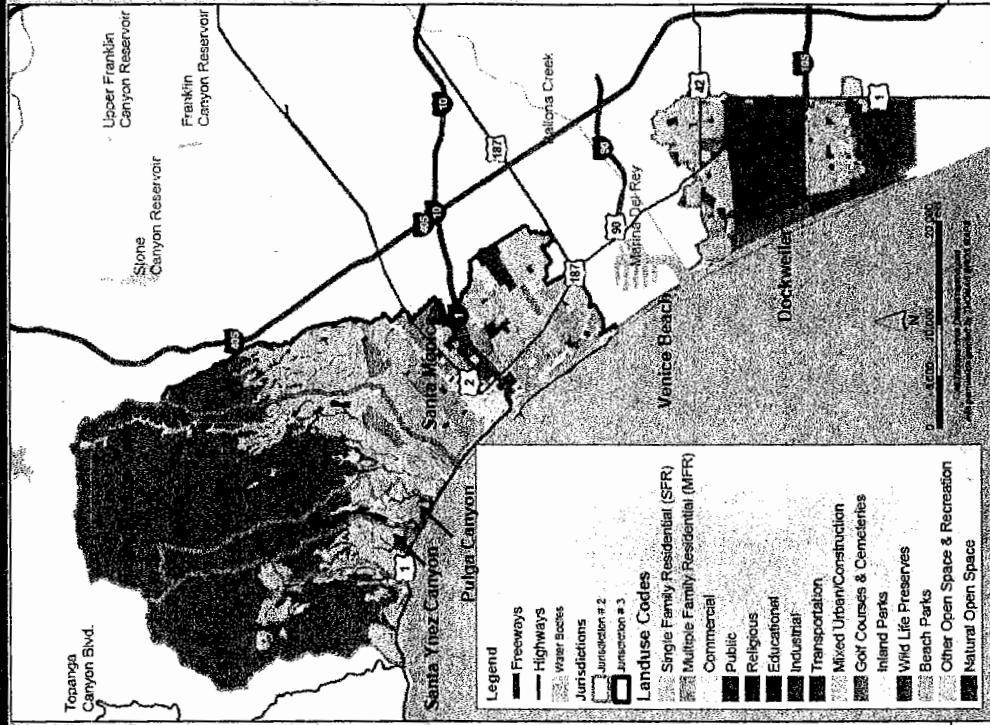


Task Update: Hydrology Study

Purpose: Determine target volumes

Approach

- Manage target storms
- Determined that having the capacity to manage a 0.45-inch rainfall will limit exceedances to 17 or less each year, over 90 percent of the time.
- More modeling was done to establish capture volumes per subwatershed to assess different levels of risk of violations.



Volume Estimates

The result: Target volumes of runoff to manage that represent

- 1 TMDL violation in 50 years
- 2 violations in 50 years
- 5 violations in 50 years

	Estimated Target Volumes (MG)		
	1 in 50	2 in 50	5 in 50
Subwatershed			
Castle Rock	2	2	1
Santa Ynez	6	5	3
Pulga Canyon	3	1	0
Santa Monica Cyn	29	25	7
Santa Monica	76	75	73
Venice Beach	<0.1	<0.1	<0.1
Dockweiler	54	53	52
Totals	169	161	136



Correlation: Rainfall and Exceedances

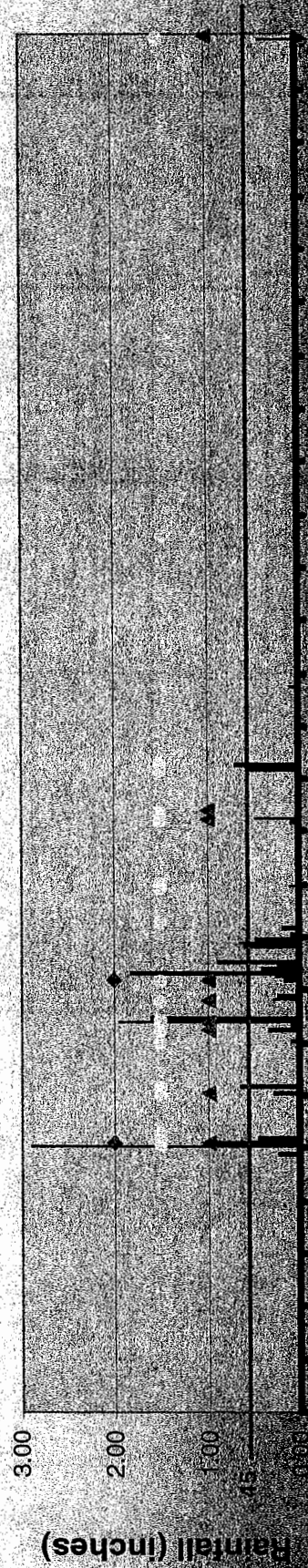
Total rainfall = 14 inches

Exceedance days = 21

Number of rain days = 31

Exceedance days after managing storms up to 0.45" = 11

S-5 Sample Results (Santa Monica Pier) 2000-2001 (Normal Year)



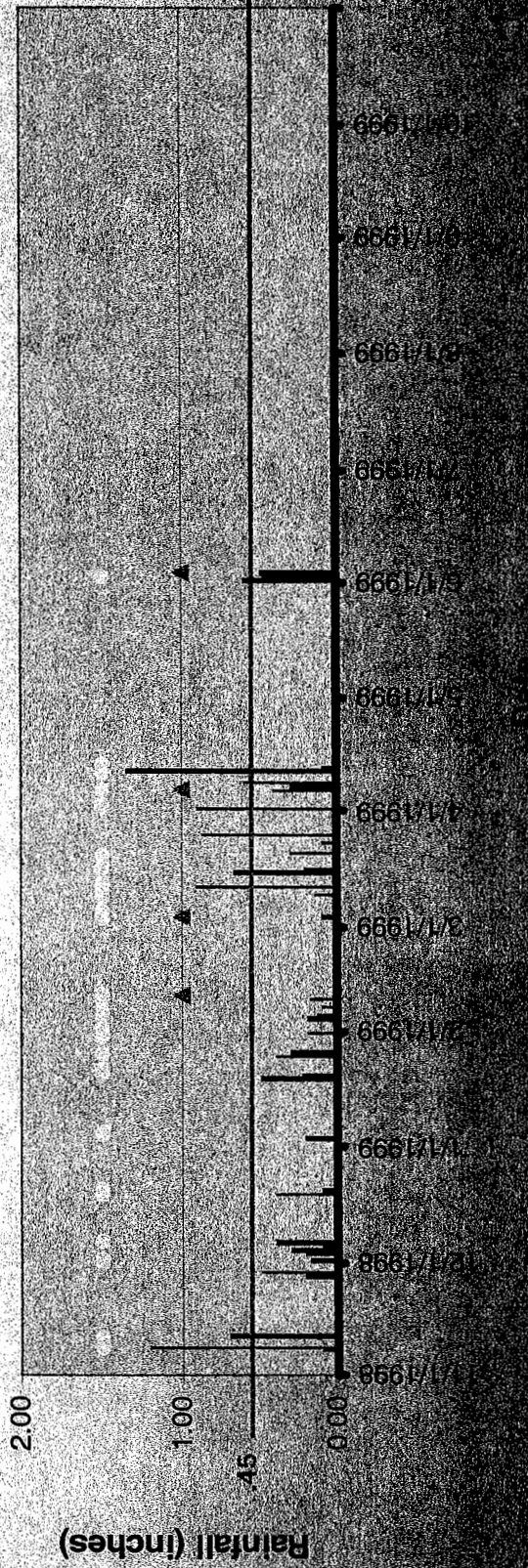
■ Daily Rainfall (inch) ▲ S5-TOT ♦ S5-ENT • S5-FEC



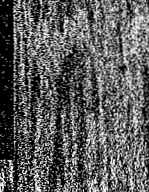
Correlation: Rainfall and Exceedances

Total rainfall = 8 inches Exceedance days = 38
 Number of rain days = 39 Exceedance days after managing storms up to 0.45" = 13

S-5 Sample Results (Santa Monica Pier) 1998-1999 (Dry Year)



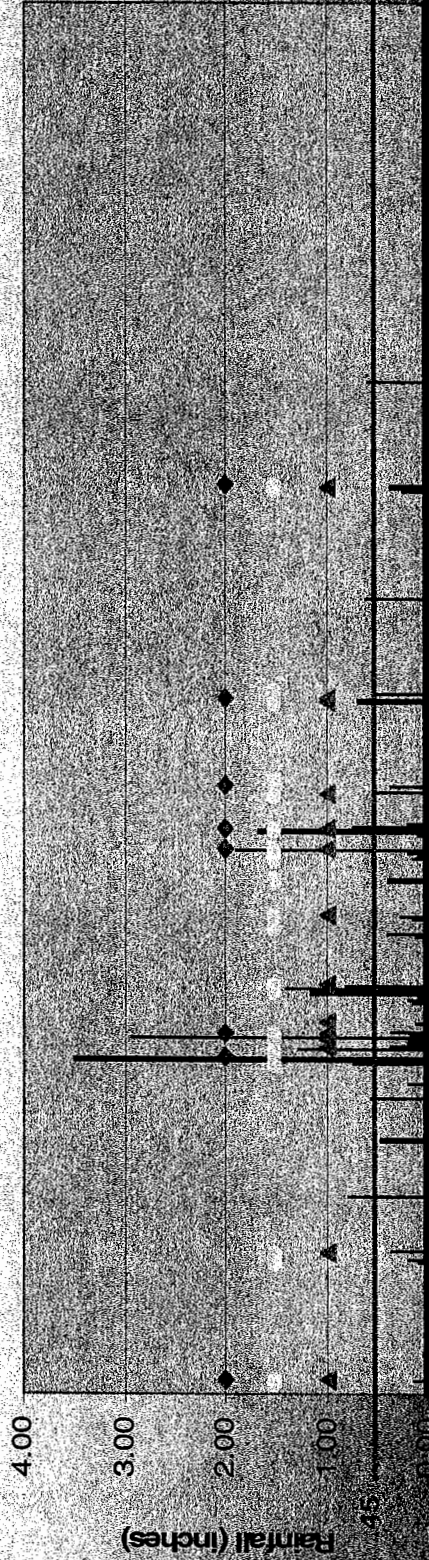
■ Daily Rainfall (inch) ▲ S5-TOT ♦ S5-ENT • S5-FEC



Correlation: Rainfall and Exceedances

Total rainfall = 23 inches Exceedance days = 28
 Number of rain days = 44 Exceedance days after managing storms up to 0.45" = 16

S-5 Sample Results (Santa Monica Pier) 1994-1995 (Wet Year)



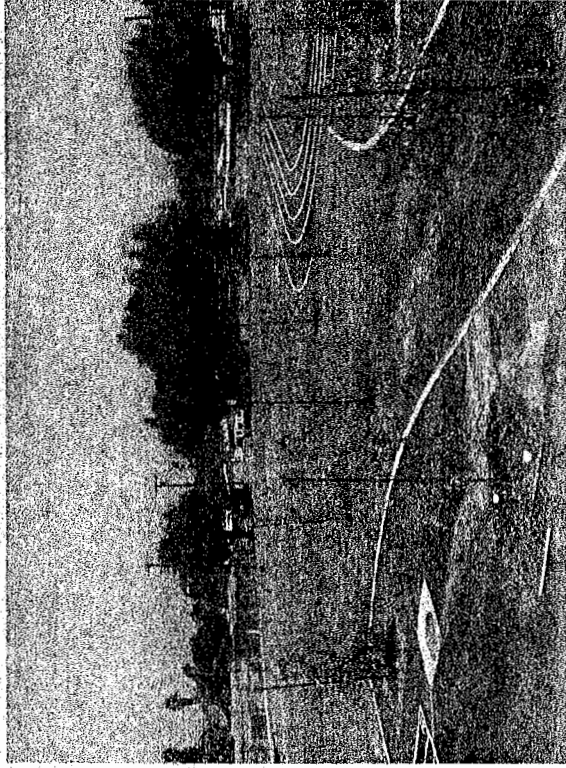
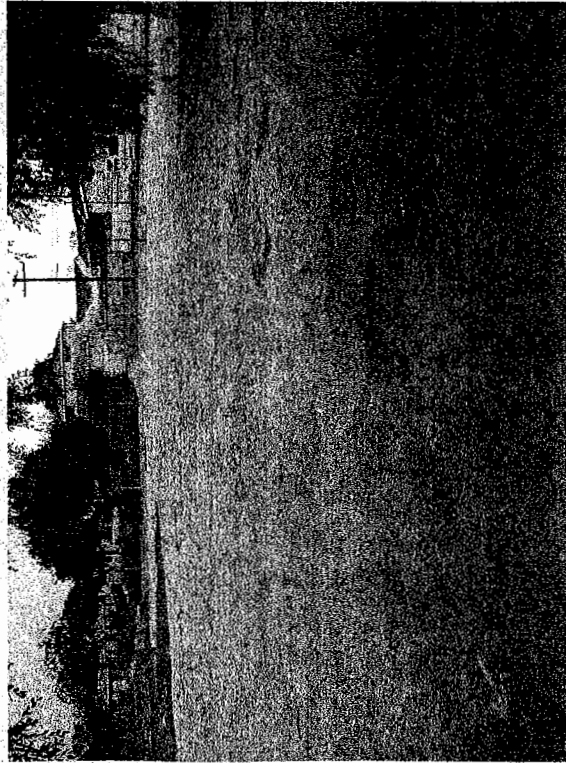
■ Daily Rainfall (inch) ▲ S5-TOT ◆ S5-ENT ● S5-FEC



Task Update: Beneficial Reuse Options

Purpose

- To identify and quantify specific direct reuse opportunities



Beneficial Reuse Options

Local (On-Site) Solutions

- ✓ On-Site infiltration projects
- ✓ Small on-site projects would partially reduce runoff (such as driveway drains, dry wells, infiltrations trenches, etc.)
- ✓ Potential public opportunities for along Venice and Dockweiler coastal areas
- ✓ Cisterns
- ✓ Installation at residences, parks, schools, government facilities, and vacant lots to supplement on-site irrigation demand.

Conclusion: Implementing on-site opportunities may assist in managing target runoff, but may not be sufficient



Beneficial Reuse Options

Regional Solutions:

- ✓ **Regional groundwater recharge – not applicable on a large scale due to confined aquifer**
- ✓ **Reuse as irrigation supply – specific demands identified**
- ✓ **Supplement supplies to West Basin (various uses)**



Task Update: Treatment Options

Several treatment technologies available

- Traditional Treatment
- Stormwater Filtration Units
- Advanced Oxidation
- Peracetic Acid (PAA) and Other Bactericides
- Subsurface Constructed Wetlands



Example: Subsurface Constructed Wetland

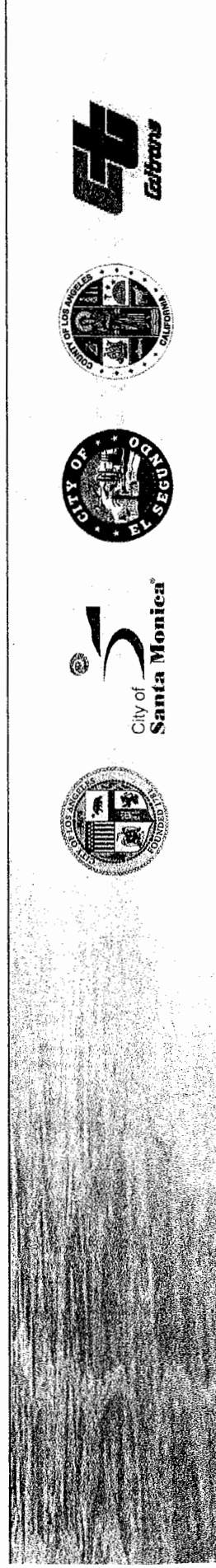
Essentially a horizontal trickling filter with gravel and plants, removes bacteria as well as other constituents

Advantages:

- Smaller land requirements compared to traditional surface flow wetlands
- Effective treatment in a passive manner with low maintenance
- Inexpensive compared to traditional treatment
- Lack of insects, odors, minimal risk of public exposure

Disadvantages:

- Requires a large land area



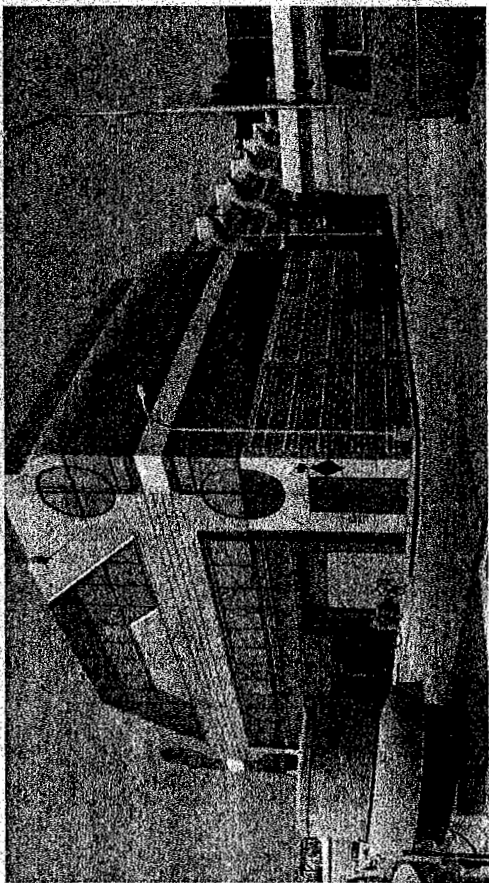
Task Update: Diversion To Wastewater System

Issue: Treat wet weather storm
drain flow at Hyperion
Treatment Plant:

**How much can we divert
and treat?**

Evaluate:

- ✓ Collection system capacity
- ✓ Hyperion Treatment Plant capacity



Approach: Diversion To Wastewater System

Conclusions: Runoff would be captured and temporarily stored, then diverted in a controlled manner into the collection system. The system capacity is sufficient to convey and treat the estimated runoff volumes shown below:

Summary of Diversion Capacity	
Subwatershed	First 24-Hour Divertable Volume (MG)
Castle Rock	3.1
Santa Ynez Canyon	5.8
Pulga Canyon	10.7
Santa Monica Canyon	10.7
Santa Monica	10.7
Venice Beach	17.3
Dockweiler	60.4



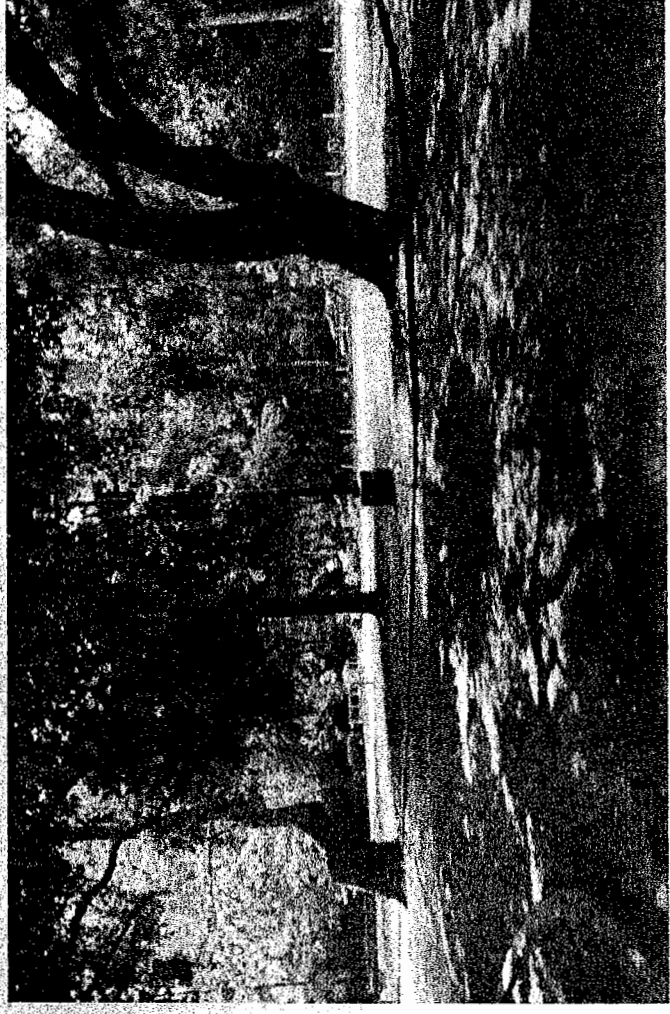
Task Update: Siting Evaluation

- ✓ **Potential sites and evaluative criteria were discussed for the following facilities:**
 - ✓ **Potential on-site storage and reuse projects**
 - ✓ **Operational storage near major storm drain outlets**
 - ✓ **Transmission pipelines to treatment**
 - ✓ **Treatment facilities**
 - ✓ **Beneficial reuse sites**
- ✓ **Regional options may be difficult to site**
- ✓ **Potential sites include parks, vacant lots and public owned land**



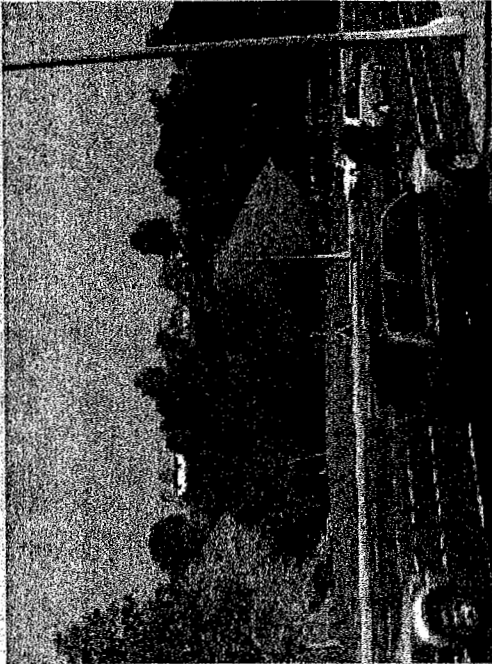
Siting Evaluation

**Potential site for an On-Site
Storage and Reuse Project:
■ Rustic Canyon Recreational
Facility**

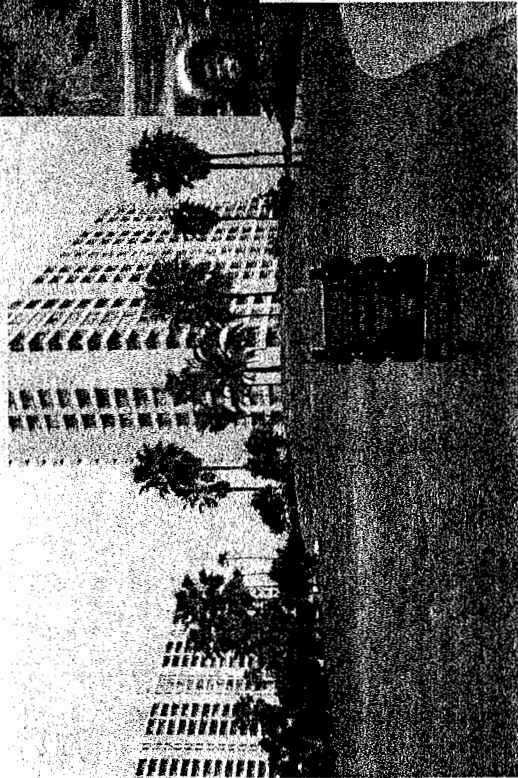


Siting Evaluation

Potential sites for new treatment facilities
in the northern subwatersheds:



Temescal Canyon Park

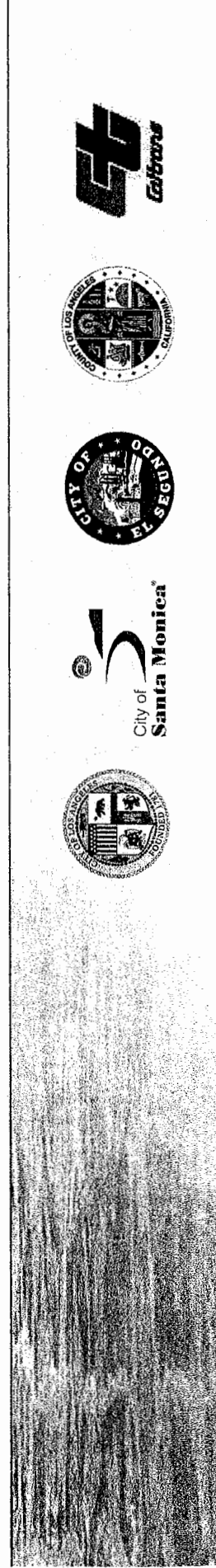
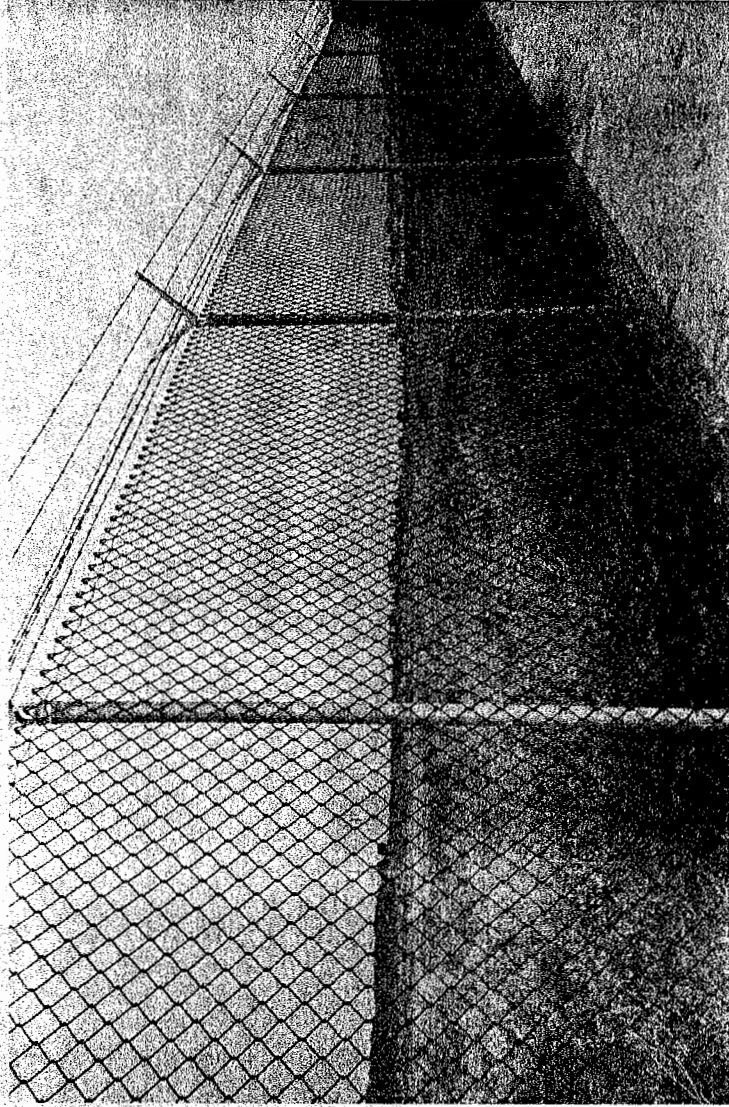


South Beach Park in Santa Monica



Siting Evaluation

- **The vicinity of LAX is presented as the best potential site for a southern treatment facility. The area may be suitable for either traditional treatment facilities or subsurface constructed wetlands.**



Siting Evaluation

Other potential sites:



Topanga State Park



East end of Playa Vista Development



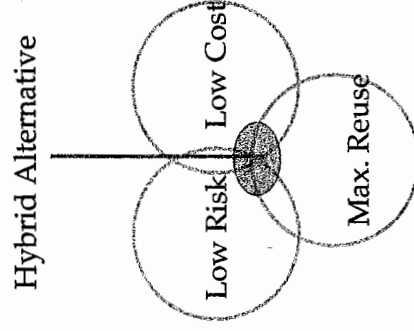
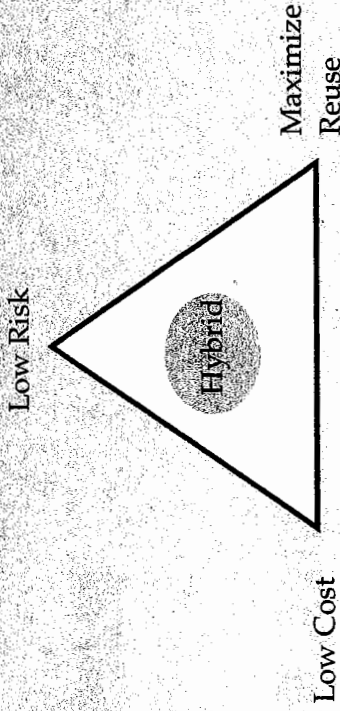
Alternatives Approach

- ✓ **Four Alternatives**
- ✓ **Low Cost**
- ✓ **Maximum Beneficial Reuse**
- ✓ **Low Risk**
- ✓ **Hybrid**
- ✓ **Each alternative is comprised of several runoff management options**
- ✓ **Alternatives will be evaluated and compared**



Alternatives Definitions

- ✓ **Low Cost** – Will include options that meet the regulatory requirements with the least capital and maintenance costs
- ✓ **Low Risk** – Will minimize compliance risk with the TMDL without regard to cost or optimizing the beneficial use of runoff
- ✓ **Maximum Beneficial Reuse** – Will maximize the amount of runoff that can be beneficially used
- ✓ **Hybrid** – The optimal alternative that combines elements of the other three



Low Cost Alternative

Risk: 5 violations in 50 years

Volume Managed: 136 MG per target rain event

<p>Institutional Solutions</p>	<ul style="list-style-type: none"> ▪ Public Outreach, Education, Good Housekeeping Practices, Ordinances and Codes, Enforcement
<p>Local Solutions</p>	<ul style="list-style-type: none"> ▪ Minimal on-site retrofits including: <ul style="list-style-type: none"> ▪ Diverting downspouts to green areas ▪ Infiltration trenches in Venice beach area
<p>Regional Solutions</p>	<ul style="list-style-type: none"> ▪ Diversions to Wastewater: Maximize Diversions (includes operational storage) ▪ Treat and Discharge: Remainder of the Runoff

Potential Constraints: Community buy-in, use of land in the vicinity of LAX



Low Cost Alternative – Institutional Solutions

Current Program:

- Public Outreach and Education
- Street Sweeping
- Storm Drain Maintenance
- Facilities/Vegetation Maintenance
- Land Use Planning and Management - SUSMP
- Ordinances and Codes
- Enforcement



Low Cost Alternative – Institutional Solutions

Additional Measures to be Considered:

- Additional public trash bins and pick-ups
- Improved restaurant trash management
- Improved grocery store trash management
- Additional portable toilets
- Additional Business Improvement Districts



Low Risk Alternative

Risk: 1 violation in 50 years

Volume Managed: 169 MG per target rain event

<p>Institutional Solutions</p>	<ul style="list-style-type: none"> ▪ Public Outreach, Education, Good Housekeeping Practices, Ordinances and Codes, Enforcement
<p>Local Solutions</p>	<ul style="list-style-type: none"> ▪ Construct small-scale infiltration projects
<p>Regional Solutions</p>	<ul style="list-style-type: none"> ▪ Diversions to Wastewater: Maximize Diversions (includes operational storage) ▪ Treat and Discharge: remainder of runoff (increased volume to reduce risk of violations)

Potential Constraints: space for larger treatment facilities, use of land in the vicinity of LAX, community buy-in



Maximum Beneficial Reuse Alternative

Risk: 1 violation in 50 years

Volume Managed: 169 MG per target rain event

<p>Institutional Solutions</p>	<ul style="list-style-type: none"> ▪ Public Outreach, Education, Good Housekeeping Practices, Ordinances and Codes, Enforcement
<p>Local Solutions</p>	<ul style="list-style-type: none"> ▪ Cisterns for rooftop runoff ▪ Small-scale infiltration projects ▪ Retention facilities at parks, golf courses, and other open spaces ▪ Sunken street medians and permeable bottoms in catch basins ▪ On-Site Storage and Reuse: larger (100,000-gal) underground cisterns at schools, government and public facilities, and public parks.



Maximum Beneficial Reuse Alternative (cont'd)

Risk: 1 violation in 50 years

Volume Managed: 169 MG per target rain event

- **Diversions to Wastewater: maximize diversions**
- **Treat and Beneficial Reuse as Irrigation Supply: portions of treated runoff (requires seasonal storage)**
- **Treat and Discharge: remainder of the runoff**

Regional Solutions

Potential Constraints: public cooperation/participation, available land for the larger treatment facilities, use of land in the vicinity of LAX, community buy-in, land and space for seasonal storage,



Hybrid Alternative

■ Which Components of the Three Alternatives are Most Appropriate?



Hybrid Alternative Sample

Volume Managed: To Be Determined

<p>Institutional Solutions</p>	<ul style="list-style-type: none"> ▪ Public Outreach, Education, Good Housekeeping Practices, Ordinances and Codes, Enforcement
<p>Local Solutions</p>	<ul style="list-style-type: none"> ▪ On-Site Storage and Reuse projects (Rustic Canyon) ▪ Cisterns for rooftop runoff ▪ Small-scale infiltration projects ▪ Retention facilities at parks, golf courses, and other open spaces ▪ Sunken street medians and permeable bottoms in catch basins
<p>Regional Solutions</p>	<ul style="list-style-type: none"> ▪ Diversions to Wastewater: Maximize diversions (includes operational storage) ▪ Treat and Discharge: remainder of runoff



Institutional Solutions

- **Public Outreach and Education**
 - **Additional public trash bins and pick-ups**
- **Street Sweeping**
 - **Improved restaurant trash management**
- **Storm Drain Maintenance**
 - **Improved grocery store trash management**
- **Facilities/Vegetation Maintenance**
 - **Additional portable toilets**
- **Land Use Planning and Management - SUSMP**
 - **Additional Business Improvement Districts**
- **Ordinances and Codes**
- **Enforcement**



Local Solutions

- Cisterns for rooftop runoff
- Small-scale infiltration projects
- Retention facilities at parks, golf courses, and other open spaces
- Sunken street medians and permeable bottoms in catch basins
- On-Site Storage and Reuse: larger (100,000-gal) underground cisterns at schools, government and public facilities, and public parks.



Next Steps

- **Completing the Hybrid Alternation**
- **Drafting the Implementation Plan**
- **Upcoming Workshop**
 - **Workshop 4: Implementation Plan – November 2004**
- **Project Milestones**
 - **Draft Implementation Plan to J2/3 Cities and Agencies – December 2004**
 - **Draft Implementation Plan to Regional Board – March 2005**
 - **Final Plan to Regional Board – July 2005**
- **Questions and Comments**
 - **Morad Sedrak: Phone: 323-342-1577 or email: Msedrak@san.lacity.org**



**Santa Monica Bay Beaches
Wet Weather Bacteria
TMDL Implementation Plan
Workshop for Stakeholders**

November 9, 2004

AGENDA

- 8:45 a.m. – 9:00 a.m.** **Welcome and introductions**
Shahram Kharaghani, Watershed
Protection Division Manager
- 9:00 a.m.—9:15 a.m.** **TMDL Compliance: Goal,
Schedule, Approach**
Hampik Dekermenjian, Consultant Team
- 9:15 a.m. – 9:45 a.m.** **Preferred Alternative; Process of
Selecting Sites**
Dave Jones, Consultant Team
- 9:45 a.m. – 10:00 a.m.** **Break**
- 10:00 a.m. – 10:45 a.m.** **Stakeholder Input**
Dave Jones, Hampik Dekermenjian
- 10:45 a.m. – 11:15 a.m.** **Draft TMDL Implementation Plan
and Discussion**
Dave Jones, Hampik Dekermenjian
- 11:15 a.m. – 11:30 a.m.** **Summary and Next Steps**
Shahram Kharaghani

Workshop for Stakeholders

Santa Monica Bay Beaches Wet Weather Bacteria TMDL

Jurisdictional Groups 2 and 3

Draft Implementation Plan

Sponsored by:

**Cities of Los Angeles, Santa Monica, and El Segundo; County of Los Angeles;
and Caltrans**

November 9, 2004



✓ **Compliance Goals Review**

✓ **Schedule Review**

✓ **Compliance Approach**

✓ **Preferred Alternative**

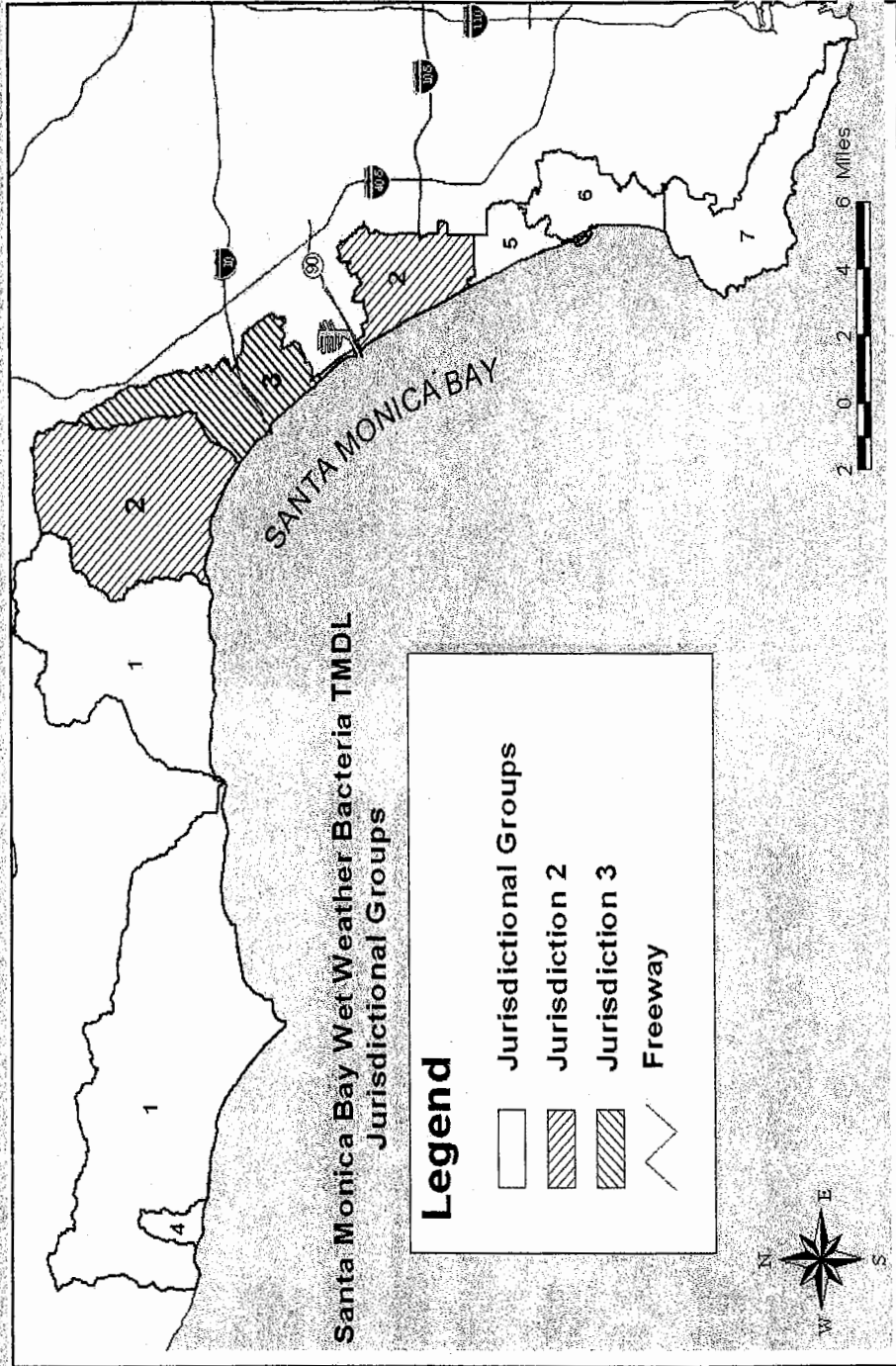
✓ **Site Selection Process**

✓ **Next Steps**



- **Improve water quality in Santa Monica Bay**
- **Reduce health risks for recreational purposes**
- **Compliance requirements include development of an implementation plan and a monitoring plan to meet the TMDL**
- **Reduce exceedance days to 17 or less per year**

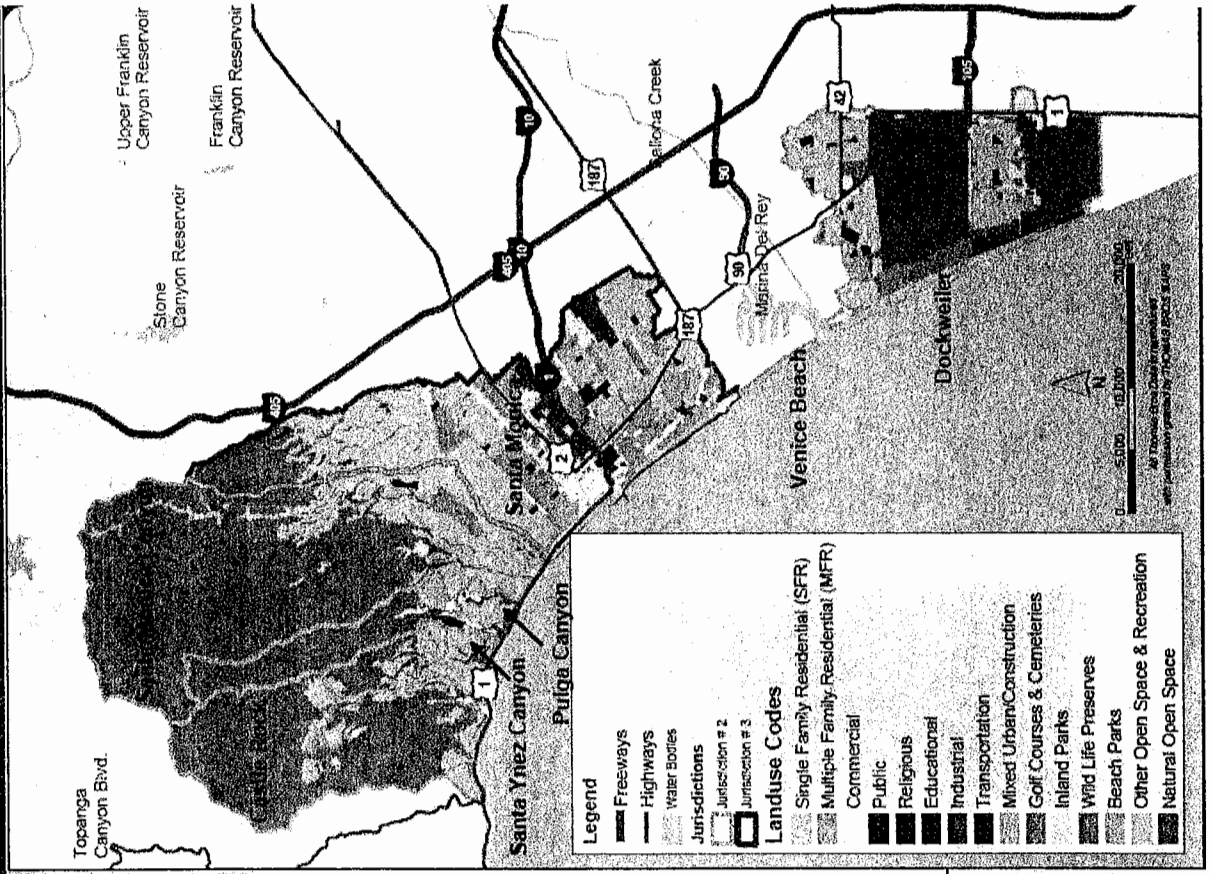


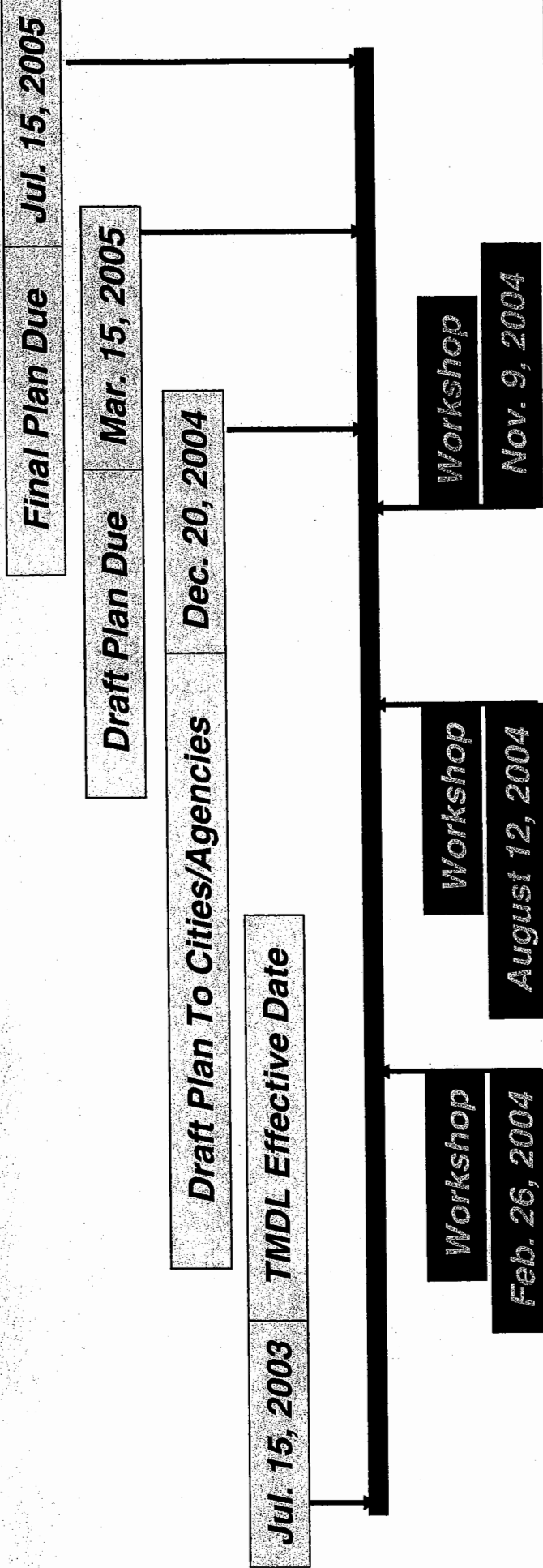


One Implementation Plan for Both Jurisdictions 2 and 3.

Include:

- City of Los Angeles (J2 lead)
- City of Santa Monica (J3 lead)
- City of El Segundo
- County of Los Angeles
- Caltrans





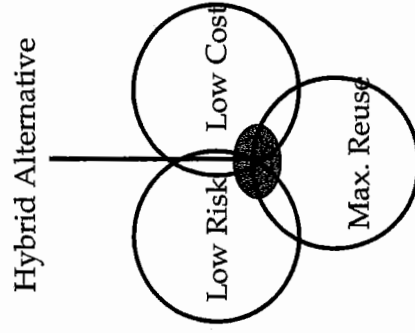
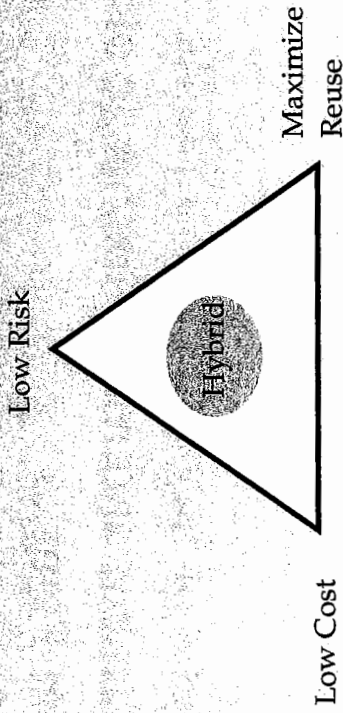
1. ***Institutional Solutions:*** Non-structural activities to minimize bacterial pollution of urban runoff including non-structural BMPs, ordinances, and improved enforcement/incentives

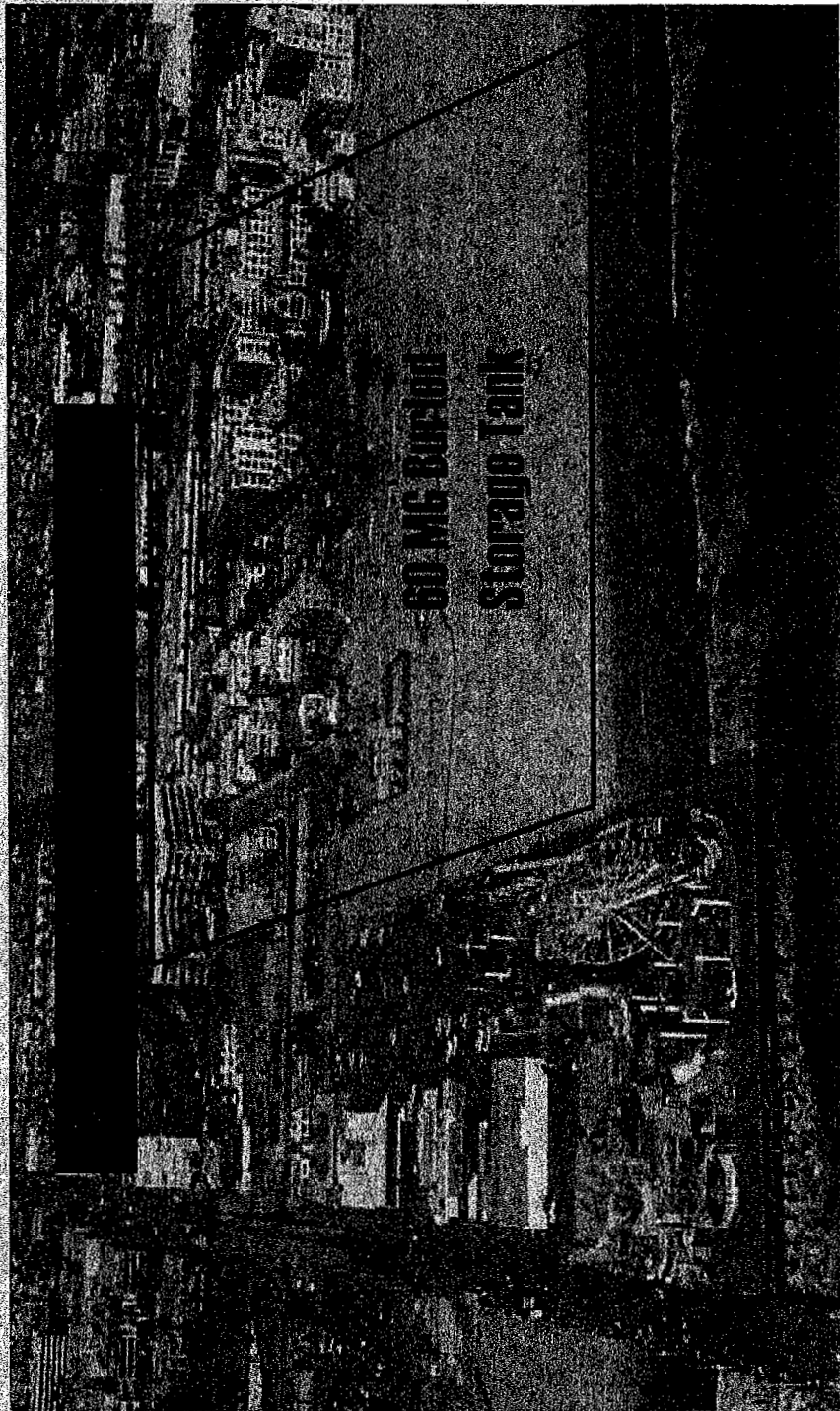
2. ***Local Solutions:*** Structural projects like dry wells, porous pavement, sunken street medians and small local storage/infiltration projects at parks, schools, government facilities and vacant lots - could manage both off-site as well as on-site runoff

3. ***Regional Solutions:*** End-of-pipe diversions or large treatment plants located near beach drains, e.g., storage, treatment and reuse/discharge or storage and diversion to Hyperion Treatment Plant



- ✓ **Low Cost - Will include options that meet the regulatory requirements with the least capital and maintenance costs**
- ✓ **Low Risk - Will minimize compliance risk with the TMDL without regard to cost or optimizing the beneficial use of runoff**
- ✓ **Maximum Beneficial Use - Will maximize the amount of runoff that can be beneficially used**
- ✓ **Hybrid - The optimal alternative that combines elements of the other three**

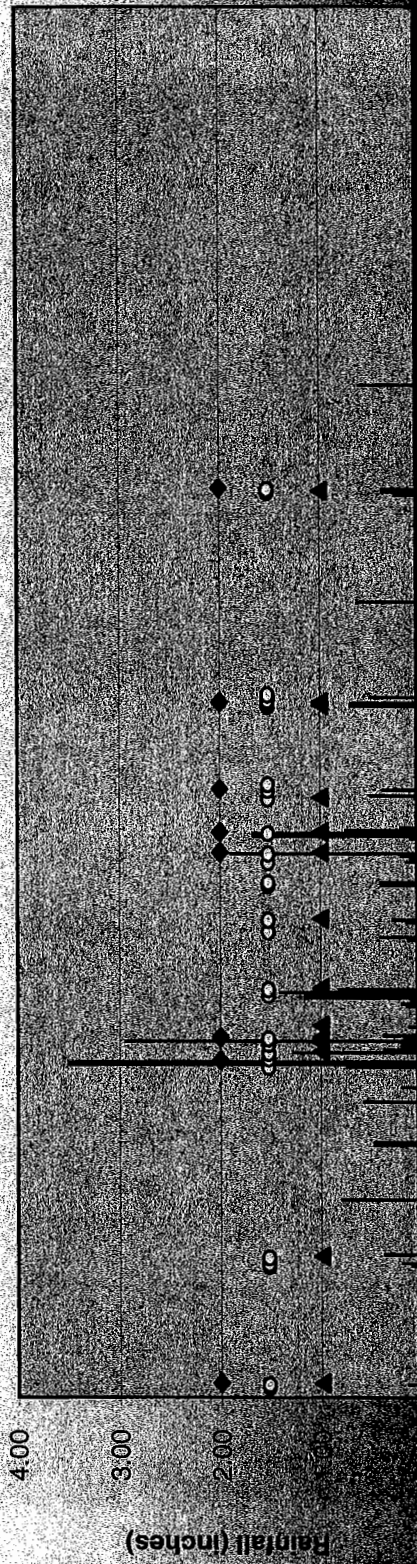




60 MG-Billion
Storage Tank



S-5 Sample Results (Santa Monica Pier) 1994-1995 (Wet Year)



■ Daily Rainfall (inch) ▲ S5-TOT ◆ S5-ENT ○ S5-FEC



1st Stage

2nd Stage

Implement institutional solutions

Implement local solutions

Improve institutional and local solutions based on performance evaluation

Evaluate performance

Assessment of regional solutions

Monitoring

Implementation Plan Approved

Re-opener #1

Proposed Re-opener #2

Proposed Re-opener #3

July 15, 2005

2007

2010

2013

2015

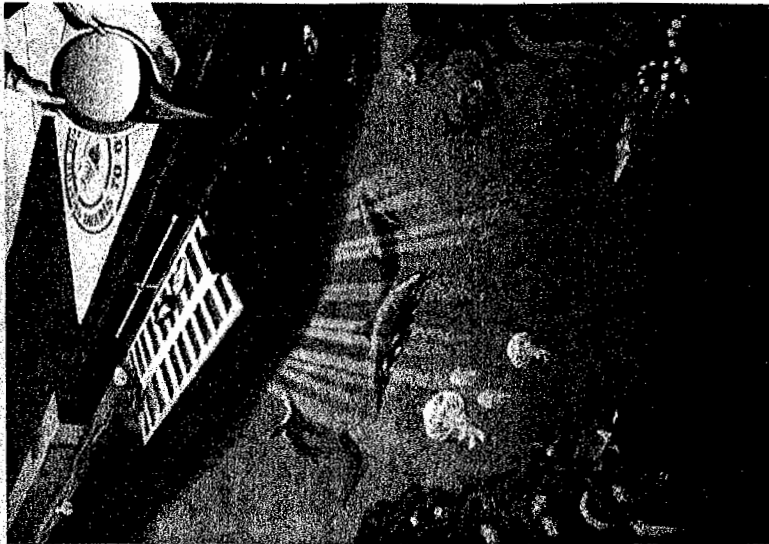
2018

2021



- **Implement Institutional, Non-structural Solutions**
- **Implement Local Solutions**
- **Conduct Additional Monitoring**





- Educational and Outreach Programs
- Street Maintenance
- Storm Drain Maintenance
- Land Use Planning and Management
- Ordinances/Codes and Enforcement

GOOD CLEANING PRACTICES
Keep it Clean, Keep it Green

For a Cleaner Environment

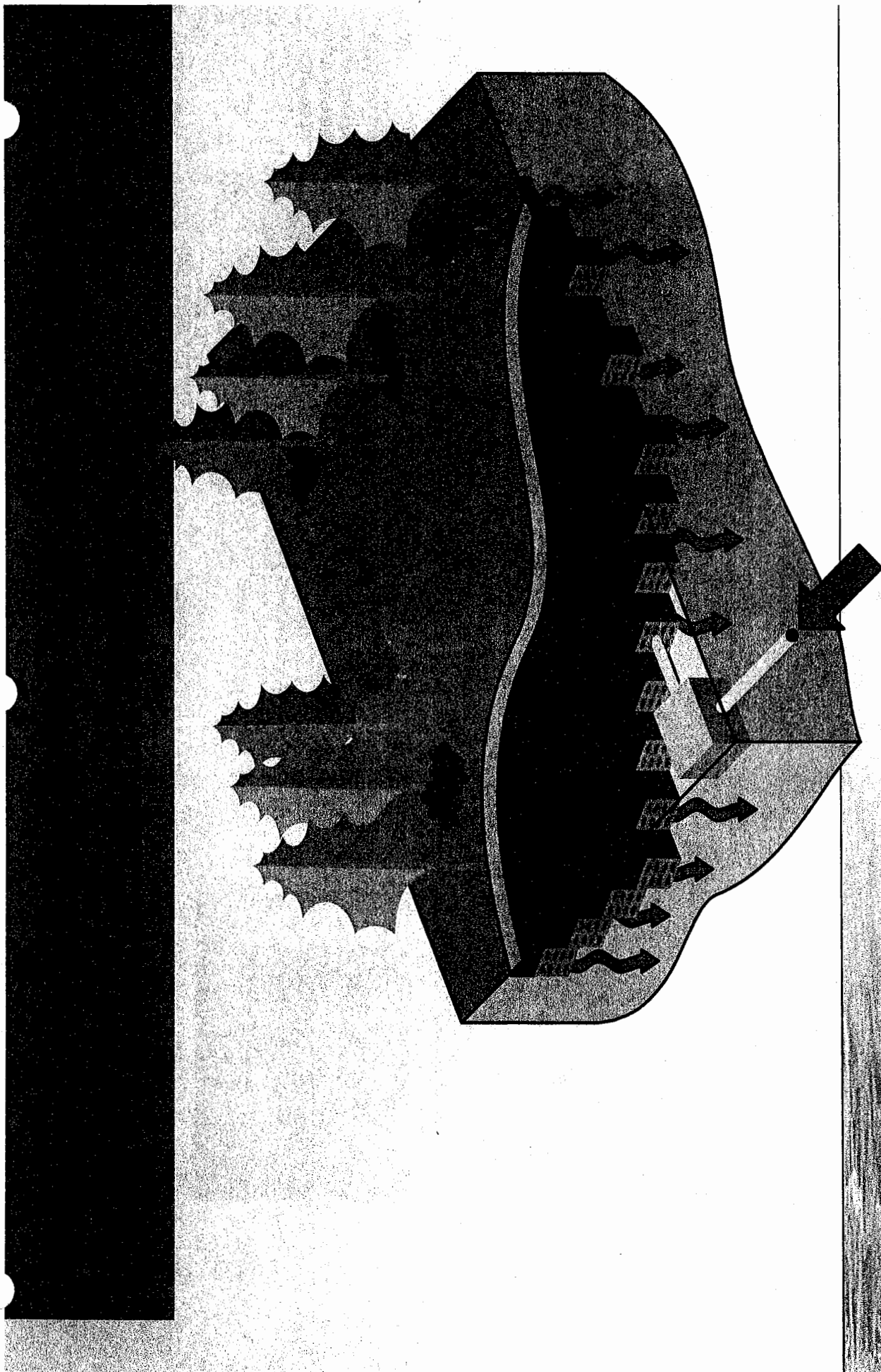
www.sanbernatecountyclean.org
 (805) 878-7754





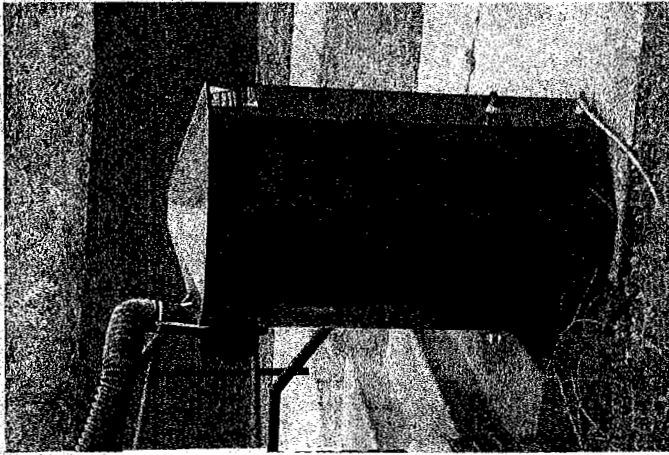
- **Public Trash Receptacles**
- **Improved Restaurant and Grocery Store Trash Management**
- **Business Improvement District expansion**
- **Expanded Public Education**
- **Incentive Programs**
- **Portable Bathrooms**
- **Pre-wet Weather Storm Drain Flushing**



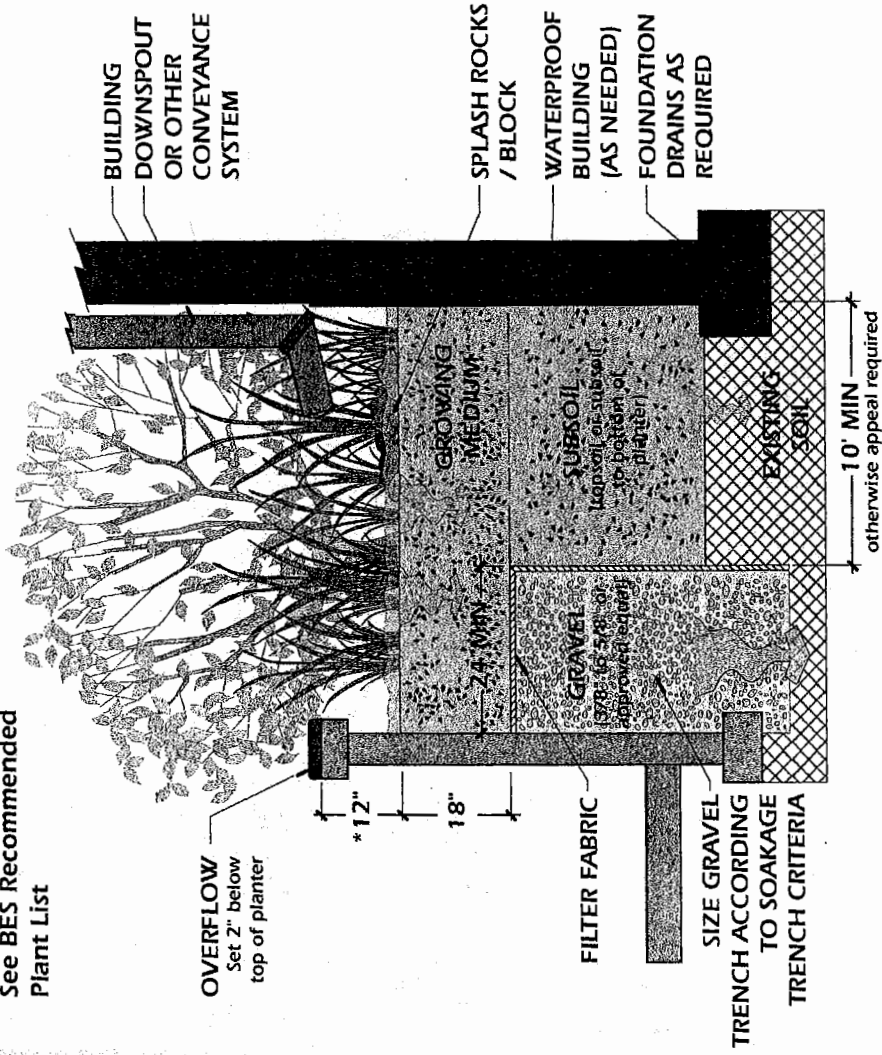


■ Cisterns

■ Redirecting Downspouts



PLANTINGS:
See BES Recommended Plant List



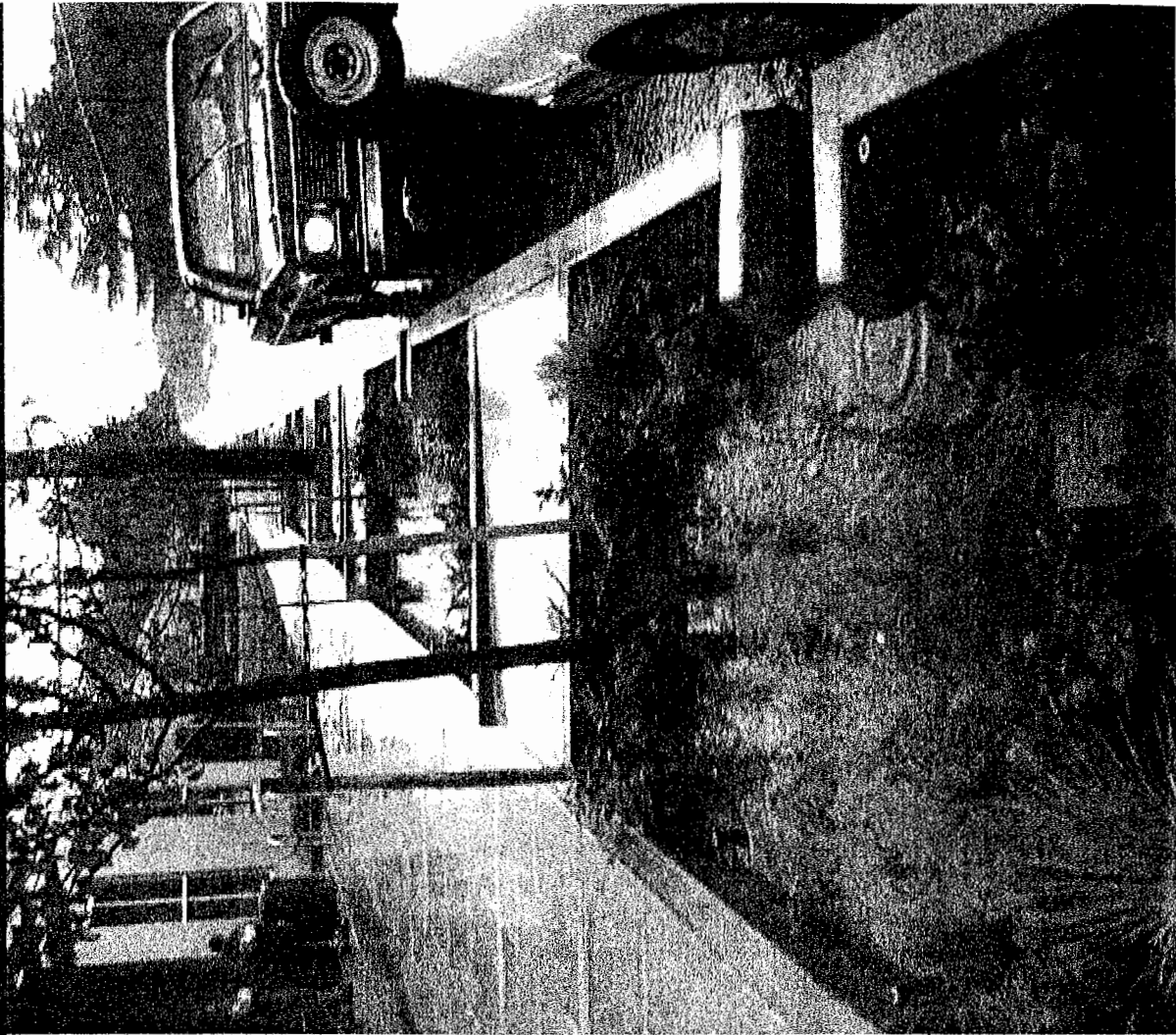
*Water reservoir depth may be reduced if planter surface area is increased.



Infiltration Planter

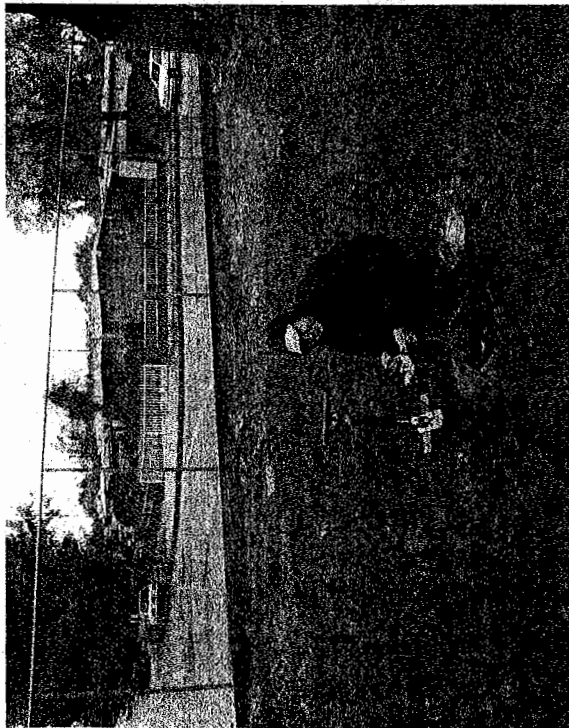
7/26/02

- **Local Storage and Reuse**
- **Small-scale Capture and Infiltration Projects to Minimize Runoff Volume**



■ **Upstream Monitoring for Performance Evaluation**

■ **Source Identification for
Additional Source Reduction**



- **Priority will be given to sites that:**
 - **are located close to drainage from commercial areas**
 - **are located near "points of concentration" within the storm drainage system**
 - **can be most easily retrofitted for multi-purpose benefits**
 - **offer the most storage and infiltration potential**



Site Selection Process

(1)
Analyze
Sampling
Results

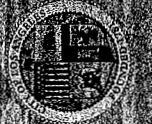
(2)
Identify Suitable
Land Use Categories:
✓ Parks
✓ Schools
✓ Govt. Facilities
✓ Vacant Lots

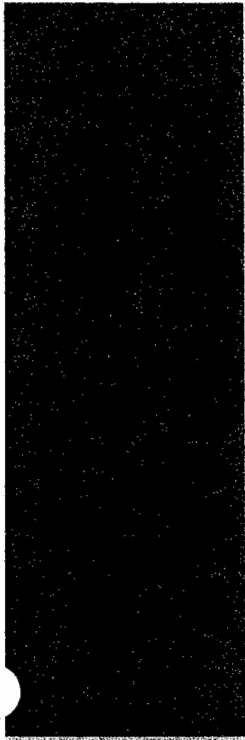
(3)
Identify
High Density
Urban Areas

(4)
Identify Points
of
Concentration

(5)
Identify Soil
Conditions

(6)
Identify
Potential Sites





Site Selection Process

(1) Analyze Sampling Results

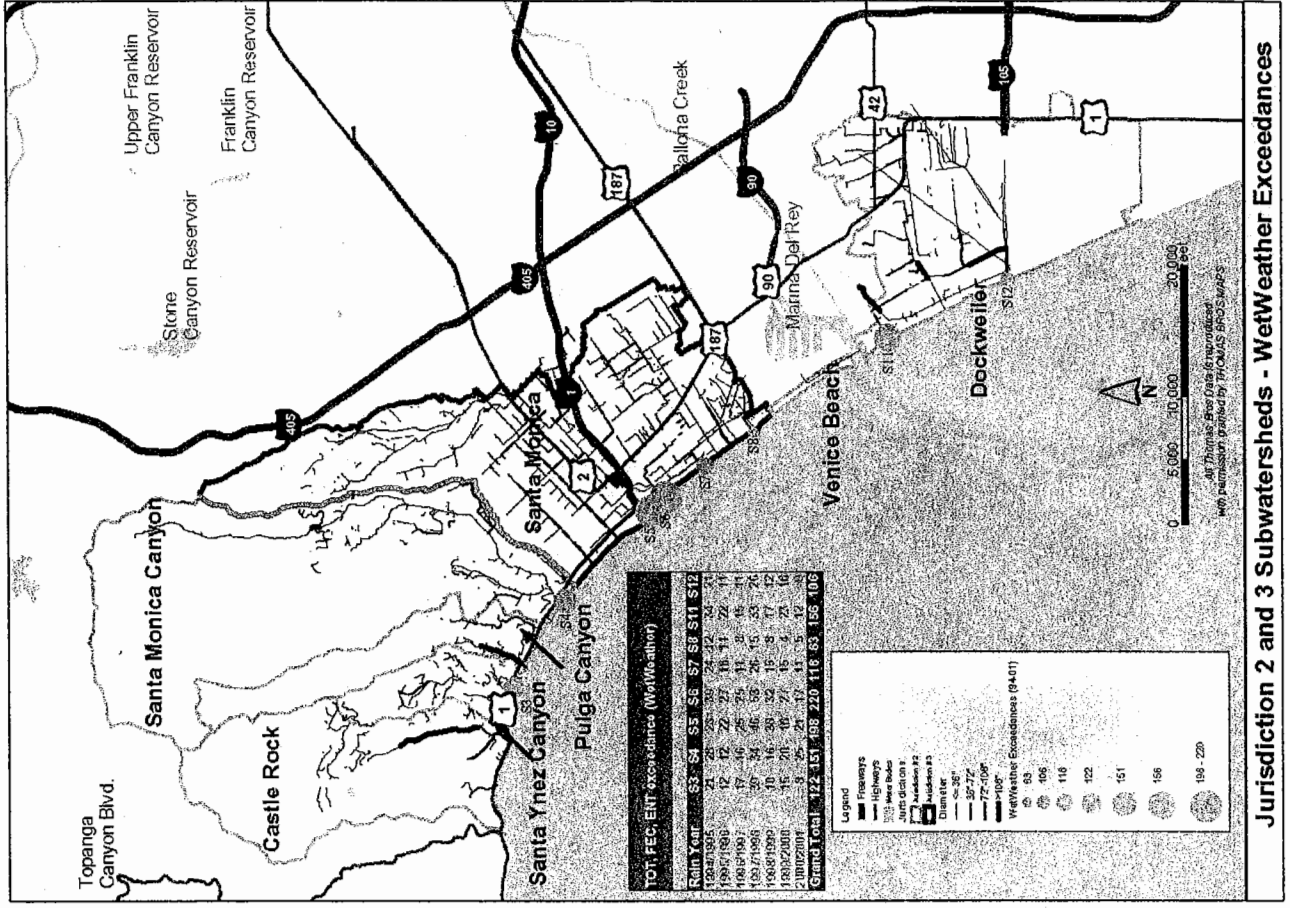
(2) Identify Suitable Land Use Categories:
✓ Parks
✓ Schools
✓ Govt. Facilities
✓ Vacant Lots

(3) Identify High Density Urban Areas

(4) Identify Points of Concentration

(6) Identify Potential Sites

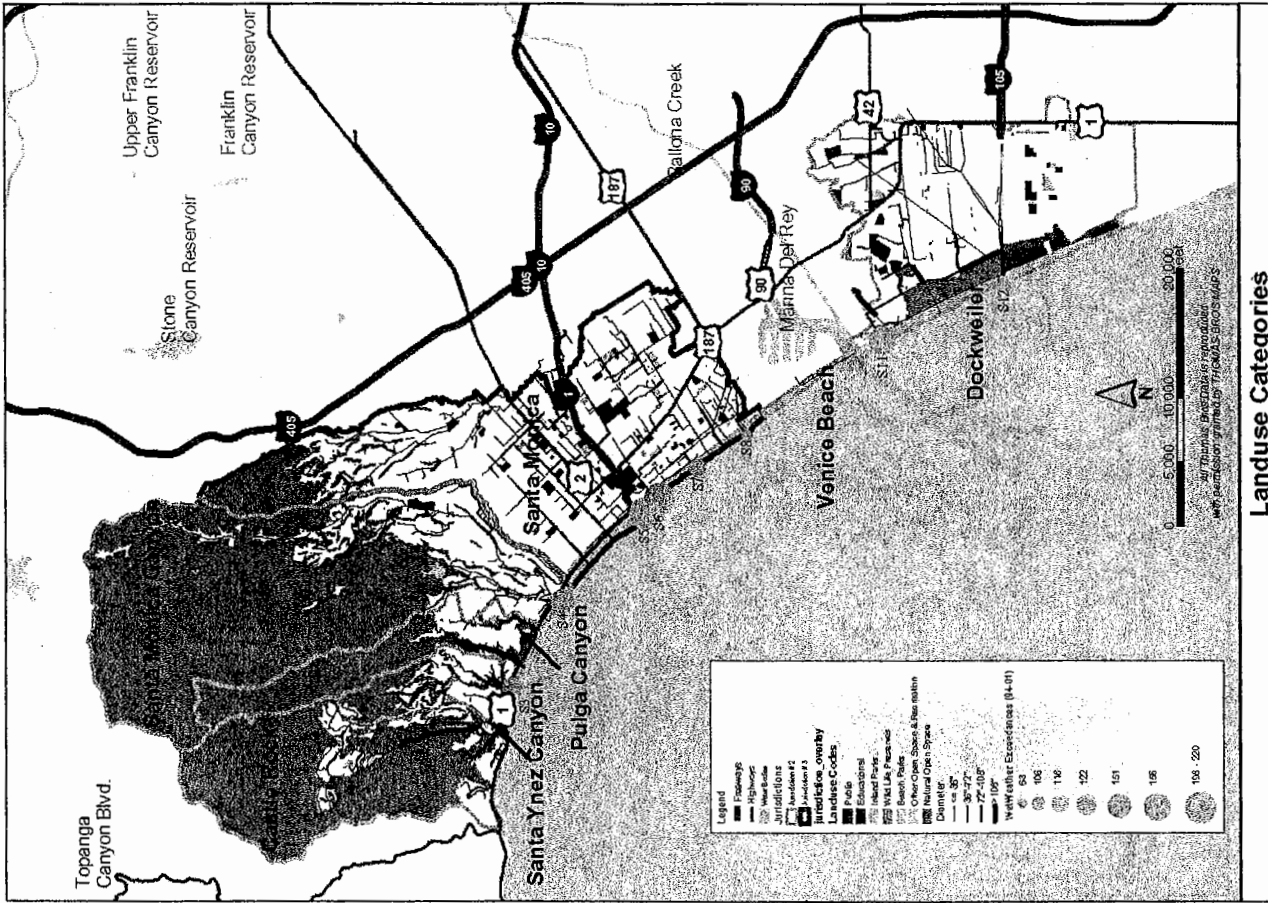
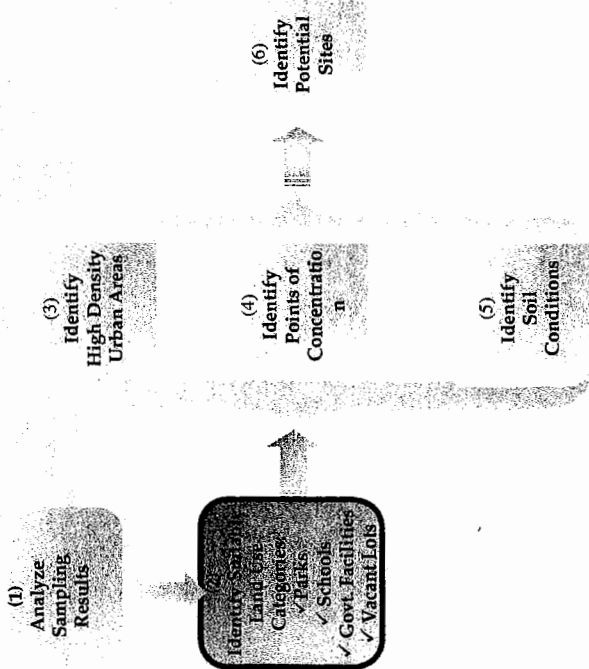
(5) Identify Soil Conditions

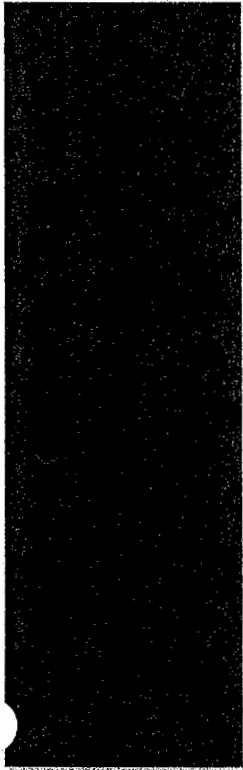


Jurisdiction 2 and 3 Subwatersheds - WetWeather Exceedances

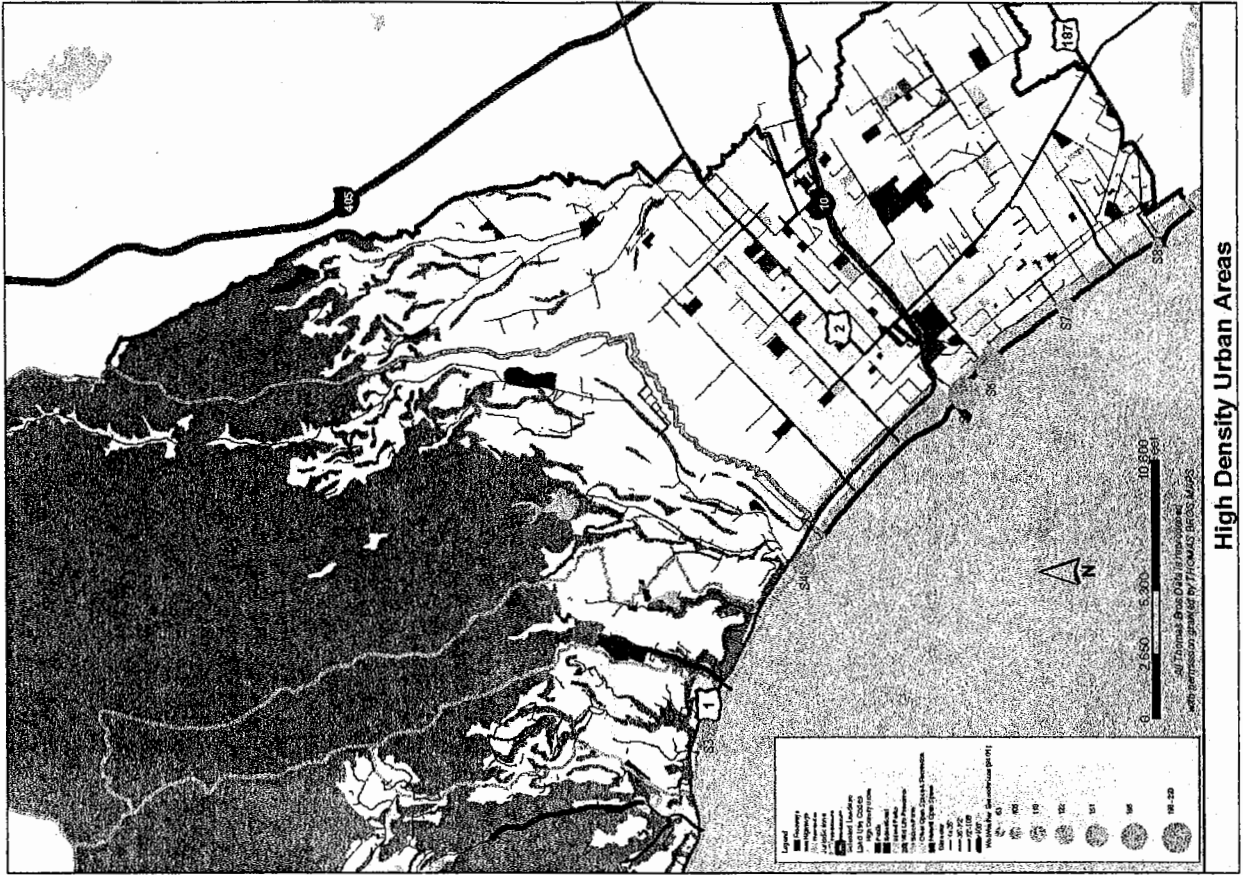
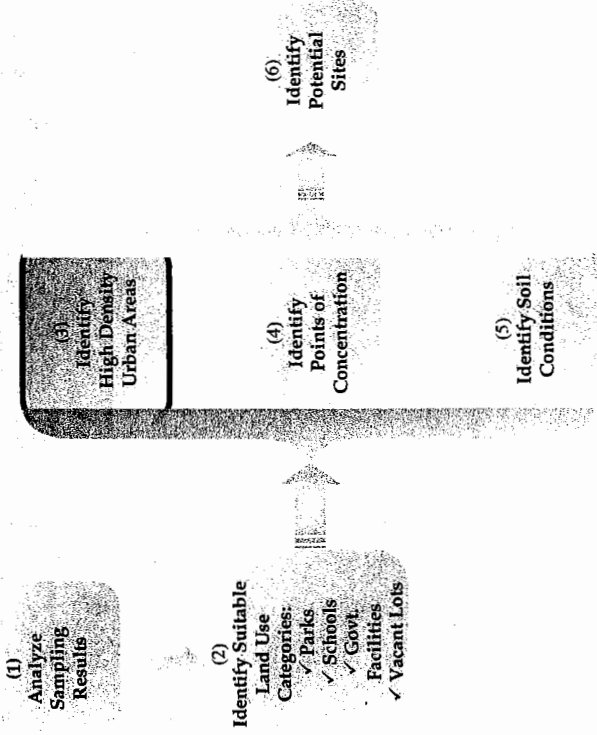


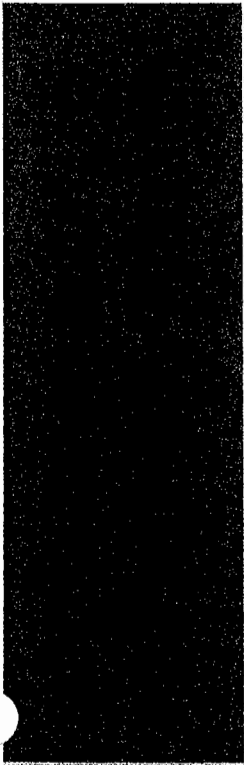
Site Selection Process



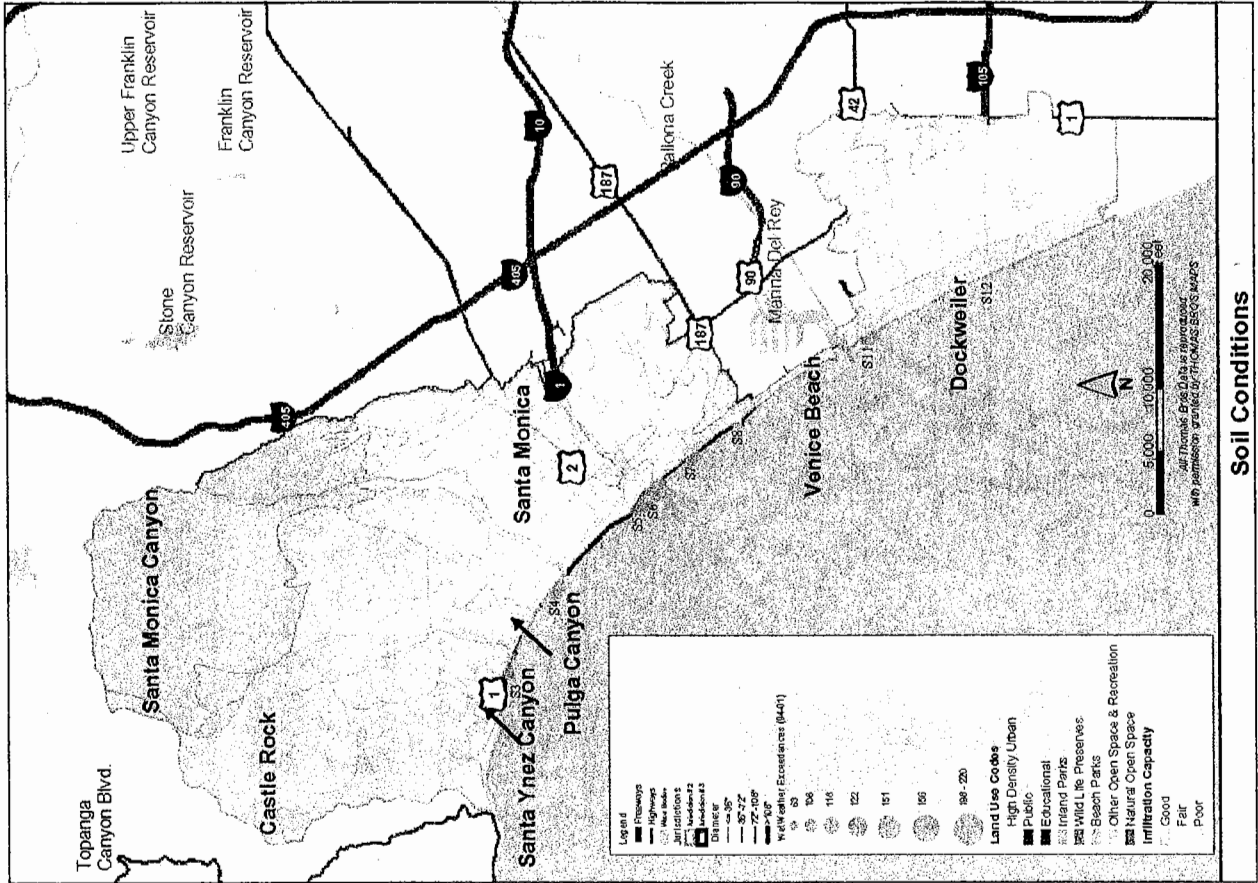
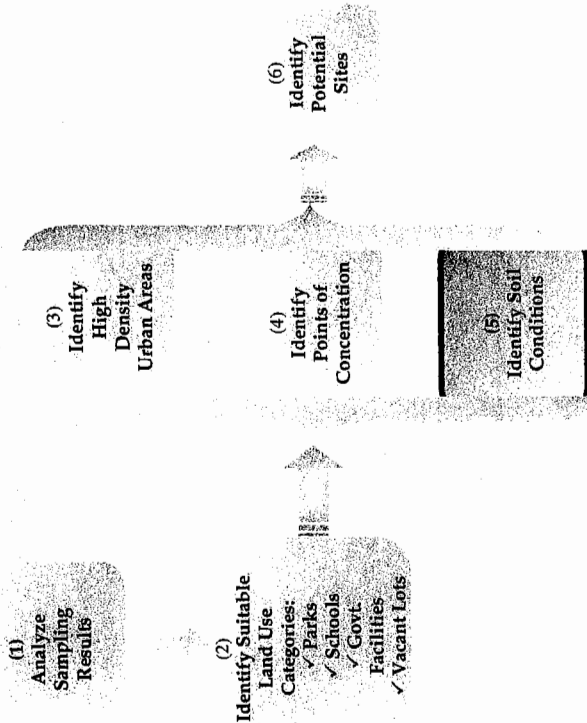


Site Selection Process

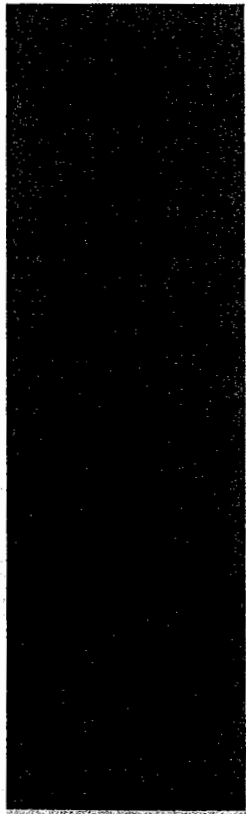




Site Selection Process



Soil Conditions



Site Selection Process

(1) Analyze Sampling Results

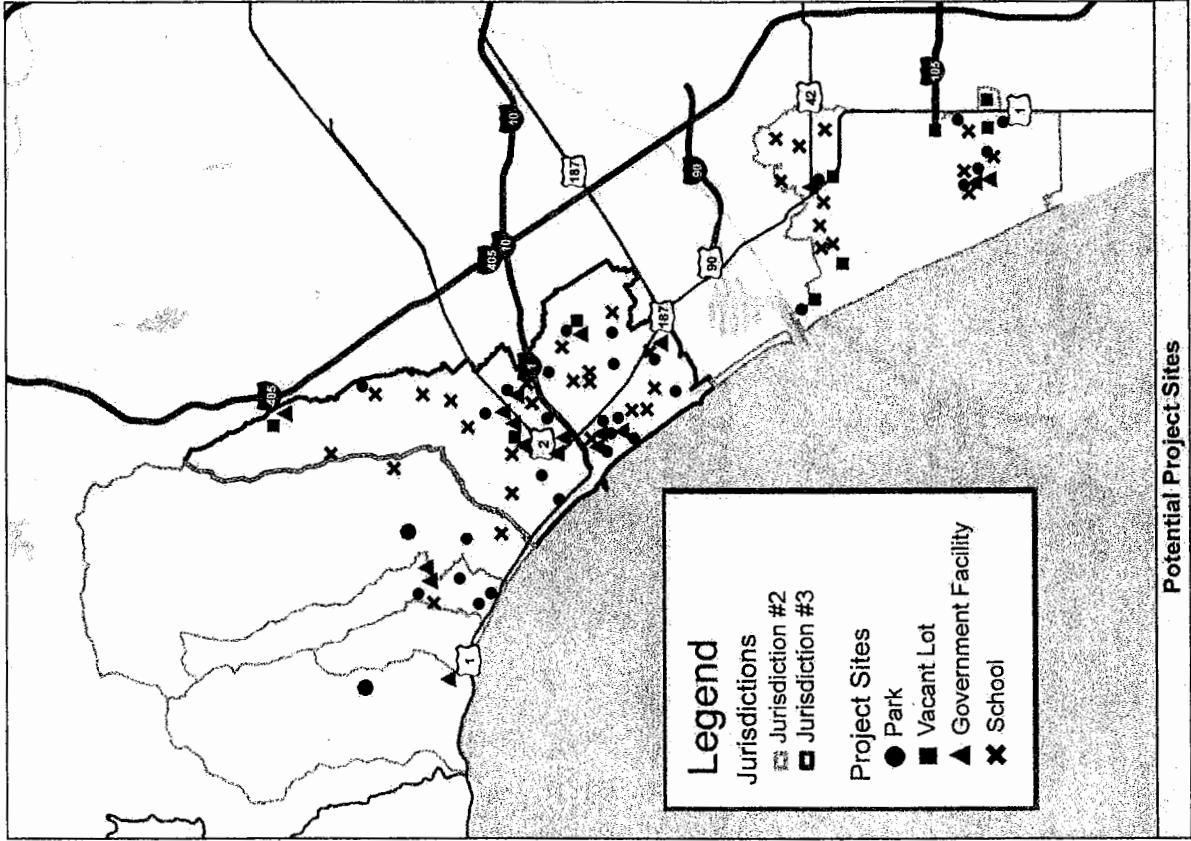
(2) Identify Suitable Land Use Categories:
✓ Parks
✓ Schools
✓ Govt. Facilities
✓ Vacant Lots

(3) Identify High Density Urban Areas

(4) Identify Points of Concentration

(5) Identify Soil Conditions

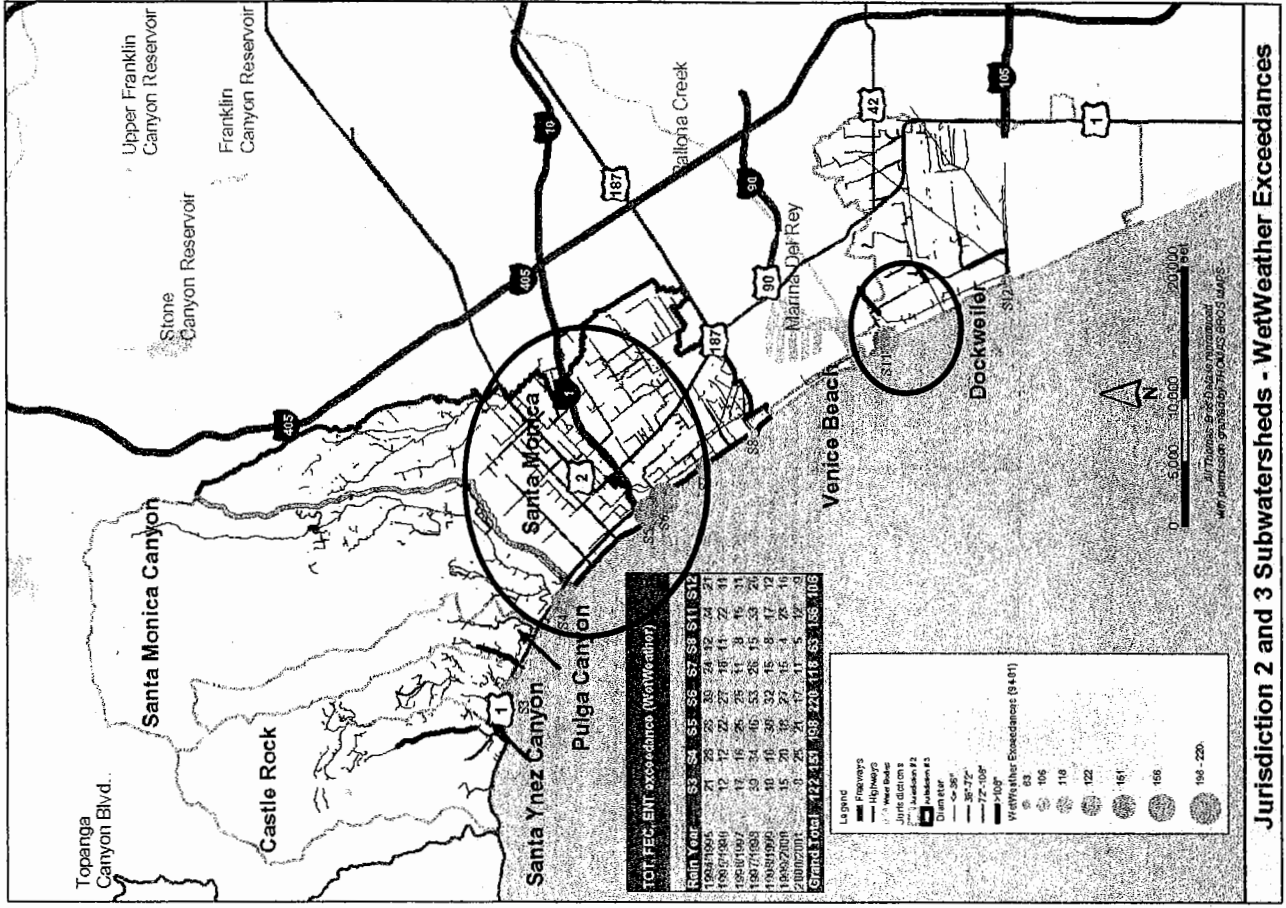
(6) Identify Potential Sites



Potential Project Sites



Subsheds Experiencing More Exceedance Days



EXAMPLE

Rank	Site	Site Type	Approximate Area(acres)	Subwatershed	Jurisdiction	Located close to drainage from high density areas	Located near points of concentration in storm drain system	Offer large storage and infiltration potential
3	South Beach Park	Public Park	16.9	Santa Monica	Santa Monica	Y	Y	Y
2	Santa Ynez Canyon Park	Public Park	50+	Castle Rock	Los Angeles	N	Y	Y
2	Westchester Golf and Recreation Center	Public Park	22.3	Dockweiler	Los Angeles	N	Y	Y
2	Recreation Park	Public Park	20.5	Dockweiler	El Segundo	N	Y	Y
2	Penmar Recreational Park	Public Park	14.4	Santa Monica	Los Angeles	N	Y	Y
2	Clover Park	Public Park	13.5	Santa Monica	Santa Monica	N	Y	Y
2	Rustic Canyon Recreation Center	Public Park	13	Pulga Canyon	Santa Monica	N	Y	Y
2	Memorial Park	Public Park	11.3	Santa Monica	Santa Monica	N	Y	Y
2	St. John's Hospital and Health Center	Government Facility	10.9	Santa Monica	Santa Monica	N	Y	Y
2	County Courthouse	Government Facility	9	Santa Monica	Santa Monica	Y	Y	N
2	Christine Emerson Reed Park	Public Park	7	Santa Monica	Santa Monica	Y	Y	N
2	Los Amigos Park	Public Park	6.9	Santa Monica	Santa Monica	Y	Y	N
2	Santa Monica - UCLA Hospital	Government Facility	5.8	Santa Monica	Santa Monica	N	Y	Y



- **Project selection depends on site conditions, such as soil permeability, available land, other plans for site, community acceptance, construction impacts**
- **Typical cost (based on Open Charter School project):**

Construction Cost - \$435,000

Non-Construction Markup - 30%

- **Engineering**
- **Permitting**
- **Legal/Administration**

■ **For budgeting purposes, estimate \$0.5-1 million per Local Solutions projects**

■ **Estimate \$1 million per year for Institutional, Non-structural Programs**



■ **Projects will be grouped according to 3 levels:**

1) Committed Projects

2) Trial Projects (Pilot Tests)

3) Projects for Consideration

■ **An implementation schedule for each of these projects will be defined**



