2.0 WATERSHED ACTIVITY PRIORITIZATION BY WATERSHED

This section presents the watershed activity prioritization process for each watershed in a step by step approach. This prioritization process is a tool for the watershed manager to identify the priority pollutants, potential priority sources and targeted areas within the watershed. The outcomes of each step provide the watershed manager with the basis for the development of a watershed activity implementation strategy. Because the outcomes provide a ranking of the pollutants, sources and sub-watersheds within each watershed, implementation of watershed activities is readily scalable. Watershed activities can be implemented in a phased manner depending on available resources, data gaps and need for effectiveness assessments. Implementation can target higher priorities in the initial phases; and, then as data gaps on sources and effectiveness of best management practices (BMPs) are addressed, the program can then be expanded to the next set of lower ranked priorities. The scalability of this tool provides the manager the flexibility to ramp up implementation as needed with out having to revise the overall implementation strategy.

The contents of Section 2 include each of the five steps of the watershed activity prioritization process for each of the watersheds. The flow chart for each step is provided following by the data was used as the basis for the outcome of each step. The specific outcome of each step is then presented.

The prioritization process begins with the identification of the Priority Water Quality Problems. Priority Water Quality Problems are determined using a combination of the following:

- Water Quality Priority Ratings from the Baseline Long-Term Effectiveness Assessment (Weston, 2006);
- Triad Assessment from the Annual Stormwater Monitoring Report; and,
- Additional water quality data sets.

The outcome of Step 1 is the identification of the Priority Water Quality Problems (PWQP) for the watershed and to the extent possible on a sub-watershed basis. Data gaps are also identified. The City is using an integrated approach to watershed activity implementation. The integrated approach consists of considering all the PWQP for a watershed that include both current and anticipated future Priority Water Quality Problems. This approach requires a greater timeframe to implement, but is the most cost effectiveness in that BMPs will not require retro-fitting to address additional pollutants in the future.

Step 2 of the process includes the identification of high threat to water quality sources based on the current source inventory and the Threat to Water Quality Rating (TTWQ) presented in the Baselines Long-Term Effectiveness Assessment. The outcome of this step is to identify the higher rated sources for the PWQP. This step also identifies the data gaps in the source inventory and identified unknown sources.

Steps 3 and 4 identify and assess potential pollutant loadings from the sub-watersheds and possible opportunities for combining storm water pollutant reductions with habitat restoration. The outcomes of all the steps are then used in Step 5 to identify priority “sectors” within each of the watersheds for which for the City has jurisdiction. The priority sectors consist of a single or

multiple sub-watersheds that are ranked from highest to lowest priority. The purpose of this process is therefore to identify for the watershed manager areas of higher and lower priority with regard to pollutant loads to receiving waters.

This prioritization provides a tool for the watershed manager in the implementation of watershed activities to reduce pollutant loads in urban runoff. For example, the watershed manager may choose to target the higher priority (higher loading) sectors for implementation of phased watershed activities to achieve greater load reduction in the overall watershed. A phased implementation approach to best management practices is recommended and is further discussed in Section 3.

The following provides a summary of the overall Watershed Activity Prioritization in a step by step process:

STEP 1: IDENTIFY AND ASSESS THE PRIORITY WATER QUALITY PROBLEMS (PWQP) USING THE FOLLOWING TOOLS

1. Review and identify "Water Quality Priority Ratings" for watershed and sub-watershed using the Baseline Long Term Effectiveness Assessment (BTLEA) process (maps provided in Annual Copermittee Stormwater Report – 2005/2006)
2. Review and assess available sub-watershed data spatially using available historical and current water and sediment quality data from various programs (dry weather, coastal outfall, third party, future MS4 and temporary mass loading stations)
3. Review and assess available watershed and sub-watershed (where available) assessment data using "Triad" approach which considers wet and dry weather, toxicity, bioassessment, and sediment data that is summarized in the annual Copermittee Stormwater Monitoring Report.
4. Further develop PWQP based on current and anticipated Total Maximum Daily Loads and other regulatory drivers
5. Develop the list of Priority Water Quality Problems based on the above review and assessment of data, ratings and regulatory drivers
6. Assess spatially to the extent possible the Priority Water Quality Problems on a sub-watershed level

OUTCOMES OF STEP 1

- Identify Priority Water Quality Problems (PWQP) for the watershed and to the extend possible high PWQP on a sub-watershed basis
- Identify where data gaps in the data exist and use this list to develop scope of priority studies
- Use INTEGRATED APPROACH to development of priority activities – consider all PWQP in BMP prioritization

STEP 2: IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES

1. Based on existing inventories used for the BLTEA, conduct spatial assessment of potential sources within the watershed for the identified PWQP from Step 1

2. Use potential source maps to identify "clusters" of potential sources for each PWQP group.
3. Using integrated approach; identify on the potential source maps the clusters of potential sources for the PWQP.
4. Assess and identify higher priority sources based on the Threat to Water Quality (TTWQ) ratings developed in the Baseline Long Term Effectiveness Assessment (BLTEA)

OUTCOMES OF STEP 2

- Identify the higher rated sources based on BLTEA TTWQ for each PWQP
- Identify potential higher priority areas based on "clustering" of high priority sources
- Use INTEGRATED approach and identify areas of higher clusters of sources for multiple PWQP
- Identify data gaps in the inventory of sources and the need to conduct inventory updates
- Identify data gaps in the identification of unknown sources that may contribute to the water quality issues
- Identify residential, roadway and other sources that are not included in source inventory list

STEP 3: IDENTIFY AND ASSESS LAND USE AND RESTORATION OPPORTUNITIES

1. Review and assess maps of the watershed showing land uses and evaluate higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps
2. Review natural resources within watershed especially high value habitat, open space and opportunities for restoration
3. Assess opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed

OUTCOME OF STEP 3

- Identify land uses and higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps which will be used to estimate pollutant loading
- Identify natural resources within watershed especially high value habitat, open space and opportunities for restoration
- Identify opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed

STEP 4: DETERMINE SUB-WATERSHED POLLUTANT LOADING

1. Develop pollutant loading model based on land uses

2. Evaluate the existing data and determine data needs to calibrate the model using water quality data
3. Develop pollutant loading maps for each PWQP
4. Assess the pollutant loading based on land use with the existing Priority Water Quality Problems and potential sources from previous steps

STEP 4 OUTCOMES:

- Identify sub-watershed with higher pollutant loading using land use data
- Identify the data gaps to calibrate and verify the loading using water quality data
- Identify the sub-watersheds that have the greatest priority based on the pollutant loading and the Priority Water Quality Problems and potential sources from previous steps

STEP 5: IDENTIFY HIGH PRIORITY SUB-WATERSHEDS FOR WATERSHED ACTIVITIES

1. Based on the outcomes of the previous steps, develop an approach to prioritize sub-watersheds for implementation of phase I watershed activities
2. Develop a map showing sub-watershed priorities by assigning each sub-watershed or group of adjacent sub-watersheds a number (1 being the highest priority)

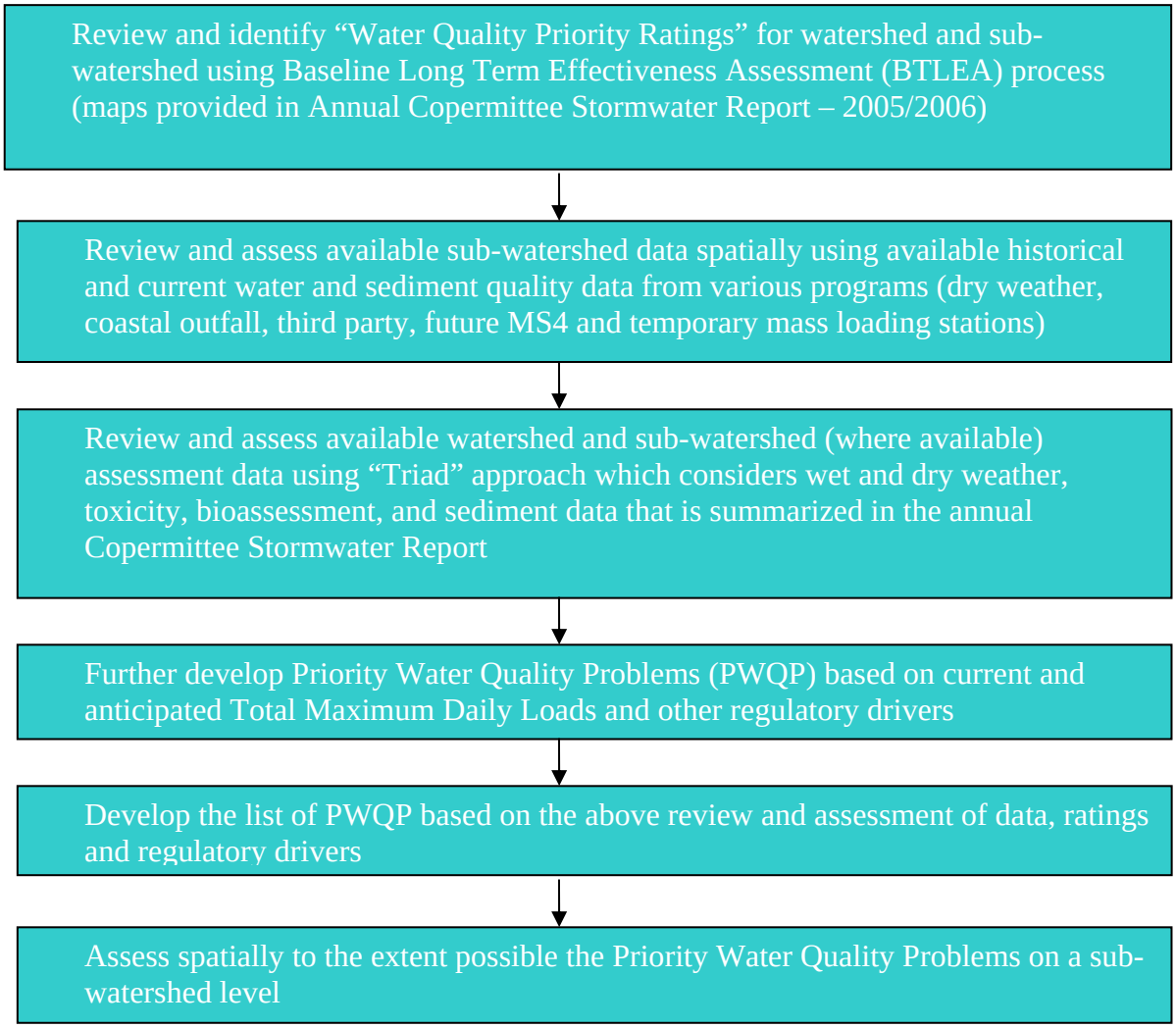
STEP 5 OUTCOME

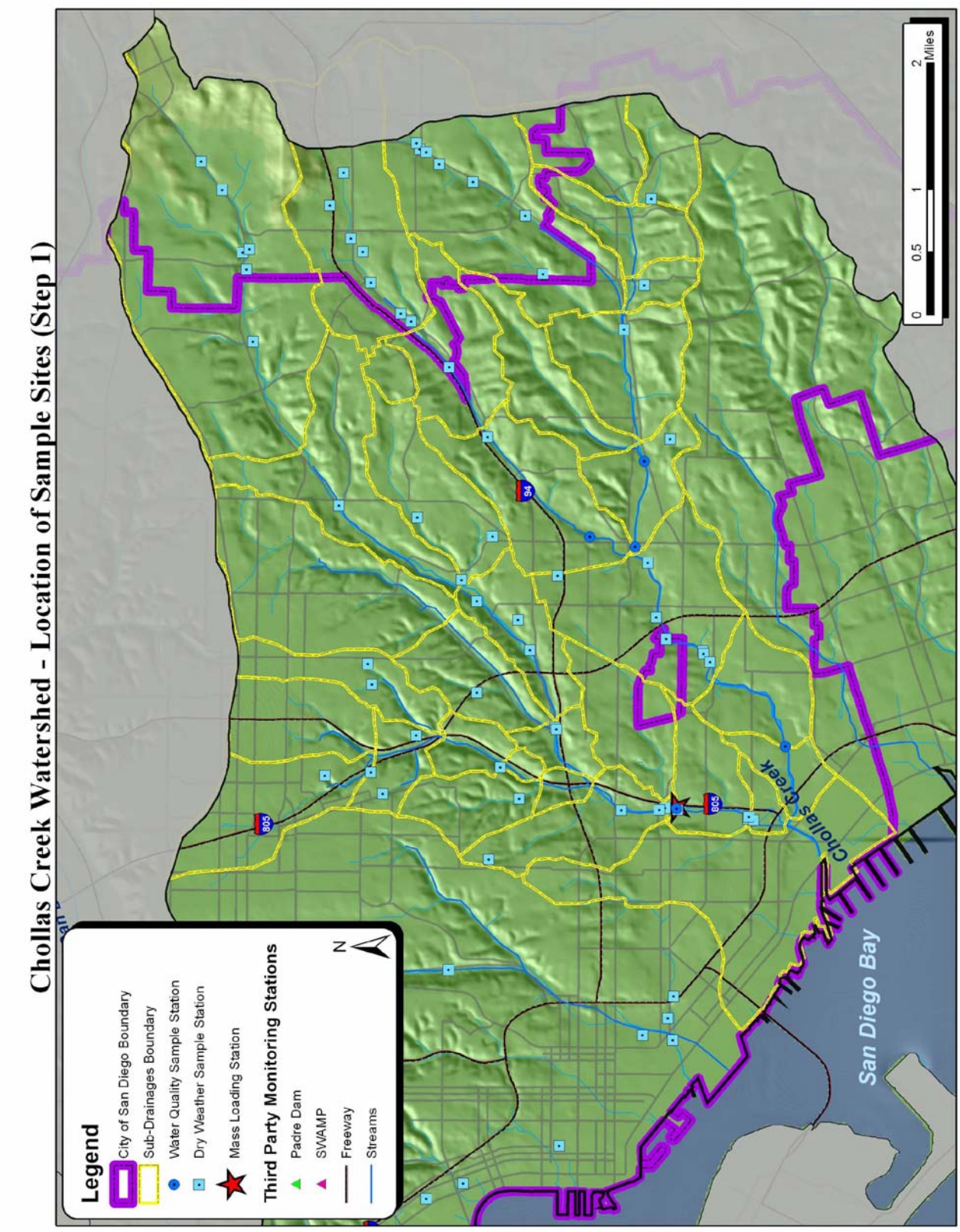
- Map showing a prioritization of the sub-watersheds using the concept of numbered Sectors (1 being the highest priority).

The contents of Section 2 include each of the five steps of the watershed activity prioritization process for each of the watersheds. The flow chart for each step is presented first, followed by the data used as the basis for the outcome of each step. The specific outcome of each step is then presented at the end of each step. A summary of the overall outcomes for all the watersheds is then presented at the end of this section. These outcomes form the basis for the 5-year Watershed Implementation Strategy presented in Section 3.

San Diego Bay Watershed Management Area - Chollas Creek Watershed

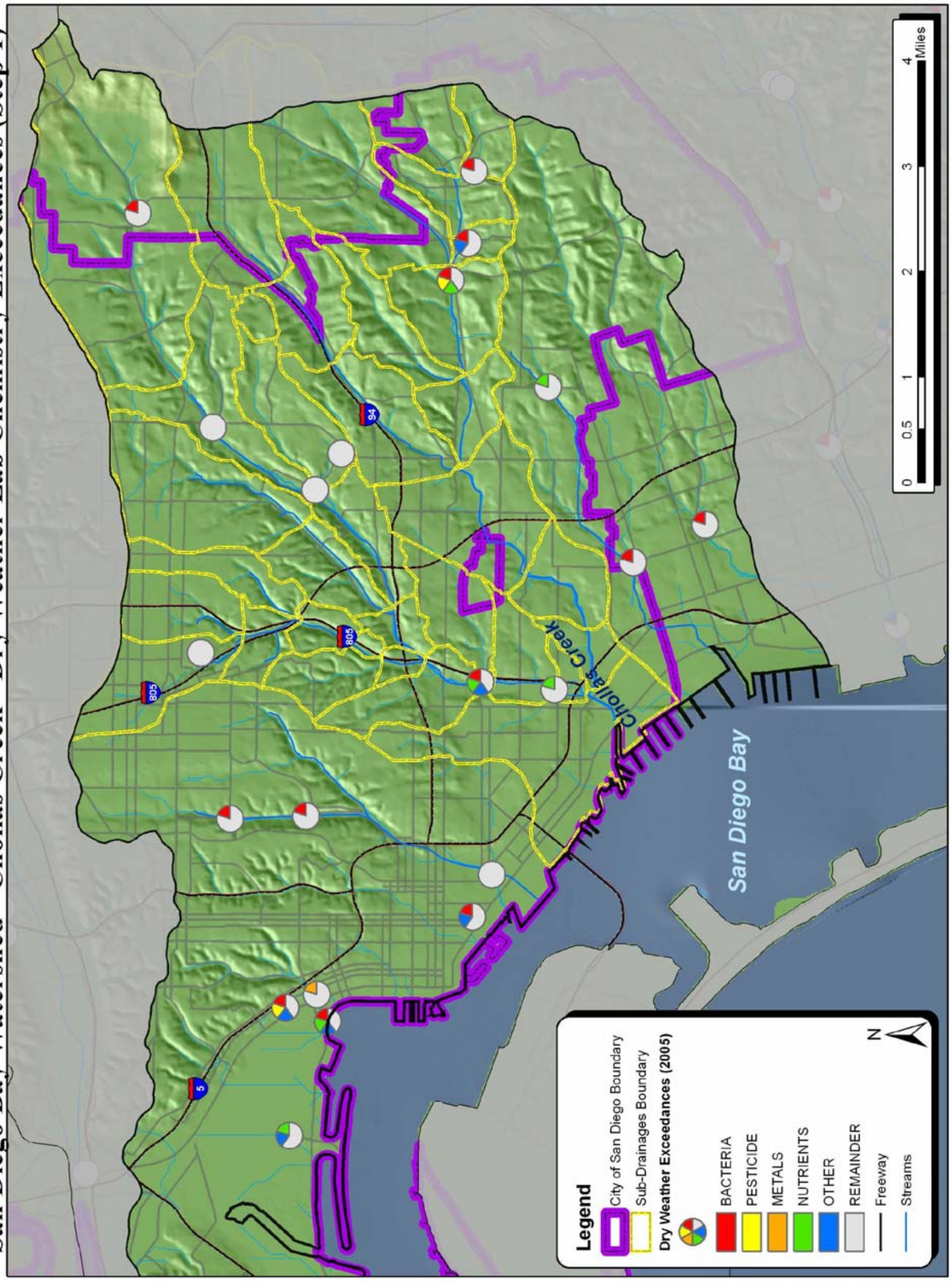
STEP 1: IDENTIFY AND ASSESS THE PRIORITY WATER QUALITY PROBLEMS USING THE FOLLOWING TOOLS




Chollas Creek Watershed - Location of Sample Sites (Step 1)
Legend
City of San Diego Boundary
Sub-Drainages Boundary
Water Quality Sample Station
Dry Weather Sample Station
Mass Loading Station
Third Party Monitoring Stations
Padre Dam
SWAMP
Freeway
Streams
N
0
0.5
1
2
Miles
San Diego Bay
Chollas Creek
805
94

Map 2.1

San Diego Bay Watershed - Chollas Creek - Dry Weather Lab Chemistry Exceedances (Step 1)



Map 2.2

Updated Water Quality Priority Ratings for the San Diego Bay WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
San Diego Bay WMA	**100%**	***D***	***B***	***D***	***D***	***C***	***C***	***D***	***D***	***B***	***C***	***B***
Point Loma HA (908.10)	2%	*A*	*D*	*D*	*B*	*C*	*B*	*D*	*D*	*A*	*A*	*A*
San Diego Mesa HA (908.20)	9%	*A*	*D*	*A*	*D*	*A*	*A*	*C*	*B*	*A*	*A*	*A*
National City HA (908.30)	2%	*C*	*D*	*D*	*C*	*B*	*C*	*B*	*C*	*A*	*A*	*A*
Lower Sweetwater HA (909.10)	11%	*D*	*A*	*D*	*D*	*C*	*B*	*D*	*D*	*A*	*A*	*B*
Middle Sweetwater HA (909.20)	19%	*D*	*B*	*D*	*D*	*C*	*A*	*D*	*D*	*C*	*B*	*B*
Upper Sweetwater HA (909.30)	22%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*C*	*C*	*B*	*B*
Coronado HA (910.10)	2%	*B*	*D*	*D*	*B*	*A*	*B*	*A*	*A*	*A*	*D*	*D*
Otay Valley HA (910.20)	10%	*D*	*D*	*D*	*D*	*C*	*D*	*C*	*C*	*A*	*D*	*D*
Dulzura HA (910.30)	22%	*D*	*B*	*D*	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*C*
Frequency of Occurrence Rating High[1]		♦♦♦				♦♦♦				♦♦♦		
Constituents of Concern		Copper Lead Zinc				Turbidity				Total Coliform Fecal Coliform Entero-coccus		

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

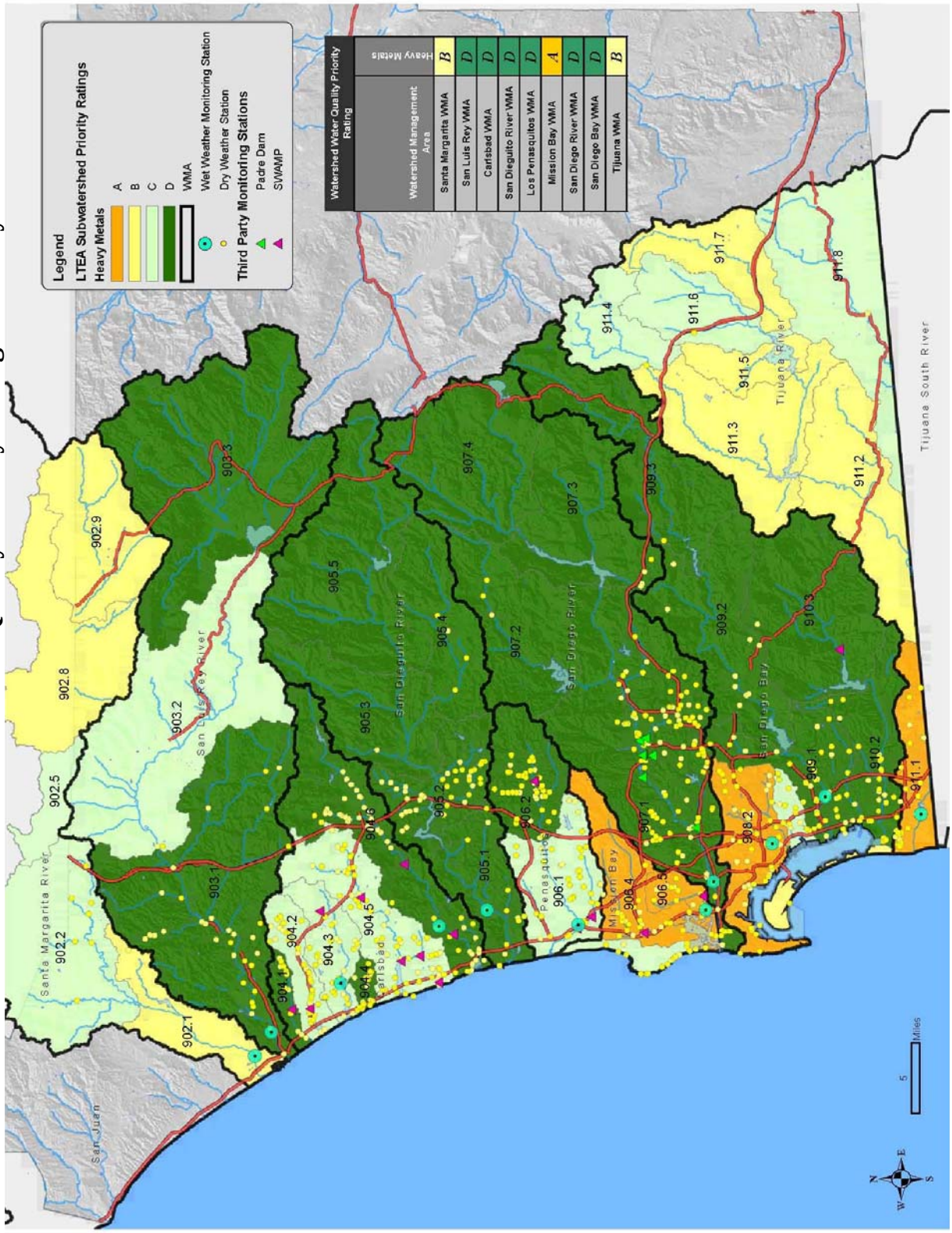
** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

303d listing

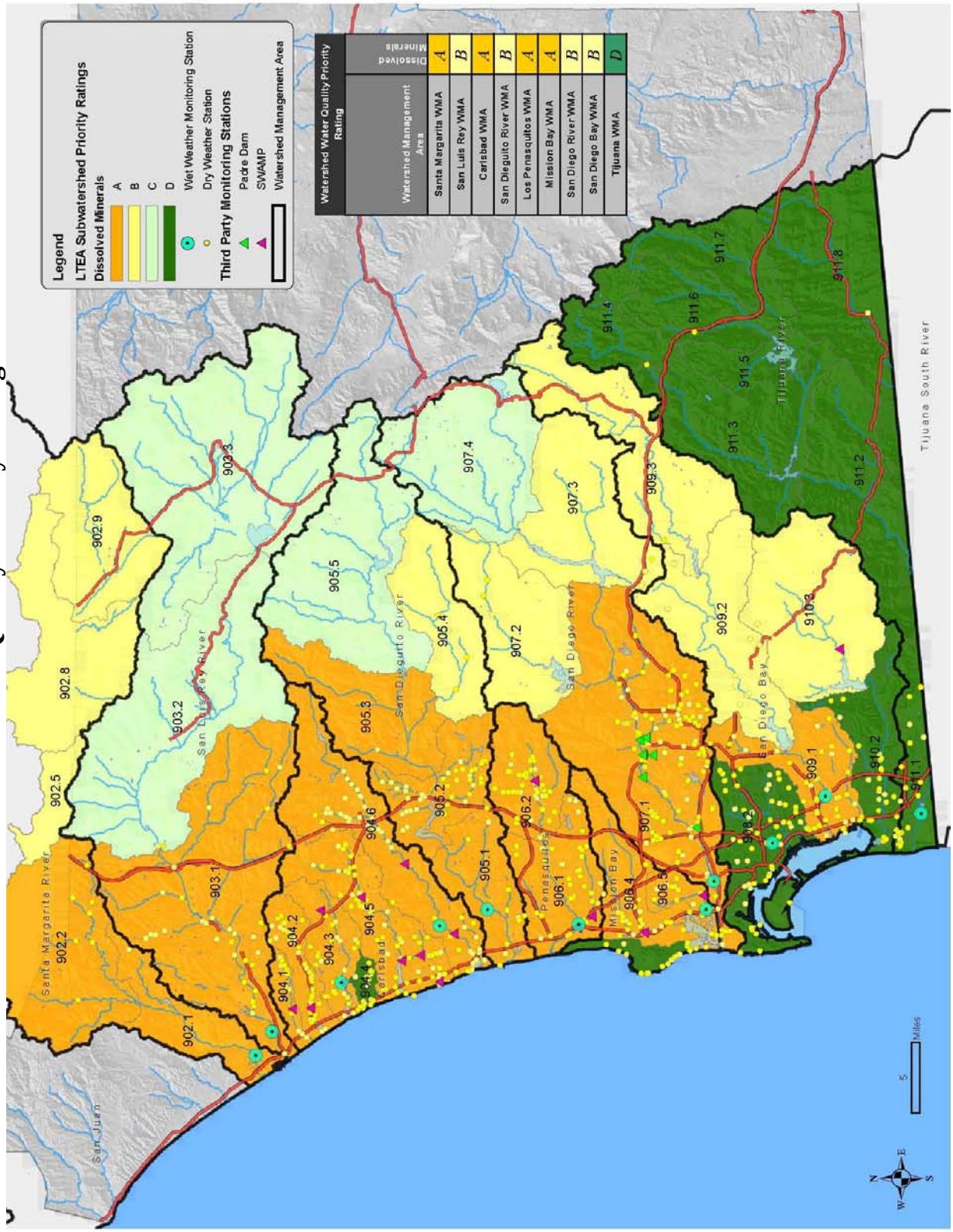
Watershed and Sub-Watershed Water Quality Priority Rating for Heavy Metals.



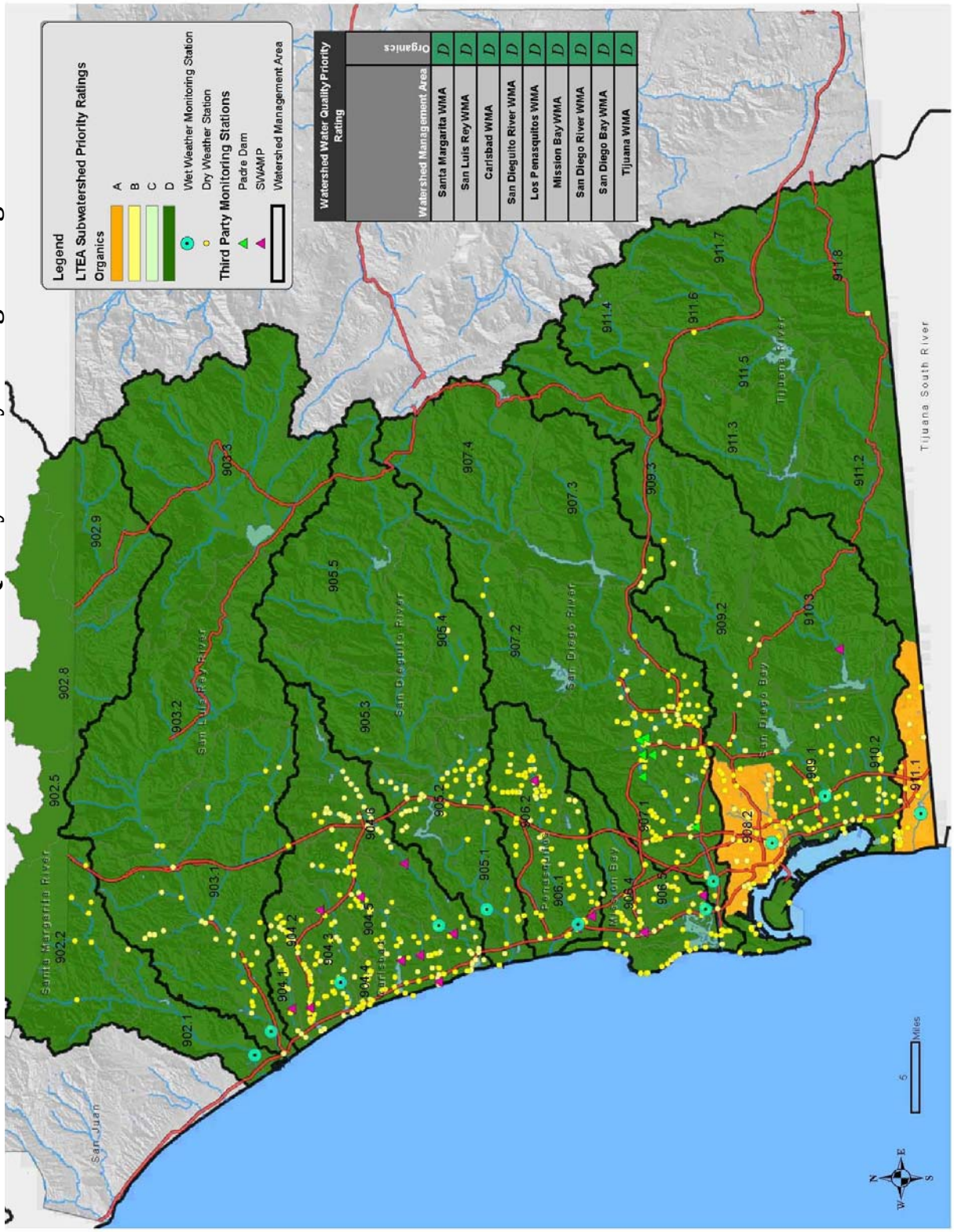
Map 2.3

Map 2.4

Watershed and Sub-Watershed Water Quality Priority Ratings for Dissolved Minerals

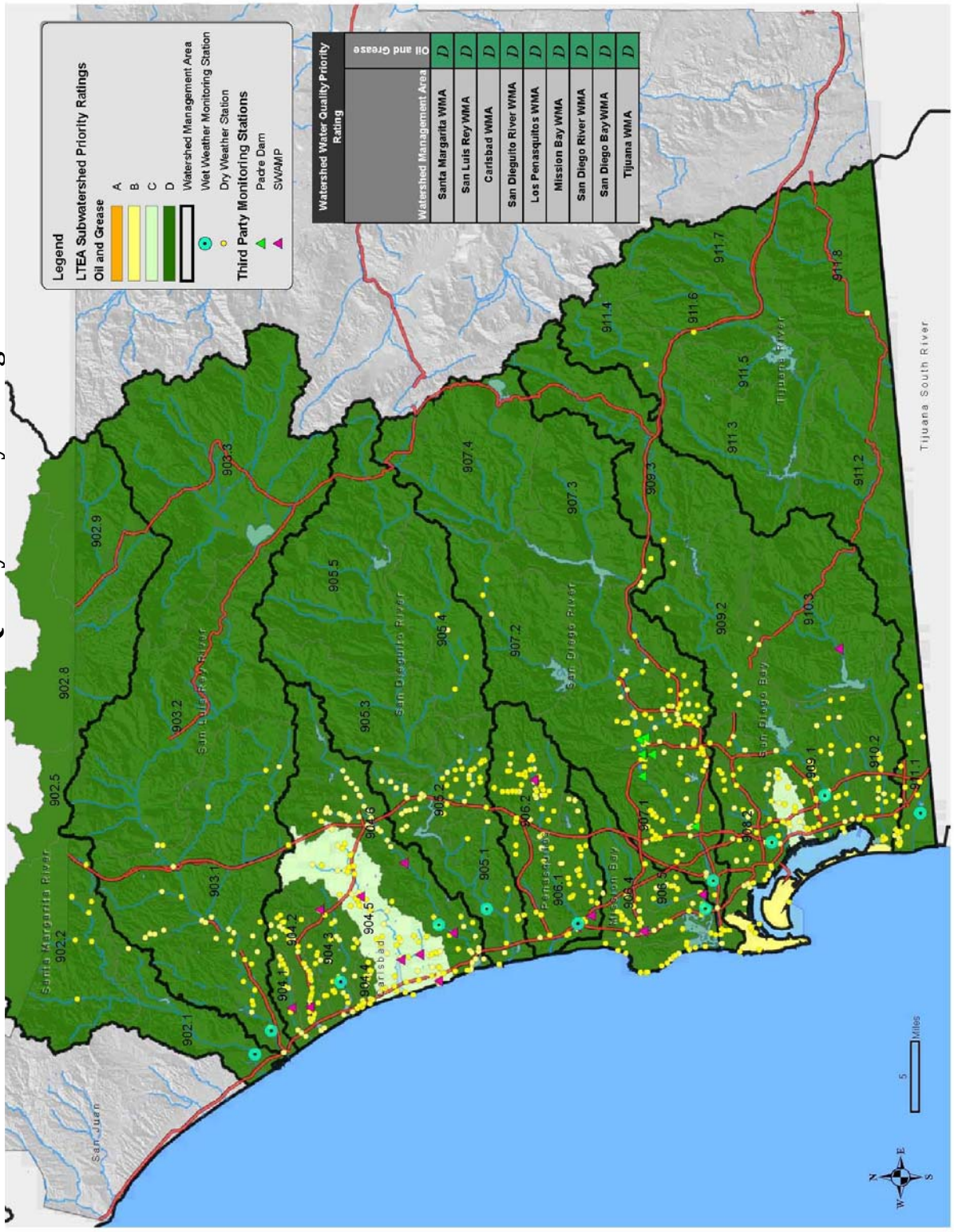


Watershed and Sub-Watershed Water Quality Priority Rating for Organics.



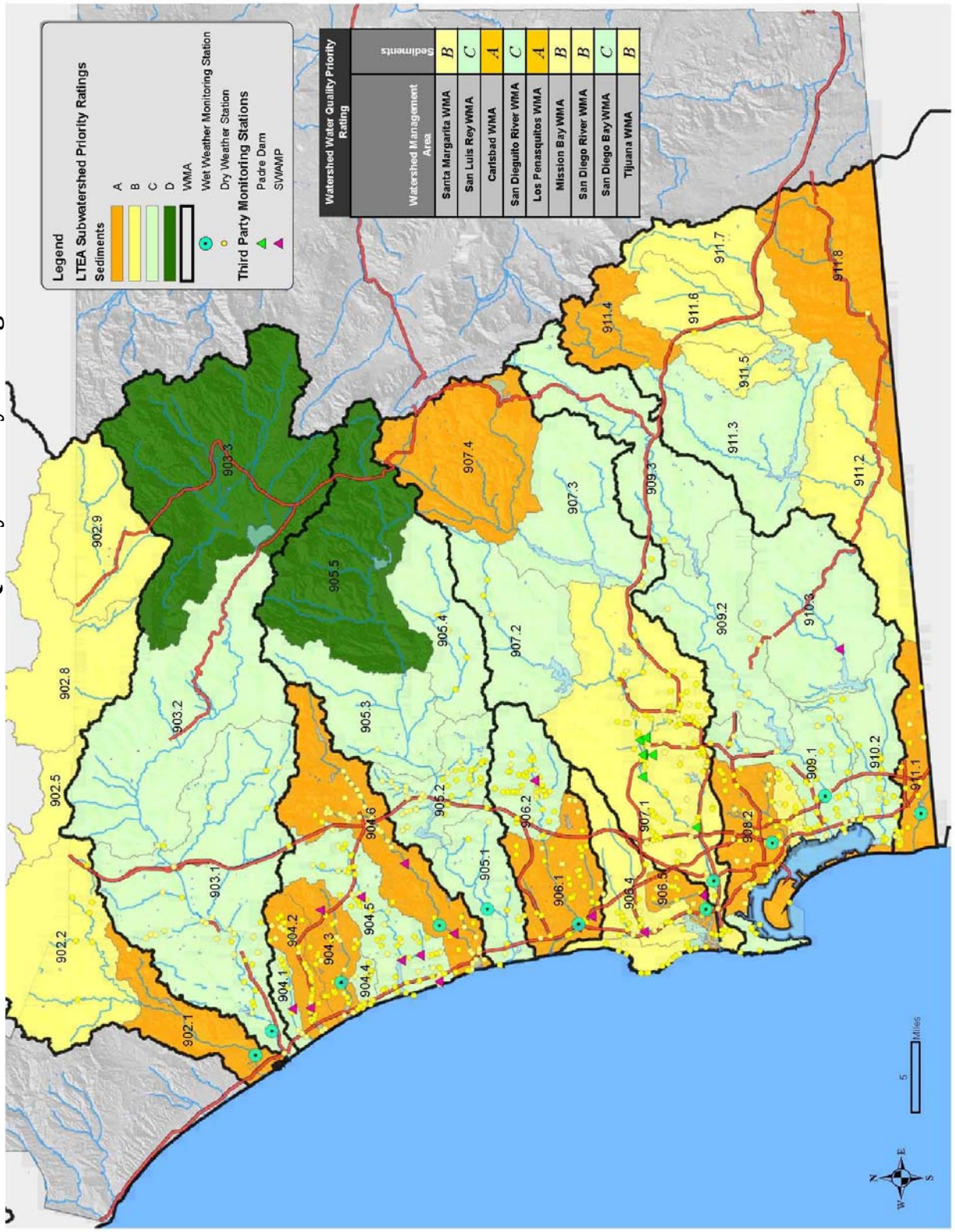
Map 2.5

Watershed and Sub-Watershed Water Quality Priority Rating for Oil and Grease.



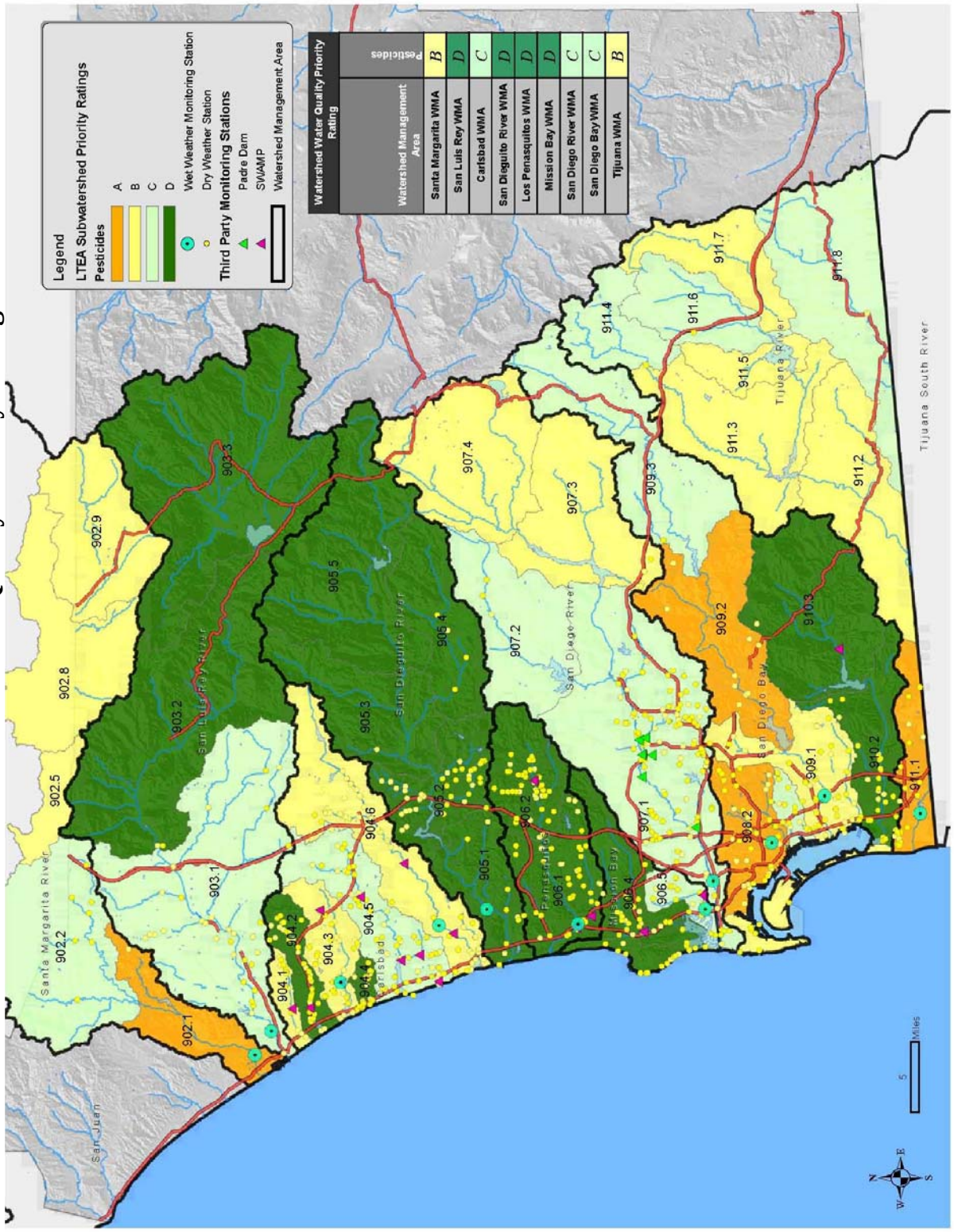
Map 2.6

Watershed and Sub-Watershed Water Quality Priority Rating for Sediment.



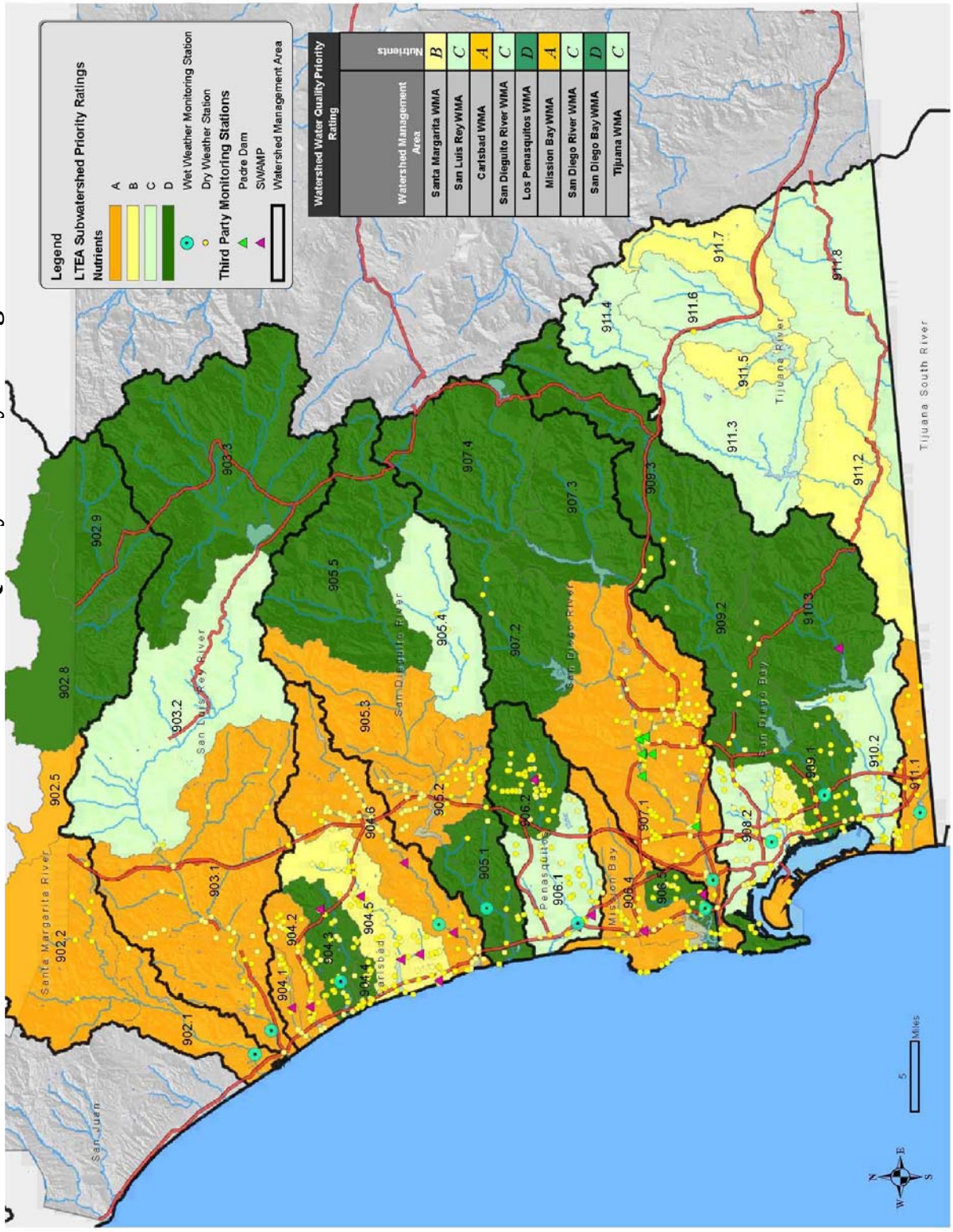
Map 2.7

Watershed and Sub-Watershed Water Quality Priority Rating for Pesticides.



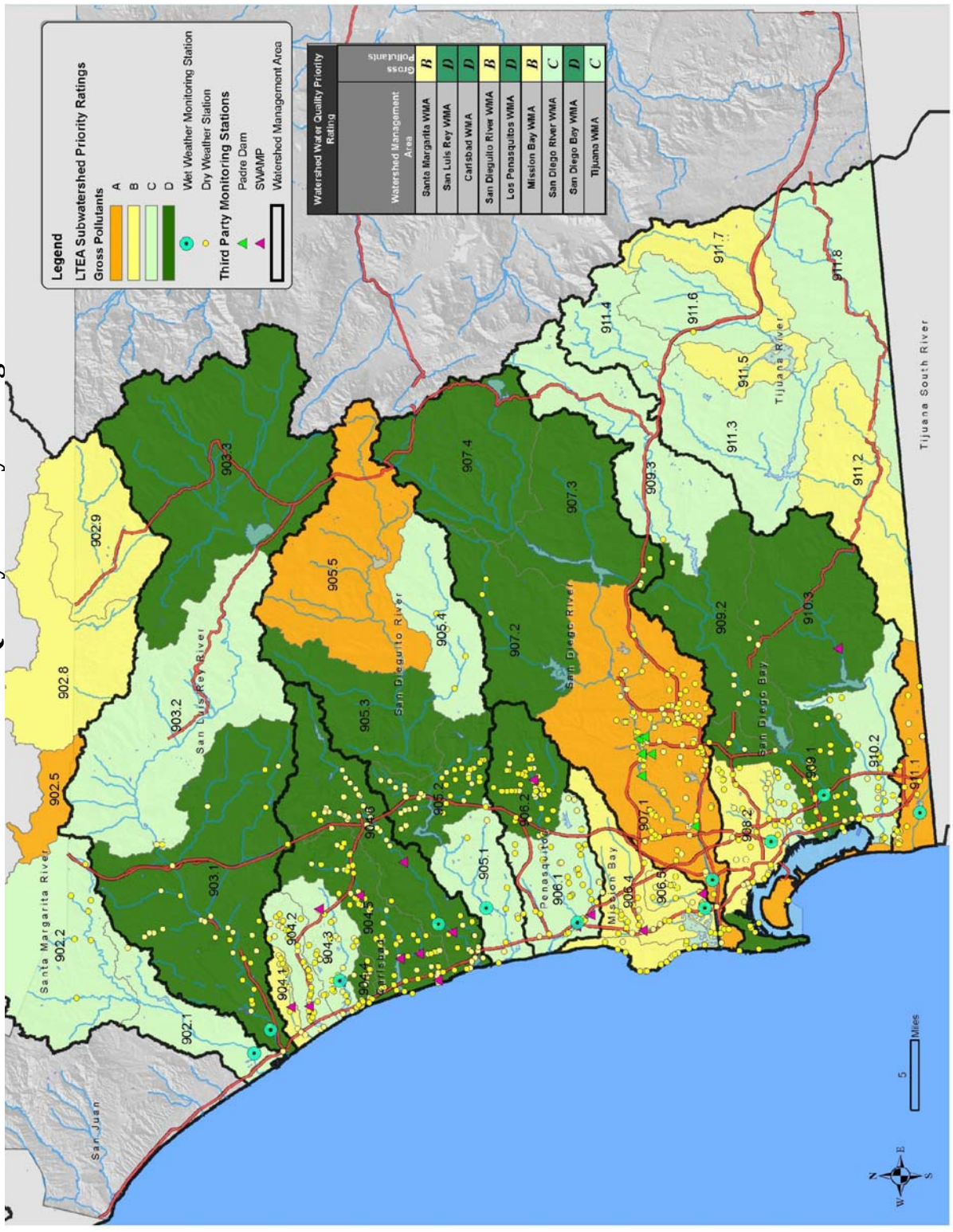
Map 2.8

Watershed and Sub-Watershed Water Quality Priority Rating for Nutrients.



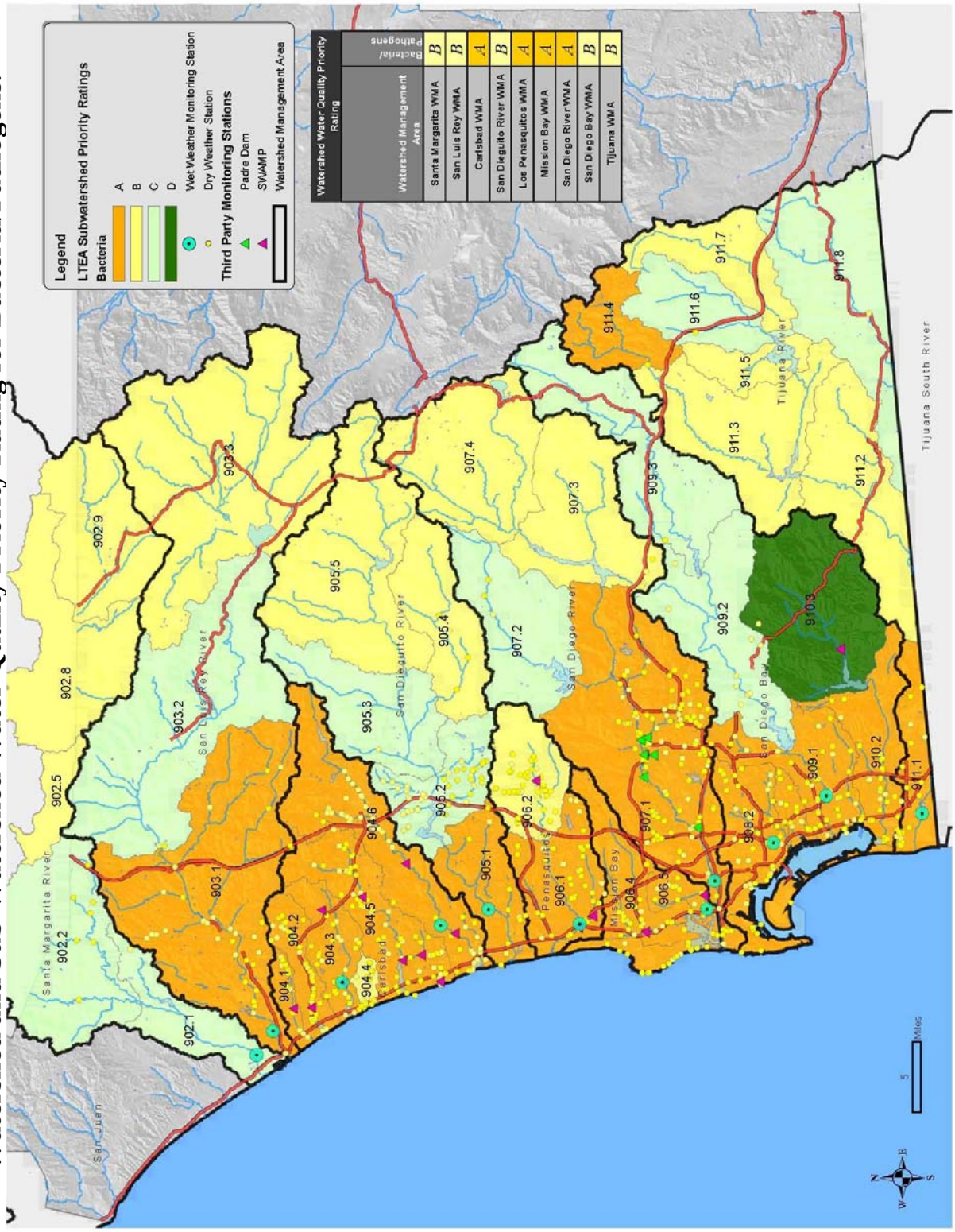
Map 2.9

Watershed and Sub-Watershed Water Quality Priority Rating for Gross Pollutants.



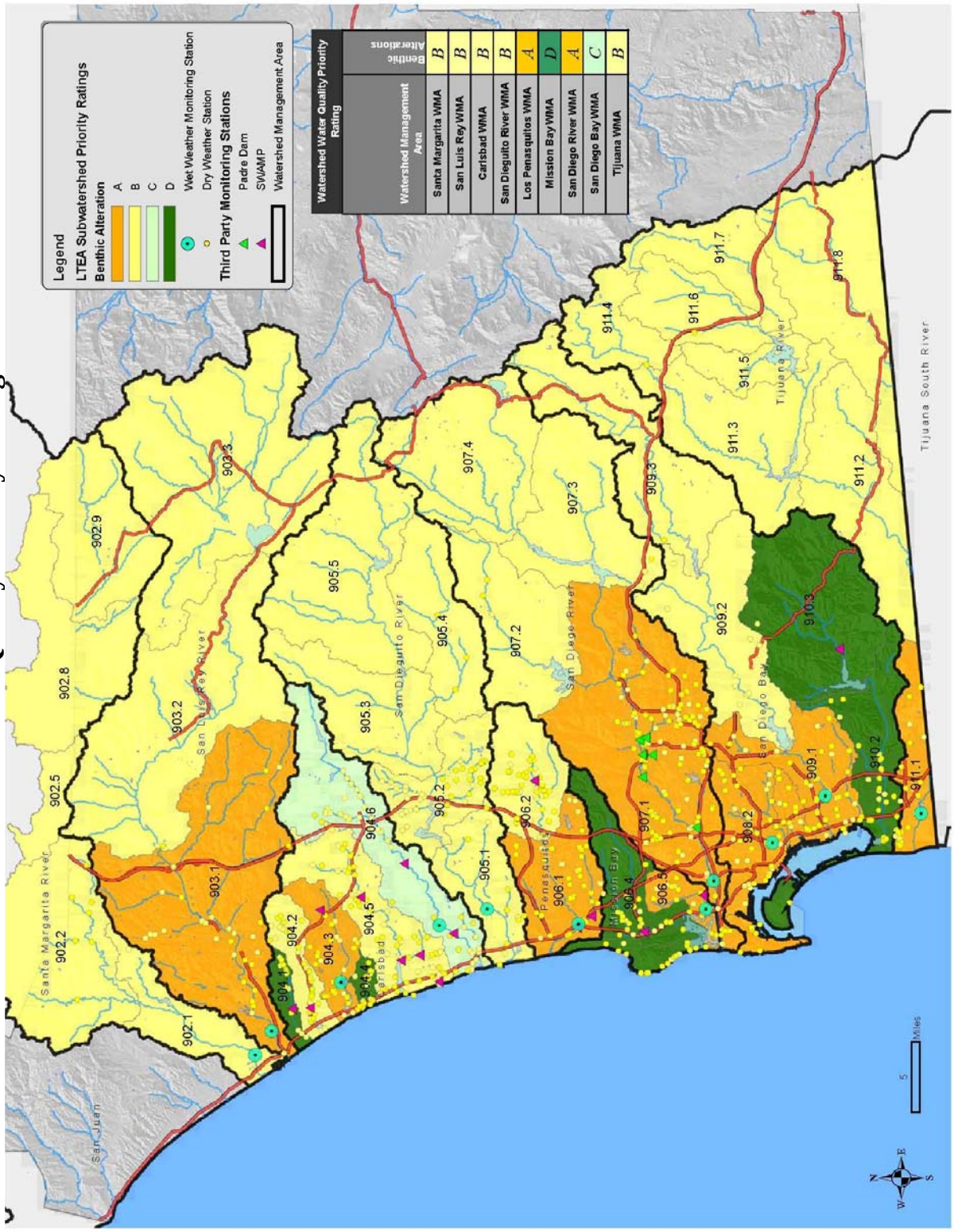
Map 2.10

Watershed and Sub-Watershed Water Quality Priority Rating for Bacteria/Pathogens.



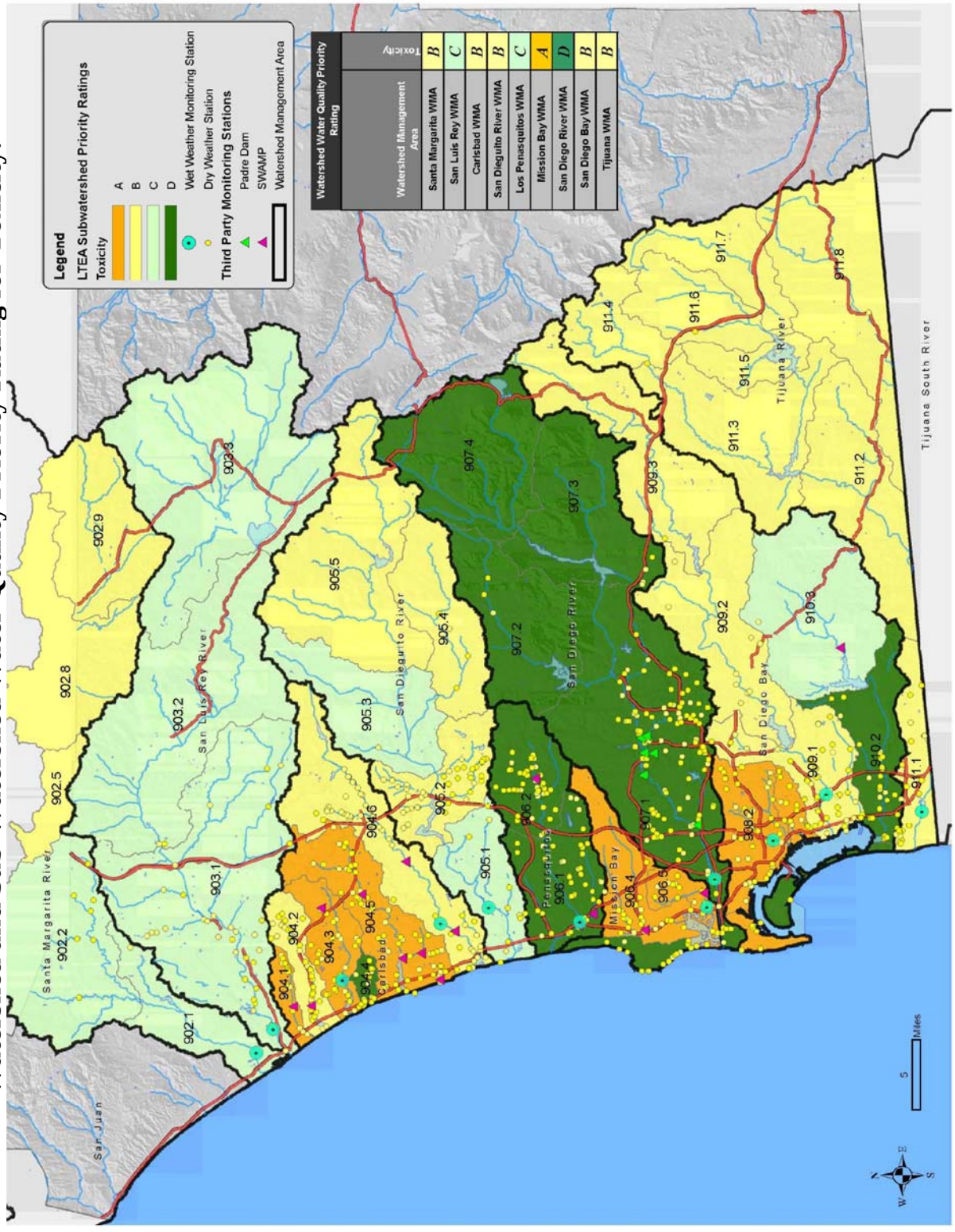
Map 2.11

Watershed and Sub-Watershed Water Quality Priority Rating for Benthic Alteration.



Map 2.12

Watershed and Sub-Watershed Water Quality Priority Rating for Toxicity.



Map 2.13

OUTCOMES OF STEP 1
IDENTIFY PRIORITY WATER QUALITY PROBLEMS AND DATA GAPS
SAN DIEGO BAY WATERSHED MANAGEMENT AREA - CHOLLAS CREEK WATERSHED

- Identify Priority Water Quality Problems (PWQP) for the watershed and to the extent possible PWQPs on a sub-watershed basis: The PWQPs for San Diego Bay Watershed Management Area – Chollas Creek Watershed include:
    - Bacteria/Pathogens
    - Heavy Metals
    - Pesticides
    - Sediments
    - Benthic Alterations
    - Toxicity
- Identify data gaps that exist in the data and use this list to develop a scope of priority studies: The data gaps for the PWQP in the Chollas Creek watershed include:
    - Design Storm Determination through pollutograph development for the PWQP – Supplement data developed by SCCWRP
    - Monitor and determine the loading contributions from the other jurisdiction in the watershed (Lemon Grove and La Mesa)
    - Investigate the sources of pesticides and other organic constituents in the watershed and assess the loading potential to the watershed and sediments to the mouth of the creek.
    - Investigate whether synthetic pyrethroids are an emerging PWQP.
    - Investigate the sources of metal (copper, lead and zinc) loading to the receiving waters targeting air deposition, industrial facilities and auto-related facilities, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
    - Investigate anthropogenic sources of bacteria load, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
    - Investigate anthropogenic sources of sediment load that is resulting in frequent exceedances of turbidity and determine the loading on a sub-watershed basis to verify the priority sectors.

In addition to these data gaps the following data needs have been recommended in the following report - Chollas Creek TMDL Source Loading, Best Management Practices, and Monitoring Strategy Assessment – Final report (Weston, 2006)

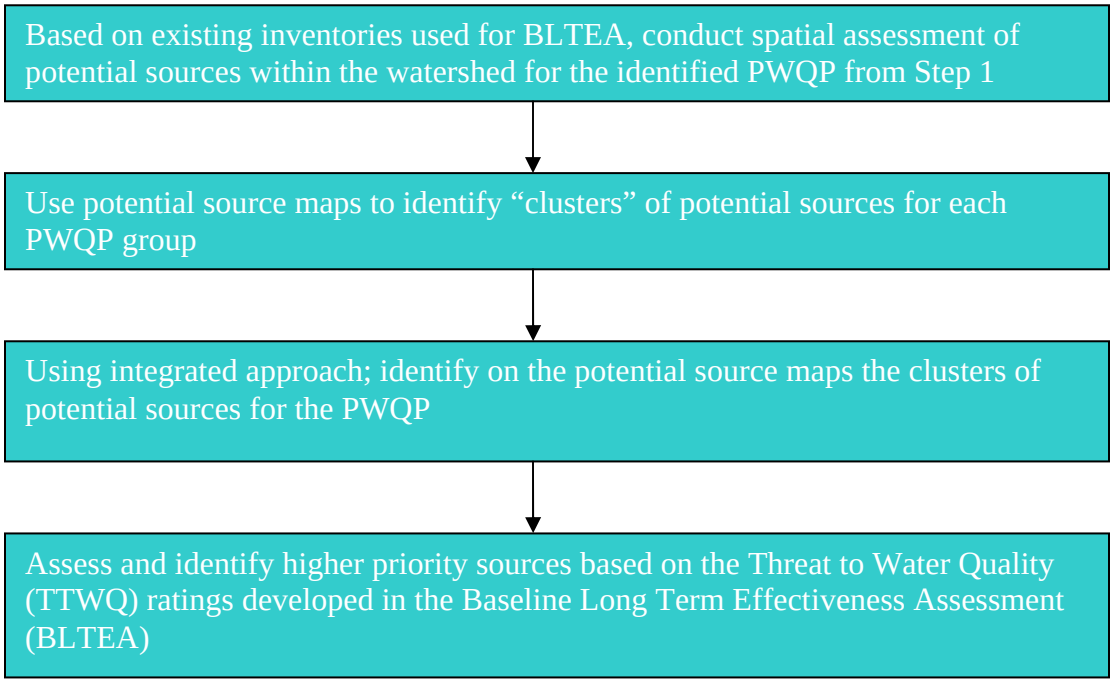
- Dry aerial Deposition component (wet Deposition has not been show n to be significant contributor to water quality issues for metals).
- Usable Industrial and Commercial Facilities Monitoring data (these facilities could be significant point sources as illustrated by the few industrial permit holders that have submitted data).
- Assess the magnitude of bacteria re-growth within the channel.

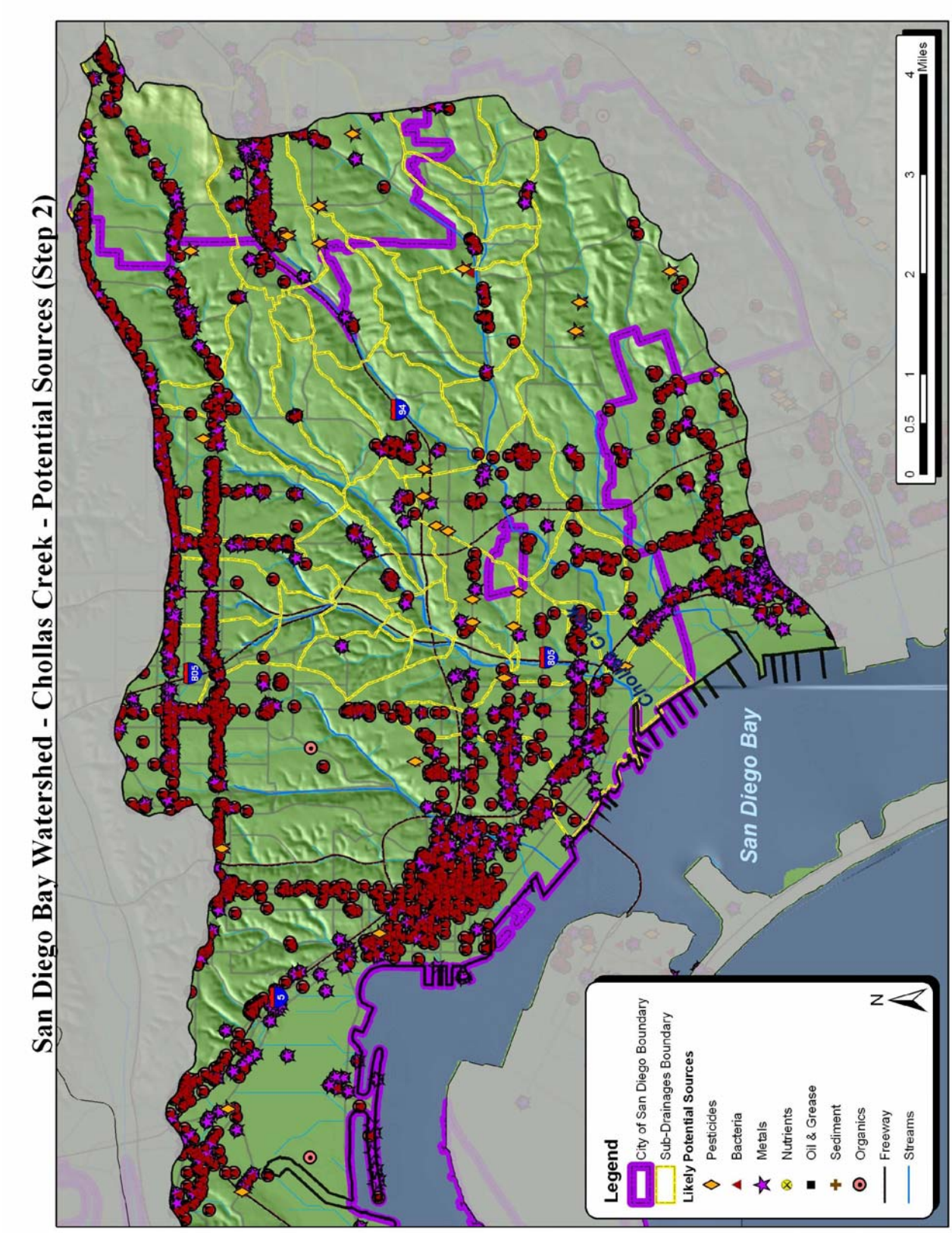
- Evaluation of the contribution of ponded dry weather flows and first flush phenomenon for bacteria and other constituents.
- Development of an overall mass balance loading estimate for all sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

The data gaps listed from the referenced document are the basis for the development of a monitoring strategy discussed further in Section 7.0 of the same.

- Use INTEGRATED APPROACH to develop priority activities – consider all PWQP in BMP prioritization.

STEP 2: IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES




San Diego Bay Watershed - Chollas Creek - Potential Sources (Step 2)
Legend
City of San Diego Boundary
Sub-Drainages Boundary
Likely Potential Sources
Pesticides
Bacteria
Metals
Nutrients
Oil & Grease
Sediment
Organics
Freeway
Streams
N
0 0.5 1 2 3 4 Miles
San Diego Bay
Chollas Cr
94
805
5

Map 2.14

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego Bay

Bacteria		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
10	Eating or drinking establishments	3574		L	T1	X		X	
17	Animal Facilities	42		L	T1	X		X	
33	POTWs (water and wastewater)	29		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	27		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	18		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
34	Sites for disposing and treating sewage sludge	-		L	T1	X		X	
19	Development subject to SUSMPs	82		UK	T1	X	X		
30	Automobile wholesale	78		UK	T1	X	X		
32	Motor Freight	61		UK	T1	X	X		
16	Marinas	26		UK	T1	X	X		
29	Active or closed municipal landfills	8		UK	T1	X	X		
7	Auto parking lots and storage facilities	-		UK	T1	X	X		
9	Pest Control Services	40		UK	T1	X	X		
22	Flood management projects and flood control devices	-		UK	T1	X	X		
23	MS4s	-		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	UL	T5	X		X	
20	Construction Sites	1674		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	724		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	112		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	59		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	57		UL	T5	X		X	
27	Fabricated metal	51		UL	T5	X		X	
24	Corporate yards (incl. maintenance/storage yards)	24		UL	T5	X		X	
28	Primary metal	14		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	9		UL	T5	X		X	
26	Chemical and allied products	5		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	62		UL	T5	X		X	
8	Retail or wholesale fueling	227		N	T6				X
31	Airfields	1		N	T6				X
15	Pool and Fountain cleaning	49		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego Bay

Heavy Metals		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
1	Auto mechanical repair, maintenance, fueling, or cleaning	724		L	T3	X		X	
5	Automobile and other vehicle body repair and painting	112		L	T3	X		X	
30	Automobile wholesale	78		L	T3	X		X	
32	Motor Freight	61		L	T3	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	59		L	T3	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	57		L	T3	X		X	
27	Fabricated metal	51		L	T3	X		X	
16	Marinas	26		L	T3	X		X	
24	Corporate yards (incl. maintenance/storage yards)	24		L	T3	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	18		L	T3	X		X	
28	Primary metal	14		L	T3	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	9		L	T3	X		X	
6	Mobile automobile or vehicle washing	-		L	T3	X		X	
7	Auto parking lots and storage facilities	-		L	T3	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T3	X		X	
21	Roads, streets, highways, and parking facilities	-	C	L	T3	X		X	
8	Retail or wholesale fueling	227		UK	T3	X	X		
19	Development subject to SUSMPs	82		UK	T3	X	X		
33	POTWs (water and wastewater)	29		UK	T3	X	X		
29	Active or closed municipal landfills	8		UK	T3	X	X		
26	Chemical and allied products	5		UK	T3	X	X		
31	Airfields	1		UK	T3	X	X		
25	Park and Recreational facilities	-		UK	T3	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T3	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	1674		UL	T5	X		X	
10	Eating or drinking establishments	3574		N	T6				X
17	Animal Facilities	42		N	T6				X
14	Landscaping - parks, golf courses, cemeteries, etc.	27		N	T6				X
9	Pest Control Services	40		N	T6				X
11	Mobile carpet, drape, or furniture cleaning	62		N	T6				X
15	Pool and Fountain cleaning	49		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego Bay

Pesticides		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
14	Landscaping - parks, golf courses, cemeteries, etc.	27		L	T2	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	18		L	T2	X		X	
9	Pest Control Services	40		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
10	Eating or drinking establishments	3574		UK	T2	X	X		
19	Development subject to SUSMPs	82		UK	T2	X	X		
30	Automobile wholesale	78		UK	T2	X	X		
32	Motor Freight	61		UK	T2	X	X		
27	Fabricated metal	51		UK	T2	X	X		
17	Animal Facilities	42		UK	T2	X	X		
16	Marinas	26		UK	T2	X	X		
24	Corporate yards (incl. maintenance/storage yards)	24		UK	T2	X	X		
28	Primary metal	14		UK	T2	X	X		
29	Active or closed municipal landfills	8		UK	T2	X	X		
26	Chemical and allied products	5		UK	T2	X	X		
31	Airfields	1		UK	T2	X	X		
7	Auto parking lots and storage facilities	-		UK	T2	X	X		
22	Flood management projects and flood control devices	-		UK	T2	X	X		
25	Park and Recreational facilities	-	B	UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	1674		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	724		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	112		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	59		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	57		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	9		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
21	Roads, streets, highways, and parking facilities	-		UL	T5	X		X	
8	Retail or wholesale fueling	227		N	T6				X
33	POTWs (water and wastewater)	29		N	T6				X
11	Mobile carpet, drape, or furniture cleaning	62		N	T6				X
15	Pool and Fountain cleaning	49		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego Bay

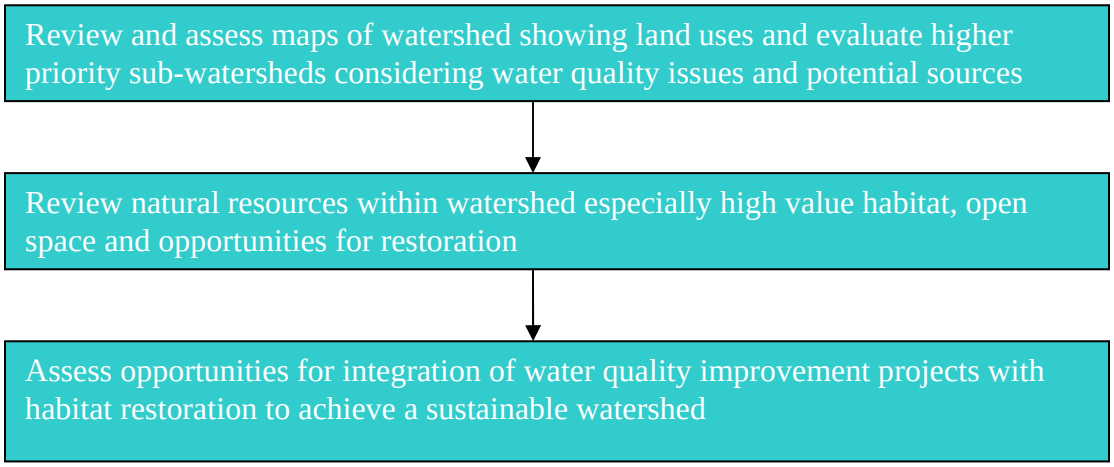
Sediment		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	L	T1	X		X	
20	Construction Sites	1674		L	T1	X		X	
30	Automobile wholesale	78		L	T1	X		X	
17	Animal Facilities	42		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	27		L	T1	X		X	
24	Corporate yards (incl. maintenance/storage yards)	24		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	18		L	T1	X		X	
6	Mobile automobile or vehicle washing	-		L	T1	X		X	
7	Auto parking lots and storage facilities	-		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
22	Flood management projects and flood control devices	-		L	T1	X		X	
23	MS4s	-		L	T1	X		X	
8	Retail or wholesale fueling	227		UK	T1	X	X		
19	Development subject to SUSMPs	82		UK	T1	X	X		
32	Motor Freight	61		UK	T1	X	X		
27	Fabricated metal	51		UK	T1	X	X		
33	POTWs (water and wastewater)	29		UK	T1	X	X		
28	Primary metal	14		UK	T1	X	X		
29	Active or closed municipal landfills	8		UK	T1	X	X		
26	Chemical and allied products	5		UK	T1	X	X		
31	Airfields	1		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T1	X	X		
10	Eating or drinking establishments	3574		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	724		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	112		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	59		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	57		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	9		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	62		UL	T5	X		X	
16	Marinas	26		N	T6				X
9	Pest Control Services	40		N	T6				X
15	Pool and Fountain cleaning	49		N	T6				X

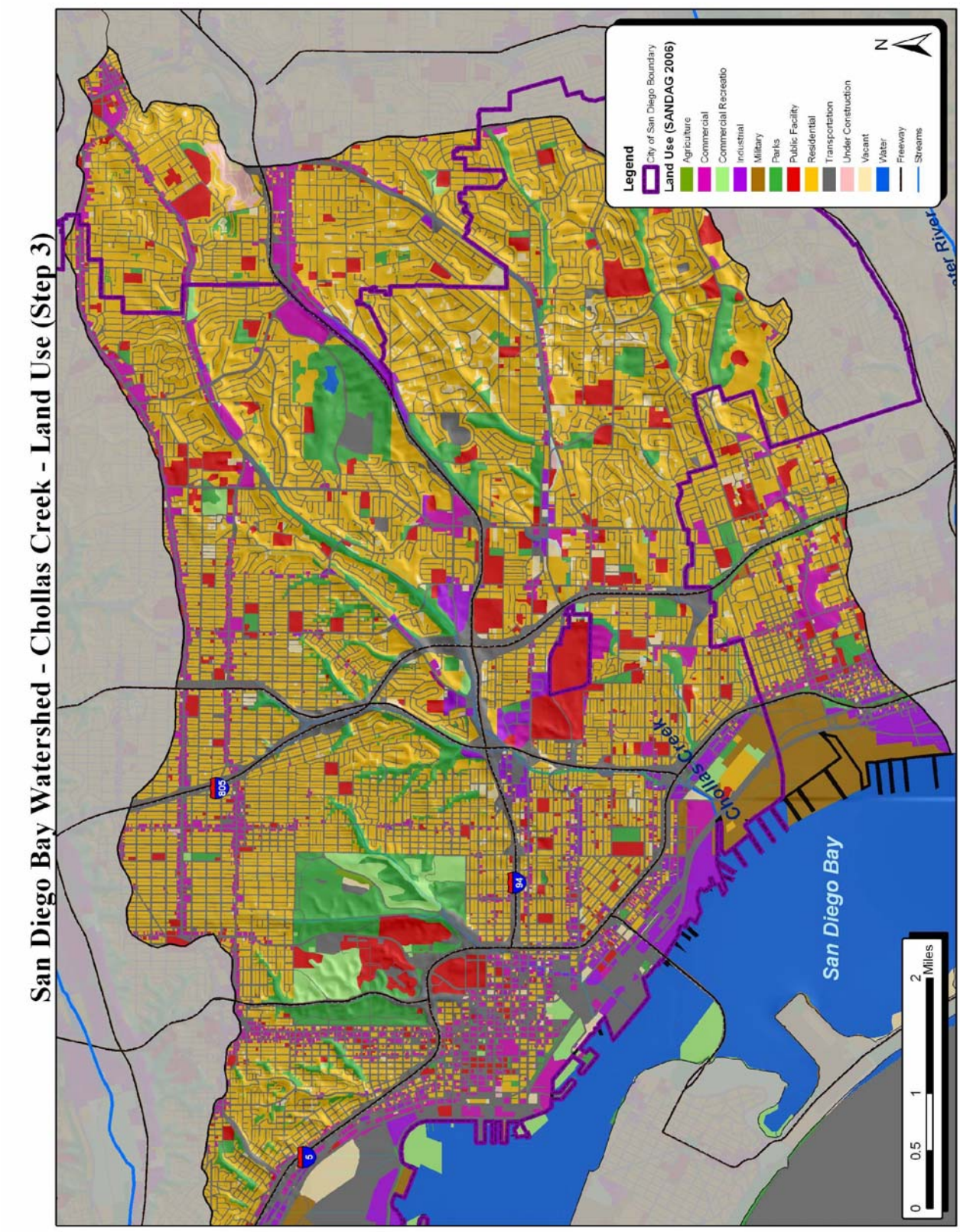
NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

OUTCOMES OF STEP 2
IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES
SAN DIEGO BAY WATERSHED MANAGEMENT AREA - CHOLLAS CREEK WATERSHED

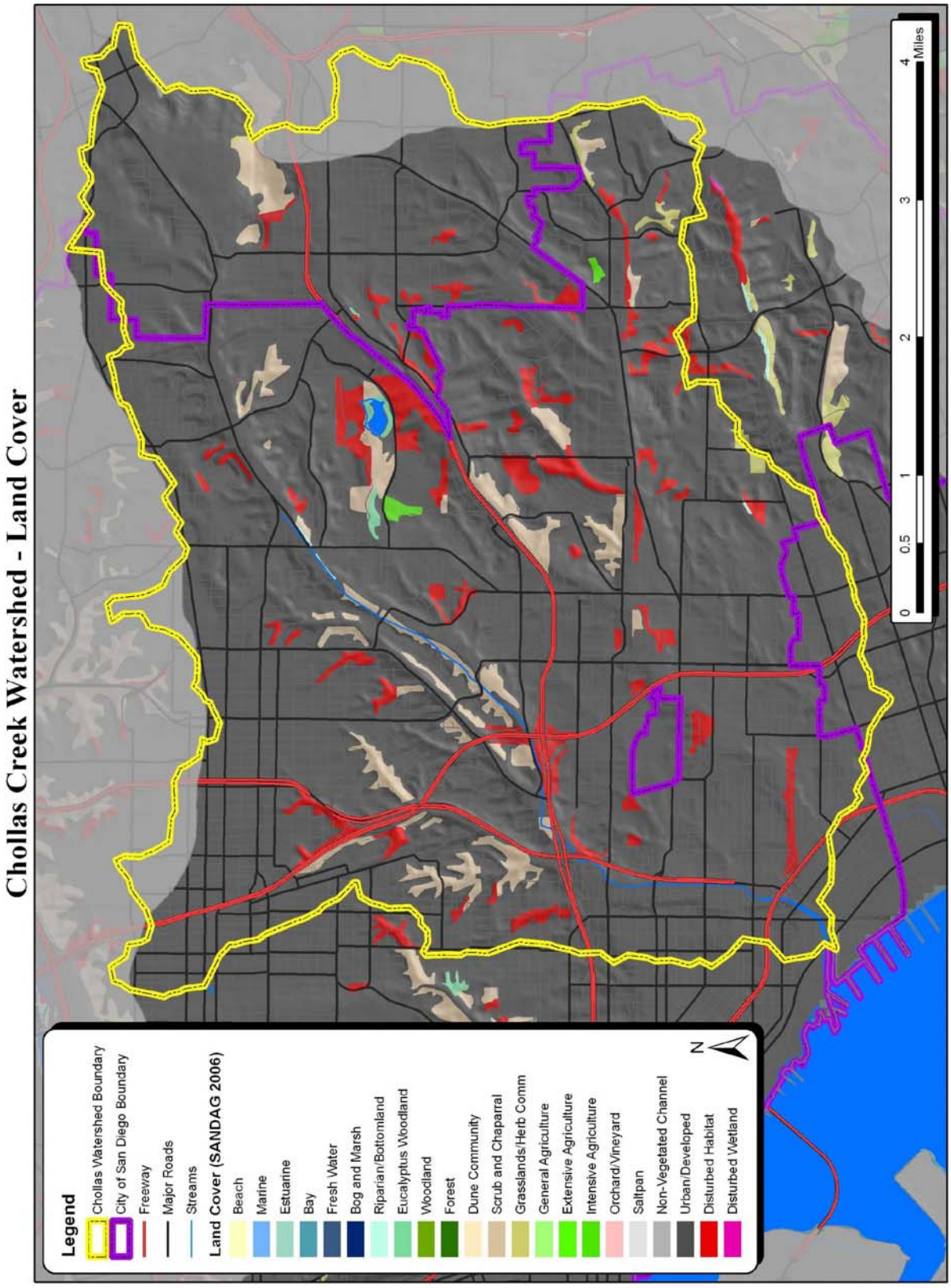
- Identify the higher rated sources based on BLTEA TTWQ for each PWQP – See Maps
- Identify potential higher priority areas based on "clustering" of high priority sources
- Use INTEGRATED approach and identify areas of higher clusters of sources for multiple PWQP
    - Eating and Drinking Establishments
    - Residential Areas and Activities
    - Commercial Landscaping
    - Municipal Facilities and Activities
    - Auto Related Facilities
    - Industrial Facilities
    - Roads, Streets, Highways and parking facilities
    - Pest Control Facilities
    - Construction Activities
- Identify data gaps in inventory of sources
    - Source data and update Inventory
    - Identify residential and roadway sources that are not included in source inventory list

STEP 3: IDENTIFY AND ASSESS LAND USE AND RESTORATION OPPORTUNITIES




San Diego Bay Watershed - Chollas Creek - Land Use (Step 3)
Legend
City of San Diego Boundary
Land Use (SANDAG 2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Freeway
Streams
N
Chollas Creek
San Diego Bay
0
0.5
1
2
Miles

Map 2.15

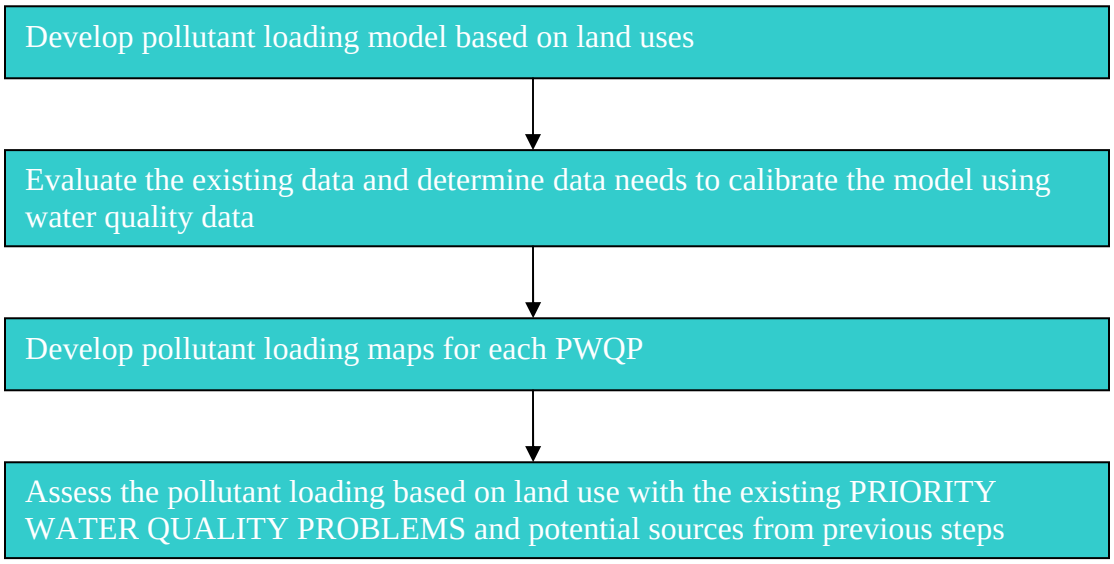

Chollas Creek Watershed - Land Cover
Legend
Chollas Watershed Boundary
City of San Diego Boundary
Freeway
Major Roads
Streams
Land Cover (SANDAG 2006)
Beach
Marine
Estuarine
Bay
Fresh Water
Bog and Marsh
Riparian/Bottomland
Eucalyptus Woodland
Woodland
Forest
Dune Community
Scrub and Chaparral
Grasslands/Herb Comm
General Agriculture
Extensive Agriculture
Intensive Agriculture
Orchard/Vineyard
Saltpan
Non-Vegetated Channel
Urban/Developed
Disturbed Habitat
Disturbed Wetland
N
0
0.5
1
2
3
4
Miles

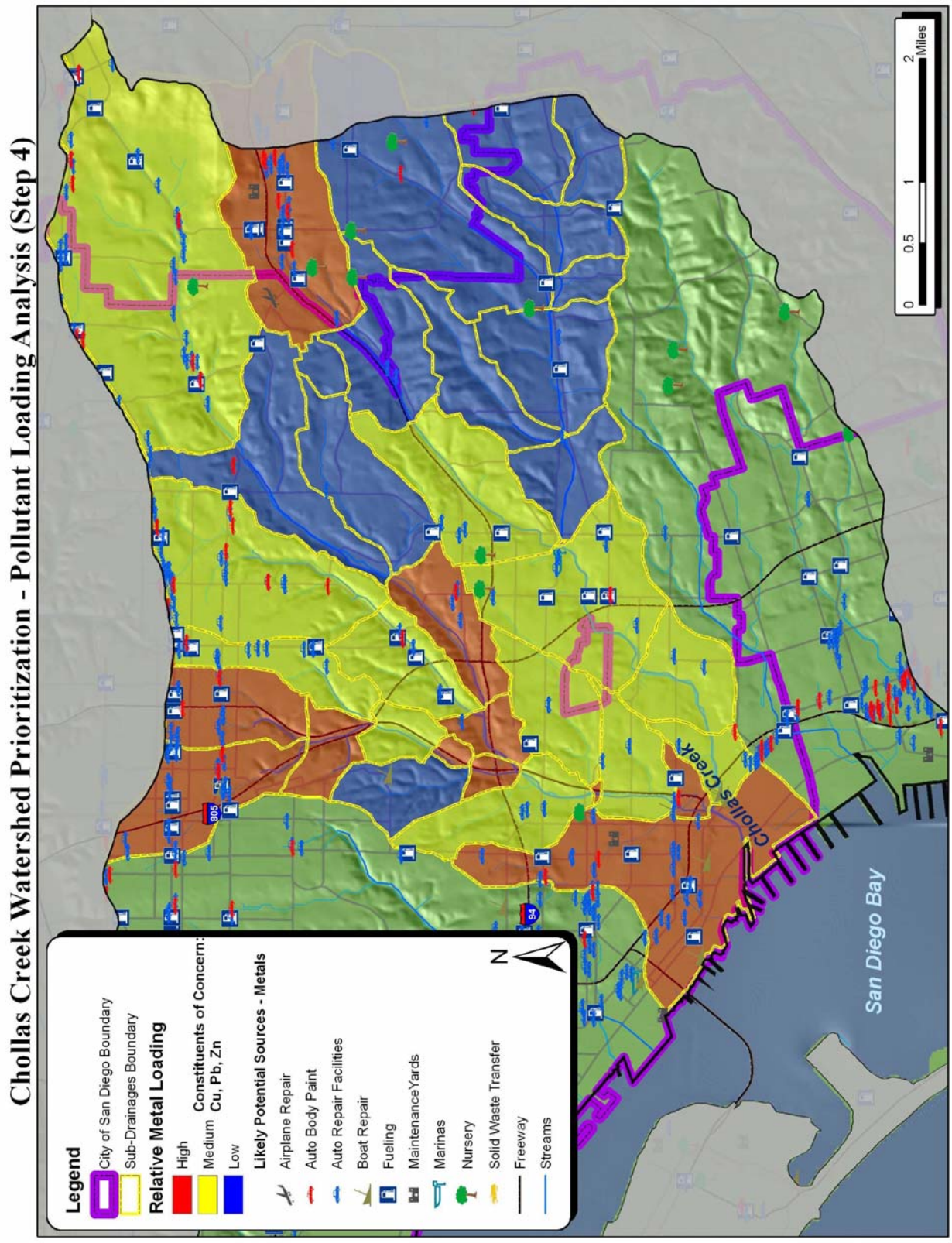
Map 2.16

OUTCOMES OF STEP 3
IDENTIFY LAND USES AND NATURAL RESOURCES TO INTEGRATE WITH WATER QUALITY IMROVEMENT PROJECTS
SAN DIEGO BAY WATERSHED MANAGEMENT AREA - CHOLLAS CREEK WATERSHED

- Identify land uses and higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps which will be used to estimate pollutant loading which will be used to estimate pollutant loading – see Map 2.15
- Identify natural resources within watershed. This information will be later used to identify opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed – see Map 2.16

STEP 4: DETERMINE SUB-WATERSHED POLLUTANT LOADING




Chollas Creek Watershed Prioritization - Pollutant Loading Analysis (Step 4)
Legend
City of San Diego Boundary
Sub-Drainages Boundary
Relative Metal Loading
High
Medium
Low
Constituents of Concern:
Cu, Pb, Zn
Likely Potential Sources - Metals
Airplane Repair
Auto Body Paint
Auto Repair Facilities
Boat Repair
Fueling
Maintenance Yards
Marinas
Nursery
Solid Waste Transfer
Freeway
Streams
N
0
0.5
1
2
Miles
Chollas Creek
San Diego Bay
805
94

Map 2.17

OUTCOMES OF STEP 4
IDENTIFY SUB-WATERSHED POLLUTANT LOADING POTENTIAL AND DATA GAPS
SAN DIEGO BAY WATERSHED MANAGEMENT AREA - CHOLLAS CREEK WATERSHED

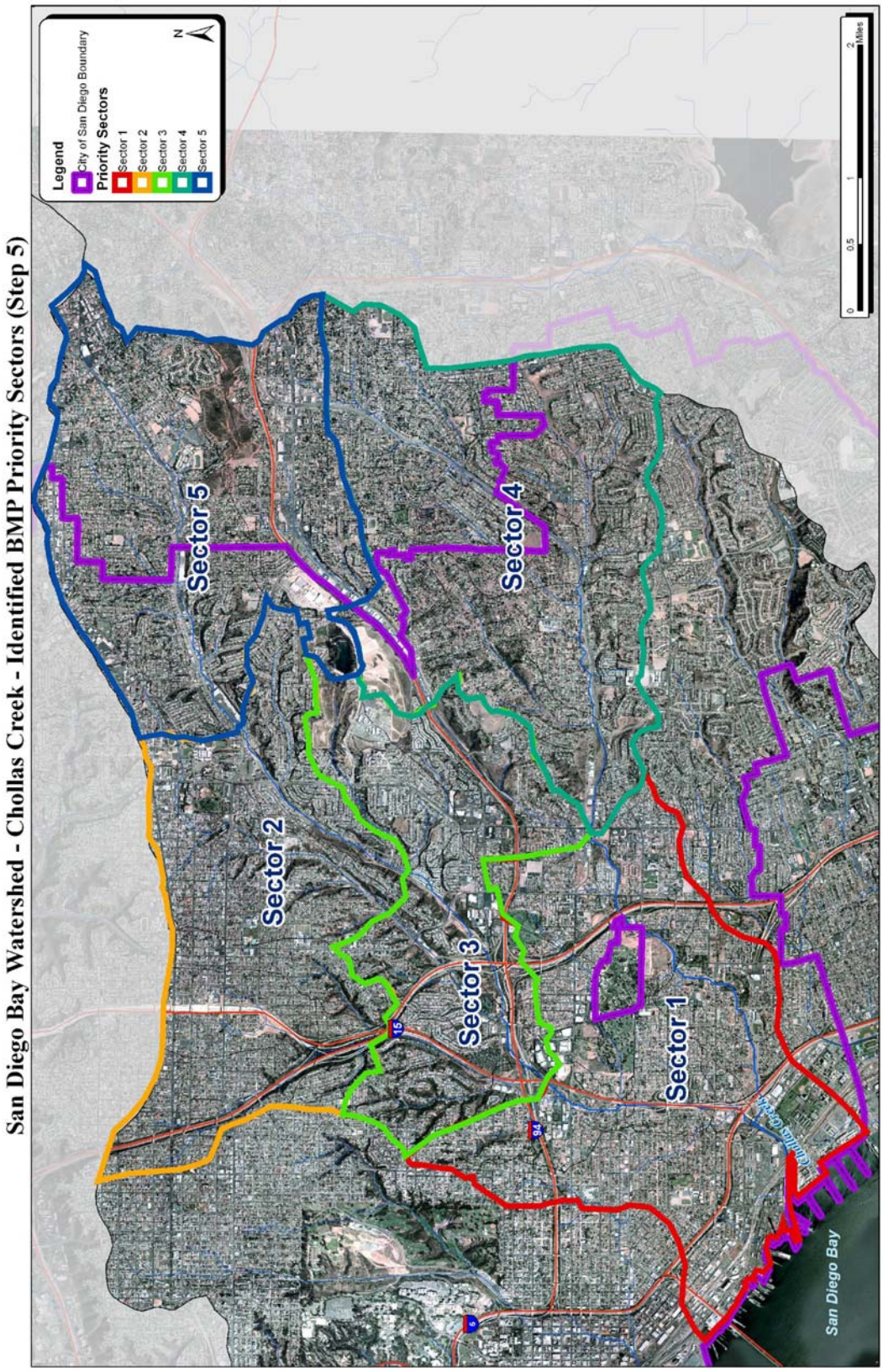
- Identify sub-watershed with higher pollutant loading using land use data – See Maps
- Identify data gaps to calibrate and verify the loading using water quality data
    - Source Data
    - Update Inventory of Source Data
    - Calibrate Model to Actual Water Quality Data (Need to Add Sub-Watershed Data)
- Identify the sub-watersheds that have the greatest priority based on the pollutant loading and the Priority Water Quality Problems and potential sources from previous steps –See Maps

STEP 5: IDENTIFY HIGH PRIORITY SUB-WATERSHEDS FOR WATERSHED ACTIVITIES

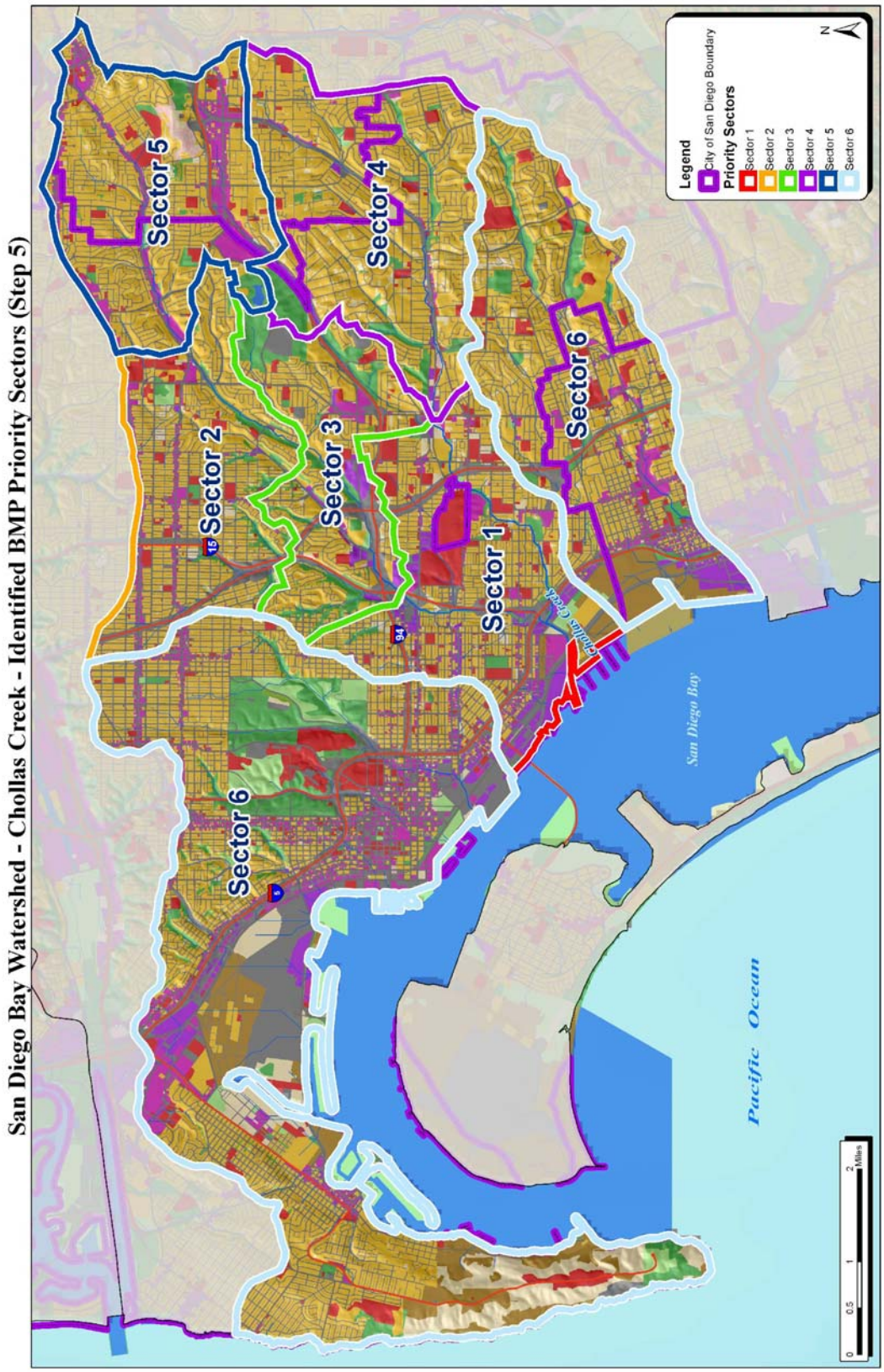
Based on the outcomes of the previous steps, develop an approach to prioritize sub-watersheds for implementation of Phase I watershed activities

↓

Develop a map showing sub-watershed priorities by assigning each sub-watershed or group of adjacent sub-watersheds a number (1 being the highest priority)


San Diego Bay Watershed - Chollas Creek - Identified BMP Priority Sectors (Step 5)
Legend
City of San Diego Boundary
Priority Sectors
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
N
0
0.5
1
2
Miles
Sector 5
Sector 4
Sector 2
Sector 3
Sector 1
15
94
5
Chollas Creek
San Diego Bay

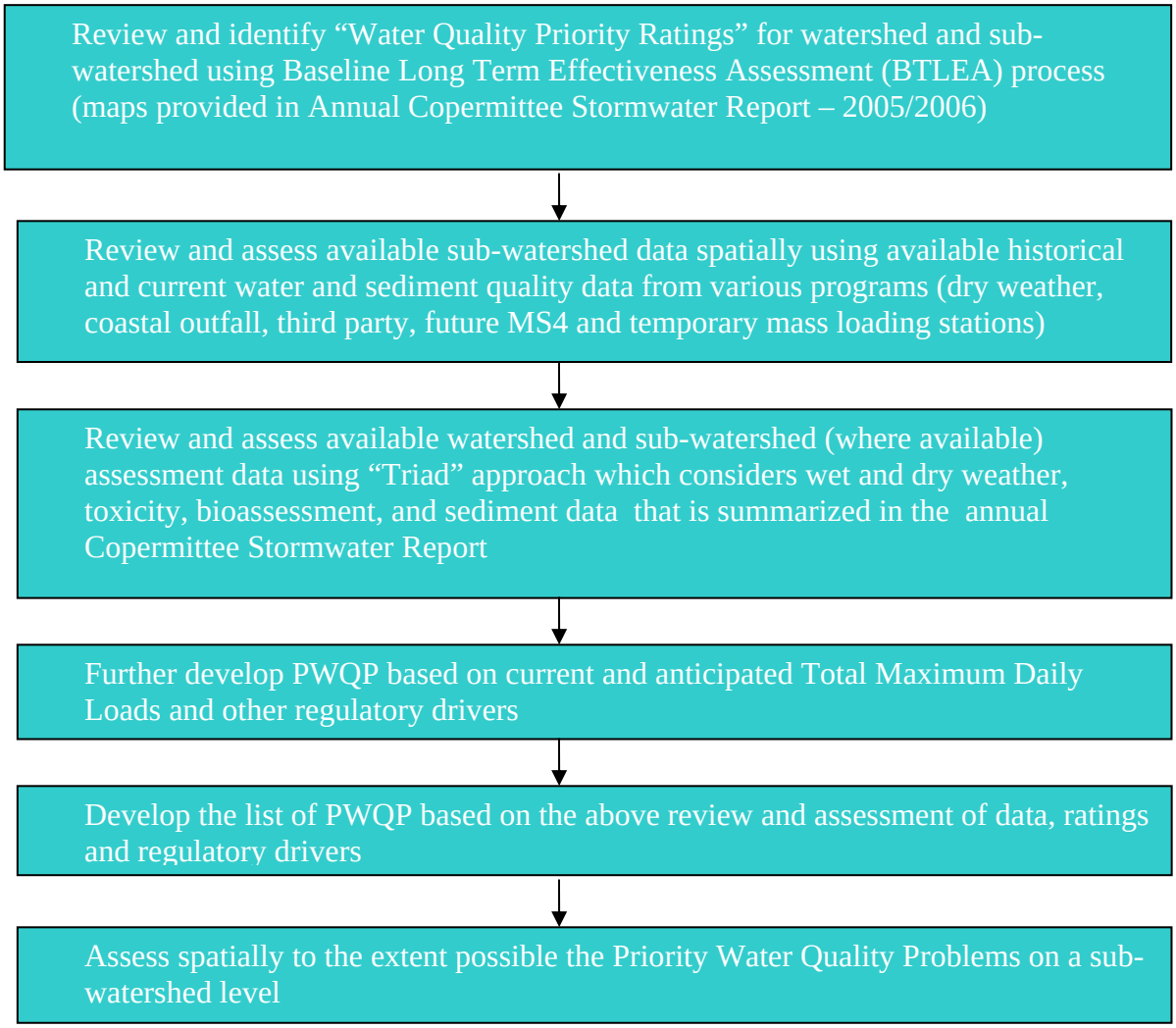
Map 2.18

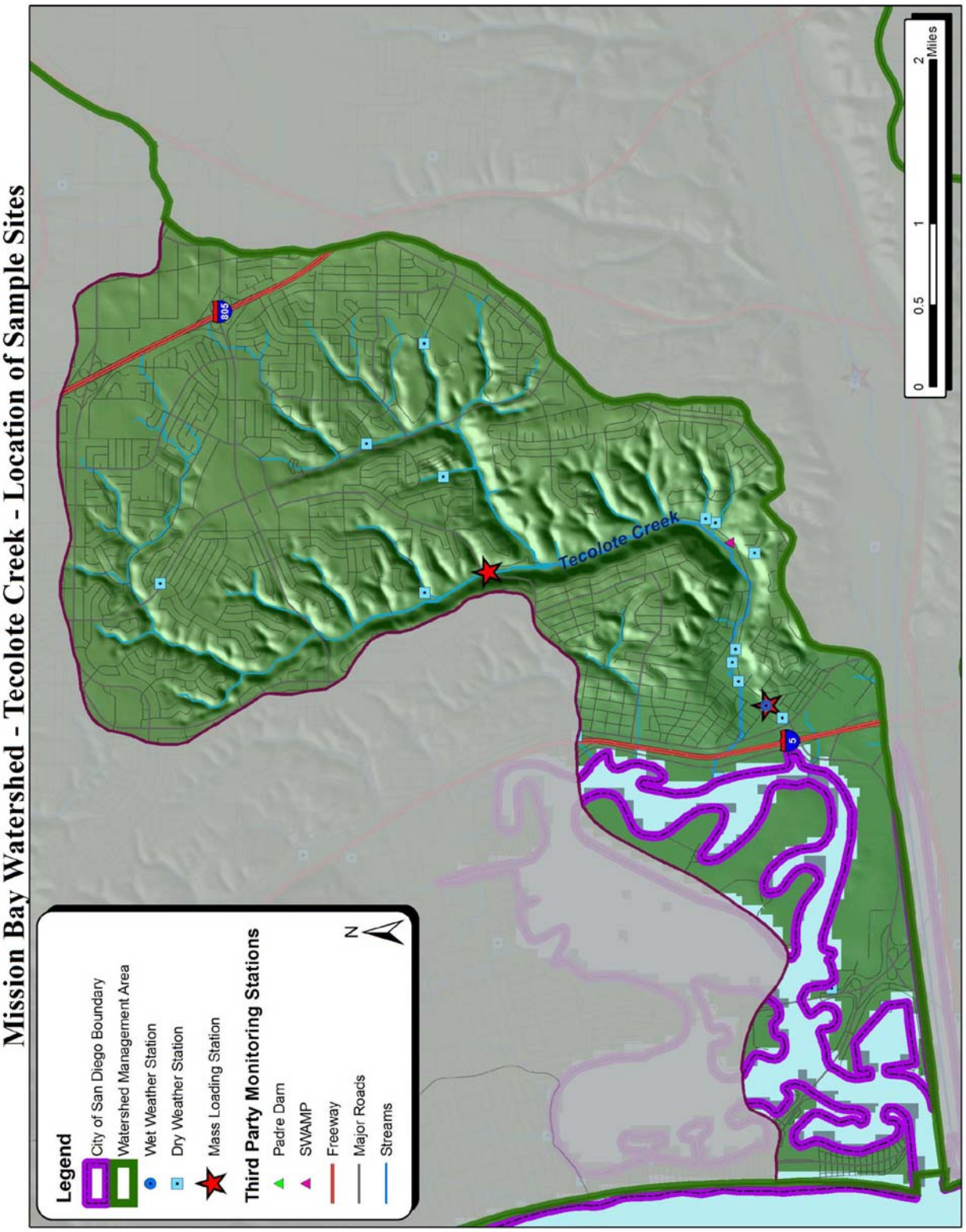

San Diego Bay Watershed - Chollas Creek - Identified BMP Priority Sectors (Step 5)
Legend
City of San Diego Boundary
Priority Sectors
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
Sector 6
N
Sector 5
Sector 4
Sector 2
Sector 3
Sector 1
Sector 6
Sector 6
Chollas Creek
San Diego Bay
Pacific Ocean
0
0.5
1
2
Miles

Map 2.19

Mission Bay Watershed Management Area- Tecolote Creek Watershed

STEP 1: IDENTIFY AND ASSESS THE PRIORITY WATER QUALITY PROBLEMS USING THE FOLLOWING TOOLS




Mission Bay Watershed - Tecolote Creek - Location of Sample Sites
Legend
City of San Diego Boundary
Watershed Management Area
Wet Weather Station
Dry Weather Station
Mass Loading Station
Third Party Monitoring Stations
Padre Dam
SWAMP
Freeway
Major Roads
Streams
N
Tecolote Creek
805
5
0
0.5
1
2
Miles

Map 2.20

Updated Water Quality Priority Ratings for the Mission Bay WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Mission Bay WMA	**100%**	***A***	***A***	***D***	***D***	***B***	***D***	***A***	***B***	***A***	***D***	***A***
Scripps HA (906.30)	15%	*C*	*D*	*D*	*D*	*B*	*D*	*A*	*B*	*A*	*D*	*D*
Miramar HA (906.4)	64%	*A*	*A*	*D*	*D*	*B*	*D*	*A*	*B*	*A*	*D*	*A*
Tecolote HA (906.5)	21%	*A*	*A*	*D*	*D*	*A*	*C*	*D*	*B*	*A*	*A*	*A*
Frequency of Occurrence Rating High[1]						♦♦♦				♦♦♦		
Constituents of Concern						Turbidity				Total Coliform Fecal Coliform Entero-coccus		

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

* = *Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

** = *Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

303d listing

OUTCOMES OF STEP 1
IDENTIFY PRIORITY WATER QUALITY PROBLEMS AND DATA GAPS
MISSION BAY WATERSHED MANAGEMENT AREA

Identify Priority Water Quality Problems (PWQP) for the watershed and to the extent possible PWQP on a sub-watershed basis. For the Mission Bay Watershed Management Area - Tecolote Watershed the PWQP are:

- Bacteria
- Heavy Metals
- Nutrients
- Sediments
- Benthic Alterations
- Toxicity

Pesticides have been included as a PWQP due to the emerging issue of synthetic pyrethroids.

For the Mission Bay Watershed Management Area – Miramar Watershed the PWQP are:

- Bacteria
- Heavy Metals
- Nutrients
- Sediments
- Toxicity

Pesticides have been included as a PWQP due to the emerging issue of synthetic pyrethroids.

- Identify data gaps that exist in the data and use this list to develop scope of priority studies:

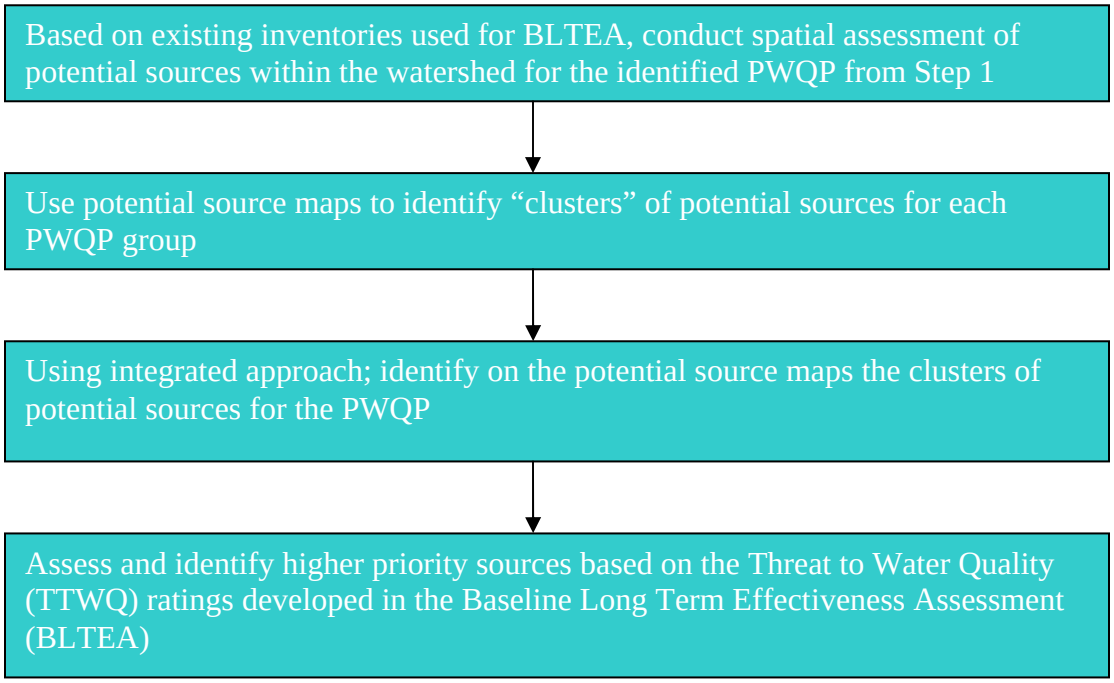
The data gaps for the Tecolote Creek and Miramar Watersheds (data gaps are common to both watersheds unless specified) include:

- Design Storm Determination through pollutograph development for the PWQP
- Investigate whether synthetic pyrethroids are an emerging PWQP.
- Investigate the sources of metal (lead for the Rose Canyon Watershed and cadmium, copper, lead and zinc in the Tecolote Watershed) loading to the receiving waters targeting air deposition, light-industrial facilities and auto-related facilities, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
- Investigate anthropogenic sources of bacteria load, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
- Assess the magnitude of bacteria re-growth within the channel.
- Evaluation of the contribution of ponded dry weather flows and first flush phenomenon for bacteria and other constituents.

  - Investigate nutrient exceedances trends, loading and potential to verify the priority of this PWQP which is included in the 303d list for both Tecolote Creek and the mouth of Rose Creek.
  - Investigate anthropogenic sources of sediment load in Tecolote Creek that is resulting in frequent exceedances of turbidity and determine the loading on a sub-watershed basis to verify the priority sectors.
  - Development of an overall mass balance loading estimate for all sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

- Use INTEGRATED APPROACH to develop priority activities – consider all PWQP in BMP prioritization

STEP 2: IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES



Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

Bacteria		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
10	Eating or drinking establishments	982		L	T1	X		X	
17	Animal Facilities	34		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	11		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T1	X		X	
33	POTWs (water and wastewater)	1		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
34	Sites for disposing and treating sewage sludge	-		L	T1	X		X	
32	Motor Freight	10		UK	T1	X	X		
29	Active or closed municipal landfills	6		UK	T1	X	X		
16	Marinas	2		UK	T1	X	X		
30	Automobile wholesale	1		UK	T1	X	X		
7	Auto parking lots and storage facilities	-		UK	T1	X	X		
9	Pest Control Services	6		UK	T1	X	X		
19	Development subject to SUSMPs	0		UK	T1	X	X		
22	Flood management projects and flood control devices	-		UK	T1	X	X		
23	MS4s	-		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	12		UL	T5	X		X	
27	Fabricated metal	10		UL	T5	X		X	
26	Chemical and allied products	6		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		UL	T5	X		X	
28	Primary metal	2		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
24	Corporate yards (incl. maintenance/storage yards)	1		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	9		UL	T5	X		X	
20	Construction Sites	0		UL	T5	X		X	
8	Retail or wholesale fueling	56		N	T6				X
15	Pool and Fountain cleaning	7		N	T6				X
31	Airfields	0		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

Heavy Metals		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		L	T1	X		X	
5	Automobile and other vehicle body repair and painting	12		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	11		L	T1	X		X	
27	Fabricated metal	10		L	T1	X		X	
32	Motor Freight	10		L	T1	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		L	T1	X		X	
16	Marinas	2		L	T1	X		X	
28	Primary metal	2		L	T1	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		L	T1	X		X	
24	Corporate yards (incl. maintenance/storage yards)	1		L	T1	X		X	
30	Automobile wholesale	1		L	T1	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		L	T1	X		X	
6	Mobile automobile or vehicle washing	-		L	T1	X		X	
7	Auto parking lots and storage facilities	-		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-	A	L	T1	X		X	
8	Retail or wholesale fueling	56		UK	T1	X	X		
26	Chemical and allied products	6		UK	T1	X	X		
29	Active or closed municipal landfills	6		UK	T1	X	X		
33	POTWs (water and wastewater)	1		UK	T1	X	X		
19	Development subject to SUSMPs	0		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
31	Airfields	0		UK	T1	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T1	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	0		UL	T5	X		X	
10	Eating or drinking establishments	982		N	T6				X
17	Animal Facilities	34		N	T6				X
14	Landscaping - parks, golf courses, cemeteries, etc.	7		N	T6				X
9	Pest Control Services	6		N	T6				X
11	Mobile carpet, drape, or furniture cleaning	9		N	T6				X
15	Pool and Fountain cleaning	7		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

Nutrients		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
17	Animal Facilities	34		L	T2	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	11		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
25	Park and Recreational facilities	-		L	T2	X		X	
10	Eating or drinking establishments	982		UK	T2	X	X		
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		UK	T2	X	X		
27	Fabricated metal	10		UK	T2	X	X		
32	Motor Freight	10		UK	T2	X	X		
26	Chemical and allied products	6		UK	T2	X	X		
29	Active or closed municipal landfills	6		UK	T2	X	X		
16	Marinas	2		UK	T2	X	X		
28	Primary metal	2		UK	T2	X	X		
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UK	T2	X	X		
24	Corporate yards (incl. maintenance/storage yards)	1		UK	T2	X	X		
33	POTWs (water and wastewater)	1		UK	T2	X	X		
30	Automobile wholesale	1	B	UK	T2	X	X		
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UK	T2	X	X		
7	Auto parking lots and storage facilities	-		UK	T2	X	X		
11	Mobile carpet, drape, or furniture cleaning	9		UK	T2	X	X		
15	Pool and Fountain cleaning	7		UK	T2	X	X		
19	Development subject to SUSMPs	0		UK	T2	X	X		
31	Airfields	0		UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	12		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
20	Construction Sites	0		UL	T5	X		X	
8	Retail or wholesale fueling	56		N	T6				X
9	Pest Control Services	6		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

Pesticides		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
13	Botanical or zoological gardens and nurseries/greenhouses	11		L	T3	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T3	X		X	
9	Pest Control Services	6		L	T3	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T3	X		X	
10	Eating or drinking establishments	982		UK	T3	X	X		
17	Animal Facilities	34		UK	T3	X	X		
27	Fabricated metal	10		UK	T3	X	X		
32	Motor Freight	10		UK	T3	X	X		
26	Chemical and allied products	6		UK	T3	X	X		
29	Active or closed municipal landfills	6		UK	T3	X	X		
16	Marinas	2		UK	T3	X	X		
28	Primary metal	2		UK	T3	X	X		
24	Corporate yards (incl. maintenance/storage yards)	1		UK	T3	X	X		
30	Automobile wholesale	1		UK	T3	X	X		
7	Auto parking lots and storage facilities	-		UK	T3	X	X		
19	Development subject to SUSMPs	0		UK	T3	X	X		
22	Flood management projects and flood control devices	-		UK	T3	X	X		
25	Park and Recreational facilities	-		UK	T3	X	X		
31	Airfields	0	C	UK	T3	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T3	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	12		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
20	Construction Sites	0		UL	T5	X		X	
21	Roads, streets, highways, and parking facilities	-		UL	T5	X		X	
8	Retail or wholesale fueling	56		N	T6				X
33	POTWs (water and wastewater)	1		N	T6				X
11	Mobile carpet, drape, or furniture cleaning	9		N	T6				X
15	Pool and Fountain cleaning	7		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

Sediment		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	B	L	T2	X		X	
17	Animal Facilities	34		L	T2	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	11		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T2	X		X	
24	Corporate yards (incl. maintenance/storage yards)	1		L	T2	X		X	
30	Automobile wholesale	1		L	T2	X		X	
6	Mobile automobile or vehicle washing	-		L	T2	X		X	
7	Auto parking lots and storage facilities	-		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
20	Construction Sites	0		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
22	Flood management projects and flood control devices	-		L	T2	X		X	
23	MS4s	-		L	T2	X		X	
8	Retail or wholesale fueling	56		UK	T2	X	X		
27	Fabricated metal	10		UK	T2	X	X		
32	Motor Freight	10		UK	T2	X	X		
26	Chemical and allied products	6		UK	T2	X	X		
29	Active or closed municipal landfills	6		UK	T2	X	X		
28	Primary metal	2		UK	T2	X	X		
33	POTWs (water and wastewater)	1		UK	T2	X	X		
19	Development subject to SUSMPs	0		UK	T2	X	X		
25	Park and Recreational facilities	-		UK	T2	X	X		
31	Airfields	0		UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
10	Eating or drinking establishments	982		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	12		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	9		UL	T5	X		X	
16	Marinas	2		N	T6				X
9	Pest Control Services	6		N	T6				X
15	Pool and Fountain cleaning	7		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

OUTCOMES OF STEP 2
IDENTIFYAND ASSESS HIGH THREAT TO WATER QUALITY SOURCES
MISSION BAY WATERSHED MANAGEMENT AREA

- Identify the higher rated sources based on BLTEA TTWQ for each PWQP – See Maps
- Identify potential higher priority areas based on "clustering" of high priority sources
- Use INTEGRATED approach and identify areas of higher clusters of sources for multiple PWQP

Mission Bay Watershed Management Area - Tecolote

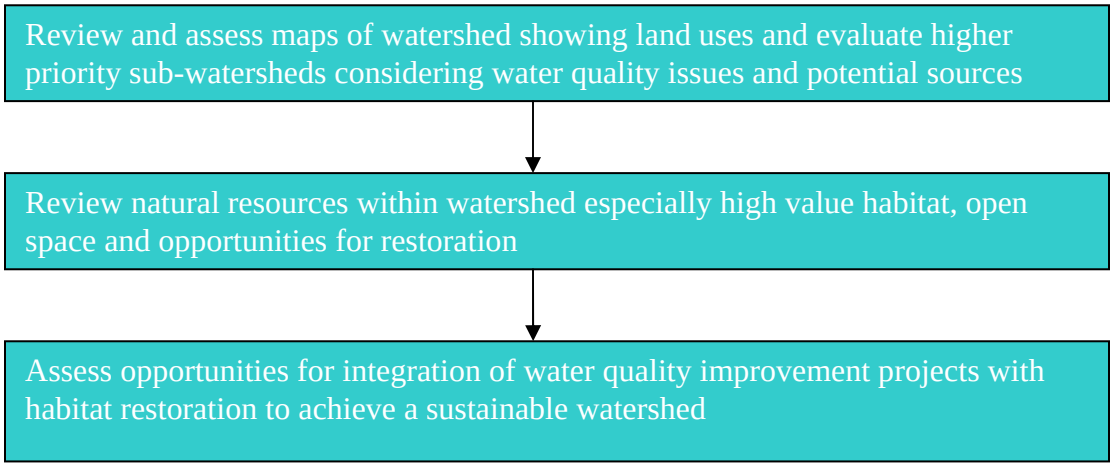
- Eating and Drinking Establishments
- Residential Areas and Activities
- Commercial Landscaping
- Animal Related Facilities
- Golf Courses, Parks and Recreational Activities
- Municipal Facilities and Activities
- Auto Related Facilities
- Roads, Streets, Highways and Parking Facilities
- Pest Control Facilities
- Construction Activities

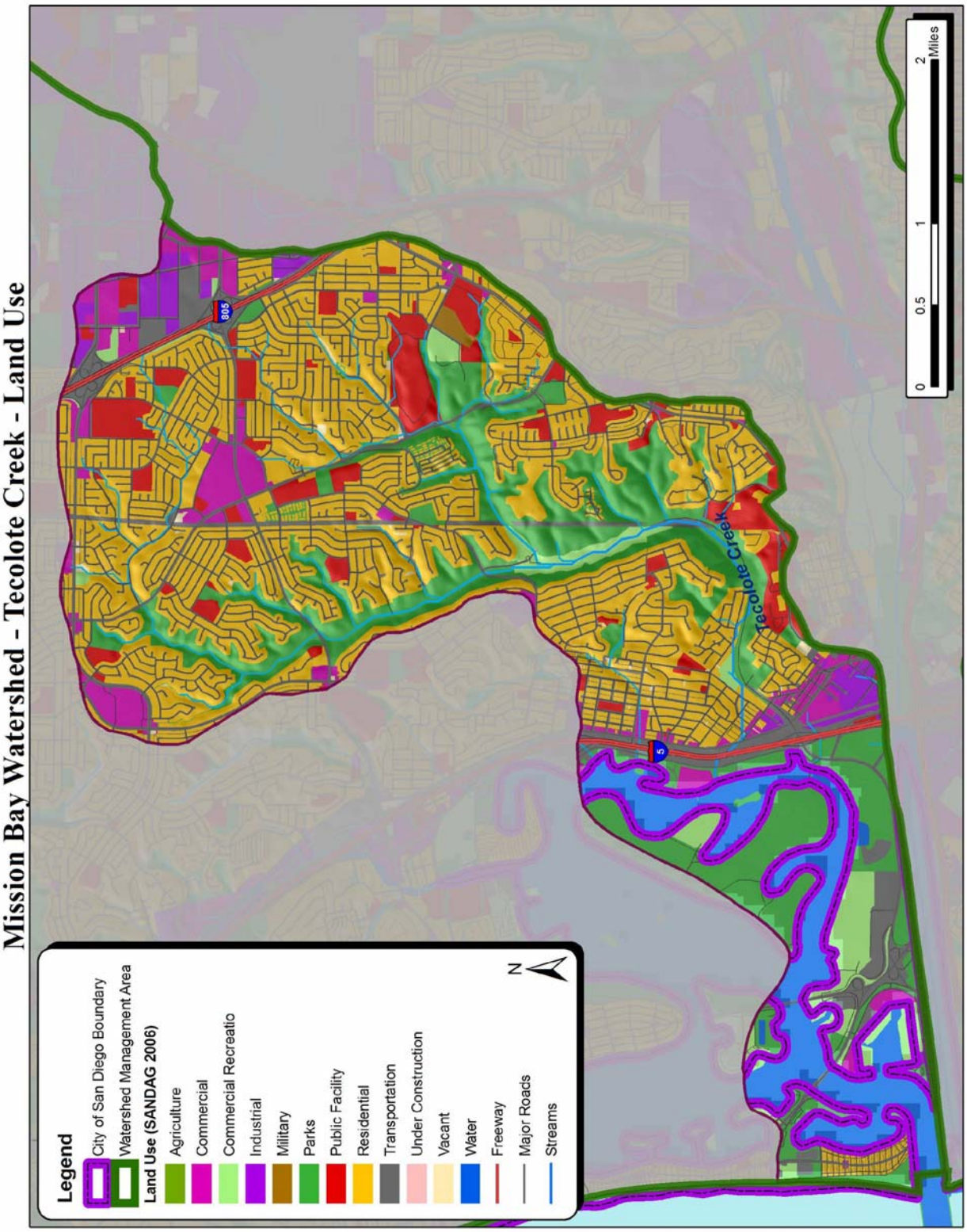
Mission Bay Watershed Management Area - Miramar

- Eating and Drinking Establishments
- Residential Areas and Activities
- Commercial Landscaping
- Animal Related Facilities
- Golf Courses, Parks and Recreational Activities
- Municipal Facilities and Activities
- Auto Related Facilities
- Industrial Facilities
- Roads, Streets, Highways and Parking Facilities
- Pest Control Facilities
- Construction Activities

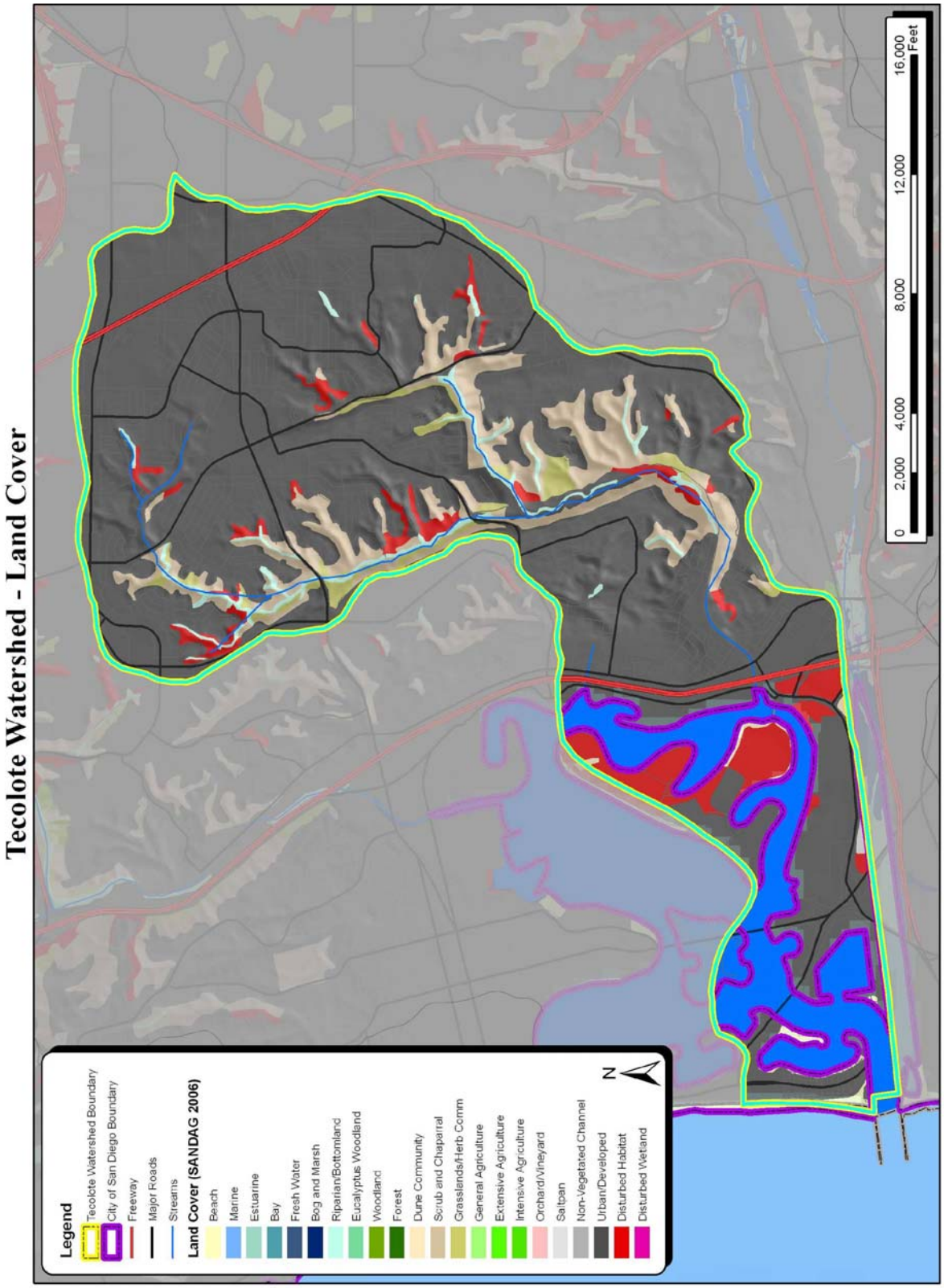
- Identify data gaps in inventory of sources
  - Source Data and Update Inventory
  - Identify residential and roadway sources that are not included in source inventory list

STEP 3: IDENTIFY AND ASSESS LAND USE AND RESTORATION OPPORTUNITIES




Mission Bay Watershed - Tecolote Creek - Land Use
Legend
City of San Diego Boundary
Watershed Management Area
Land Use (SANDAG 2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Freeway
Major Roads
Streams
N
Tecolote Creek
805
5
0
0.5
1
2
Miles

Map 2.21

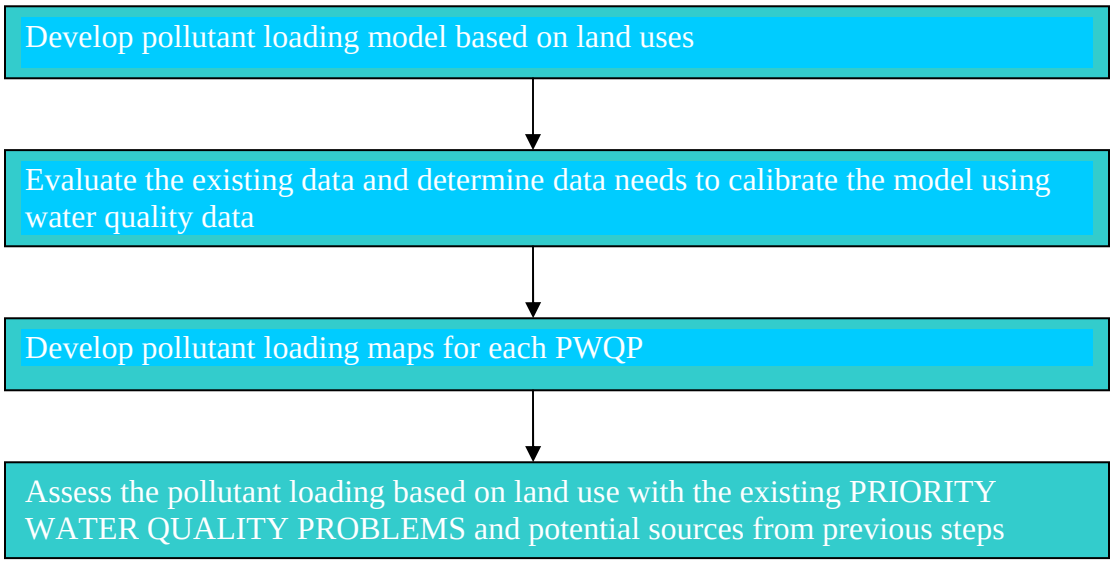

Tecolote Watershed - Land Cover
Legend
Tecolote Watershed Boundary
City of San Diego Boundary
Freeway
Major Roads
Streams
Land Cover (SANDAG 2006)
Beach
Marine
Estuarine
Bay
Fresh Water
Bog and Marsh
Riparian/Bottomland
Eucalyptus Woodland
Woodland
Forest
Dune Community
Scrub and Chaparral
Grasslands/Herb Comm
General Agriculture
Extensive Agriculture
Intensive Agriculture
Orchard/Vineyard
Saltpan
Non-Vegetated Channel
Urban/Developed
Disturbed Habitat
Disturbed Wetland
N
0
2,000
4,000
8,000
12,000
16,000
Feet

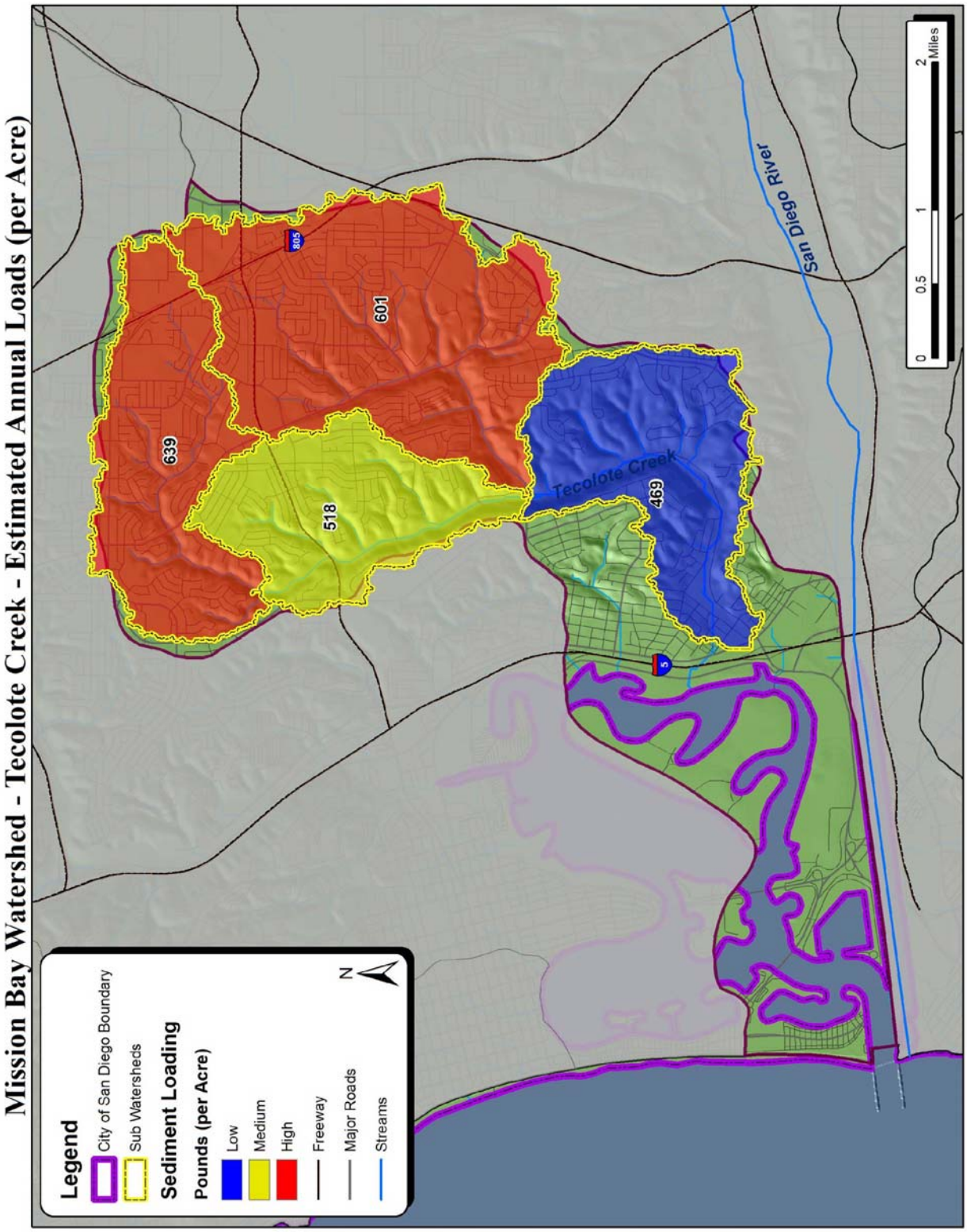
Map 2.22

OUTCOMES OF STEP 3
IDENTIFY LAND USES AND NATURAL RESOURCES TO INTEGRATE WITH WATER QUALITY IMPROVEMENT PROJECTS
MISSION BAY WATERSHED MANAGEMENT AREA

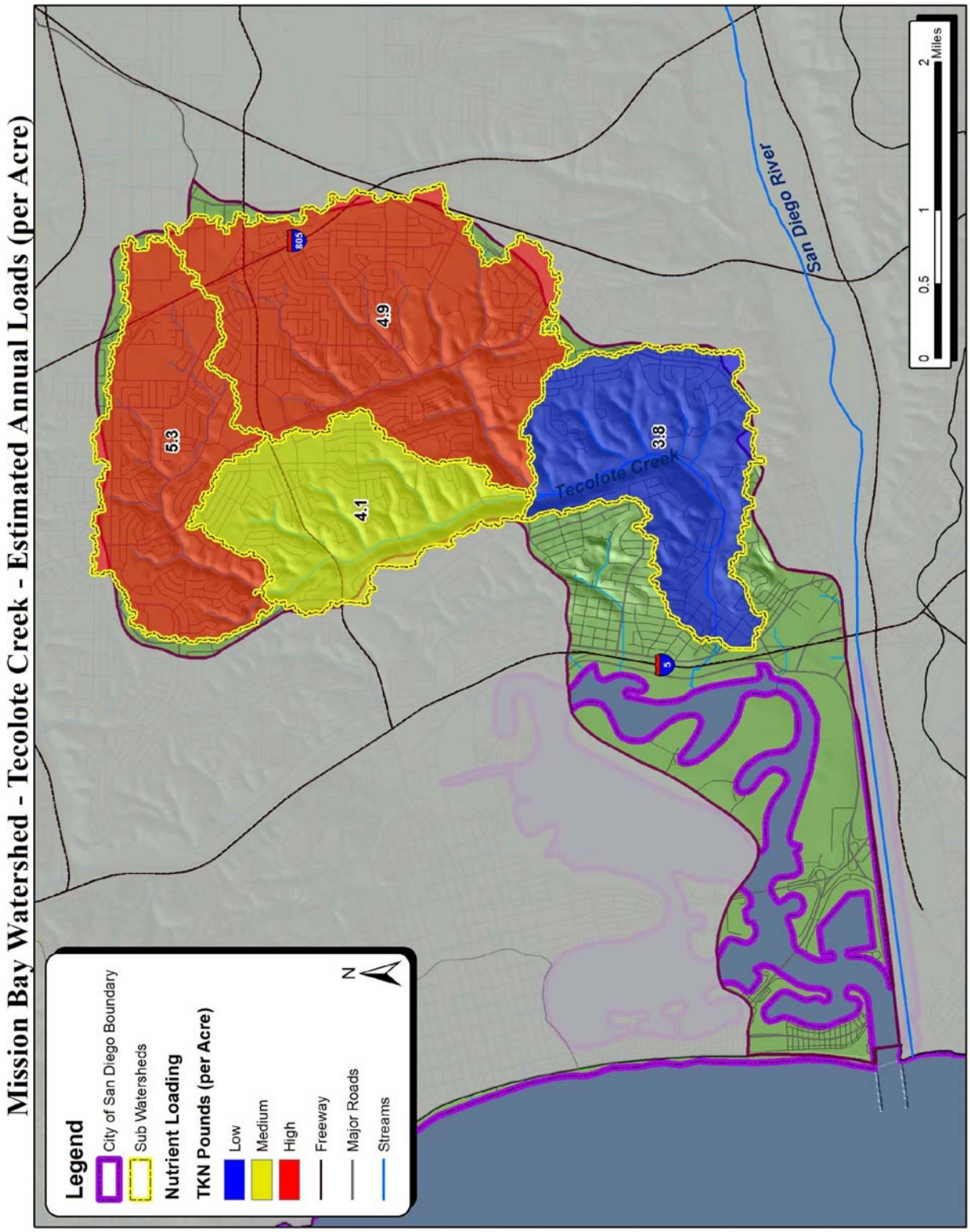
- Identify land uses and higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps which will be used to estimate pollutant loading - See Map 2.21
- Identify natural resources within watershed. This information will be later used to identify opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed - See Map 2.22

STEP 4: DETERMINE SUB-WATERSHED POLLUTANT LOADING

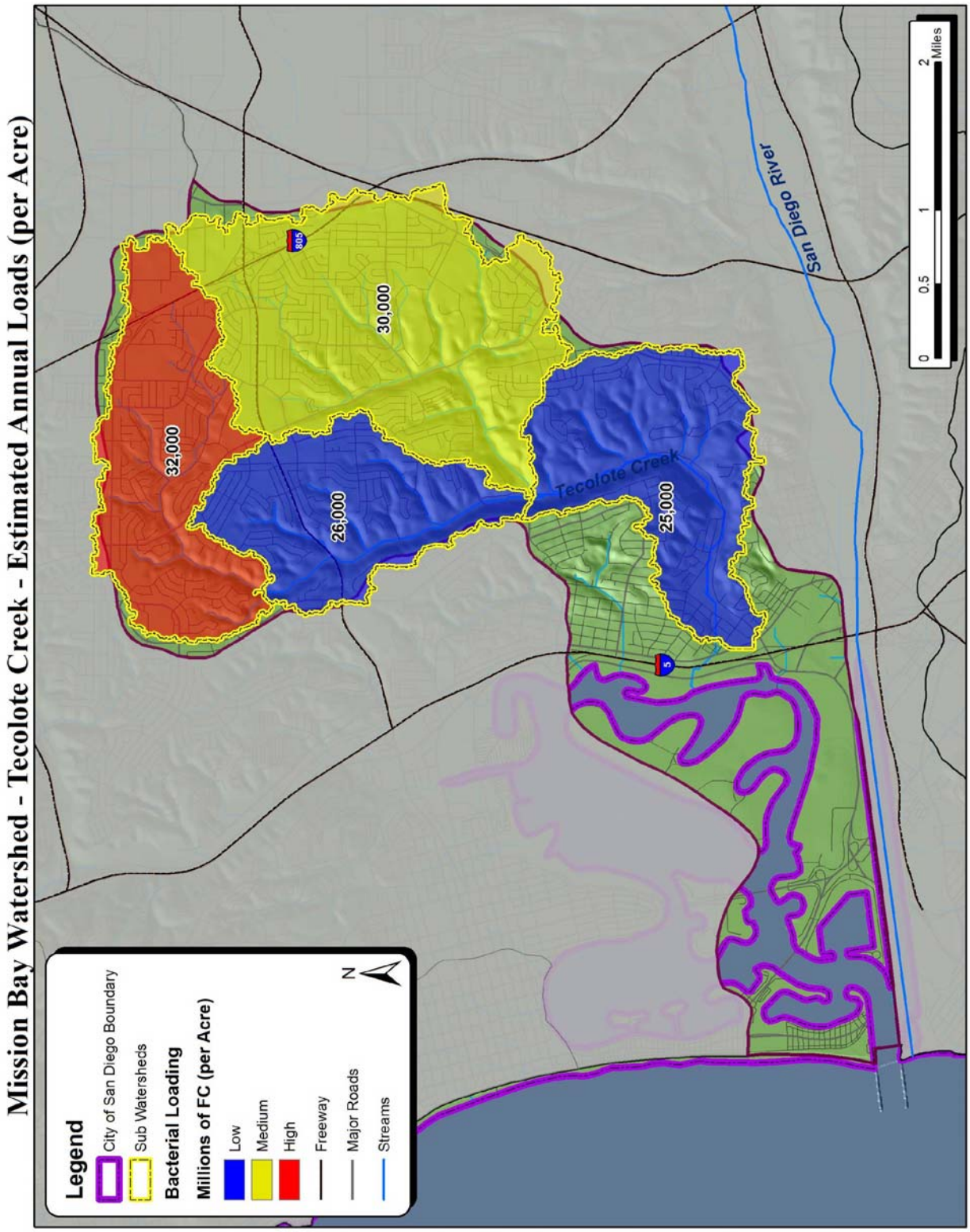



Mission Bay Watershed - Tecolote Creek - Estimated Annual Loads (per Acre)
Legend
City of San Diego Boundary
Sub Watersheds
Sediment Loading
Pounds (per Acre)
Low
Medium
High
Freeway
Major Roads
Streams
N
639
601
518
469
Tecolote Creek
San Diego River
805
5
0
0.5
1
2
Miles

Map 2.23


Mission Bay Watershed - Tecolote Creek - Estimated Annual Loads (per Acre)
Legend
City of San Diego Boundary
Sub Watersheds
Nutrient Loading
TKN Pounds (per Acre)
Low
Medium
High
Freeway
Major Roads
Streams
N
5.3
4.9
4.1
3.8
Tecolote Creek
San Diego River
805
5
0
0.5
1
2
Miles

Map 2.24


Mission Bay Watershed - Tecolote Creek - Estimated Annual Loads (per Acre)
Legend
City of San Diego Boundary
Sub Watersheds
Bacterial Loading
Millions of FC (per Acre)
Low
Medium
High
Freeway
Major Roads
Streams
N
32,000
30,000
26,000
25,000
Tecolote Creek
San Diego River
805
5
0
0.5
1
2
Miles

Map 2.25

OUTCOMES OF STEP 4
IDENTIFY SUB-WATERSHED POLLUTANT LOADING POTENTIAL AND DATA GAPS
MISSION BAY WATERSHED MANAGEMENT AREA

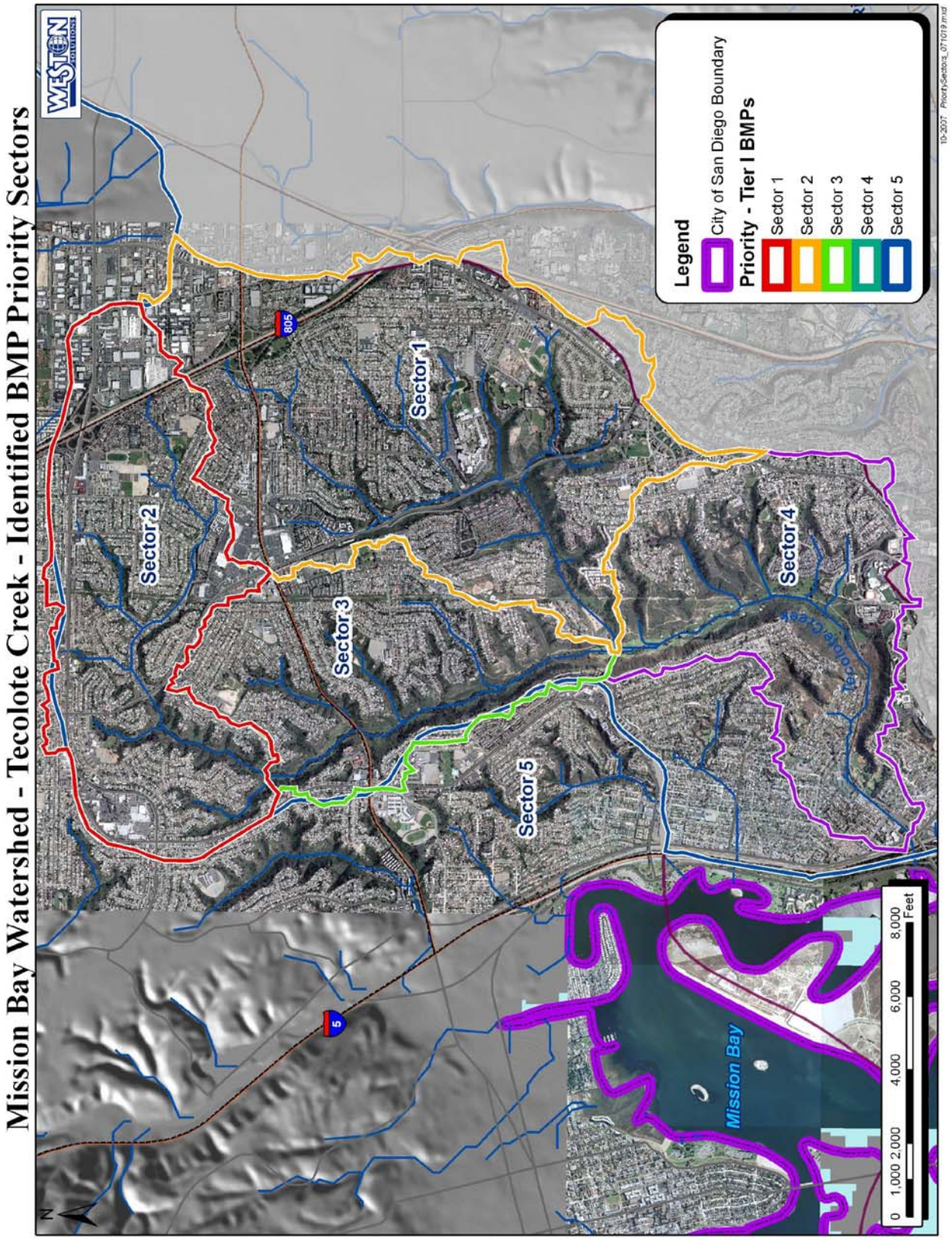
- Identify sub-watershed with higher pollutant loading using land use data – See Maps
- Identify the data gaps to calibrate and verify the loading using water quality data
    - Source Data
    - Update Inventory of Source Data
    - Calibrate Model to Actual Water Quality data (Need to Add Sub-Watershed Data)
- Identify the sub-watersheds that have the greatest priority based on the pollutant loading and the Priority Water Quality Problems and potential sources from previous steps –See Maps

STEP 5: IDENTIFY HIGH PRIORITY SUB-WATERSHEDS FOR WATERSHED ACTIVITIES

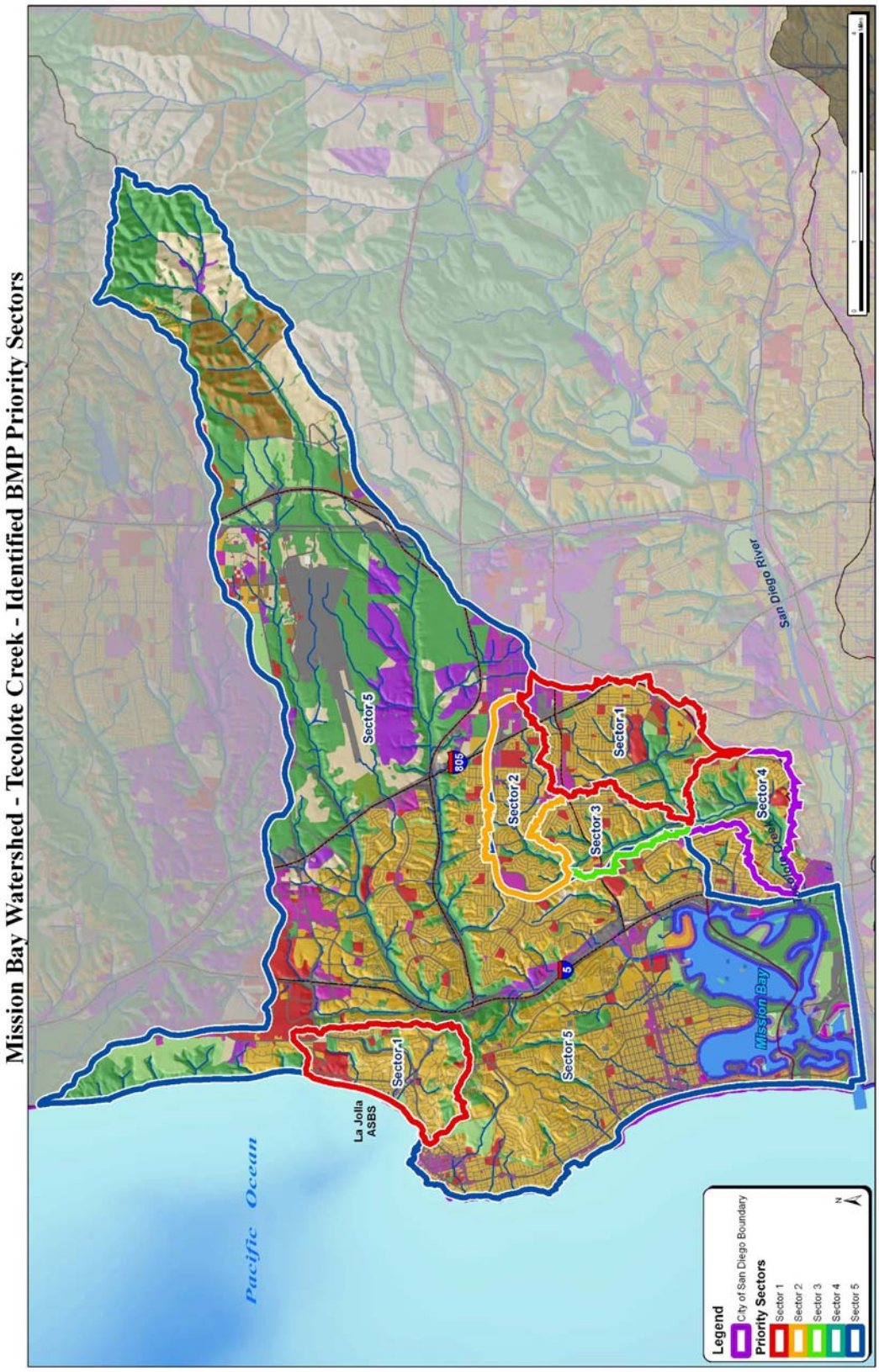
Based on the outcomes of the previous steps, develop an approach to prioritize sub-watersheds for implementation of Phase I watershed activities

↓

Develop a map showing sub-watershed priorities by assigning each sub-watershed or group of adjacent sub-watersheds a number (1 being the highest priority)


Mission Bay Watershed - Tecolote Creek - Identified BMP Priority Sectors
Legend
City of San Diego Boundary
Priority - Tier I BMPs
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
Tecolote Creek
Mission Bay
805
5
N
0 1,000 2,000 4,000 6,000 8,000
Feet

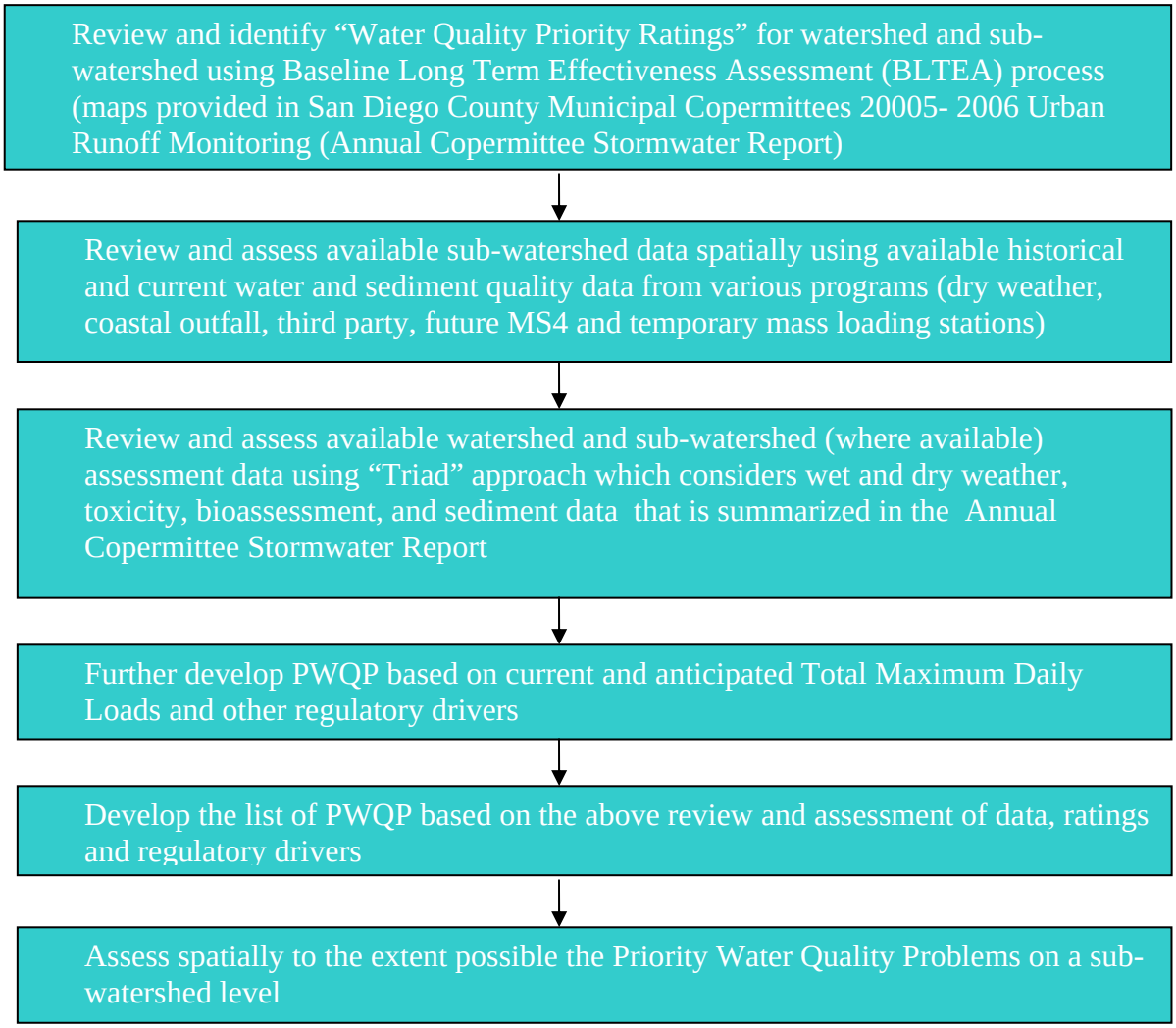
Map 2.26

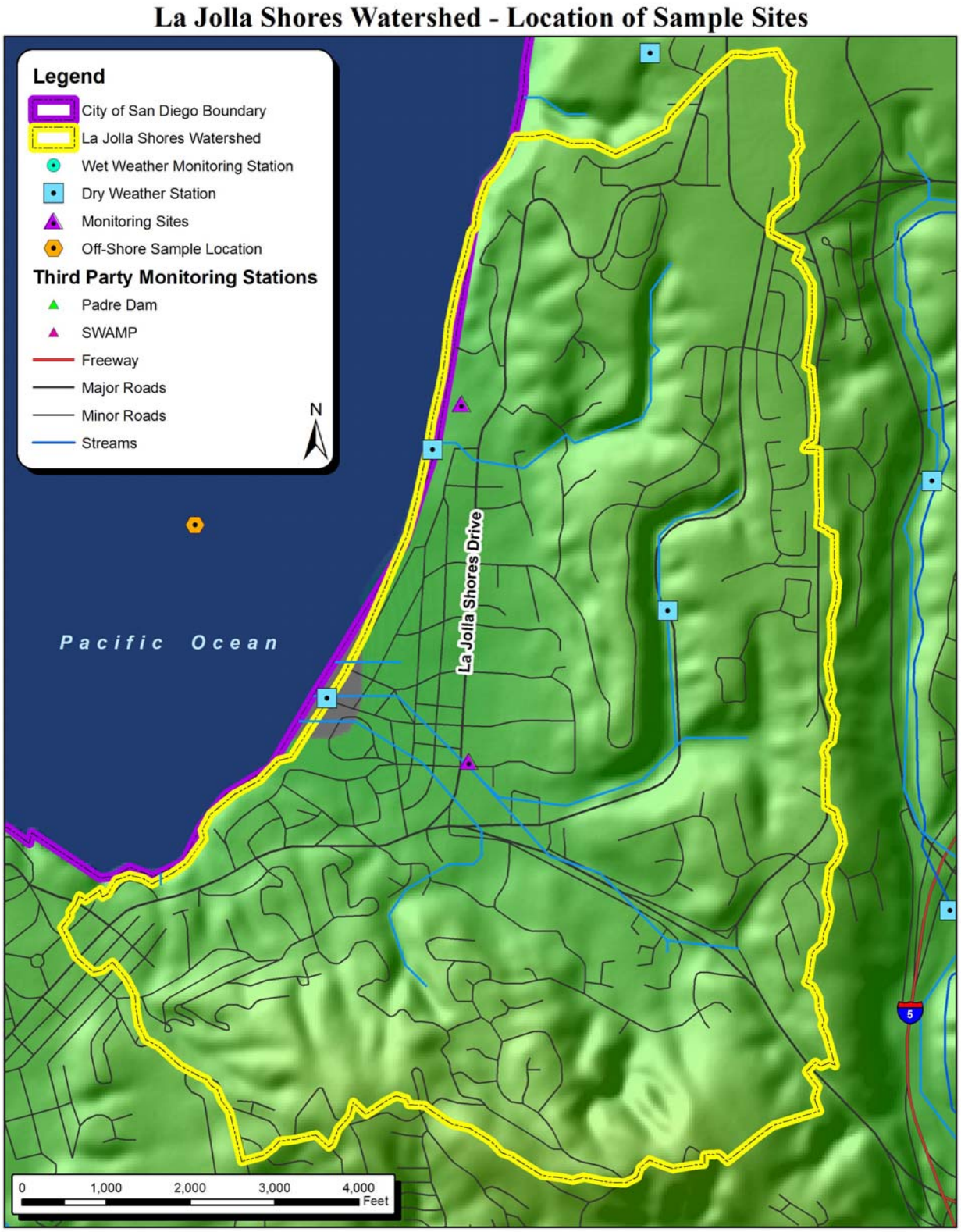

Mission Bay Watershed - Tecolote Creek - Identified BMP Priority Sectors
Pacific Ocean
La Jolla ASBS
Mission Bay
San Diego River
805
5
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
Legend
City of San Diego Boundary
Priority Sectors
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
N

Map 2.27

Mission Watershed Management Area – La Jolla Shores ASBS Watershed

STEP 1: IDENTIFY AND ASSESS THE PRIORITY WATER QUALITY PROBLEMS USING THE FOLLOWING TOOLS




La Jolla Shores Watershed - Location of Sample Sites
Legend
City of San Diego Boundary
La Jolla Shores Watershed
Wet Weather Monitoring Station
Dry Weather Station
Monitoring Sites
Off-Shore Sample Location
Third Party Monitoring Stations
Padre Dam
SWAMP
Freeway
Major Roads
Minor Roads
Streams
N
Pacific Ocean
La Jolla Shores Drive
5
0
1,000
2,000
3,000
4,000
Feet

Map 2.28

Updated Water Quality Priority Ratings for the Mission Bay WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Mission Bay WMA	**100%**	***A***	***A***	***D***	***D***	***B***	***D***	***A***	***B***	***A***	***D***	***A***
Scripps HA (906.30)	15%	*C*	*D*	*D*	*D*	*B*	*D*	*A*	*B*	*A*	*D*	*D*
Miramar HA (906.4)	64%	*A*	*A*	*D*	*D*	*B*	*D*	*A*	*B*	*A*	*D*	*A*
Tecolote HA (906.5)	21%	*A*	*A*	*D*	*D*	*A*	*C*	*D*	*B*	*A*	*A*	*A*
Frequency of Occurrence Rating High[1]						♦♦♦				♦♦♦		
Constituents of Concern						Turbidity				Total Coliform Fecal Coliform Entero-coccus		

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

* = *Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

** = *Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

303d listing

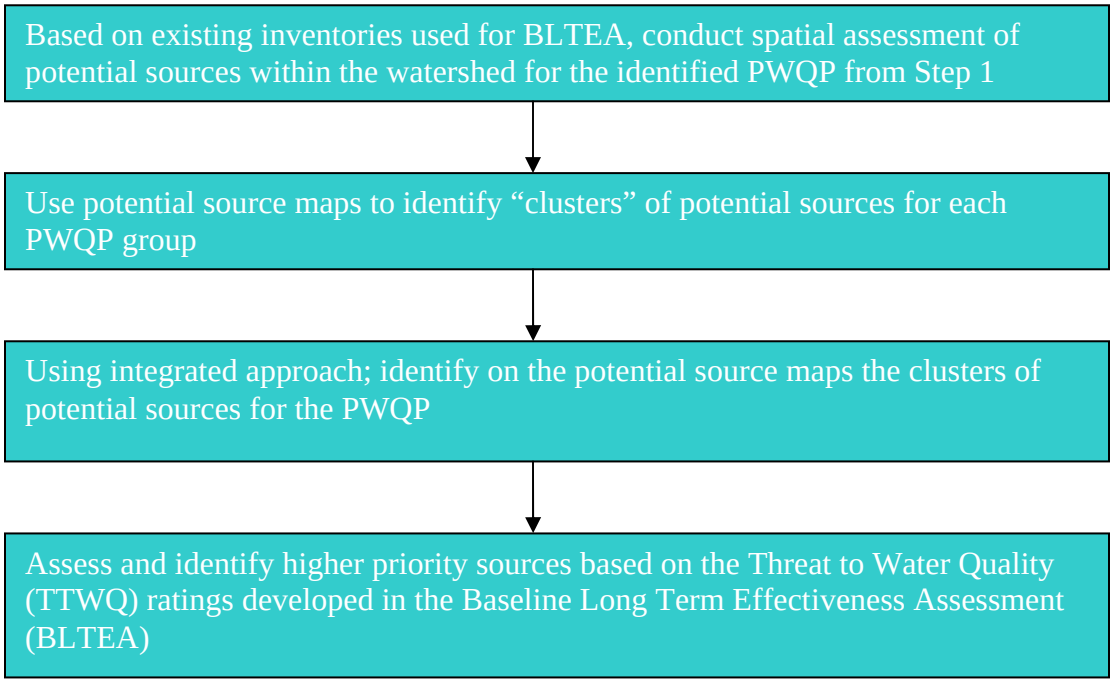
OUTCOMES OF STEP 1
IDENTIFY PRIORITY WATER QUALITY PROBLEMS AND DATA GAPS
LA JOLLA SHORES ASBS WATERSHED

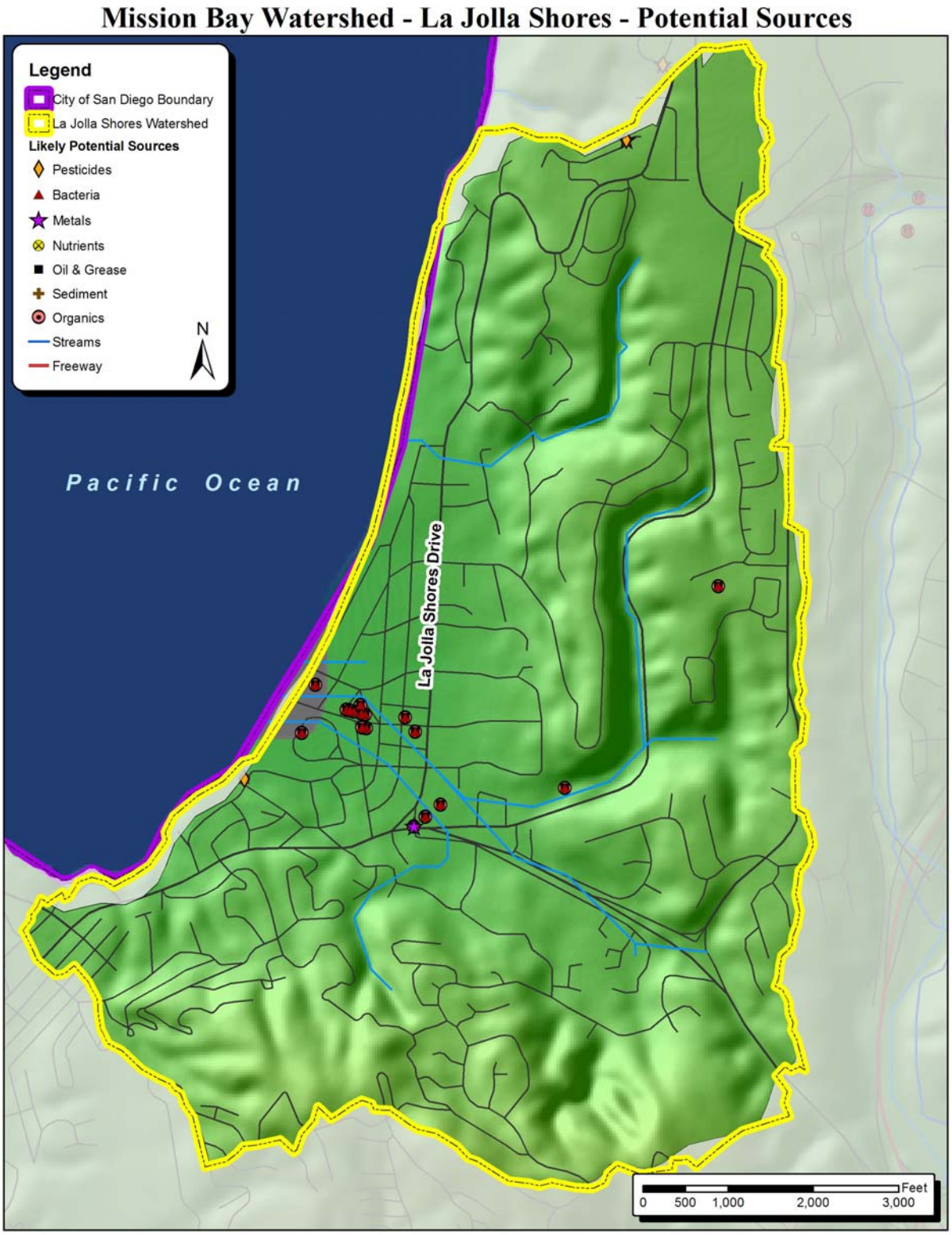
- Identify Priority Water Quality Problems (PWQP) for the watershed and to the extent possible PWQPs on a sub-watershed basis. For the Mission Bay Watershed Management Area - La Jolla Shores ASBS Watershed the PWQP are:
    - Bacteria
    - Heavy Metals
    - Pesticides
    - Sediments

  These PWQP are consistent with the priority pollutants identified in the Integrated Coastal Watershed Management Plan for the La Jolla Shores ASBS Watershed. synthetic pyrethroids are identified as an emerging PWQP. Nutrients are rated as a high priority per the Long Term Effectiveness criteria. However, this is due to the high "A" rating for Mission Bay Watershed for nutrients per this rating system is projected into the entire watershed. Nutrients are not identified as a priority constituent of concern in the Watershed Management Plan based on wet weather sampling data. Nutrients are therefore not listed as a PWQP for this watershed.
- Identify data gaps that exist in the data and use this list to develop scope of priority studies: For the La Jolla Shores ASBS watershed, the data gaps include:
    - Design Storm Determination through pollutograph development for the PWQP
    - Investigate whether synthetic pyrethroids are an emerging PWQP.
    - Investigate the sources of metal (copper, arsenic, chromium and nickel) loading to the receiving waters targeting air deposition, existing structures in the ASBS and auto-related facilities.
    - Investigate anthropogenic sources of bacteria loading to target Tier I and II activities.
    - Assess the magnitude of bacteria re-growth within the MS4.
    - Evaluation of the contribution of ponded dry weather flows and first flush phenomenon for bacteria and other constituents.
    - Investigate anthropogenic sources of sediment load to the ASBS that is resulting in exceedances of turbidity in the storm water and mixing zone and potential toxic impact to giant kelp based on toxicity testing.
    - Development of an overall mass balance loading estimate for all sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

- Use INTEGRATED APPROACH to develop priority activities – consider all PWQP in BMP prioritization

STEP 2: IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES




Mission Bay Watershed - La Jolla Shores - Potential Sources
Legend
City of San Diego Boundary
La Jolla Shores Watershed
Likely Potential Sources
Pesticides
Bacteria
Metals
Nutrients
Oil & Grease
Sediment
Organics
Streams
Freeway
N
Pacific Ocean
La Jolla Shores Drive
Feet
0 500 1,000 2,000 3,000

Map 2.29

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

Bacteria		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
10	Eating or drinking establishments	982		L	T1	X		X	
17	Animal Facilities	34		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	11		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T1	X		X	
33	POTWs (water and wastewater)	1		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
34	Sites for disposing and treating sewage sludge	-		L	T1	X		X	
32	Motor Freight	10		UK	T1	X	X		
29	Active or closed municipal landfills	6		UK	T1	X	X		
16	Marinas	2		UK	T1	X	X		
30	Automobile wholesale	1		UK	T1	X	X		
7	Auto parking lots and storage facilities	-		UK	T1	X	X		
9	Pest Control Services	6		UK	T1	X	X		
19	Development subject to SUSMPs	0		UK	T1	X	X		
22	Flood management projects and flood control devices	-		UK	T1	X	X		
23	MS4s	-		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	12		UL	T5	X		X	
27	Fabricated metal	10		UL	T5	X		X	
26	Chemical and allied products	6		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		UL	T5	X		X	
28	Primary metal	2		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
24	Corporate yards (incl. maintenance/storage yards)	1		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	9		UL	T5	X		X	
20	Construction Sites	0		UL	T5	X		X	
8	Retail or wholesale fueling	56		N	T6				X
15	Pool and Fountain cleaning	7		N	T6				X
31	Airfields	0		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

Heavy Metals		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		L	T1	X		X	
5	Automobile and other vehicle body repair and painting	12		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	11		L	T1	X		X	
27	Fabricated metal	10		L	T1	X		X	
32	Motor Freight	10		L	T1	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		L	T1	X		X	
16	Marinas	2		L	T1	X		X	
28	Primary metal	2		L	T1	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		L	T1	X		X	
24	Corporate yards (incl. maintenance/storage yards)	1		L	T1	X		X	
30	Automobile wholesale	1		L	T1	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		L	T1	X		X	
6	Mobile automobile or vehicle washing	-		L	T1	X		X	
7	Auto parking lots and storage facilities	-		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-	A	L	T1	X		X	
8	Retail or wholesale fueling	56		UK	T1	X	X		
26	Chemical and allied products	6		UK	T1	X	X		
29	Active or closed municipal landfills	6		UK	T1	X	X		
33	POTWs (water and wastewater)	1		UK	T1	X	X		
19	Development subject to SUSMPs	0		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
31	Airfields	0		UK	T1	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T1	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	0		UL	T5	X		X	
10	Eating or drinking establishments	982		N	T6				X
17	Animal Facilities	34		N	T6				X
14	Landscaping - parks, golf courses, cemeteries, etc.	7		N	T6				X
9	Pest Control Services	6		N	T6				X
11	Mobile carpet, drape, or furniture cleaning	9		N	T6				X
15	Pool and Fountain cleaning	7		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

Pesticides		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
13	Botanical or zoological gardens and nurseries/greenhouses	11	C	L	T3	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T3	X		X	
9	Pest Control Services	6		L	T3	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T3	X		X	
10	Eating or drinking establishments	982		UK	T3	X	X		
17	Animal Facilities	34		UK	T3	X	X		
27	Fabricated metal	10		UK	T3	X	X		
32	Motor Freight	10		UK	T3	X	X		
26	Chemical and allied products	6		UK	T3	X	X		
29	Active or closed municipal landfills	6		UK	T3	X	X		
16	Marinas	2		UK	T3	X	X		
28	Primary metal	2		UK	T3	X	X		
24	Corporate yards (incl. maintenance/storage yards)	1		UK	T3	X	X		
30	Automobile wholesale	1		UK	T3	X	X		
7	Auto parking lots and storage facilities	-		UK	T3	X	X		
19	Development subject to SUSMPs	0		UK	T3	X	X		
22	Flood management projects and flood control devices	-		UK	T3	X	X		
25	Park and Recreational facilities	-		UK	T3	X	X		
31	Airfields	0		UK	T3	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T3	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	12		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
20	Construction Sites	0		UL	T5	X		X	
21	Roads, streets, highways, and parking facilities	-		UL	T5	X		X	
8	Retail or wholesale fueling	56		N	T6				X
33	POTWs (water and wastewater)	1		N	T6				X
11	Mobile carpet, drape, or furniture cleaning	9		N	T6				X
15	Pool and Fountain cleaning	7		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Mission Bay

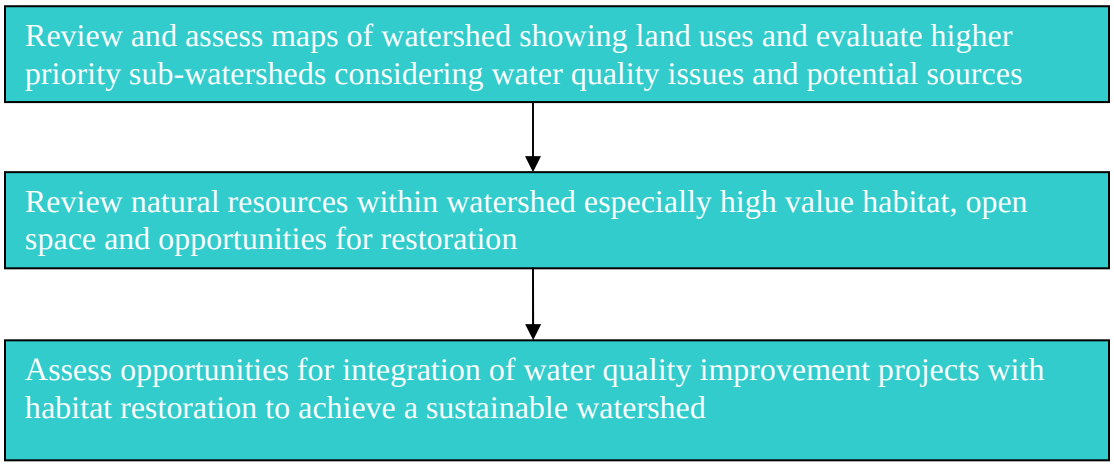
Sediment		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	B	L	T2	X		X	
17	Animal Facilities	34		L	T2	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	11		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T2	X		X	
24	Corporate yards (incl. maintenance/storage yards)	1		L	T2	X		X	
30	Automobile wholesale	1		L	T2	X		X	
6	Mobile automobile or vehicle washing	-		L	T2	X		X	
7	Auto parking lots and storage facilities	-		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
20	Construction Sites	0		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
22	Flood management projects and flood control devices	-		L	T2	X		X	
23	MS4s	-		L	T2	X		X	
8	Retail or wholesale fueling	56		UK	T2	X	X		
27	Fabricated metal	10		UK	T2	X	X		
32	Motor Freight	10		UK	T2	X	X		
26	Chemical and allied products	6		UK	T2	X	X		
29	Active or closed municipal landfills	6		UK	T2	X	X		
28	Primary metal	2		UK	T2	X	X		
33	POTWs (water and wastewater)	1		UK	T2	X	X		
19	Development subject to SUSMPs	0		UK	T2	X	X		
25	Park and Recreational facilities	-		UK	T2	X	X		
31	Airfields	0		UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
10	Eating or drinking establishments	982		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	119		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	12		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	3		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	9		UL	T5	X		X	
16	Marinas	2		N	T6				X
9	Pest Control Services	6		N	T6				X
15	Pool and Fountain cleaning	7		N	T6				X

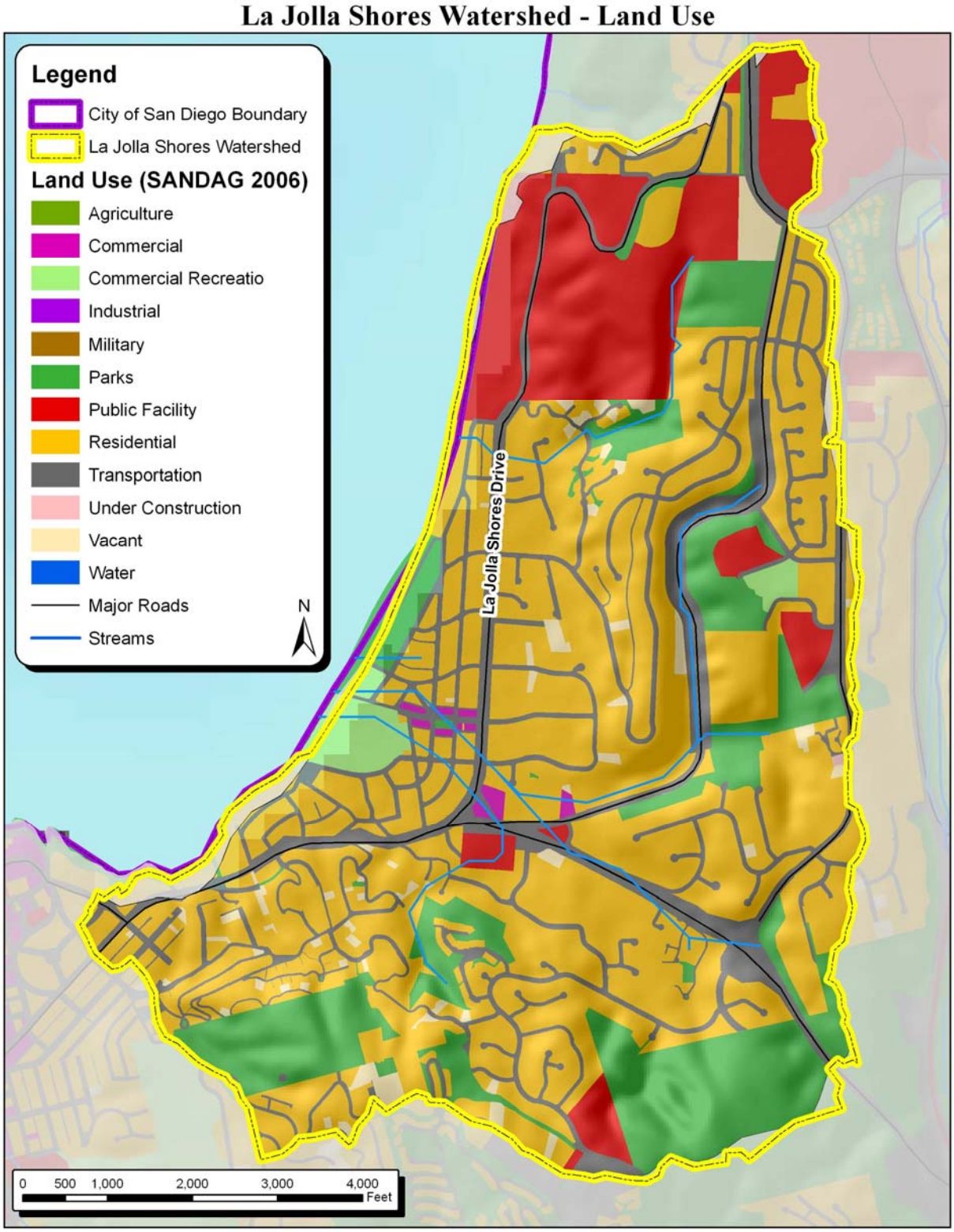
NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

OUTCOMES OF STEP 2
IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES
LA JOLLA SHORES ASBS WATERSHED

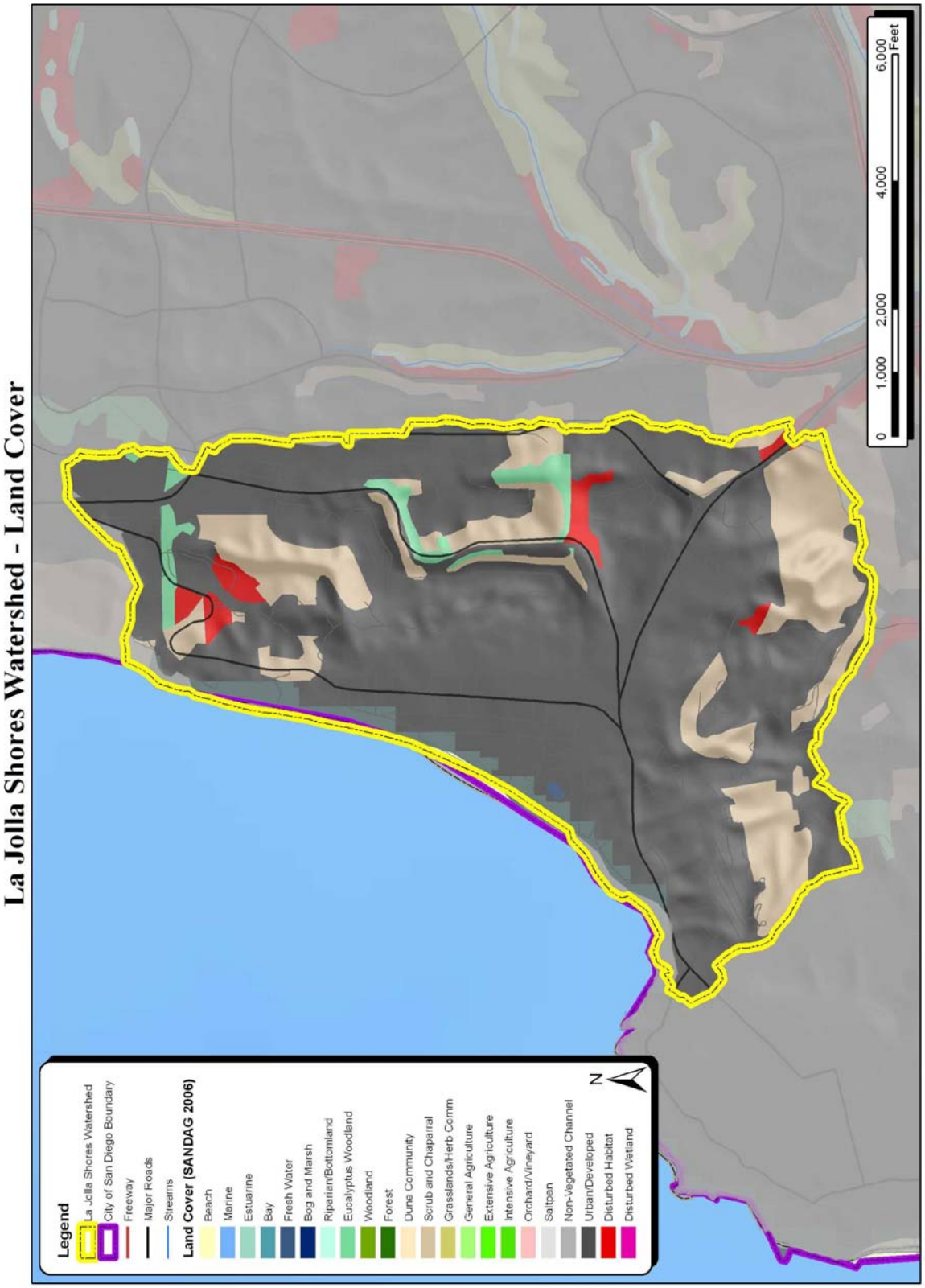
- Identify the higher rated sources based on BLTEA TTWQ for each PWQP – See Maps
- Identify potential higher priority areas based on "clustering" of high priority sources
- Use INTEGRATED approach and identify areas of higher clusters of sources for multiple PWQP
    - Eating and Drinking Establishments
    - Residential Areas and Activities
    - Commercial Landscaping
    - Golf Courses, Parks and Recreational Activities
    - Municipal Facilities and Activities
    - Auto Related Facilities
    - Roads, Streets, Highways and Parking Facilities
    - Pest Control Facilities
    - Construction Activities
- Identify data gaps in inventory of sources
    - Source Data and Update Inventory
    - Identify residential and roadway sources that are not included in source inventory list

STEP 3: IDENTIFY AND ASSESS LAND USE AND RESTORATION OPPORTUNITIES




La Jolla Shores Watershed - Land Use
Legend
City of San Diego Boundary
La Jolla Shores Watershed
Land Use (SANDAG 2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Major Roads
Streams
N
La Jolla Shores Drive
0 500 1,000 2,000 3,000 4,000
Feet

Map 2.30

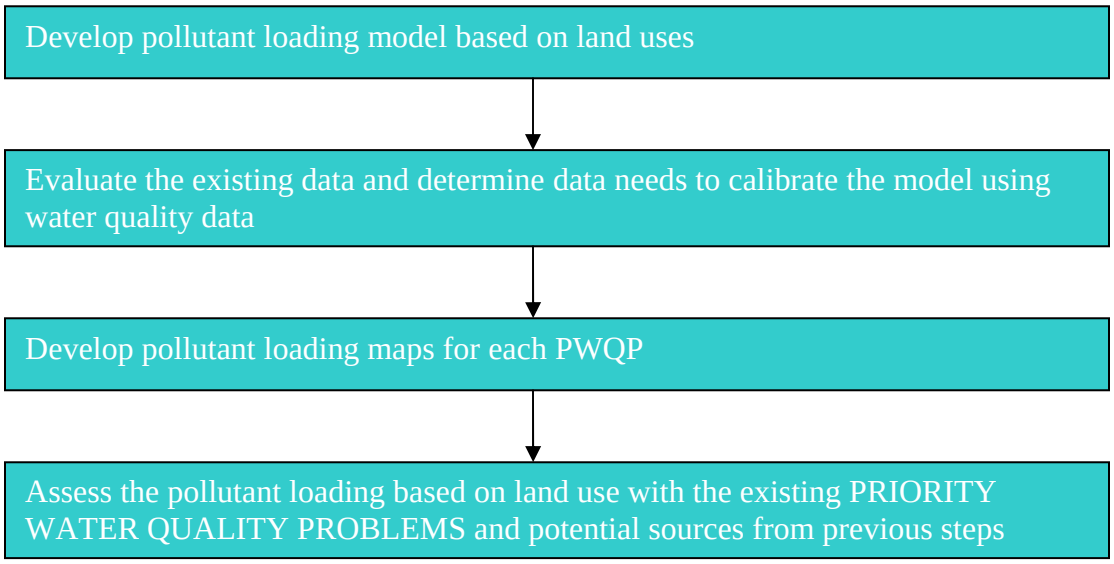

La Jolla Shores Watershed - Land Cover
Legend
La Jolla Shores Watershed
City of San Diego Boundary
Freeway
Major Roads
Streams
Land Cover (SANDAG 2006)
Beach
Marine
Estuarine
Bay
Fresh Water
Bog and Marsh
Riparian/Bottomland
Eucalyptus Woodland
Woodland
Forest
Dune Community
Scrub and Chaparral
Grasslands/Herb Comm
General Agriculture
Extensive Agriculture
Intensive Agriculture
Orchard/Vineyard
Saltpan
Non-Vegetated Channel
Urban/Developed
Disturbed Habitat
Disturbed Wetland
N
0
1,000
2,000
4,000
6,000
Feet

Map 2.31

OUTCOMES OF STEP 3
IDENTIFY LAND USES AND NATURAL RESOURCES TO INTEGRATE WITH WATER QUALITY IMPROVEMENT PROJECTS
LA JOLLA SHORES ASBS WATERSHED

- Identify land uses and higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps which will be used to estimate pollutant loading – See Map 2.30
- Identify natural resources within watershed. This information will be later used to identify opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed – See Map 2.31

STEP 4: DETERMINE SUB-WATERSHED POLLUTANT LOADING



OUTCOMES OF STEP 4
IDENTIFY SUB-WATERSHED POLLUTANT LOADING POTENTIAL AND DATA GAPS
LA JOLLA SHORES ASBS WATERSHED

- Identify sub-watershed with higher pollutant loading using land use data – See Maps
- Identify the data gaps to calibrate and verify the loading using water quality data
    - Source Data
    - Update Inventory of Source Data
    - Calibrate Model to Actual Water Quality data (Need to add Sub watershed Data)
- Identify the sub-watersheds that have the greatest priority based on the pollutant loading and the Priority Water Quality Problems and potential sources from previous steps –See Maps

STEP 5: IDENTIFY HIGH PRIORITY SUB-WATERSHEDS FOR WATERSHED ACTIVITIES

Based on the outcomes of the previous steps, develop an approach to prioritize sub-watersheds for implementation of phase I watershed activities

↓

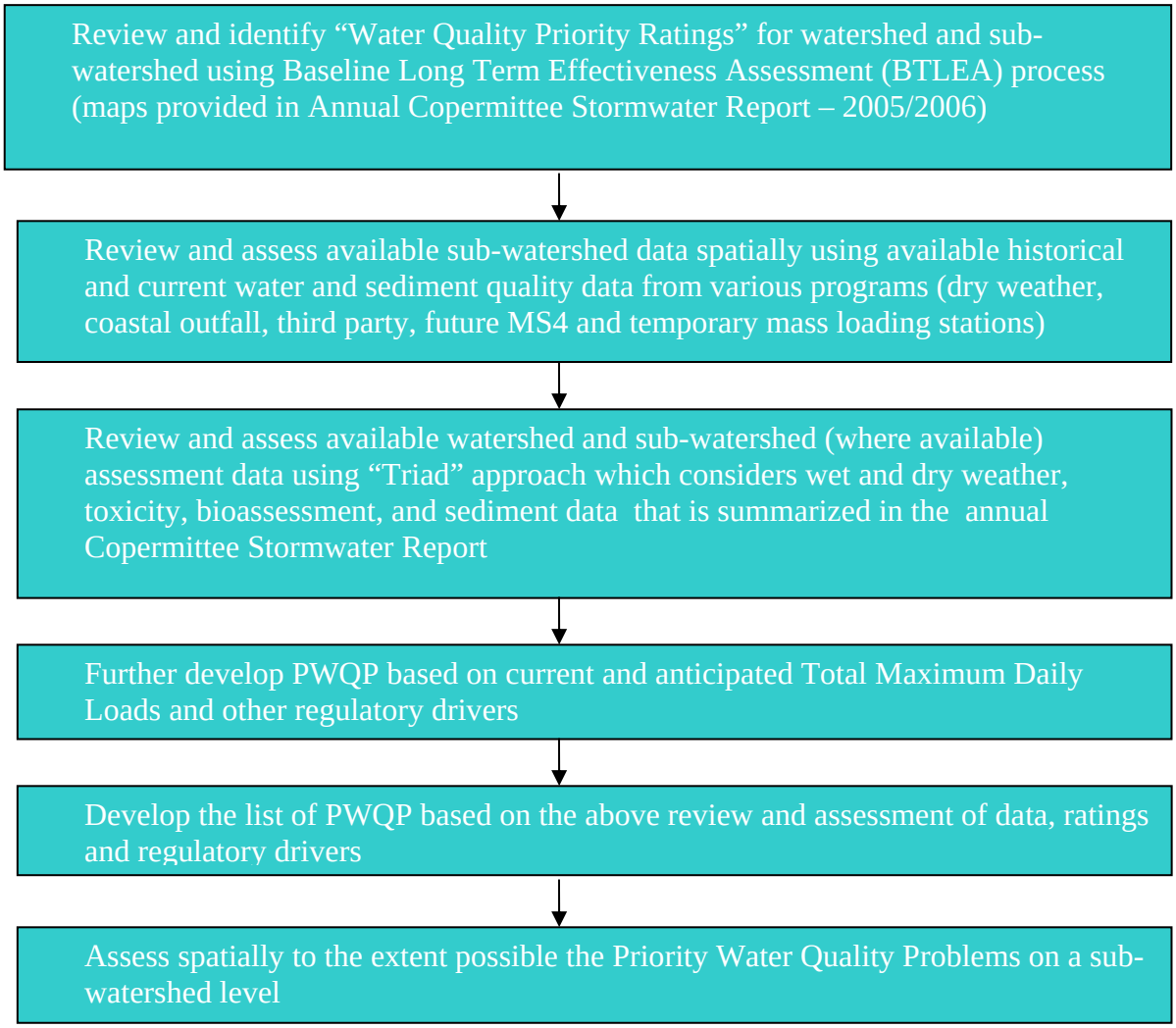
Develop a map showing sub-watershed priorities by assigning each sub-watershed or group of adjacent sub-watersheds a number (1 being the highest priority)

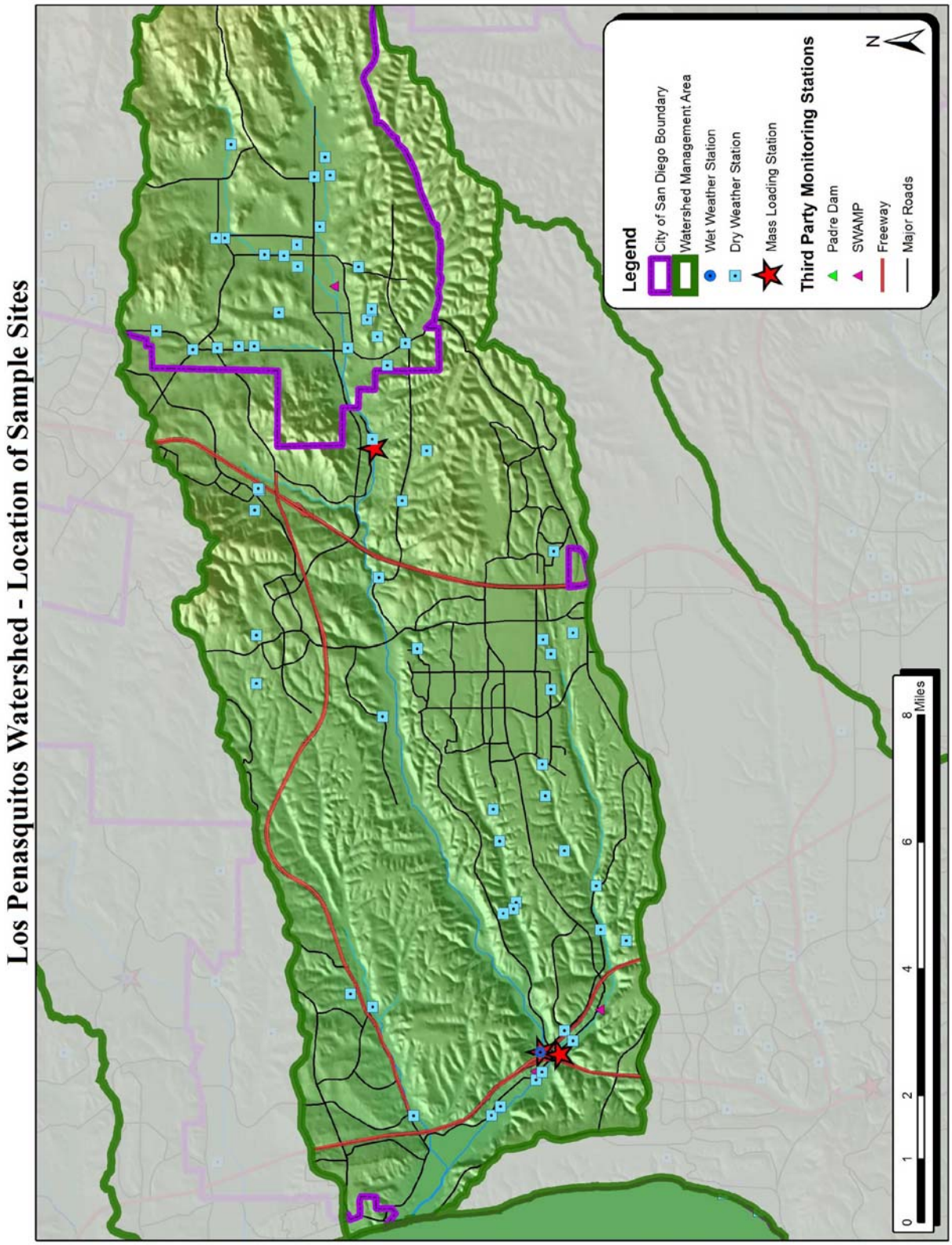
La Jolla Shores Watershed - Identified BMP Priority Sectors

Map 2.32

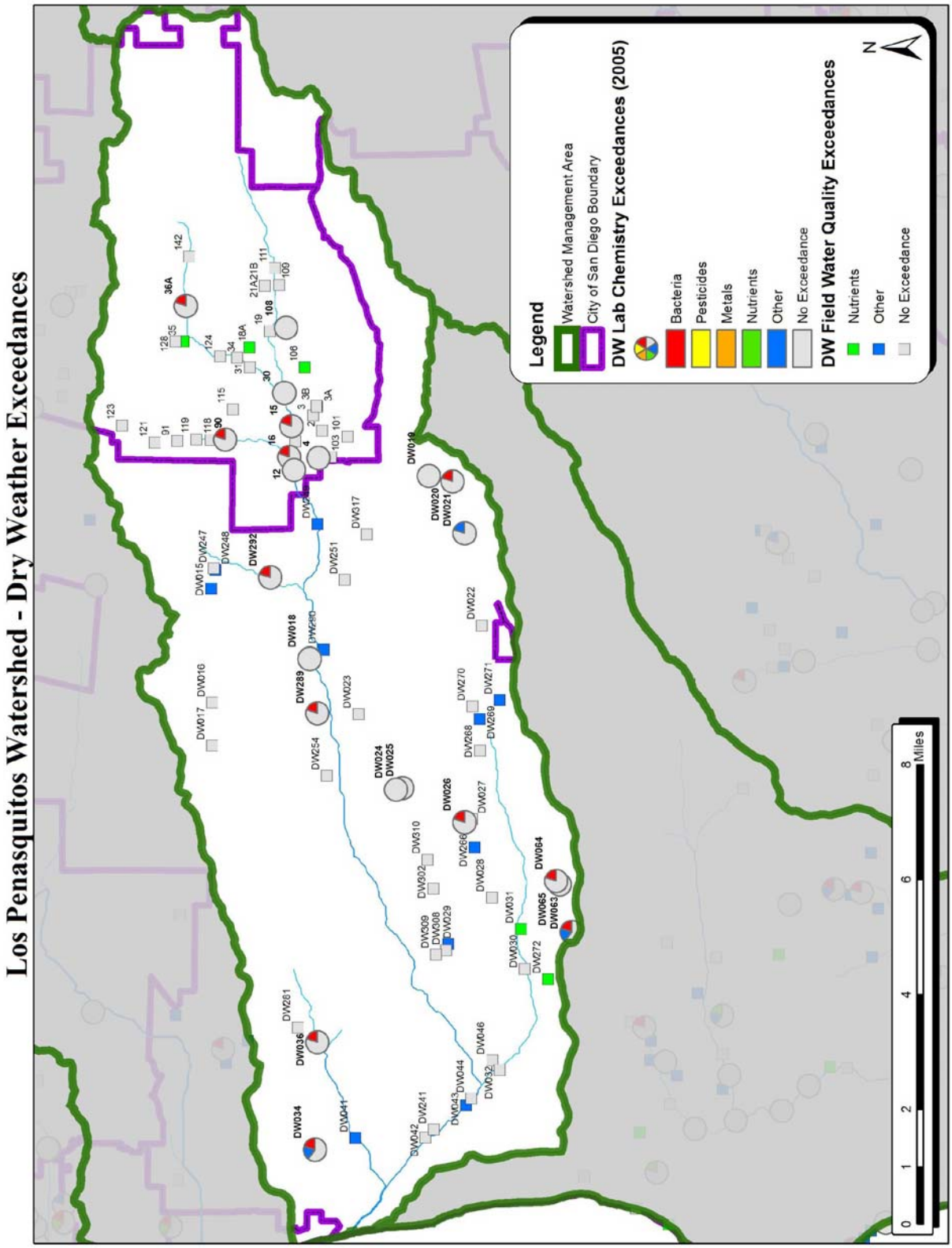
Los Peñasquitos Watershed

STEP 1: IDENTIFY AND ASSESS THE PRIORITY WATER QUALITY PROBLEMS USING THE FOLLOWING TOOLS




Los Penasquitos Watershed - Location of Sample Sites
Legend
City of San Diego Boundary
Watershed Management Area
Wet Weather Station
Dry Weather Station
Mass Loading Station
Third Party Monitoring Stations
Padre Dam
SWAMP
Freeway
Major Roads
N
0
1
2
4
6
8
Miles

Map 2.33


Los Penasquitos Watershed - Dry Weather Exceedances
Legend
Watershed Management Area
City of San Diego Boundary
DW Lab Chemistry Exceedances (2005)
Bacteria
Pesticides
Metals
Nutrients
Other
No Exceedance
DW Field Water Quality Exceedances
Nutrients
Other
No Exceedance
N
0 1 2 4 6 8 Miles

Map 2.34

Updated Water Quality Priority Ratings for the Los Peñasquitos WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Los Peñasquitos WMA	**100%**	***D***	***A***	***D***	***D***	***A***	***D***	***D***	***D***	***A***	***A***	***C***
Miramar Reservoir HA (906.10)	55%	*C*	*A*	*D*	*D*	*A*	*D*	*C*	*C*	*A*	*A*	*C*
Poway HA (906.20)	45%	*D*	*A*	*D*	*D*	*C*	*D*	*D*	*D*	*B*	*B*	*C*
Frequency of Occurrence Rating High[1]			♦♦♦									
Constituents of Concern			TDS									

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

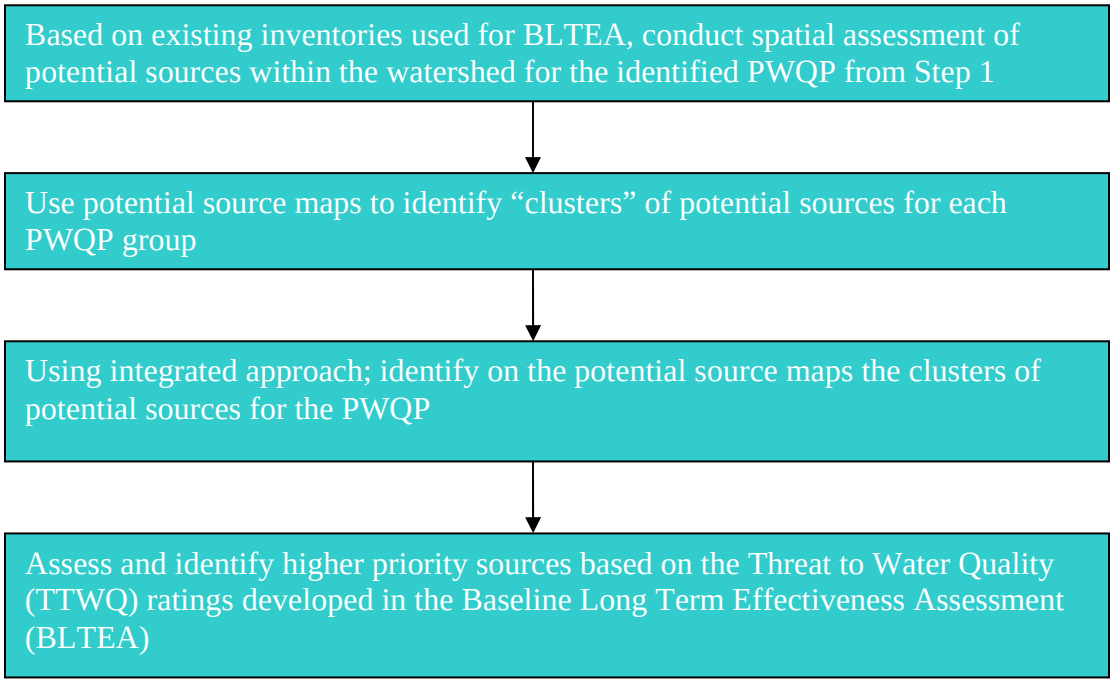
303d listing

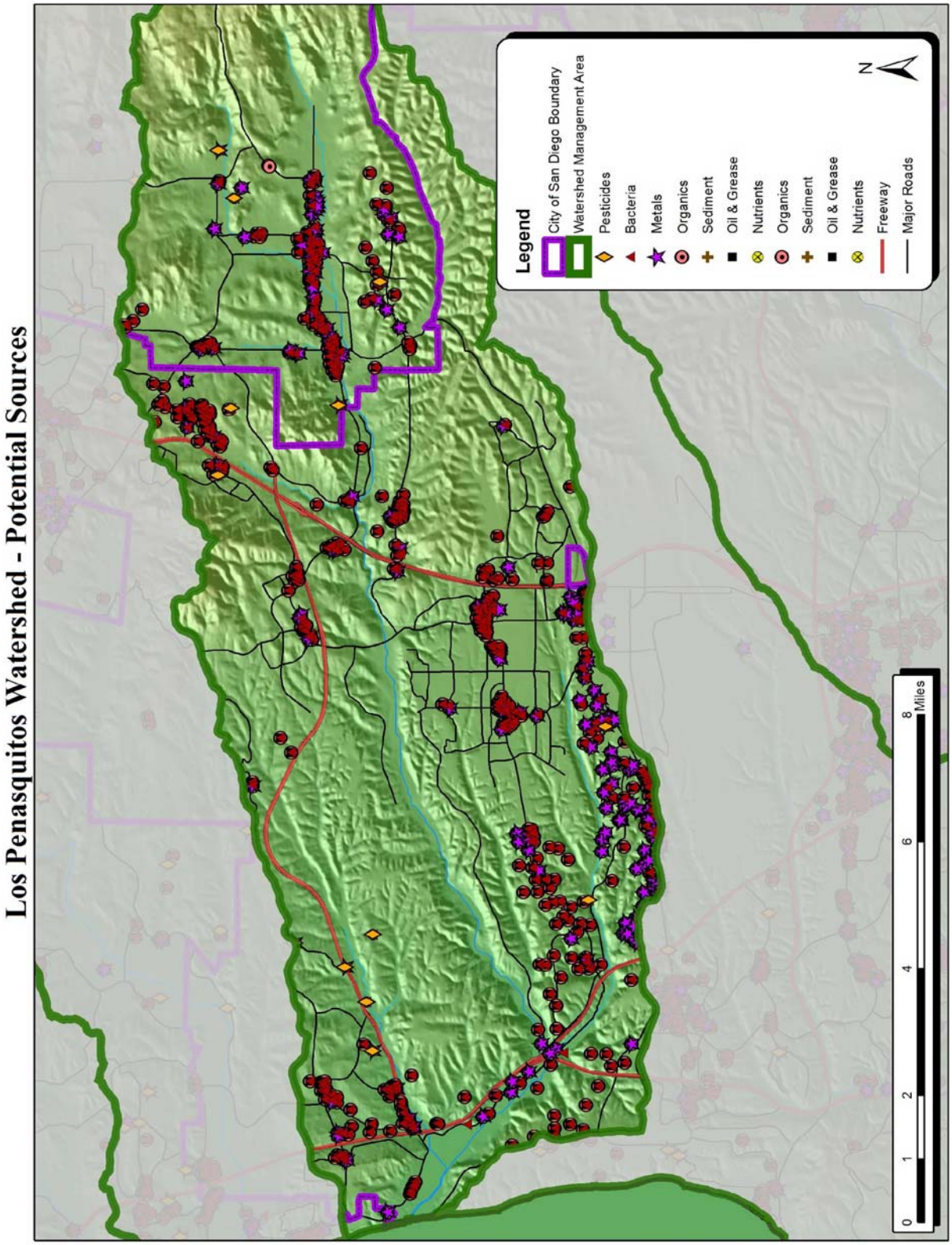
OUTCOMES OF STEP 1
IDENTIFY PRIORITY WATER QUALITY PROBLEMS AND DATA GAPS
LOS PENASQUITOS WATERSHED

- Identify Priority Water Quality Problems (PWQP) for the watershed and to the extent possible high PWQPs on a sub-watershed basis: For the Los Peñasquitos Watershed the PWQP are:
    - Bacteria
    - Nutrients
    - Sediment
    - Total Dissolved Solids
    - Benthic Alterations
- Identify data gaps that exist in the data and use this list to develop scope of priority studies: The data gaps for Los Penasquitos Watershed include:
    - Design Storm Determination through pollutograph development for the PWQP
    - Investigate anthropogenic sources of bacteria load, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
    - Investigate the trends in the exceedances of nutrient concentrations and loading (phosphate), and verify the 303d listing for the Creek.
    - Investigate anthropogenic sources of sediment load to the creek and Los Penasquitos Lagoon which is under an Investigation Order and listed for sediment. Determine the loading on a sub-watershed basis to verify the priority sectors.
    - Investigate the sources of the TDS exceedances.
    - Development of an overall mass balance loading estimate for all sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

- Use INTEGRATED APPROACH to develop priority activities – consider all PWQP in BMP prioritization

STEP 2: IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES




Los Penasquitos Watershed - Potential Sources
Legend
City of San Diego Boundary
Watershed Management Area
Pesticides
Bacteria
Metals
Organics
Sediment
Oil & Grease
Nutrients
Organics
Sediment
Oil & Grease
Nutrients
Freeway
Major Roads
N
0
1
2
4
6
8
Miles

Map 2.35

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Los Peñasquitos

Bacteria		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
10	Eating or drinking establishments	829		L	T1	X		X	
17	Animal Facilities	33		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	7		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T1	X		X	
33	POTWs (water and wastewater)	4		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
34	Sites for disposing and treating sewage sludge	-		L	T1	X		X	
32	Motor Freight	27		UK	T1	X	X		
19	Development subject to SUSMPs	17		UK	T1	X	X		
29	Active or closed municipal landfills	2		UK	T1	X	X		
7	Auto parking lots and storage facilities	-		UK	T1	X	X		
9	Pest Control Services	9		UK	T1	X	X		
16	Marinas	0		UK	T1	X	X		
22	Flood management projects and flood control devices	-		UK	T1	X	X		
23	MS4s	-		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
30	Automobile wholesale	0		UK	T1	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	201		UL	T5	X		X	
20	Construction Sites	92		UL	T5	X		X	
27	Fabricated metal	50		UL	T5	X		X	
26	Chemical and allied products	30		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	21		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	11		UL	T5	X		X	
28	Primary metal	5		UL	T5	X		X	
24	Corporate yards (incl. maintenance/storage yards)	2		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	13		UL	T5	X		X	
8	Retail or wholesale fueling	65		N	T6				X
15	Pool and Fountain cleaning	10		N	T6				X
31	Airfields	0		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Los Peñasquitos

Nutrients		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
17	Animal Facilities	33		L	T3	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T3	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	7		L	T3	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T3	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T3	X		X	
25	Park and Recreational facilities	-		L	T3	X		X	
10	Eating or drinking establishments	829		UK	T3	X	X		
1	Auto mechanical repair, maintenance, fueling, or cleaning	201		UK	T3	X	X		
27	Fabricated metal	50		UK	T3	X	X		
26	Chemical and allied products	30		UK	T3	X	X		
32	Motor Freight	27		UK	T3	X	X		
19	Development subject to SUSMPs	17		UK	T3	X	X		
4	Equipment mechanical repair, maintenance, fueling, or cleaning	11		UK	T3	X	X		
28	Primary metal	5		UK	T3	X	X		
33	POTWs (water and wastewater)	4		UK	T3	X	X		
24	Corporate yards (incl. maintenance/storage yards)	2		UK	T3	X	X		
29	Active or closed municipal landfills	2		UK	T3	X	X		
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1	C	UK	T3	X	X		
7	Auto parking lots and storage facilities	-		UK	T3	X	X		
11	Mobile carpet, drape, or furniture cleaning	13		UK	T3	X	X		
15	Pool and Fountain cleaning	10		UK	T3	X	X		
16	Marinas	0		UK	T3	X	X		
30	Automobile wholesale	0		UK	T3	X	X		
31	Airfields	0		UK	T3	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T3	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	92		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	21		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
8	Retail or wholesale fueling	65		N	T6				X
9	Pest Control Services	9		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Los Peñasquitos

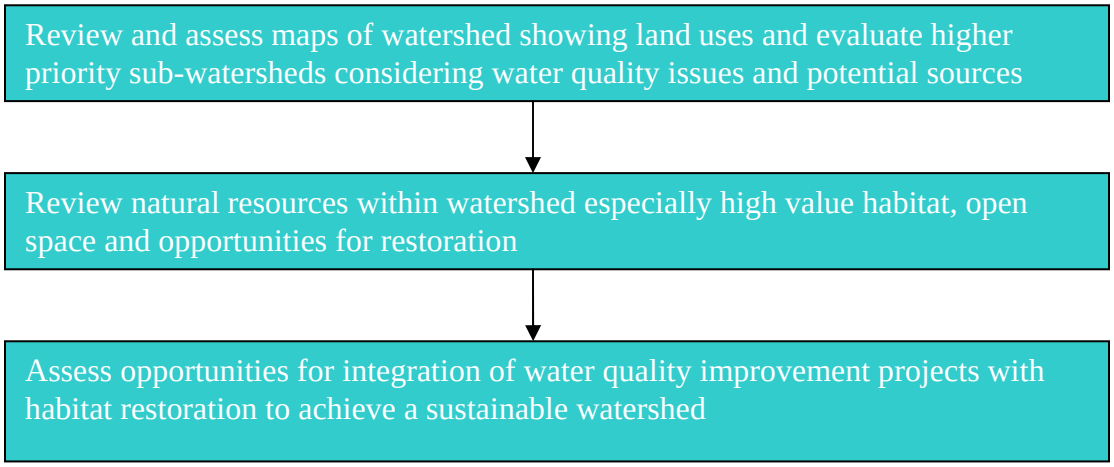
Sediment		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	L	T1	X		X	
20	Construction Sites	92		L	T1	X		X	
17	Animal Facilities	33		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	7		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	7		L	T1	X		X	
24	Corporate yards (incl. maintenance/storage yards)	2		L	T1	X		X	
6	Mobile automobile or vehicle washing	-		L	T1	X		X	
7	Auto parking lots and storage facilities	-		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
22	Flood management projects and flood control devices	-		L	T1	X		X	
23	MS4s	-		L	T1	X		X	
30	Automobile wholesale	0		L	T1	X		X	
8	Retail or wholesale fueling	65		UK	T1	X	X		
27	Fabricated metal	50		UK	T1	X	X		
26	Chemical and allied products	30		UK	T1	X	X		
32	Motor Freight	27		UK	T1	X	X		
19	Development subject to SUSMPs	17		UK	T1	X	X		
28	Primary metal	5		UK	T1	X	X		
33	POTWs (water and wastewater)	4		UK	T1	X	X		
29	Active or closed municipal landfills	2		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
31	Airfields	0		UK	T1	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T1	X	X		
10	Eating or drinking establishments	829		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	201		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	21		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	11		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	13		UL	T5	X		X	
9	Pest Control Services	9		N	T6				X
15	Pool and Fountain cleaning	10		N	T6				X
16	Marinas	0		N	T6				X

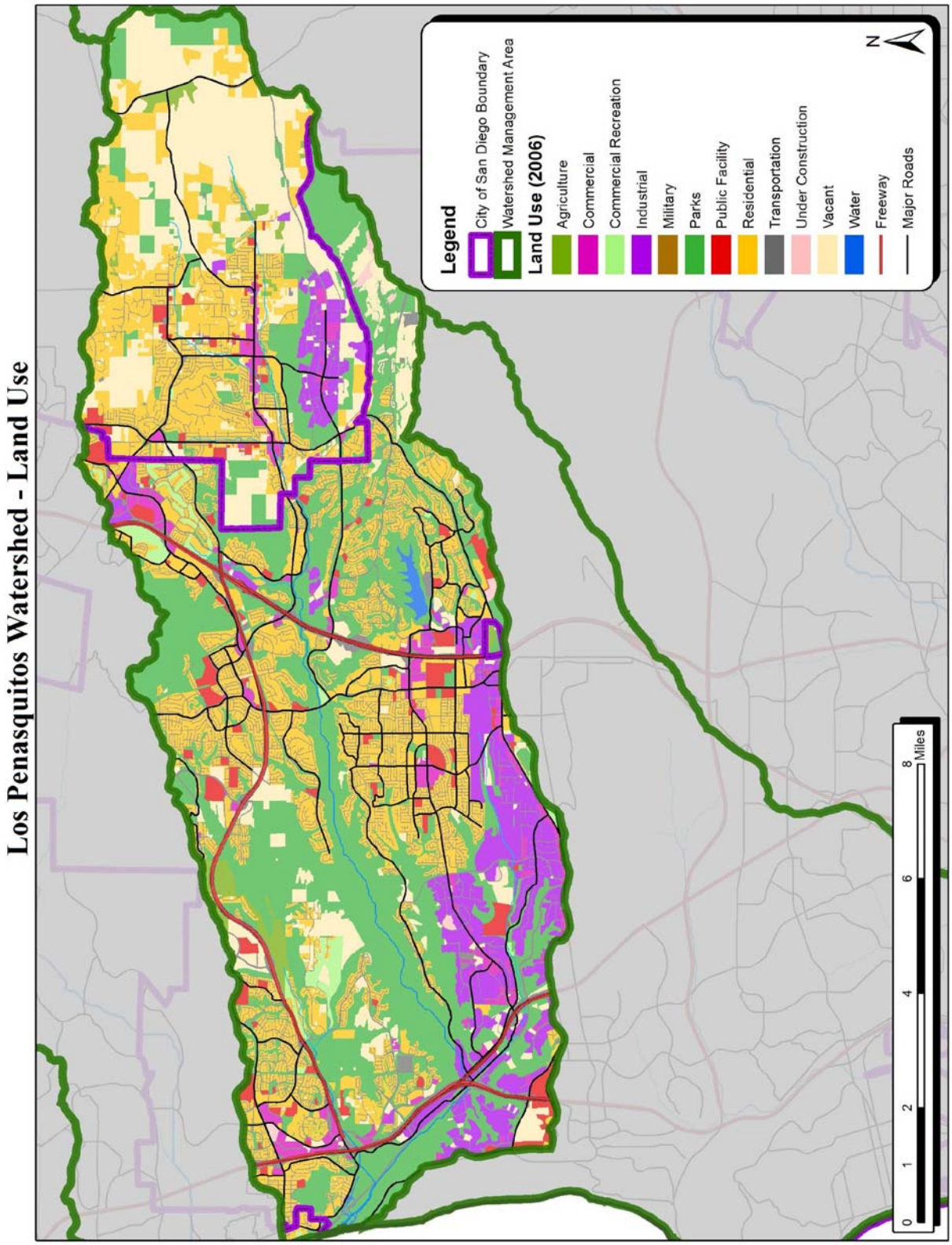
NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

OUTCOMES OF STEP 2
IDENTIFYAND ASSESS HIGH THREST TI WATER QUALITY SOURCES
LOS PENASQUITOS WATERSHED

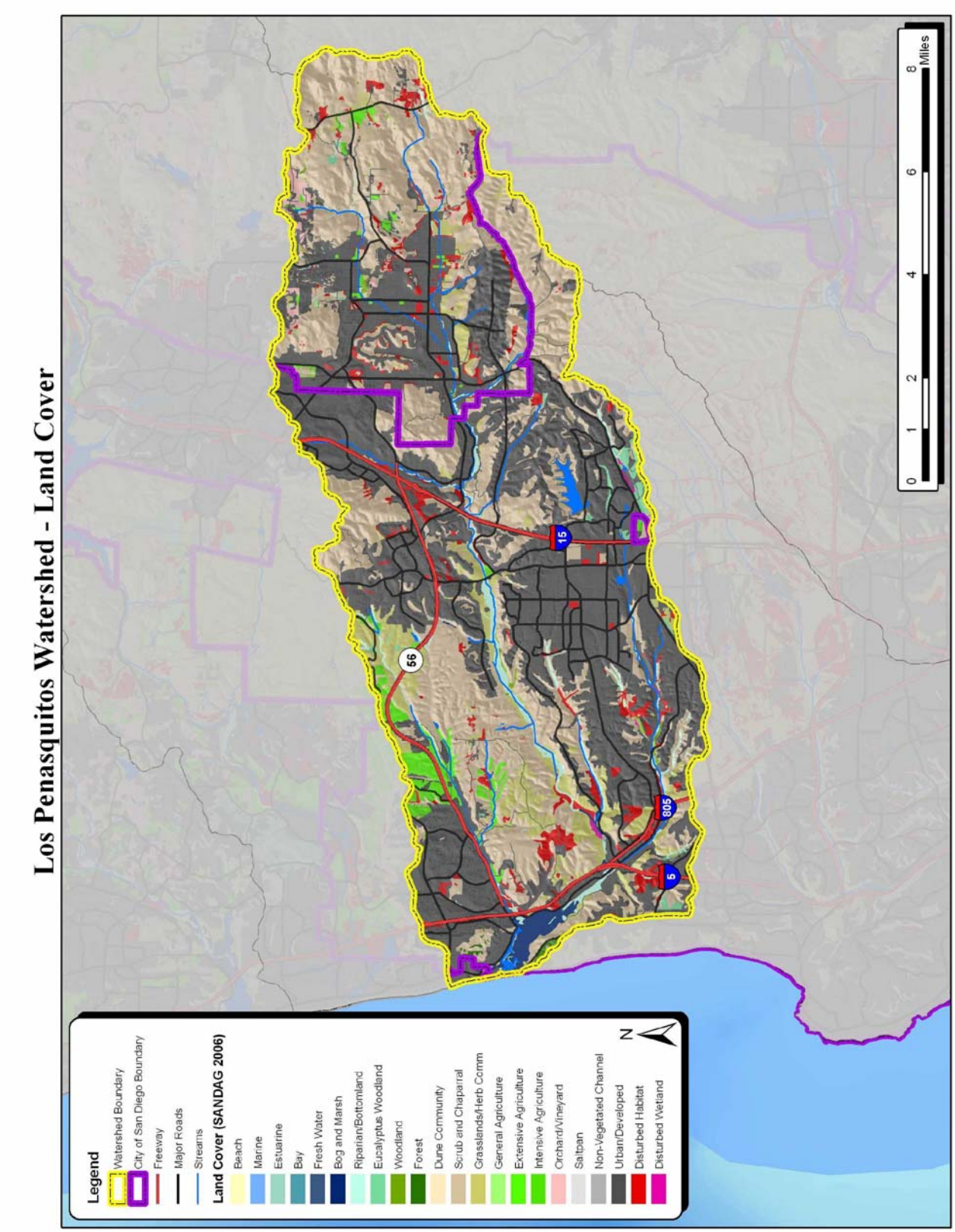
- Identify the higher rated sources based on BLTEA TTWQ for each PWQP – See Maps
- Identify potential higher priority areas based on "clustering" of high priority sources
- Use INTEGRATED approach and identify areas of higher clusters of sources for multiple PWQP
    - Eating and Drinking Establishments
    - Residential Areas and Activities
    - Commercial Landscaping
    - Animal Related Facilities
    - Golf Courses, Parks and Recreational Activities
    - Municipal Facilities and Activities
    - Auto Related Facilities
    - Roads, Streets, Highways and Parking Facilities
    - Construction Activities
- Identify data gaps in inventory of sources
    - Source Data and Update Inventory
    - Identify residential and roadway sources that are not included in source inventory list

STEP 3: IDENTIFY AND ASSESS LAND USE AND RESTORATION OPPORTUNITIES




Los Penasquitos Watershed - Land Use
Legend
City of San Diego Boundary
Watershed Management Area
Land Use (2006)
Agriculture
Commercial
Commercial Recreation
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Freeway
Major Roads
N
0
1
2
4
6
8
Miles

Map 2.36

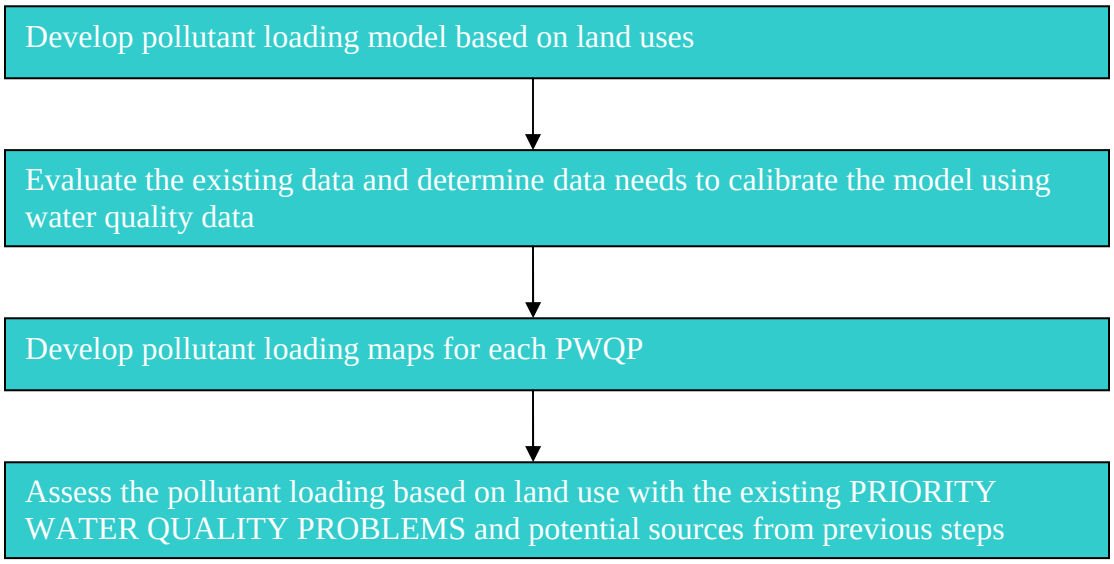

Los Penasquitos Watershed - Land Cover
Legend
Watershed Boundary
City of San Diego Boundary
Freeway
Major Roads
Streams
Land Cover (SANDAG 2006)
Beach
Marine
Estuarine
Bay
Fresh Water
Bog and Marsh
Riparian/Bottomland
Eusalyptus Woodland
Woodland
Forest
Dune Community
Scrub and Chaparral
Grasslands/Herb Comm
General Agriculture
Extensive Agriculture
Intensive Agriculture
Orchard/Vineyard
Saltpan
Non-Vegetated Channel
Urban/Developed
Disturbed Habitat
Disturbed Wetland
N
0 1 2 4 6 8 Miles
15
56
805
5

Map 2.37

OUTCOMES OF STEP 3
IDENTIFY LAND USE AND NATURAL RESOURCES TO INTEGRATE WITHWATR QUALITY IMPROVEMENT PROJECTS
LOS PENASQUITOS WATERSHED

- Identify land uses and higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps which will be used to estimate pollutant loading – See Map 2.36
- Identify natural resources within watershed. This information will be later used to identify opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed – See Map 2.37

STEP 4: DETERMINE SUB-WATERSHED POLLUTANT LOADING



OUTCOMES OF STEP 4
IDENTIFY SUB-WATERSHED POLLUTANT LOADING POTENTIAL AND DATA GAPS
LOS PENASQUITOS WATERSHED

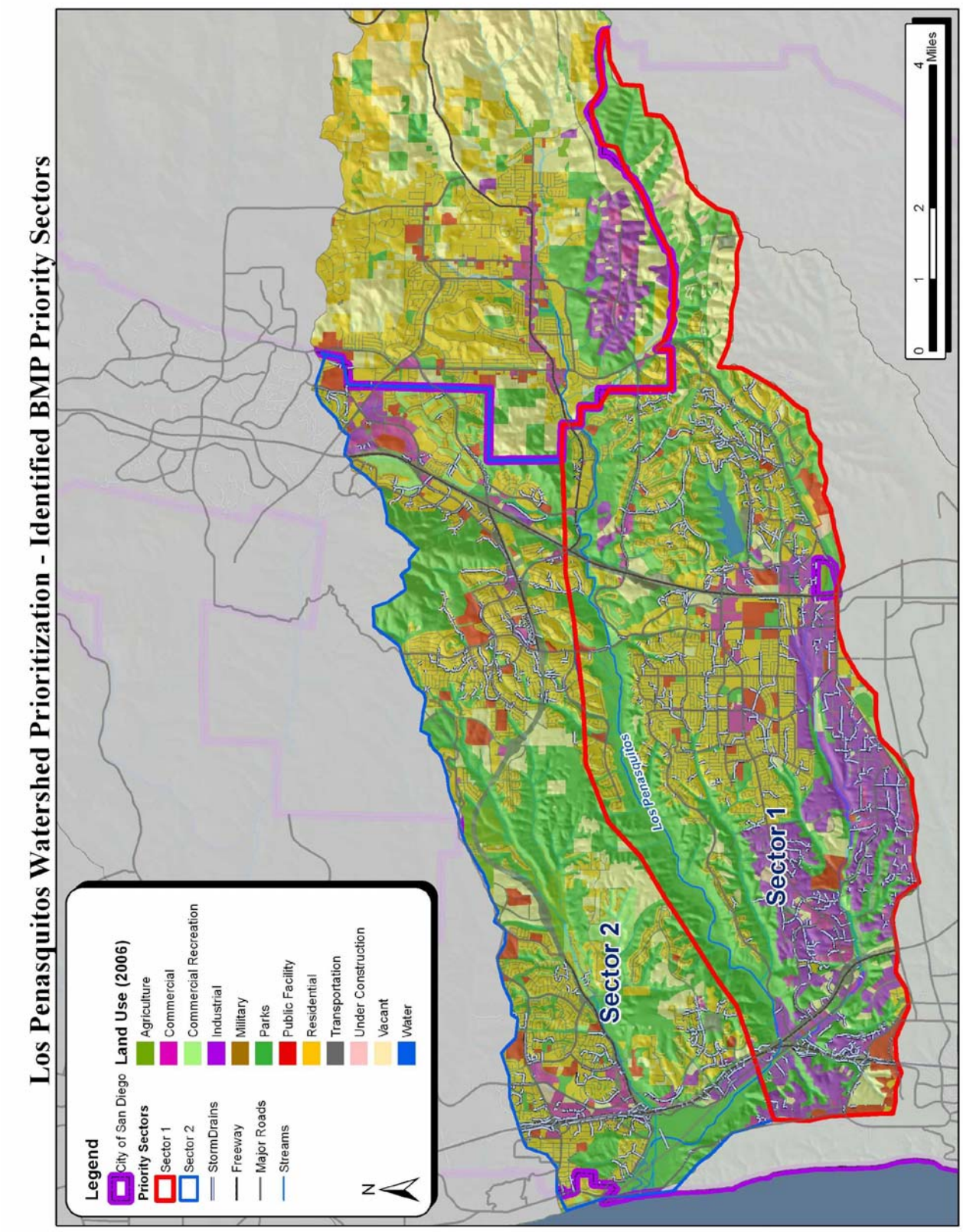
- Identify sub-watershed with higher pollutant loading using land use data – See Maps
- Identify the data gaps to calibrate and verify the loading using water quality data
    - Source Data
    - Update Inventory of Source Data
    - Calibrate Model to Actual Water Quality data (Need to Add Sub-Watershed Data)
- Identify the sub-watersheds that have the greatest priority based on the pollutant loading and the Priority Water Quality Problems and potential sources from previous steps –See Maps

STEP 5: IDENTIFY HIGH PRIORITY SUB-WATERSHEDS FOR WATERSHED ACTIVITIES

Based on the outcomes of the previous steps, develop an approach to prioritize sub-watersheds for implementation of Phase I watershed activities

↓

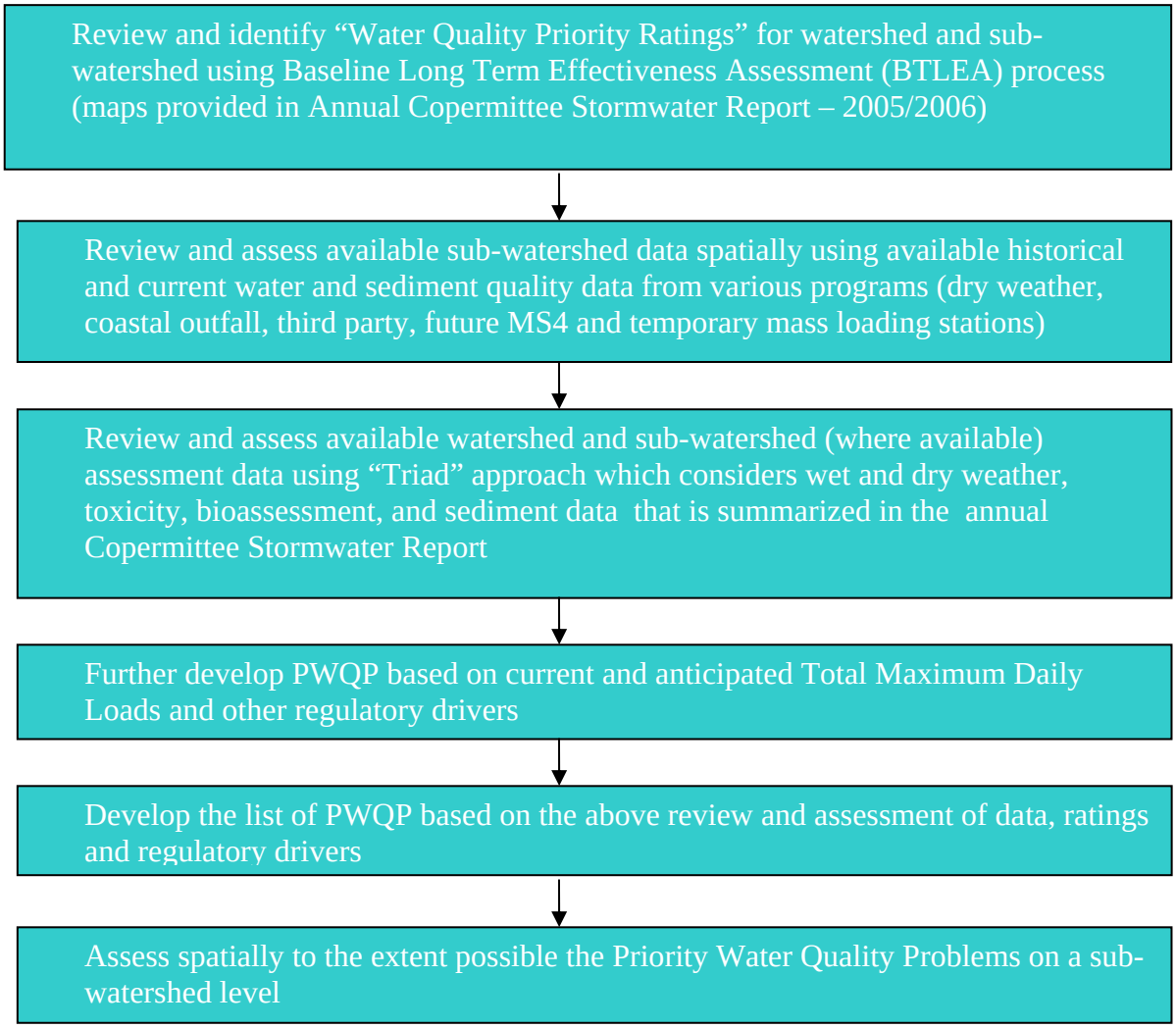
Develop a map showing sub-watershed priorities by assigning each sub-watershed or group of adjacent sub-watersheds a number (1 being the highest priority)

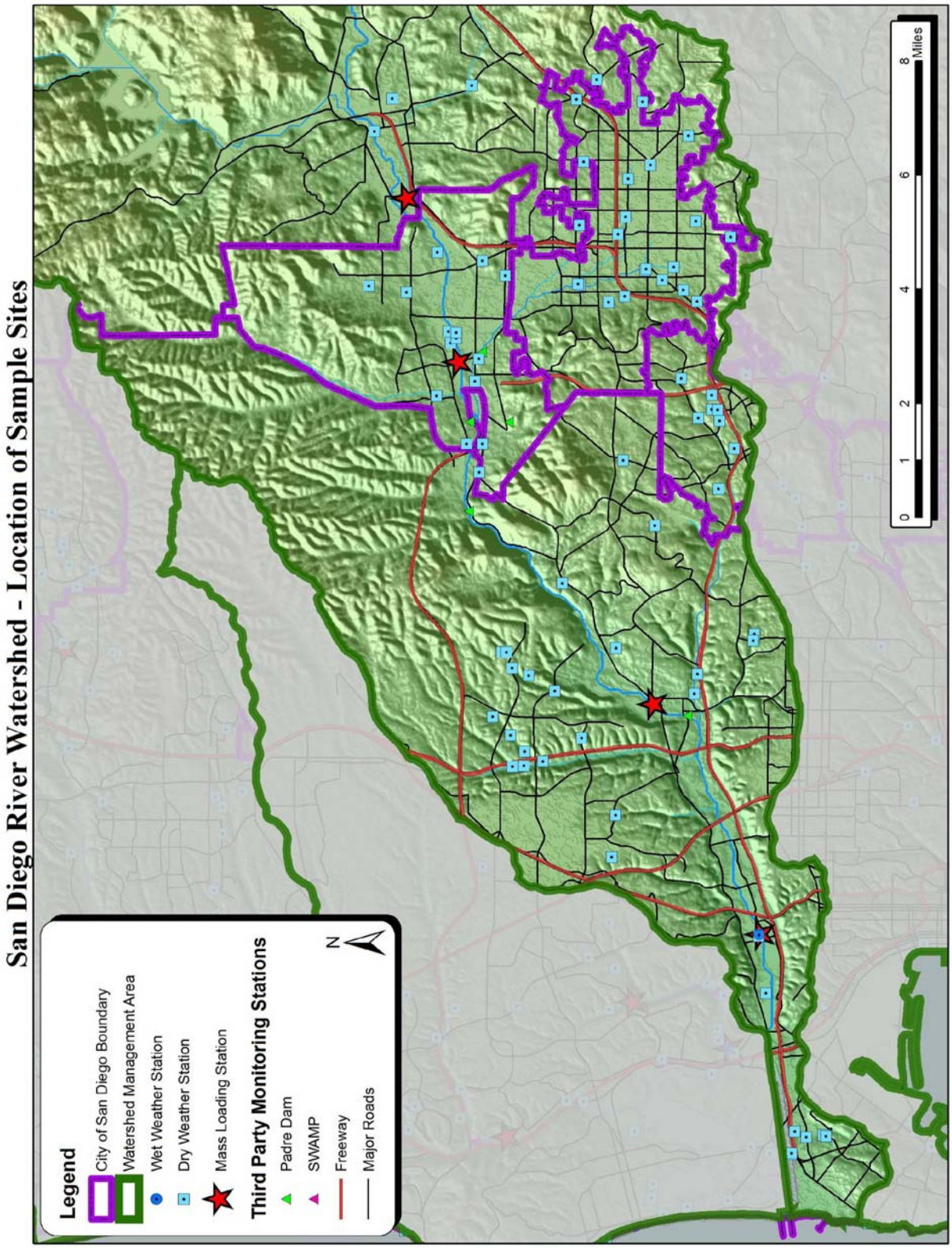

Los Penasquitos Watershed Prioritization - Identified BMP Priority Sectors
Legend
City of San Diego
Priority Sectors
Sector 1
Sector 2
StormDrains
Freeway
Major Roads
Streams
Land Use (2006)
Agriculture
Commercial
Commercial Recreation
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
N
Sector 2
Sector 1
Los Penasquitos
0
1
2
4
Miles

Map 2.38

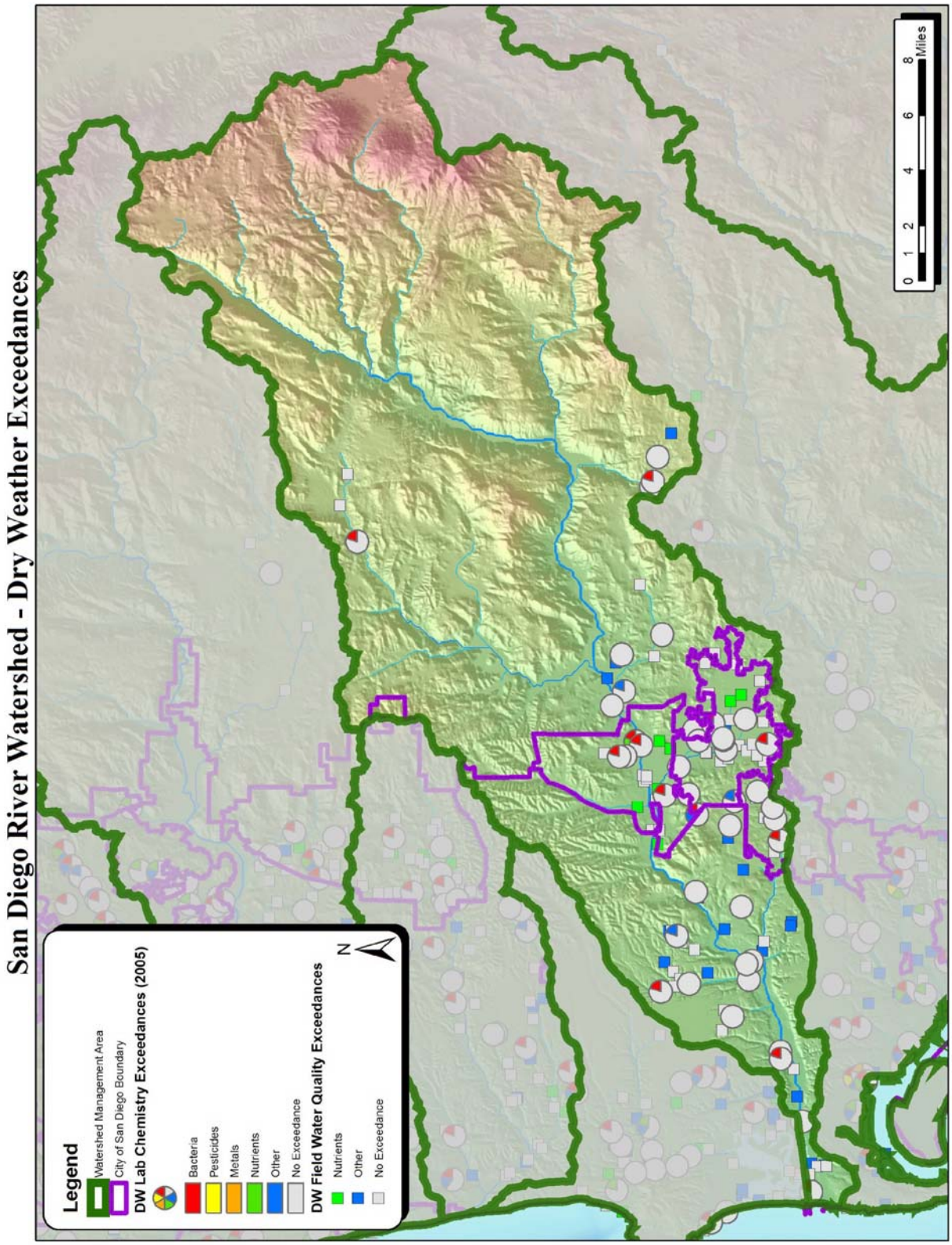
San Diego River Watershed

STEP 1: IDENTIFY AND ASSESS THE PRIORITY WATER QUALITY PROBLEMS USING THE FOLLOWING TOOLS




San Diego River Watershed - Location of Sample Sites
Legend
City of San Diego Boundary
Watershed Management Area
Wet Weather Station
Dry Weather Station
Mass Loading Station
Third Party Monitoring Stations
Padre Dam
SWAMP
Freeway
Major Roads
N
0
1
2
4
6
8
Miles

Map 2.39


San Diego River Watershed - Dry Weather Exceedances
Legend
Watershed Management Area
City of San Diego Boundary
DW Lab Chemistry Exceedances (2005)
Bacteria
Pesticides
Metals
Nutrients
Other
No Exceedance
DW Field Water Quality Exceedances
Nutrients
Other
No Exceedance
N
0 1 2 4 6 8
Miles

Map 2.40

Updated Water Quality Priority Ratings for the San Diego River WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacterial/ Pathogens	Benthic Alterations	Toxicity
San Diego River WMA	**100%**	***D***	***B***	***D***	***D***	***B***	***C***	***C***	***C***	***A***	***A***	***D***
Lower San Diego HA (907.10)	40%	*D*	*A*	*D*	*D*	*B*	*C*	*A*	*A*	*A*	*A*	*D*
San Vicente HA (907.20)	17%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*D*	*C*	*B*	*D*
El Capitan HA (907.30)	20%	*D*	*B*	*D*	*D*	*C*	*B*	*D*	*D*	*B*	*B*	*D*
Boulder Creek HA (907.40)	23%	*D*	*C*	*D*	*D*	*A*	*B*	*D*	*D*	*B*	*B*	*D*
Frequency of Occurrence Rating High[1]						♦♦♦				♦♦♦		
Constituents of Concern						Turbidity				Total Coliform Fecal Coliform		

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

* = *Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

** = *Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

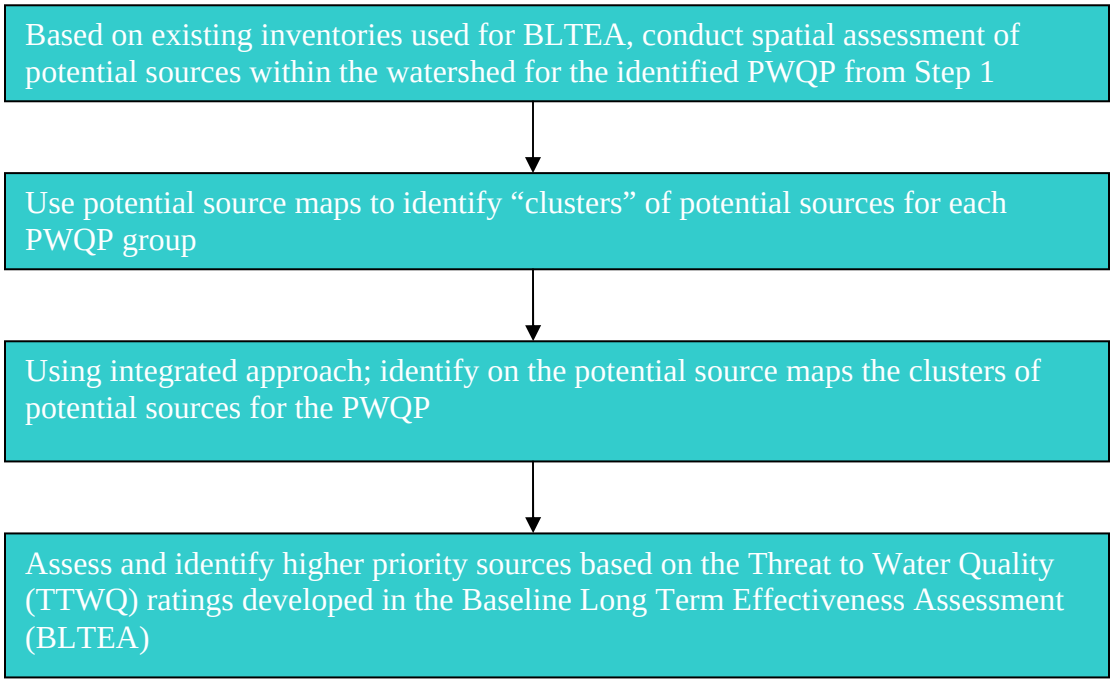
303d listing

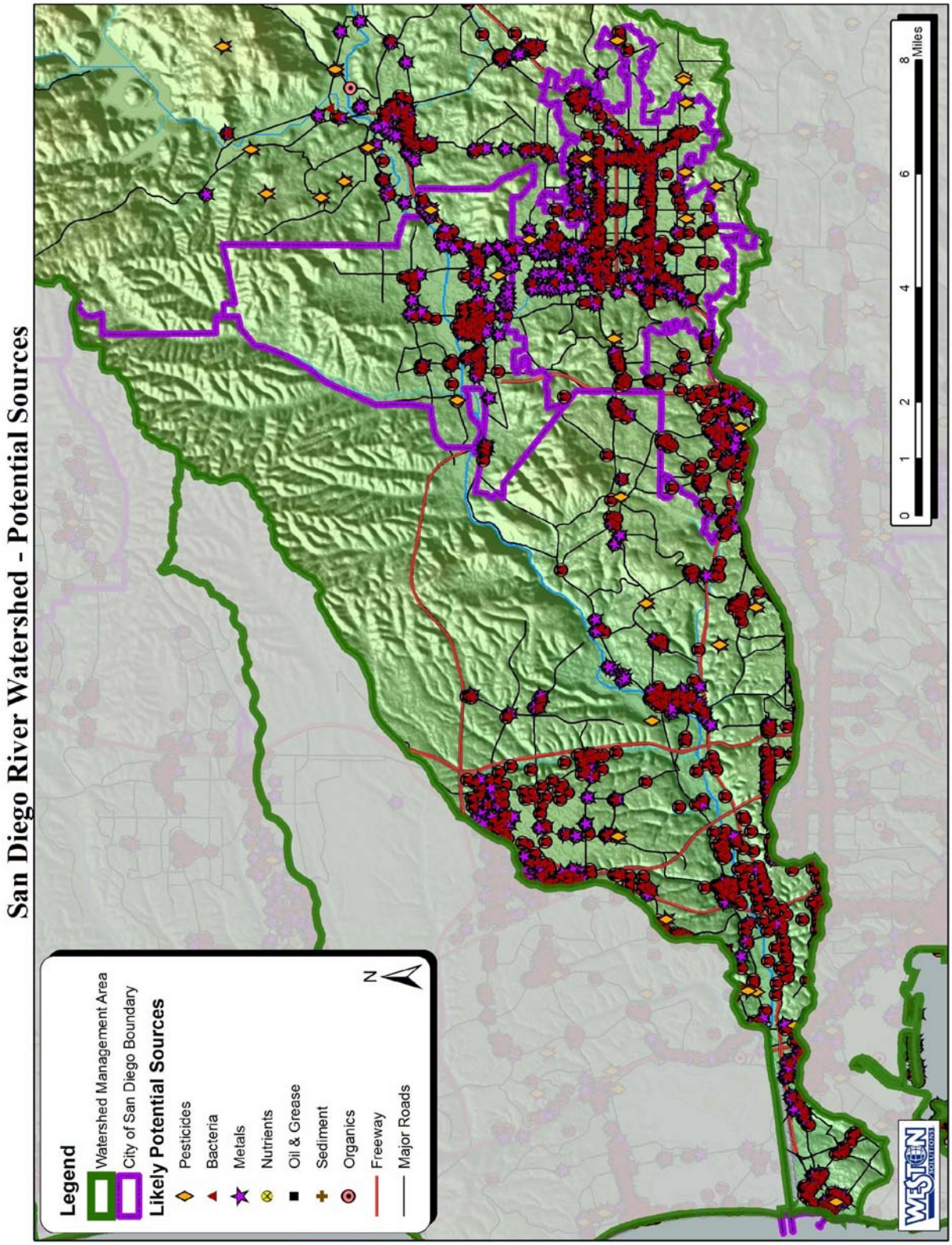
OUTCOMES OF STEP 1
IDENTIFY PRIORITY WATER QUALITY PROBLEMS AND DATA GAPS
SAN DIEGO RIVER WATERSHED

- Identify Priority Water Quality Problems (PWQP) for the watershed and to the extent possible high PWQPs on a sub-watershed basis: For the San Diego River Watershed Management Area – Lower San Diego River Sub-Watershed the PWQP are:
    - Bacteria
    - Gross Pollutants (Trash)
    - Nutrients
    - Sediment
    - Total Dissolved Solids (TDS)
    - Benthic Alterations
- Identify data gaps exist in the data and use this list to develop scope of priority studies: The data gaps for the San Diego River watershed include:
    - Design storm determination through pollutograph development for the PWQP
    - Investigate anthropogenic sources of bacteria load and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
    - Investigate nutrient exceedances trends, loading and potential to verify the priority of this PWQP which is included in the 303d list.
    - Investigate anthropogenic sources of sediment load in San Diego River that result in frequent exceedances of turbidity and determine the loading on a sub-watershed basis to verify the priority sectors.
    - Investigate the sources of the total dissolved solids exceedances.
    - Development of an overall mass balance loading estimate for all sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

- Use INTEGRATED APPROACH to develop priority activities – consider all PWQP in BMP prioritization

STEP 2: IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES




San Diego River Watershed - Potential Sources
Legend
Watershed Management Area
City of San Diego Boundary
Likely Potential Sources
Pesticides
Bacteria
Metals
Nutrients
Oil & Grease
Sediment
Organics
Freeway
Major Roads
N
0
1
2
4
6
8
Miles

Map 2.41

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego River

Bacteria		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
10	Eating or drinking establishments	1908		L	T1	X		X	
17	Animal Facilities	60		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	45		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	11		L	T1	X		X	
33	POTWs (water and wastewater)	4		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
34	Sites for disposing and treating sewage sludge	-		L	T1	X		X	
19	Development subject to SUSMPs	79		UK	T1	X	X		
32	Motor Freight	37		UK	T1	X	X		
30	Automobile wholesale	5		UK	T1	X	X		
16	Marinas	2		UK	T1	X	X		
29	Active or closed municipal landfills	1		UK	T1	X	X		
7	Auto parking lots and storage facilities	-		UK	T1	X	X		
9	Pest Control Services	38		UK	T1	X	X		
22	Flood management projects and flood control devices	-		UK	T1	X	X		
23	MS4s	-		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	UL	T5	X		X	
20	Construction Sites	1410		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	452		UL	T5	X		X	
27	Fabricated metal	64		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	61		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	48		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	18		UL	T5	X		X	
26	Chemical and allied products	12		UL	T5	X		X	
28	Primary metal	8		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	6		UL	T5	X		X	
24	Corporate yards (incl. maintenance/storage yards)	5		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	59		UL	T5	X		X	
8	Retail or wholesale fueling	160		N	T6				X
31	Airfields	2		N	T6				X
15	Pool and Fountain cleaning	46		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego River

Gross Pollutants		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	L	T1	X		X	
10	Eating or drinking establishments	1908		L	T1	X		X	
20	Construction Sites	1410		L	T1	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	452		L	T1	X		X	
5	Automobile and other vehicle body repair and painting	61		L	T1	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	48		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	11		L	T1	X		X	
30	Automobile wholesale	5		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
8	Retail or wholesale fueling	160		UK	T1	X	X		
19	Development subject to SUSMPs	79		UK	T1	X	X		
27	Fabricated metal	64		UK	T1	X	X		
17	Animal Facilities	60		UK	T1	X	X		
13	Botanical or zoological gardens and nurseries/greenhouses	45		UK	T1	X	X		
32	Motor Freight	37		UK	T1	X	X		
2	Airplane mechanical repair, maintenance, fueling, or cleaning	18		UK	T1	X	X		
26	Chemical and allied products	12		UK	T1	X	X		
28	Primary metal	8		UK	T1	X	X		
3	Boat mechanical repair, maintenance, fueling, or cleaning	6		UK	T1	X	X		
24	Corporate yards (incl. maintenance/storage yards)	5		UK	T1	X	X		
33	POTWs (water and wastewater)	4		UK	T1	X	X		
16	Marinas	2		UK	T1	X	X		
31	Airfields	2		UK	T1	X	X		
29	Active or closed municipal landfills	1		UK	T1	X	X		
7	Auto parking lots and storage facilities	-		UK	T1	X	X		
9	Pest Control Services	38		UK	T1	X	X		
15	Pool and Fountain cleaning	46		UK	T1	X	X		
18	Home automobile associated activities, home and garden care activities, waste disposal	-		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T1	X	X		
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	59		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego River

Nutrients		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
17	Animal Facilities	60	B	L	T2	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	45		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	11		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
25	Park and Recreational facilities	-		L	T2	X		X	
10	Eating or drinking establishments	1908		UK	T2	X	X		
1	Auto mechanical repair, maintenance, fueling, or cleaning	452		UK	T2	X	X		
19	Development subject to SUSMPs	79		UK	T2	X	X		
27	Fabricated metal	64		UK	T2	X	X		
4	Equipment mechanical repair, maintenance, fueling, or cleaning	48		UK	T2	X	X		
32	Motor Freight	37		UK	T2	X	X		
2	Airplane mechanical repair, maintenance, fueling, or cleaning	18		UK	T2	X	X		
26	Chemical and allied products	12		UK	T2	X	X		
28	Primary metal	8		UK	T2	X	X		
24	Corporate yards (incl. maintenance/storage yards)	5		UK	T2	X	X		
30	Automobile wholesale	5		UK	T2	X	X		
33	POTWs (water and wastewater)	4		UK	T2	X	X		
16	Marinas	2		UK	T2	X	X		
31	Airfields	2		UK	T2	X	X		
29	Active or closed municipal landfills	1		UK	T2	X	X		
7	Auto parking lots and storage facilities	-		UK	T2	X	X		
11	Mobile carpet, drape, or furniture cleaning	59		UK	T2	X	X		
15	Pool and Fountain cleaning	46		UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	1410		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	61		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	6		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
8	Retail or wholesale fueling	160		N	T6				X
9	Pest Control Services	38		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego River

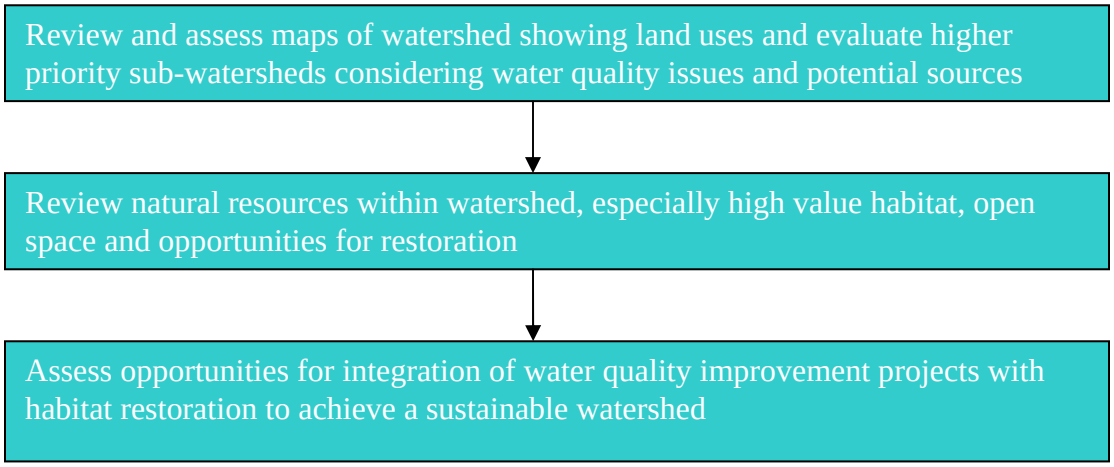
Sediment		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		L	T1	X		X	
20	Construction Sites	1410		L	T1	X		X	
17	Animal Facilities	60		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	45		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	11		L	T1	X		X	
24	Corporate yards (incl. maintenance/storage yards)	5		L	T1	X		X	
30	Automobile wholesale	5		L	T1	X		X	
6	Mobile automobile or vehicle washing	-		L	T1	X		X	
7	Auto parking lots and storage facilities	-		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
22	Flood management projects and flood control devices	-		L	T1	X		X	
23	MS4s	-		L	T1	X		X	
8	Retail or wholesale fueling	160		UK	T1	X	X		
19	Development subject to SUSMPs	79		UK	T1	X	X		
27	Fabricated metal	64		UK	T1	X	X		
32	Motor Freight	37		UK	T1	X	X		
26	Chemical and allied products	12	A	UK	T1	X	X		
28	Primary metal	8		UK	T1	X	X		
33	POTWs (water and wastewater)	4		UK	T1	X	X		
31	Airfields	2		UK	T1	X	X		
29	Active or closed municipal landfills	1		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T1	X	X		
10	Eating or drinking establishments	1908		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	452		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	61		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	48		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	18		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	6		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	59		UL	T5	X		X	
16	Marinas	2		N	T6				X
9	Pest Control Services	38		N	T6				X
15	Pool and Fountain cleaning	46		N	T6				X

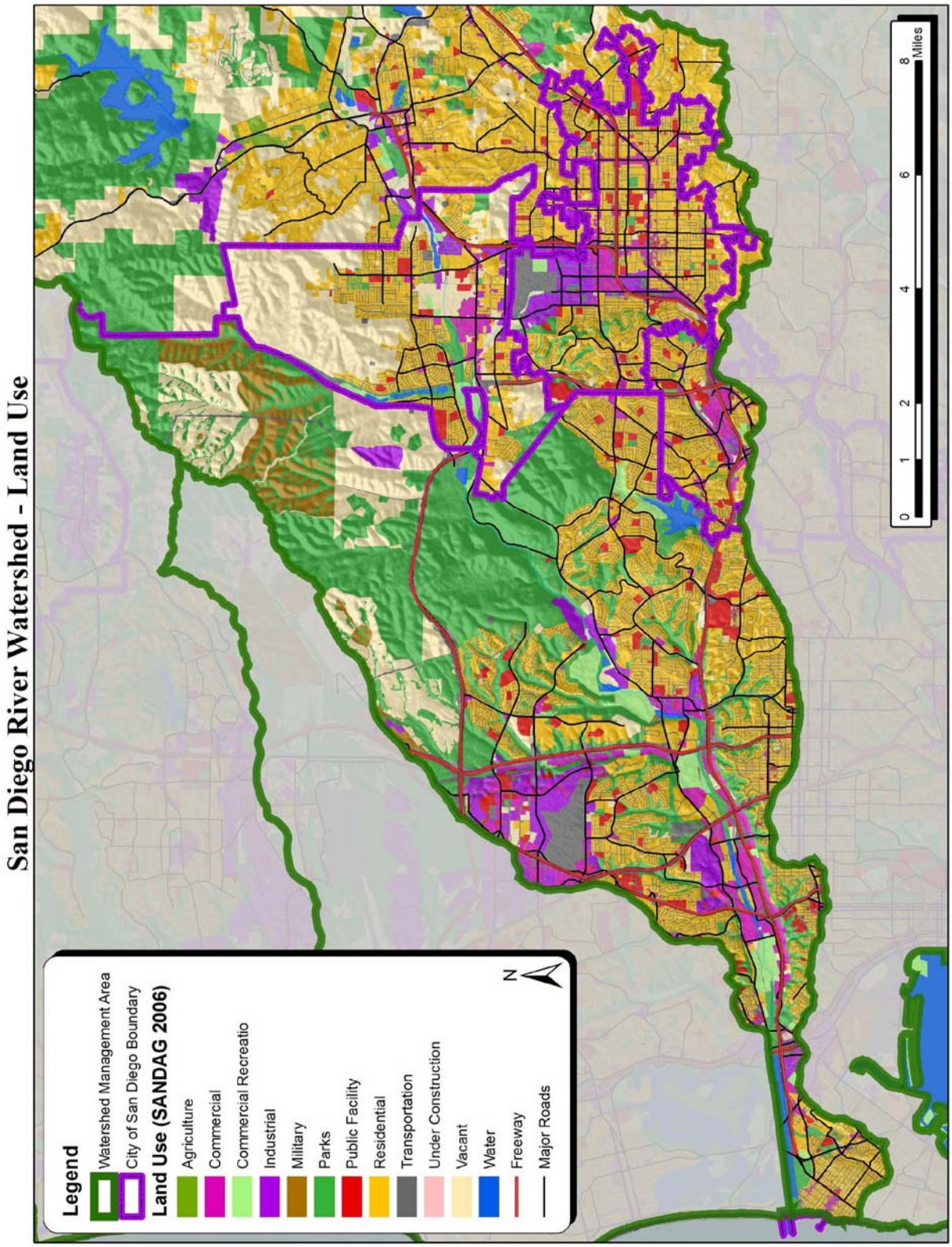
NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

OUTCOMES OF STEP 2
IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES
SAN DIEGO RIVER WATERSHED

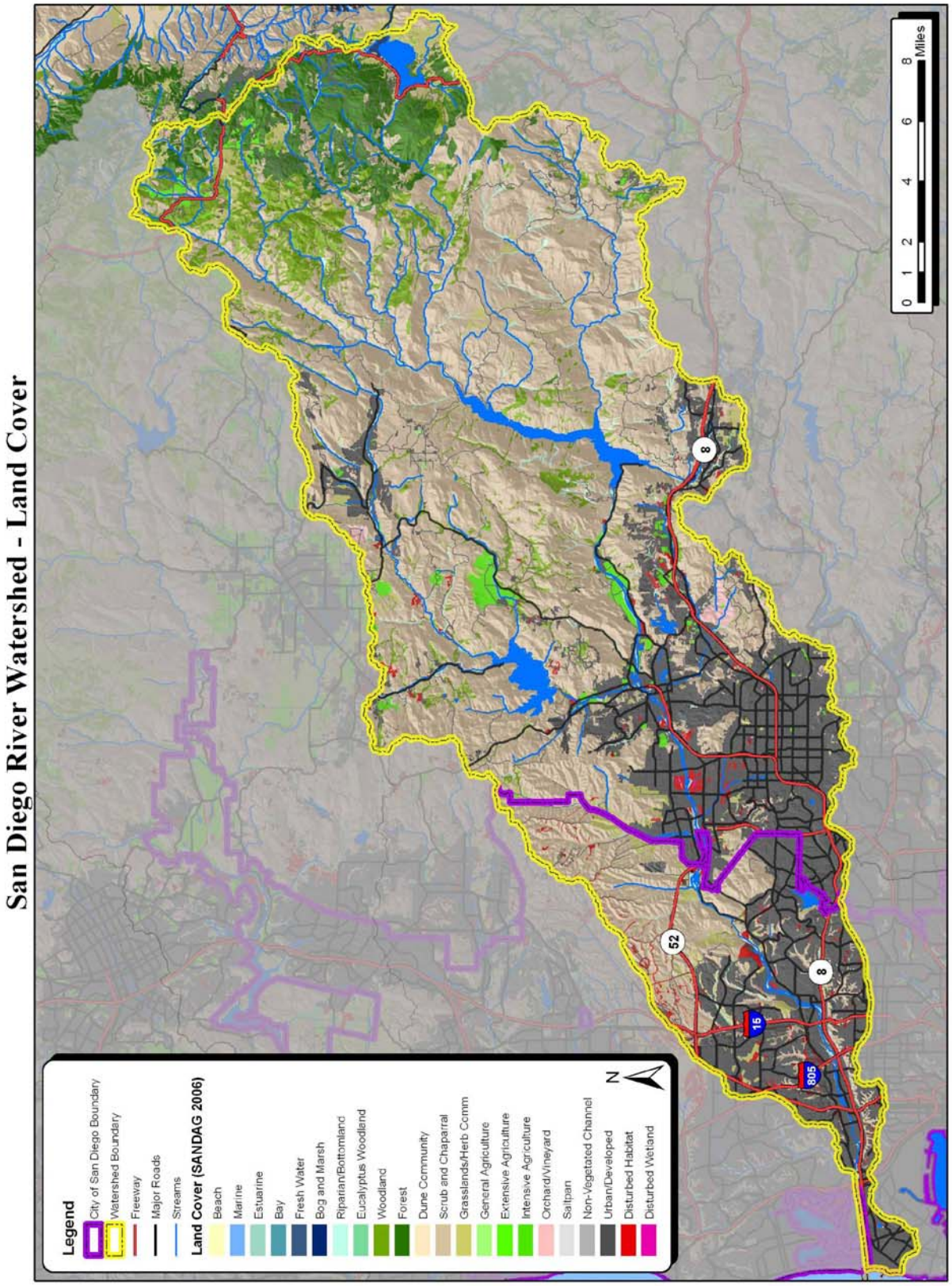
- Identify the higher rated sources based on BLTEA TTWQ for each PWQP – See Maps
- Identify potential higher priority areas based on "clustering" of high priority sources
- Use INTEGRATED approach and identify areas of higher clusters of sources for multiple PWQP
    - Eating and Drinking Establishments
    - Residential Areas and Activities
    - Commercial Landscaping
    - Animal Related Facilities
    - Golf Courses, Parks and Recreational Activities
    - Municipal Facilities and Activities
    - Auto Related Facilities
    - Roads, streets, Highways and parking Facilities
    - Construction Sites
- Identify data gaps in inventory of sources
    - Source Data and Update Inventory
    - Identify residential and roadway sources that are not included in source inventory list

STEP 3: IDENTIFY AND ASSESS LAND USE AND RESTORATION OPPORTUNITIES




San Diego River Watershed - Land Use
Legend
Watershed Management Area
City of San Diego Boundary
Land Use (SANDAG 2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Freeway
Major Roads
N
0
1
2
4
6
8
Miles

Map 2.42

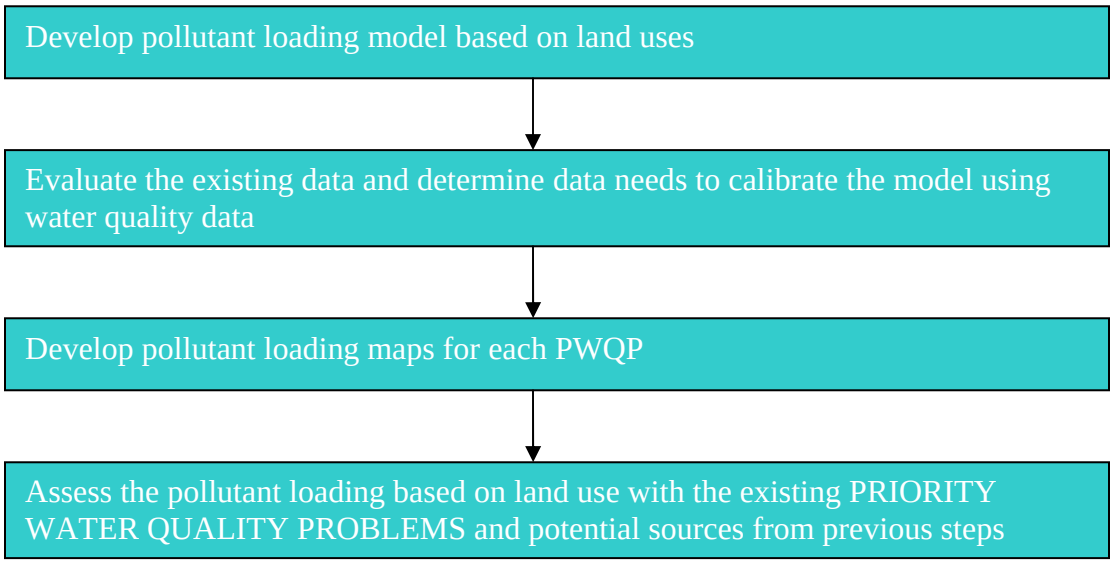

San Diego River Watershed - Land Cover
Legend
City of San Diego Boundary
Watershed Boundary
Freeway
Major Roads
Streams
Land Cover (SANDAG 2006)
Beach
Marine
Estuarine
Bay
Fresh Water
Bog and Marsh
Riparian/Bottomland
Eucalyptus Woodland
Woodland
Forest
Dune Community
Scrub and Chaparral
Grasslands/Herb Comm
General Agriculture
Extensive Agriculture
Intensive Agriculture
Orchard/Vineyard
Saltpan
Non-Vegetated Channel
Urban/Developed
Disturbed Habitat
Disturbed Wetland
N
0 1 2 4 6 8 Miles
8
52
8
15
805

Map 2.43

OUTCOMES OF STEP 3
IDENTIFY LAND USES AND NATURAL RESOURCES TO INTEGRATE WITH WATER QUALITY IMPROVEMENT PROJECTS
SAN DIEGO RIVER

- Identify land uses and higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps which will be used to estimate pollutant loading – See Map 2.42
- Identify natural resources within watershed. This information will be later used to identify opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed – See Map 2.43

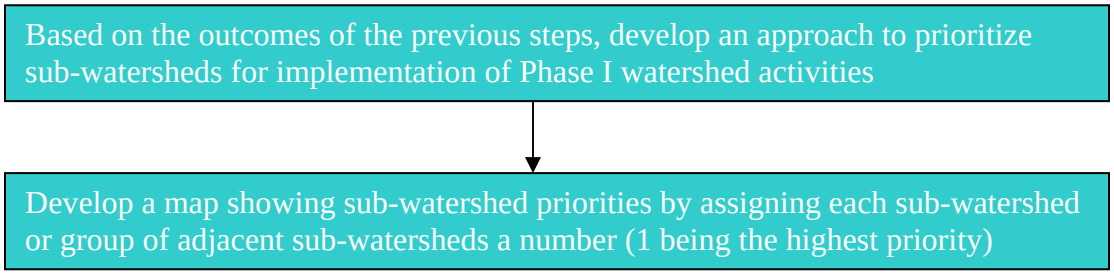
STEP 4: DETERMINE SUB-WATERSHED POLLUTANT LOADING

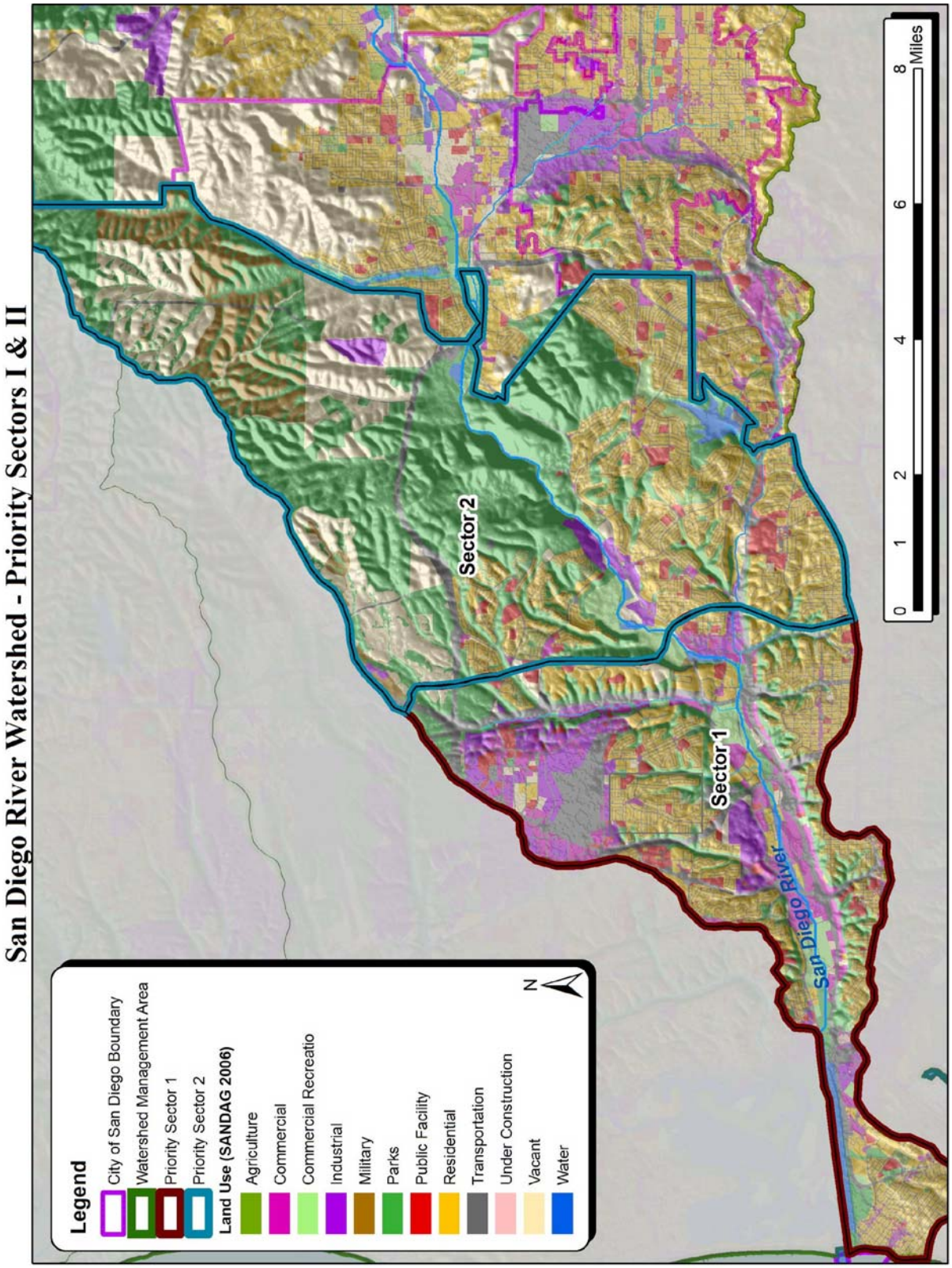


OUTCOMES OF STEP 4
IDENTIFY SUB-WATERSHED POLLUTANT LOADING POTENTIAL AND DATA GAPS
SAN DIEGO RIVER WATERSHED

- Identify sub-watershed with higher pollutant loading using land use data – See Maps
- Identify the data gaps to calibrate and verify the loading using water quality data
    - Source Data
    - Update Inventory of Source Data
    - Calibrate Model to Actual Water Quality data (Need to Add Sub-Watershed Data)
- Identify the sub-watersheds that have the greatest priority based on the pollutant loading and the Priority Water Quality Problems and potential sources from previous steps –See Maps

STEP 5: IDENTIFY HIGH PRIORITY SUB-WATERSHEDS FOR WATERSHED ACTIVITIES

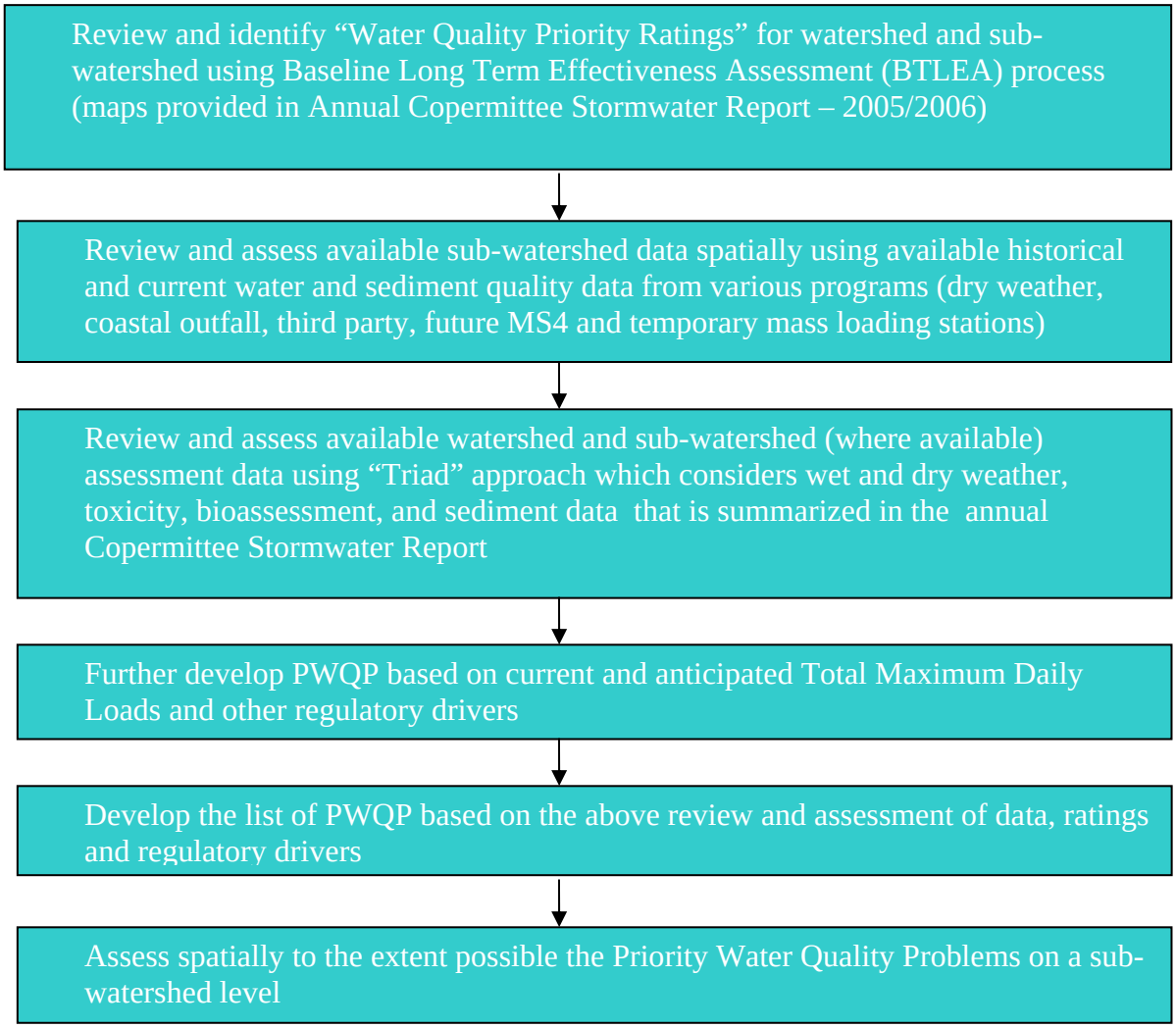


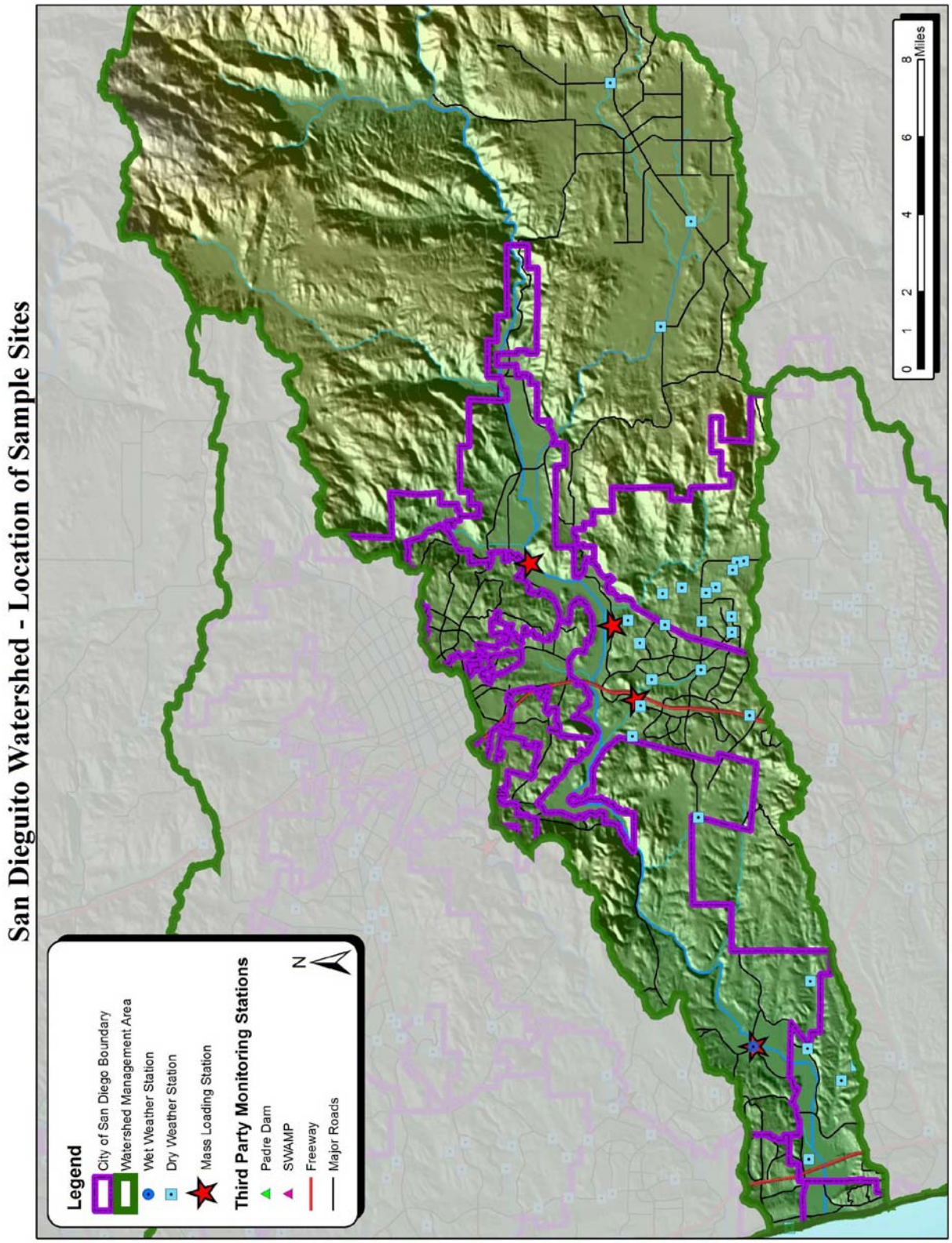

San Diego River Watershed - Priority Sectors I & II
Legend
City of San Diego Boundary
Watershed Management Area
Priority Sector 1
Priority Sector 2
Land Use (SANDAG 2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
N
Sector 2
Sector 1
San Diego River
0
1
2
4
6
8
Miles

Map 2.44

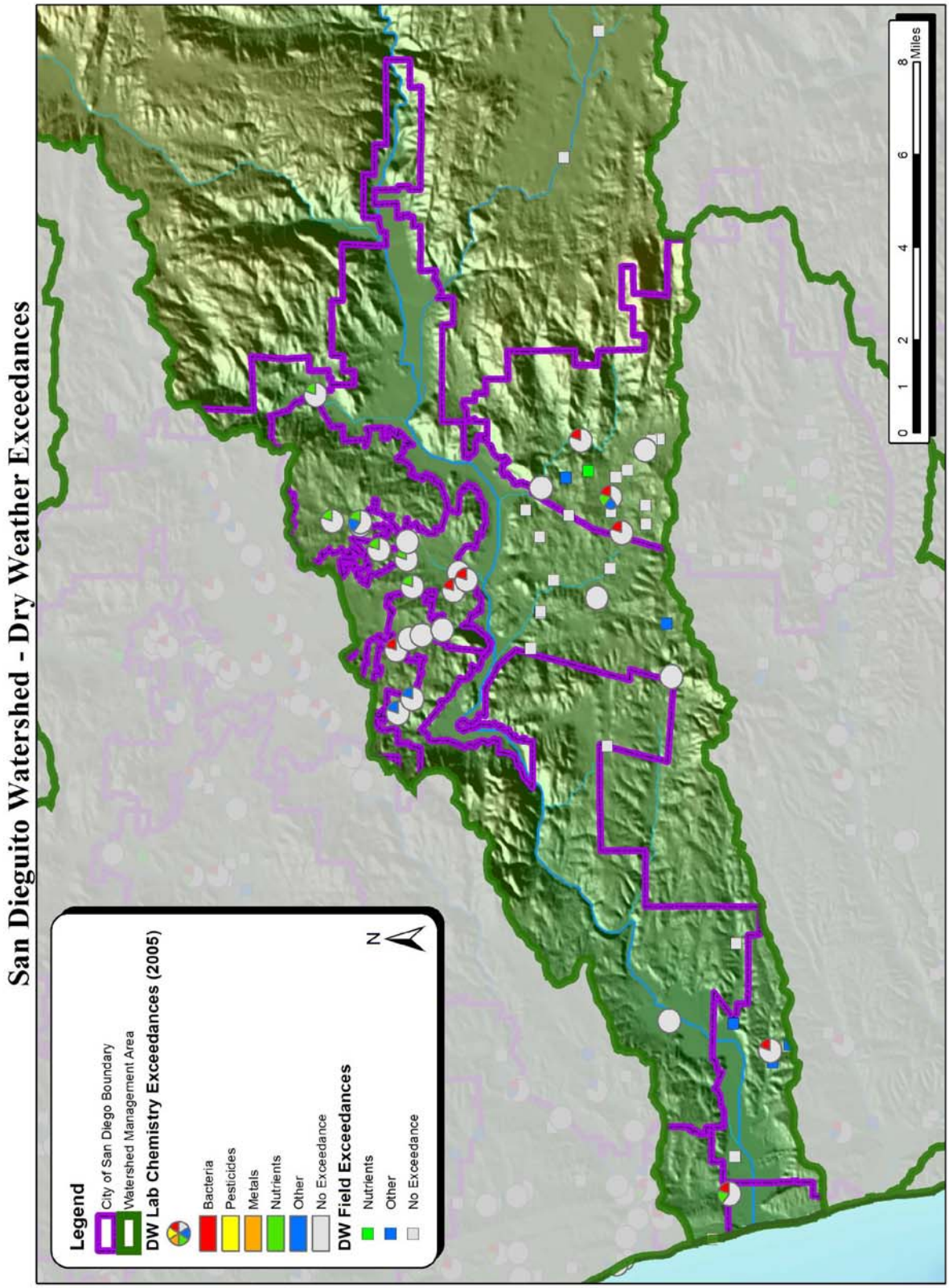
San Dieguito Watershed

STEP 1: IDENTIFY AND ASSESS THE PRIORITY WATER QUALITY PROBLEMS USING THE FOLLOWING TOOLS




San Dieguito Watershed - Location of Sample Sites
Legend
City of San Diego Boundary
Watershed Management Area
Wet Weather Station
Dry Weather Station
Mass Loading Station
Third Party Monitoring Stations
Padre Dam
SWAMP
Freeway
Major Roads
N
0 1 2 4 6 8
Miles

Map 2.45


San Dieguito Watershed - Dry Weather Exceedances
Legend
City of San Diego Boundary
Watershed Management Area
DW Lab Chemistry Exceedances (2005)
Bacteria
Pesticides
Metals
Nutrients
Other
No Exceedance
DW Field Exceedances
Nutrients
Other
No Exceedance
N
0
1
2
4
6
8
Miles

Map 2.46

Updated Water Quality Priority Ratings for the San Dieguito River WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
San Dieguito River WMA	**100%**	***D***	***B***	***D***	***D***	***C***	***D***	***C***	***B***	***B***	***B***	***B***
Solana Beach HA (905.10)	13%	*D*	*A*	*D*	*D*	*C*	*D*	*D*	*C*	*A*	*B*	*C*
Hodges HA (905.20)	14%	*D*	*A*	*D*	*D*	*C*	*D*	*A*	*D*	*C*	*B*	*B*
San Pasqual HA (905.30)	20%	*D*	*A*	*D*	*D*	*C*	*D*	*A*	*D*	*C*	*B*	*C*
Santa Maria Valley HA (905.40)	17%	*D*	*B*	*D*	*D*	*C*	*D*	*C*	*C*	*B*	*B*	*B*
Santa Ysabel HA (905.50)	37%	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*A*	*B*	*B*	*B*
Frequency of Occurrence Rating High[1]			♦♦♦									
Constituents of Concern			TDS									

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

* = *Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

** = *Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

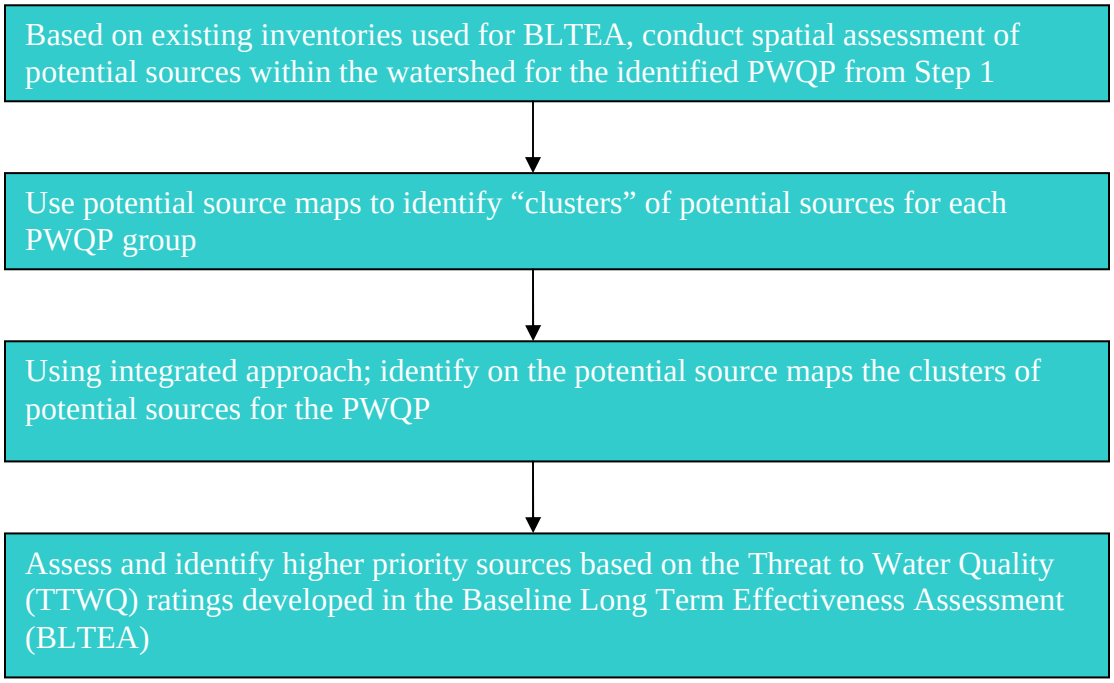
303d listing

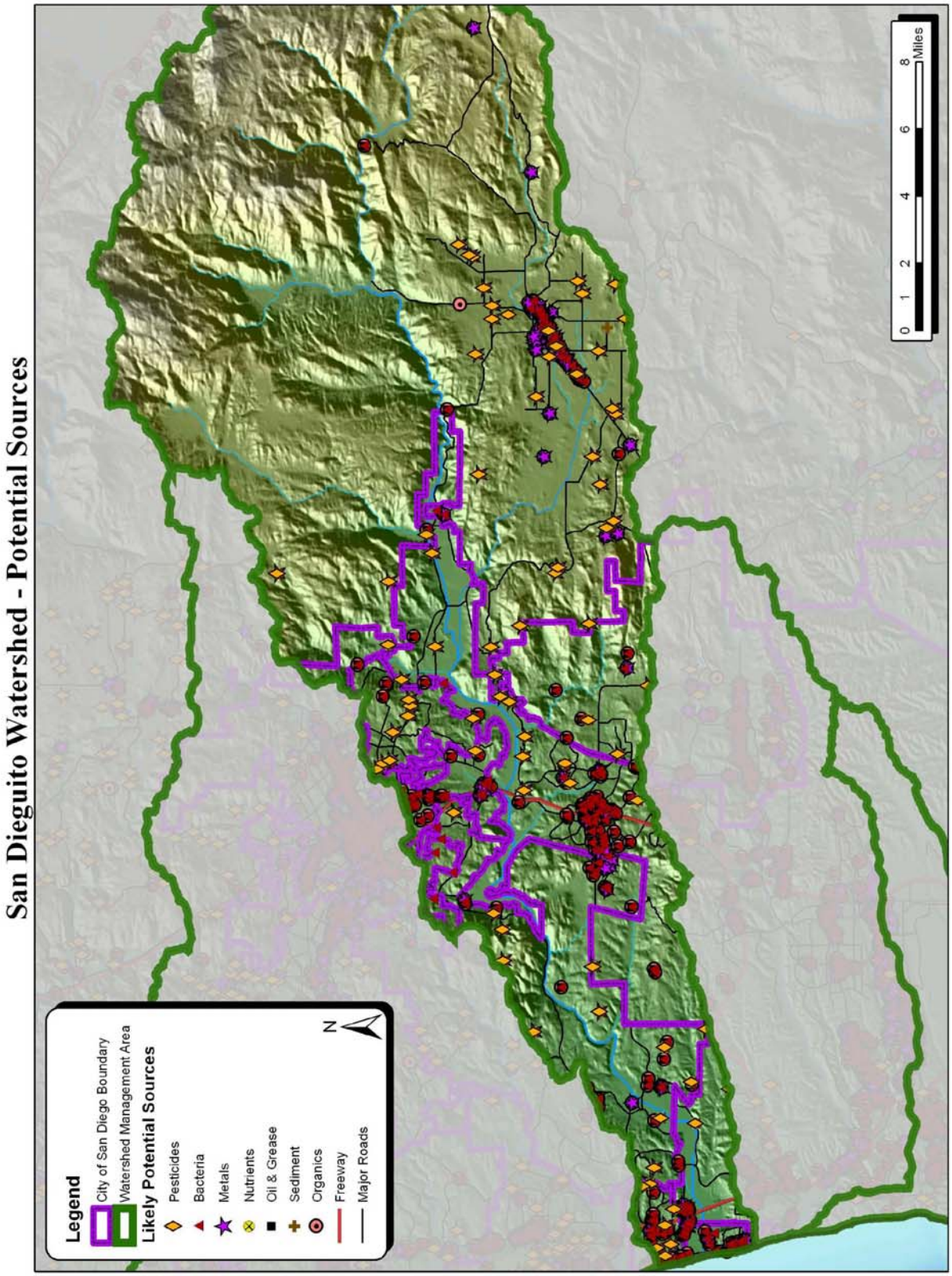
OUTCOMES OF STEP 1
IDENTIFY PRIORITY WATER QUALITY PROBLEMS AND DATA GAPS
SAN DIEGUITO WATERSHED

- Identify Priority Water Quality Problems (PWQP) for the watershed and to the extent possible high PWQPs on a sub-watershed basis: The PWQP for the San Dieguito Watershed are:
    - Bacteria
    - Nutrients
    - Total Dissolved Solids
- Identify data gaps that exist in the data and use this list to develop scope of priority studies
    - Design Storm Determination through pollutograph development for the PWQP
    - Investigate anthropogenic sources of bacteria load, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
    - Assess the magnitude of bacteria re-growth within the channel.
    - Evaluation of the contribution of ponded dry weather flows and first flush phenomenon for bacteria and other constituents.
    - Investigate nutrient exceedances trends, loading and potential sources to verify the priority of this PWQP which is included in the 303d list for Lake Hodges.
    - Investigate the sources of TDS exceedances.
    - Development of an overall mass balance loading estimate for all sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

- Use INTEGRATED APPROACH to develop priority activities – consider all PWQP in BMP prioritization

STEP 2: IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES




San Dieguito Watershed - Potential Sources
Legend
City of San Diego Boundary
Watershed Management Area
Likely Potential Sources
Pesticides
Bacteria
Metals
Nutrients
Oil & Grease
Sediment
Organics
Freeway
Major Roads
N
0 1 2 4 6 8
Miles

Map 2.47

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Dieguito

Bacteria		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
10	Eating or drinking establishments	465		L	T1	X		X	
17	Animal Facilities	70		L	T1	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	68		L	T1	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	14		L	T1	X		X	
33	POTWs (water and wastewater)	14		L	T1	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T1	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T1	X		X	
34	Sites for disposing and treating sewage sludge	-		L	T1	X		X	
19	Development subject to SUSMPs	87		UK	T1	X	X		
32	Motor Freight	3		UK	T1	X	X		
29	Active or closed municipal landfills	1		UK	T1	X	X		
30	Automobile wholesale	1		UK	T1	X	X		
7	Auto parking lots and storage facilities	-		UK	T1	X	X		
9	Pest Control Services	30		UK	T1	X	X		
16	Marinas	0		UK	T1	X	X		
22	Flood management projects and flood control devices	-		UK	T1	X	X		
23	MS4s	-		UK	T1	X	X		
25	Park and Recreational facilities	-		UK	T1	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	A	UL	T5	X		X	
20	Construction Sites	925		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	65		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	5		UL	T5	X		X	
27	Fabricated metal	4		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	3		UL	T5	X		X	
26	Chemical and allied products	3		UL	T5	X		X	
24	Corporate yards (incl. maintenance/storage yards)	2		UL	T5	X		X	
28	Primary metal	2		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	47		UL	T5	X		X	
8	Retail or wholesale fueling	36		N	T6				X
31	Airfields	1		N	T6				X
15	Pool and Fountain cleaning	37		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

San Diego River

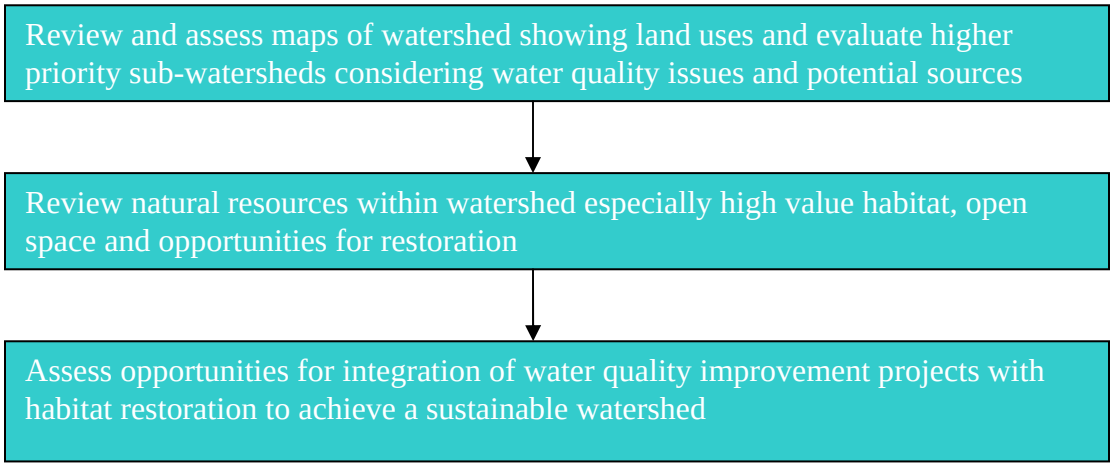
Nutrients		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
17	Animal Facilities	60	B	L	T2	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	45		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	11		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
25	Park and Recreational facilities	-		L	T2	X		X	
10	Eating or drinking establishments	1908		UK	T2	X	X		
1	Auto mechanical repair, maintenance, fueling, or cleaning	452		UK	T2	X	X		
19	Development subject to SUSMPs	79		UK	T2	X	X		
27	Fabricated metal	64		UK	T2	X	X		
4	Equipment mechanical repair, maintenance, fueling, or cleaning	48		UK	T2	X	X		
32	Motor Freight	37		UK	T2	X	X		
2	Airplane mechanical repair, maintenance, fueling, or cleaning	18		UK	T2	X	X		
26	Chemical and allied products	12		UK	T2	X	X		
28	Primary metal	8		UK	T2	X	X		
24	Corporate yards (incl. maintenance/storage yards)	5		UK	T2	X	X		
30	Automobile wholesale	5		UK	T2	X	X		
33	POTWs (water and wastewater)	4		UK	T2	X	X		
16	Marinas	2		UK	T2	X	X		
31	Airfields	2		UK	T2	X	X		
29	Active or closed municipal landfills	1		UK	T2	X	X		
7	Auto parking lots and storage facilities	-		UK	T2	X	X		
11	Mobile carpet, drape, or furniture cleaning	59		UK	T2	X	X		
15	Pool and Fountain cleaning	46		UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	1410		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	61		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	6		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
8	Retail or wholesale fueling	160		N	T6				X
9	Pest Control Services	38		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

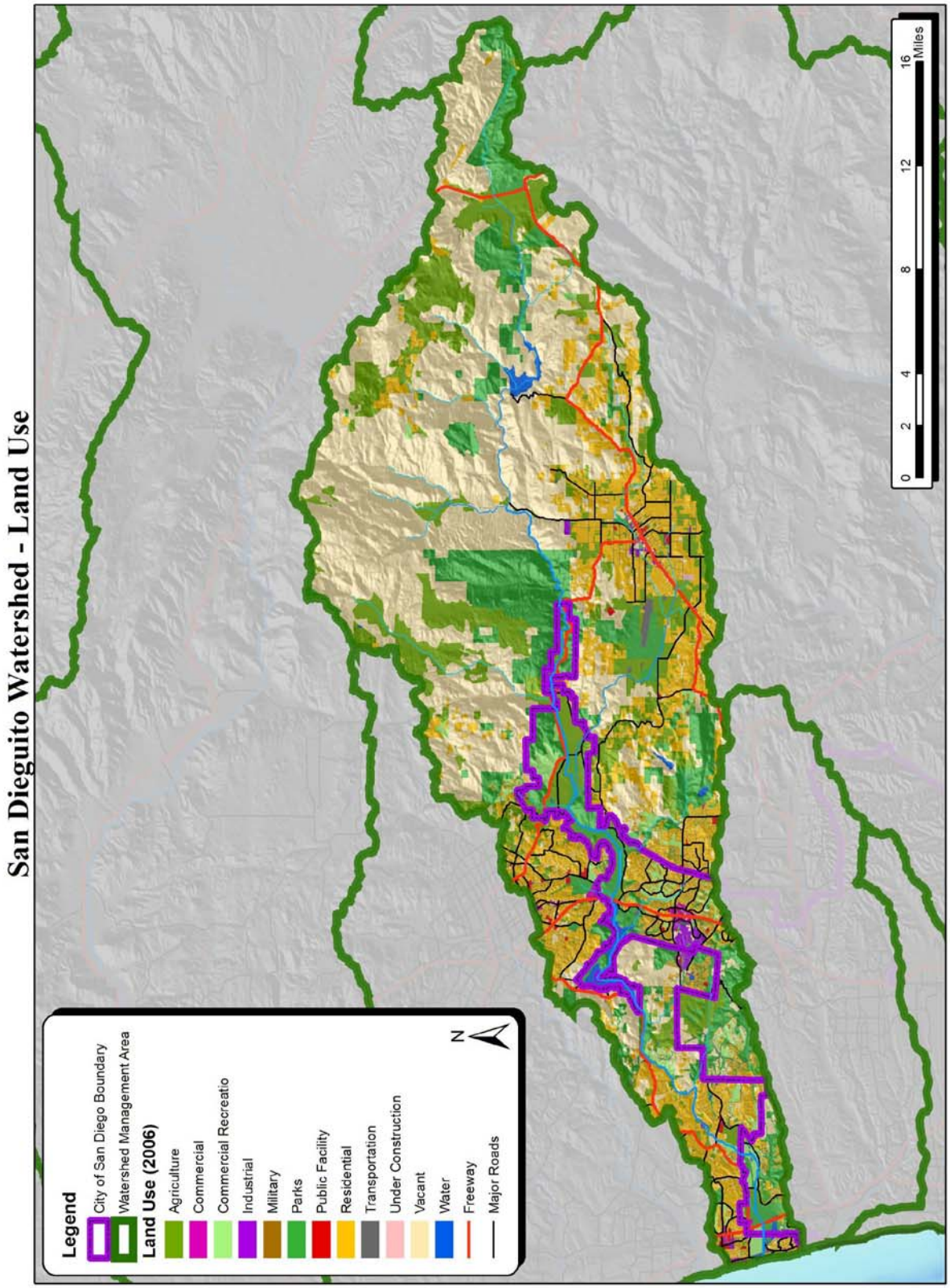
NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

OUTCOMES OF STEP 2
IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES
SAN DIEGUITO WATERSHED

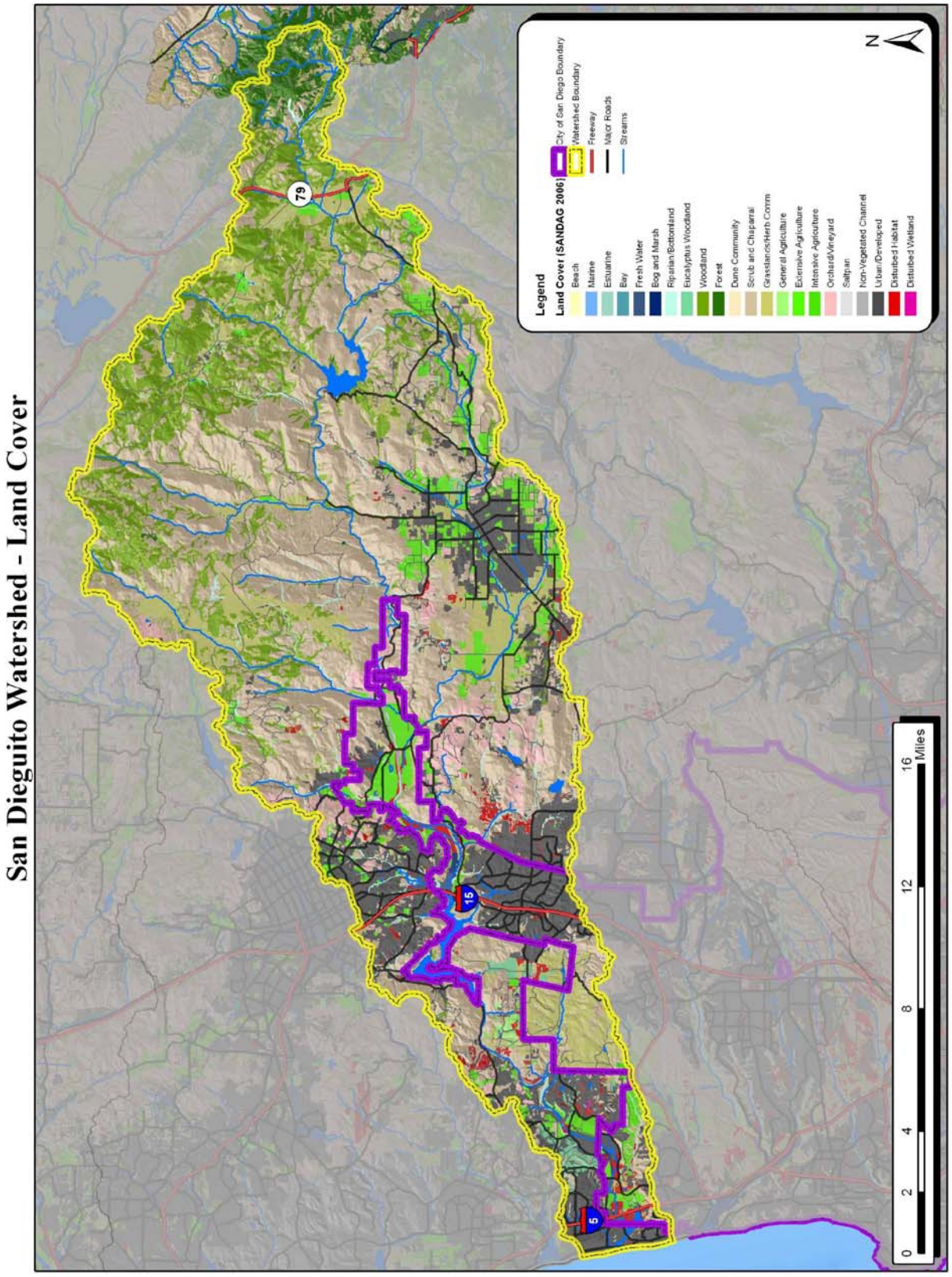
- Identify the higher rated sources based on BLTEA TTWQ for each PWQP – See Maps
- Identify potential higher priority areas based on "clustering" of high priority sources
- Use INTEGRATED approach and identify areas of higher clusters of sources for multiple PWQP
    - Eating and Drinking Establishments
    - Residential Areas and Activities
    - Commercial Landscaping
    - Animal Related Facilities
    - Golf Courses, Parks and Recreational Activities
    - Municipal Facilities and Activities
    - Auto Related Facilities
    - Roads, Streets, Highways and Parking Facilities
    - Construction Activities
- Identify data gaps in inventory of sources
    - Source Data and Update Inventory
    - Identify residential and roadway sources that are not included in source inventory list

STEP 3: IDENTIFY AND ASSESS LAND USE AND RESTORATION OPPORTUNITIES




San Dieguito Watershed - Land Use
Legend
City of San Diego Boundary
Watershed Management Area
Land Use (2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Freeway
Major Roads
N
0
2
4
8
12
16
Miles

Map 2.48

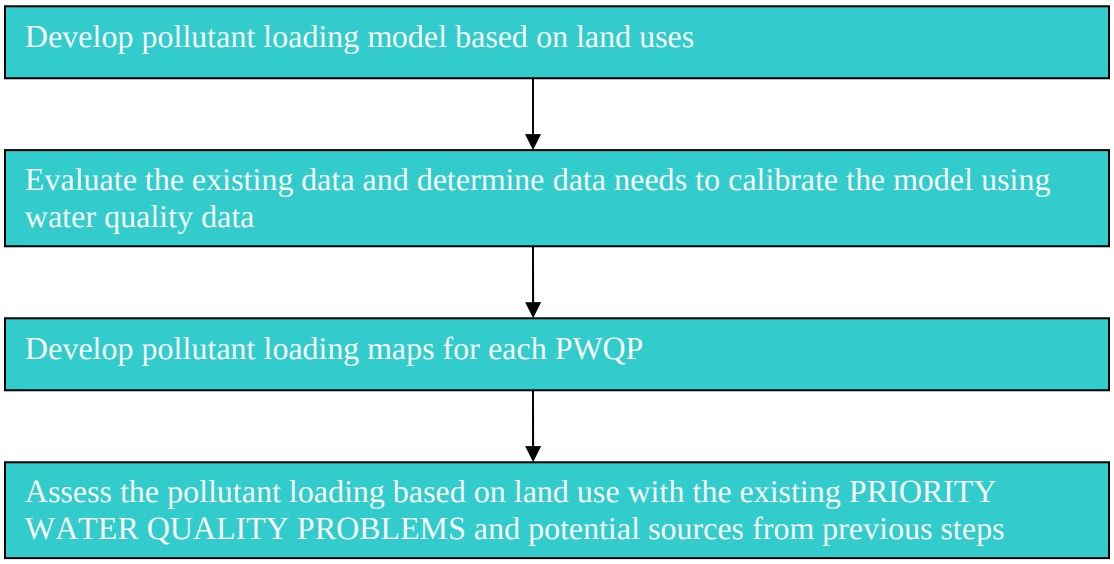

San Dieguito Watershed - Land Cover
Legend
Land Cover (SANDAG 2006)
City of San Diego Boundary
Watershed Boundary
Freeway
Major Roads
Streams
Beach
Marine
Estuarine
Bay
Fresh Water
Bog and Marsh
Riparian/Bottomland
Eucalyptus Woodland
Woodland
Forest
Dune Community
Scrub and Chaparral
Grasslands/Herb Comm
General Agriculture
Extensive Agriculture
Intensive Agriculture
Orchard/Vineyard
Saltpan
Non-Vegetated Channel
Urban/Developed
Disturbed Habitat
Disturbed Wetland
N
0
2
4
8
12
16
Miles
79
15
5

Map 2.49

OUTCOMES OF STEP 3
IDENTIFY LAND USES AND NATURAL RESOURCES TO INTEGRATE WITH WATER QUALITY IMPROVEMENT PROJECTS
SAN DIEGUITO WATERSHED

- Identify land uses and higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps which will be used to estimate pollutant loading – See Map 2.48
- Identify natural resources within watershed. This information will be later used to identify opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed – See Map 2.49

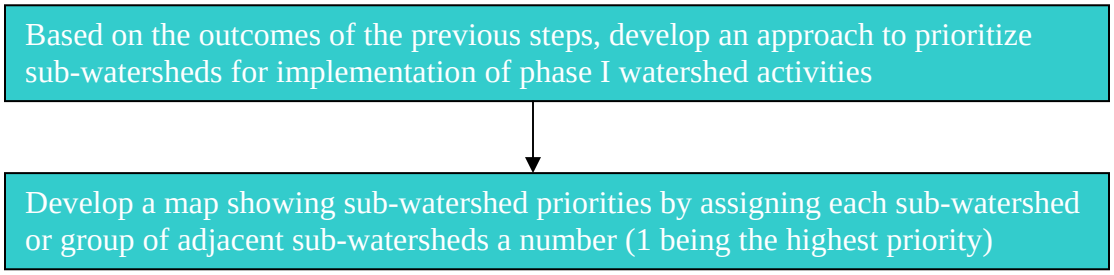
STEP 4: DETERMINE SUB-WATERSHED POLLUTANT LOADING

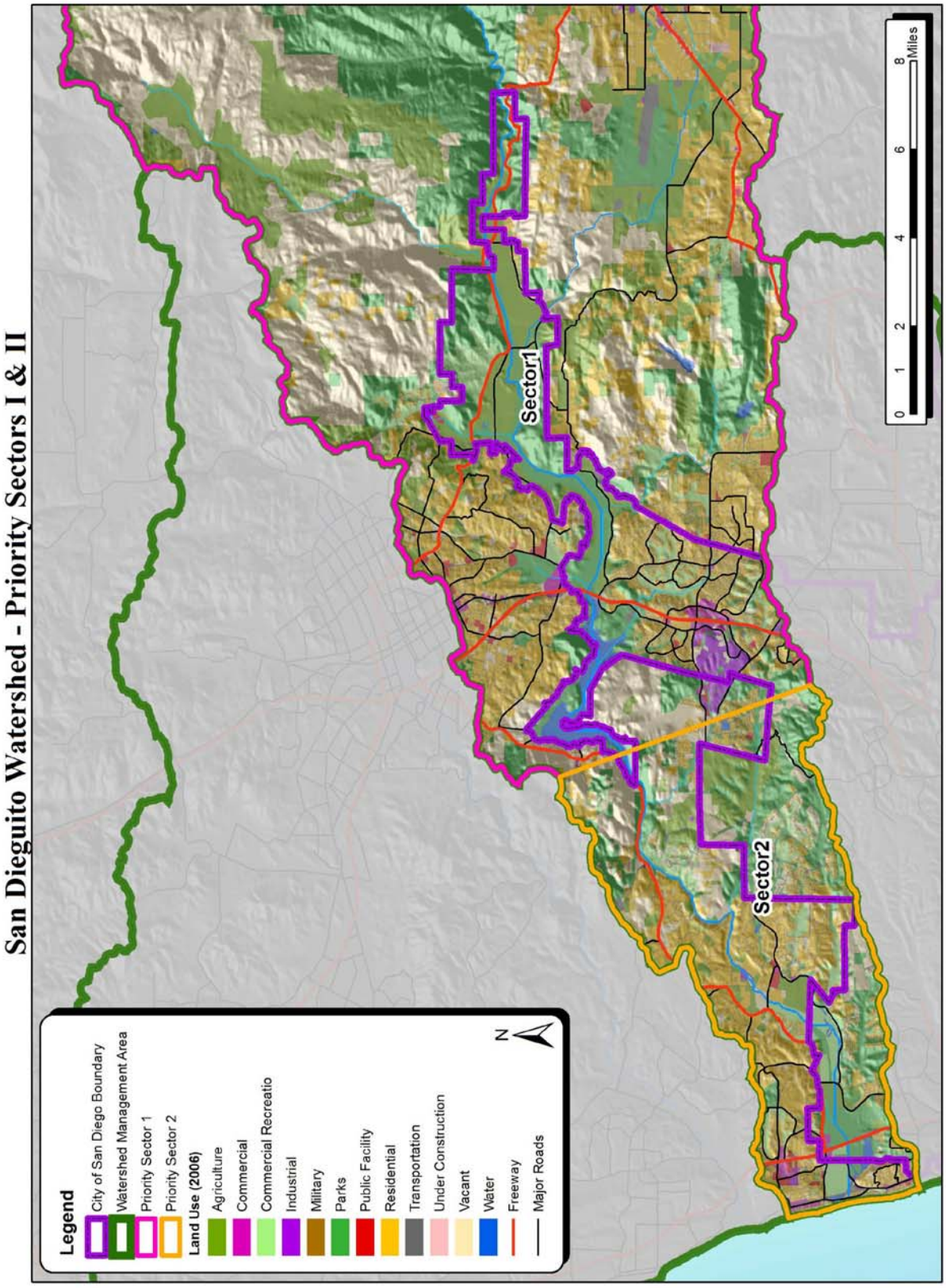


OUTCOMES OF STEP 4
IDENTIFY SUB-WATERSHED POLLUTANT LOADING POTENTIAL AND DATA GAPS
SAN DIEGUITO WATERSHED

- Identify sub-watershed with higher pollutant loading using land use data – See Maps
- Identify the data gaps to calibrate and verify the loading using water quality data
    - Source Data
    - Update Inventory of Source Data
    - Calibrate Model to Actual Water Quality data (Need to add Sub-Watershed Data)
- Identify the sub-watersheds that have the greatest priority based on the pollutant loading and the Priority Water Quality Problems and potential sources from previous steps –See Maps

STEP 5: IDENTIFY HIGH PRIORITY SUB-WATERSHEDS FOR WATERSHED ACTIVITIES

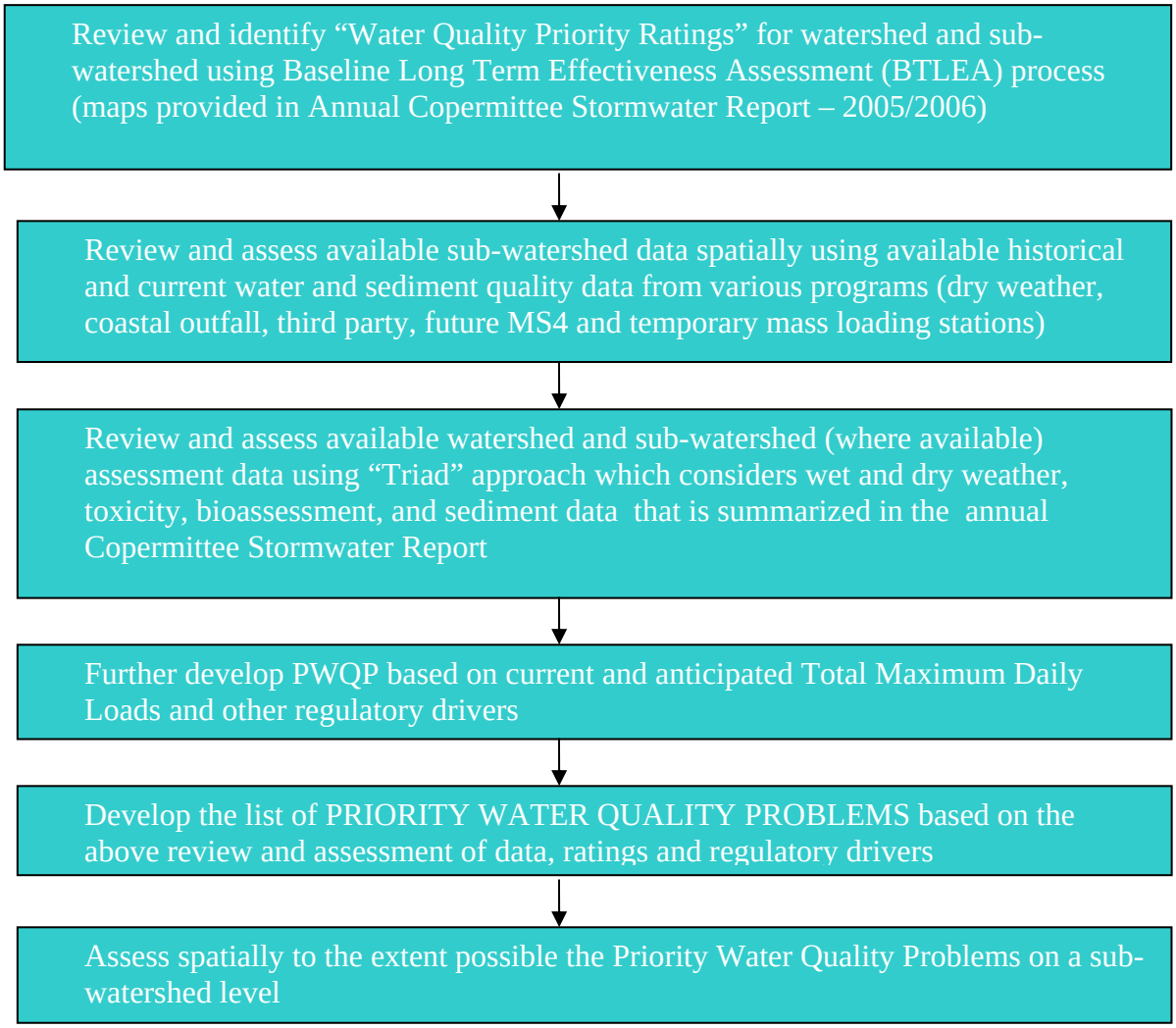



San Dieguito Watershed - Priority Sectors I & II
Legend
City of San Diego Boundary
Watershed Management Area
Priority Sector 1
Priority Sector 2
Land Use (2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Freeway
Major Roads
N
Sector1
Sector2
0 1 2 4 6 8 Miles

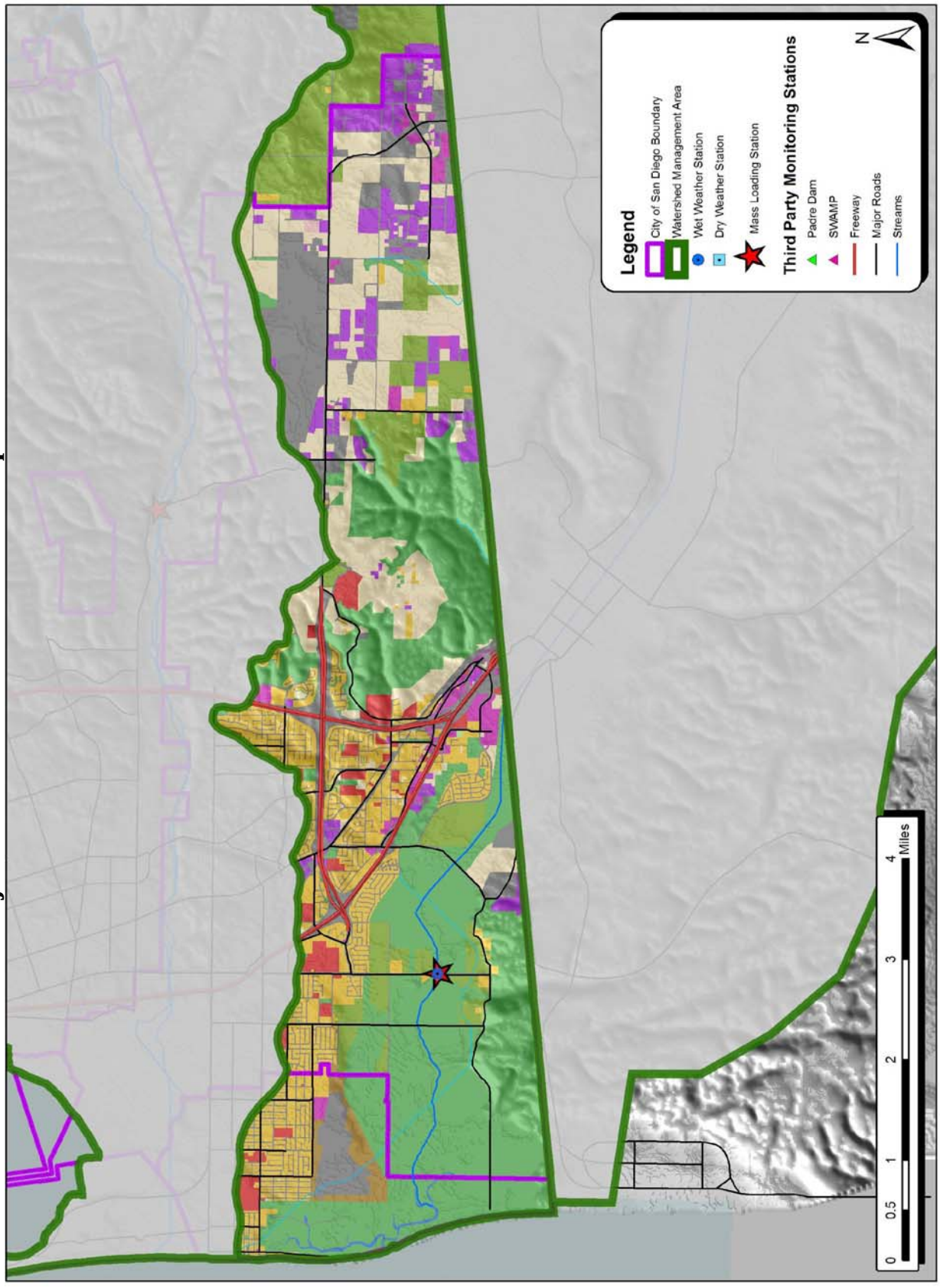
Map 2.50

Tijuana Watershed

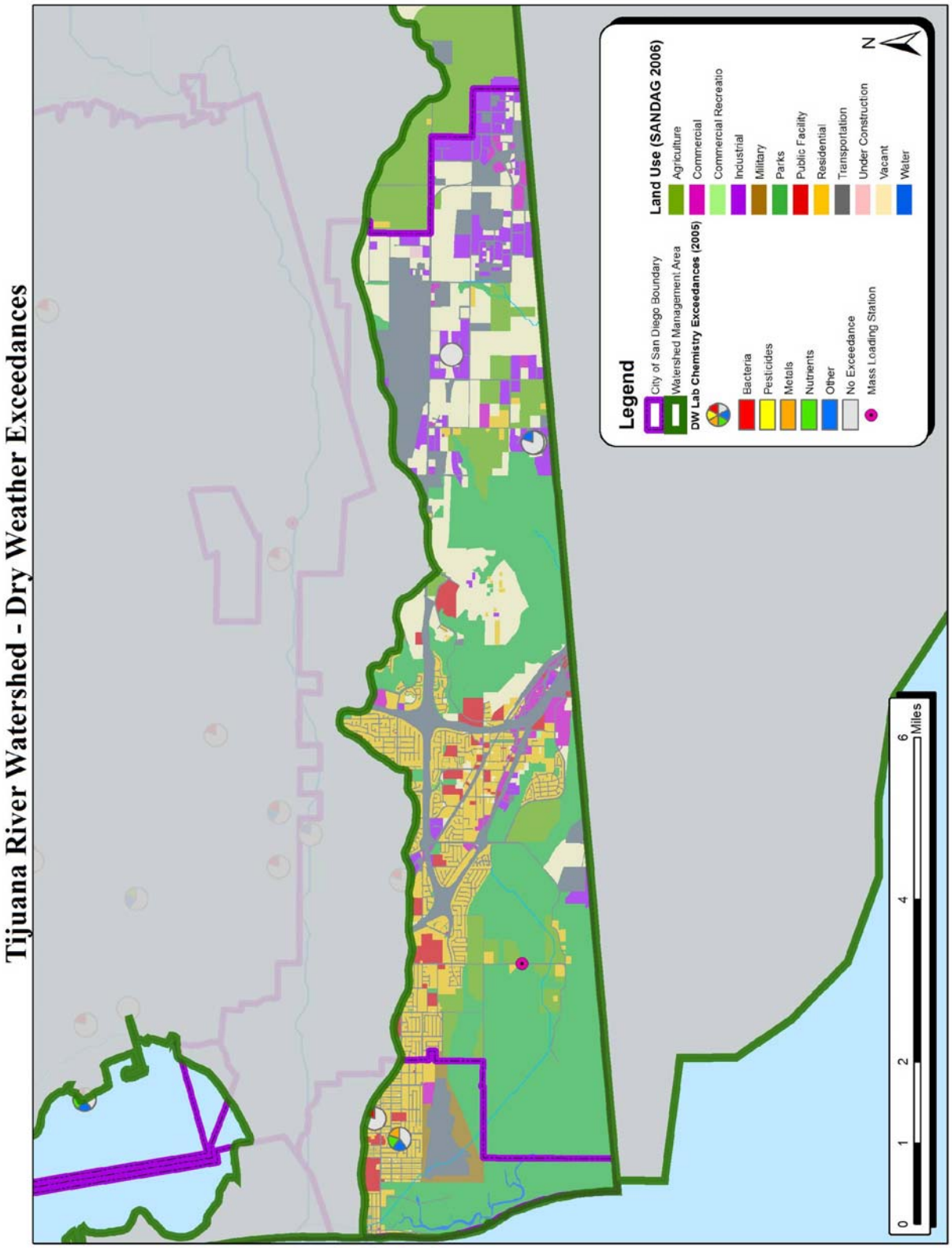
STEP 1: IDENTIFY AND ASSESS THE PRIORITY WATER QUALITY PROBLEMS USING THE FOLLOWING TOOLS



Tijuana Watershed – Location of Sample Sites



Map 2.51


Tijuana River Watershed - Dry Weather Exceedances
Legend
City of San Diego Boundary
Watershed Management Area
DW Lab Chemistry Exceedances (2005)
Bacteria
Pesticides
Metals
Nutrients
Other
No Exceedance
Mass Loading Station
Land Use (SANDAG 2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
N
0
1
2
4
6
Miles

Map 2.52

Updated Water Quality Priority Ratings for the Tijuana River WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Tijuana WMA	**100%**	***B***	***D***	***D***	***D***	***B***	***B***	***C***	***C***	***B***	***B***	***B***
Tijuana Valley HA (911.10)	7%	*A*	*D*	*A*	*D*	*A*	*A*	*A*	*A*	*A*	*A*	*B*
Potrero HA (911.20)	18%	*B*	*D*	*D*	*D*	*B*	*B*	*B*	*B*	*B*	*B*	*B*
Barrett Lake HA (911.30)	20%	*B*	*D*	*D*	*D*	*C*	*B*	*C*	*C*	*B*	*B*	*B*
Monument HA (911.40)	8%	*C*	*D*	*D*	*D*	*A*	*C*	*C*	*C*	*A*	*B*	*B*
Morena HA (911.50)	5%	*B*	*D*	*D*	*D*	*B*	*B*	*B*	*B*	*B*	*B*	*B*
Cottonwood HA (911.60)	10%	*C*	*D*	*D*	*D*	*B*	*C*	*C*	*C*	*C*	*B*	*B*
Cameron HA (911.70)	10%	*B*	*D*	*D*	*D*	*B*	*B*	*B*	*B*	*B*	*B*	*B*
Campo HA (911.80)	23%	*C*	*D*	*D*	*D*	*A*	*C*	*C*	*C*	*C*	*B*	*B*
Frequency of Occurrence Rating High[1]						♦♦♦	♦♦♦			♦♦♦		
Constituents of Concern						TSS Turbidity	Diazinon			Total Coliform Fecal Coliform Entero-coccus		

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

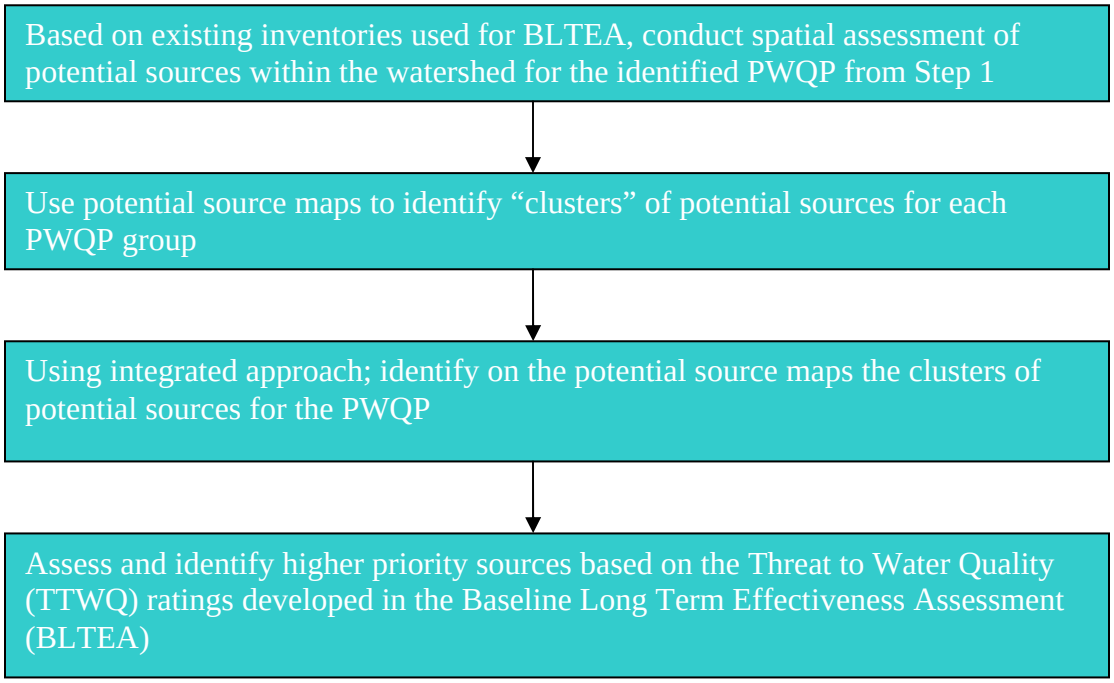
303d listing

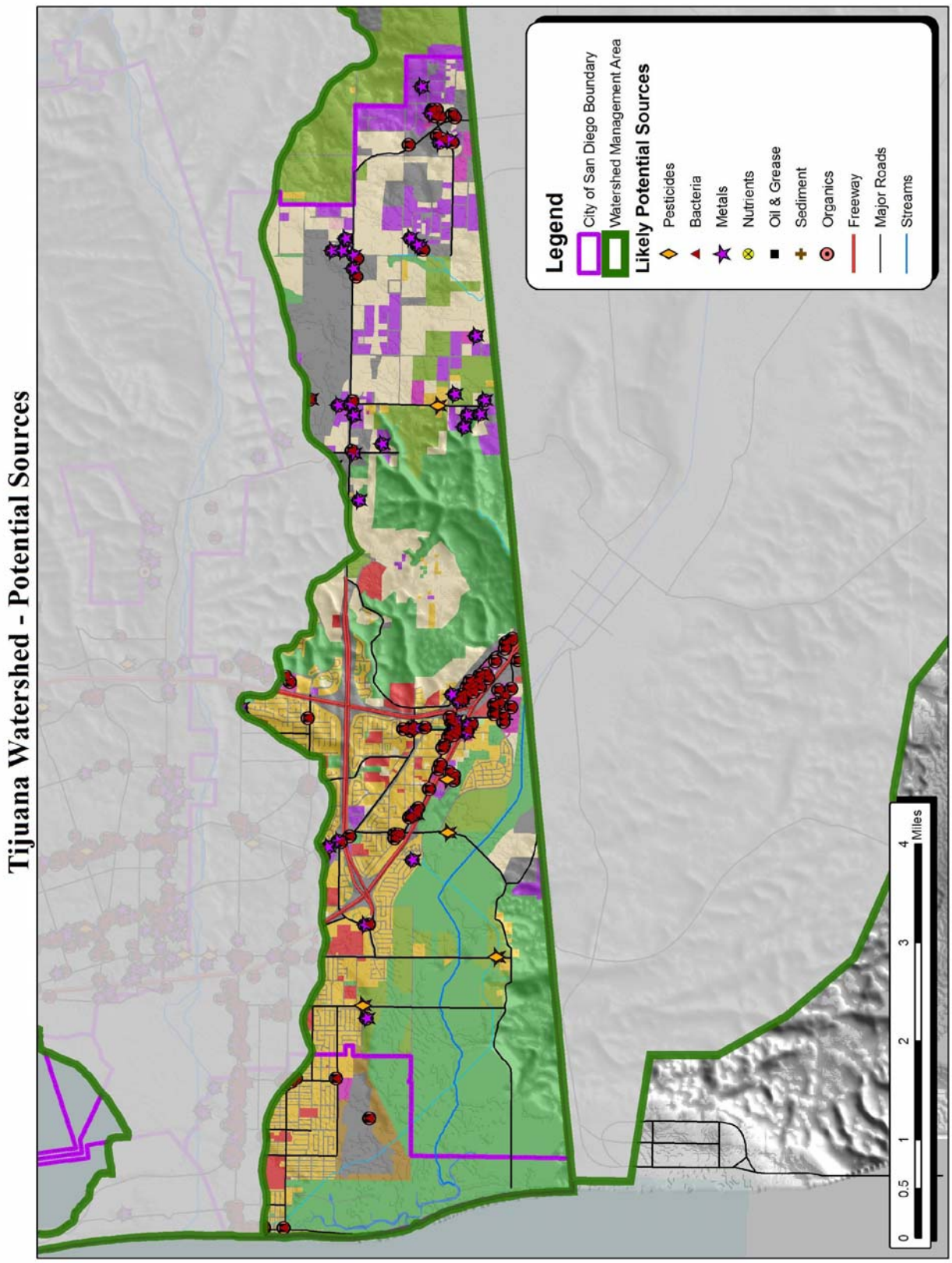
OUTCOMES OF STEP 1
IDENTIFY PRIORITY WATER QUALITY PROBLEMS AND DATA GAPS
TIJUANA WATERSHED

- Identify Priority Water Quality Problems (PWQP) for the watershed and to the extent possible high PWQPs on a sub-watershed basis. The City's jurisdiction is predominantly within the Tijuana Valley Watershed (911.10 Hydrologic Area). The PWQP for the Tijuana Valley Watershed are:
    - Bacteria
    - Trash
    - Organic Compounds
    - Heavy Metals
    - Nutrients
    - Pesticides
    - Sediment
    - Benthic Alterations
- Identify data gaps exist in the data and use this list to develop scope of priority studies
    - Design Storm Determination
    - Sources of PWQP
    - Sub-watershed Data up-stream of Tijuana Valley Watershed

- Use INTEGRATED APPROACH to develop priority activities – consider all PWQP in BMP prioritization

STEP 2: IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES




Tijuana Watershed - Potential Sources
Legend
City of San Diego Boundary
Watershed Management Area
Likely Potential Sources
Pesticides
Bacteria
Metals
Nutrients
Oil & Grease
Sediment
Organics
Freeway
Major Roads
Streams
0
0.5
1
2
3
4
Miles

Map 2.53

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Tijuana

Bacteria		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
10	Eating or drinking establishments	223		L	T2	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	7		L	T2	X		X	
17	Animal Facilities	4		L	T2	X		X	
33	POTWs (water and wastewater)	1		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	0		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
34	Sites for disposing and treating sewage sludge	-		L	T2	X		X	
32	Motor Freight	19		UK	T2	X	X		
19	Development subject to SUSMPs	10		UK	T2	X	X		
29	Active or closed municipal landfills	2		UK	T2	X	X		
30	Automobile wholesale	1		UK	T2	X	X		
7	Auto parking lots and storage facilities	-		UK	T2	X	X		
9	Pest Control Services	41		UK	T2	X	X		
16	Marinas	0		UK	T2	X	X		
22	Flood management projects and flood control devices	-		UK	T2	X	X		
23	MS4s	-		UK	T2	X	X		
25	Park and Recreational facilities	-		UK	T2	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	B	UL	T5	X		X	
20	Construction Sites	120		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	31		UL	T5	X		X	
27	Fabricated metal	5		UL	T5	X		X	
28	Primary metal	3		UL	T5	X		X	
24	Corporate yards (incl. maintenance/storage yards)	2		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	1		UL	T5	X		X	
26	Chemical and allied products	1		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	63		UL	T5	X		X	
8	Retail or wholesale fueling	28		N	T6				X
31	Airfields	1		N	T6				X
15	Pool and Fountain cleaning	50		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Tijuana

Gross Pollutants		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-	B	L	T2	X		X	
10	Eating or drinking establishments	223		L	T2	X		X	
20	Construction Sites	120		L	T2	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	31		L	T2	X		X	
5	Automobile and other vehicle body repair and painting	1		L	T2	X		X	
30	Automobile wholesale	1		L	T2	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	0		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
8	Retail or wholesale fueling	28		UK	T2	X	X		
32	Motor Freight	19		UK	T2	X	X		
19	Development subject to SUSMPs	10		UK	T2	X	X		
13	Botanical or zoological gardens and nurseries/greenhouses	7		UK	T2	X	X		
27	Fabricated metal	5		UK	T2	X	X		
17	Animal Facilities	4		UK	T2	X	X		
28	Primary metal	3		UK	T2	X	X		
24	Corporate yards (incl. maintenance/storage yards)	2		UK	T2	X	X		
29	Active or closed municipal landfills	2		UK	T2	X	X		
3	Boat mechanical repair, maintenance, fueling, or cleaning	1		UK	T2	X	X		
26	Chemical and allied products	1		UK	T2	X	X		
31	Airfields	1		UK	T2	X	X		
33	POTWs (water and wastewater)	1		UK	T2	X	X		
2	Airplane mechanical repair, maintenance, fueling, or cleaning	0		UK	T2	X	X		
7	Auto parking lots and storage facilities	-		UK	T2	X	X		
9	Pest Control Services	41		UK	T2	X	X		
15	Pool and Fountain cleaning	50		UK	T2	X	X		
16	Marinas	0		UK	T2	X	X		
18	Home automobile associated activities, home and garden care activities, waste disposal	-		UK	T2	X	X		
25	Park and Recreational facilities	-		UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	63		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Tijuana

Heavy Metals		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
1	Auto mechanical repair, maintenance, fueling, or cleaning	31	C	L	T3	X		X	
32	Motor Freight	19		L	T3	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	7		L	T3	X		X	
27	Fabricated metal	5		L	T3	X		X	
28	Primary metal	3		L	T3	X		X	
24	Corporate yards (incl. maintenance/storage yards)	2		L	T3	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	1		L	T3	X		X	
5	Automobile and other vehicle body repair and painting	1		L	T3	X		X	
30	Automobile wholesale	1		L	T3	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	0		L	T3	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		L	T3	X		X	
6	Mobile automobile or vehicle washing	-		L	T3	X		X	
7	Auto parking lots and storage facilities	-		L	T3	X		X	
16	Marinas	0		L	T3	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T3	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T3	X		X	
8	Retail or wholesale fueling	28		UK	T3	X	X		
19	Development subject to SUSMPs	10		UK	T3	X	X		
29	Active or closed municipal landfills	2		UK	T3	X	X		
26	Chemical and allied products	1		UK	T3	X	X		
31	Airfields	1		UK	T3	X	X		
33	POTWs (water and wastewater)	1		UK	T3	X	X		
25	Park and Recreational facilities	-		UK	T3	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T3	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	120		UL	T5	X		X	
10	Eating or drinking establishments	223		N	T6				X
17	Animal Facilities	4		N	T6				X
14	Landscaping - parks, golf courses, cemeteries, etc.	0		N	T6				X
9	Pest Control Services	41		N	T6				X
11	Mobile carpet, drape, or furniture cleaning	63		N	T6				X
15	Pool and Fountain cleaning	50		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Tijuana

Nutrients		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
13	Botanical or zoological gardens and nurseries/greenhouses	7		L	T2	X		X	
17	Animal Facilities	4		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	0		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
25	Park and Recreational facilities	-		L	T2	X		X	
10	Eating or drinking establishments	223		UK	T2	X	X		
1	Auto mechanical repair, maintenance, fueling, or cleaning	31		UK	T2	X	X		
32	Motor Freight	19		UK	T2	X	X		
19	Development subject to SUSMPs	10		UK	T2	X	X		
27	Fabricated metal	5		UK	T2	X	X		
28	Primary metal	3		UK	T2	X	X		
24	Corporate yards (incl. maintenance/storage yards)	2		UK	T2	X	X		
29	Active or closed municipal landfills	2		UK	T2	X	X		
26	Chemical and allied products	1		UK	T2	X	X		
31	Airfields	1		UK	T2	X	X		
33	POTWs (water and wastewater)	1		UK	T2	X	X		
30	Automobile wholesale	1		UK	T2	X	X		
2	Airplane mechanical repair, maintenance, fueling, or cleaning	0	B	UK	T2	X	X		
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UK	T2	X	X		
7	Auto parking lots and storage facilities	-		UK	T2	X	X		
11	Mobile carpet, drape, or furniture cleaning	63		UK	T2	X	X		
15	Pool and Fountain cleaning	50		UK	T2	X	X		
16	Marinas	0		UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	120		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	1		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
8	Retail or wholesale fueling	28		N	T6				X
9	Pest Control Services	41		N	T6				X
22	Flood management projects and flood control devices	-		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Tijuana

Pesticides		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
13	Botanical or zoological gardens and nurseries/greenhouses	7	C	L	T3	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	0		L	T3	X		X	
9	Pest Control Services	41		L	T3	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T3	X		X	
10	Eating or drinking establishments	223		UK	T3	X	X		
32	Motor Freight	19		UK	T3	X	X		
19	Development subject to SUSMPs	10		UK	T3	X	X		
27	Fabricated metal	5		UK	T3	X	X		
17	Animal Facilities	4		UK	T3	X	X		
28	Primary metal	3		UK	T3	X	X		
24	Corporate yards (incl. maintenance/storage yards)	2		UK	T3	X	X		
29	Active or closed municipal landfills	2		UK	T3	X	X		
26	Chemical and allied products	1		UK	T3	X	X		
31	Airfields	1		UK	T3	X	X		
30	Automobile wholesale	1		UK	T3	X	X		
7	Auto parking lots and storage facilities	-		UK	T3	X	X		
16	Marinas	0		UK	T3	X	X		
22	Flood management projects and flood control devices	-		UK	T3	X	X		
25	Park and Recreational facilities	-		UK	T3	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T3	X	X		
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		UL	T5	X		X	
20	Construction Sites	120		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	31		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	1		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
6	Mobile automobile or vehicle washing	-		UL	T5	X		X	
21	Roads, streets, highways, and parking facilities	-		UL	T5	X		X	
8	Retail or wholesale fueling	28		N	T6				X
33	POTWs (water and wastewater)	1		N	T6				X
11	Mobile carpet, drape, or furniture cleaning	63		N	T6				X
15	Pool and Fountain cleaning	50		N	T6				X
23	MS4s	-		N	T6				X

NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

Potential Sources and Loading, Potential Rating by Constituent and Watershed

Tijuana

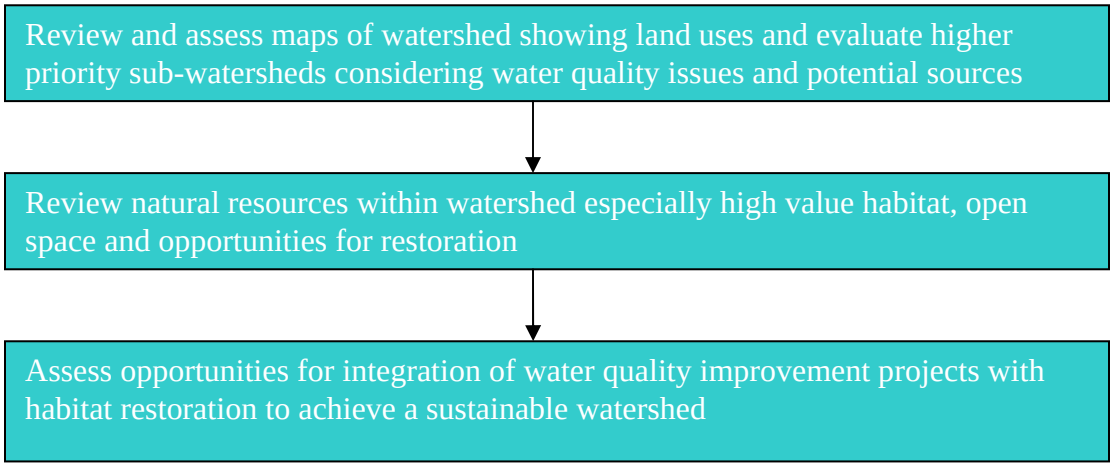
Sediment		# of Sources	Water Quality Priority	Source Loading Potential	TTWQ	Reduce loading to MEP	Evaluate and Identify Source Loading Potential	Confirm Source Loading Potential	No Action
Source ID	Source								
12	General contractors for home/commercial improvements (e.g. cement mixing, masonry, painting, etc.)	-		L	T2	X		X	
20	Construction Sites	120		L	T2	X		X	
13	Botanical or zoological gardens and nurseries/greenhouses	7		L	T2	X		X	
17	Animal Facilities	4		L	T2	X		X	
24	Corporate yards (incl. maintenance/storage yards)	2		L	T2	X		X	
30	Automobile wholesale	1		L	T2	X		X	
14	Landscaping - parks, golf courses, cemeteries, etc.	0		L	T2	X		X	
6	Mobile automobile or vehicle washing	-		L	T2	X		X	
7	Auto parking lots and storage facilities	-		L	T2	X		X	
18	Home automobile associated activities, home and garden care activities, waste disposal	-		L	T2	X		X	
21	Roads, streets, highways, and parking facilities	-		L	T2	X		X	
22	Flood management projects and flood control devices	-		L	T2	X		X	
23	MS4s	-		L	T2	X		X	
8	Retail or wholesale fueling	28		UK	T2	X	X		
32	Motor Freight	19		UK	T2	X	X		
19	Development subject to SUSMPs	10		UK	T2	X	X		
27	Fabricated metal	5		UK	T2	X	X		
28	Primary metal	3	B	UK	T2	X	X		
29	Active or closed municipal landfills	2		UK	T2	X	X		
26	Chemical and allied products	1		UK	T2	X	X		
31	Airfields	1		UK	T2	X	X		
33	POTWs (water and wastewater)	1		UK	T2	X	X		
25	Park and Recreational facilities	-		UK	T2	X	X		
34	Sites for disposing and treating sewage sludge	-		UK	T2	X	X		
10	Eating or drinking establishments	223		UL	T5	X		X	
1	Auto mechanical repair, maintenance, fueling, or cleaning	31		UL	T5	X		X	
3	Boat mechanical repair, maintenance, fueling, or cleaning	1		UL	T5	X		X	
5	Automobile and other vehicle body repair and painting	1		UL	T5	X		X	
2	Airplane mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
4	Equipment mechanical repair, maintenance, fueling, or cleaning	0		UL	T5	X		X	
11	Mobile carpet, drape, or furniture cleaning	63		UL	T5	X		X	
9	Pest Control Services	41		N	T6				X
15	Pool and Fountain cleaning	50		N	T6				X
16	Marinas	0		N	T6				X

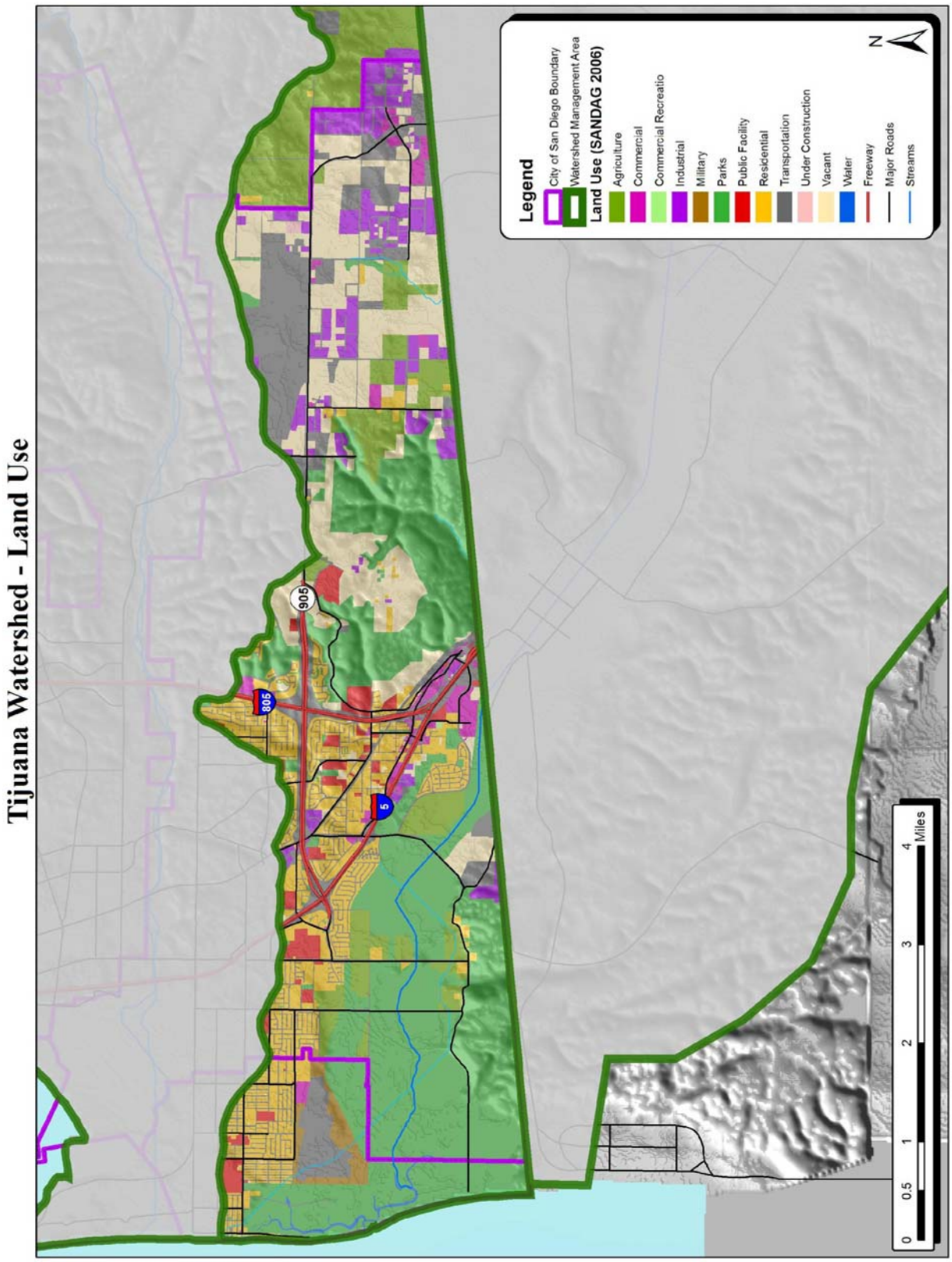
NOTES:
(1) Ranked by TTWQ and # of sources
(2) "-" signifies that no inventory information is available
(3) All inventory is based on best available information
(4) Inventory numbers for Source ID 9, 11 and 15 are regional inventories distributed across watersheds by percentage of land area

OUTCOMES OF STEP 2
IDENTIFY AND ASSESS HIGH THREAT TO WATER QUALITY SOURCES
TIJUANA WATERSHED

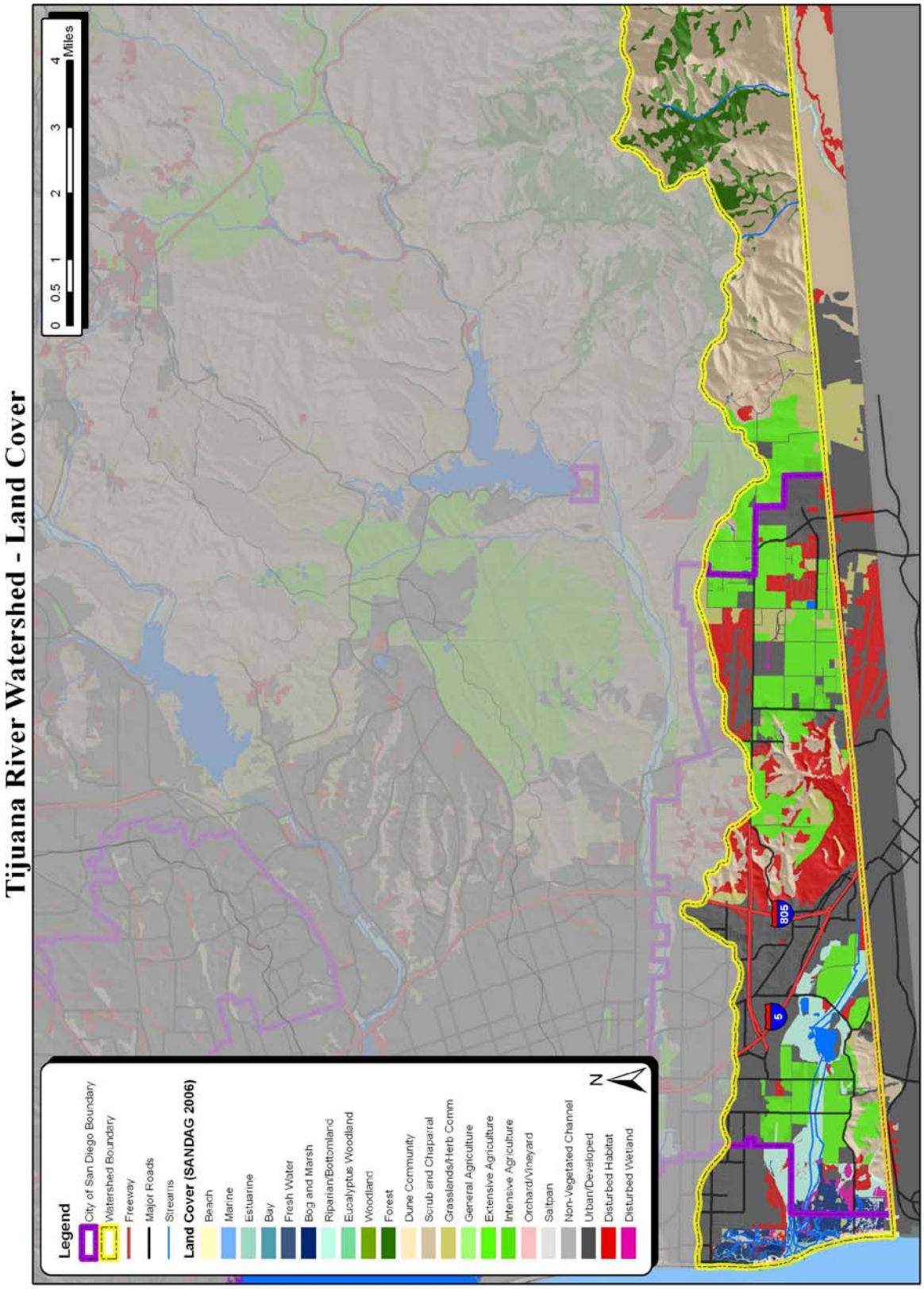
- Identify the higher rated sources based on BLTEA TTWQ for each PWQP – See Maps
- Identify potential higher priority areas based on "clustering" of high priority sources
- Use INTEGRATED approach and identify areas of higher clusters of sources for multiple PWQP
    - Eating and Drinking Establishments
    - Residential Areas and Activities
    - Commercial Landscaping
    - Animal Related Facilities
    - Golf Courses, Parks and Recreational Activities
    - Municipal Facilities and Activities
    - Auto Related Facilities
    - Industrial Facilities
    - Roads, Streets, Highways and Parking Facilities
    - Pest Control Facilities
    - Construction Activities
- Identify data gaps in inventory of sources
    - Source Data and Update Inventory
    - Identify residential and roadway sources that are not included in source inventory list

STEP 3: IDENTIFY AND ASSESS LAND USE AND RESTORATION OPPORTUNITIES




Tijuana Watershed - Land Use
Legend
City of San Diego Boundary
Watershed Management Area
Land Use (SANDAG 2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Freeway
Major Roads
Streams
N
0
0.5
1
2
3
4
Miles
905
805
5

Map 2.54

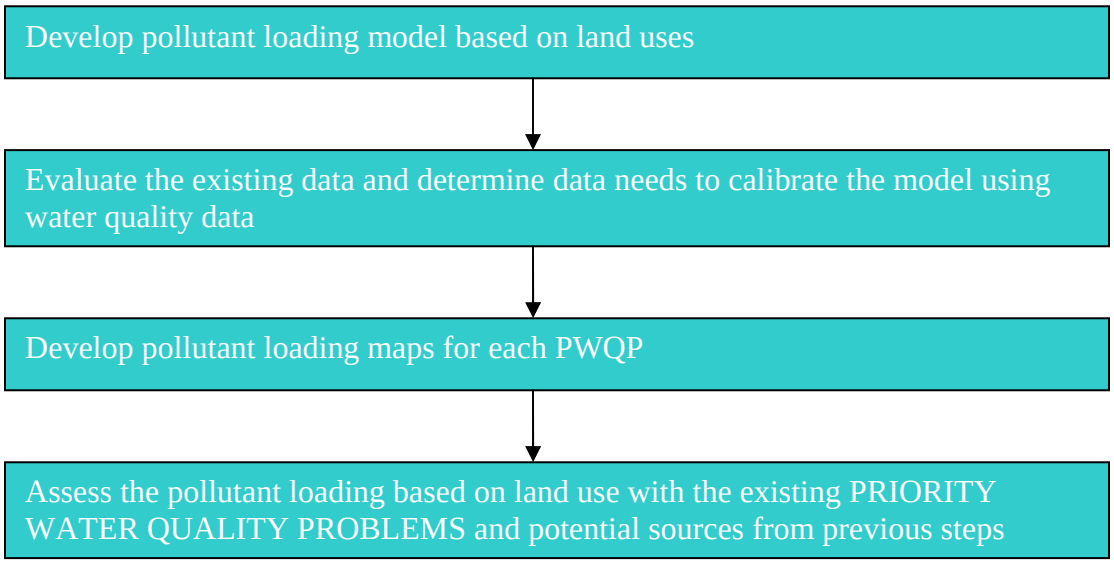

Tijuana River Watershed - Land Cover
Legend
City of San Diego Boundary
Watershed Boundary
Freeway
Major Roads
Streams
Land Cover (SANDAG 2006)
Beach
Marine
Estuarine
Bay
Fresh Water
Bog and Marsh
Riparian/Bottomland
Eucalyptus Woodland
Woodland
Forest
Dune Community
Scrub and Chaparral
Grasslands/Herb Comm
General Agriculture
Extensive Agriculture
Intensive Agriculture
Orchard/Vineyard
Saltpan
Non-Vegetated Channel
Urban/Developed
Disturbed Habitat
Disturbed Wetland
N
0 0.5 1 2 3 4 Miles
805
5

Map 2.55

OUTCOMES OF STEP 3
IDENTIFY LAND USES AND NATURAL RESOURCES TO INTEGRATE WITH WATER QUALITY IMPROVEMENT PROJECTS
TIJUANA WATERSHED

- Identify land uses and higher priority sub-watersheds considering water quality issues and potential sources assessed in previous steps which will be used to estimate pollutant loading – See Map 2.54
- Identify natural resources within watershed. This information will be later used to identify opportunities for integration of water quality improvement projects with habitat restoration to achieve a sustainable watershed – See Map 2.55

STEP 4: DETERMINE SUB-WATERSHED POLLUTANT LOADING



OUTCOMES OF STEP 4
IDENTIFY SUB-WATERSHED POLLUTANT LOADING POTENTIAL AND DATA GAPS
TIJUANA WATERSHED

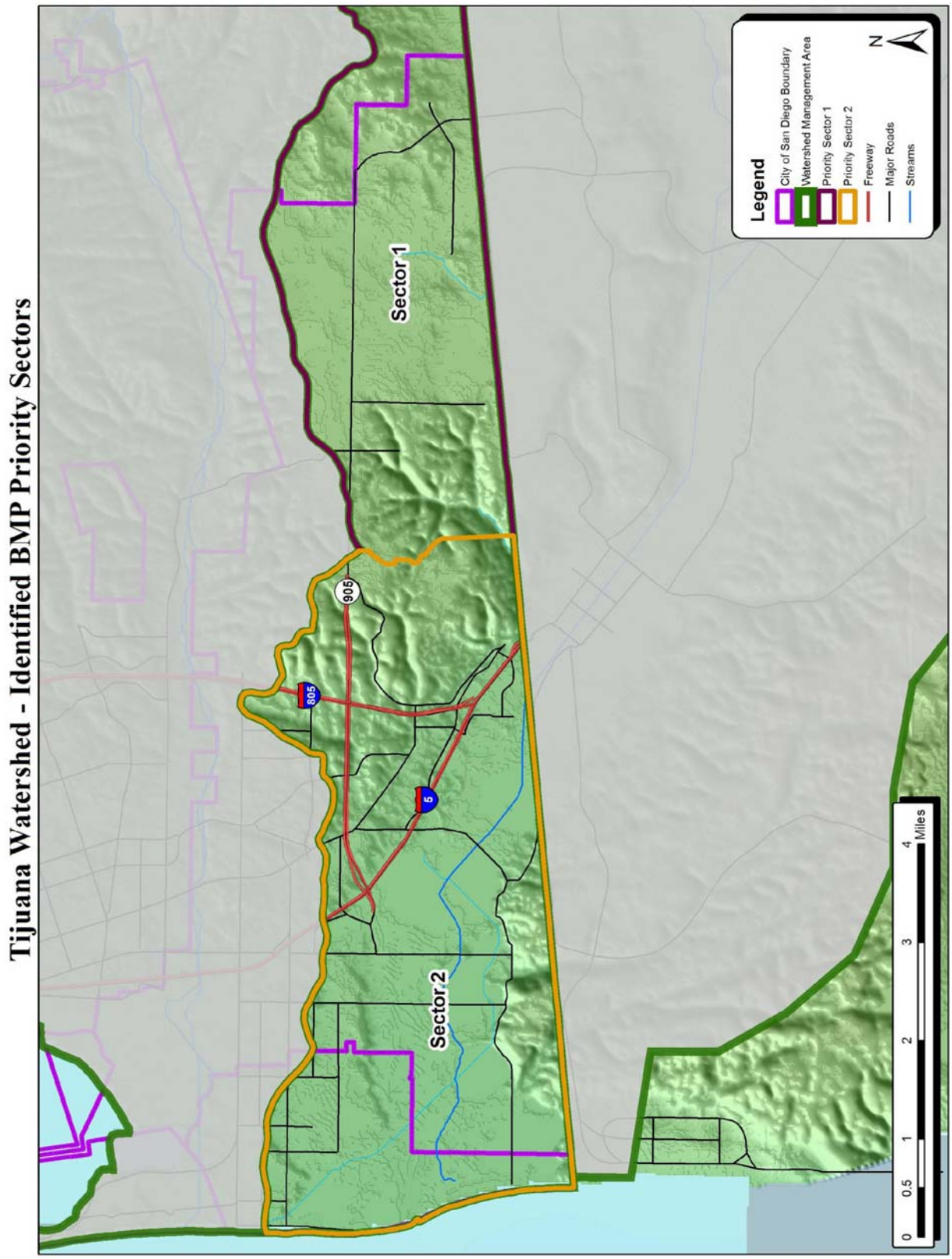
- Identify sub-watershed with higher pollutant loading using land use data – See Maps
- Identify the data gaps to calibrate and verify the loading using water quality data
    - Source Data
    - Update Inventory of Source Data
    - Calibrate Model to Actual Water Quality data (Need to add Sub-Watershed Data)
- Identify the sub-watersheds that have the greatest priority based on the pollutant loading and the Priority Water Quality Problems and potential sources from previous steps –See Maps

STEP 5: IDENTIFY HIGH PRIORITY SUB-WATERSHEDS FOR WATERSHED ACTIVITIES

Based on the outcomes of the previous steps, develop an approach to prioritize sub-watersheds for implementation of Phase I watershed activities

↓

Develop a map showing sub-watershed priorities by assigning each sub-watershed or group of adjacent sub-watersheds a number (1 being the highest priority)


Tijuana Watershed - Identified BMP Priority Sectors
Legend
City of San Diego Boundary
Watershed Management Area
Priority Sector 1
Priority Sector 2
Freeway
Major Roads
Streams
N
Sector 1
Sector 2
905
805
5
0
0.5
1
2
3
4
Miles

Map 2.56

SUMMARY OF PRIORITIZATION PROCESS

The following tables present the outcomes of the overall watershed activity prioritization process for all the watersheds. The outcomes of Step 1 to Step 2 are presented in tabular form. The outcomes of Step 3 are used to develop the priority sector maps in Step 5. The outcome of Step 5 is provided as watershed maps for each of the watershed.

Table 2-1 Priority Water Quality Problems – Results of Step 1

Watersheds	Bacteria/ Pathogens	Gross pollutants (Trash)	Heavy Metals	Nutrients	Pesticides	Sediment (Turbidity, TSS)	Total Dissolved Solids	Benthic Alterations	Toxicity
San Diego Bay Watershed - Chollas Creek	●●	●	●●		●g	●●		●d	●d
Mission Bay watershed - Tecolote	●●		●a	●a	●	●●		●	●
Mission Bay watershed - La Jolla	●○d		●○		●	●			
Mission Bay Watershed - Miramar	●●d		●b	●b	●				●
Los Penasquitos	●d			●		●c	●●	●	
San Diego River - Lower San Diego	●●e	●		●f		●●	●	●	
San Dieguito	●d			●h			●●		
Tijuana - Tijuana Valley	●●d	●	●	●	●●	●●	●	●	

● Priority Water Quality Problem
●● Identified as a high frequency of exceedance and occurrence in San Diego County Municipal Copermitees 2005-2006 Urban Runoff Monitoring Report (2005-2006)
●○ Identified as a Priority COC in the Integrated Coastal Watershed Management Plan based on frequency of detection above the water quality criteria
303d listing (SWRCB, 2006)

a Mouth of Tecolote Creek only
b Mouth of Rose Creek only
c Los Penasquitos Canyon
d Shoreline
e River mouth (Dog beach) and lower 6 miles
f Formosa Slough and Channel and Lower River
g Switzer Creek
h Lake Hodges

Emerging Priority Water Quality problem

Table 2-2 Summary of Data Gaps – Verifying Priority Water Quality Problems and Design Storm

Identifying Data Gaps for Priority Water Quality Problems (1)												
Watersheds		Design Storm Determination	Bacteria/ Pathogens	Gross pollutants	Heavy Metals	Nutrients	Pesticides	Sediment (Turbidity, TSS)	Total Dissolved Solids	Benthic Alterations	Toxicity	Wet and Dry Weather Data Gap in Receiving Waters on a Sub-Watershed Basis
	San Diego Bay Watershed - Chollas Creek	●			●		●	●		●	●	●
	Mission Bay watershed - Tecolote	●	●		●	●	●	●		●	●	●
	Mission Bay watershed - La Jolla	●	●		●	●	●	●			●	●
	Mission Bay Watershed - Miramar	●	●		●	●	●				●	●
	Los Penasquitos	●	●			●		●	●	●		●
	San Diego River - Lower San Diego	●	●	●		●		●	●	●		●
	San Dieguito	●	●			●			●			●
	Tijuana - Tijuana Valley	●	●	●	●	●	●	●	●	●	●	●

1) These data gaps represent recommended further water quality monitoring and assessment where current storm water data does not indicate frequent exceedances of the water quality objectives but a constituent within this pollutant group is included in the 303d listing (in several cases at the mouth or shoreline). This data gap also indicates a need for further water quality sampling within the watershed to assess the extent and nature of the constituents in this group either due to a 303d listing or frequent exceedances at the mass loading station as part of the County-wide Municipal Urban Runoff Monitoring Program.

Table 2-3 Summary of Priority Sources – Identification of Sources

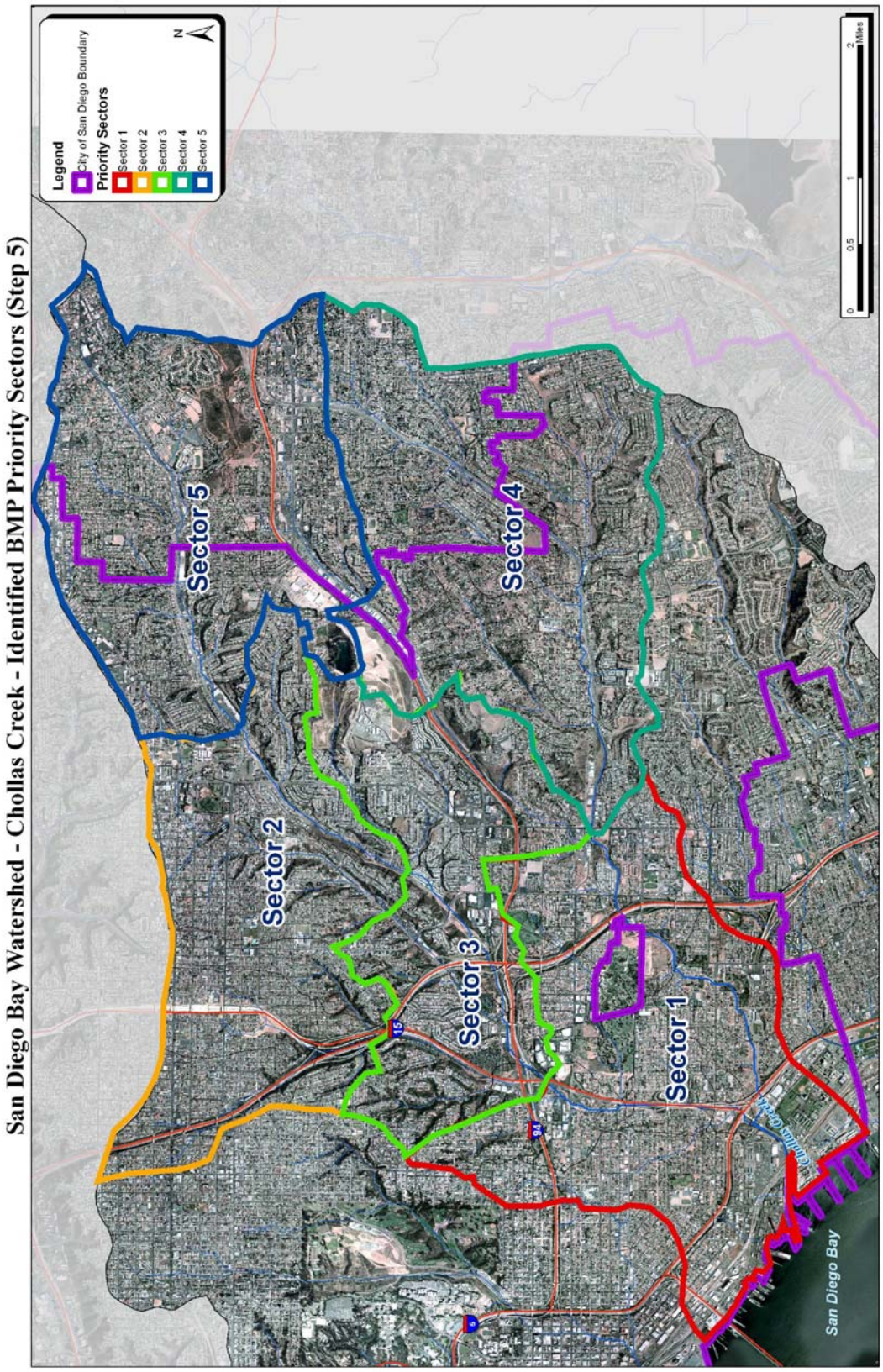
Watersheds	Priority Sources of PWQP											
	Eating and Drinking Establishments	Residential Areas and Activities (1)	Commercial Landscaping	Animal realted facilities	Golf Courses, Parks, Recreational facilities and Zoos	Municipal facilities and Activities (2)	Auto related facilities (3)	Industrial facilities (4)	Roads, Streets, Highways and parking facilities	Pest Control services	Construction sites/General Contractors
San Diego Bay Watershed - Chollas Creek	●	●	●	●	●	●	●	●	●	●	●
Mission Bay watershed - Tecolote	●	●	●	●	●	●	●		●	●	●
Mission Bay watershed - La Jolla	●	●	●		●	●	●		●	●	●
Mission Bay Watershed - Miramar	●	●	●	●	●	●	●	●	●	●	●
Los Penasquitos	●	●	●	●	●	●	●		●		●
San Diego River - Lower San Diego	●	●	●	●	●	●	●		●		●
San Dieguito	●	●	●	●	●	●	●		●		●
Tijuana - Tijuana Valley	●	●	●	●	●	●	●	●	●	●	●

1) Home automobile associated activities, home and garden care activities and solid waste management
2) Corporate maintenance and storage yards, landfills, water and wastewater treatment facilities
3) Auto mechanical repair, maintenance, fueling or cleaning; equipment mechanical repair, maintenance, fueling and cleaning; automobile and other vehicle body repair and painting; mobile automobile or vehicle washing; auto parking lots and storage facilities; and retail and wholesale fueling
4)Chemical and allied products; fabricated metal; primary metal and motor freight

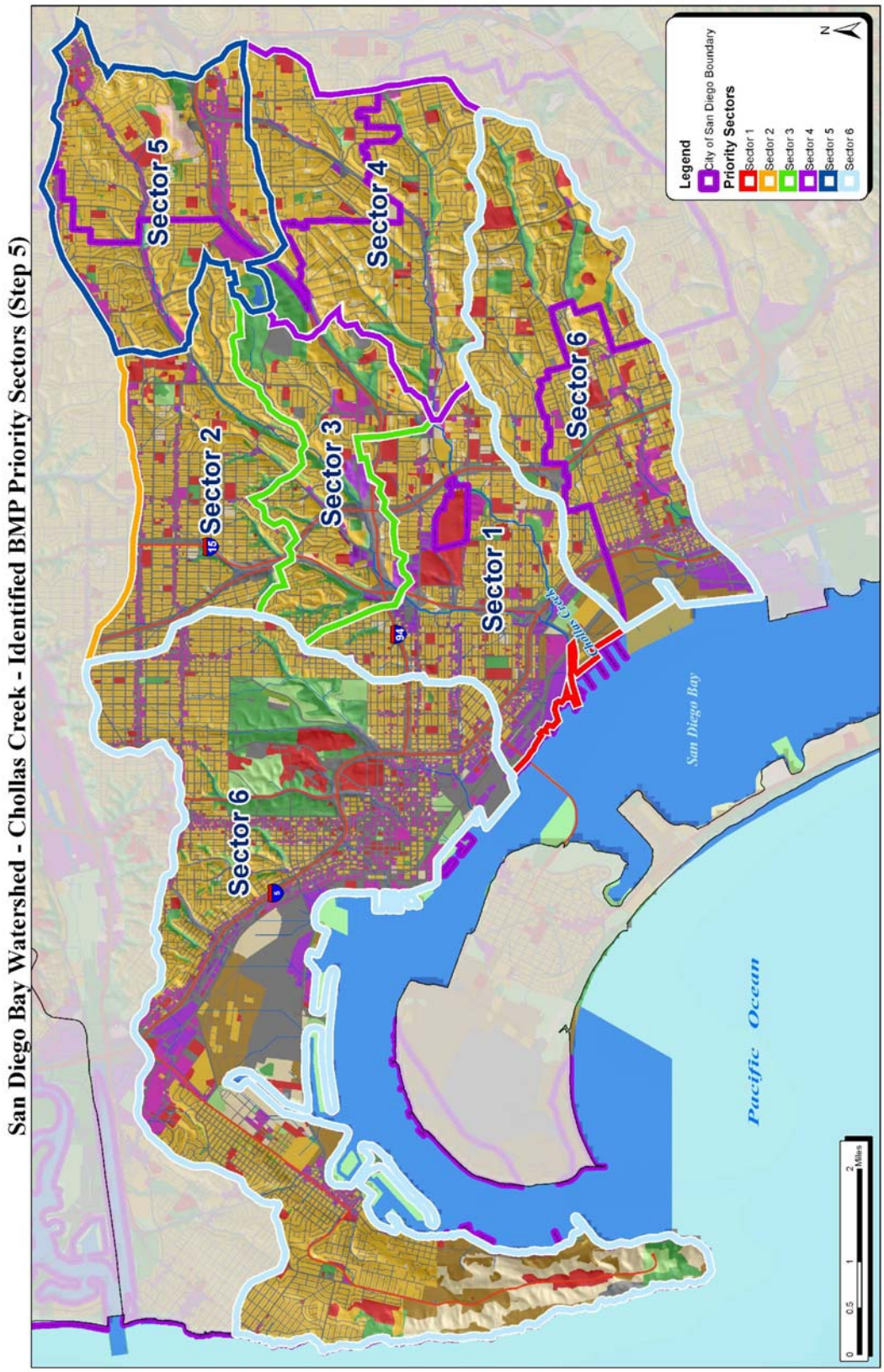
Table 2-4 Summary of Data Gaps to Verify Source Loading Potential

Watersheds	Source Data gaps											
	Eating and Drinking Establishments	Residential Areas and Activities	Commercial Landscaping	Animal realted facilities	Golf Courses, Parks and Recreational facilities	Municipal facilities and Activities	Auto related facilities	Industrial facilities	Roads, Streets, Highways and parking facilities	Pest Control services	Construction sites
Bacteria/Pathogen	L	L	L	L	UK				L	UK	
Gross Pollutants											
Heavy Metals		L			UK	L	L	L	L		
Nutrients	UK	L	L	L	L	UK	UK	UK	L		
Pesticides	UK	L	L	UK	UK	UK		UK		L	
Sediment		L	L	L	UK	UK	L	UK	L		L

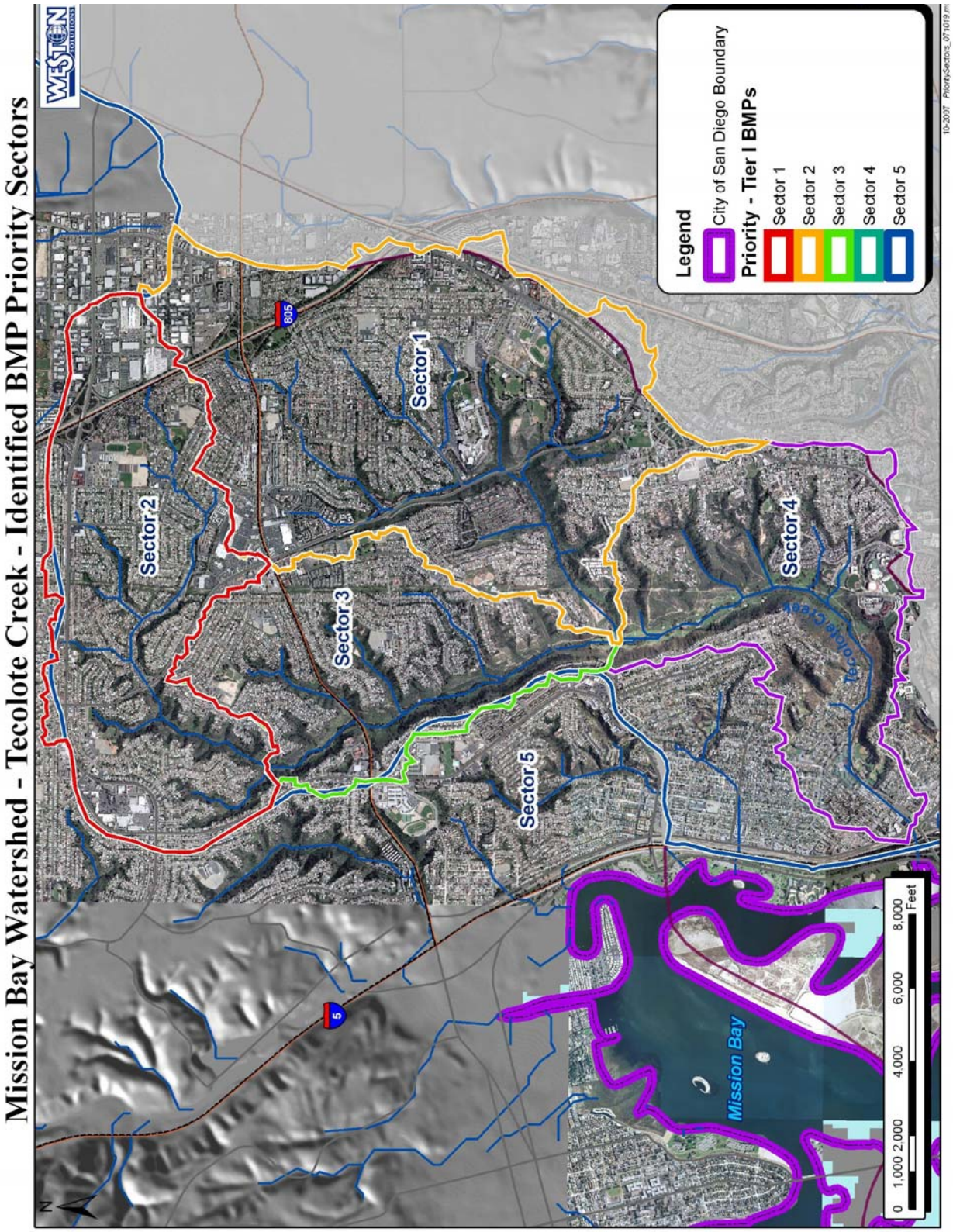
L - Likely Source Loading Potential - study recommended to verify that this is a likely source for this pollutant group and what specific activities result in pollutant loading
UK - Unknown Source Loading Potential - further study needed to determine if this source is a likely or unlikely source for this pollutant group


San Diego Bay Watershed - Chollas Creek - Identified BMP Priority Sectors (Step 5)
Legend
City of San Diego Boundary
Priority Sectors
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
N
0
0.5
1
2
Miles
Sector 5
Sector 4
Sector 2
Sector 3
Sector 1
15
94
5
Chollas Creek
San Diego Bay

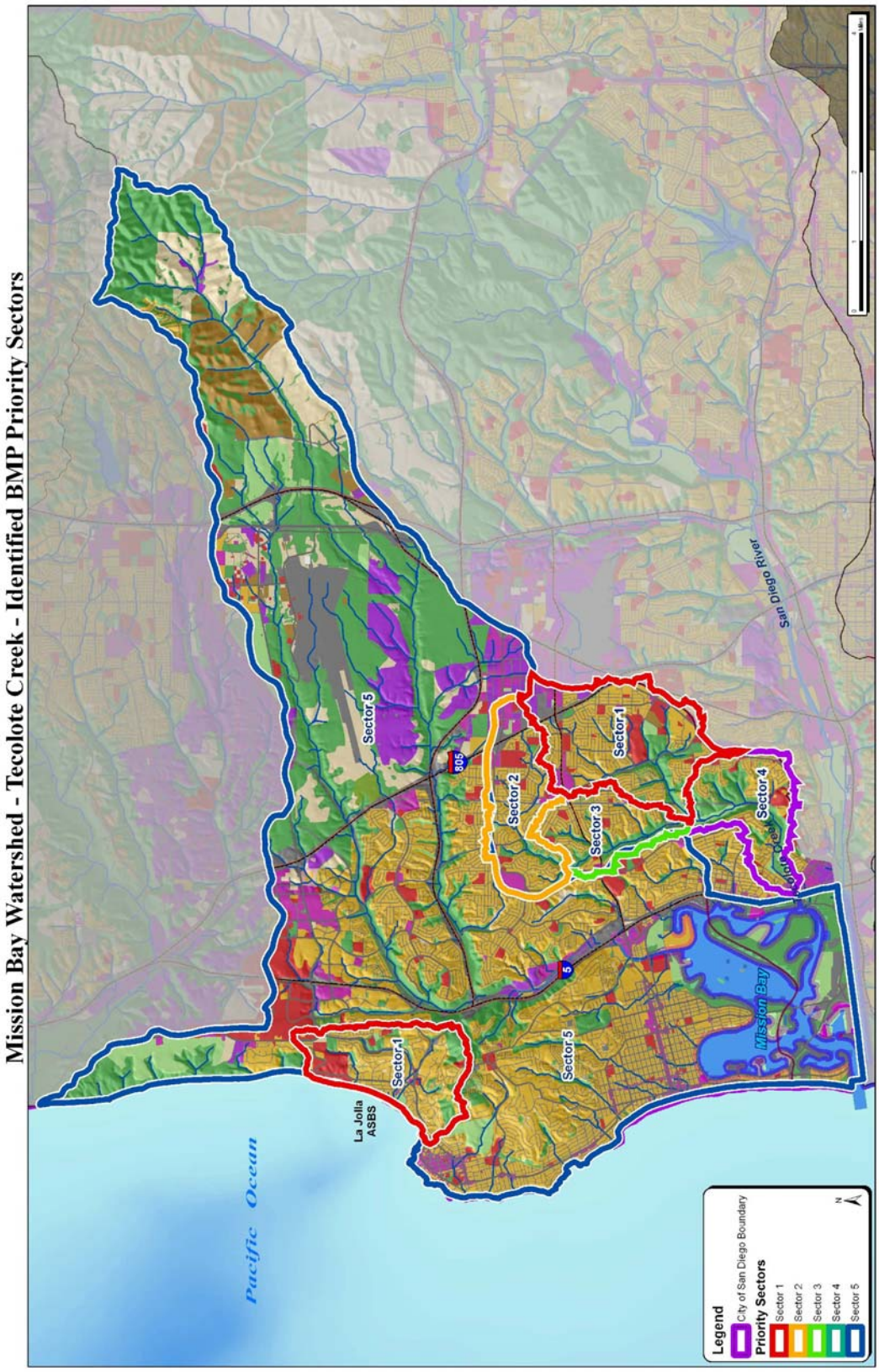
Map 2.18


San Diego Bay Watershed - Chollas Creek - Identified BMP Priority Sectors (Step 5)
Legend
City of San Diego Boundary
Priority Sectors
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
Sector 6
N
Sector 5
Sector 4
Sector 2
Sector 3
Sector 1
Sector 6
Sector 6
Chollas Creek
San Diego Bay
Pacific Ocean
0
0.5
1
2 Miles

Map 2.19


Mission Bay Watershed - Tecolote Creek - Identified BMP Priority Sectors
Legend
City of San Diego Boundary
Priority - Tier I BMPs
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
Tecolote Creek
Mission Bay
805
5
0 1,000 2,000 4,000 6,000 8,000
Feet
N

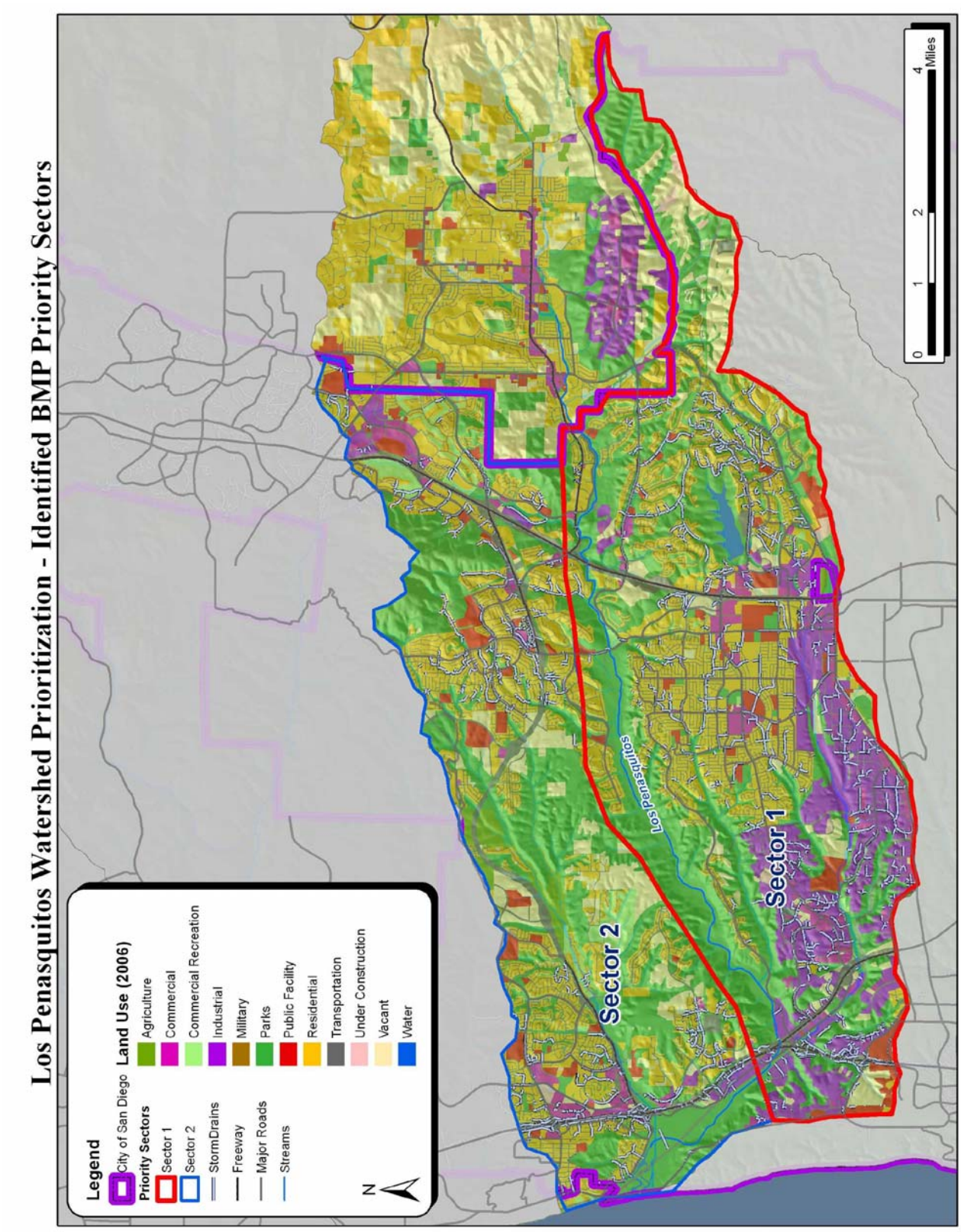
Map 2.26


Mission Bay Watershed - Tecolote Creek - Identified BMP Priority Sectors
Pacific Ocean
La Jolla ASBS
Sector 1
Sector 5
Sector 5
805
Sector 2
Sector 3
Sector 1
Sector 4
San Diego River
Mission Bay
5
Legend
City of San Diego Boundary
Priority Sectors
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
N

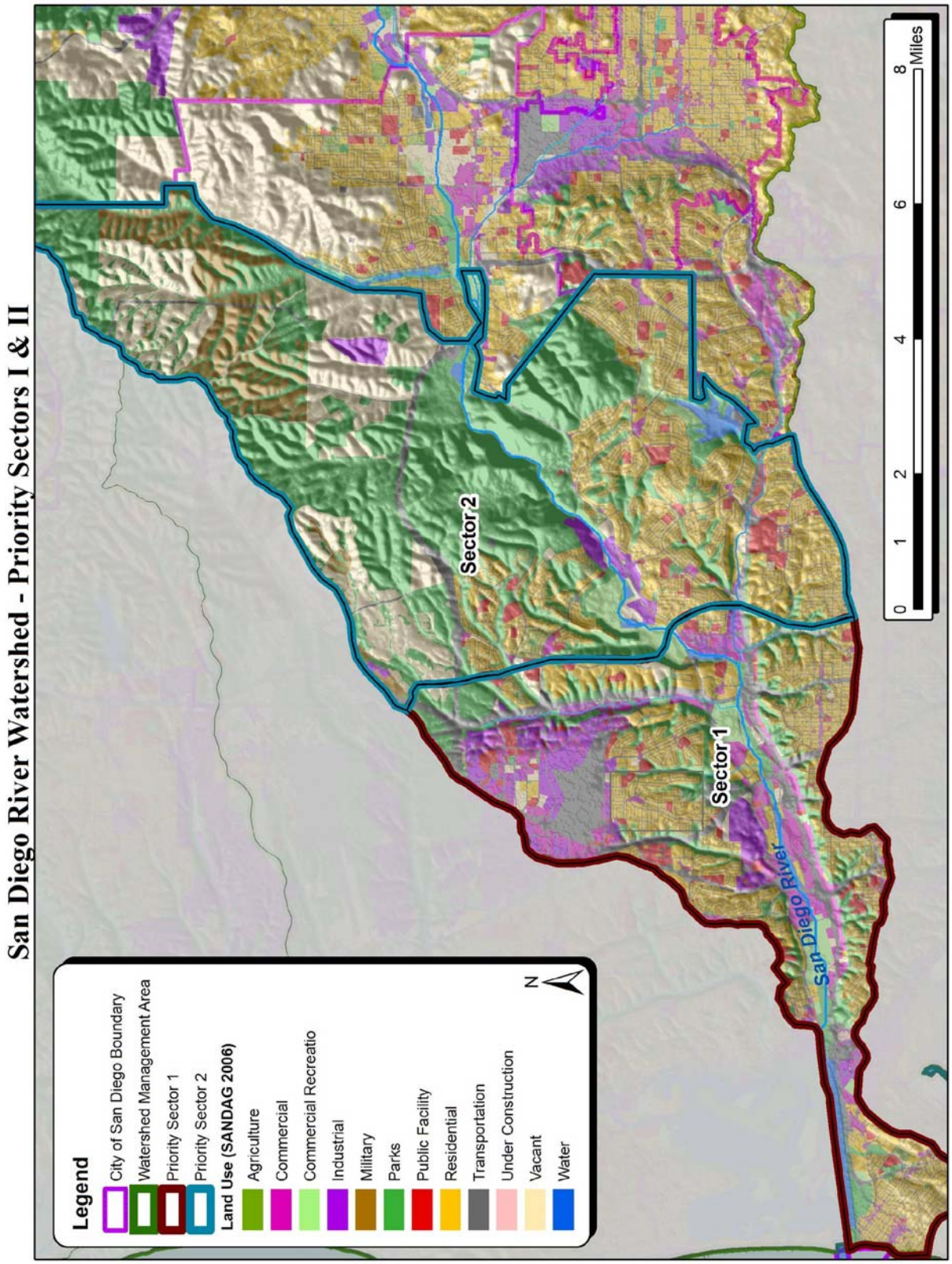
Map 2.27

La Jolla Shores Watershed - Identified BMP Priority Sectors

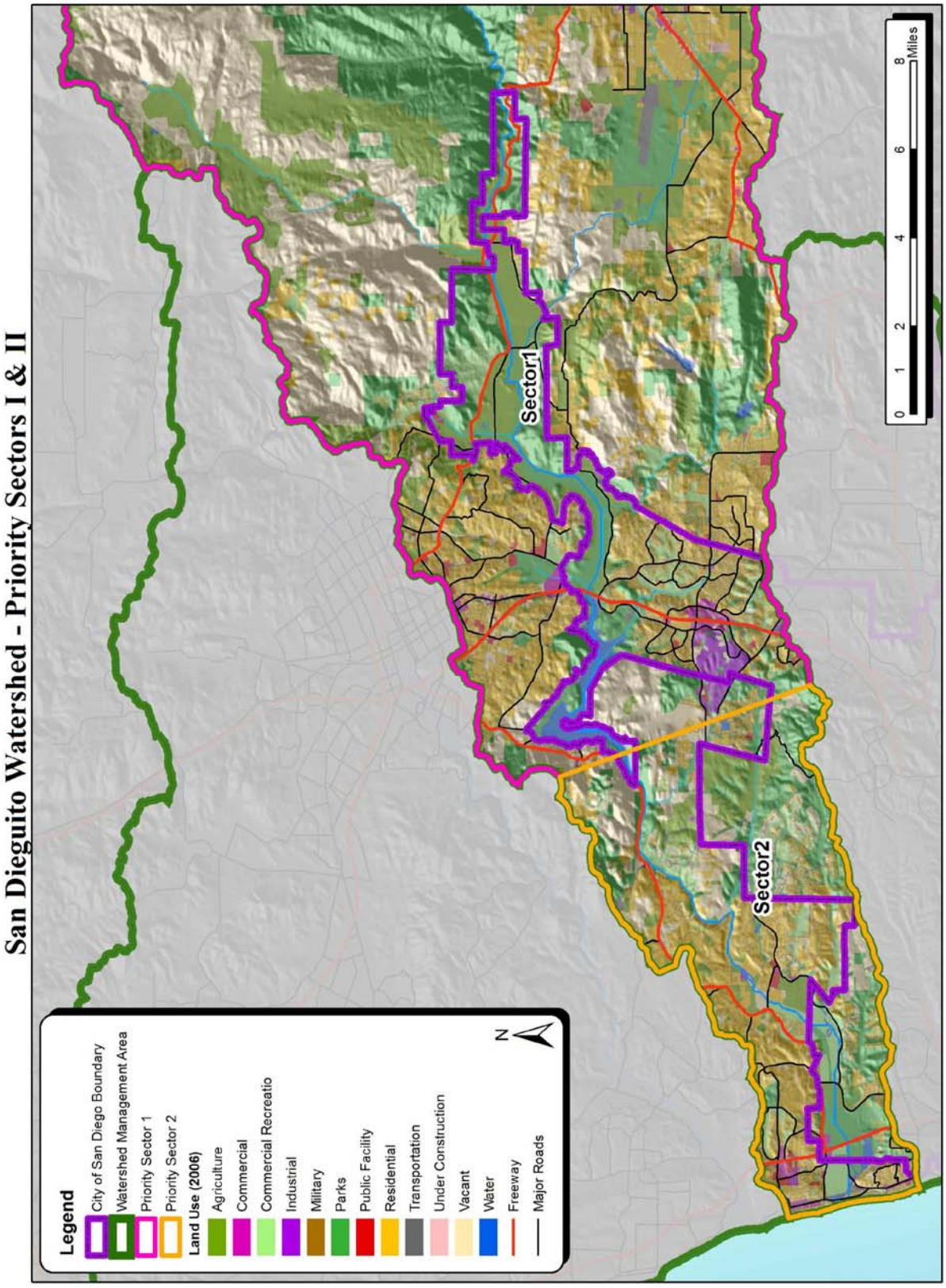
Map 2.32


Los Penasquitos Watershed Prioritization - Identified BMP Priority Sectors
Legend
City of San Diego
Priority Sectors
Sector 1
Sector 2
StormDrains
Freeway
Major Roads
Streams
Land Use (2006)
Agriculture
Commercial
Commercial Recreation
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
N
Sector 1
Sector 2
Los Penasquitos
0
1
2
4
Miles

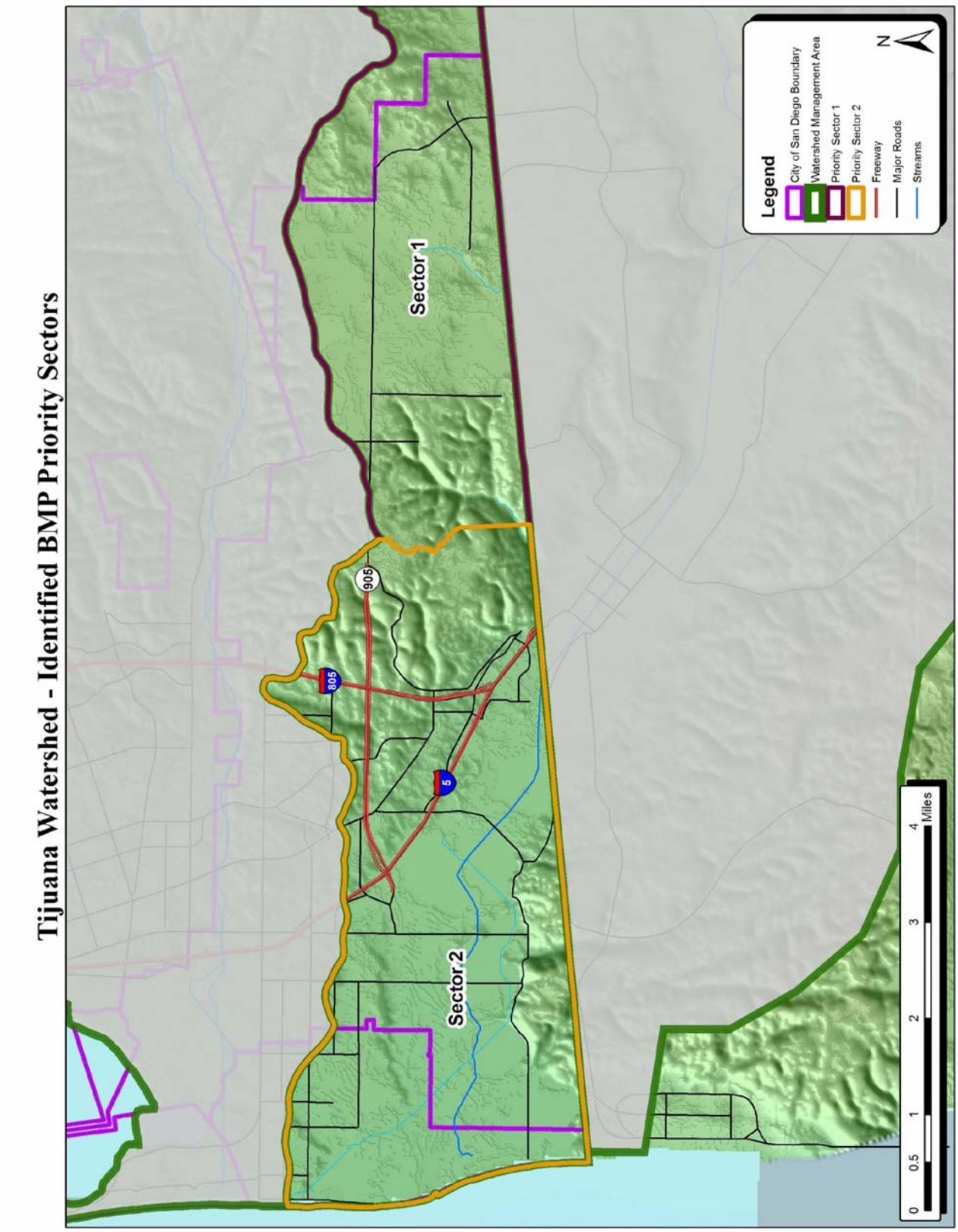
Map 2.38


San Diego River Watershed - Priority Sectors I & II
Legend
City of San Diego Boundary
Watershed Management Area
Priority Sector 1
Priority Sector 2
Land Use (SANDAG 2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
N
Sector 1
Sector 2
San Diego River
0
1
2
4
6
8
Miles

Map 2.44


San Dieguito Watershed - Priority Sectors I & II
Legend
City of San Diego Boundary
Watershed Management Area
Priority Sector 1
Priority Sector 2
Land Use (2006)
Agriculture
Commercial
Commercial Recreatio
Industrial
Military
Parks
Public Facility
Residential
Transportation
Under Construction
Vacant
Water
Freeway
Major Roads
N
Sector1
Sector2
0 1 2 4 6 8
Miles

Map 2.50


Tijuana Watershed - Identified BMP Priority Sectors
Legend
City of San Diego Boundary
Watershed Management Area
Priority Sector 1
Priority Sector 2
Freeway
Major Roads
Streams
N
Sector 1
Sector 2
905
805
5
0
0.5
1
2
3
4
Miles

Map 2.56