APPENDIX F

F. GLAC IRWMP Water Quality Objectives and Targets

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GLAC-IRWMP

Water Quality Objectives & Targets

Introduction

The quality of water is one of the major water resources challenges for the Greater Los Angeles County (GLAC) Region, due in large part to the impact of dry and wet weather flows from heavily urbanized areas, which constitute a significant portion of the Region, and sensitive habitats and recreation demands. Because of this, the Los Angeles Regional Water Quality Control Board (LARWQCB) identified storm water and urban runoff as some of the leading sources of pollutants to waters in Southern California (LARWQCB 2002). Urban runoff-associated pollutants may contribute to a loss of beneficial uses of waterbodies in the Region. For instance bacteria, metals and nutrients have been found to directly impact human and/or ecosystem health, which may lead to significant economic costs in terms of health care, loss of productivity and tourism. This is particularly important for the GLAC Region which is well known for the recreational opportunities afforded by its wealth of natural resources. In addition, and, no less significant, is the negative impact urban runoff can have on the availability of the already-limited usable water supply in the Region.

Efforts to improve the quality of urban storm water runoff and mitigate dry weather flows, therefore, lead to improvements in water quality for water bodies as well as groundwater. This in turn can make these resources available for use as sources of water supply as well as, in the case of surface water, make them more suitable for recreational and habitat purposes.

For the GLAC IRWM Region, water quality targets were set in terms of establishing storm water capture and treatment capacity (i.e. available volume to capture the volume of runoff from the design storm), emphasizing areas identified as having a greater need, in order to address this major source of water quality degradation. These targets and the methodology used to arrive at them are presented in the following sections.

Goal

Improve the quality of dry and wet weather runoff to help meet beneficial use requirements for the region's receiving water bodies.

Objective

Develop new stormwater capture capacity[1] (or equivalent) spatially dispersed to reduce region-wide pollutant loads, emphasizing higher priority areas[2].

Targets

Water quality targets for the GLAC IRWM Region were developed based on the goal of capturing and treating (see Footnote 1) runoff generated by a ¾" storm over the entire Region, excluding catchments that were greater than or equal to 98% vacant and less than or equal to 1% impervious, and focusing efforts on higher priority areas. Specifically, when applied to the NSMB subregion with scattered development throughout many subwatersheds, the method used results in an overestimated value of 4,290 AF. A simpler method of multiplying developed area by ¾" was used: the total amount of rain that would fall on the 11% developed area in a ¾" storm is 893 AF. Subject to the 2012 LARWQB's update of the NPDES MS4 Permit conditions, which includes new watershed management planning and coordinated watershed monitoring requirements, these assumptions may be revised.

High priority areas were identified based on weighting of the following inputs: 1) Wet weather priority areas; and 2) areas prioritized based on receiving water drainage.

<u>Wet weather priority areas</u>

Wet weather priority areas were identified using the Structural BMP Prioritization and Analysis Tool (SBPAT) which is a GIS-based decision support tool that may be used to identify optimal areas for placement of stormwater Best Management Practice (BMP) controls (see the SBPAT User's Guide for more information [Geosyntec 2008]). The identification of GLAC IRWM water quality targets utilized the first step of SBPAT, which is catchment prioritization. This step assigns priority

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[1] Stormwater capture capacity assumes (1) providing storage volume equivalent to runoff from the 0.75-inch, 24-hour design storm event, (2) designing BMPs to retain the captured volume to the maximum extent practicable via infiltration, evapotranspiration, or harvest and use, and (3) designing BMPs to provide effective treatment to address pollutants of concern for the remaining portion of the captured volume that is not retained. Projects deviating from these specifications may be demonstrated to be equivalent based on comparison of average annual volume captured and/or average annual pollutant load reduction for pollutants of concern. Pollutants of concern are defined as those pollutants expected to be generated from the land uses within the subwatershed and for which the downstream water bodies are impaired (TMDL, 303(d) listed).

[2] High priority areas will be determined based on project-specific characteristics such as project area land use, precipitation, imperviousness and downstream impairments.

levels to individual catchments in the Region through consideration of catchment-specific characteristics, namely pollutant generation and location.

Pollutant generation is determined based on rainfall, as well as the land use of the catchment, which provides information on average imperviousness, typical pollutants expected to be generated and pollutant Event Mean Concentrations (EMCs), which are concentrations of pollutants expected to be found in runoff from that land use. Location is used to flag those catchments that drain to impaired waterbodies, with catchments draining to waterbodies with approved TMDLs prioritized higher than those draining to waterbodies listed on the 303(d) list[3], which are in turn assigned a higher priority to those draining to waterbodies without impairments.

For purposes of prioritization, the GLAC region was split into major watersheds, with prioritization normalized according to these watersheds. In some Subregions, dividing by major watersheds divided individual Subregions into multiple subareas, however, with the exception of a few catchments, portions of different Subregions were not grouped together for normalization.

Receiving Water Analysis

Since the SBPAT analysis is primarily applicable to wet weather and emphasizes land use as a prioritization metric, an additional layer of analysis was added to give emphasis to dry weather flows as well as impacts to receiving waters.

The receiving water prioritization was based on catchment drainage, by producing maps showing 1) rankings of catchments based on the number of approved TMDLs in the waterbodies to which they drain, 2) rankings of catchments based on the number of 303(d) listings (without approved TMDLs) in the waterbodies to which they drain (see footnote 2), and, for those Subregions that have them, and 3) catchments that drain into "Areas of Special Biological Significance" (ASBS). Through work with each Subregion as well as discussions with the Water Quality Working Group, protection of ASBSs from urban stormwater runoff was identified as a high priority water quality concern. Not all Subregions contain ASBSs, however, so in those that do not contain them, only the first two maps were used to create a composite receiving water prioritization, with each given a weight of 45 and 20 respectively out of a total of 65 possible points. Catchments in Subregions that do contain ASBSs were prioritized by weighting all three maps 45, 20 and 35 out of a total of 100 possible points.

The composite Receiving Water map created from this prioritization scheme is shown in Figure 1.

Composite Prioritization

A final composite map was created by combining the wet weather and receiving water maps (Figure 2) in order to arrive at an overall prioritization for all catchments in the GLAC Region. The wet weather and receiving water analyses were given equal weight in this composite, and, as

[3] 303d impairments resulting from legacy pollutants and natural and non-urban runoff sources, exclusive of bacteria, were excluded from consideration, based on input provided by individual Subregions.

described earlier, catchments that were greater than or equal to 98% vacant and less than or equal to 1% impervious were excluded from the prioritization. Catchments were grouped into quantities and assigned a rank from 1 to 5, with 5 being the highest priority.

The cumulative prioritization map for the GLAC Region is shown in Figure 2, with maps of each Subregion shown in Figures 3 through 7.

IRWM water quality targets are presented in Table 1. As stated above, these targets were calculated based on the goal of creating capture and treatment capacity (see footnote 1) for the ¾" storm across the GLAC Region, excluding undeveloped catchments, and with an emphasis on high priority catchments. It should be noted that these targets do not take into account existing water quality projects or new information learned in water quality studies and new water quality models . Due to the large number of potential existing projects, determining the benefits of existing projects and subtracting them from the overall targets is left to the discretion of individual Subregions.

Table 1. IRWMP Water Quality Targets

Management Capacity (AF/ ¾" storm)[1]	North Santa Monica Bay[2]	Upper Los Angeles River	Upper San Gabriel and Rio Hondo	Lower San Gabriel and Los Angeles Rivers	South Bay	Total
Total	**900**	**14,700**	**11,500**	**14,400**	**12,700**	**54,200**
5 (highest priority)	310	2,500	1,600	1,700	2,800	8,910
4	270	3,400	1,600	2,600	3,500	11,370
3	130	2,500	1,700	2,300	2,900	9,530
2	100	2,900	2,500	3,200	1,900	10,600
1 (lowest priority)	90	3,400	4,100	4,600	1,600	13,790

[1]The calculation of ¾" storm capture capacity excludes all catchments greater than or equal to 98% vacant and less than or equal to 1% impervious.

[2] The calculation of North Santa Monica Bay priority ranking was based on modeling done using results from the primary regional method applied proportionally to the total from the alternate method for this subregion.

References

Geosyntec Consultants. 2008. A User's Guide for the Structural BMP Prioritization and Analysis Tool (SBPAT v1.0). December.

Los Angeles Regional Water Quality Control Board (LARWQCB). 2002. Municipal Storm Water Q&A. January

Exhibit A – Maps of Water Quality Targets by IRWMP Subregion (Figures 1-7)

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Figure 1: Receiving Water Prioritization: Composite

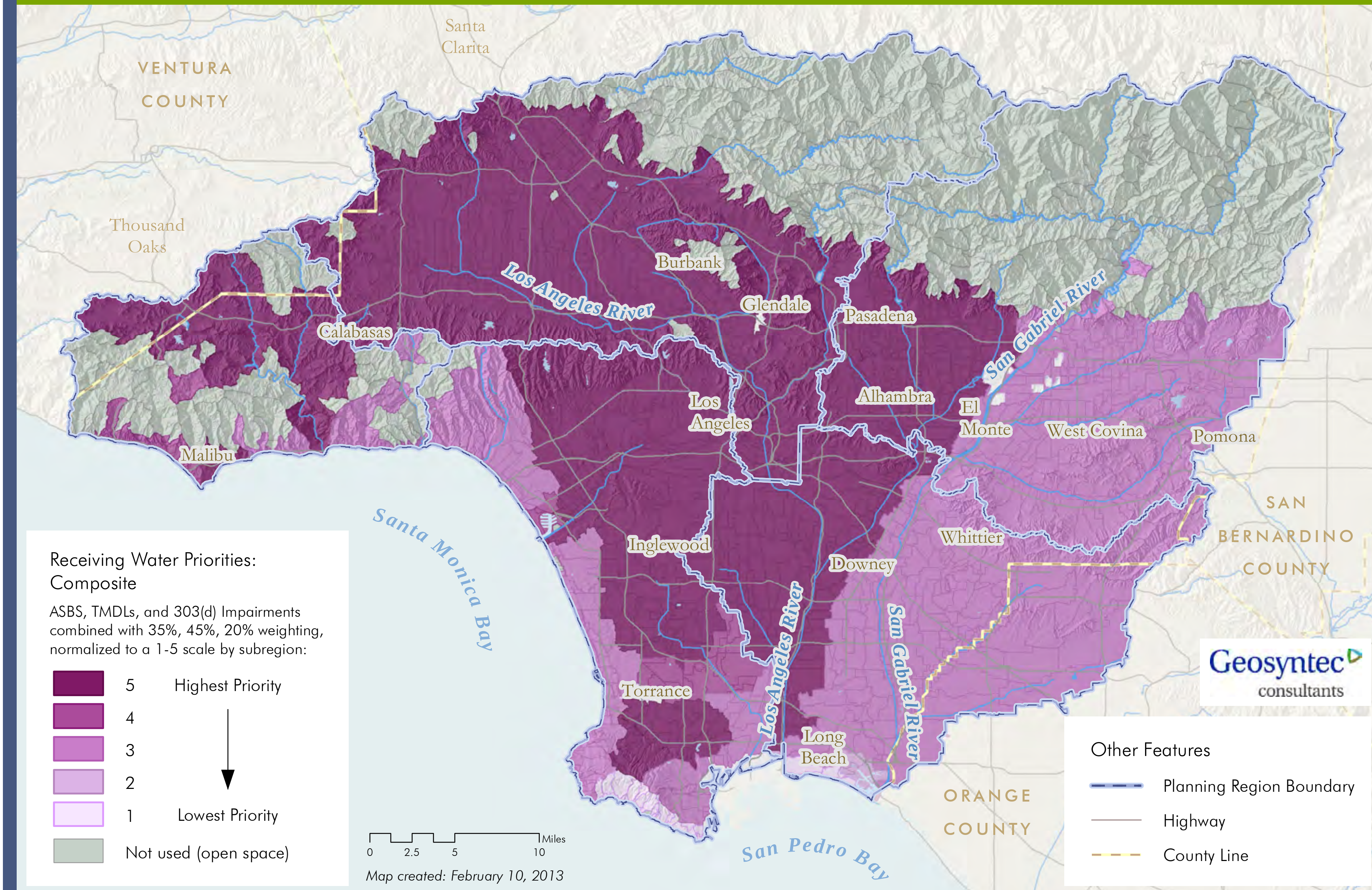


Figure 2: Water Quality Prioritization: Composite (Equal Weighting)

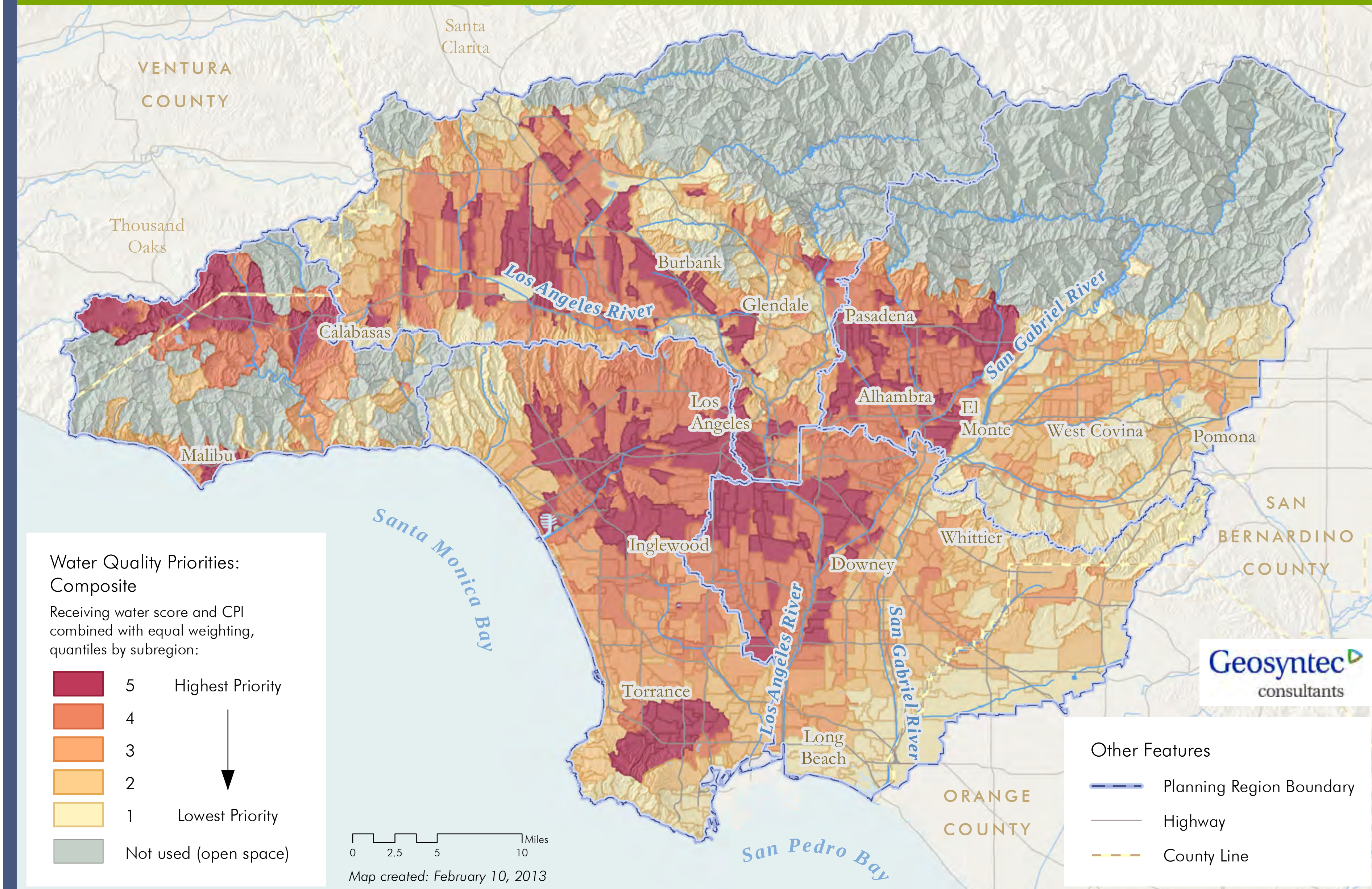
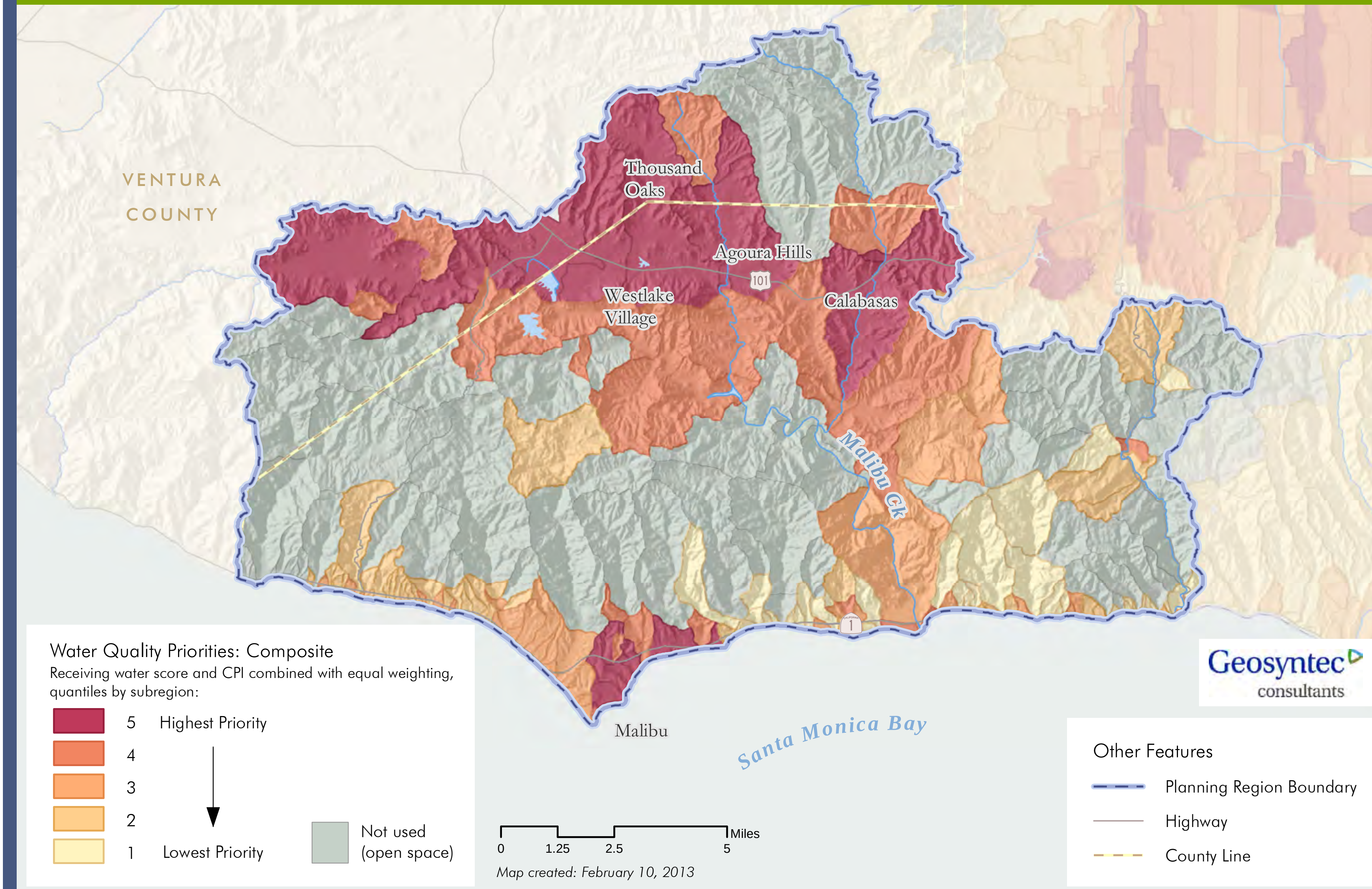


Figure 3: Water Quality Prioritization: Composite (Equal Weighting)

North Santa Monica Bay



Map created: February 10, 2013

Geosyntec consultants

Figure 4: Water Quality Prioritization: Composite (Equal Weighting)

Lower Los Angeles and San Gabriel Rivers

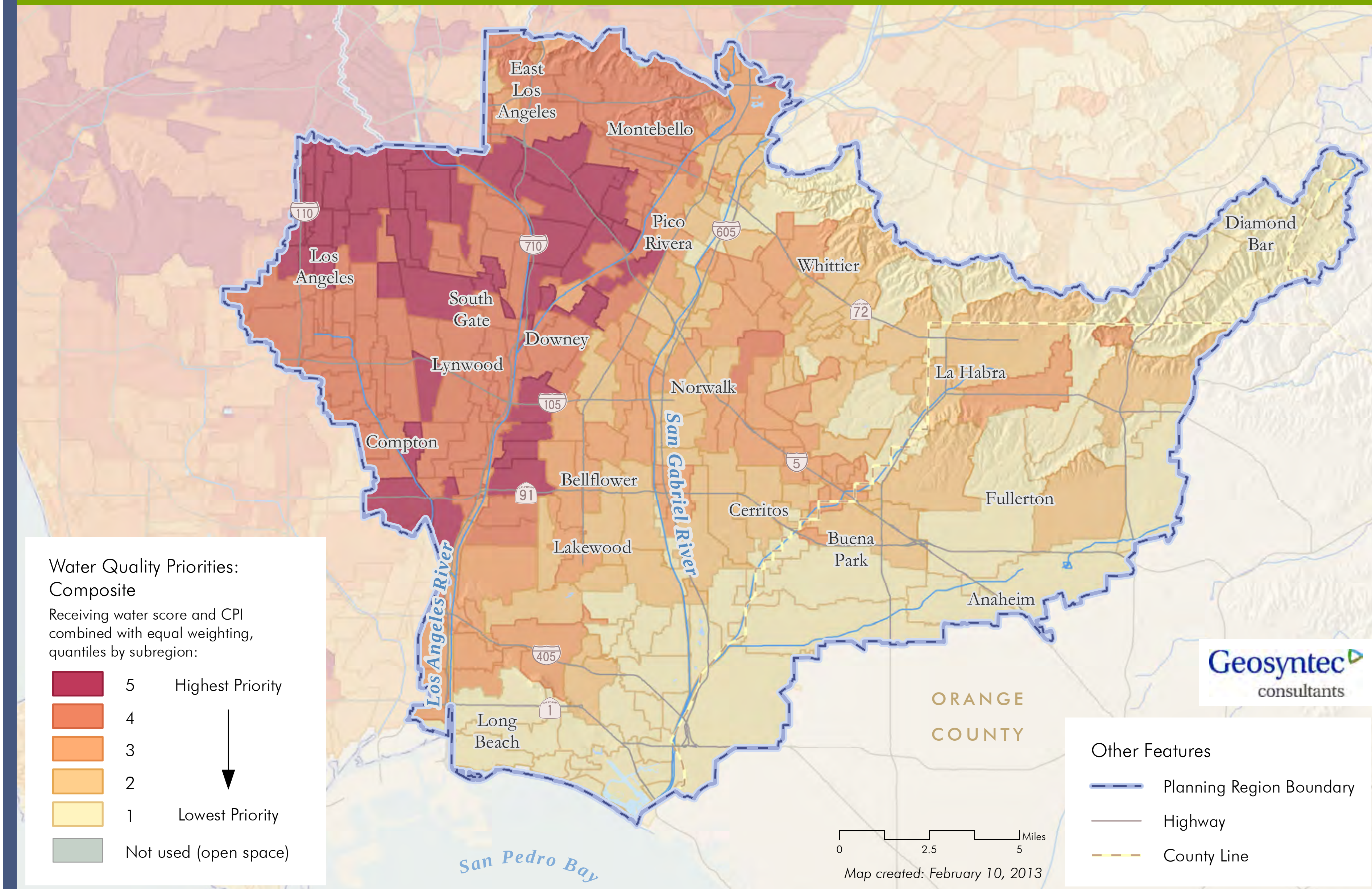


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Figure 5: Water Quality Prioritization: Composite (Equal Weighting)

Upper San Gabriel and Rio Hondo Rivers

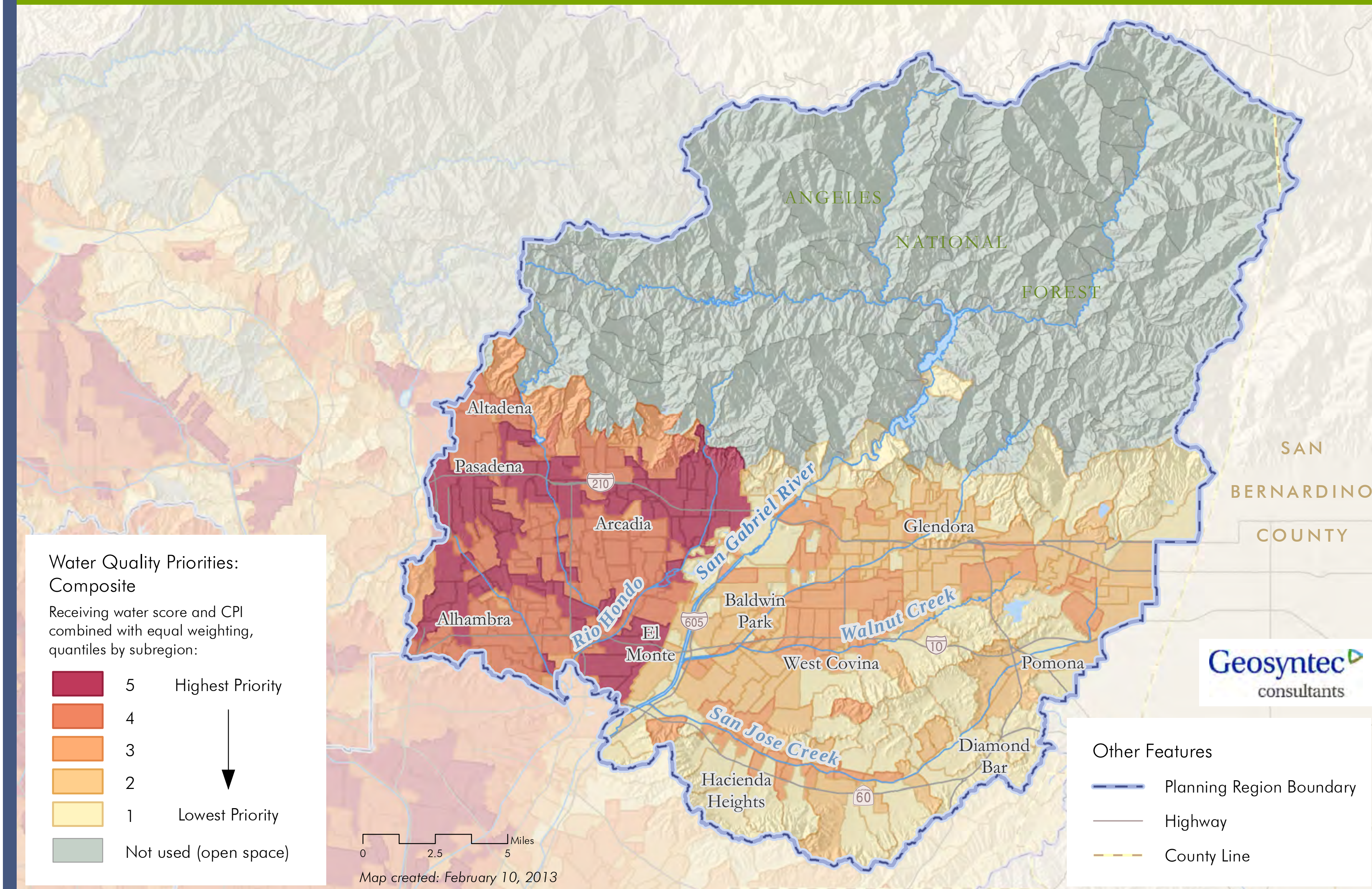

Figure 6: Water Quality Prioritization: Composite (Equal Weighting)

Upper Los Angeles River

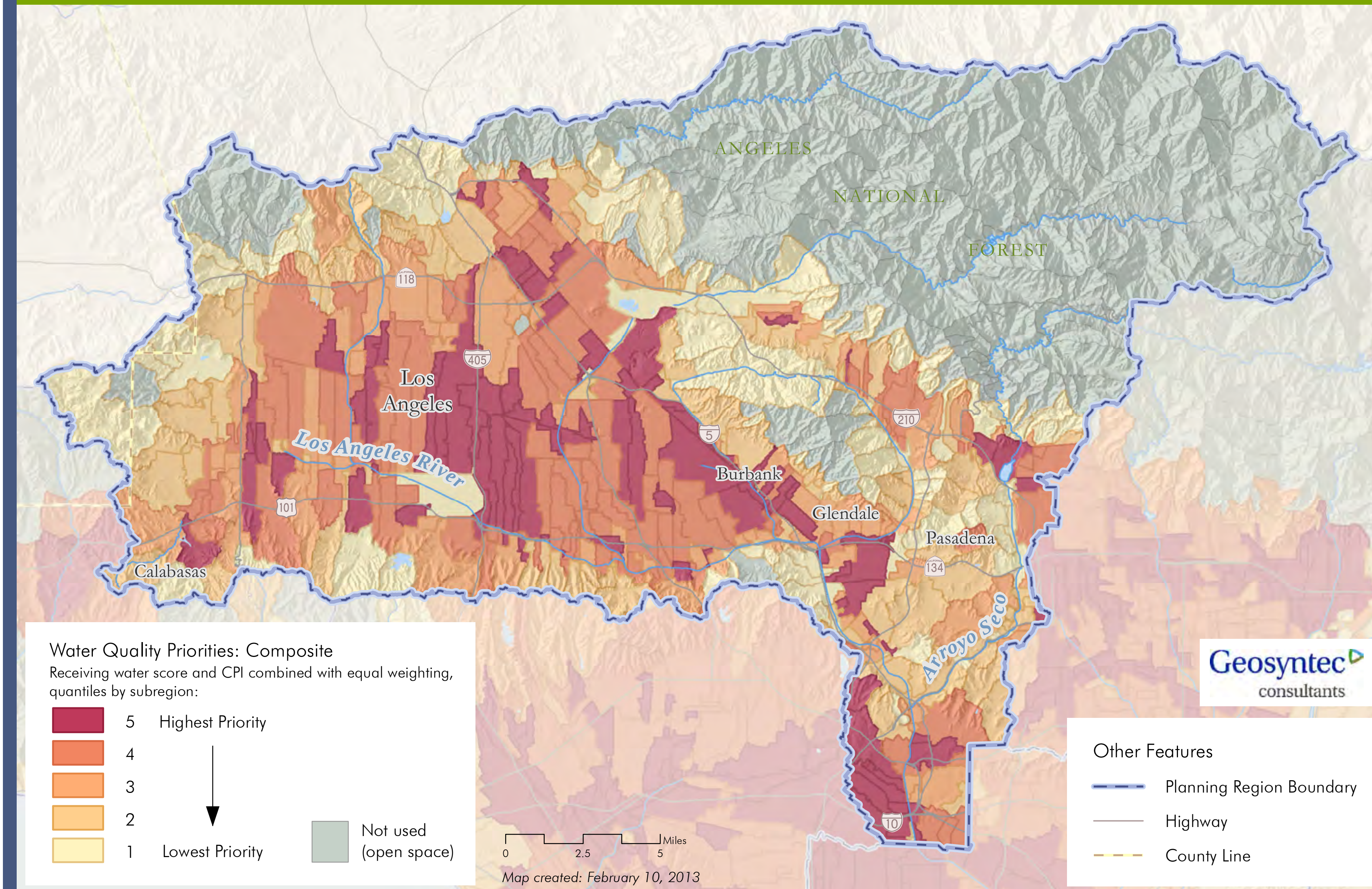

Figure 7: Water Quality Prioritization: Composite (Equal Weighting)

South Santa Monica Bay