

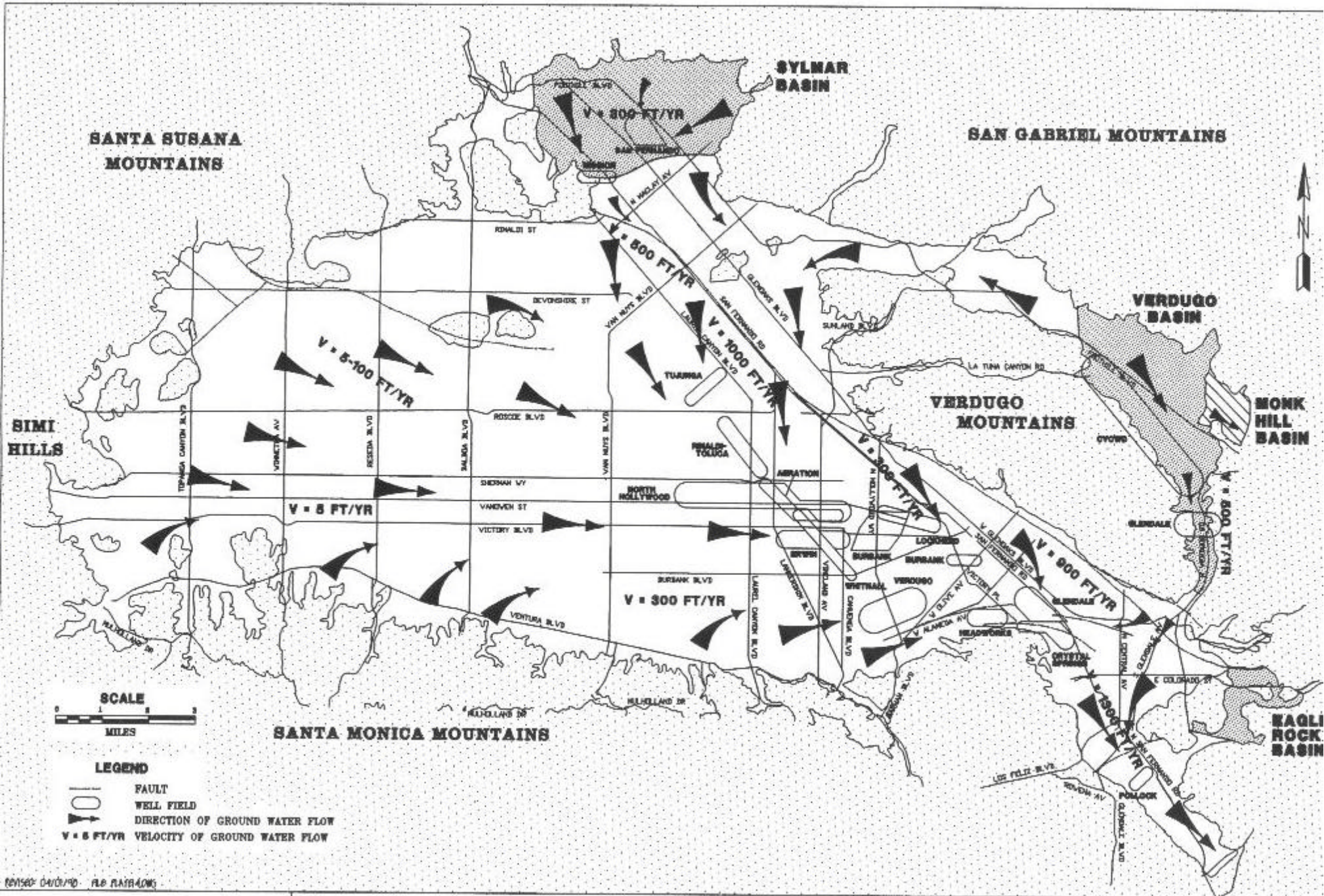
Chromium 6 Workshop

Special Board Meeting (Glendale)

November 13, 2000

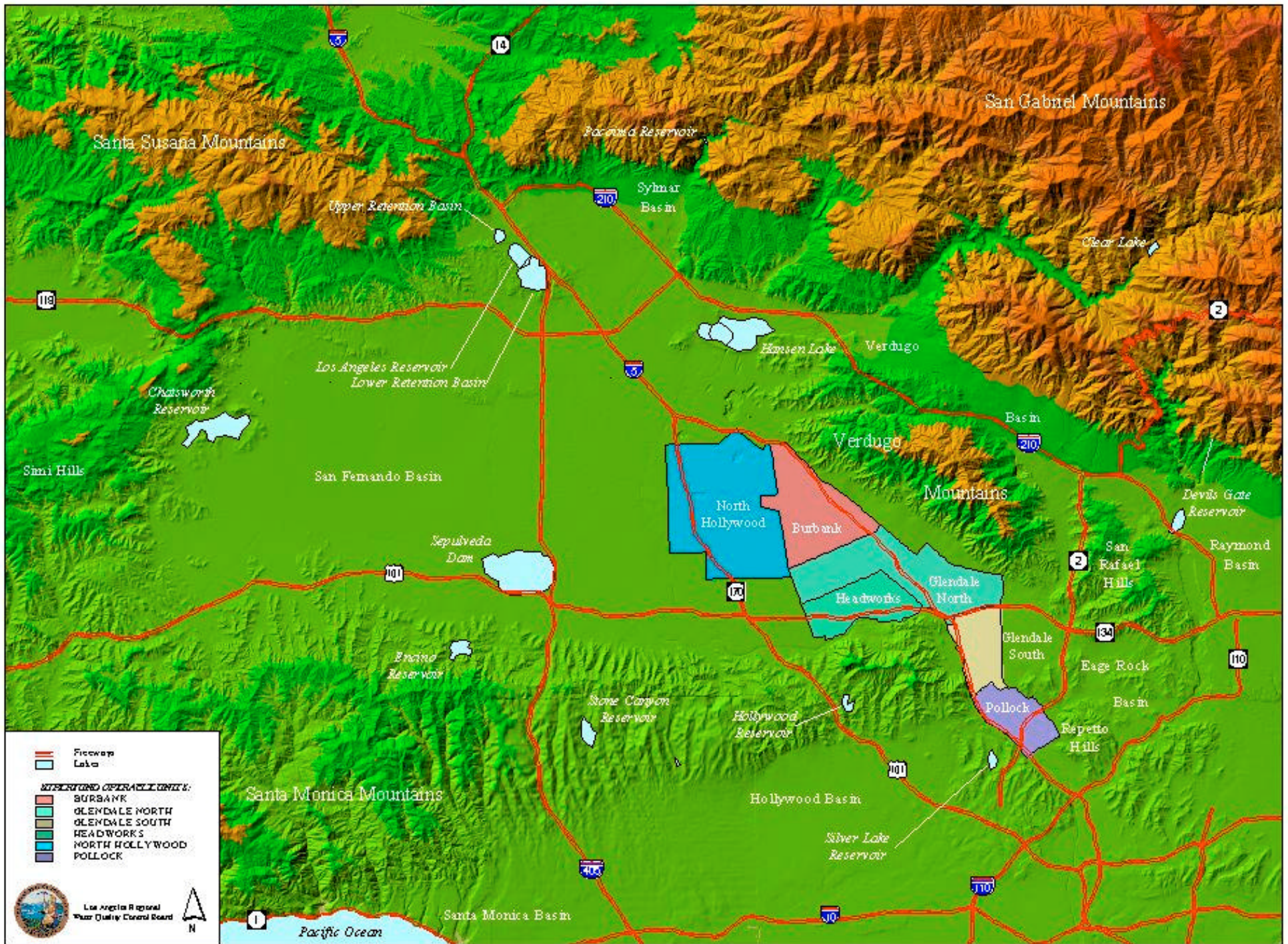
California Regional Water Quality Control Board

Los Angeles Region



**1995-96 Water Year
ULARA Watermaster**

Upper Los Angeles River Area



Miles

Chromium

▶ Chromium in the environment

– exists in three principal forms

- Chromium metal (0)
- Chromium Three (trivalent chrome)
 - common mineral
 - essential nutrient in very small quantities
- Chromium Six (hexavalent chromium)
 - toxic chemical
 - forms soluble non-reactive compounds (readily moves in groundwater)
 - may occur naturally in very small concentrations

Sources of Chromium 6 Contamination

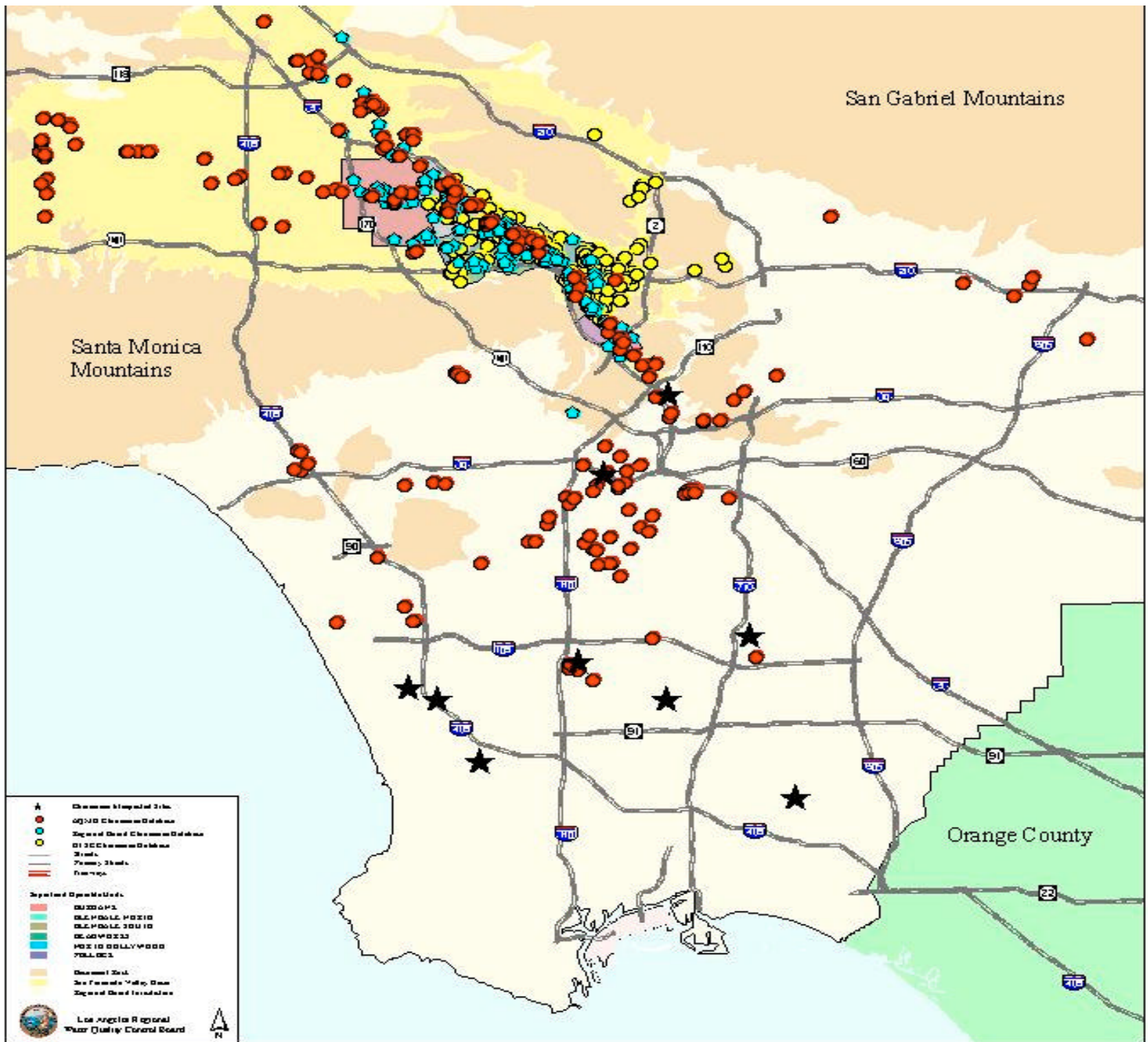
- ▶ Metal plating
- ▶ Steel making
- ▶ Bricks in furnaces
- ▶ Dyes and pigments
- ▶ Chrome plating
- ▶ Leather tanning
- ▶ Wood preservation

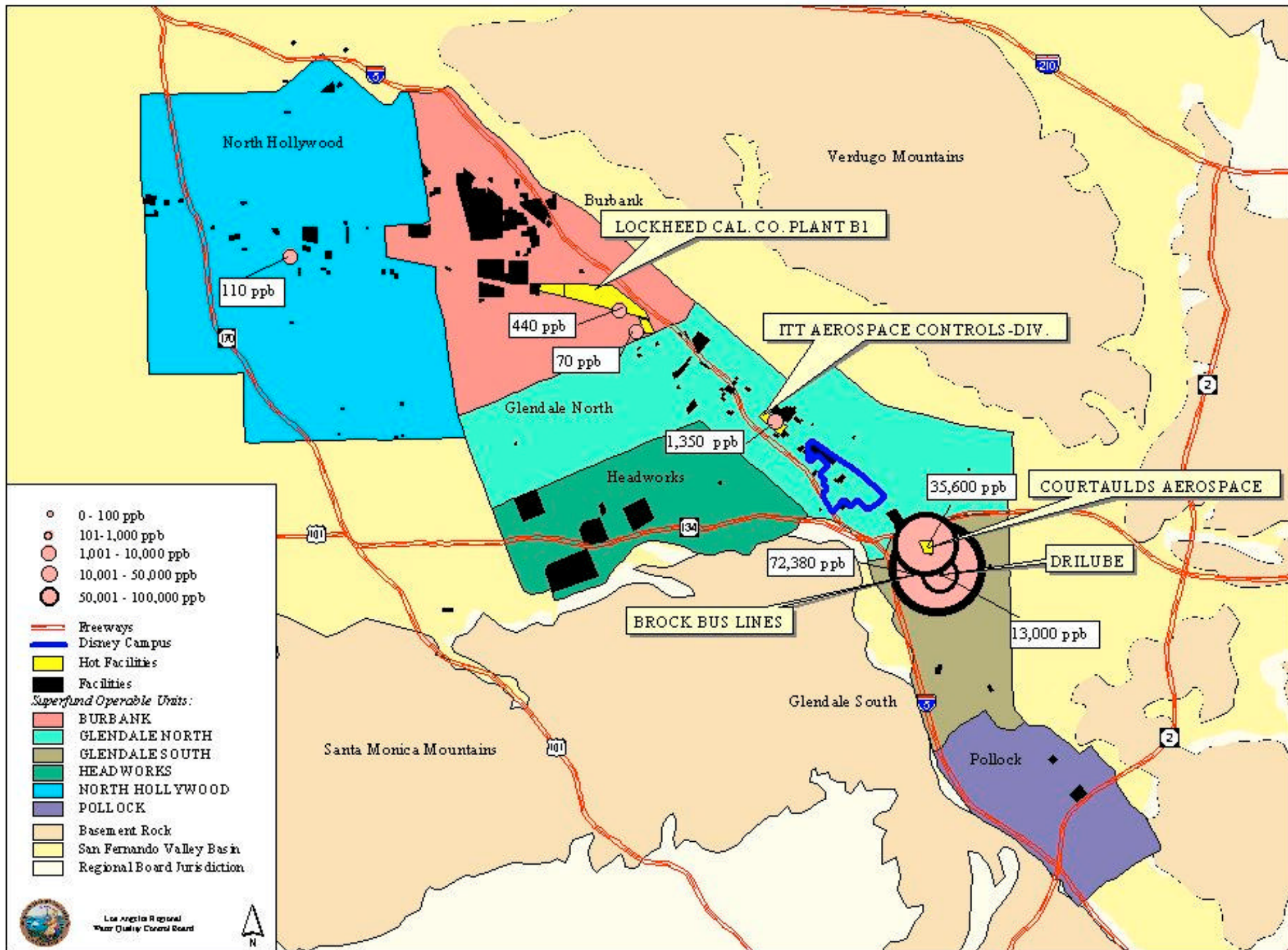
Chromium Contamination

- ▶ Chromium 6 contamination:
 - ▶ - is widespread in the San Fernando Valley, especially along the eastern section
 - ▶ - is predominantly the result of industrial practices that occurred from the 1940s through the early 1980s

San Fernando Valley Basin

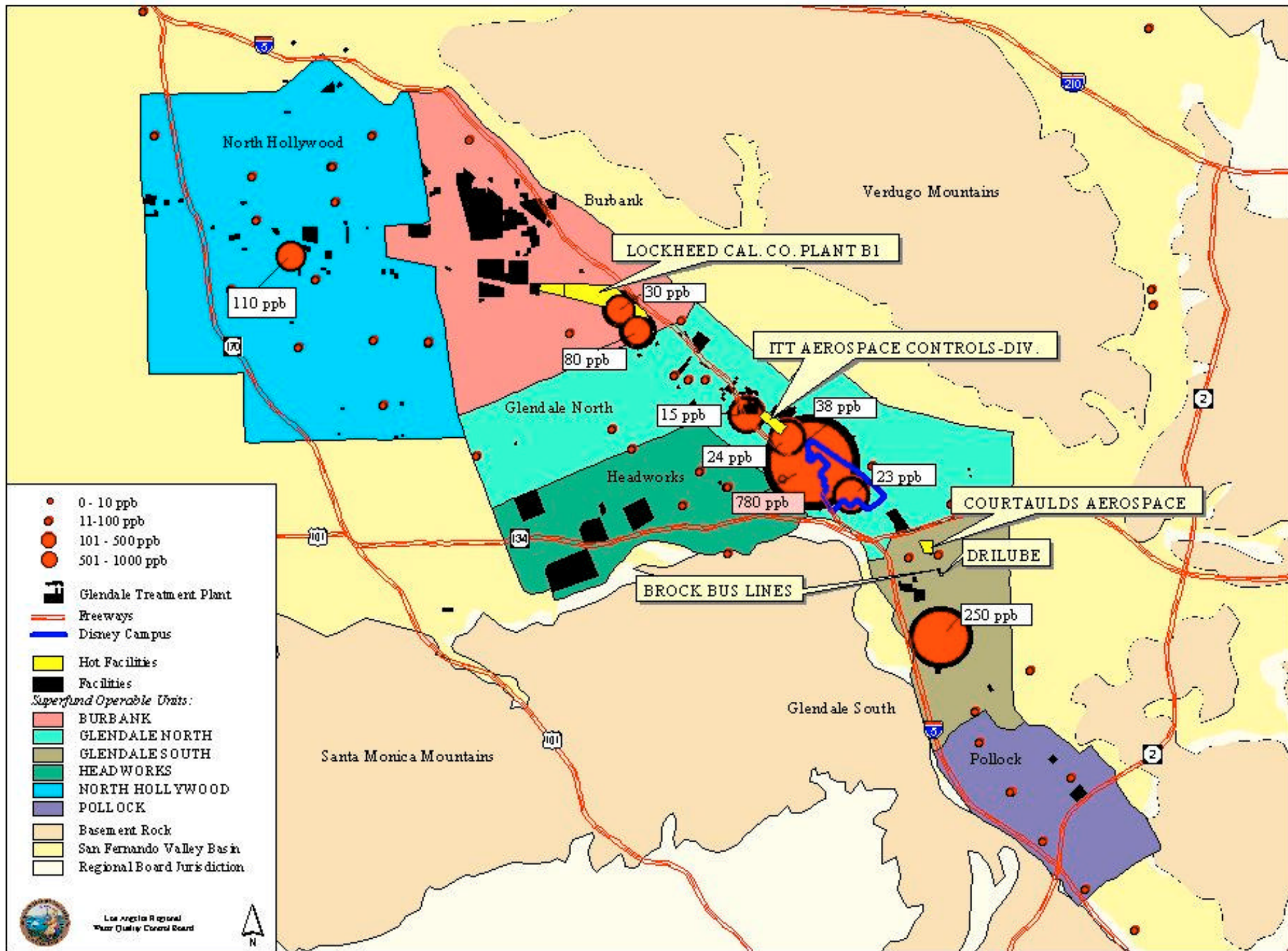
- Large unconfined aquifer composed of alluvial deposits.
- Groundwater flows from west and north to the SE.
- Major aquifer for Los Angeles, Burbank and Glendale.





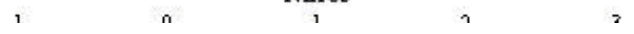
Miles

1 0 1 2



- 0 - 10 ppb
- 11-100 ppb
- 101 - 500 ppb
- 501 - 1000 ppb
- Glendale Treatment Plant
- Freeways
- Disney Campus
- Hot Facilities
- Facilities
- Superfund Operable Units:*
- BURBANK
- GLENDALE NORTH
- GLENDALE SOUTH
- HEADWORKS
- NORTH HOLLYWOOD
- POLLCK
- Basement Rock
- San Fernando Valley Basin
- Regional Board Jurisdiction

Miles



Los Angeles Regional Water Quality Control Board



Chromium Contamination (continued)

- ▶ Several significant active sites have been under Regional Board oversight for some time
 - Lockheed Aeronautics
 - ITT Industries
 - Allied Signal
 - Menasco (Division of Coltech Industries)
 - Courtaulds Aerospace
 - Drilube Company

Chromium Contamination

(continued)

- ▶ As pointed out earlier, Chromium 6 contamination has also been found in the South Bay and in San Gabriel Valley, e.g.
 - one recent site was discovered as a result of excavation of the Alameda transportation corridor
 - ▶ Barkens Corporation
 - 810,000 ppb in shallow groundwater
 - site currently being assessed for extent of contamination

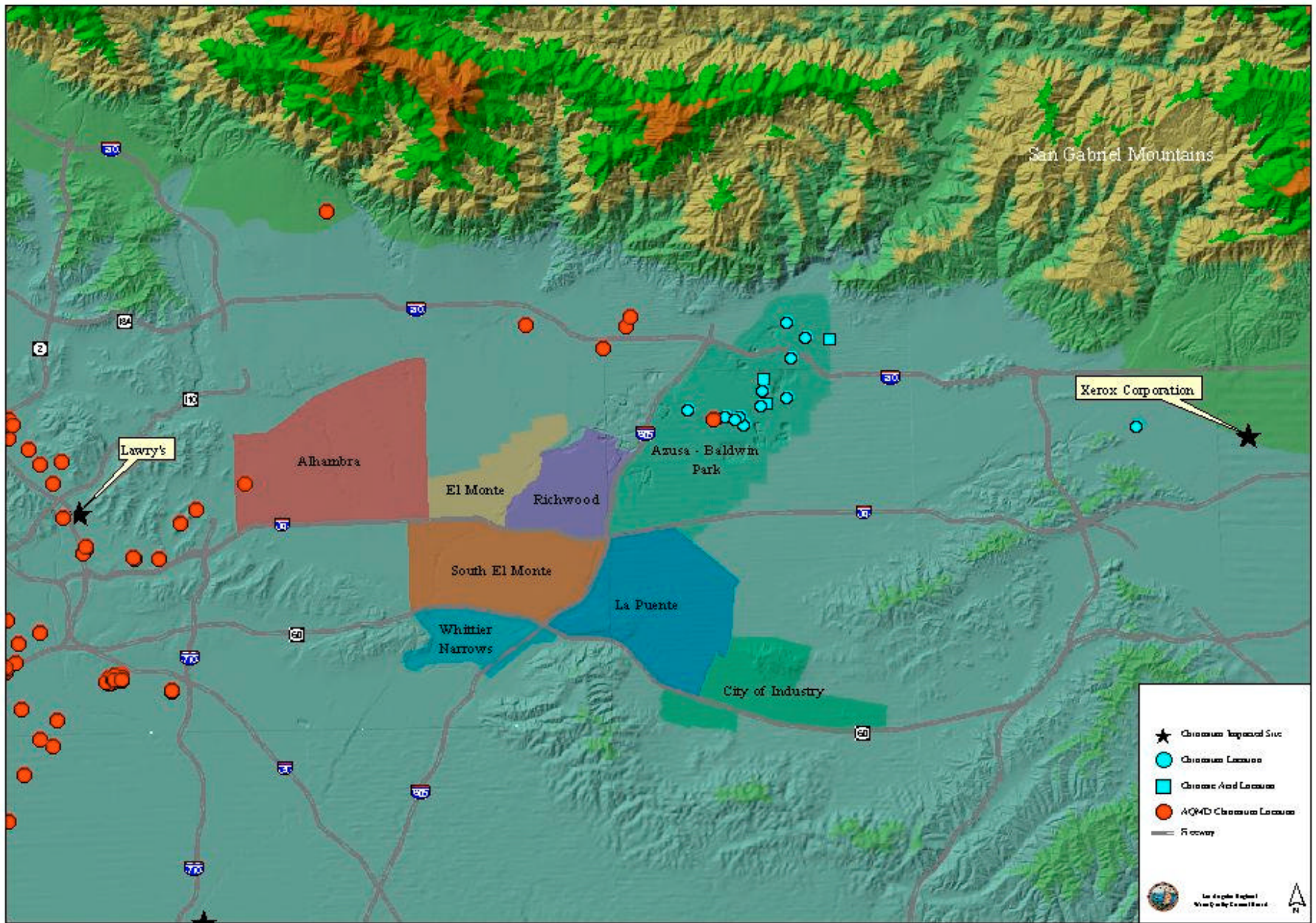
South Bay Chromium Sites

- Barkens Corporation (Compton)
- Fairchild Industries (Manhattan Beach)
- Mondo Chrome (South Gate)
- US Chrome
- Boeing (McDonnell Douglas-Long Beach)
- Anadite Corporation (South Gate)
- Voi Shan, Inc. (Paramount)

San Gabriel Valley Sites

- SGV Watermaster has begun a regional chromium 6 groundwater quality assessment
- 18 suspected chromium 6 sites known
- Xerox site in Pomona almost cleaned up

San Gabriel Valley Suspected Chromium 6 Sites



Chromium Contamination (continued)

- ▶ Typically, chromium 6 contamination is initially found at very high levels in the soil and shallow groundwater
 - ▶ Regional Board directed/oversight cleanups are producing results
 - Anadite (Southgate)
 - ▶ shallow groundwater ranged from 43,000 ppb to 5,000 ppb
 - Lawry's (Los Angeles)
 - ▶ shallow groundwater reduced from 34,000 ppb to 110 ppb
 - ▶ Each site requires extensive staff involvement to review technical reports

Chromium Contamination (continued)

- ▶ Chromium 6 contamination in deeper drinking water aquifers results from long-term contaminant spreading
 - through pathways such as improperly abandoned wells
 - contaminant migration to lower aquifers over time
- ▶ While drinking water aquifers show relatively small amounts of contamination,
 - it is imperative that existing sources of contamination be identified and the contamination remediated as quickly as possible to protect the resource

Remediation Approach

- After contamination is delineated in the soil, excavation and chemical fixation techniques are used to remove or immobilize residual contamination.
- These steps are followed by verification sampling and leachability tests to assure diminished threat to groundwater.

Remediation Approach

(continued)

- Regional Board staff designs site-specific cleanup goals based on threat or depth to groundwater & proximity to water supply well (s). Cleanup to total chromium MCL is recommended.
- Groundwater is best treated using ion exchange at a cost of \$0.30 to \$0.80 per 1,000 gallons.

Local Groundwater Supply

- ▶ Groundwater pumped locally is
 - treated and blended with imported water from MWD or other wells before being distributed to customers
 - in effect, this reduces the concentration of chromium being delivered
- ▶ All distributed water meets Federal and State drinking water standards or is removed from supply

USEPA/Regional Board San Fernando Valley Chromium 6 Investigation

▶ Goal

- Identify all sites that have used chromium - develop a multi-agency database.
 - ✓ Over 200 RB chromium sites identified.
 - ✓ 6 active sites impacted with chromium 6.
- Inspections will identify all chromium 6 sites in phases.
 - ✓ Inspections will start beginning of November 2000.
- Require soil assessment and groundwater assessment, if necessary.

SFV Cooperative Agreement Under the 1999 Work Plan

- Identify sites that have used chromium - develop database
 - ✓ 6 active sites contaminated with chromium
- Develop chemical use database (for all chemicals)
- Write case summaries for identified chromium 6 sites
- Develop geographical information system (GIS) maps
- Develop quality assurance project plan (QAPP)
- Develop a database system to input chromium data
- Continue work on active solvent and chromium sites

SFV Cooperative Agreement Under the 2000 Work Plan

- ▶ Complete identification of potential chromium sites
 - ✓ Over 200 potential chromium sites identified
- ▶ Conduct site inspections on identified sites
 - ✓ Inspections will start beginning of November 2000
- ▶ Require soil and groundwater assessment, if needed
- ▶ Require soil and groundwater cleanup, if needed
- ▶ Complete Quality Assurance Project Plan (completed)
- ▶ Provide public outreach/workshops for dischargers and community

California Toxics Rule (CTR)

California Toxics Rule (CTR) imposes Numerical Limits for continuous surface water discharge:

- Freshwater (e.g. LA River) is 11 ppb
- Saltwater (e.g. Ocean) is 50 ppb

Limits driven by aquatic toxicity which can differ from human drinking water MCL levels

SUMMARY

- ▶ Regional Board authority is to ensure that contamination is prevented and/or identified and remediated
 - ▶ Maintain consistent enforcement policy
 - ✓ Issue CAOs for soil/groundwater assessments and cleanup
 - ✓ reduce threat/impact to water supply wells
 - ✓ reduce long-term cost of groundwater cleanup
- ▶ Without regional groundwater cleanup
 - ✓ difficult to protect uncontaminated water supply wells.