Nipomo Mesa Management Area Technical Group

Presentation of 2008 Annual Report

PLEASE NOTE

The following slides are a summary of portions of the Annual Report.

The Annual Report should be the document that is read and referenced.

Key Technical Personnel

Robert S. Miller, PE, Chairman
Woodlands Mutual Water Company

Steve Bachman, PhD, PG, Vice Chairman
ConocoPhillips

Brad Newton, PhD, PG, Secretary
Nipomo Community Services District

Key Technical Personnel

Norm Brown, PhD, PG
ConocoPhillips

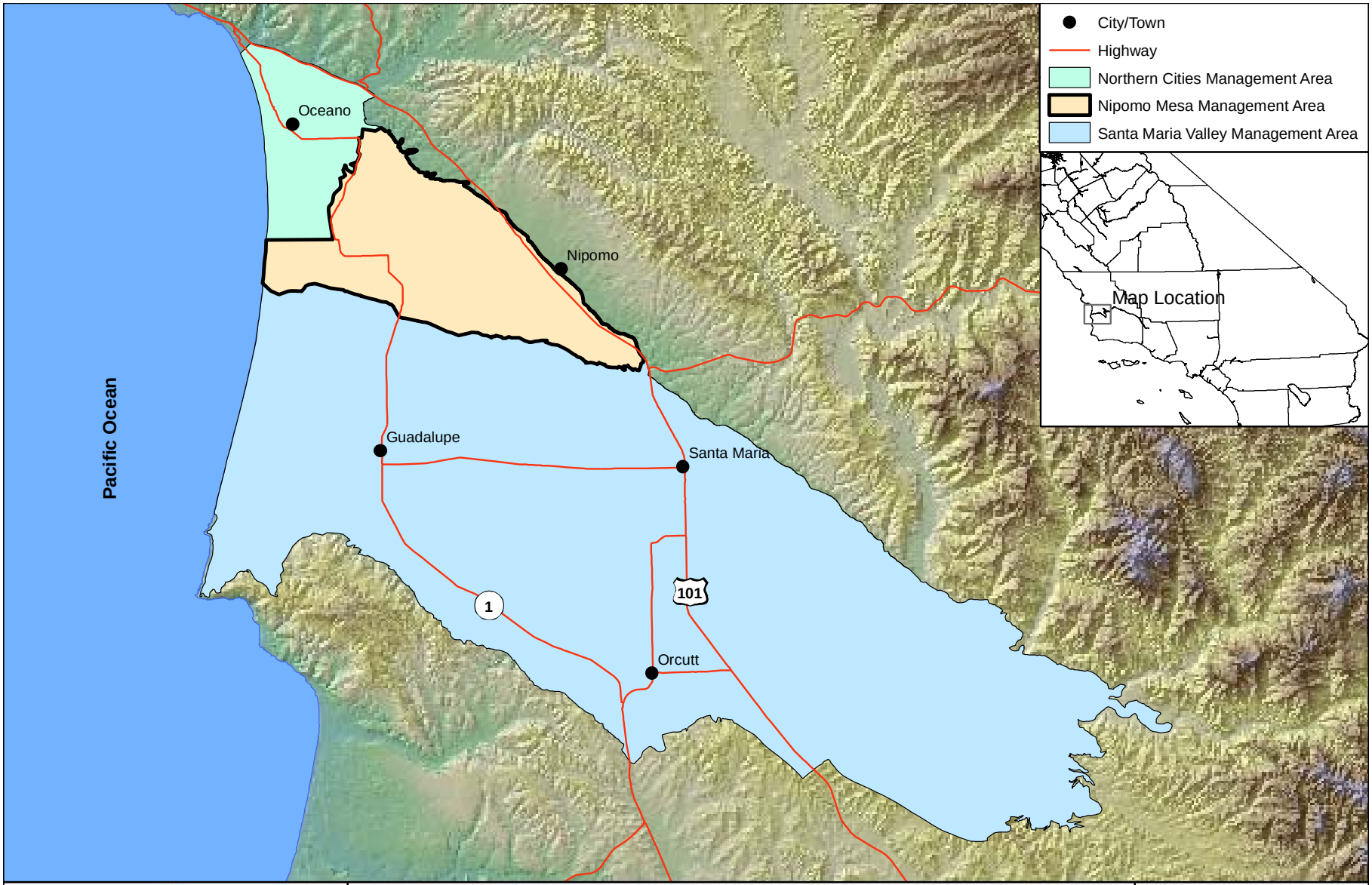
Timothy S. Cleath, PG, CEG, CHG
Woodlands Mutual Water Company

Jacqueline V. Frederick, Attorney
Agriculture Representation

Key Technical Personnel

Carl Holloway
Agricultural Representative

Toby B. Moore, PhD, PG, CHG
Golden State Water Company



NOTES:

Coordinate System: UTM Zone 10N
Horizontal Datum: NAD 83

N

Santa Maria Valley Groundwater Basin and Management Areas

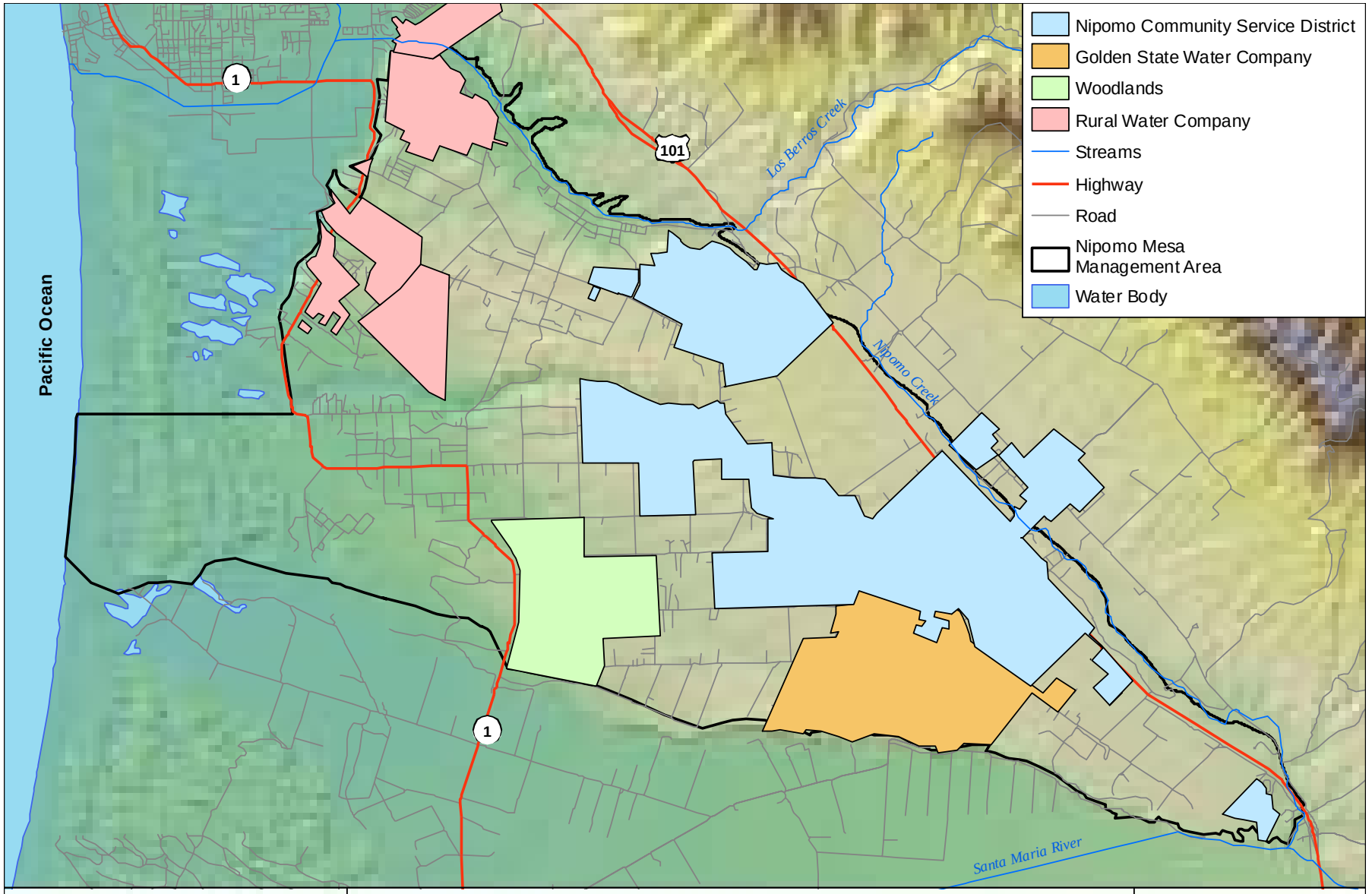
0 1 2 4 6 8

Miles

NMMA Technical Group

DATE: 04-02-09

BY: J. Degner



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Horizontal Datum: NAD 83
Topography: National Elevation Dataset 10m

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NMMA Water Purveyor Boundaries

0 0.5 1 2 3 4
Miles

NMMA Technical Group

DATE: 04/02/09 BY: J. Degner

History and Purpose of Tech Group

- Litigation over water rights initiated in 1997
- Most parties agreed to a settlement in 2005 (the “Stipulation”), which was formalized by the Court in 2008
- As part of the stipulation, a technical group was formed to analyze, monitor, and report on the Nipomo Mesa Management Area (NMMA) aquifer.

History and Purpose of Tech Group

- Technical Group includes representatives from the following parties:
  - Golden State Water Company
  - Rural Water Company
  - Conoco Phillips
  - Nipomo Community Services District
  - Agricultural Representative
  - Woodlands Mutual Water Company

History and Purpose of Tech Group

- Tech Group meetings can be attended by any stipulating party
- Work products are released through the Court and then available to the public

History and Purpose of Tech Group

Key Objectives of the Tech Group:

- Monitoring plan – quality, quantity, and other parameters
- Annual report on NMMA aquifer health filed to the Court
- Identify conditions that may trigger corrective actions

Groundwater Primer

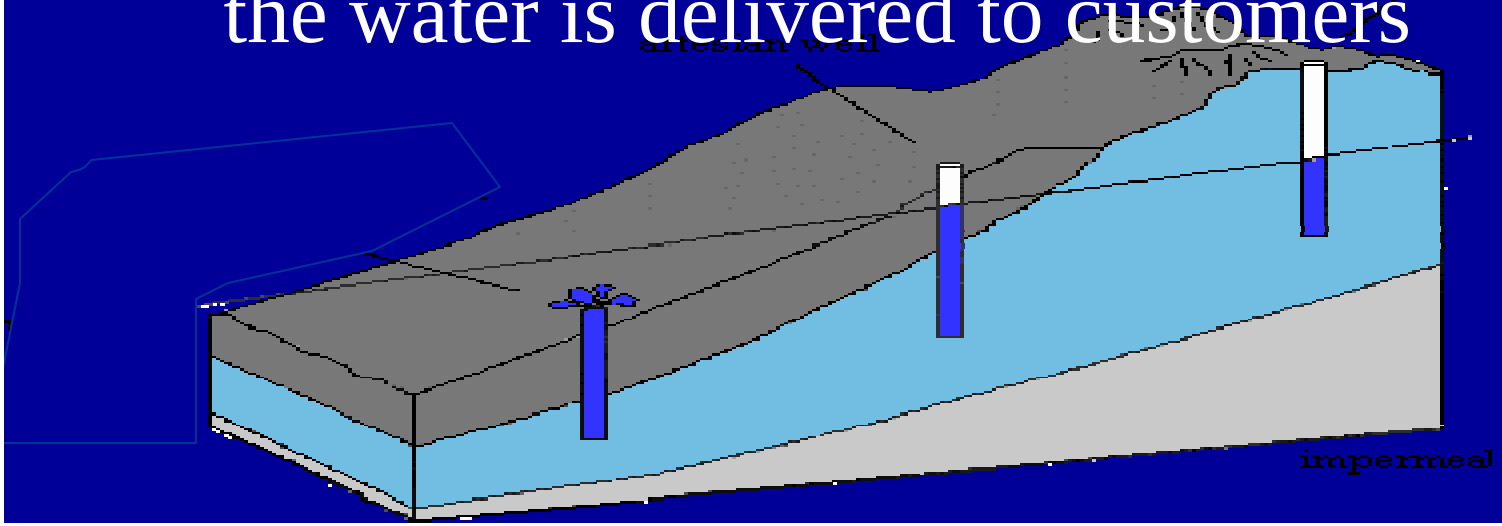
- Groundwater is currently the sole source of water for the Nipomo area
- Water is stored in the spaces between soil particles
- Water moves within the ground due to pressure forces (higher to lower)
- How do we analyze an underground basin?

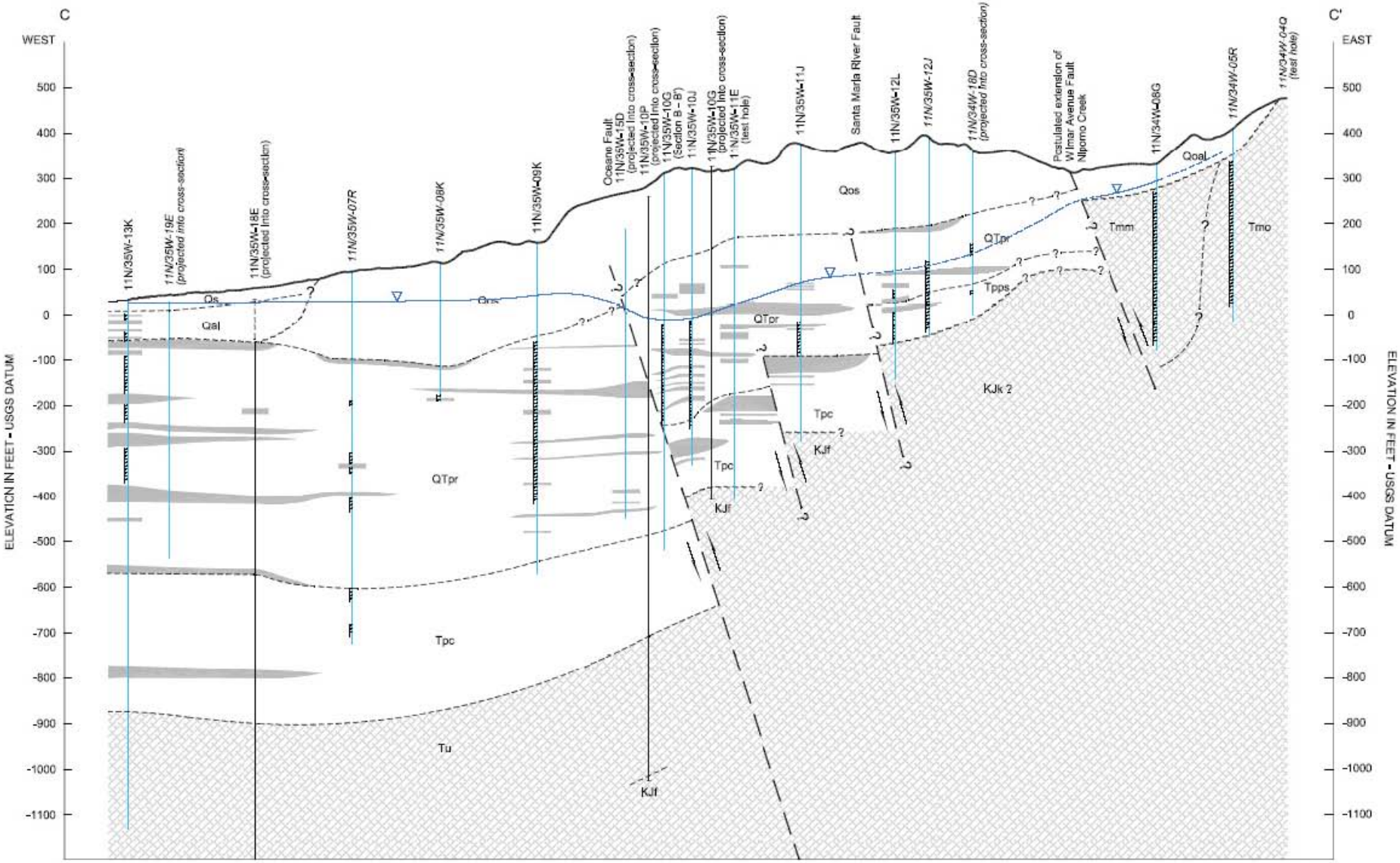
Aquifers and Aquitards

- Aquitard: a barrier that slows or stops the movement of water, usually made up of clay
- Imagine a layer of rock or clay deep in the ground in the shape of a bowl
- Add sand and gravel over the clay bowl, and water can be stored = aquifer
- Aquifers can exist in multiple layers

Groundwater Wells

- Hole in the ground for the purpose of pumping water from an aquifer
- Kept open by a plastic or steel pipe
- Part of the pipe is screened to collect water from the soil
- A pump is placed down the hole, and the water is delivered to customers





DWR (2002), Section C-C'.

Groundwater Measurements

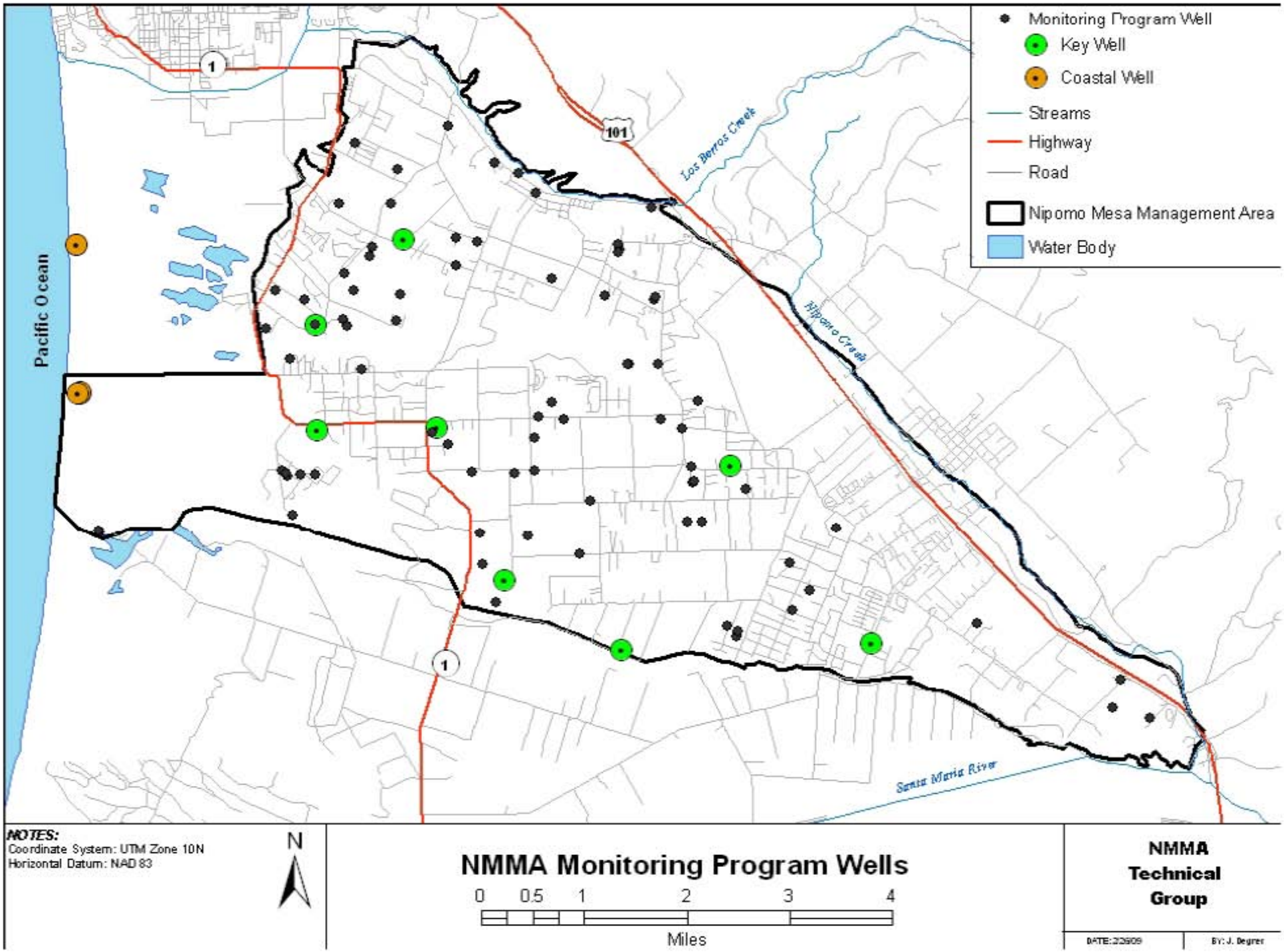
- Semi-annual well water levels
- Water quality through purveyors or Tech Group efforts
- Reduce uncertainty

Seawater Intrusion

- Seawater intrusion: the movement of salt water into a freshwater aquifer
- One key Tech Group objective: guard against seawater intrusion
- Our groundwater basin extends beyond the coast, under the ocean

Seawater Intrusion

- Seawater intrusion is generally caused by over pumping
- No current evidence of seawater intrusion



Key Wells and Water Shortage Conditions

- Coastal wells – detect seawater intrusion at coast
- Key wells – quantify inland NMMA aquifer health
- Water Shortage Conditions – court-mandated thresholds for taking action based on conditions
- Appendix B of the 2008 Annual Report

Water Shortage Conditions

- Two required criteria:
  - Potentially Severe Water Shortage Conditions
  - Severe Water Shortage Conditions

Potentially Severe Water Shortage Conditions

"Shall be designed to reflect that water levels beneath the NMMA as a whole are at a point at which voluntary conservation measures, augmentation of supply, or other steps may be desirable or necessary to avoid further declines in water levels."

Potentially Severe Water Shortage Conditions

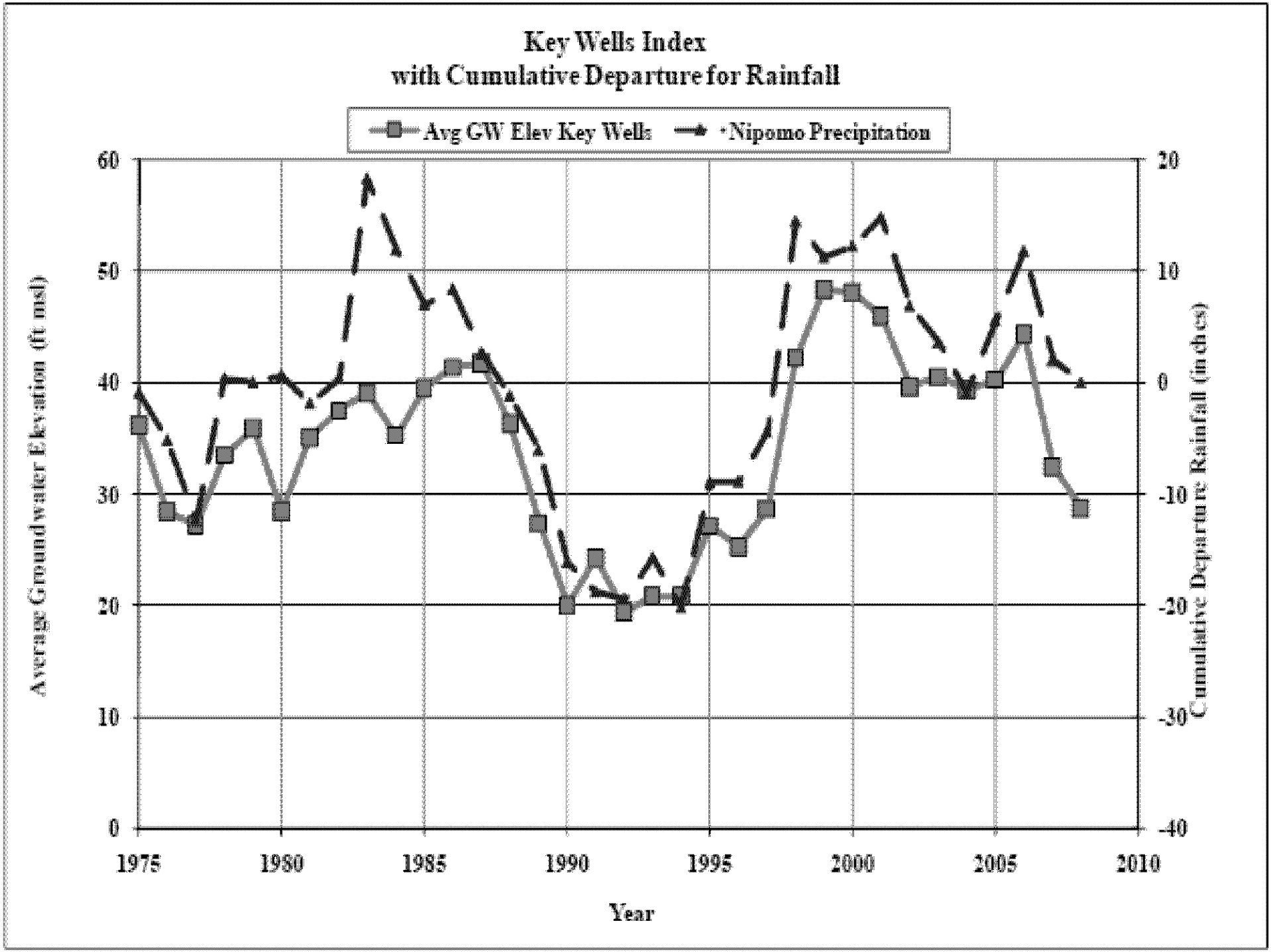
- Coastal wells – if water levels are not maintained safely above sea level
- Coastal water quality – if small amounts of sea water are detected (250 mg/l chloride)
- Inland key wells – if Key Well Index drops below 31.5 ft above mean sea level

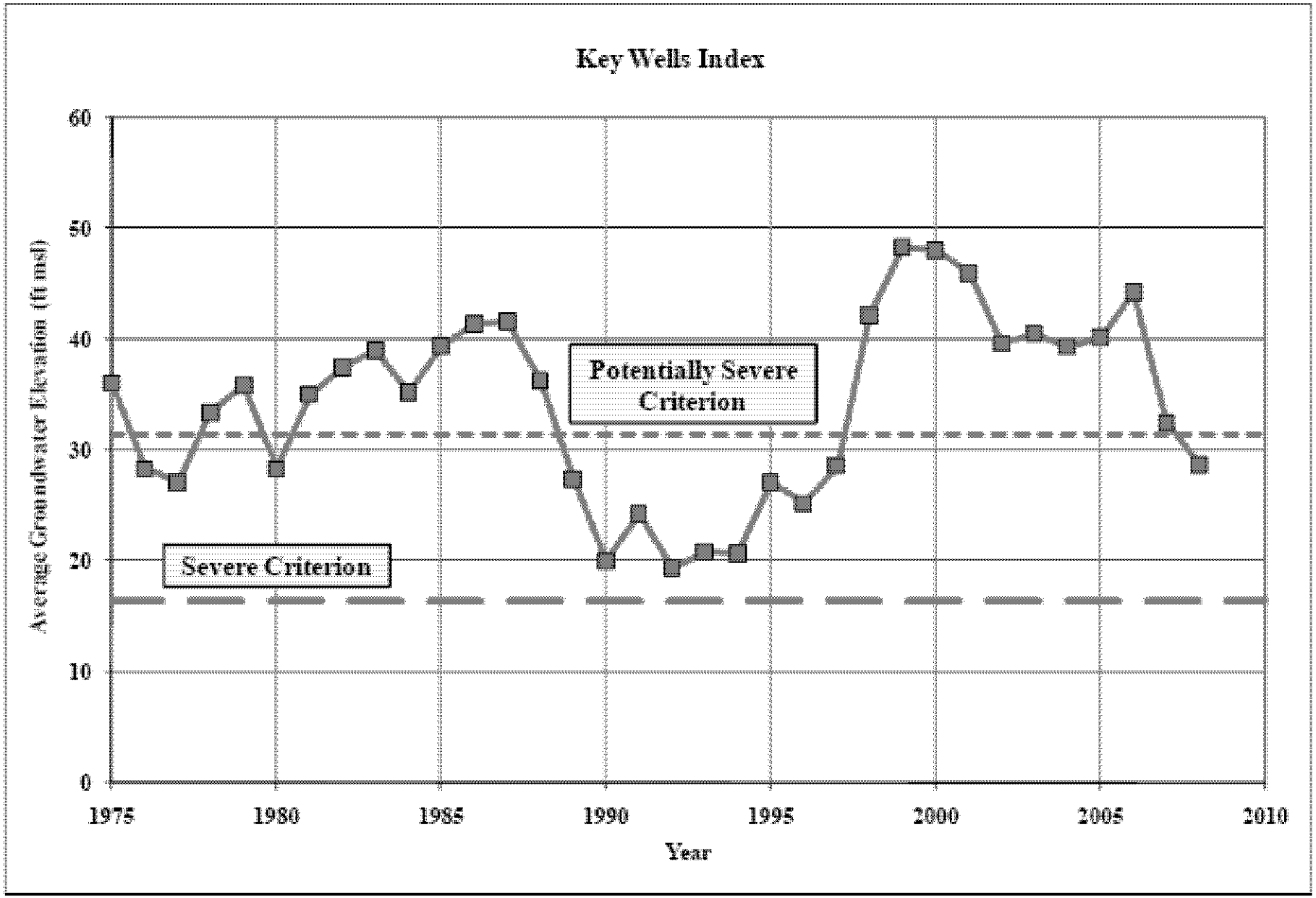
Severe Water Shortage Conditions

Indicate that " the lowest historic water levels beneath the NMMA as a whole have been reached or that conditions constituting seawater intrusion have been reached."

Severe Water Shortage Conditions

- Coastal water quality – if water quality degrades to 500 mg/l chloride
- Inland key wells – if Key Well Index drops below 16.5 ft above sea level

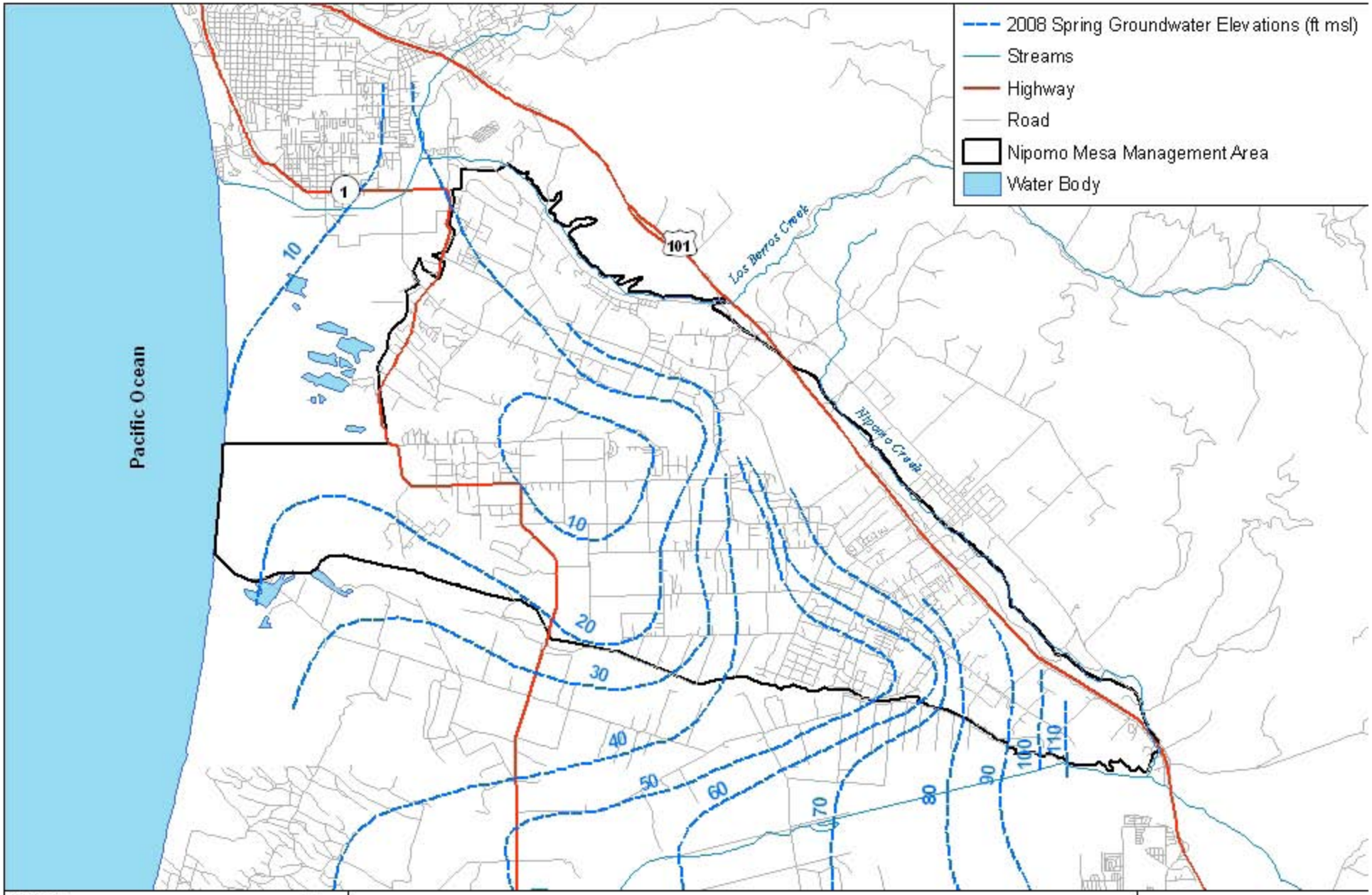




Summary of 2008 Findings

- The NMMA aquifer is in a potentially severe water shortage condition based on the Key Well Index (28.7 ft above sea level)
- Spring water levels have declined for the last two years
- Additional technical work is needed to further define the NMMA groundwater aquifer geology
- Total Estimated Groundwater Production

Agriculture/Golf	5,300 AF
Urban/Industrial	7,300 AF
Total Production	**12,600 AF**



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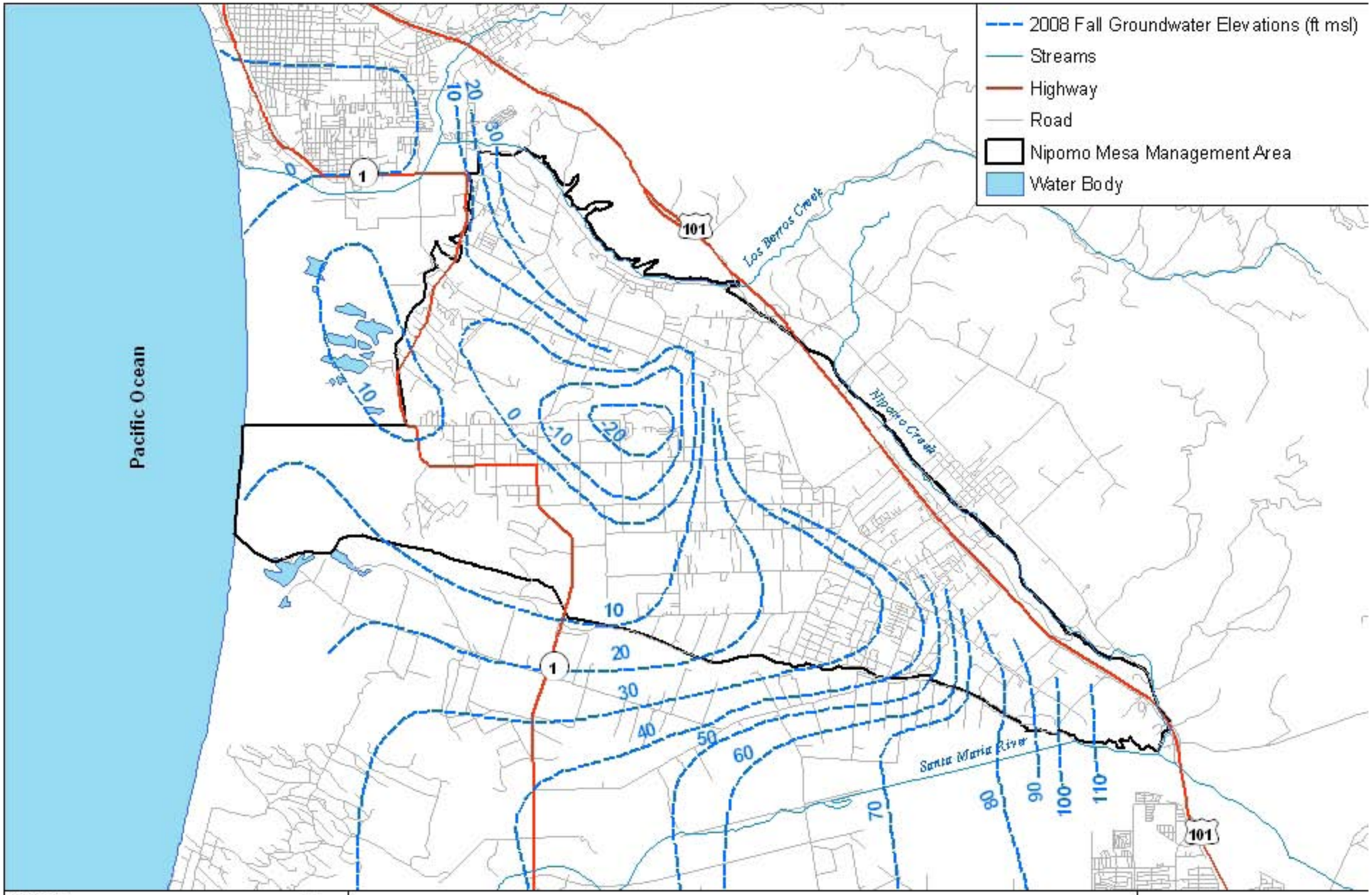
2008 Spring Groundwater Elevations

0 0.5 1 2 3 4

Miles

NMMA Technical Group

DATE: 9/08/09 BY: J. Degrer



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2008 Fall Groundwater Elevations

0 0.5 1 2 3 4

Miles

NMMA Technical Group

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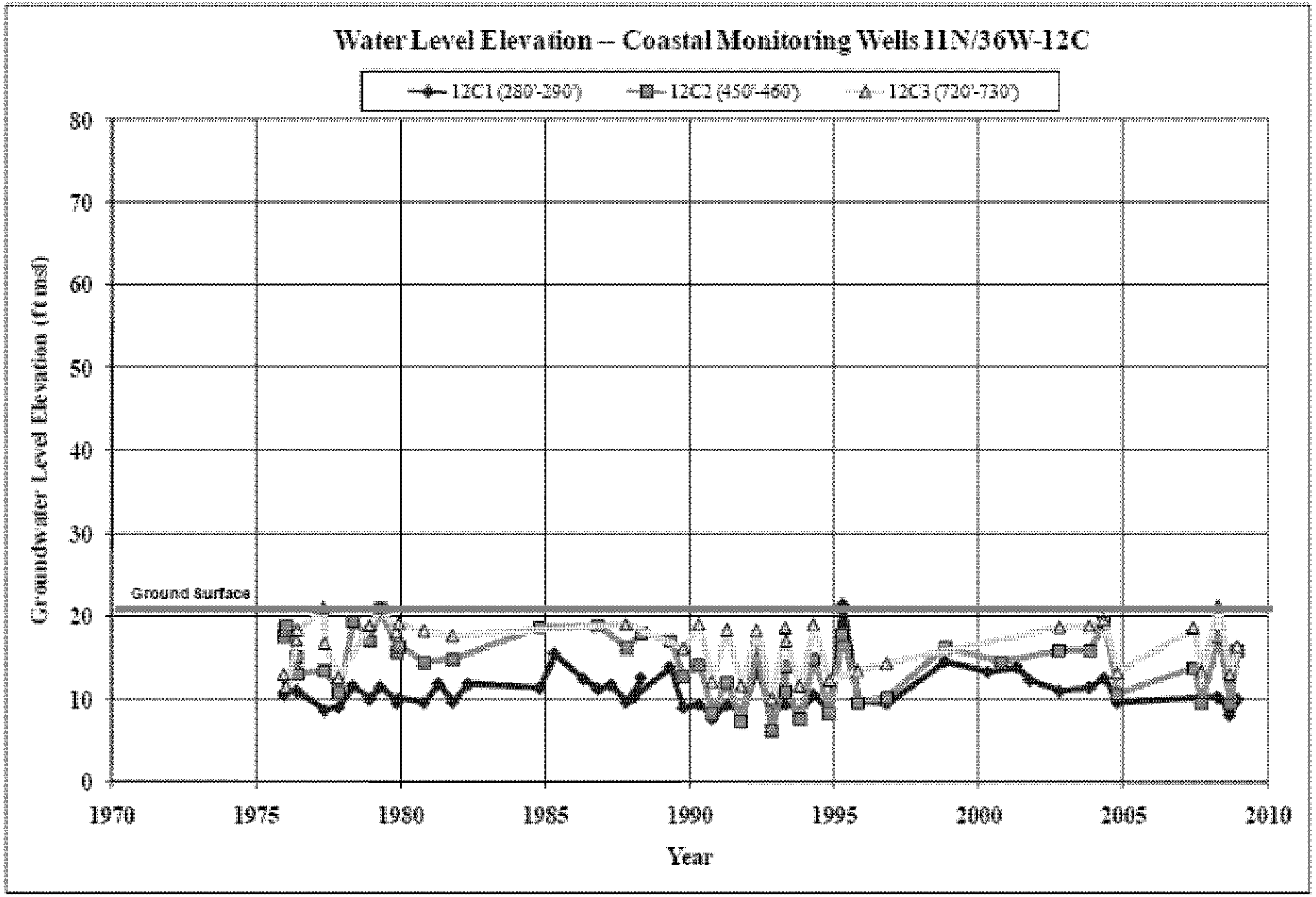

Technical Group Recommendations

- Technical
- Management
- Funding

Technical Recommendations

- Replacement of the Oso Flaco Lake Coastal Monitoring Well
- Installation of automatic data collection equipment for specific wells
- Collection of data from CIMIS station #202 on a continuous basis
- Collection of construction data for specific wells

Technical Recommendations (cont)

- Develop Protocols For:
  - Obtaining surface and groundwater quality data
  - Obtaining groundwater elevation data
  - Measuring stream flow in Los Berros Creek & Nipomo Creek
  - Determining relevant land use data

Technical Recommendations (cont)

- Encourage participation in data collection from all parties
- Further define the hydrogeology of the NMMA
- Evaluation of the costs and benefits of developing a groundwater model

Management Recommendations

- Develop programs to address water shortages
- Public outreach & education to promote water conservation and NMMA aquifer understanding

Questions?