

*WESTERN GROUNDWATER
OPERABLE UNIT*

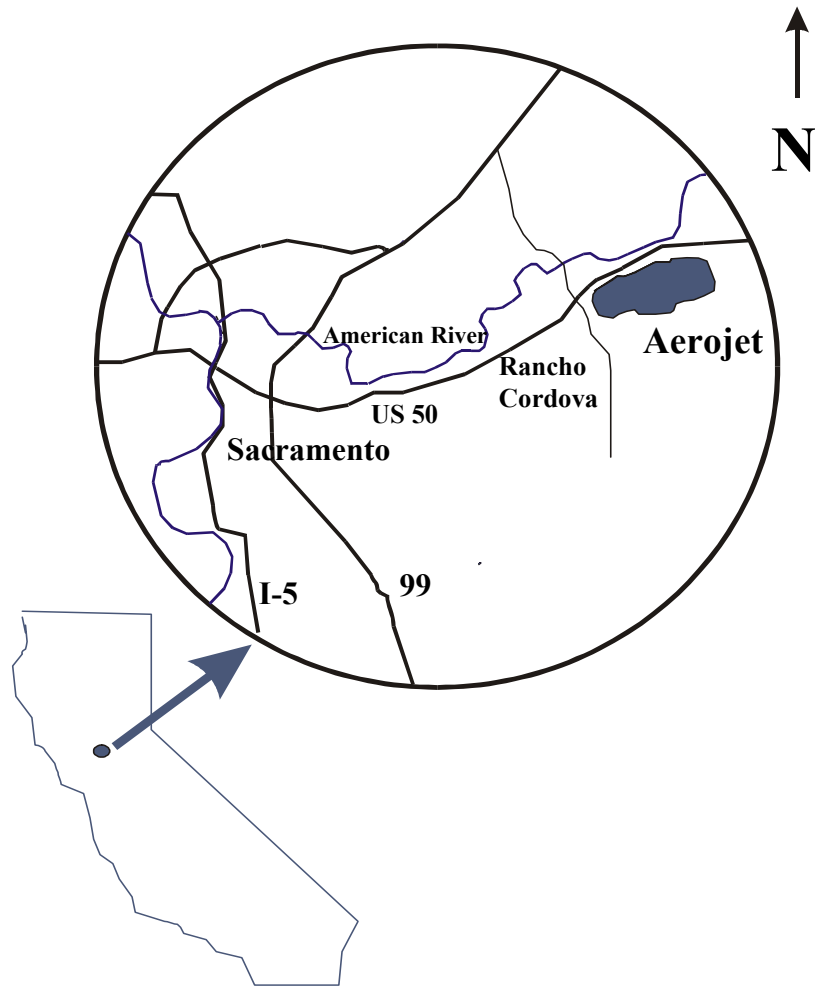


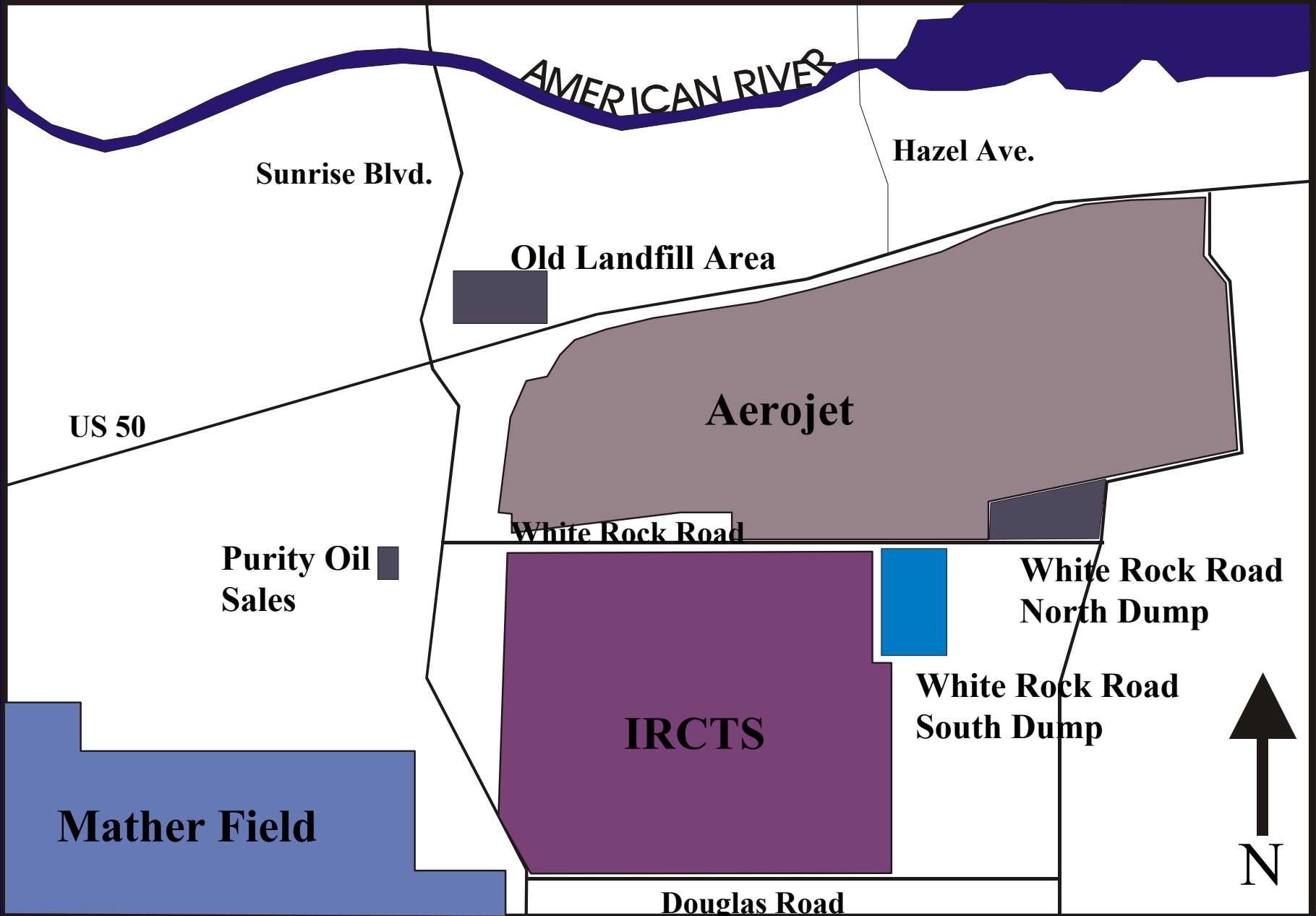
2 June 2004

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AMERICAN RIVER

Sunrise Blvd.

Hazel Ave.

Old Landfill Area

US 50

Aerojet

Purity Oil Sales

White Rock Road

White Rock Road North Dump

IRCTS

White Rock Road South Dump

Mather Field



Douglas Road

E

W

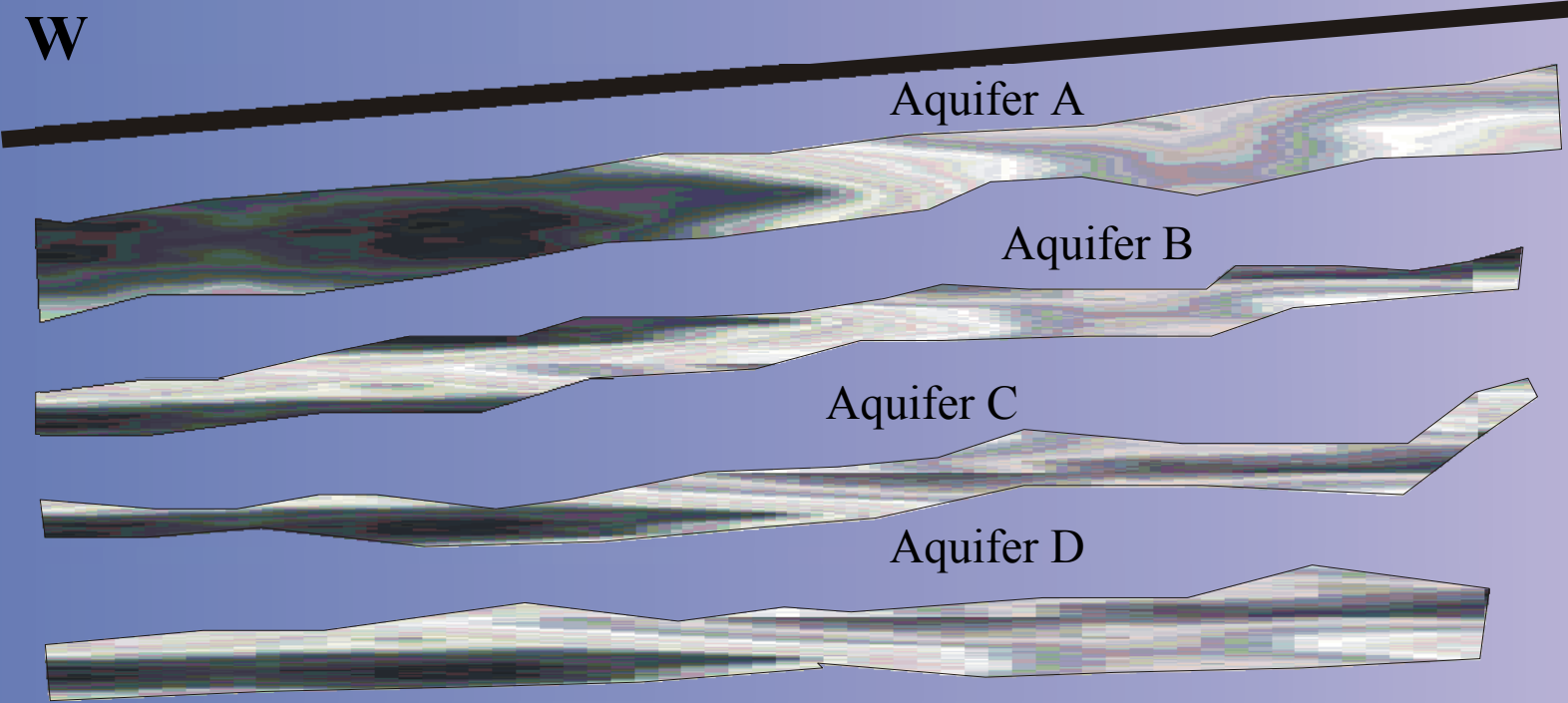
Aquifer A

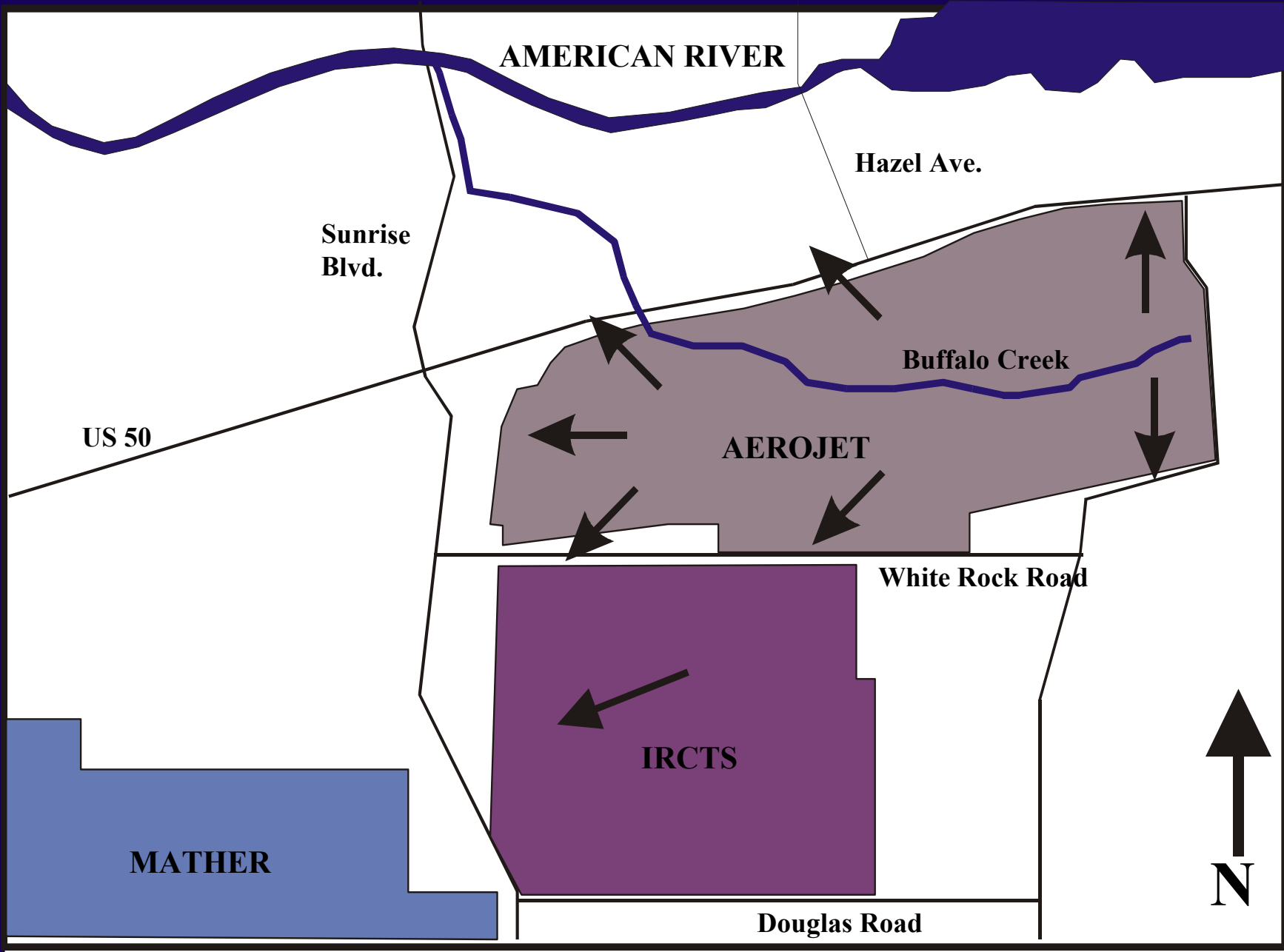
Aquifer B

Aquifer C

Aquifer D

Aquifer E





AMERICAN RIVER

Hazel Ave.

Sunrise Blvd.

US 50

Buffalo Creek

AEROJET

White Rock Road

IRCTS

MATHER

Douglas Road



Contaminants of Concern



- Solvents - TCE, PCE, Freon, Chloroform
- Perchlorate – component of solid rocket propellant
- N-nitrosodimethylamine (NDMA) – associated with liquid rocket fuel
- Fuels - kerosene



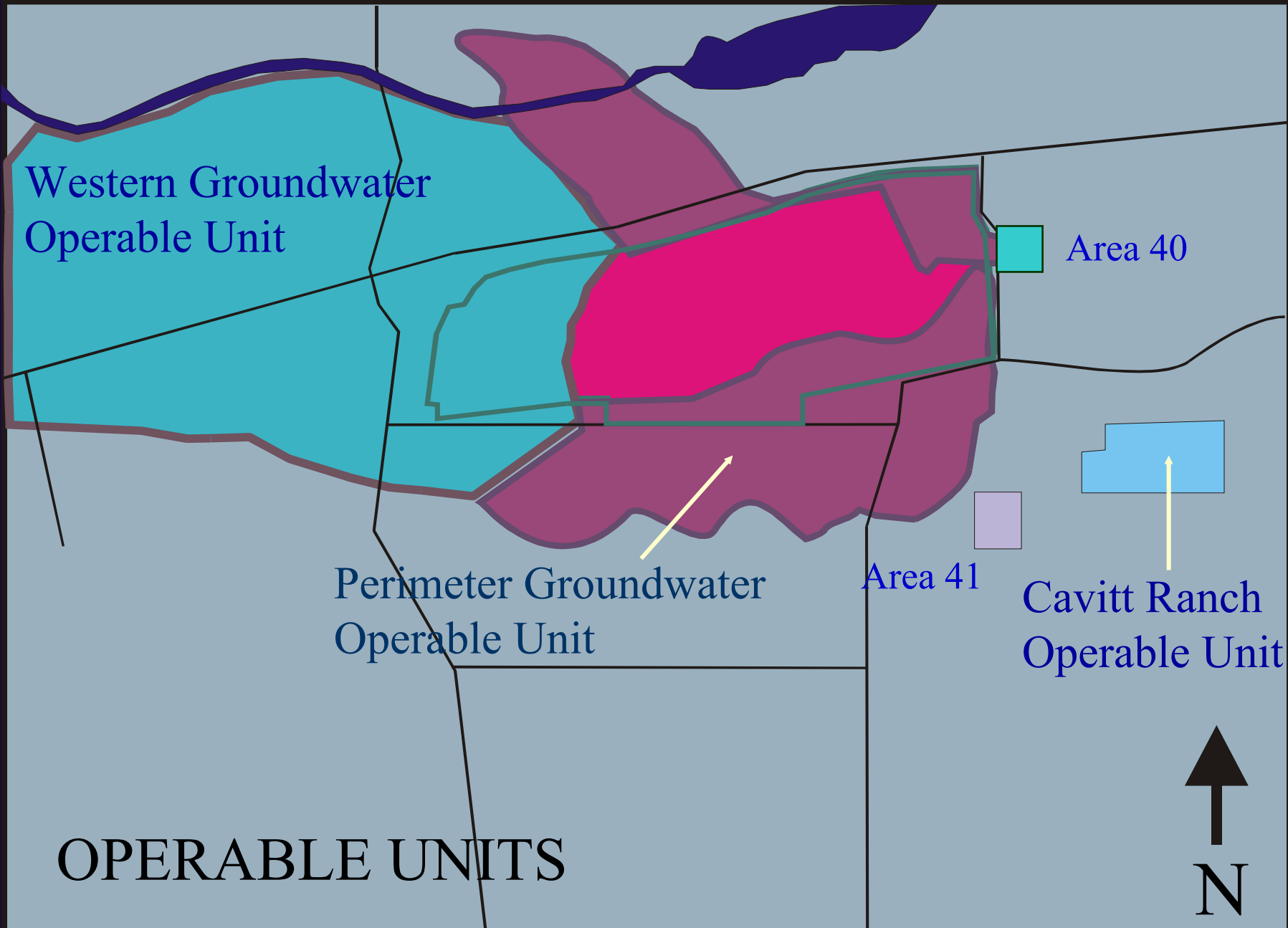
NDMA

- Found in Hydrazine-Based Rocket Fuel
- Found in hotdogs, smoked/cured meats, malted beverages, and tobacco
- Incremental one-in-a-million cancer risk level is around 1 ppt
- No Drinking Water Standard
- DHS Action Level is 10 ppt

Cleanup Process



- Conduct Remedial Investigation (RI)
- Prepare Feasibility Study (FS)
- USEPA Prepares Proposed Plan – Public Meeting
- USEPA Issues a Record of Decision (ROD)
- Consent or Unilateral Order Issued
- Design Remedy
- Implement and Monitor the Remedy



Western Groundwater Operable Unit

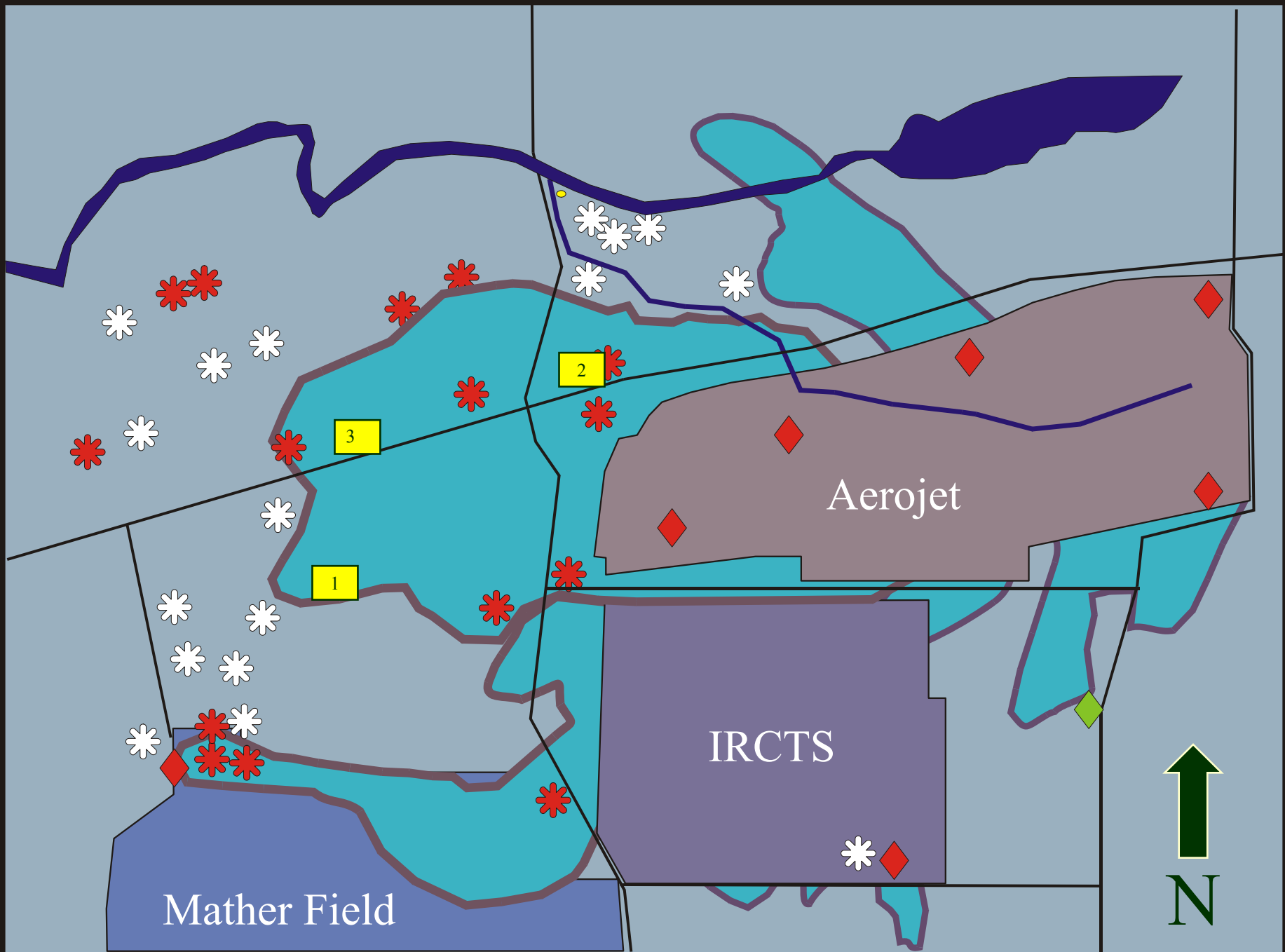


- Remedial Investigation/Feasibility Study
Completed in October 2000
- Record of Decision in July 2001
 - Cleanup Values of 4 ppb for perchlorate, 0.0013ppb for NDMA, and 5.0 ppb for TCE
- Unilateral Administrative Order (UAO) Issued by EPA in August 2002
 - UAO Requires Design and Implementation of Remedy
 - Includes Contingency Plan for Replacement Water Supplies

Initial Implementation of Western Groundwater Remedy



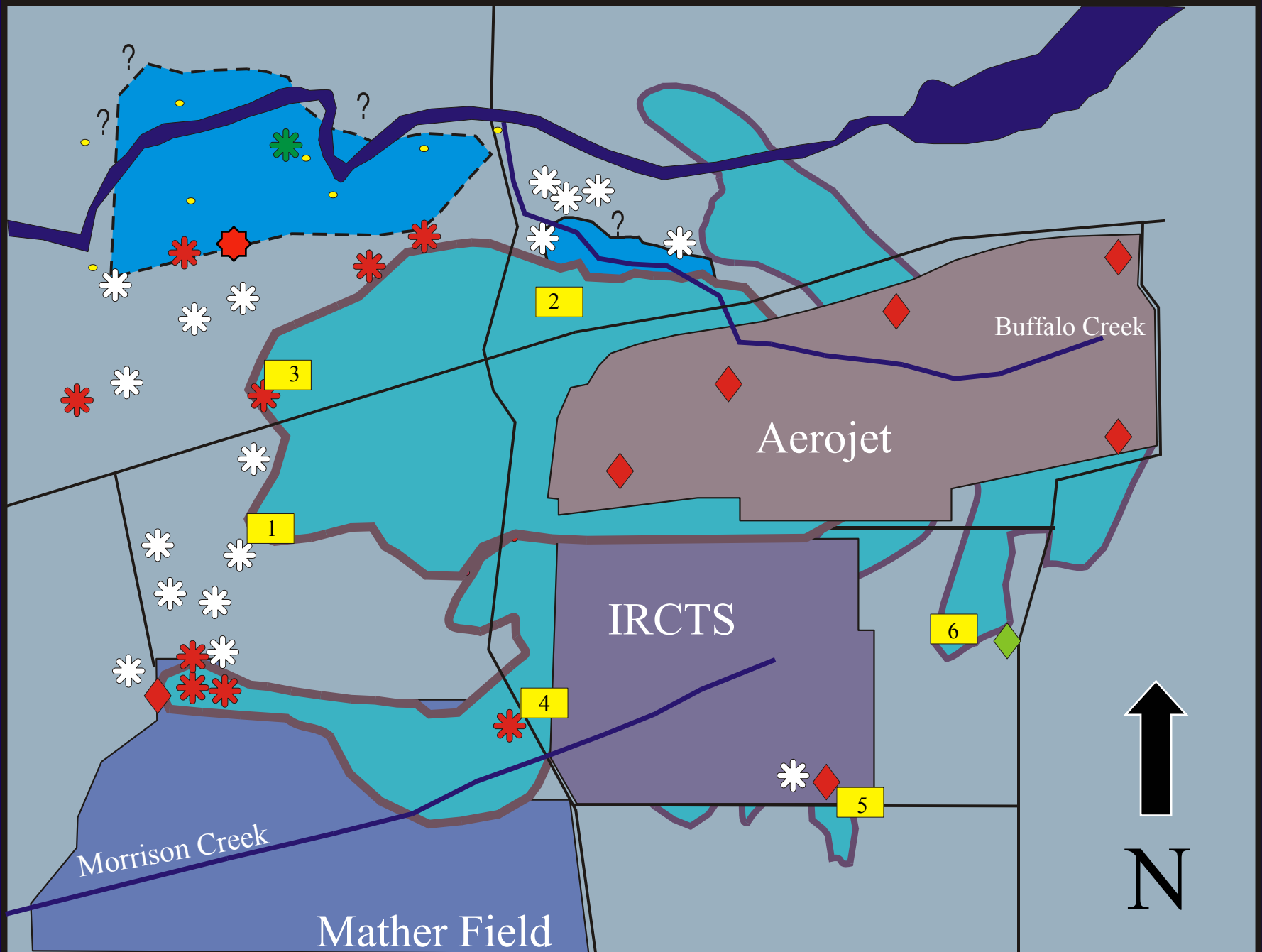
- Add Additional Extraction Wells on Aerojet Property
- Construct 3 Off-Property Extraction and Treatment Systems
- Discharge Treated Groundwater Under an NPDES Permit
- Continue Evaluation of Western Plume in Area 3 and Need for Modification of Design
- Add New Extraction and Treatment Facilities as Needed

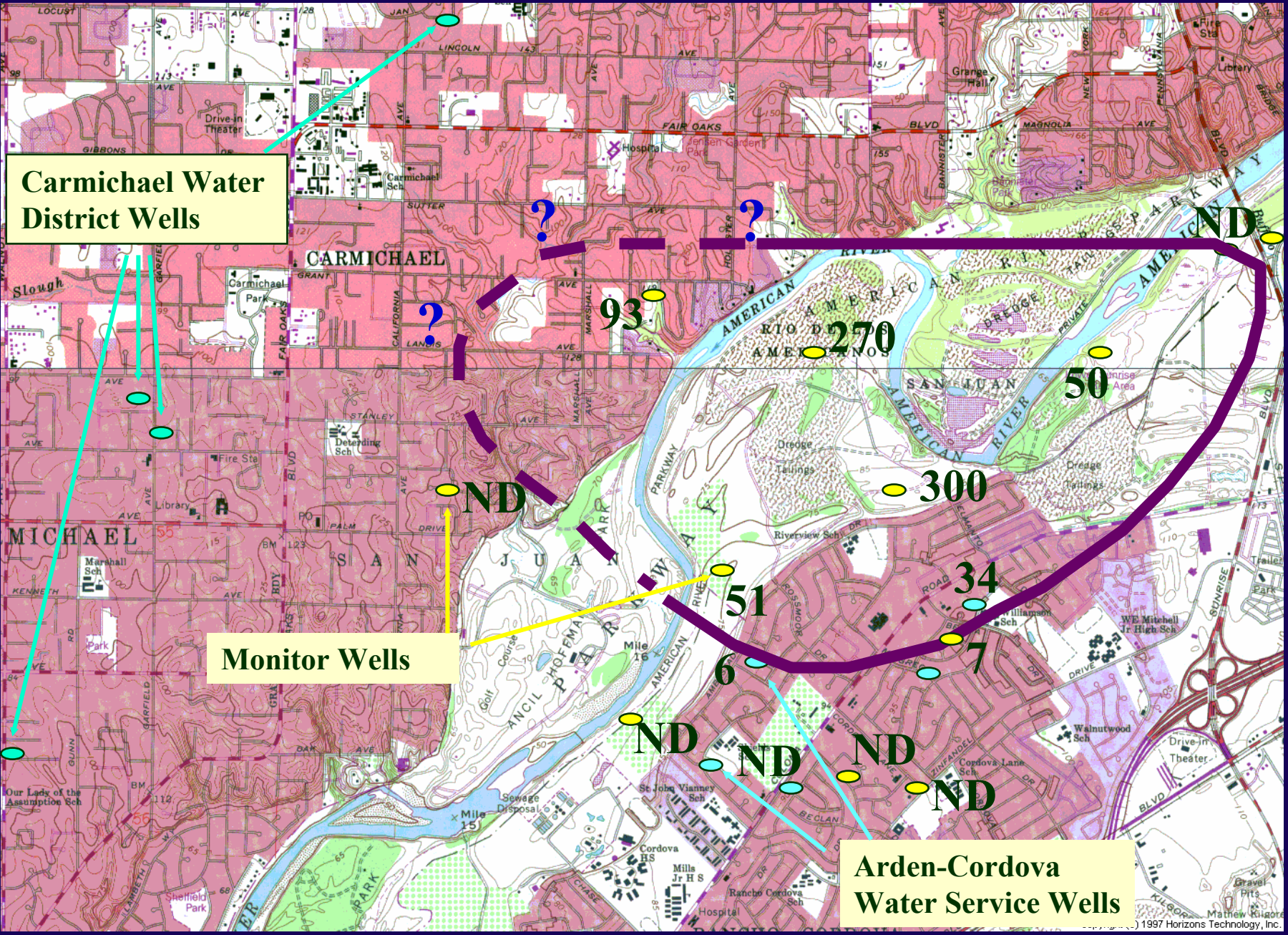


Discovery of New Contamination Plume



- Monitor Wells Constructed Near Rossmoor Bar Park
- Found to Contain up to 300 ppt of NDMA
- Requested Aerojet to Construct Monitor Wells on North Side of American River
- One Well With 93 ppt NDMA
- Requested Aerojet to Evaluate Additional Response Actions





Carmichael Water District Wells

Monitor Wells

Arden-Cordova Water Service Wells

93

270

50

300

34

51

6

7

ND

ND

ND

ND

ND

ND

?

?

?

CARMICHAEL

MICHAEL

ANCIL

PROFUMA

RIVER

AMERICAN

AMERICAN RIVER

AMERICAN RIVER

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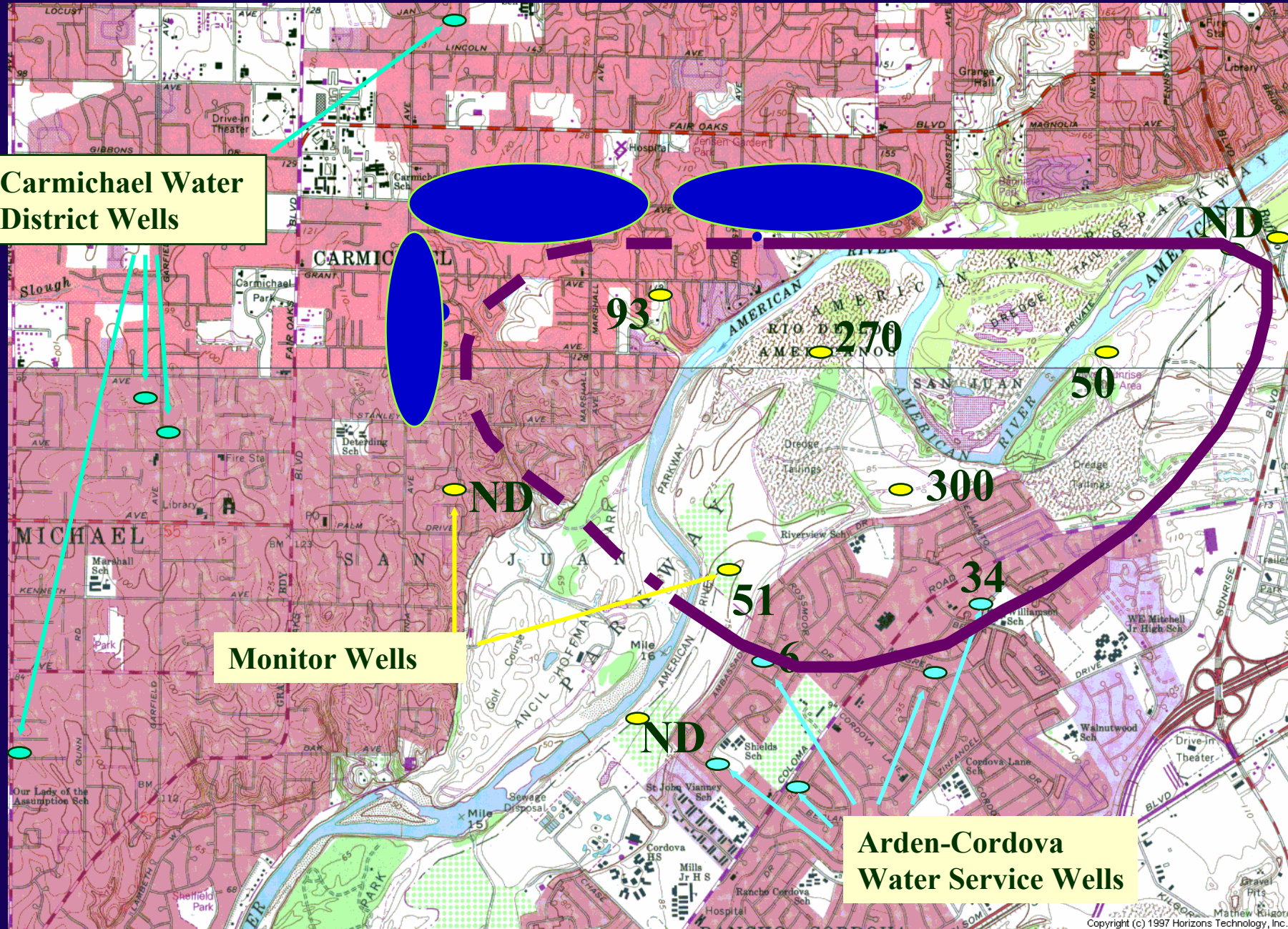
Next Steps

- March 30th Aerojet Submitted Draft Work Plan
 - Evaluate Groundwater Flow Directions to Locate Monitor Wells
 - Construct Wells to Evaluate Northern Plume – Locations Not Specific – May and June
 - Add Water Supply Wells Into Monitor Scheme
- Initial Agency Response
 - Three Monitor Well Clusters Needed in First Phase
 - Add Into Schedule Plan for Additional Wells if Needed

Carmichael Water District Wells

Monitor Wells

Arden-Cordova Water Service Wells



Next Steps



- This Is an Expansion of the Western Groundwater Operable Unit
- Already Have Record of Decision and Enforcement Order
- Northern Plume Exceeds Cleanup Criteria
- Need to Define Plume Sufficiently to Revise Existing Design

Potential Delays



- Ability to Locate/Obtain Approval for Monitor and Extraction Wells
- Locating Property for Treatment Facility
- Pipeline Location and Construction



Questions