WZI INC.

DRAFT
Planning Document

Conversion from Class II to non-Class II Designation for NAFTEX Edison and Race Track Aquifer Recharge Project

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Submitted to:
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1 Project Description

Naftex Operating Company proposes to recapture otherwise wasted USDW quality groundwater under the provision of the Aquifer Storage and Recharge (ASR) provisions.

1.1 Project Location

The proposed ASR project is located in the Racetrack Area of the Edison oil field in Kern County, Sections 26 and 27, T29S, R29E bisected by Comanche Drive, 11.5 miles due east of the Center of Bakersfield, Ca, **Figure 1, Location Map**. The terrain slopes downward to the south west from the foothill to the valley floor. The surrounding area use is a combination of oil field projects, orchards and grazing. The nearest water agency is the Arvin-Edison Water Storage District.

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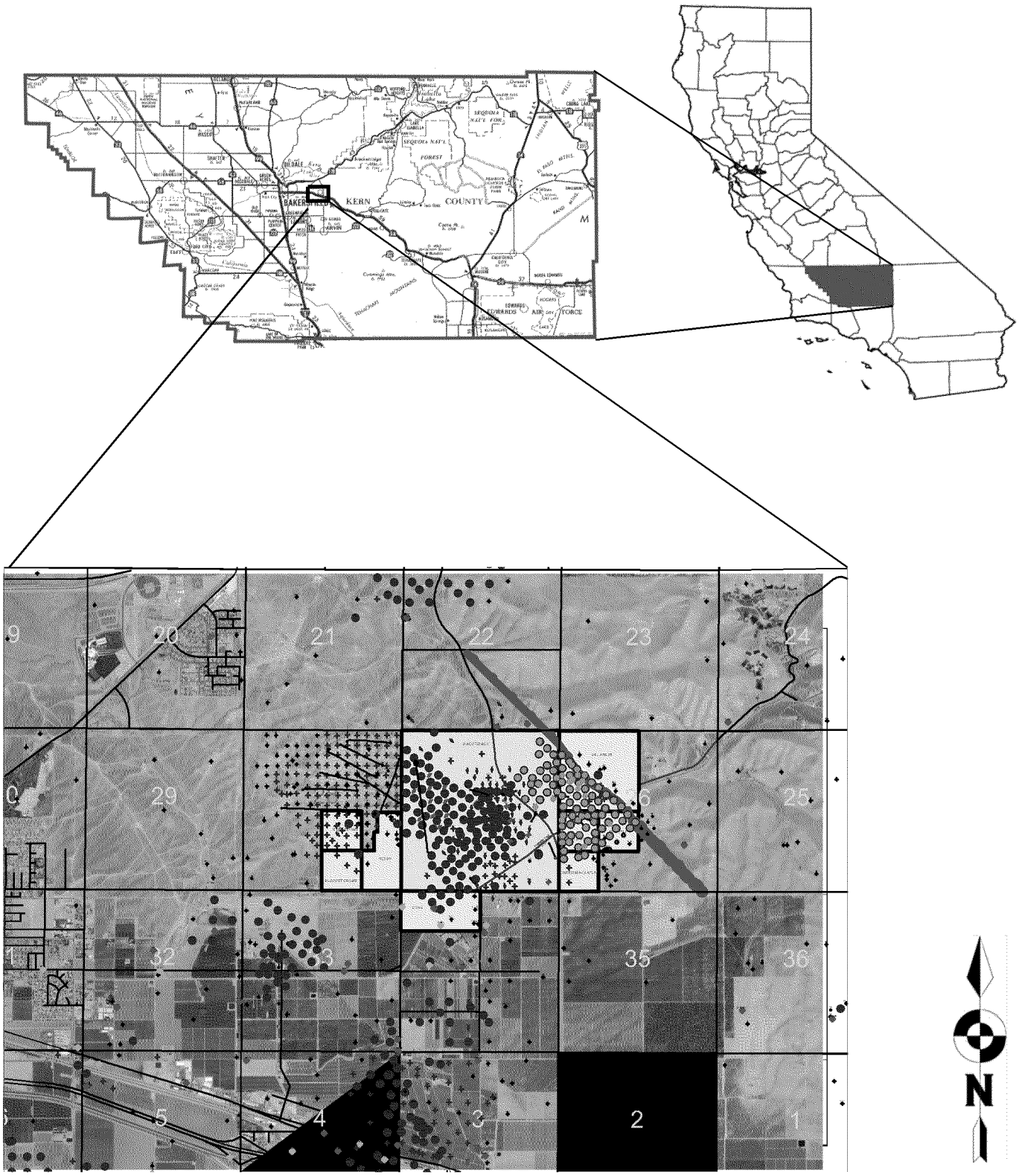


WZI INC.
BAKERSFIELD, CALIFORNIA

NAFTEX OPERATING CO.

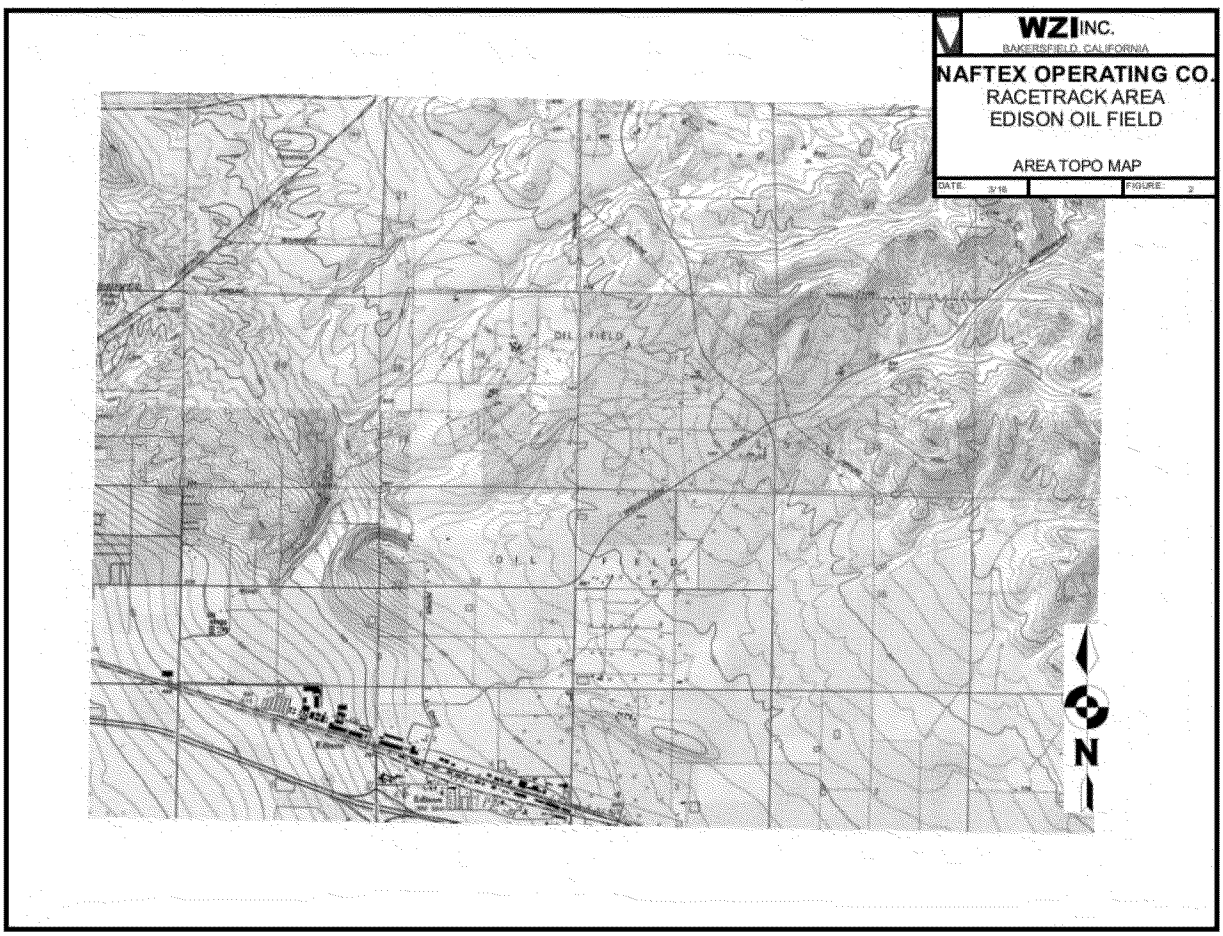
RACETRACK AREA
EDISON OIL FIELD

LOCATION MAP

DATE: 3/16		FIGURE: 1

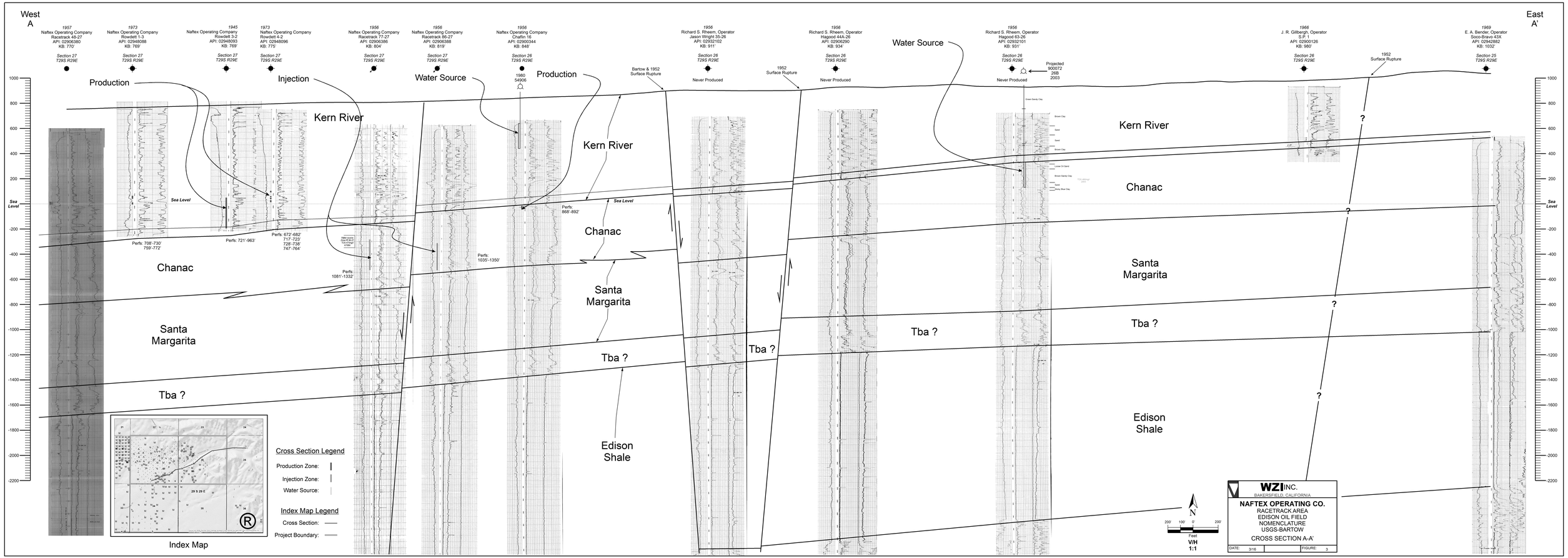
1.2 Project General Geology/Hydrogeology

The surface of the project area is approximately 800 to 1000 feet MSL, **Figure 2, Area Topography**.



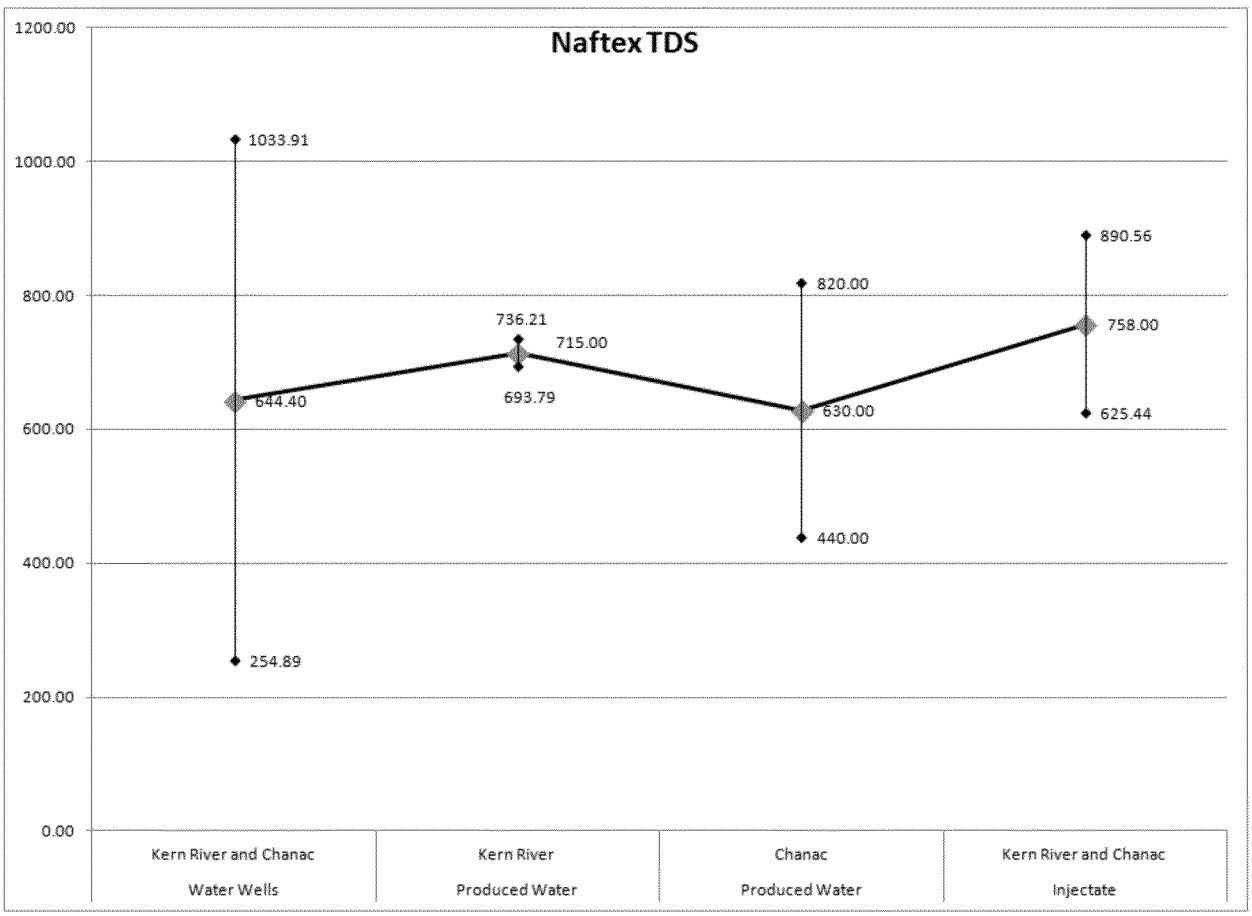
The Kern River formation exists from approximately 1000 (to the east) to -350 feet MSL (to the west). The source of the water to be injected is from the Kern River formation and the Chanac formation.[1] The zone into which the water is currently and proposed to be stored is the Chanac formation below the Chanac's production zone. The Chanac Formation exists from approximately 600 feet MSL (to the east) to -800 feet MSL (to the west). The Santa Margarita exists from approximately sea level (to the east to -1450 feet MSL (to the west). Below the Santa Margarita lies the Edison Shale, **Figure 3, Cross Section A-A'.** Groundwater source wells are perforated in the Kern River and Chanac formations in the subject area.

[1] The geologic formation nomenclature is consistent with USGS "Bartow". DOGGR nomenclature would describe the produced water as coming from the Kern River formation, the Chanac formation and the Santa Margarita formation with the injection going into the Santa Margarita. The Kern River formation, the Chanac formation and the Santa Margarita are exempted aquifers in the Racetrack/Edison oil field where the injection is taking place.


West
A
East
A'
1957
Naftex Operating Company
Racetrack 48-27
API: 02906380
KB: 770'
Section 27
T29S R29E
1973
Naftex Operating Company
Rowdett 1-3
API: 02948088
KB: 769'
Section 27
T29S R29E
1945
Naftex Operating Company
Rowdett 3-2
API: 02948093
KB: 769'
Section 27
T29S R29E
1973
Naftex Operating Company
Rowdett 4-2
API: 02948096
KB: 775'
Section 27
T29S R29E
1956
Naftex Operating Company
Racetrack 77-27
API: 02906386
KB: 804'
Section 27
T29S R29E
1956
Naftex Operating Company
Racetrack 86-27
API: 02906388
KB: 819'
Section 27
T29S R29E
1956
Naftex Operating Company
Chaffin 16
API: 02900344
KB: 848'
Section 26
T29S R29E
1956
Richard S. Rheem, Operator
Jason Wright 35-26
API: 02932102
KB: 911'
Section 26
T29S R29E
Never Produced
1956
Richard S. Rheem, Operator
Hagood 44A-26
API: 02906290
KB: 934'
Section 26
T29S R29E
Never Produced
1956
Richard S. Rheem, Operator
Hagood 63-26
API: 02932101
KB: 931'
Section 26
T29S R29E
Never Produced
1966
J. R. Gillbergh, Operator
S.P. 1
API: 02900126
KB: 980'
Section 26
T29S R29E
1969
E. A. Bender, Operator
Soco-Bravo 43X
API: 02942882
KB: 1032'
Section 25
T29S R29E
Production
Injection
Water Source
Production
Water Source
Bartow & 1952
Surface Rupture
1952
Surface Rupture
1952
Surface Rupture
1980
54906
Projected
900072
26B
2003
Kern River
Kern River
Kern River
Chanac
Chanac
Chanac
Santa
Margarita
Santa
Margarita
Santa
Margarita
Tba ?
Tba ?
Tba ?
Tba ?
Tba ?
Edison
Shale
Edison
Shale
Sea Level
Perfs: 708'-730'
759'-772'
Perfs: 721'-963'
Perfs: 672'-682'
717'-723'
728'-738'
747'-764'
Perfs:
1081'-1332'
Perfs:
1035'-1350'
Perfs:
868'-892'
Index Map
Cross Section Legend
Production Zone:
Injection Zone:
Water Source:
Index Map Legend
Cross Section:
Project Boundary:
N
200' 100' 0' 200'
Feet
V/H
1:1
WZI INC.
BAKERSFIELD, CALIFORNIA
NAFTEX OPERATING CO.
RACETRACK AREA
EDISON OIL FIELD
NOMENCLATURE
USGS-BARTOW
CROSS SECTION A-A'
DATE: 3/16
FIGURE: 3

1.3 Project General Water Quality

Historically, the TDS of the water wells and the TDS of the injectate are the same on average within standard deviations. Naftex injects into the Chanac (approximately 800 ppm TDS and 1-2 ppm boron), an exempted zone within the Racetrack Area of the Edison Oil Field, **Figure 4, Naftex Average TDS with Standard Deviation**.



This proposed discharge has historically been managed for cylic steaming, steamflood, and as reinjectate under previously permitted activity as Class II injection. The produced ground water currently meets the California Drinking Water Requirements.[2]

The proposed project does not unreasonably affect present and anticipated beneficial uses of groundwater and surface water as follows:
The project will not:

- Cause groundwater to exceed any water quality objective;
- Unreasonably affect beneficial uses; or

[2] Drinking Water Standards, **Appendix I**.

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- Cause a condition of pollution or nuisance.

The project will:

- Implement best practicable treatment or control (BPTC);
- Characterize source water quality;
- Design and operate the ASR to minimize adverse aquifer conditions and geochemistry;
- Ensure lowest practical oxygen concentration prior to injection;
- Monitor groundwater of the injection/extraction wells to evaluate the potential for groundwater quality changes;
- Regularly evaluate Maximum Contaminant Level (MCLs) and Water Quality Objectives and their impact on the ASR project.

Naftex Operating Company proposes to return the produced ground water to the Chanac (as described by Bartow) as Aquifer Recharge and Storage (ARS) for preservation for future use.

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