**Draft**
**Environmental Impact Report**

# North Delta Flood Control and Ecosystem Restoration Project

VOLUME 2—FIGURES

California Department of Water Resources
November 2007

# Draft
# Environmental Impact Report

# North Delta
# Flood Control and Ecosystem
# Restoration Project

## Volume 2—Figures

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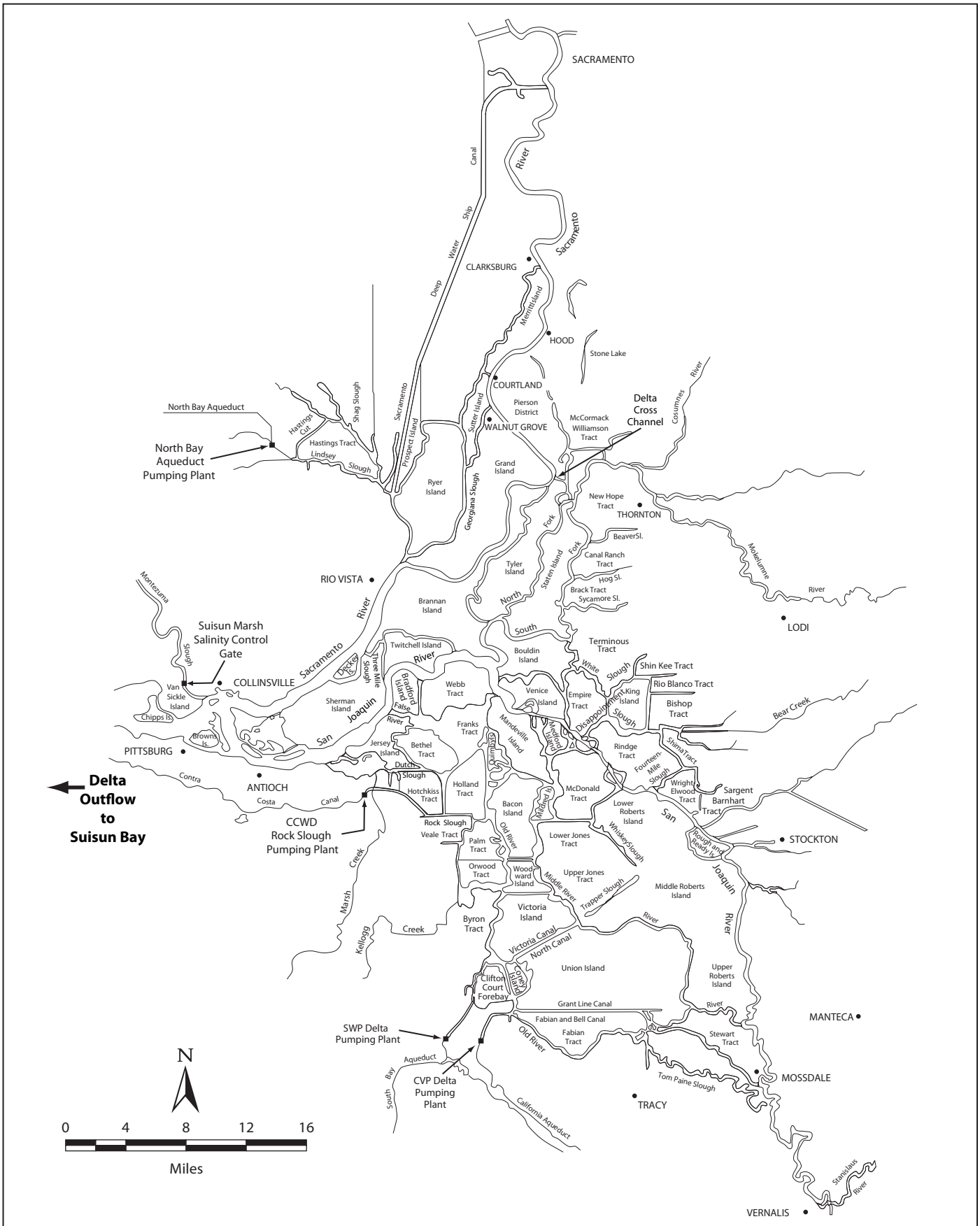
November 2007

Jones & Stokes. 2007. *Draft environmental impact report North Delta Flood Control and Ecosystem Restoration Project*. Volume 2—Figures. November. (J&S 01268.01.) Sacramento, CA.

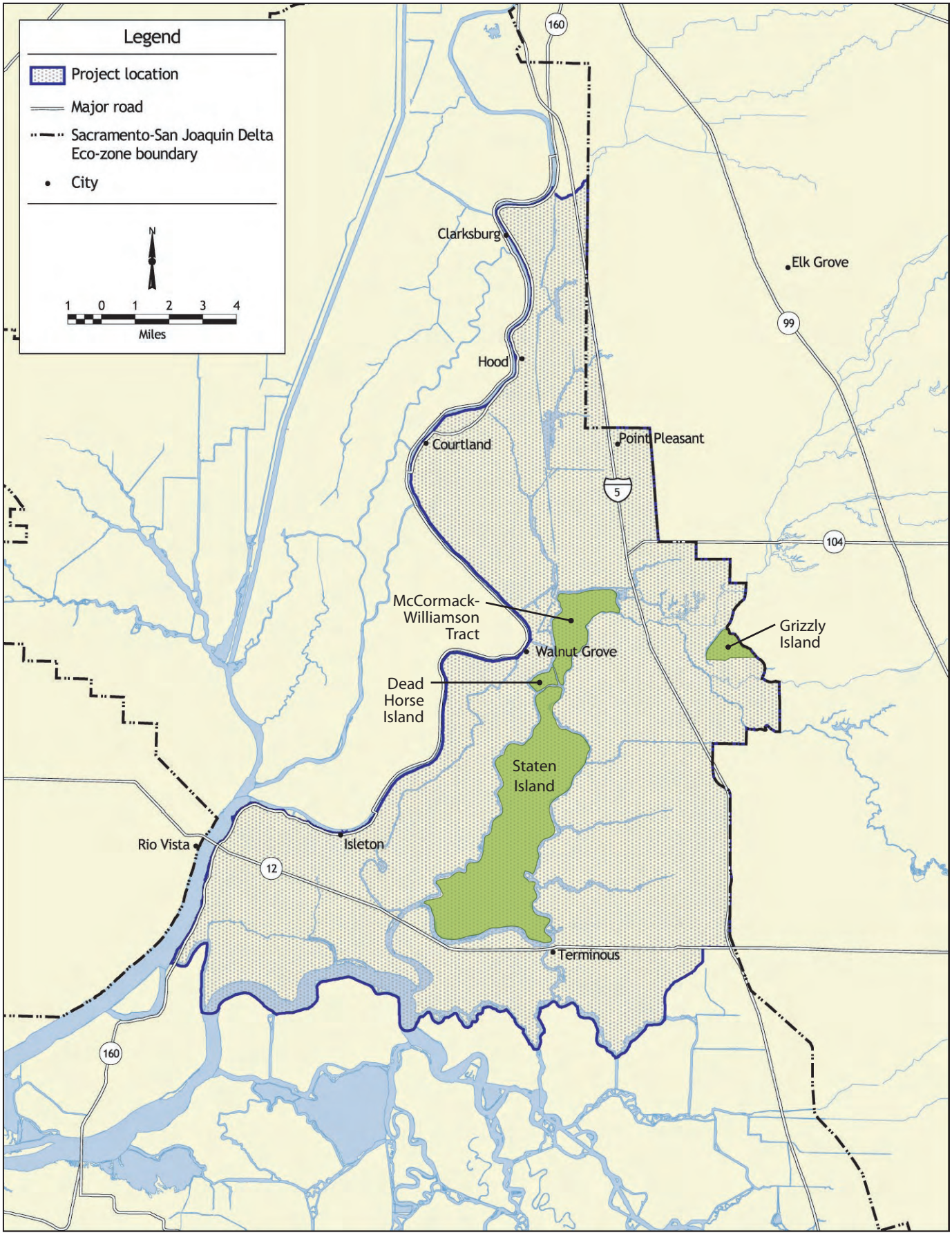



SOURCE: Adapted from California Department of Water Resources 1993.

01268.01 EIR

Jones & Stokes

**Figure 1-1**
**The Sacramento – San Joaquin Delta**




01268.01 EIR

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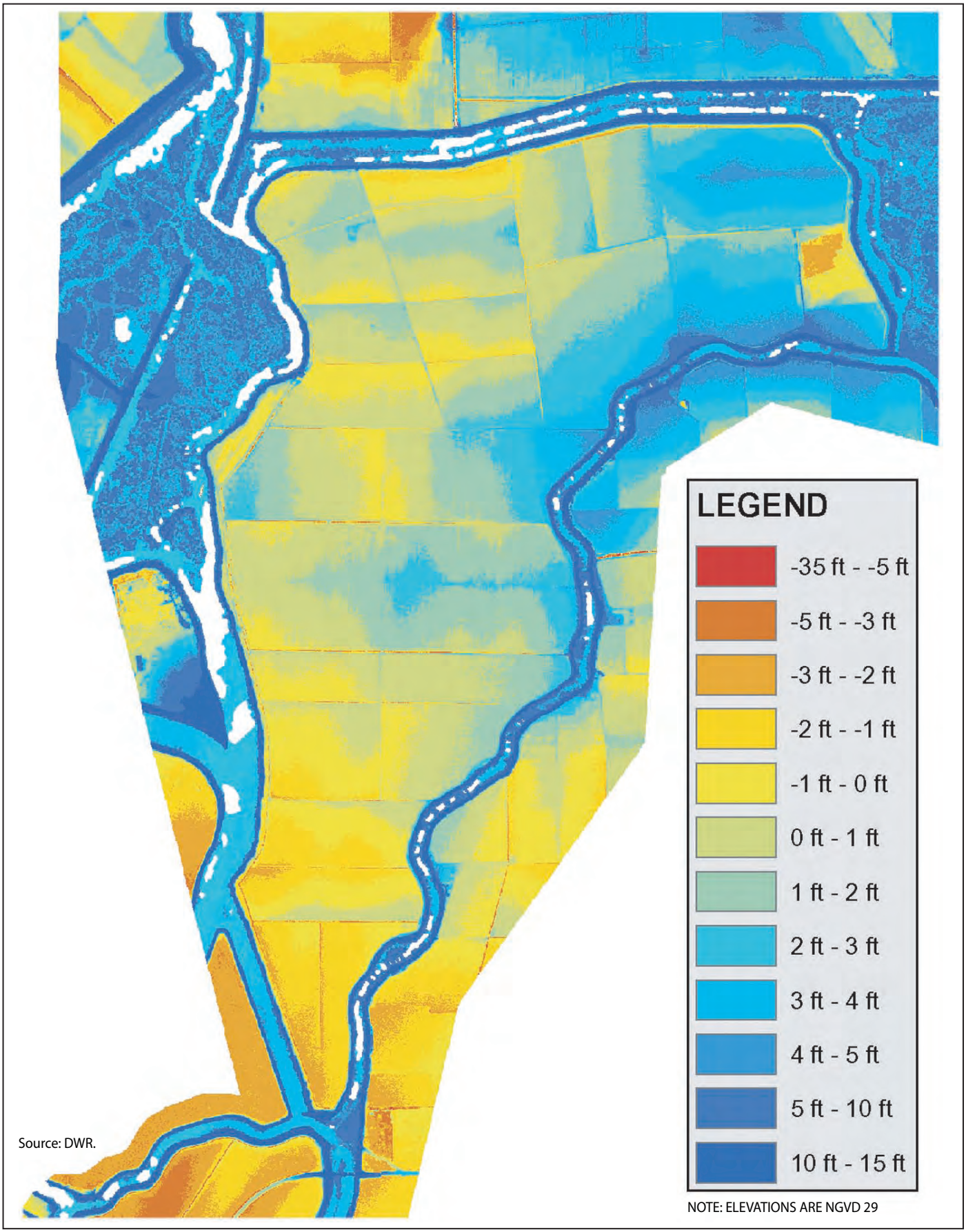
**Figure 1-2**
**North Delta Flood Control and Ecosystem Restoration Project**
**Project Area**




01268.01 EIR

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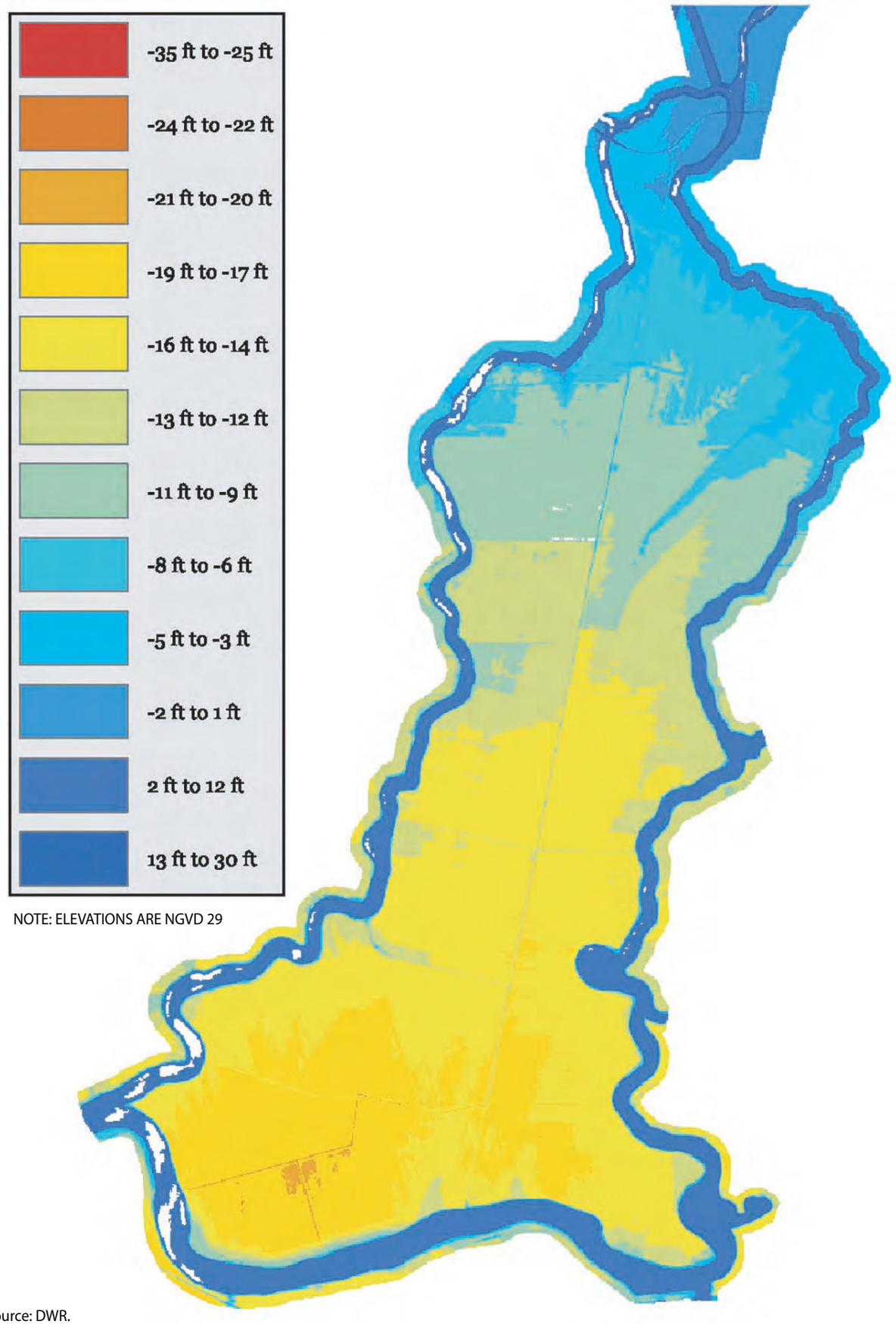
**Figure 1-3**
**McCormack Williamson Tract Elevation Map**




Source: DWR.

01268.01 EIR

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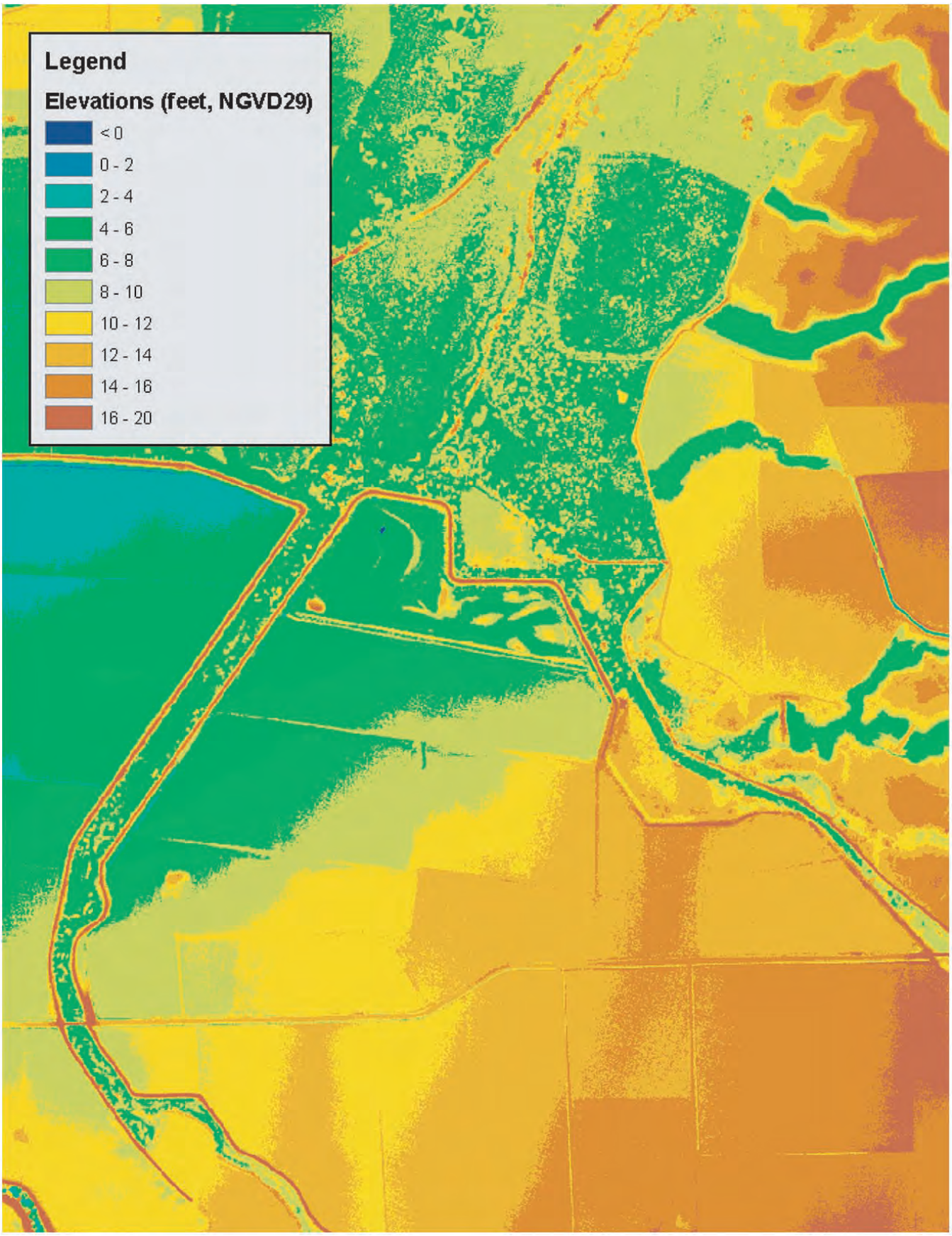
**Figure 1-4**
**Staten Island Elevation Map**




Source: DWR.

01268.01 EIR

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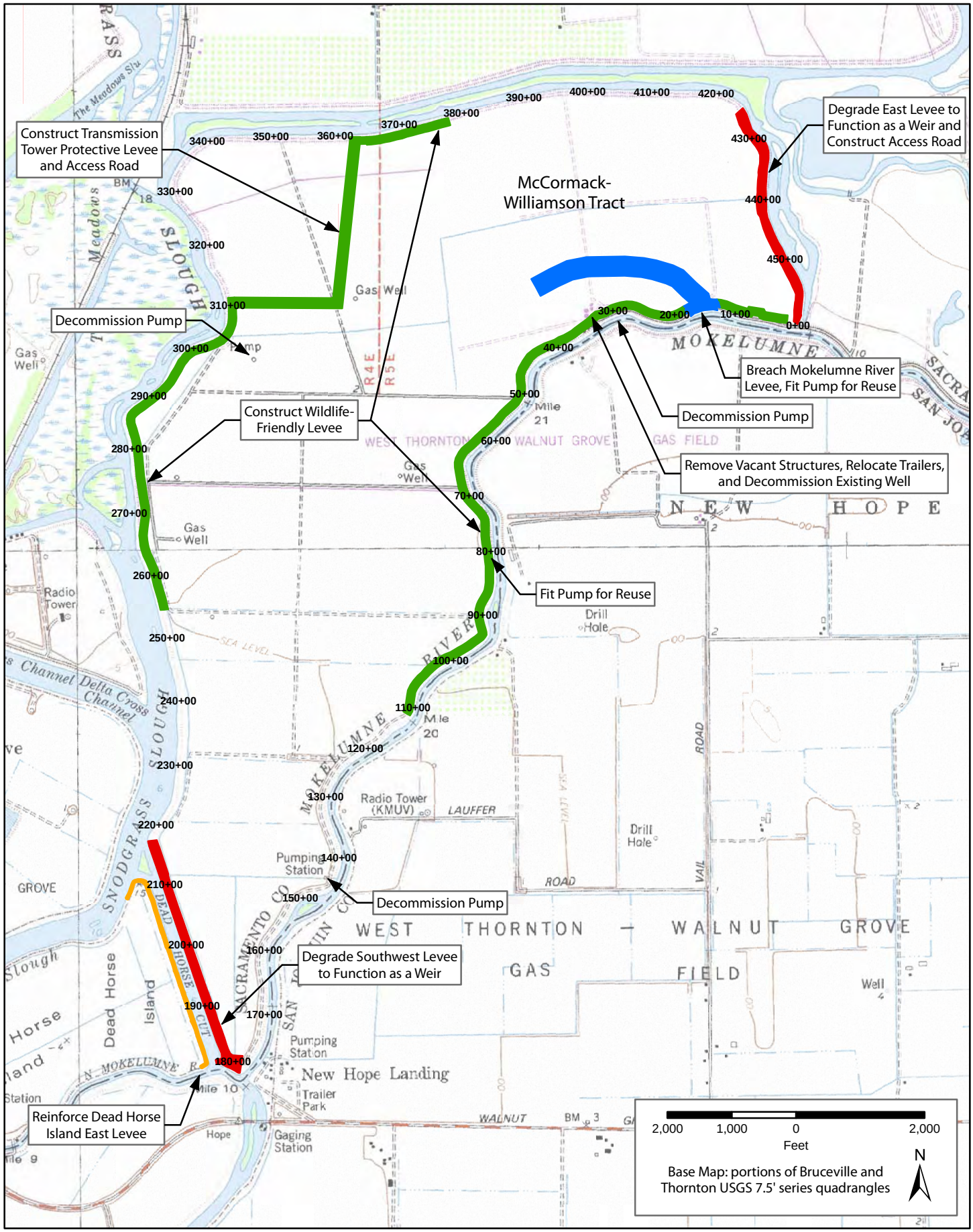
**Figure 1-5**
**Grizzly Slough Property Elevation Map**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_1_ALT_1A.MXD LD (05-08-06)

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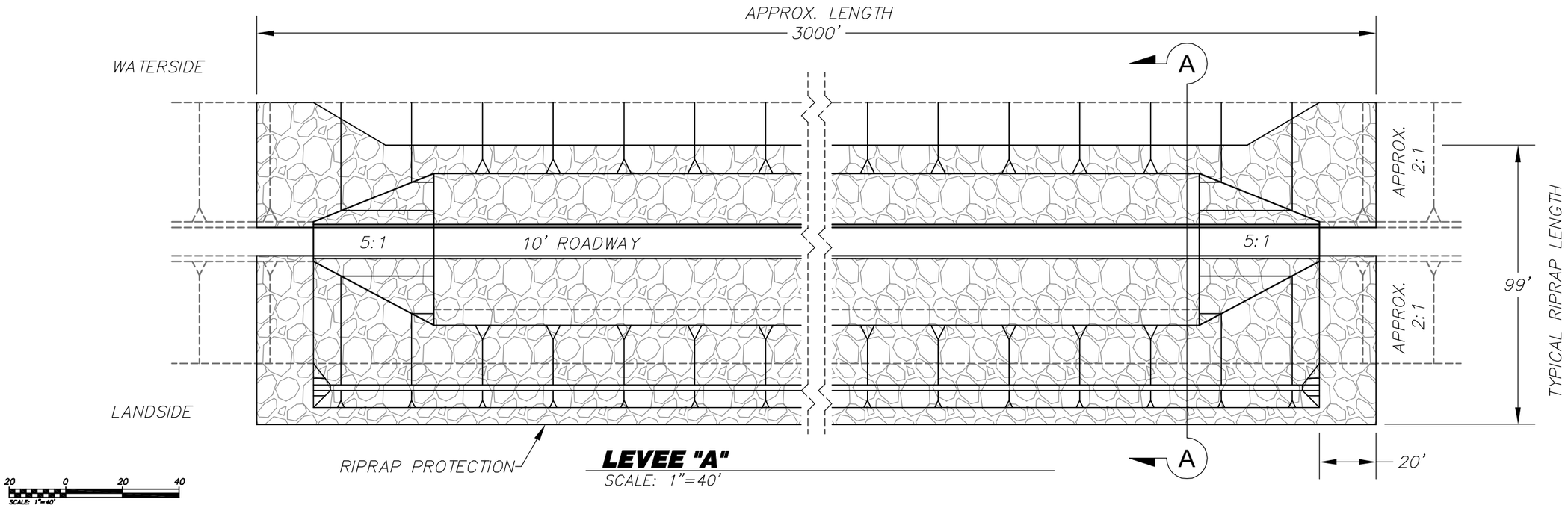
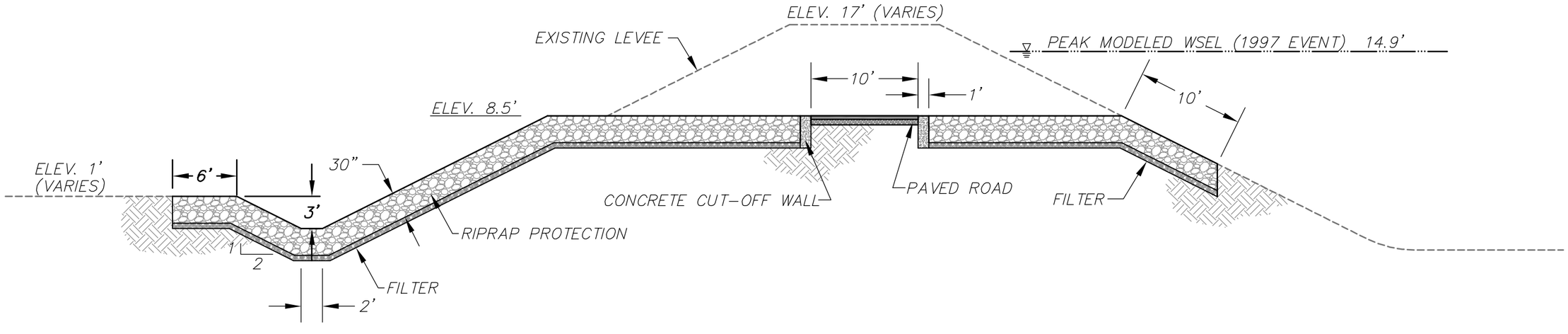
**Figure 2-1**
**Alternative 1-A: Fluvial Process Optimization Plan**




**LEVEE "A"**
SCALE: 1"=40'




Source: Northwest Hydraulic Consultants 2005.

A **DEGRADED EAST LEVEE ON MWT**
SCALE: 1"=10'

NOTE: ALL ELEVATIONS ARE NGVD

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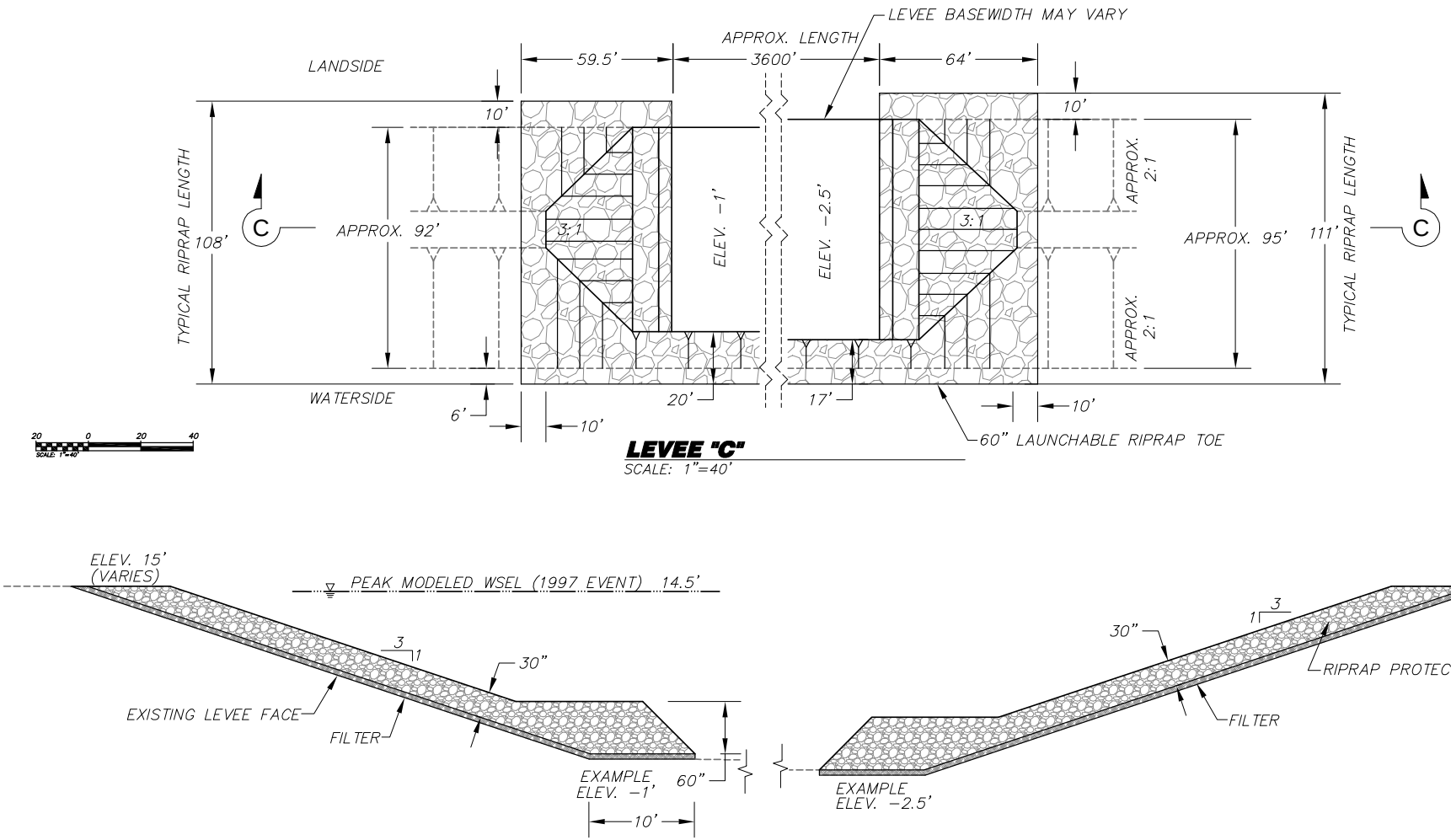
**Figure 2-2**
**Degraded East Levee on McCormack-Williamson Tract Plan and Section**




Source: Northwest Hydraulic Consultants 2005.

NOTE: ALL ELEVATIONS ARE NGVD

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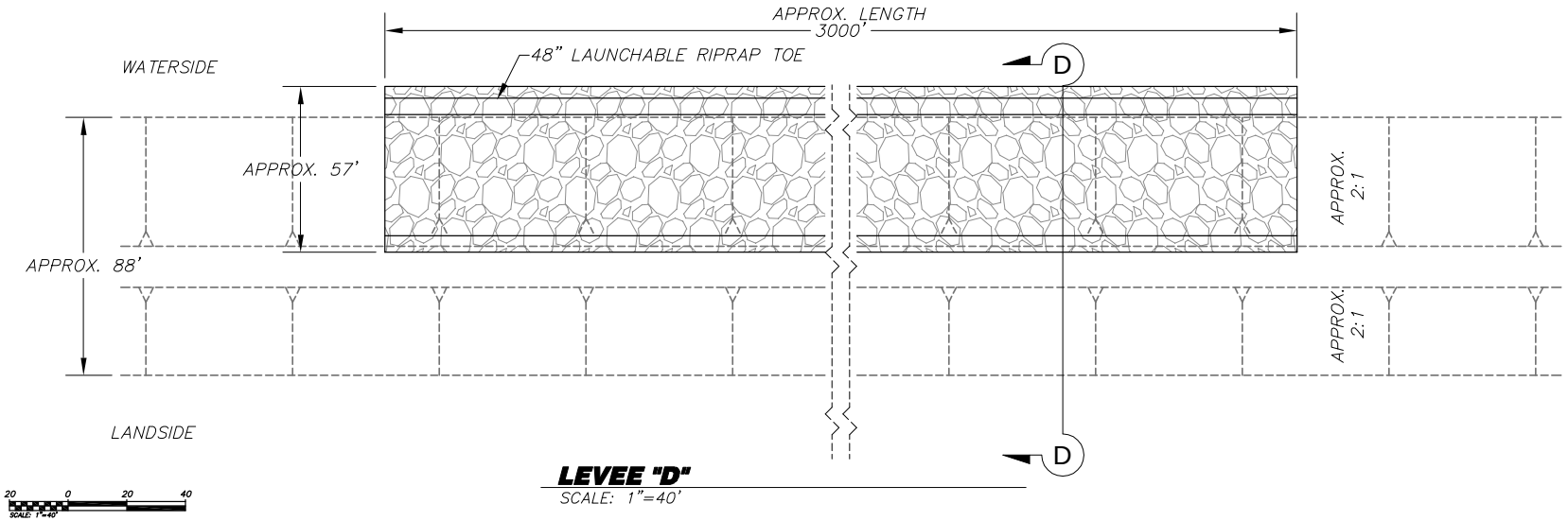
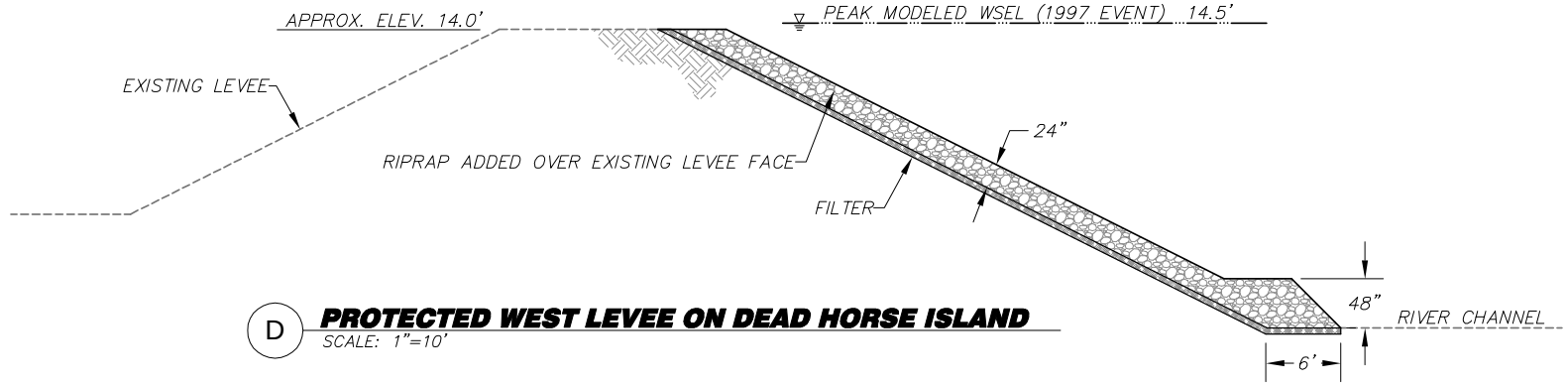
**Figure 2-3**
**Degraded Southwest Levee on McCormack-Williamson Tract (Elevation –2.5')**
**Plan and Section**




Source: Northwest Hydraulic Consultants 2005.

NOTE: ALL ELEVATIONS ARE NGVD

01268.01 EIR

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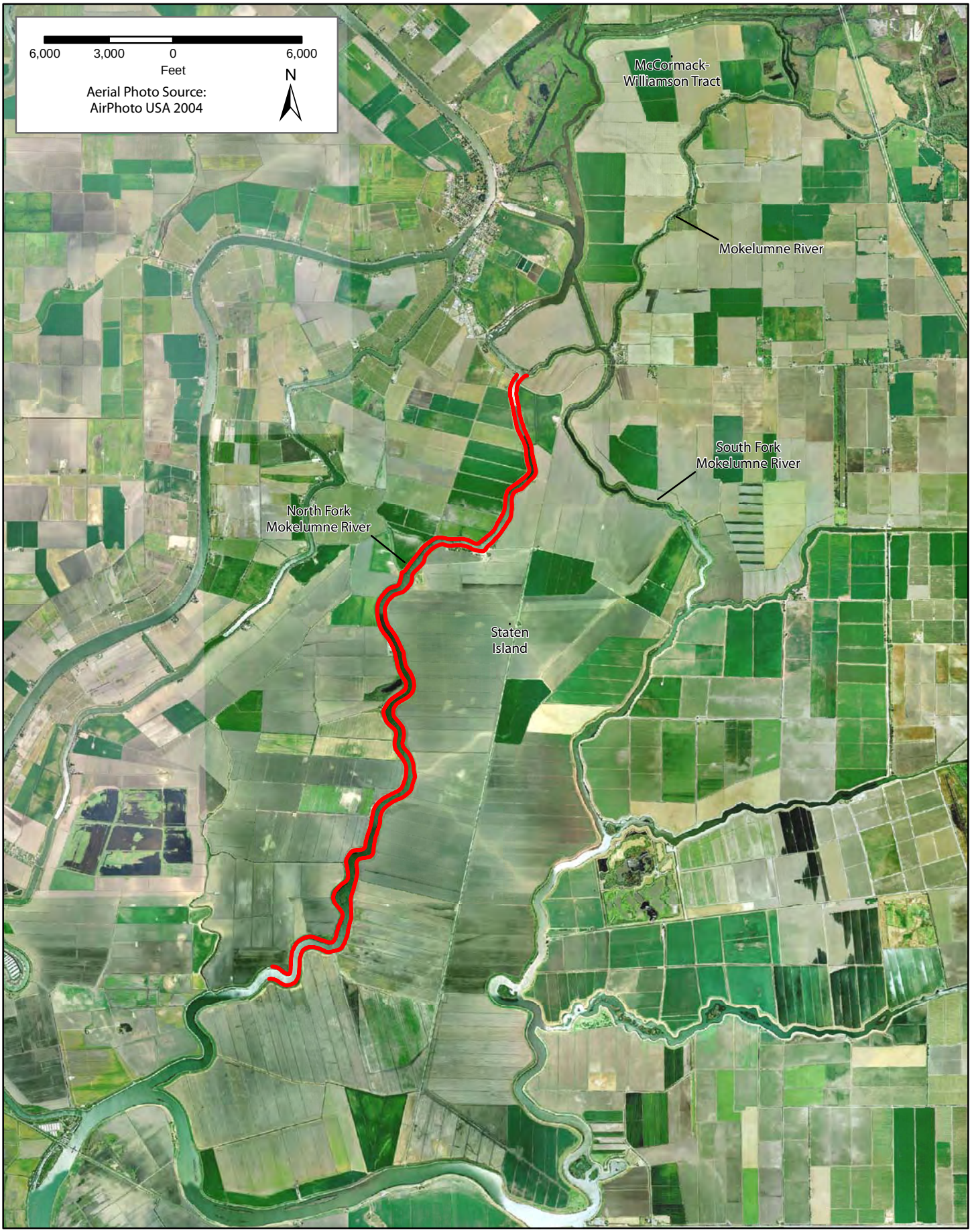
**Figure 2-4**
**Reinforced East Levee on Dead Horse Island**
**Plan and Section**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_5_NF_LEVEE_MOD.MXD LD (05-08-06)

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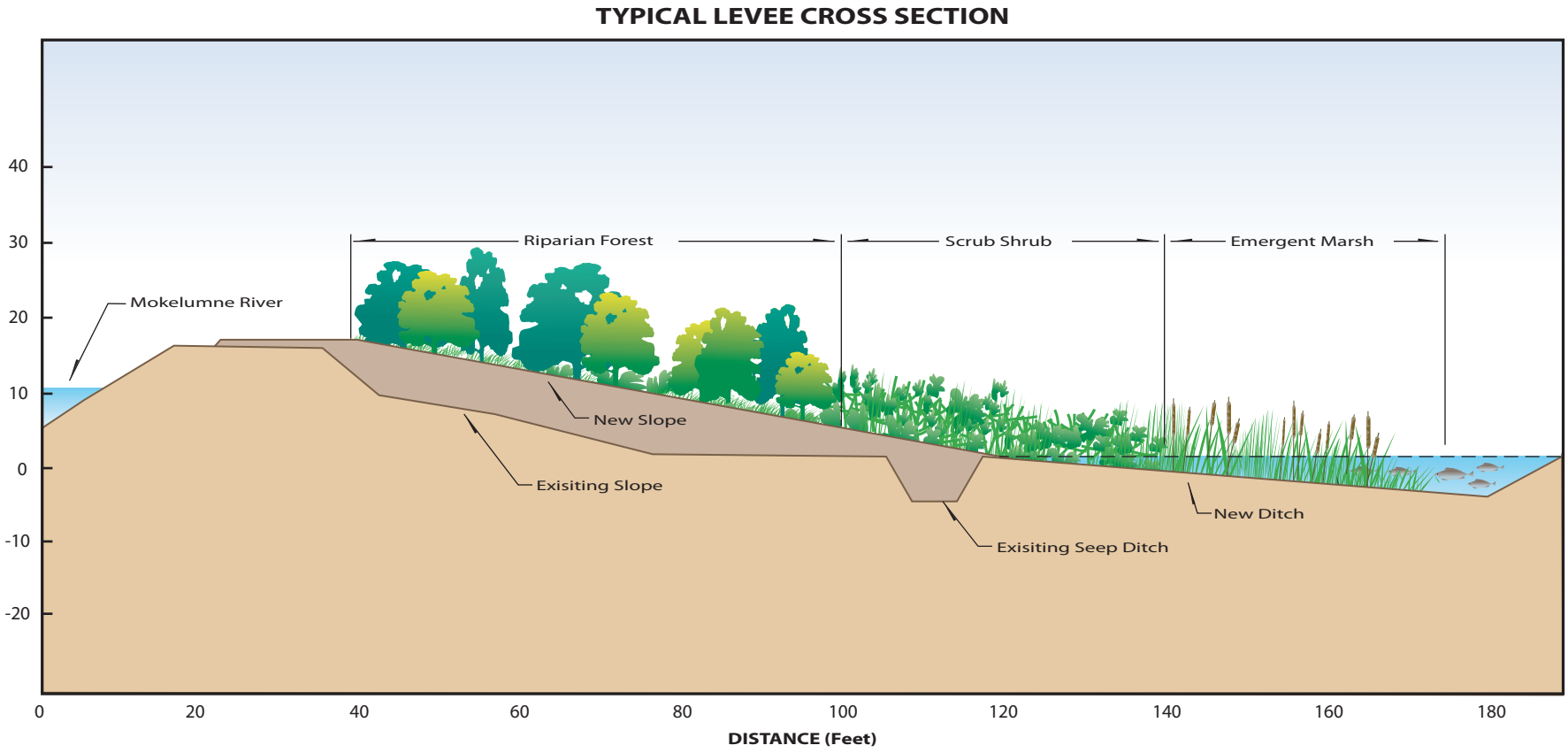
**Figure 2-5**
**North Fork Mokelumne River Levee Modification Plan**




Source: DWR.

01268.01 EIR

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**Figure 2-6**
**Enhanced Interior Levee Slope and Habitat Section**

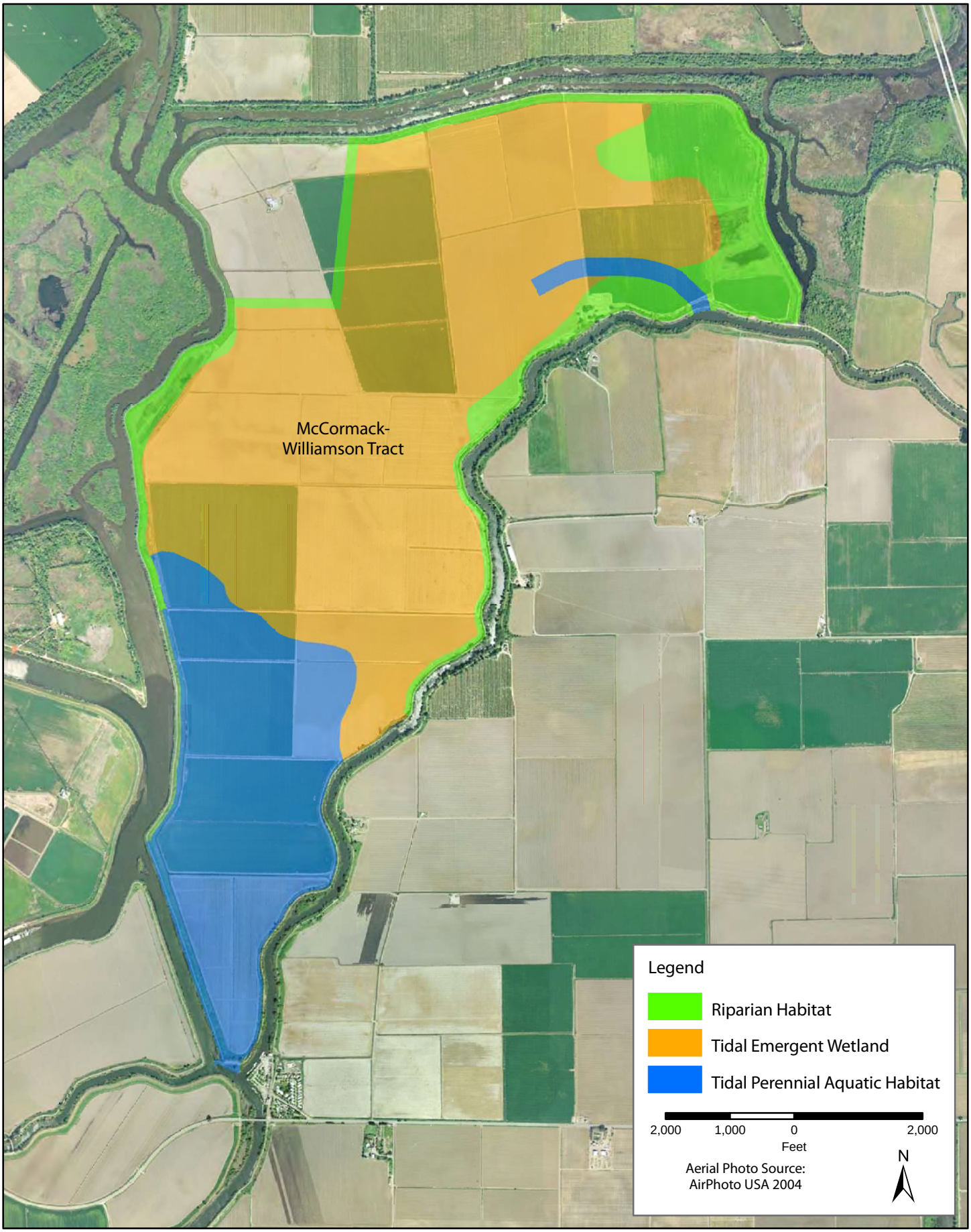


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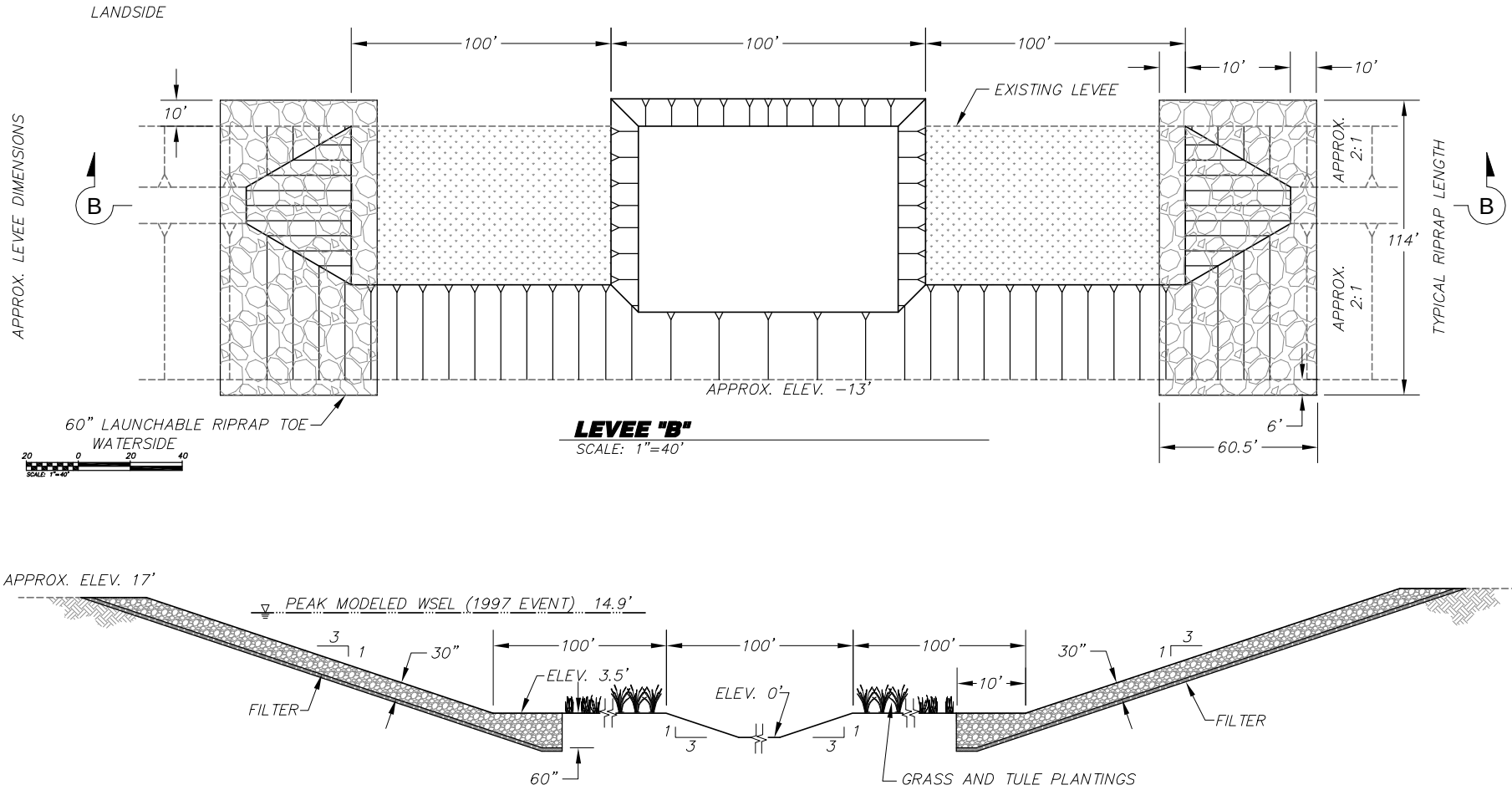
**Figure 2-7**
**Anticipated Cover Types from Fluvial Process Optimization (Alternative 1-A)**




Source: Northwest Hydraulic Consultants 2005.

NOTE: ALL ELEVATIONS ARE NGVD

01268.01 EIR

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**Figure 2-8**
**Levee Breach Inlet Channel**
**Plan and Section**

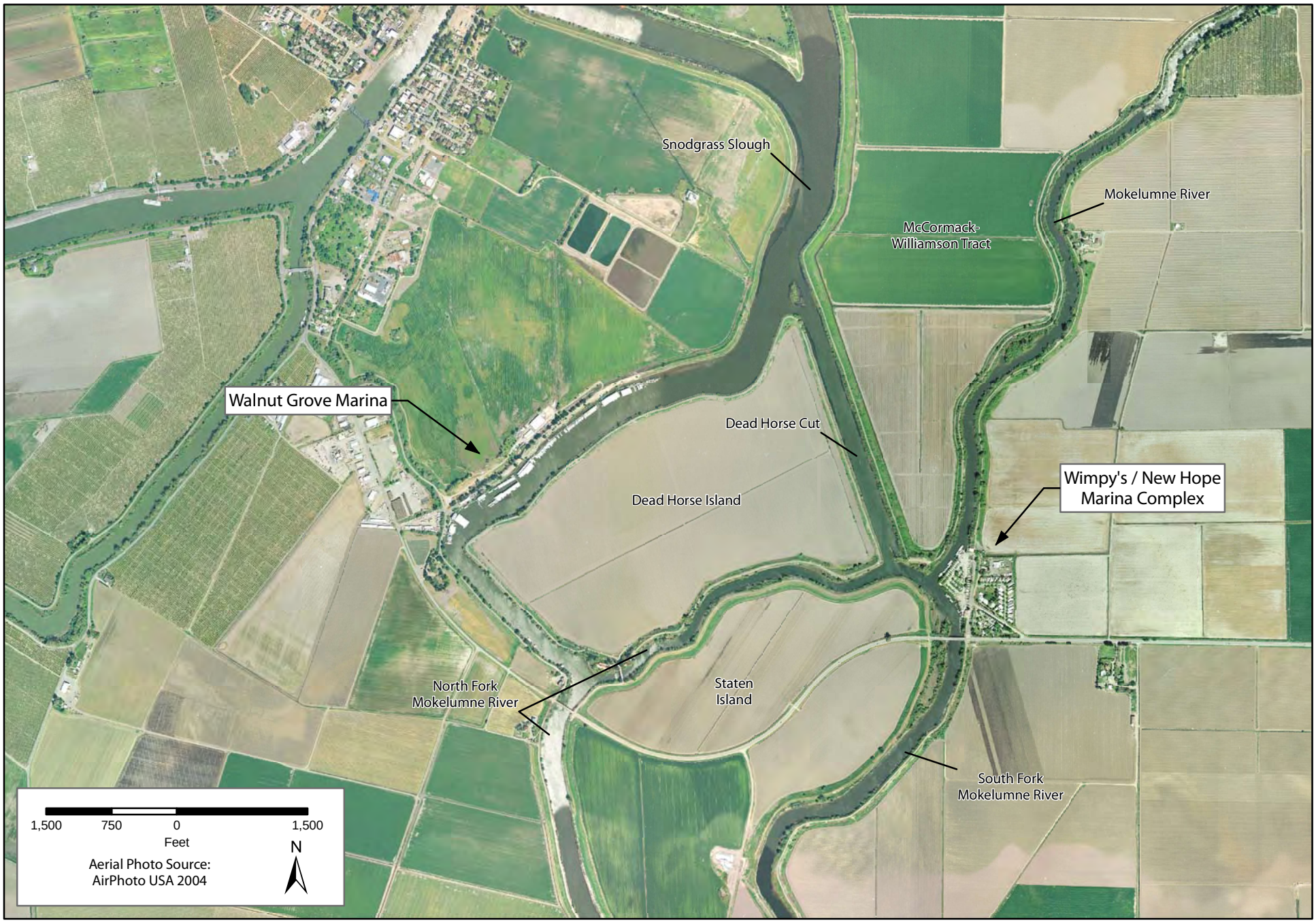




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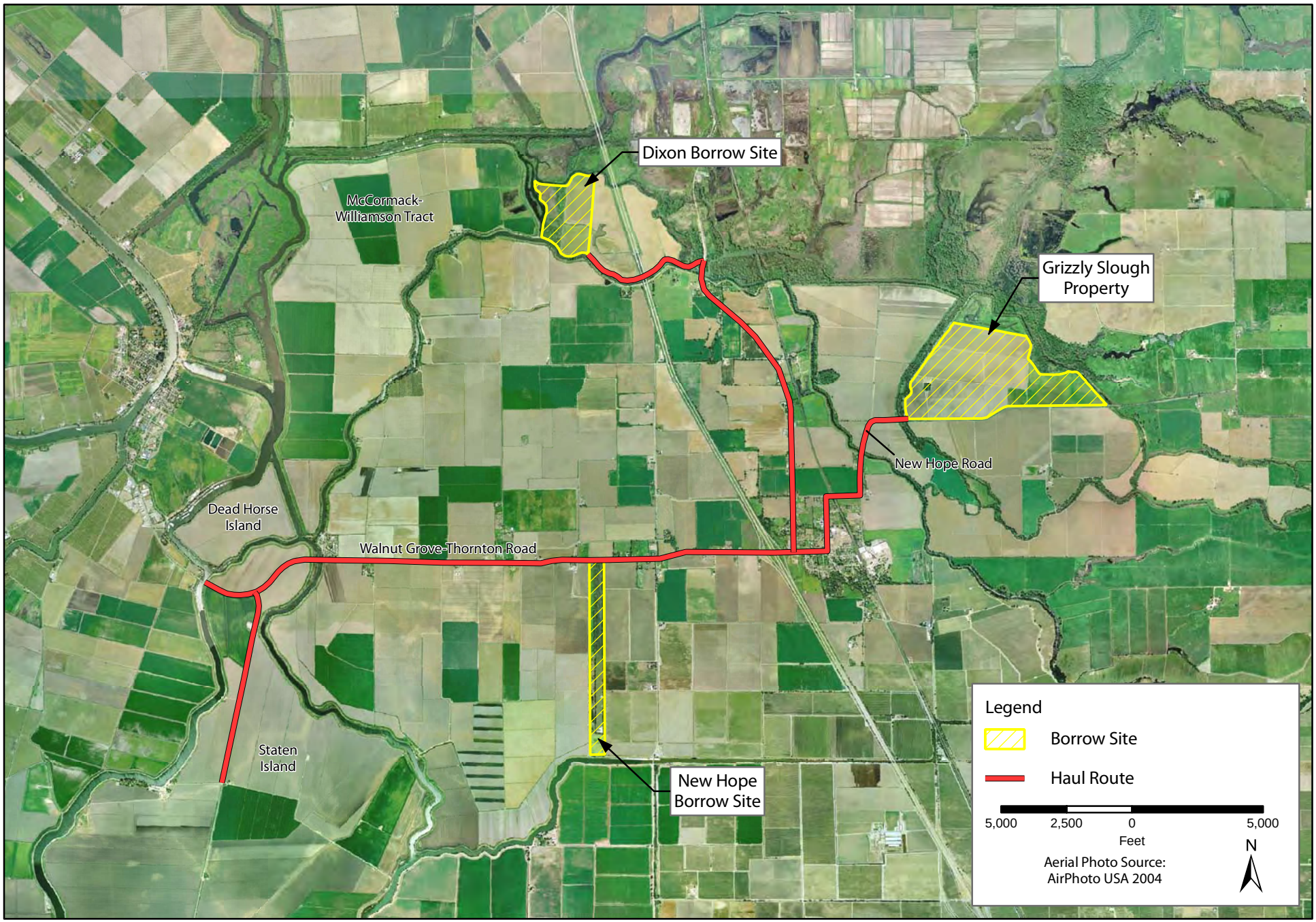
**Figure 2-9**
**Project Area Marinas Map**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_10_BORROW_SITES.MXD LD (04-14-06)

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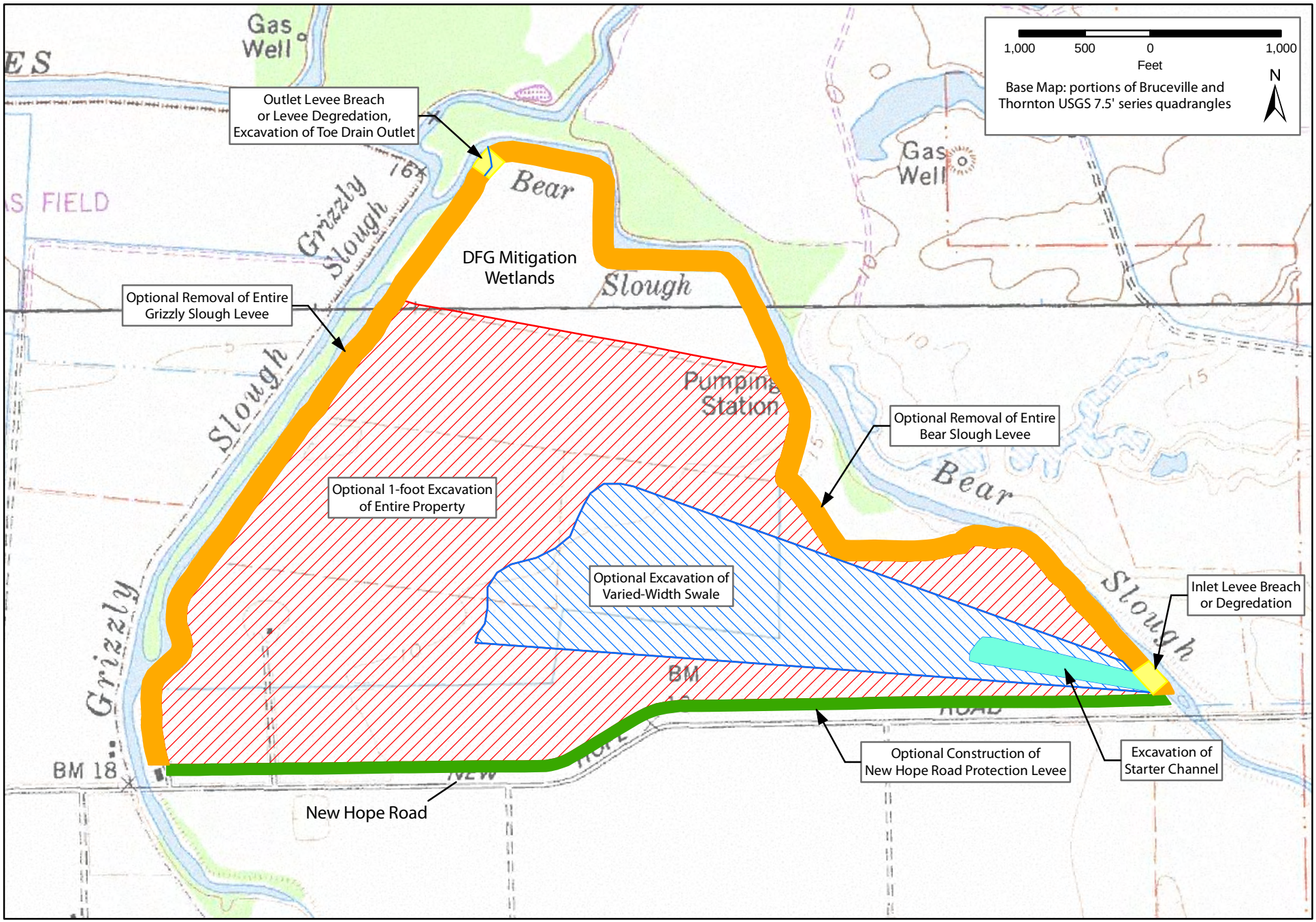
**Figure 2-10**
**Dixon and New Hope Borrow Sites and Haul Routes Map**
**(with Grizzly Slough Property)**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_11_GRIZZLY.MXD LD (05-09-06)

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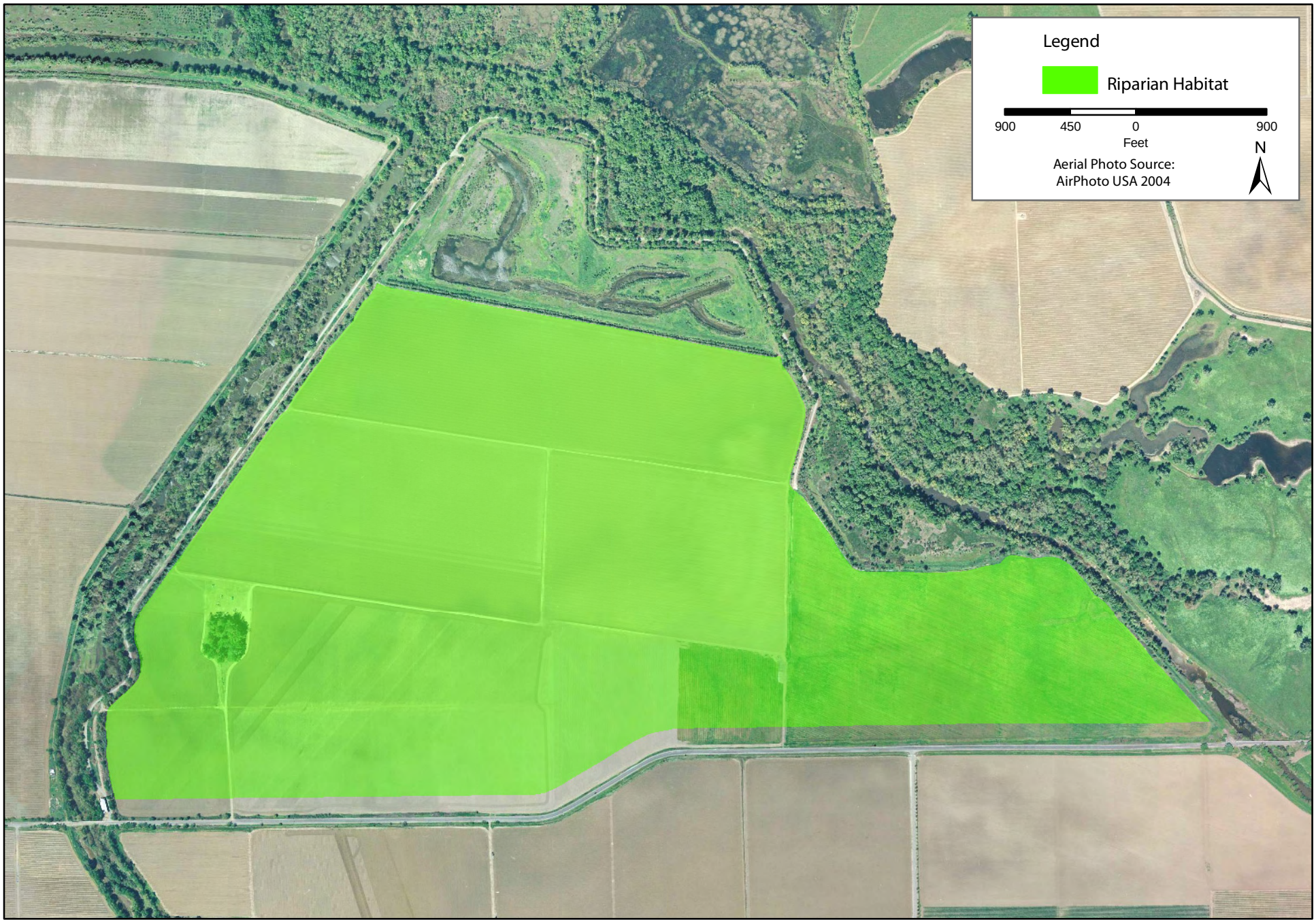
**Figure 2-11**
**Excavation and Restoration of Grizzly Slough Property**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_12_GRIZZLY_COVER_TYPES.MXD LD (05-01-06)

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**Figure 2-12**
**Anticipated Cover Types from Grizzly Slough Restoration**


H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_13_SF_DREDGING.MXD LD (05-10-06)

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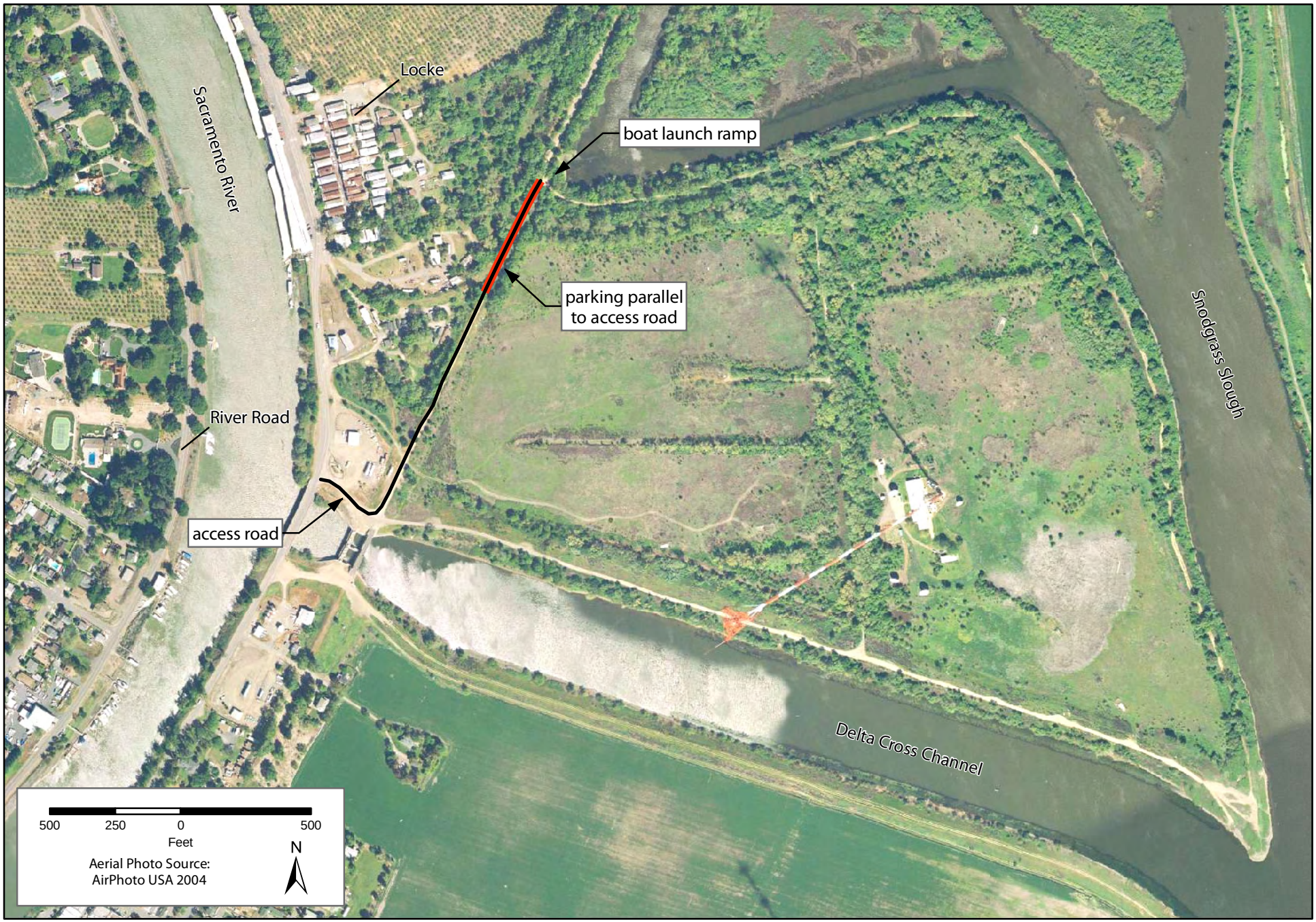
**Figure 2-13**
**South Fork Mokelumne River Dredging Plan**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_14_DELTA MEADOWS.MXD LD (05-09-06)

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**Figure 2-14**
**Delta Meadows Property Map**

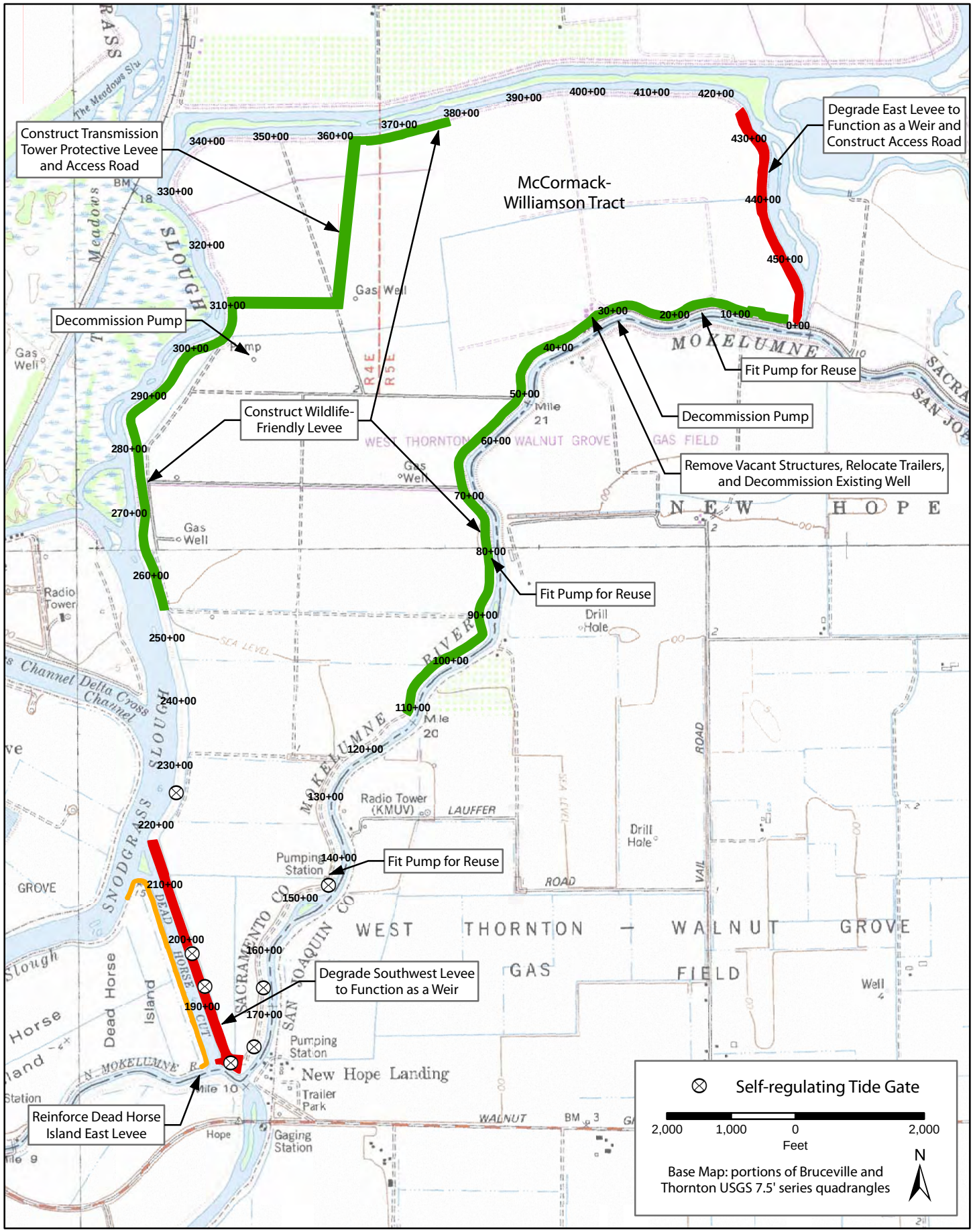


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**Figure 2-15**
**Alternative 1-B: Seasonal Floodplain Optimization Plan**

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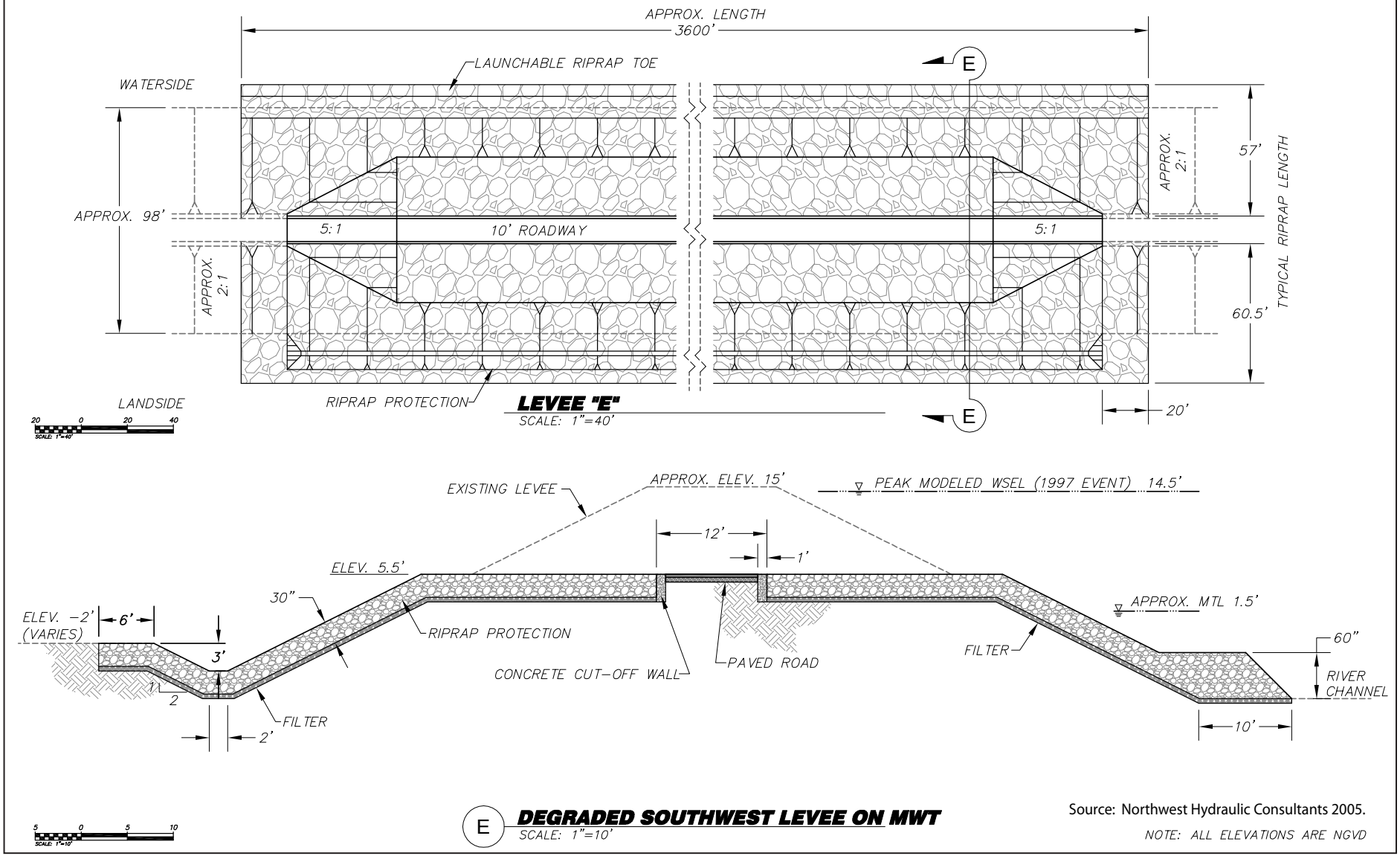


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**Figure 2-16**
**Degraded Southwest Levee on McCormack-Williamson Tract (Elevation 5.5')**
**Plan and Section**

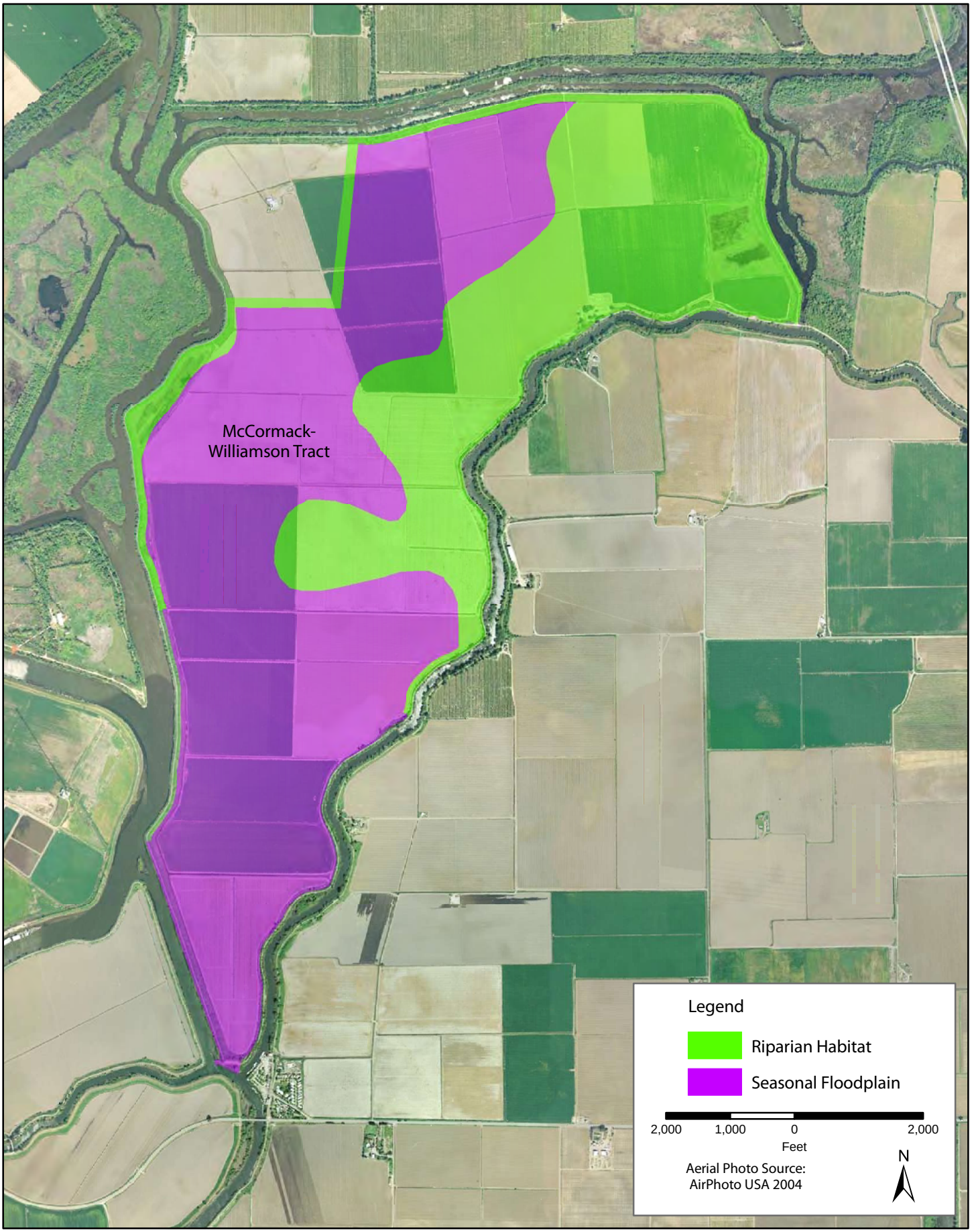


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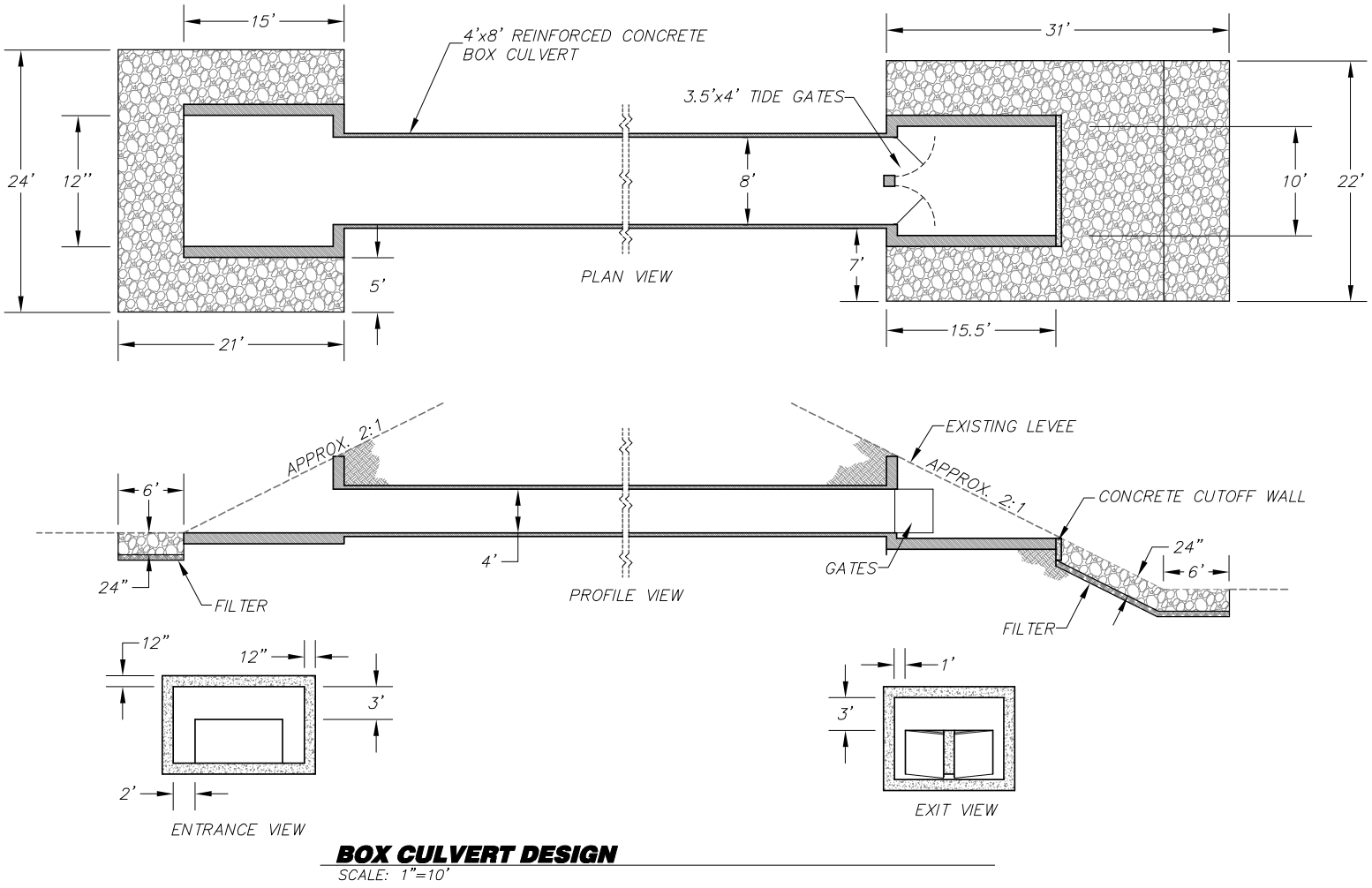
**Figure 2-17**
**Anticipated Cover Types from**
**Seasonal Floodplain Optimization Plan (Alternative 1-B)**




**BOX CULVERT DESIGN**

SCALE: 1"=10'

5 0 5 10

SCALE: 1"=10'

NOTE: ALL ELEVATIONS ARE NGVD

Source: Northwest Hydraulic Consultants 2005.

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**Figure 2-18**
**Box Culvert Drain Plan and Section**

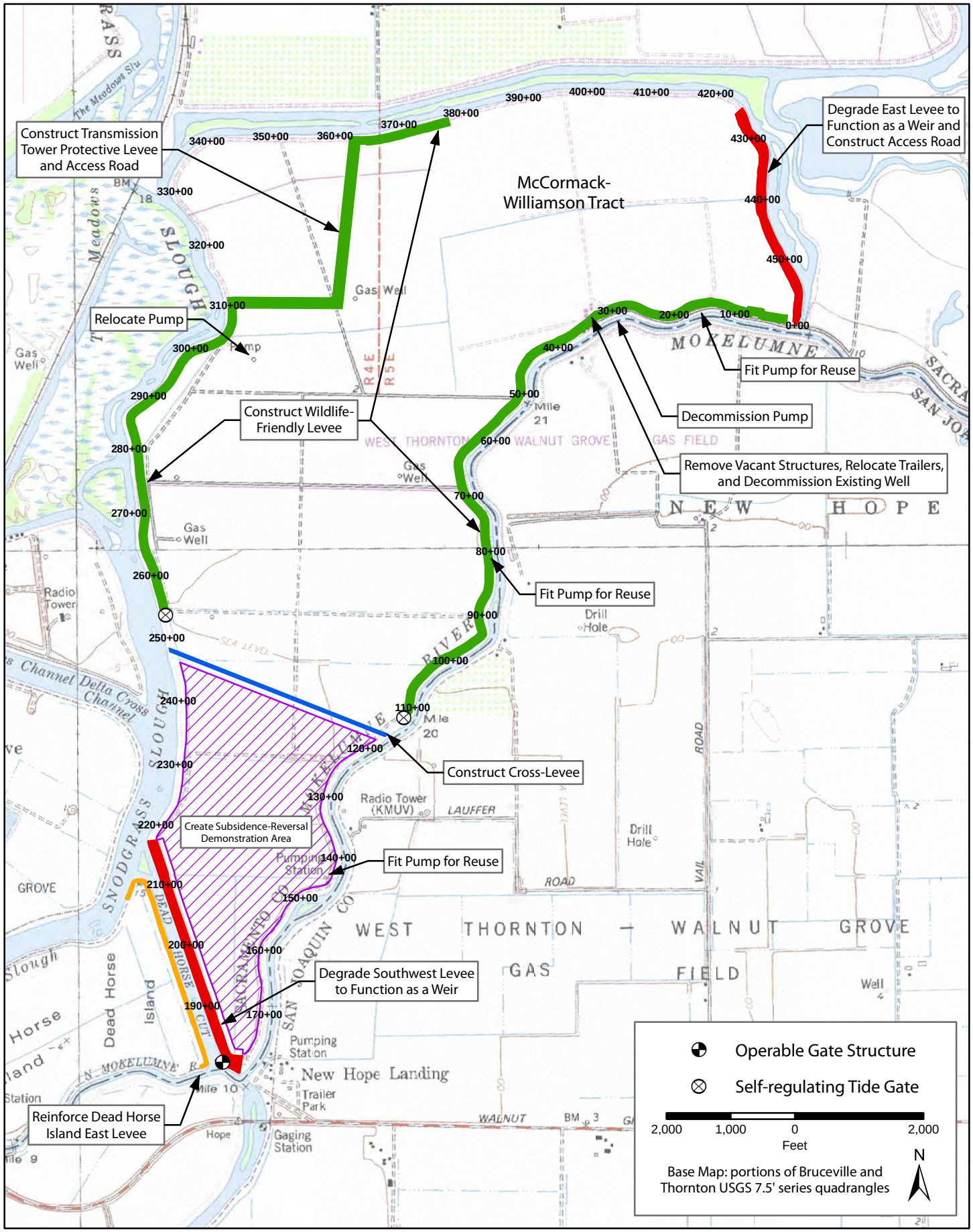


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**Figure 2-19**
**Alternative 1-C: Seasonal Floodplain Enhancement and Subsidence Reversal Plan**

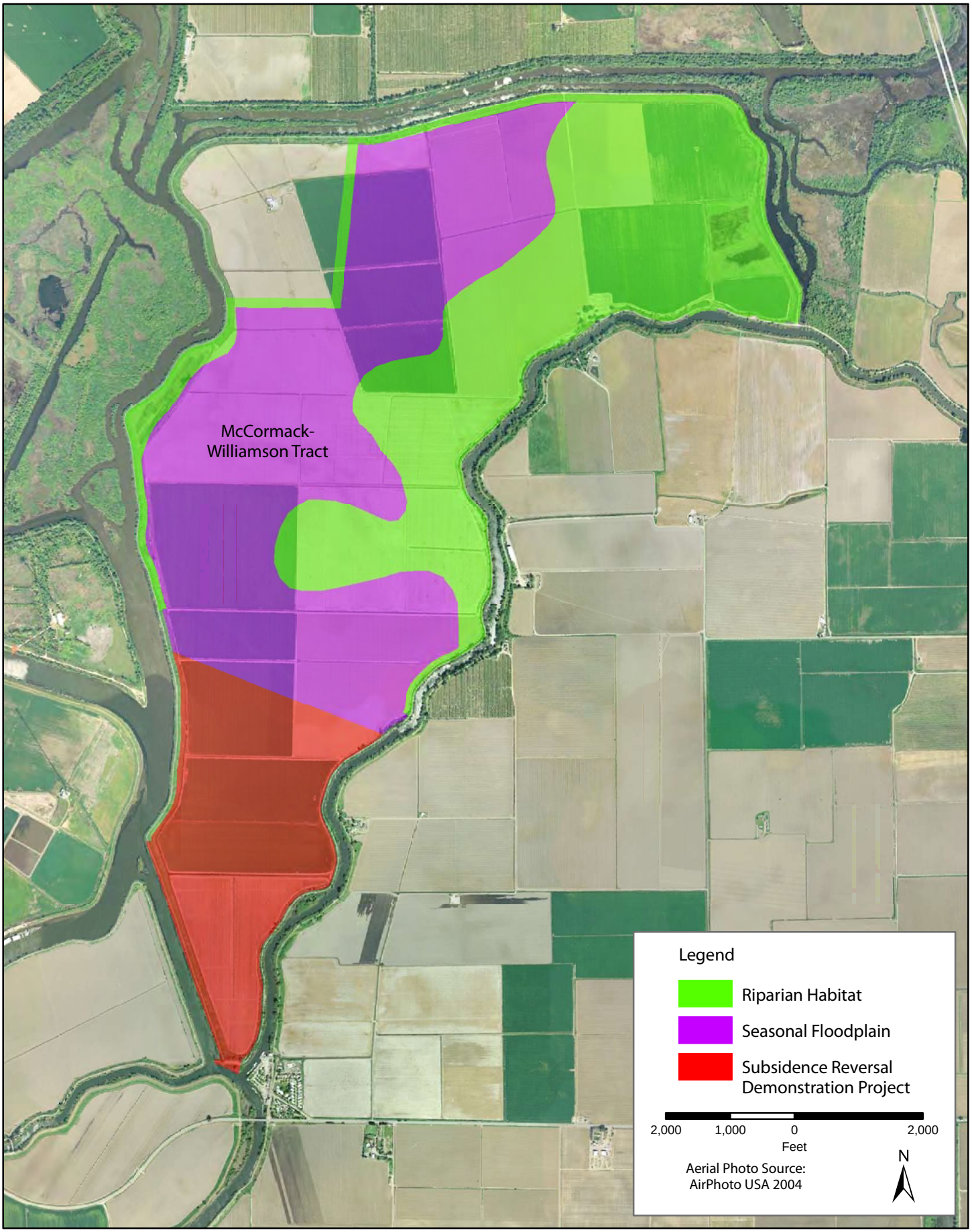


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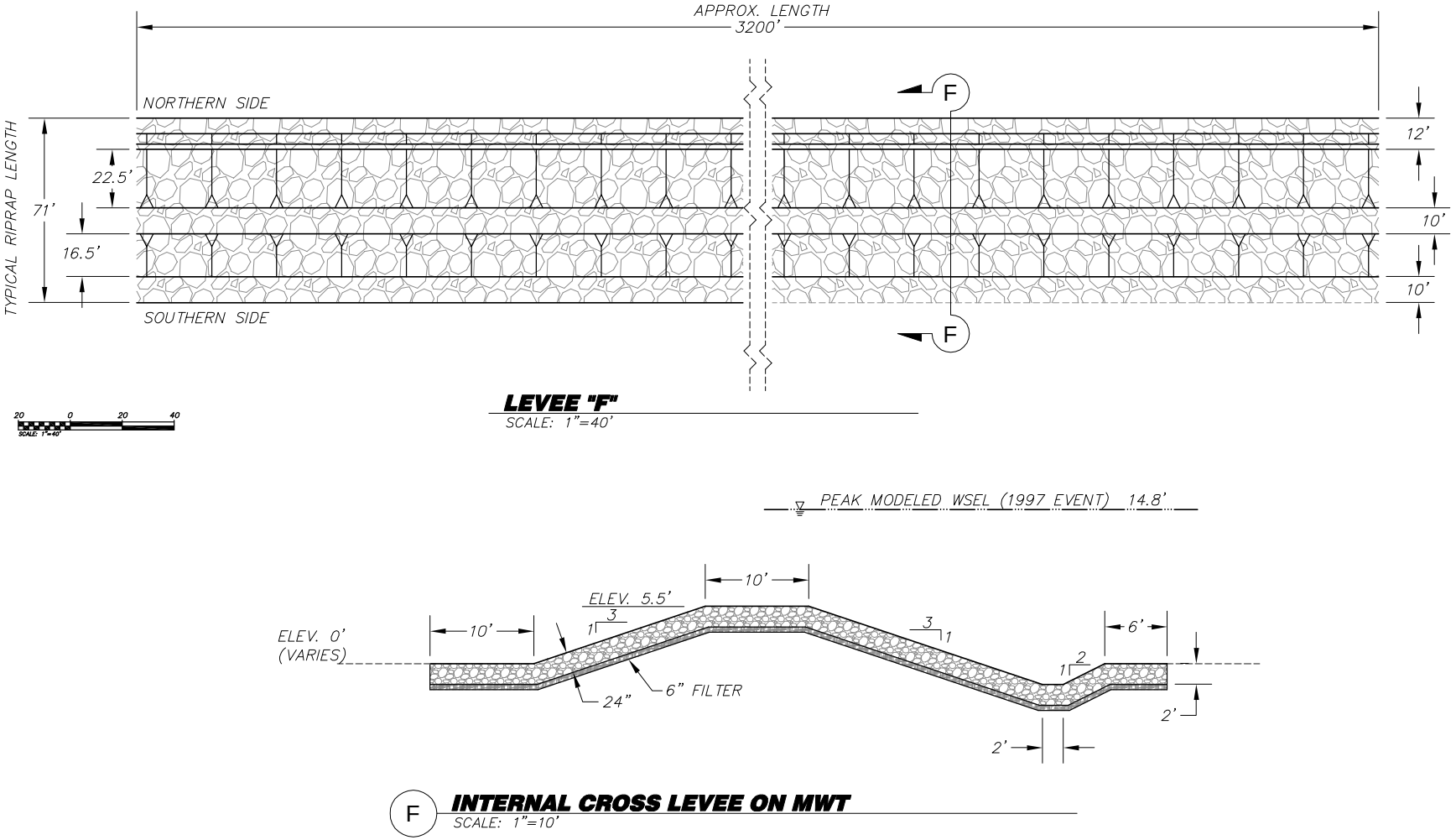
**Figure 2-20**
**Anticipated Cover Types from Seasonal Floodplain and Subsidence Reversal Plan (Alternative 1-C)**




Source: Northwest Hydraulic Consultants 2005.

01268.01 EIR

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**Figure 2-21**
**McCormack-Williamson Tract Cross-Levee**
**Plan and Section**

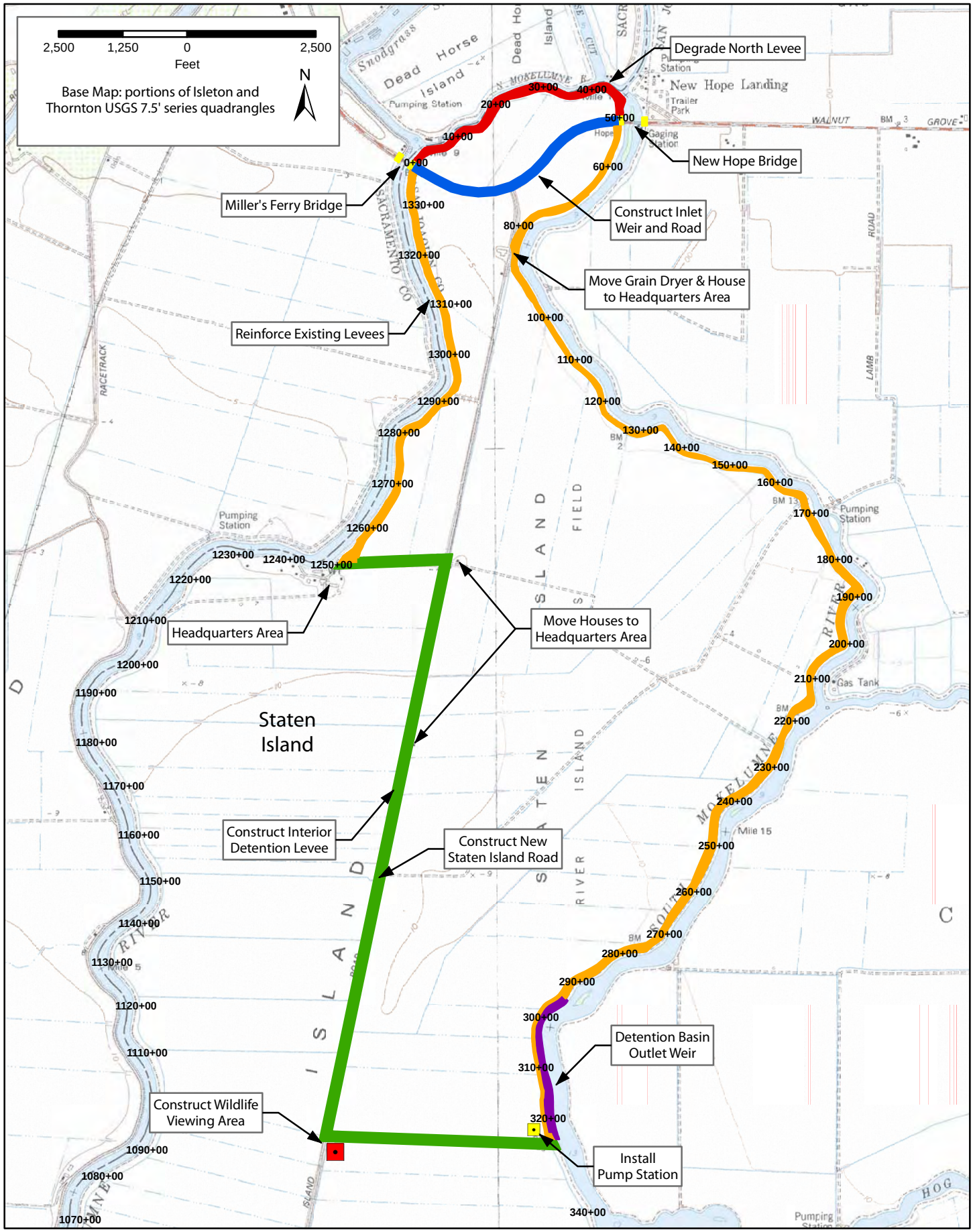


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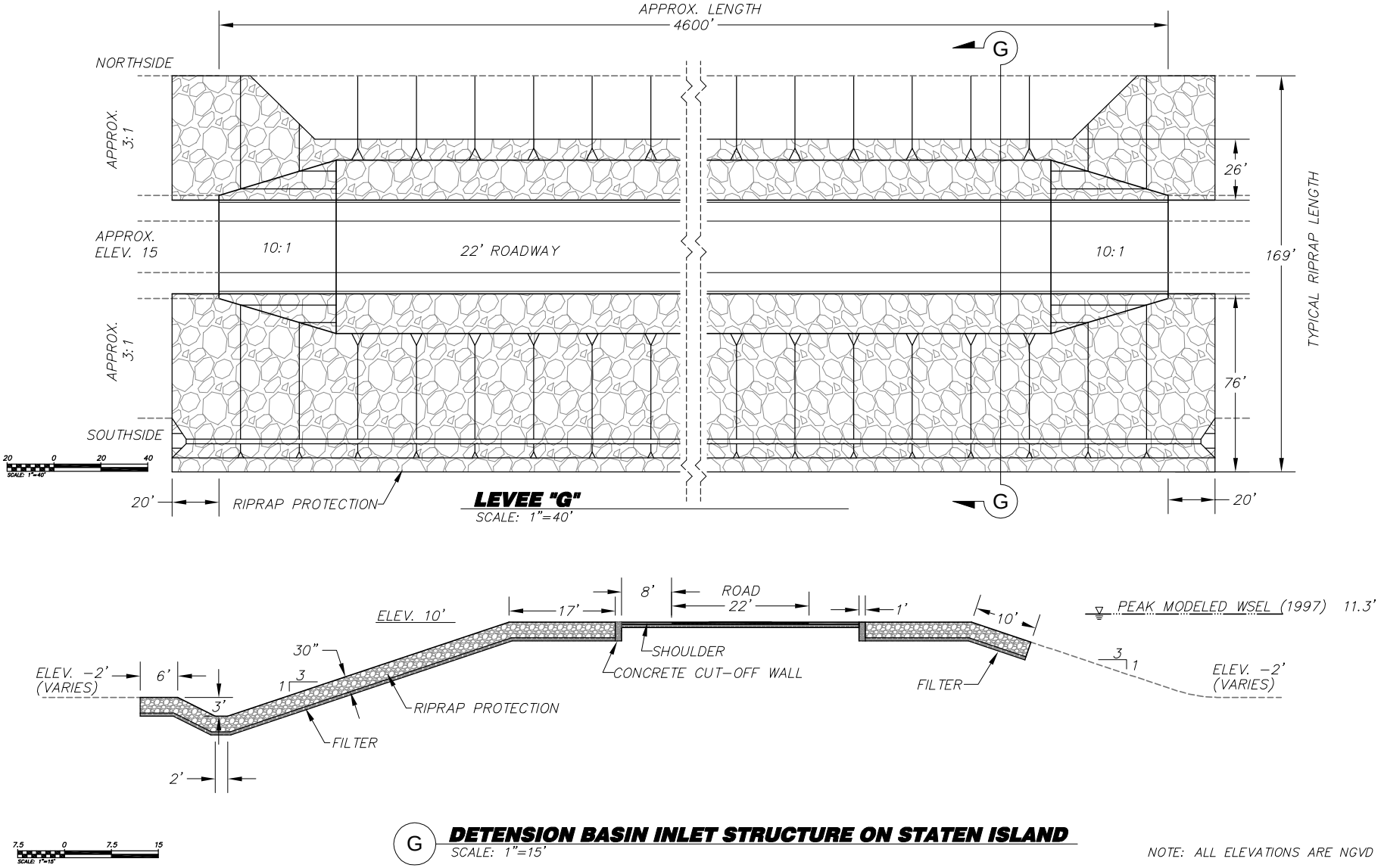
**Figure 2-22**
**Alternative 2-A: North Staten Detention Plan**




Source: Northwest Hydraulic Consultants 2005.

01268.01 EIR

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**Figure 2-23**
**Detention Basin Inlet Weir (North Staten)**
**Plan and Section**

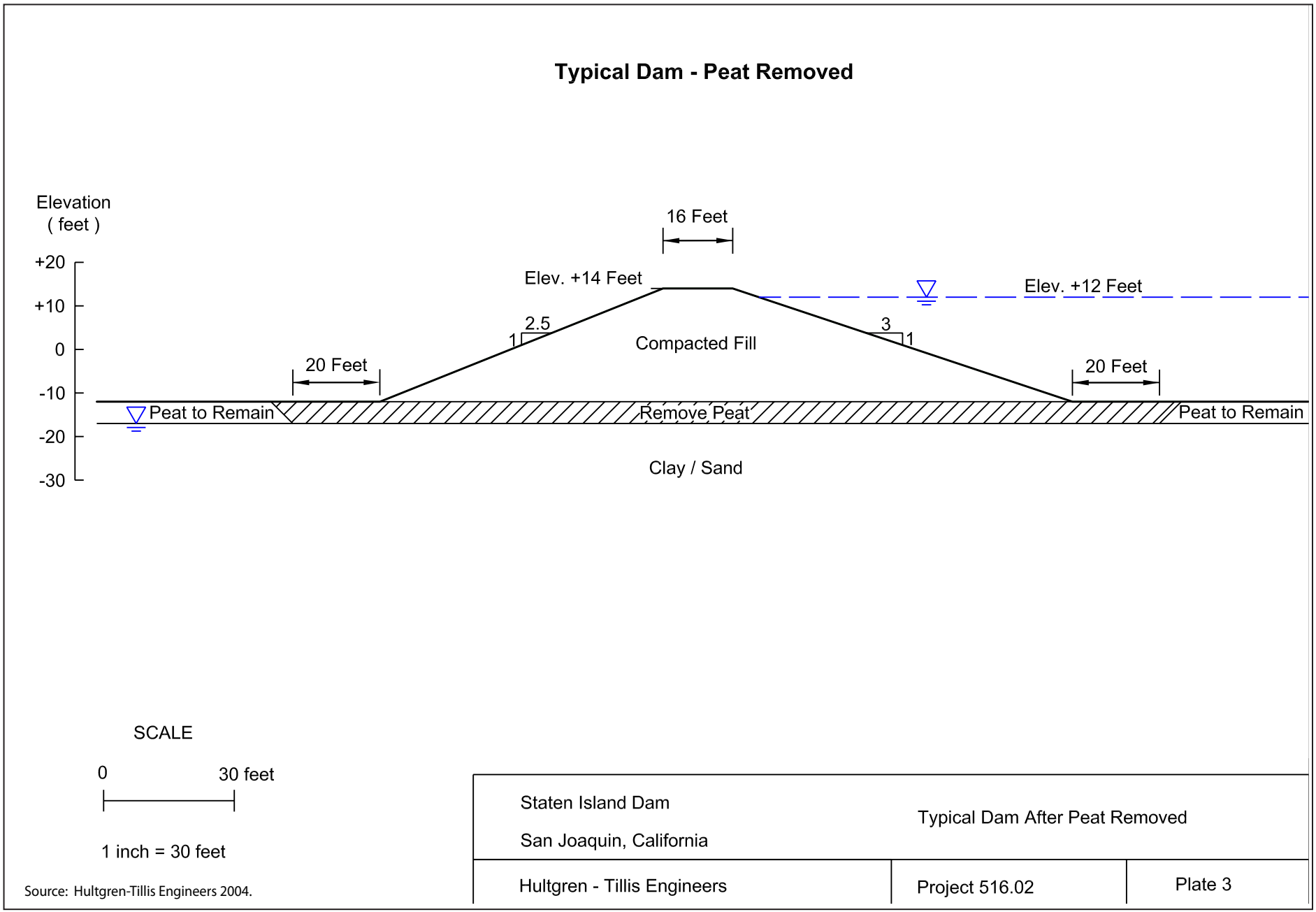


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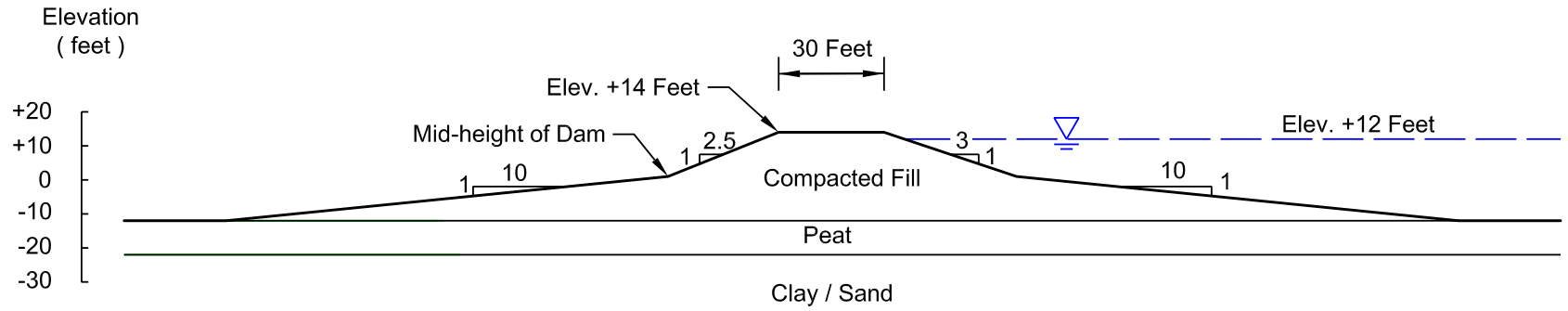
**Figure 2-24**
**Staten Interior Detention Levee (Profile 1 – Peat Removed) Section**

## Typical Dam Constructed Over Peat




SCALE

0 50 feet

1 inch = 50 feet

Source: Hultgren-Tillis Engineers 2004.

| | | |
|---|---|---|
| Staten Island Dam<br>San Joaquin County, California | Typical Dam Constructed Over Peat | |
| Hultgren - Tillis Engineers | Project 516.02 | Plate 4 |

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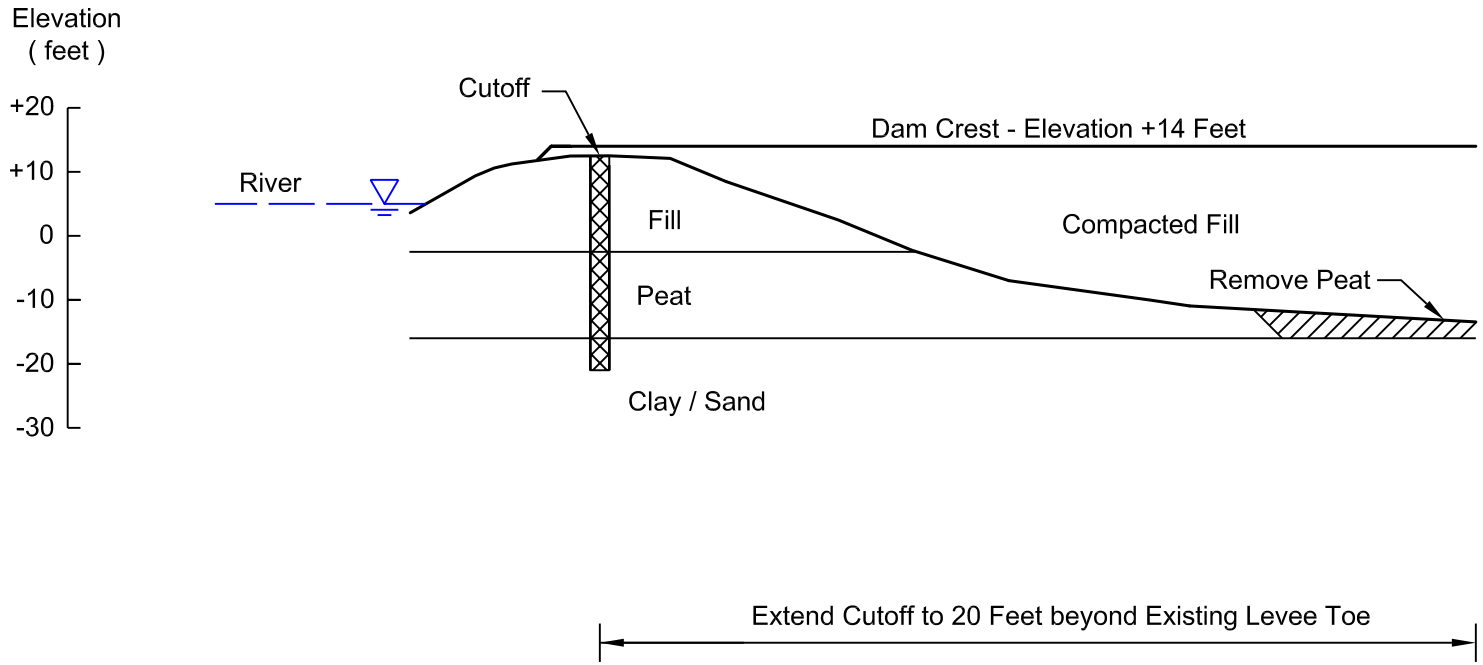
**Figure 2-25**
**Staten Interior Detention Levee (Profile 2 – Peat Remaining) Section**

**Typical Dam Abutment at Levee**
**Cross-Section - Staten Island Station 1115 + 00**




SCALE

0 30 feet

1 inch = 30 feet

Source: Hultgren-Tillis Engineers 2004.

| | | |
|---|---|---|
| Staten Island Dam<br>San Joaquin County, California | Typical Dam Abutment | |
| Hultgren - Tillis Engineers | Project 516.02 | Plate 5 |

01268.01 EIR

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**Figure 2-26**
**Levee Abutment and Cutoff Wall Section**

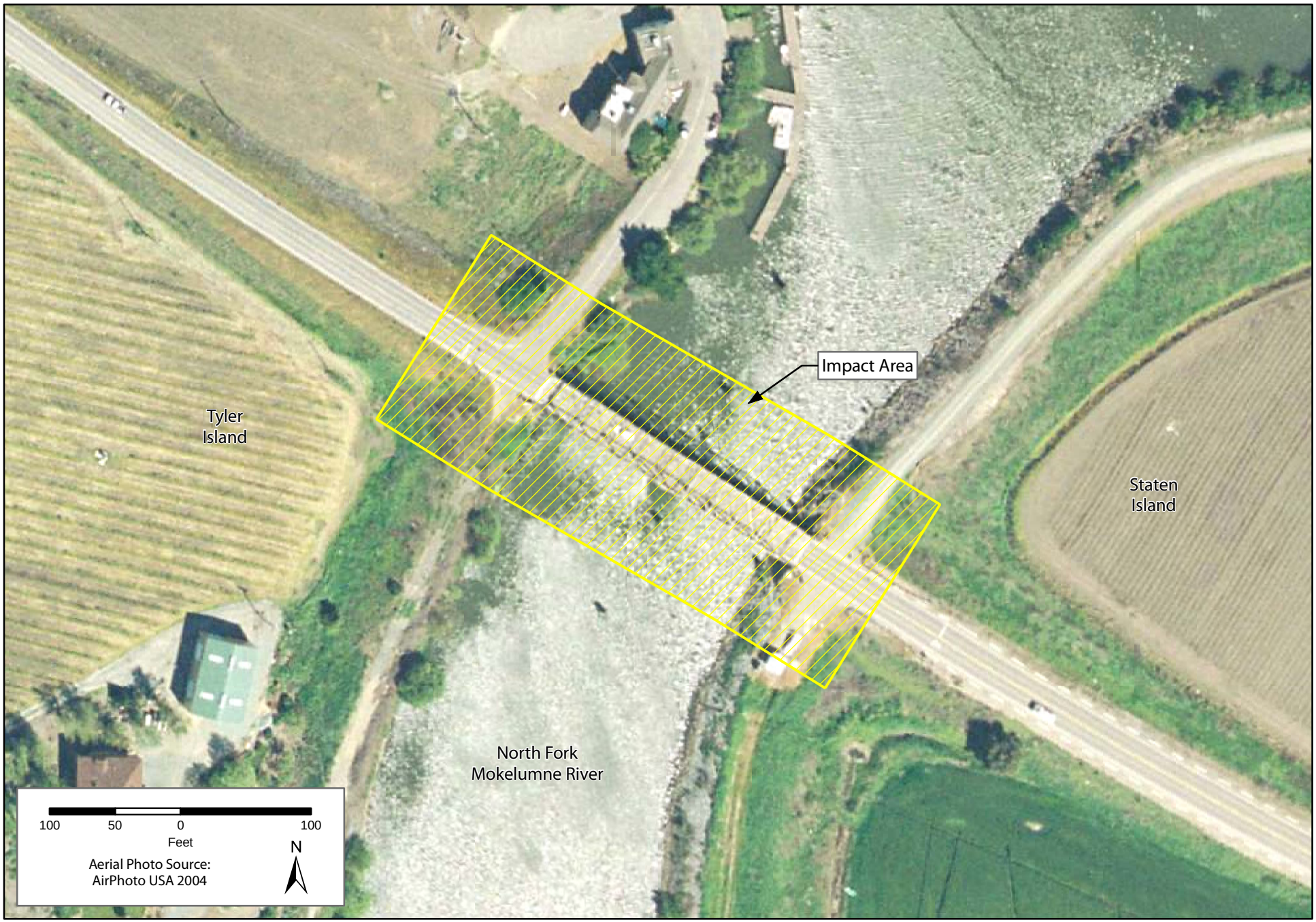


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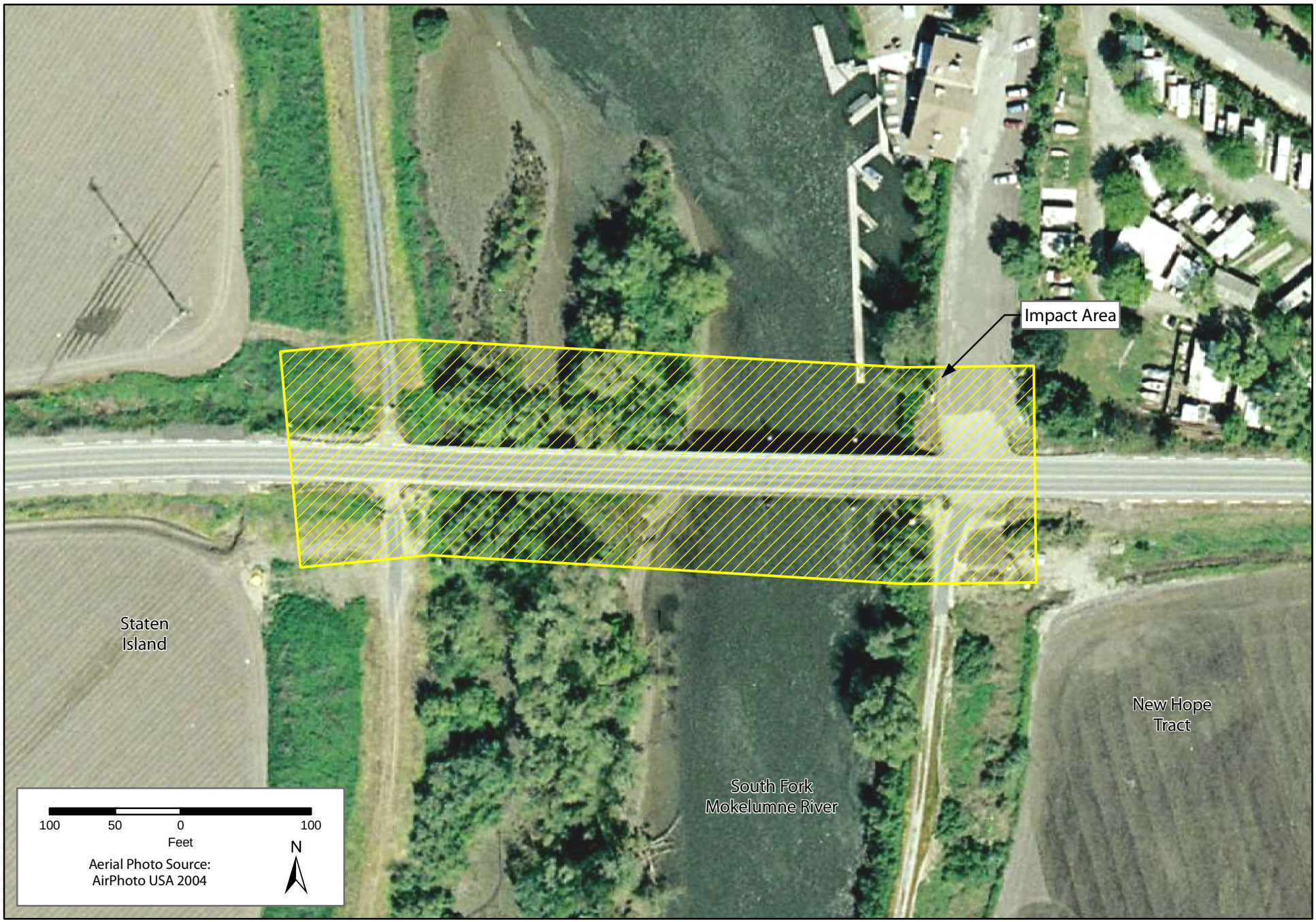
**Figure 2-27**
**Miller's Ferry Bridge Plan**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_28_NEW_HOPE.MXD LD (05-09-06)

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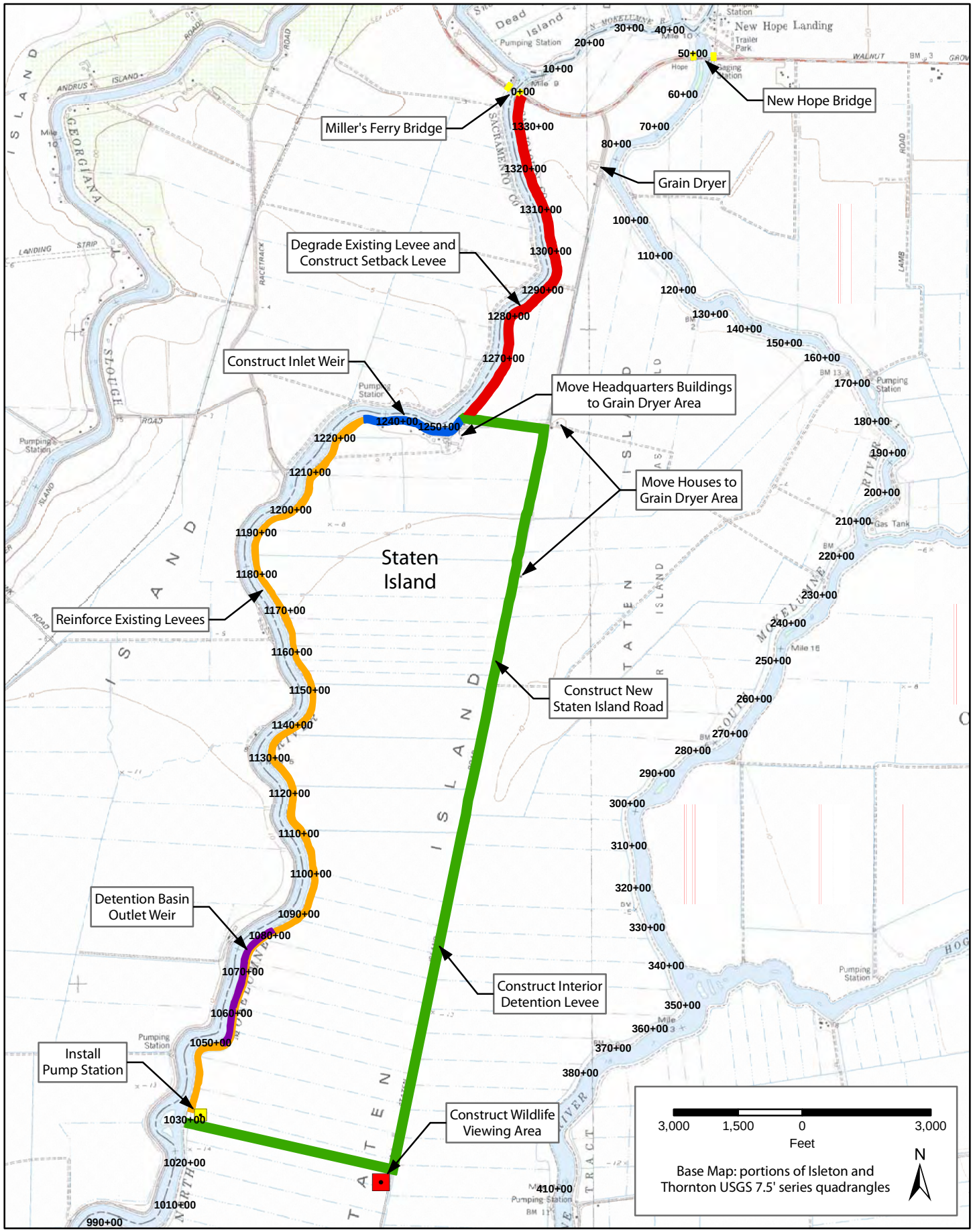
**Figure 2-28**
**New Hope Bridge Plan**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_2_29_ALT_2B.MXD LD (05-09-06)

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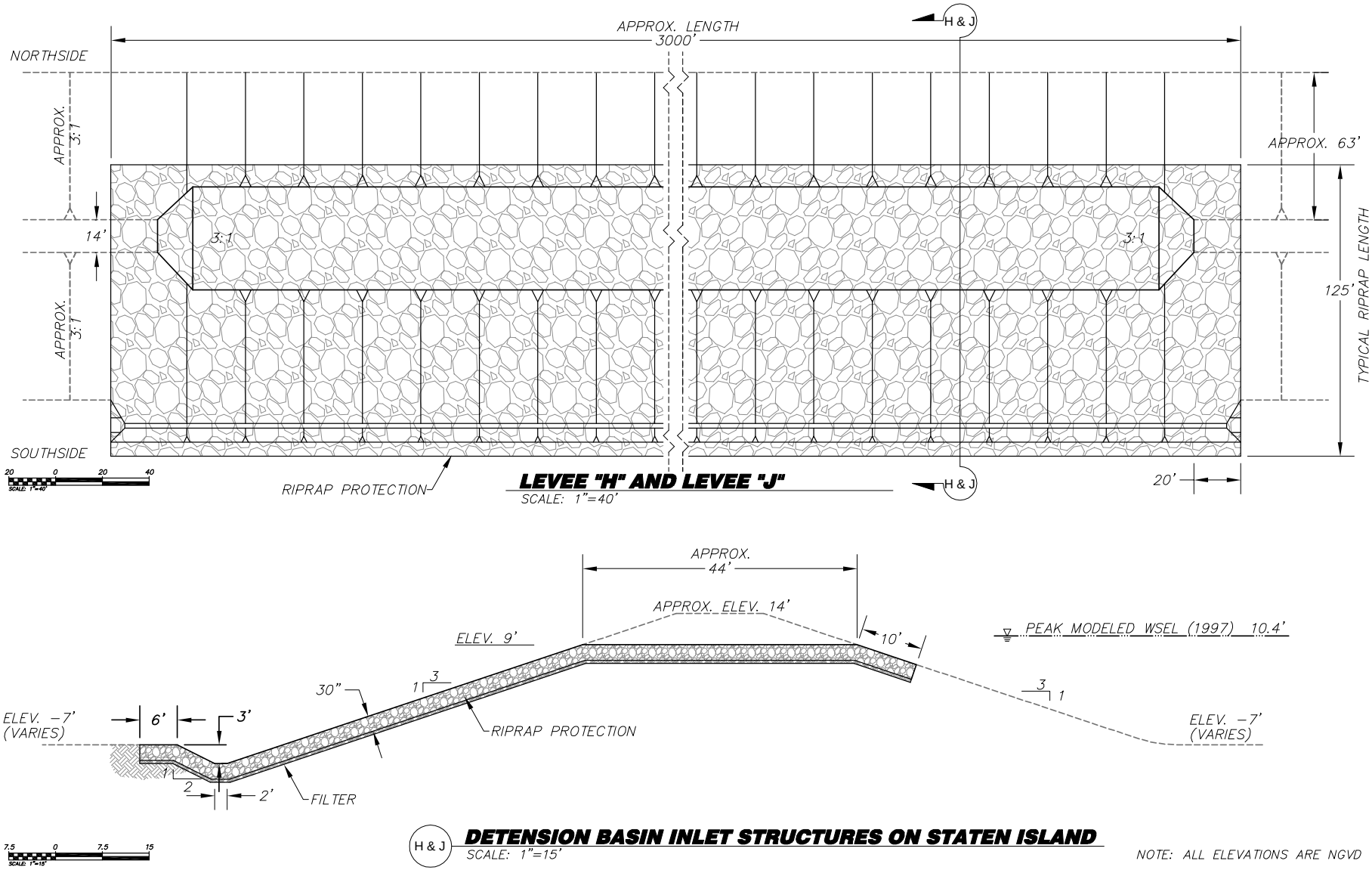
**Figure 2-29**
**Alternative 2-B: West Staten Detention Plan**




Source: Northwest Hydraulic Consultants 2005.

01268.01 EIR

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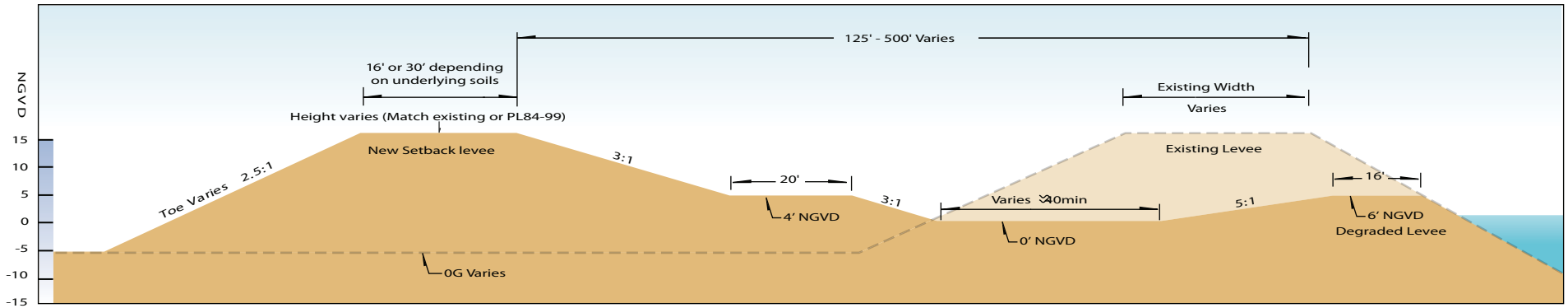
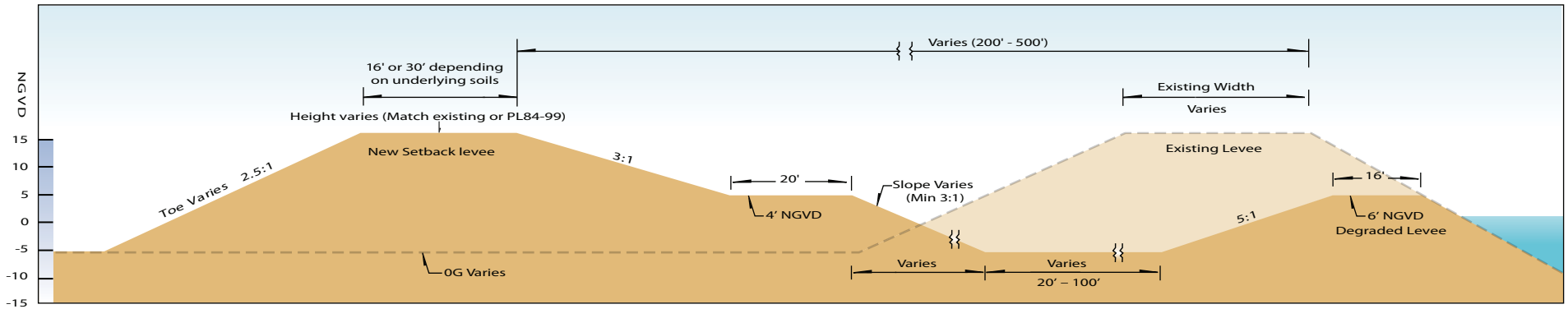
**Figure 2-30**
**Detention Basin Inlet Weir (West and East Staten)**
**Plan and Section**




**CONCEPTUAL SETBACK LEVEE CROSS SECTION**
**(Type - 1)**




**CONCEPTUAL SETBACK LEVEE CROSS SECTION**
**(Type - 2)**

Source: DWR.

01268.01 EIR

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**Figure 2-31**
**Setback Levee Section**

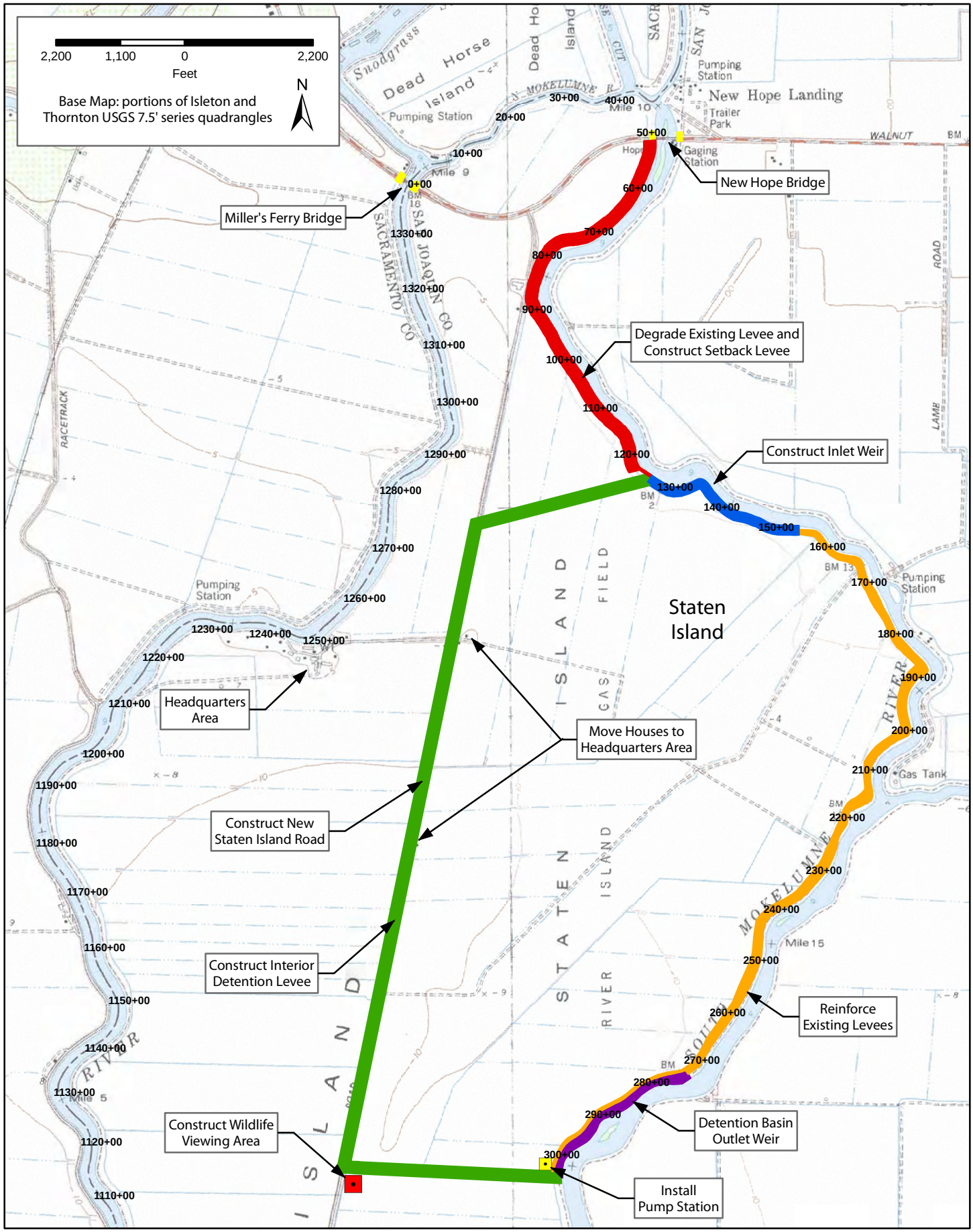


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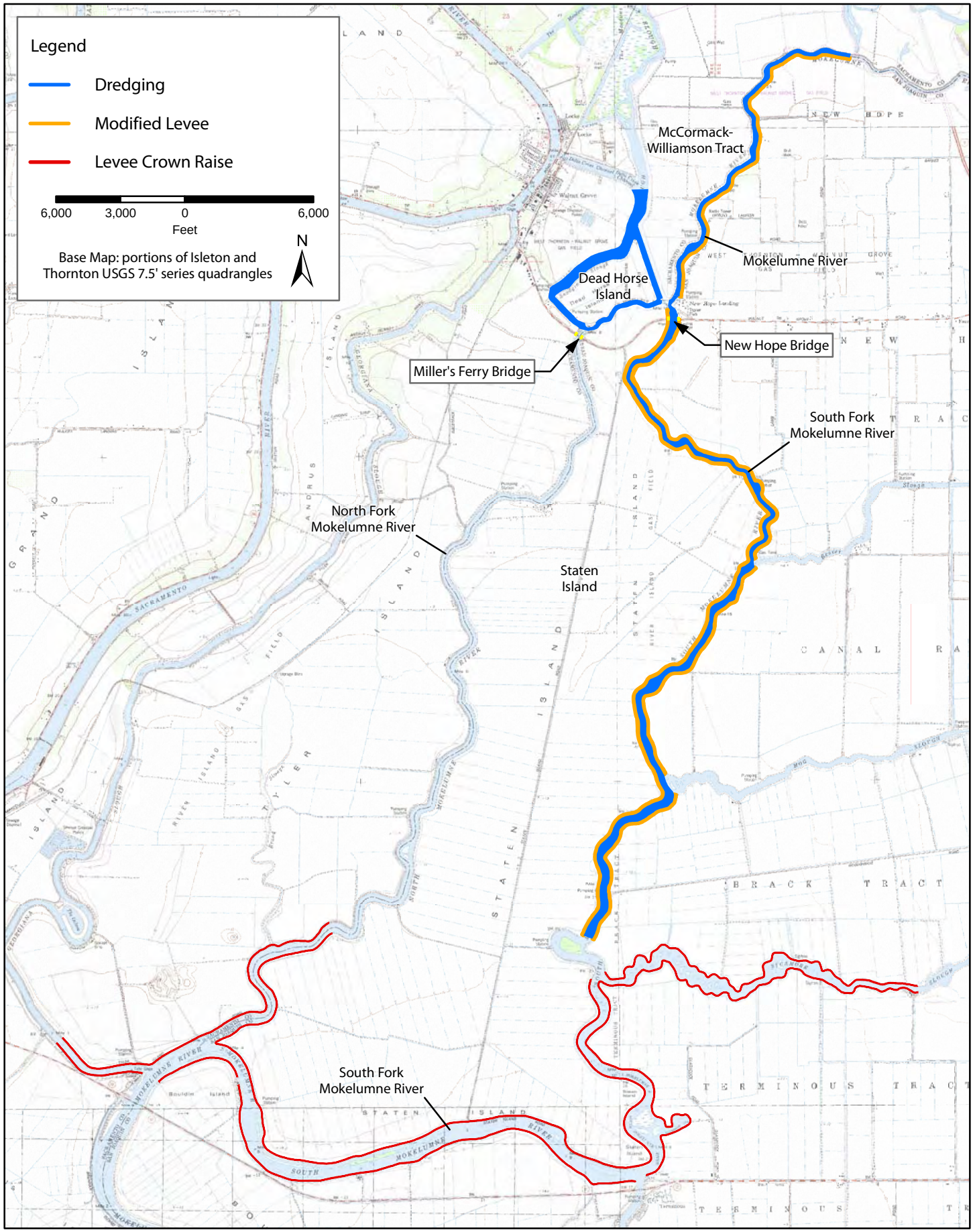
**Figure 2-32**
**Alternative 2-C: East Staten Detention Plan**




S:\GIS\PROJECTS\CALBAY_DELTA\01268_01\MAPDOC\ADEIR_FIGURES\FIG_2_33_ALT_2D.MXD LD (11-20-06)

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**Figure 2-33**
**Alternative 2-D: Dredging and Levee Modification Plan**

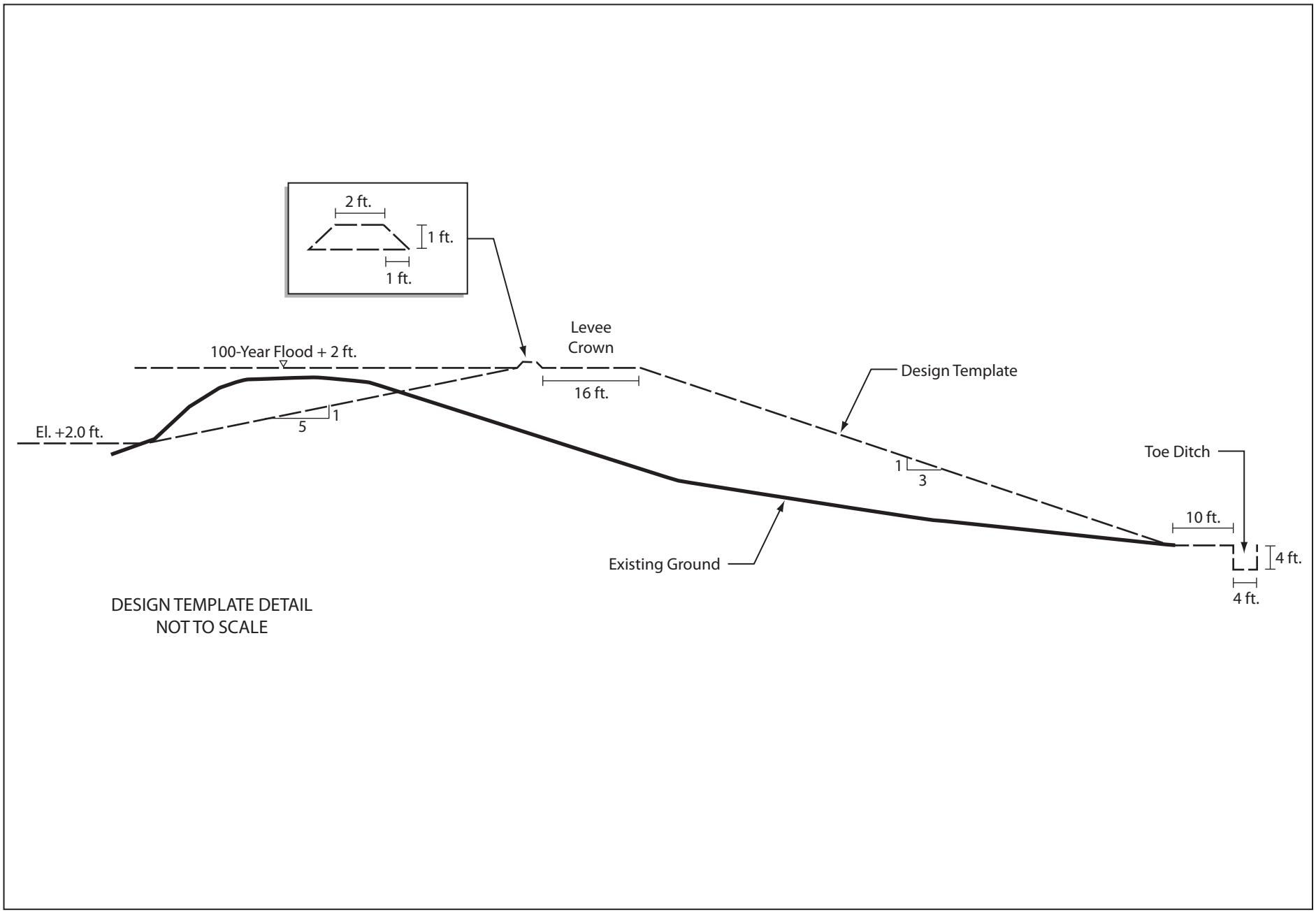


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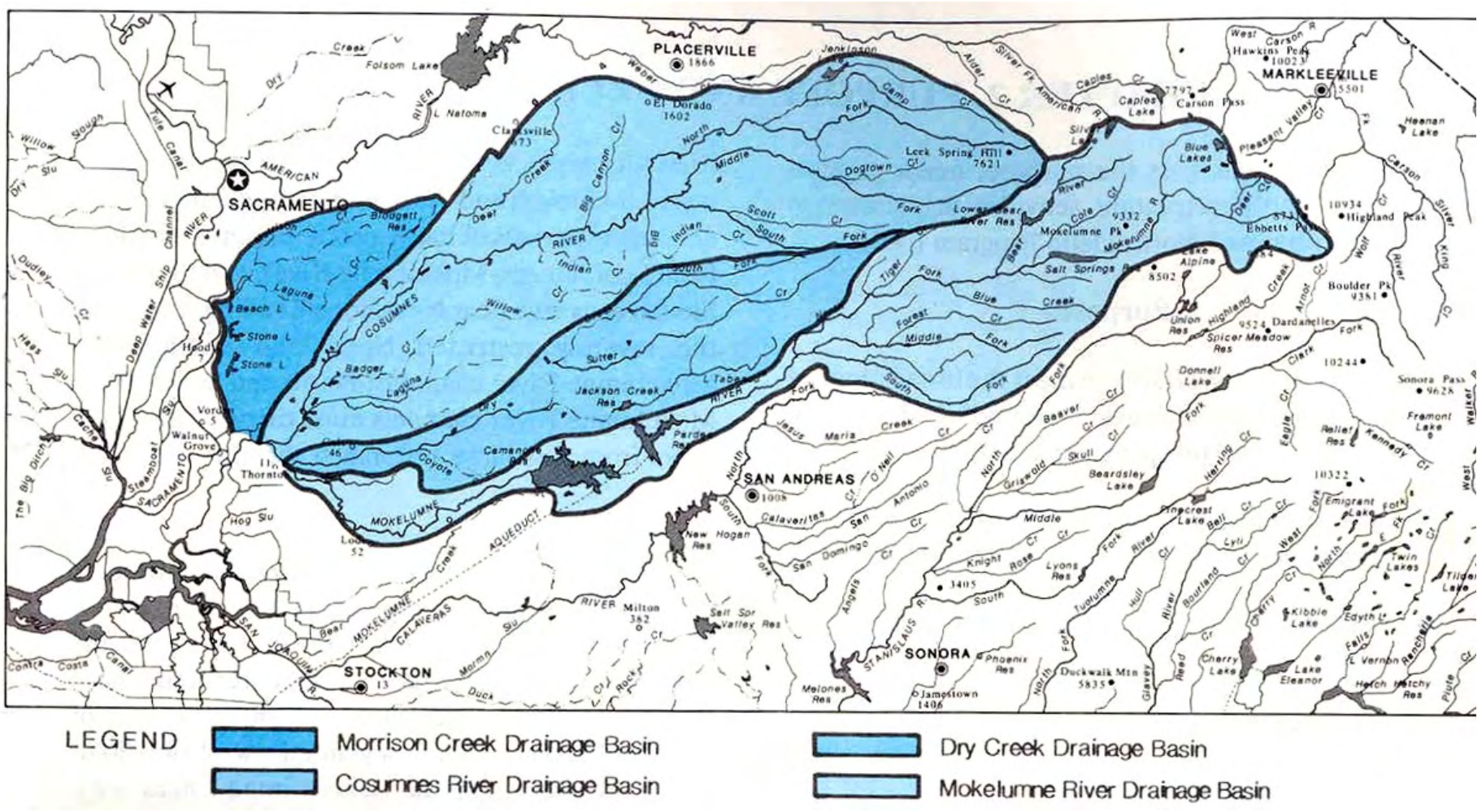
**Figure 2-34**
**Modified Levee Cross Section**




Source: 1990 Draft EIR, DWR.

01268.01 EIR

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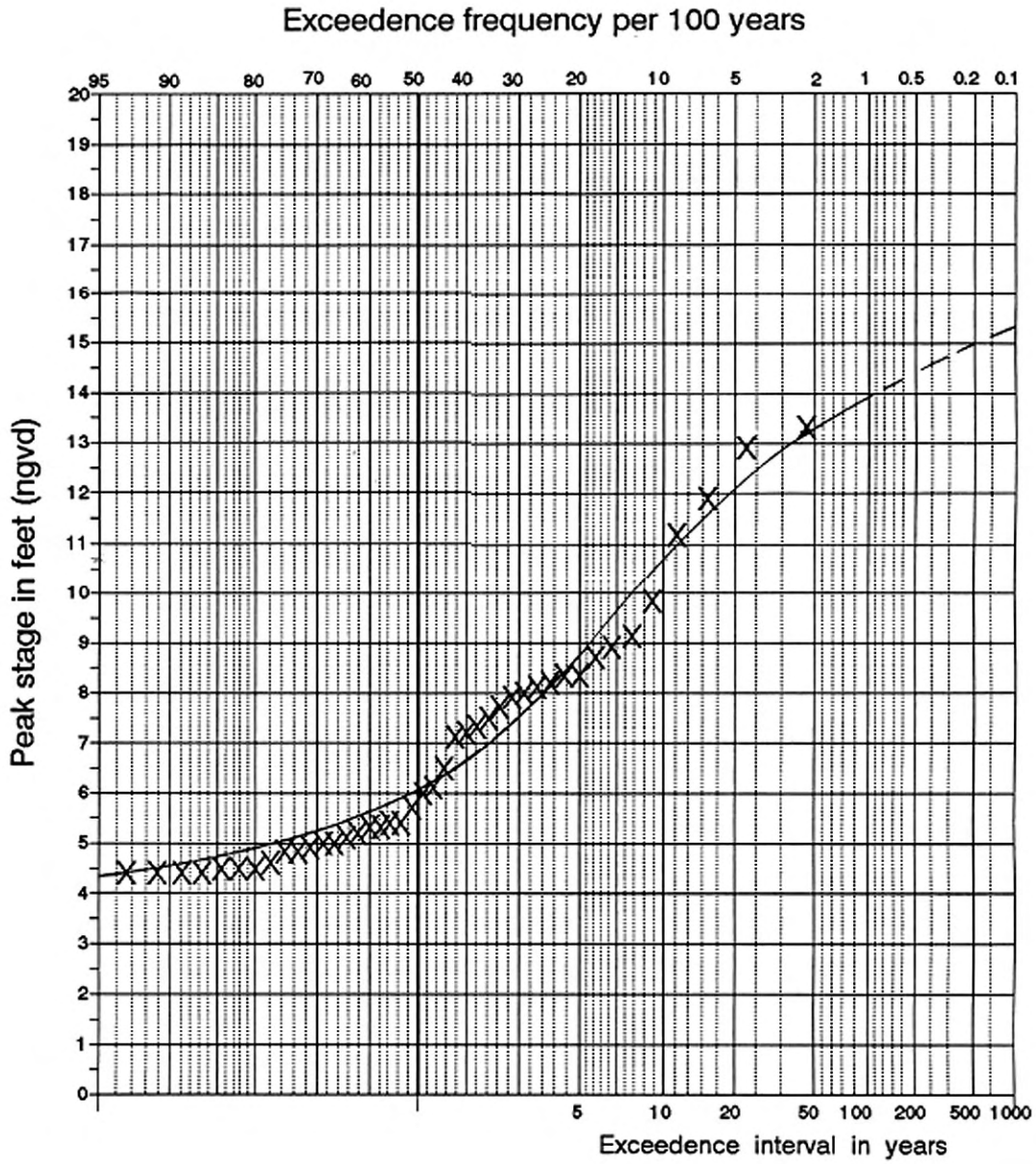
**Figure 3.1-1**
**Project Watershed Boundaries**




**NOTES:**

PLOTTED POINTS ARE ANNUAL PEAK STAGES
CURVE PLOTTED GRAPHICALLY
PERIOD OF RECORD 1940-1988
MISSING DATA 1964, 1961, 1948, 1947, 1941
POINTS BEYOND 95% EXCEEDENCE FREQUENCY NOT SHOWN
PLOTTED POINTS REPRESENT 45 YEARS OF DATA

SACRAMENTO - SAN JOAQUIN DELTA

STAGE FREQUENCY CURVE
S. F. MOKELUMNE RIVER AT
NEW HOPE LANDING

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: J.H.
Drawn: J.H.
Date: February 1992

Source: Corps of Engineers, Sacramento, 1992

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**Figure 3.1-2**
**New Hope Stage-Frequency**

Source: DWR

01268.01 EIR

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**Figure 3.1-3**
**Aerial Photograph of 1986 Flooding**

Source: DWR

01268.01 EIR

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**Figure 3.1-4**
**Boat Lodged on the North Side of New Hope Bridge in 1986**

Source: DWR

01268.01 EIR

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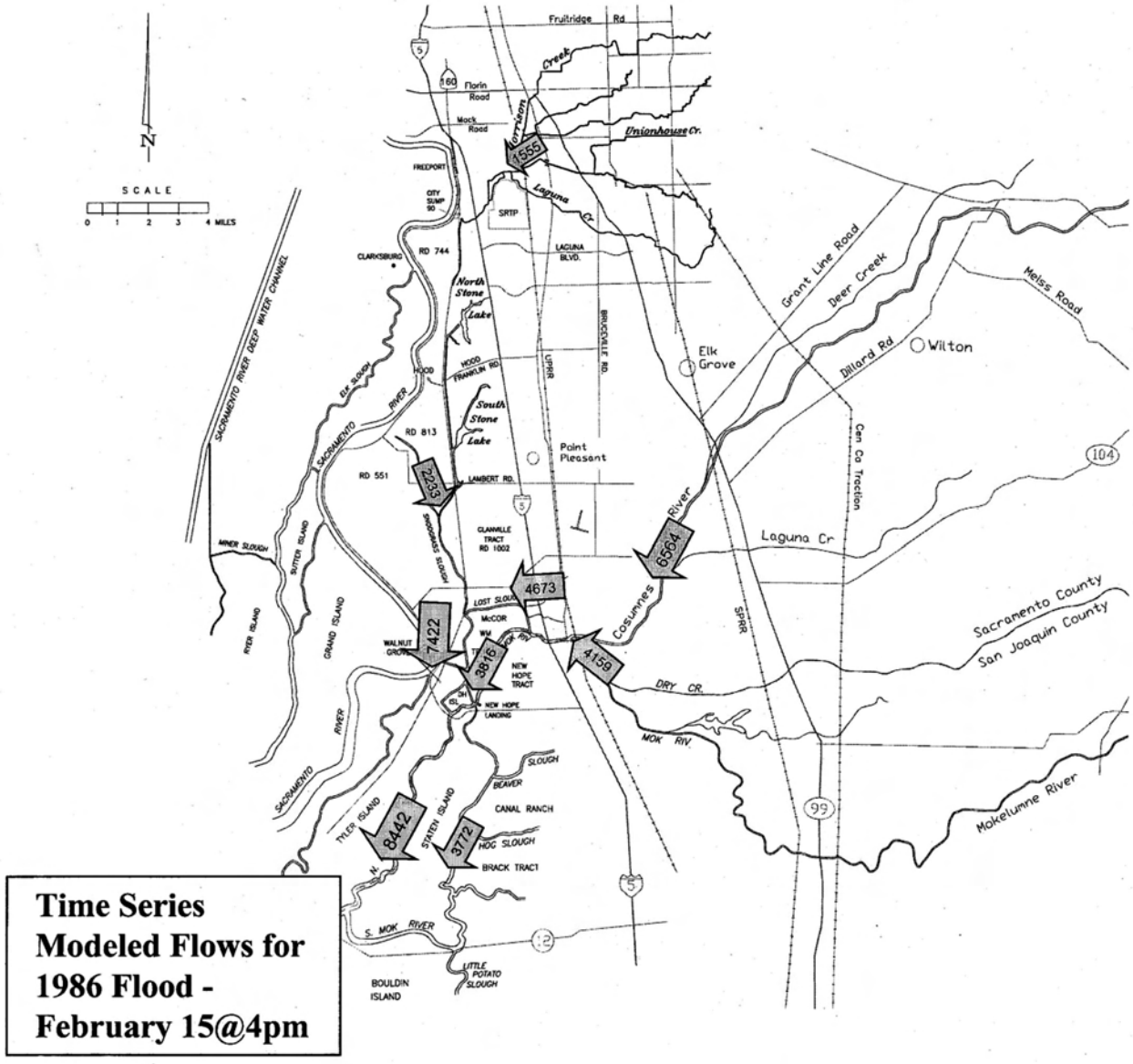
**Figure 3.1-5**
**Boat Lodged on the North Side of Miller Ferry Bridge in 1986**




Source: DWR

01268.01 EIR

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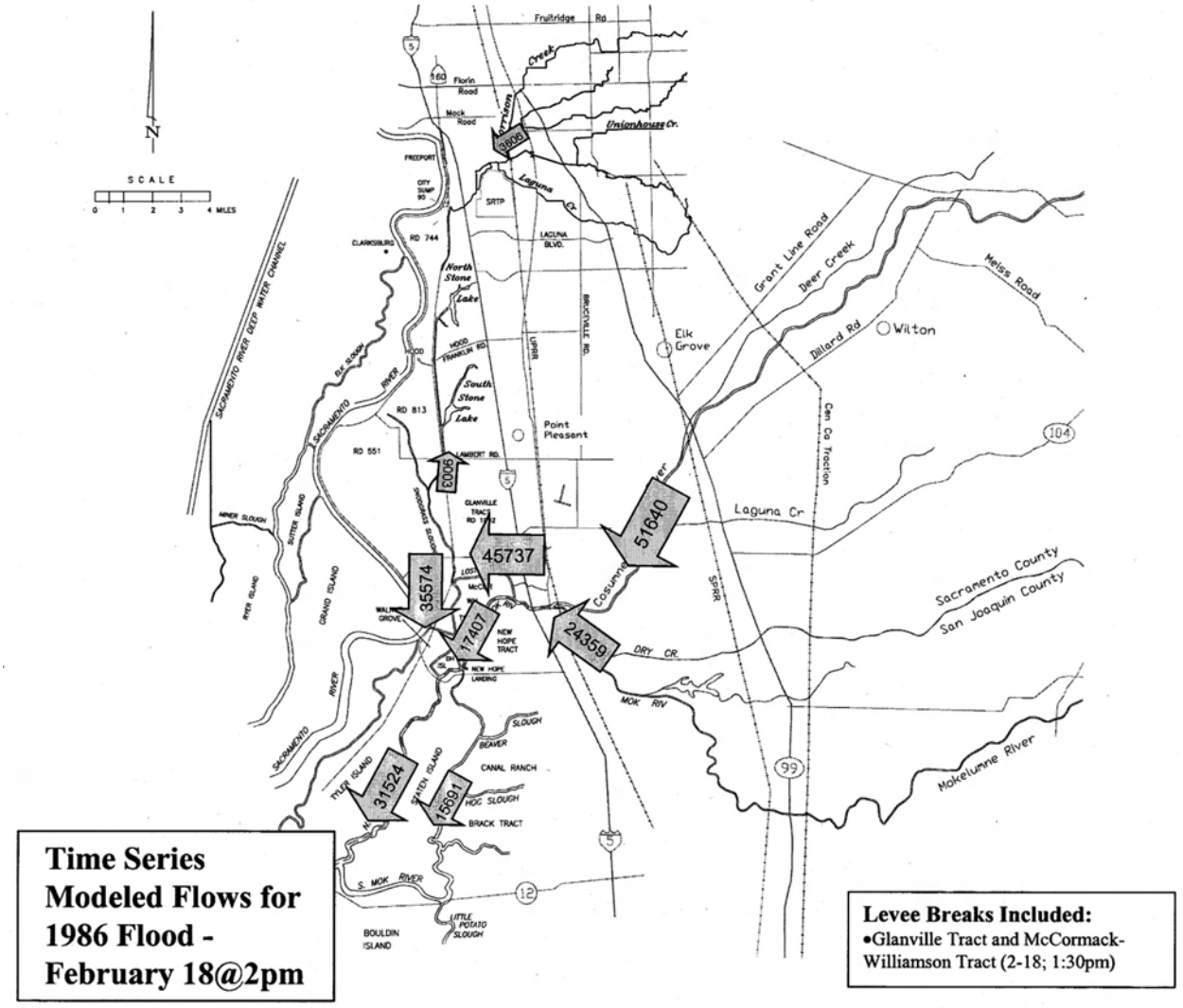
**Figure 3.1-6**
**Time Series Modeled Flows for 1986 Flood—**
**February 15 at 4 pm**




Source: DWR

01268.01 EIR

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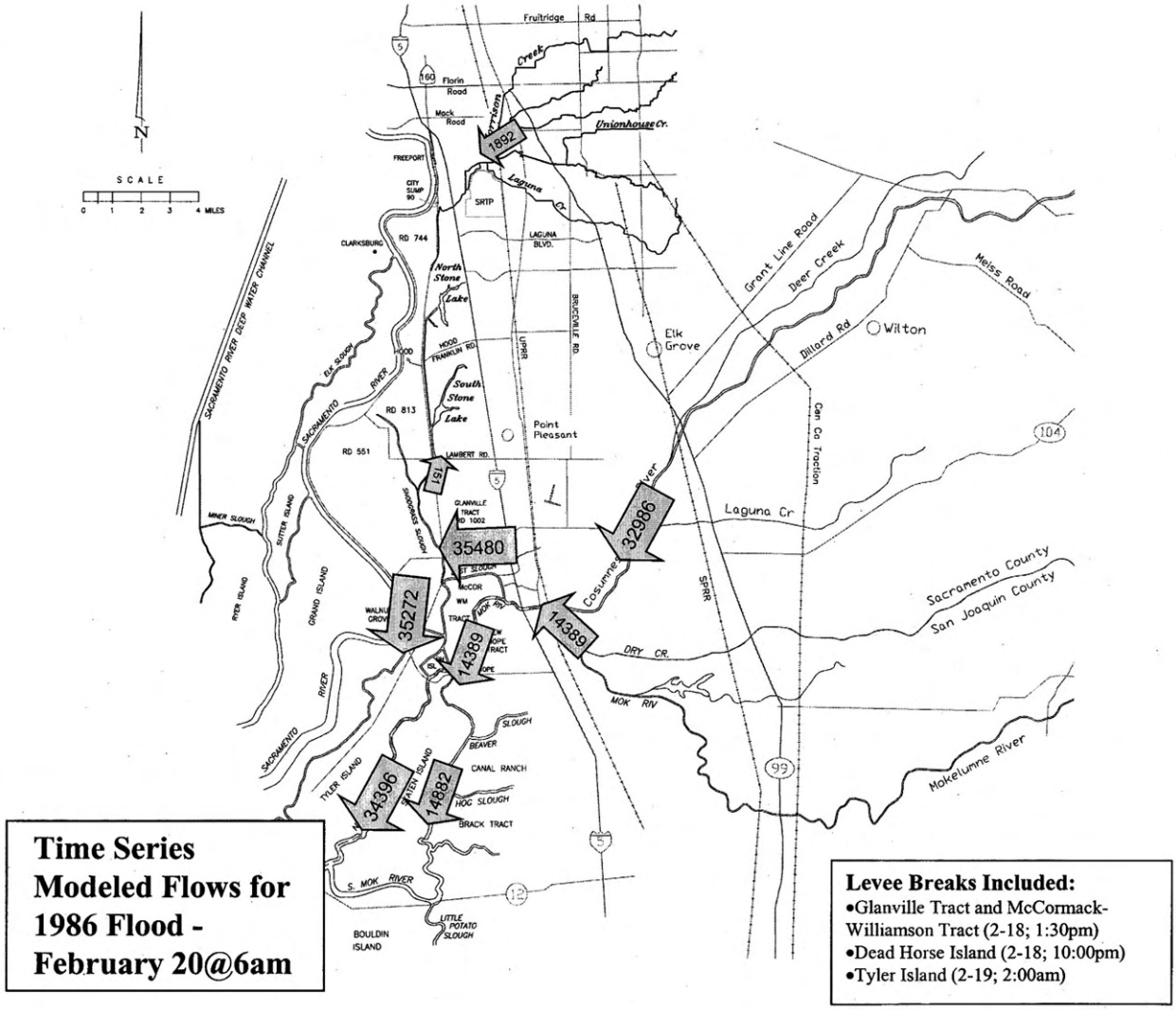
**Figure 3.1-7**
**Time Series Modeled Flows for 1986 Flood—February 18 at 2 pm**




Source: DWR

01268.01 EIR

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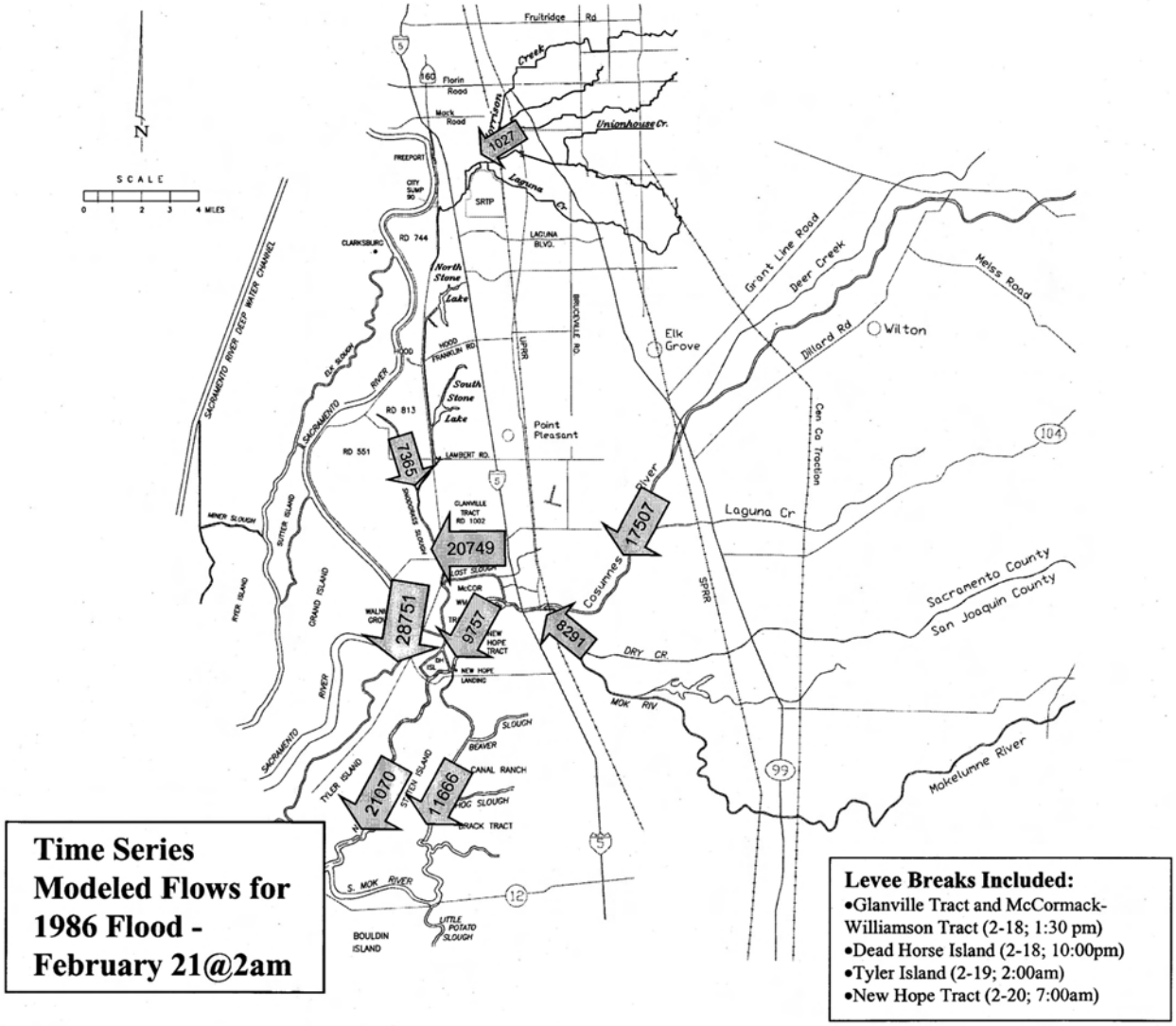
**Figure 3.1-8**
**Time Series Modeled Flows for 1986 Flood—**
**February 20 at 6 pm**




Source: DWR

01268.01 EIR

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**Figure 3.1-9**
**Time Series Modeled Flows for 1986 Flood—February 21 at 2 am**


Source: DWR

01268.01 EIR

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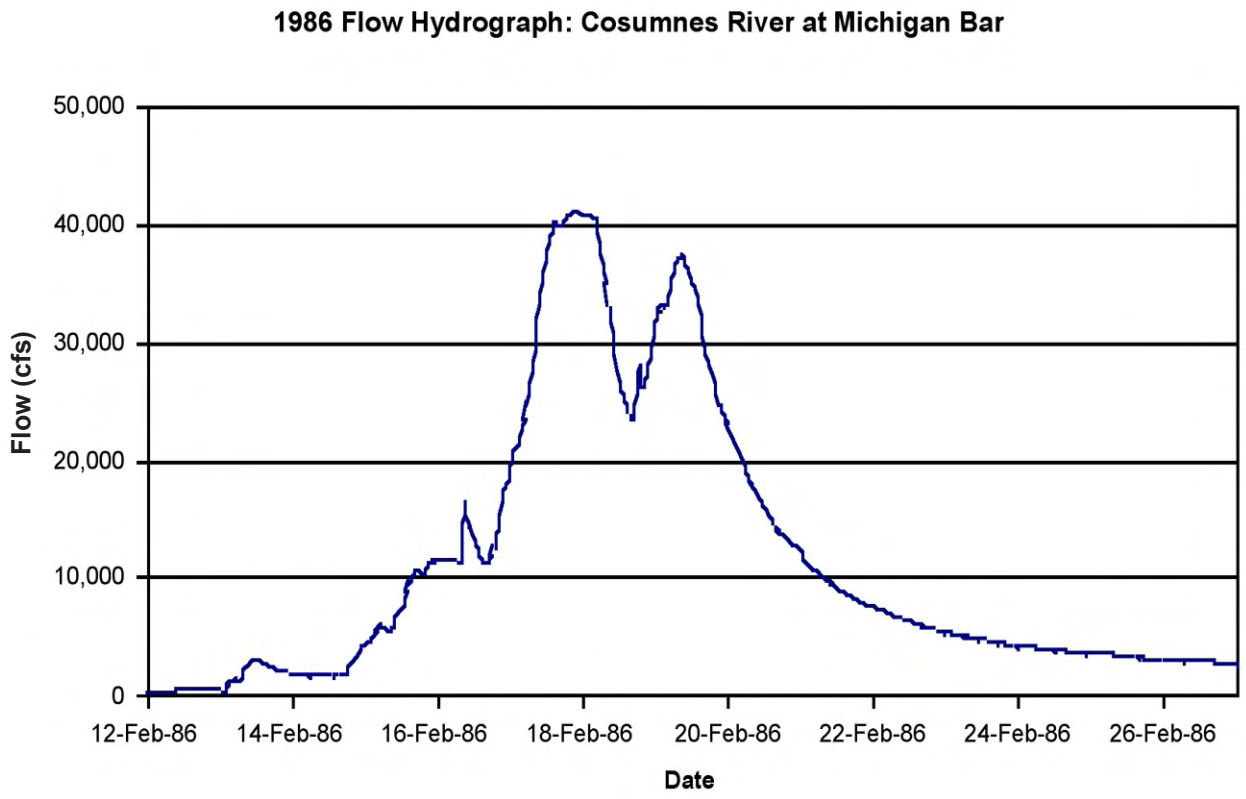
**Figure 3.1-10**
**Schematic Showing 1986 Floodflow Path for Interstate 5**




Source: DWR

01268.01 EIR

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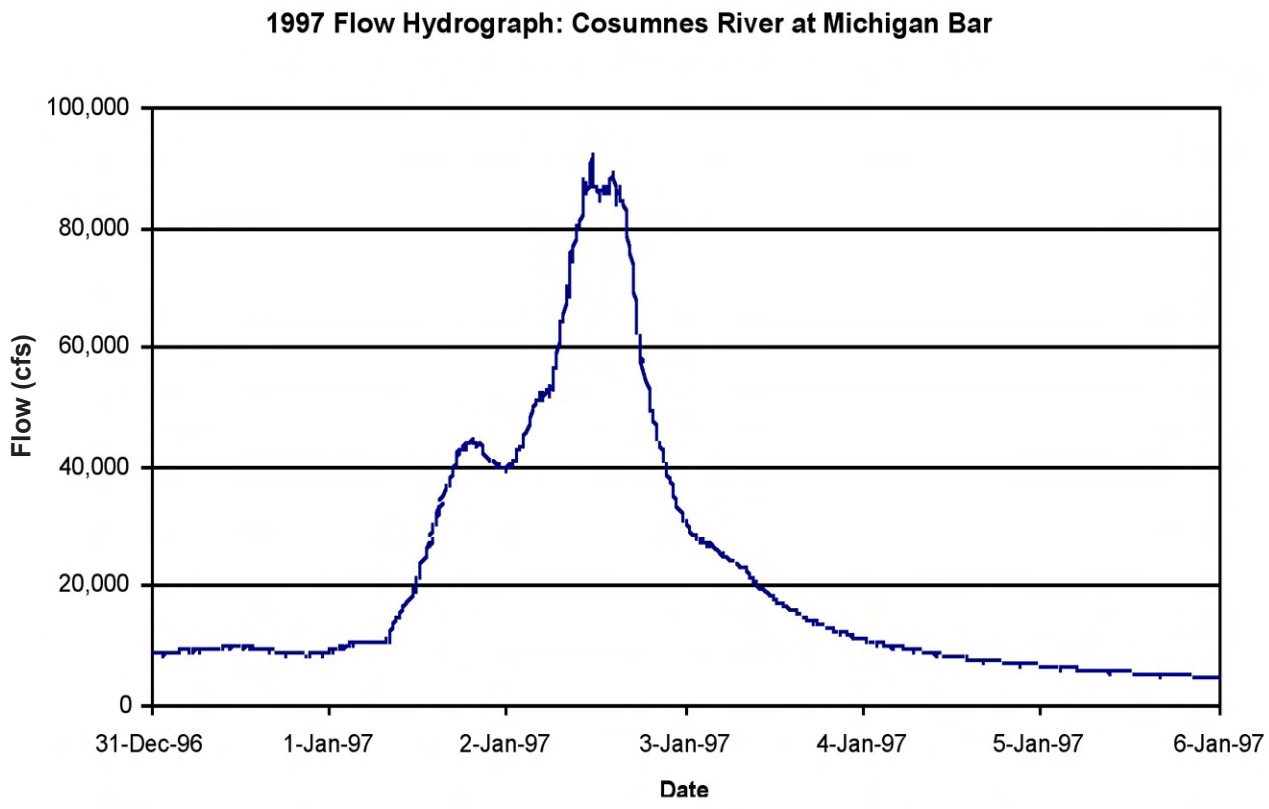
**Figure 3.1-11**
**1986 Flood Event Flows for Cosumnes River at Michigan Bar**




Source: DWR

01268.01 EIR

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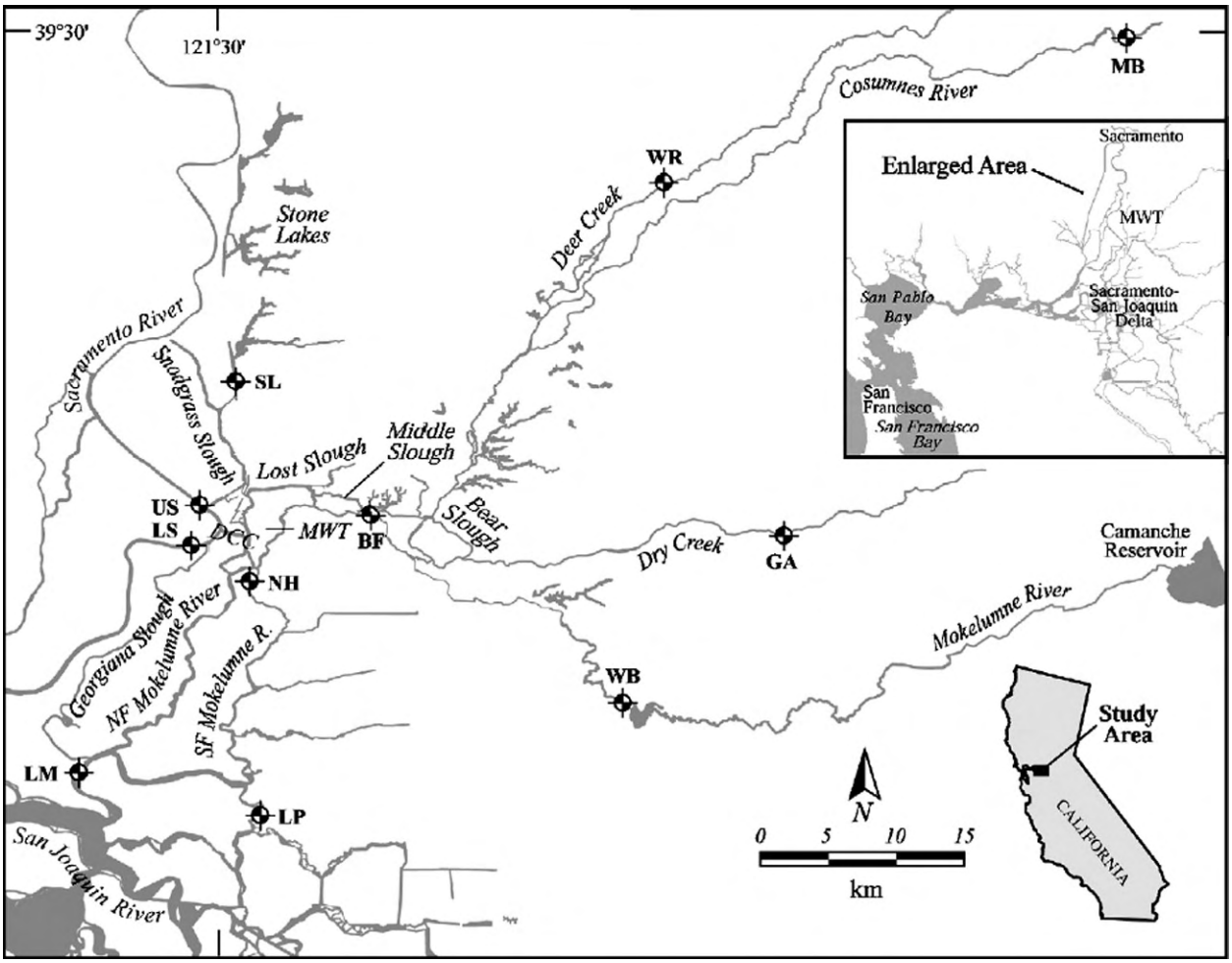
**Figure 3.1-12**
**1997 Flood Event Flows for Cosumnes River at Michigan Bar**




Note: Model result validation and scenario comparison is conducted at Benson's Ferry (BF) and at New Hope (NH). Model boundary conditions are labeled as follows:

MB: Michigan Bar on the Cosumnes River,
WR:Wilton Road on Deer Creek,
GA: Galt on Dry Creek,
WB:Woodbridge on the Mokelumne River,
SL: Stone Lakes Outlet at Lambert Road,
US: Sacramento River above the Delta Cross Channel (DCC),
LS: Sacramento River below Georgiana Slough,
LM: Lower Mokelumne River at Georgiana Slough and
LP: Little Potato Slough below Terminous.

Source: DWR

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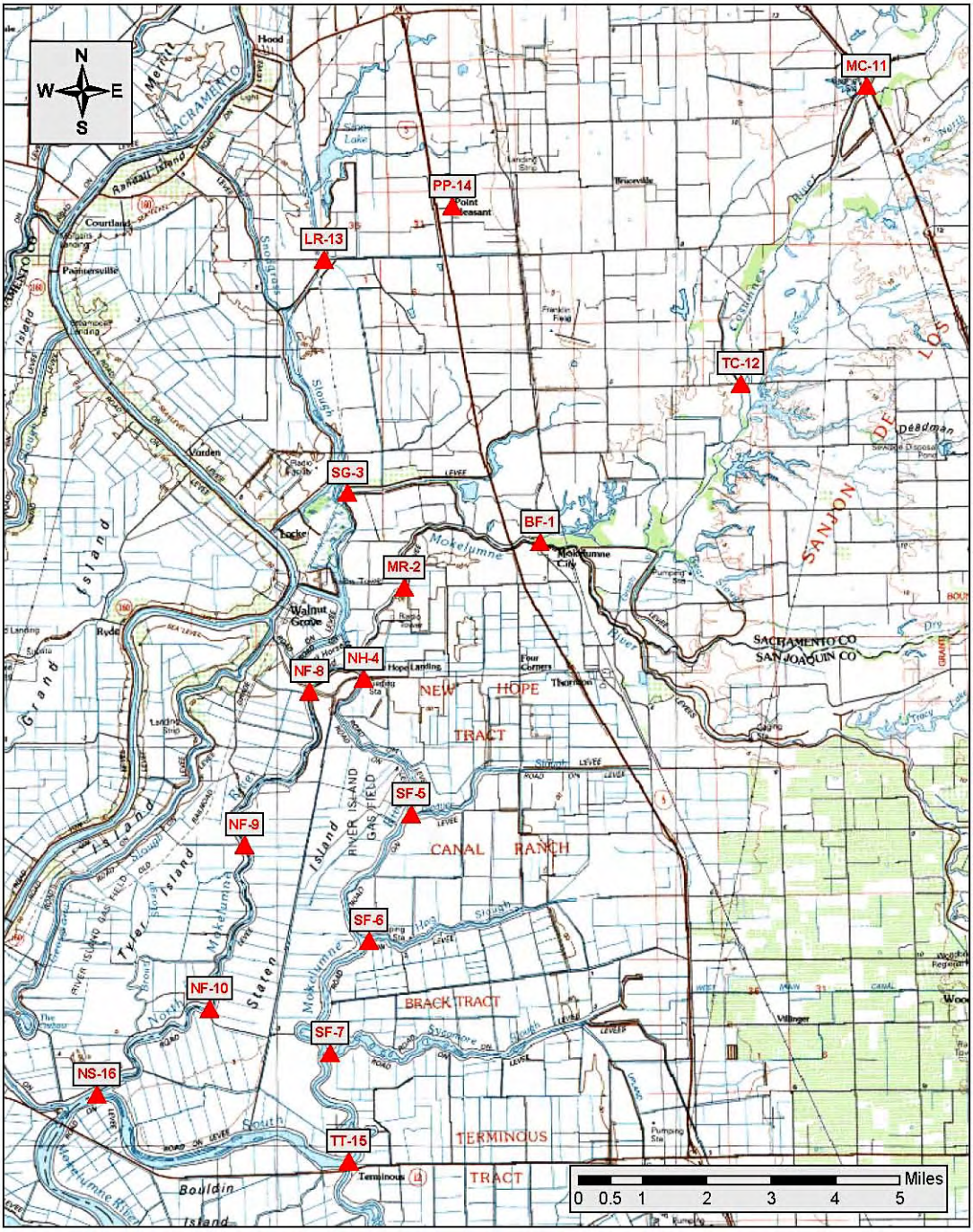
**Figure 3.1-13**
**Location of Gages Used for Mike 11 Boundary Conditions and Internal Validation Points**

# North Delta MIKE 11 Index Points




Source: DWR

01268.01 EIR

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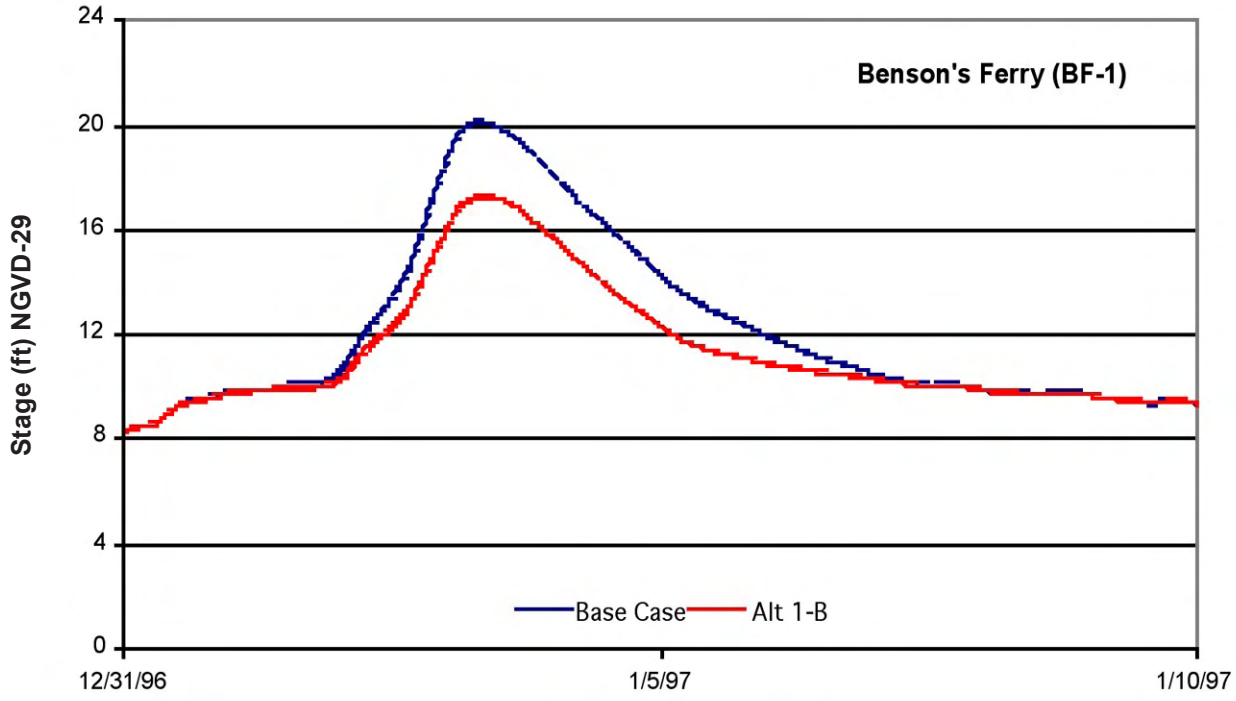
**Figure 3.1-14**
**North Delta Mike11 Index Points**




Source: DWR

01268.01 EIR

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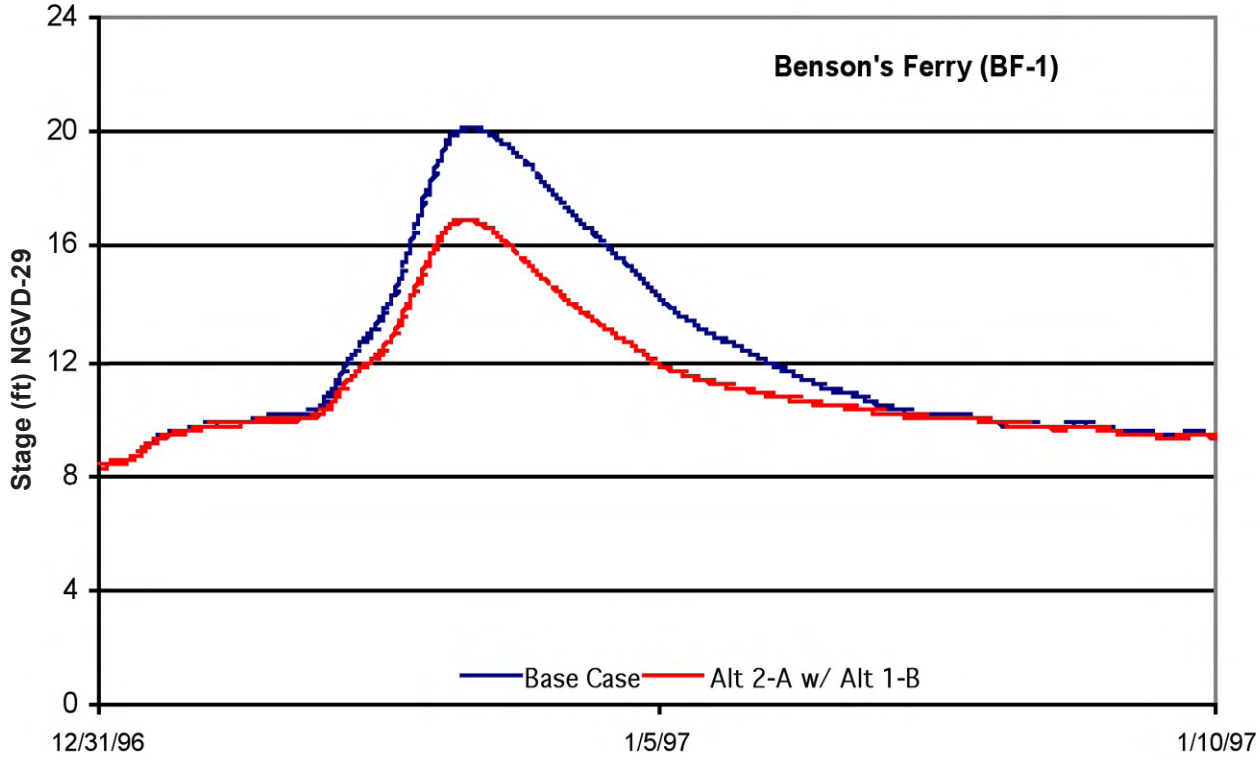
**Figure 3.1-15**
**Model Results at Benson's Ferry for the 1997 Flood Showing the Impact of Alternative 1-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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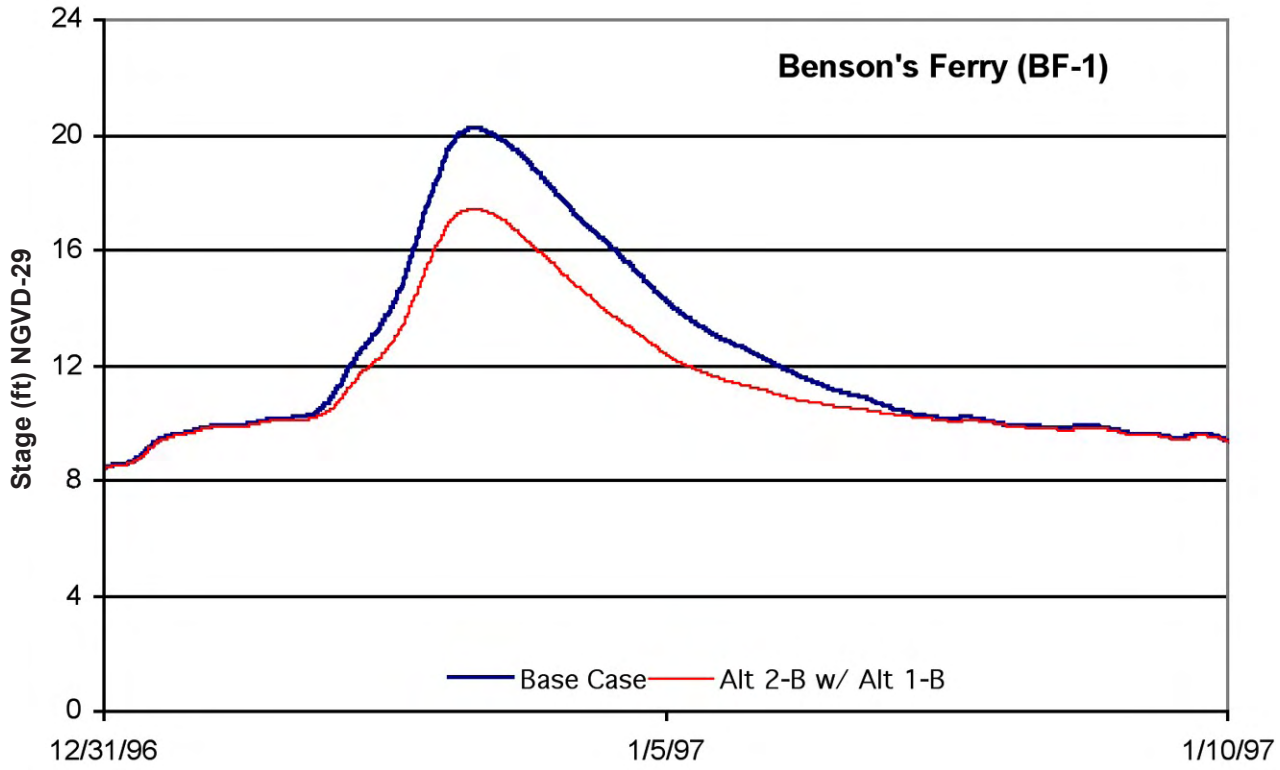
**Figure 3.1-16**
**Model results at Benson's Ferry for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-A Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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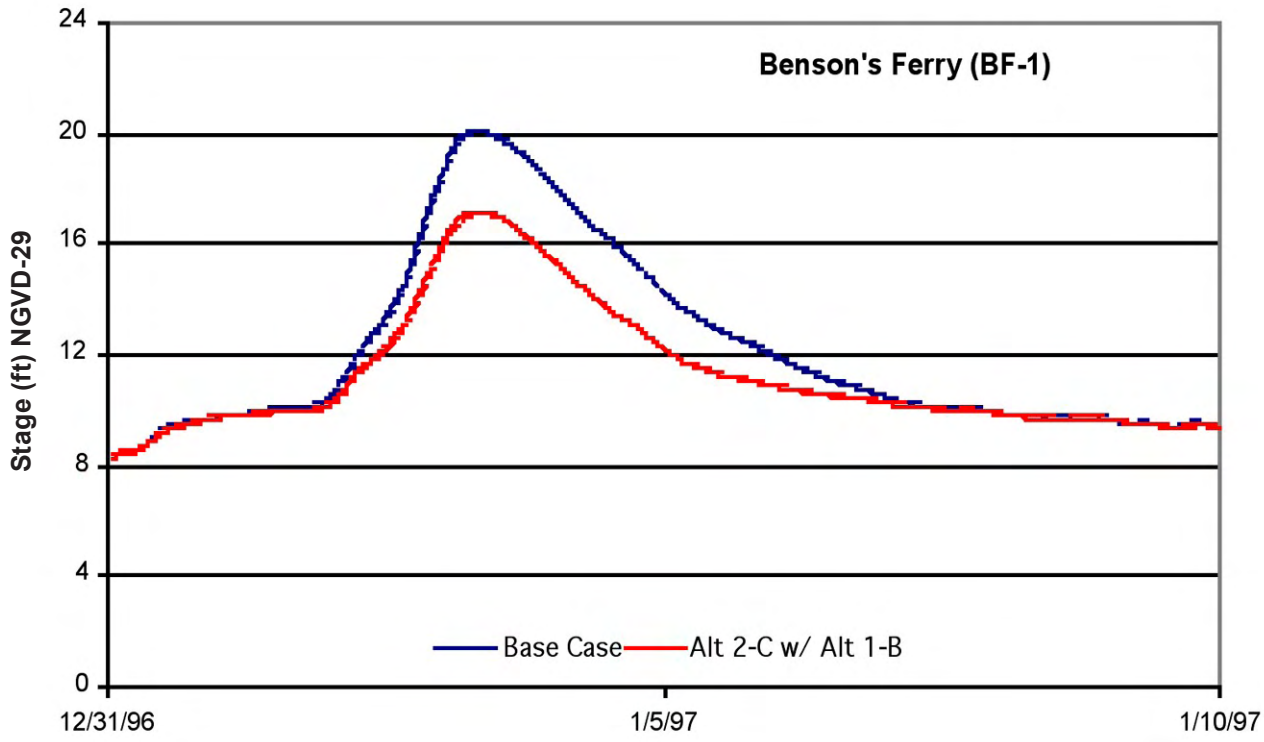
**Figure 3.1-17**
**Model results at Benson's Ferry for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-B compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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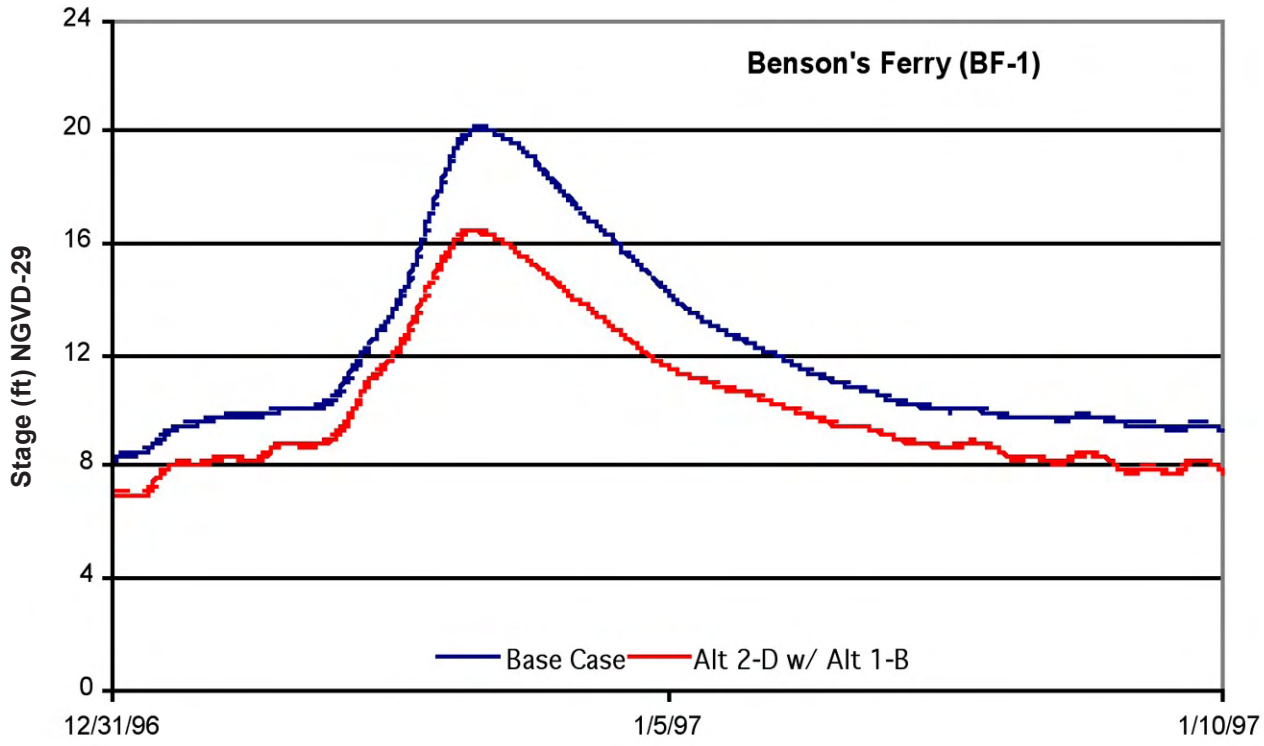
**Figure 3.1-18**
**Model Results at Benson's Ferry for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-C Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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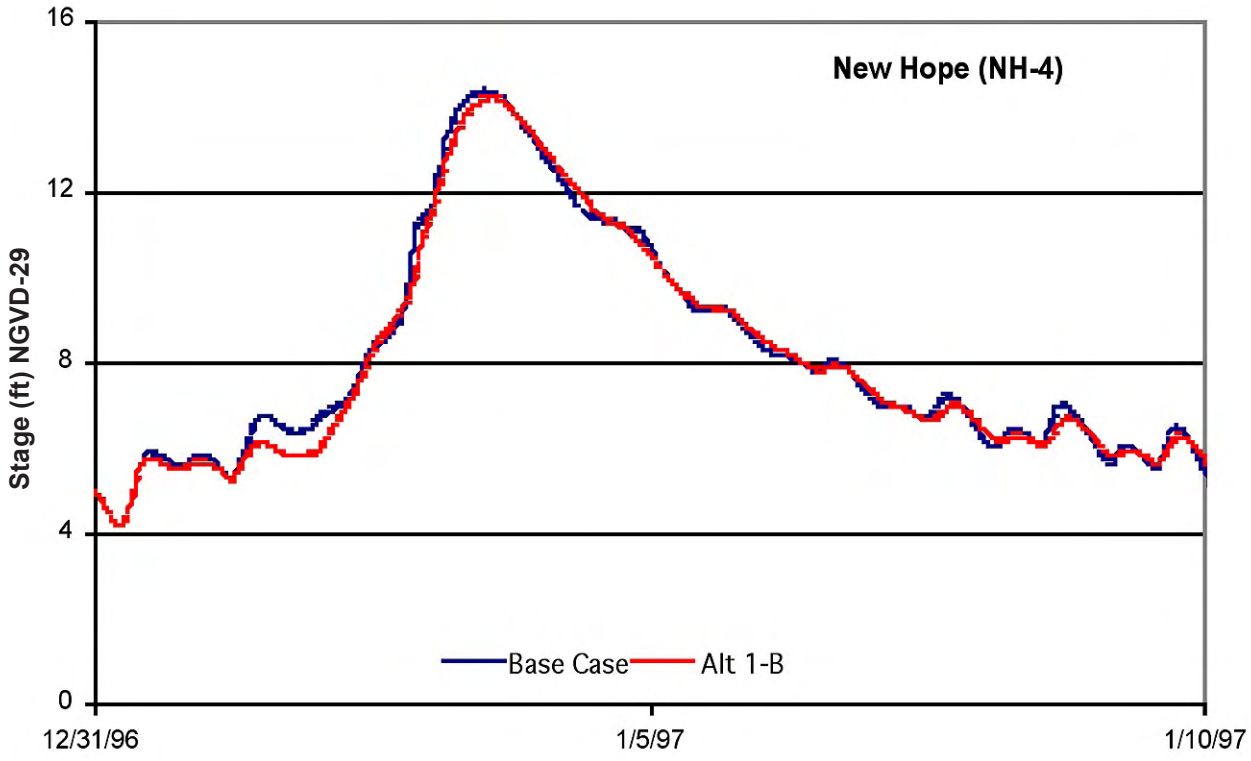
**Figure 3.1-19**
**Model Results at Benson's Ferry for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-D Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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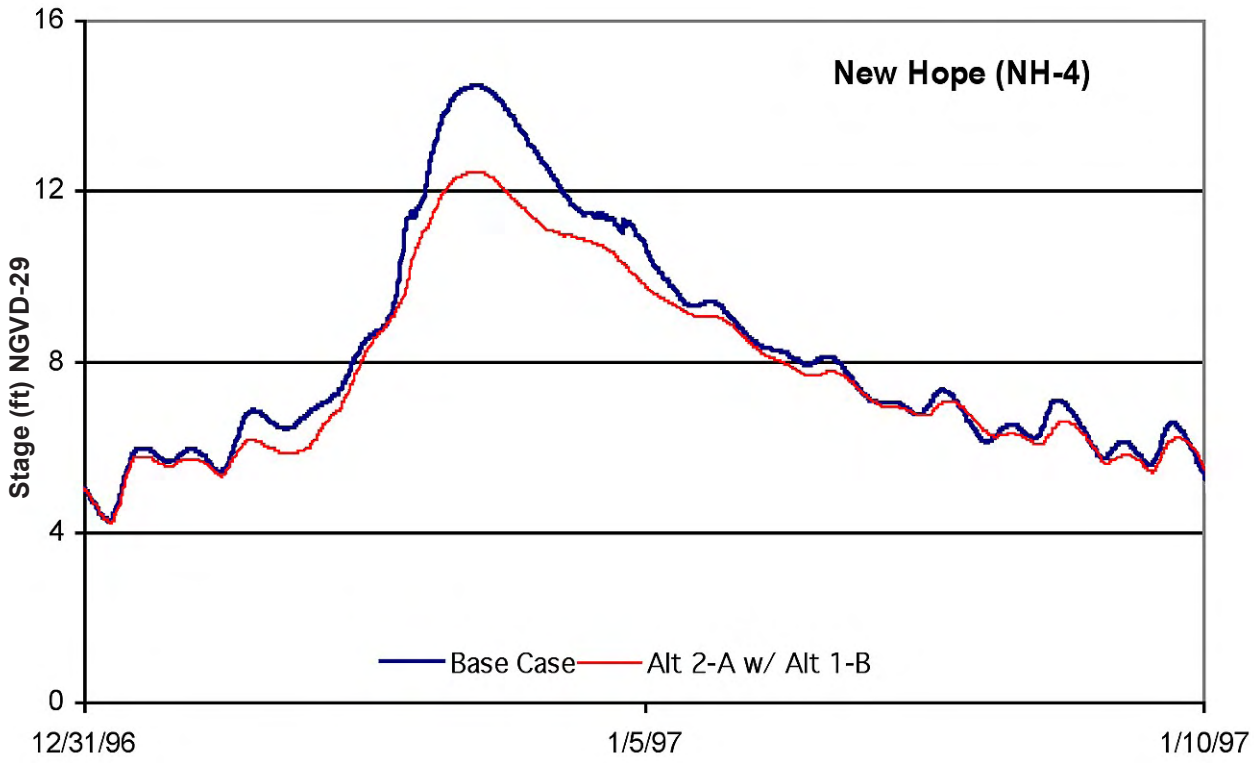
**Figure 3.1-20**
**Model Results at New Hope for the 1997 Flood Showing the Impact of Alternative 1-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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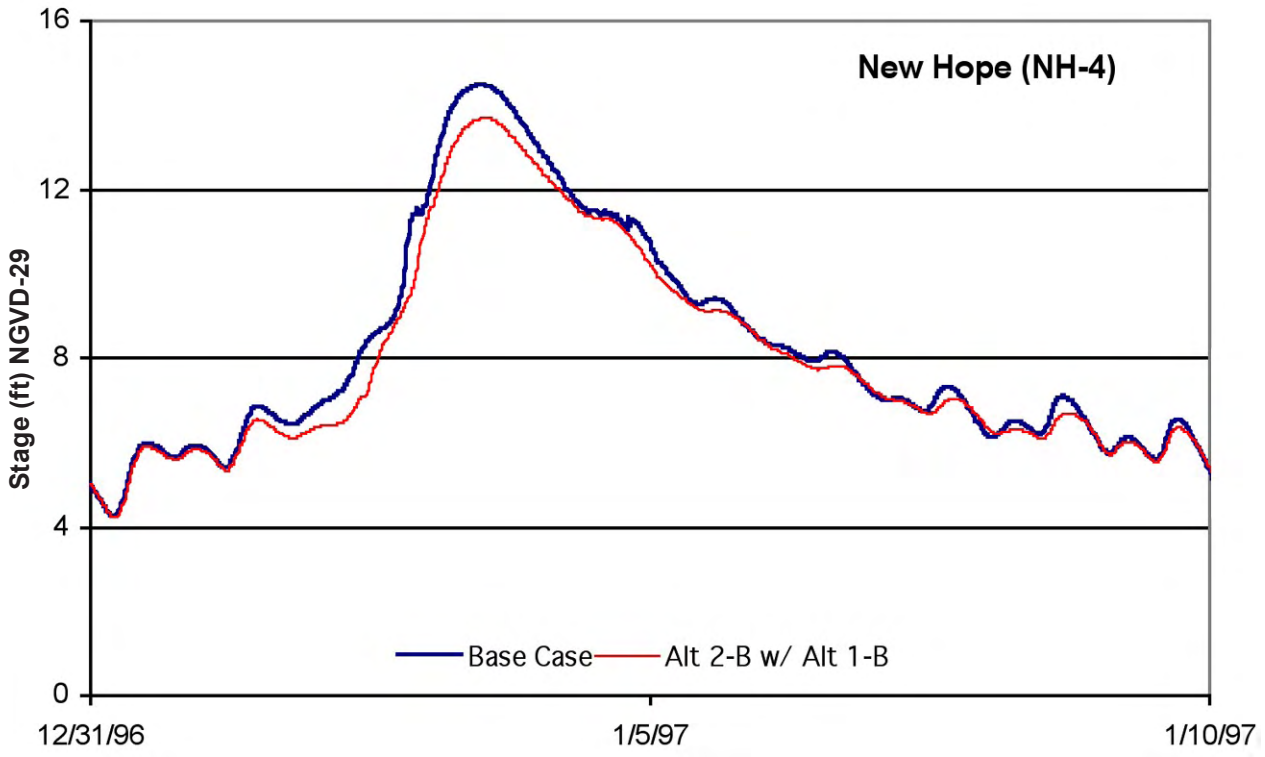
**Figure 3.1-21**
**Model Results at New Hope for the 1997 Flood Showing the Impact of Alternative 2-A with Alternative 1-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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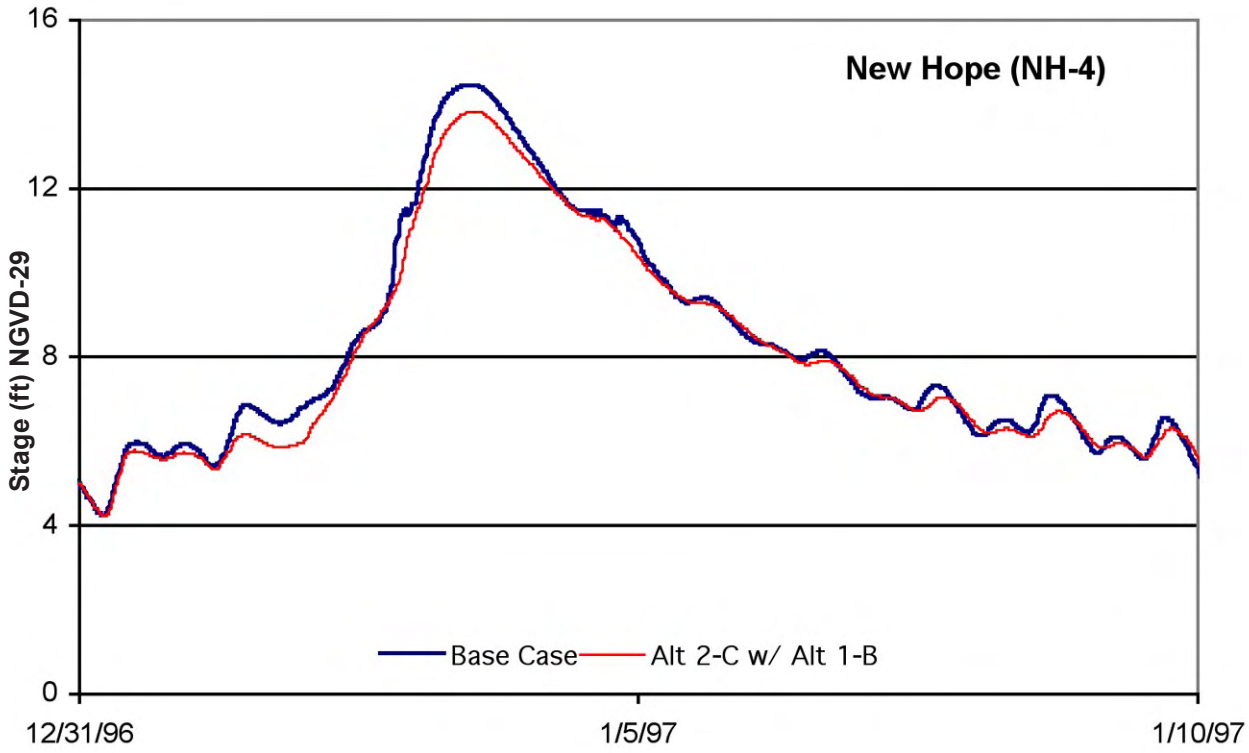
**Figure 3.1-22**
**Model Results at New Hope for the 1997 Flood Showing the Impact of Alternative 2-B with Alternative 1-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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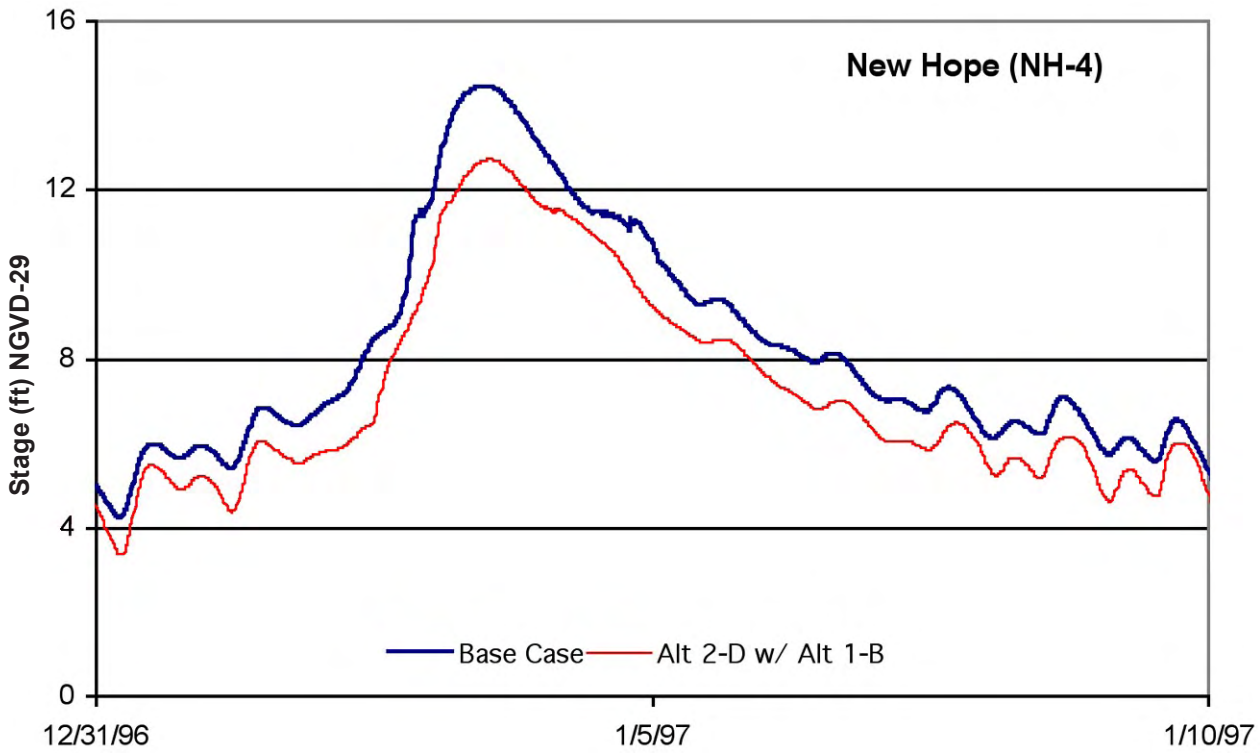
**Figure 3.1-23**
**Model Results at New Hope for the 1997 Flood Showing the Impact of Alternative 2-C with Alternative 1-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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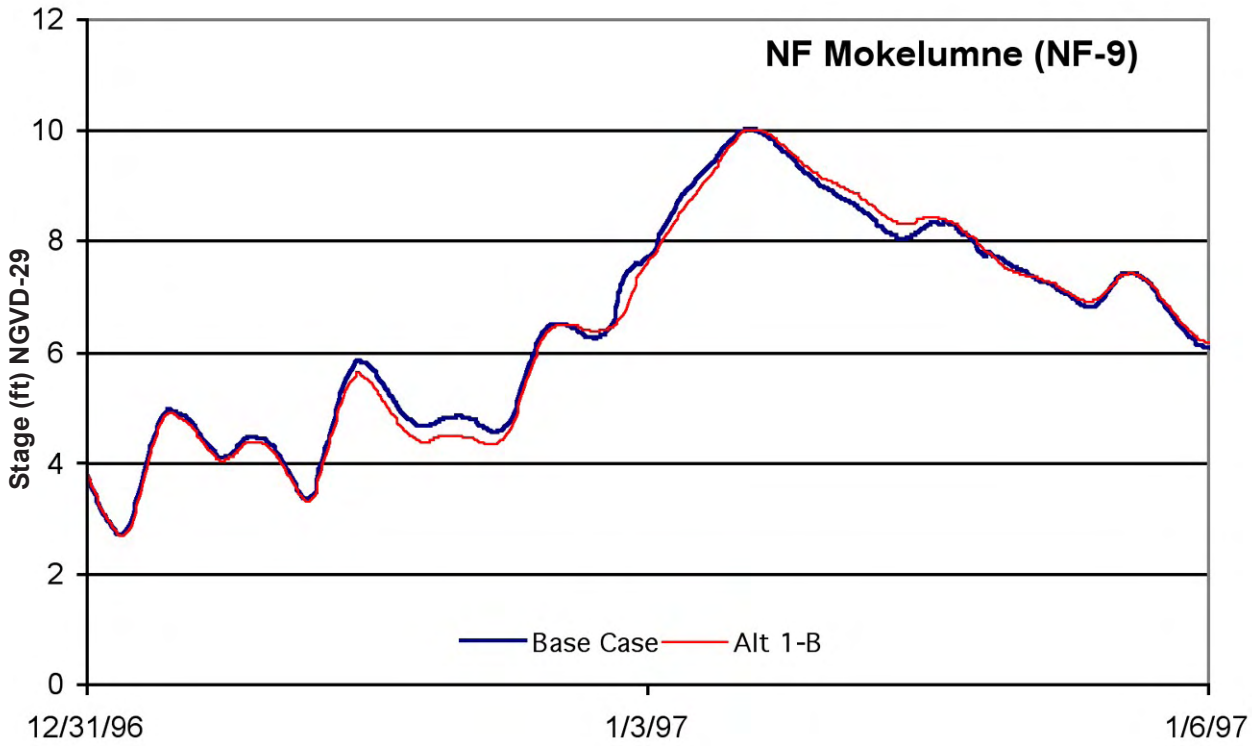
**Figure 3.1-24**
**Model Results at New Hope for the 1997 Flood Showing the Impact of Alternative 2-D with Alternative 1-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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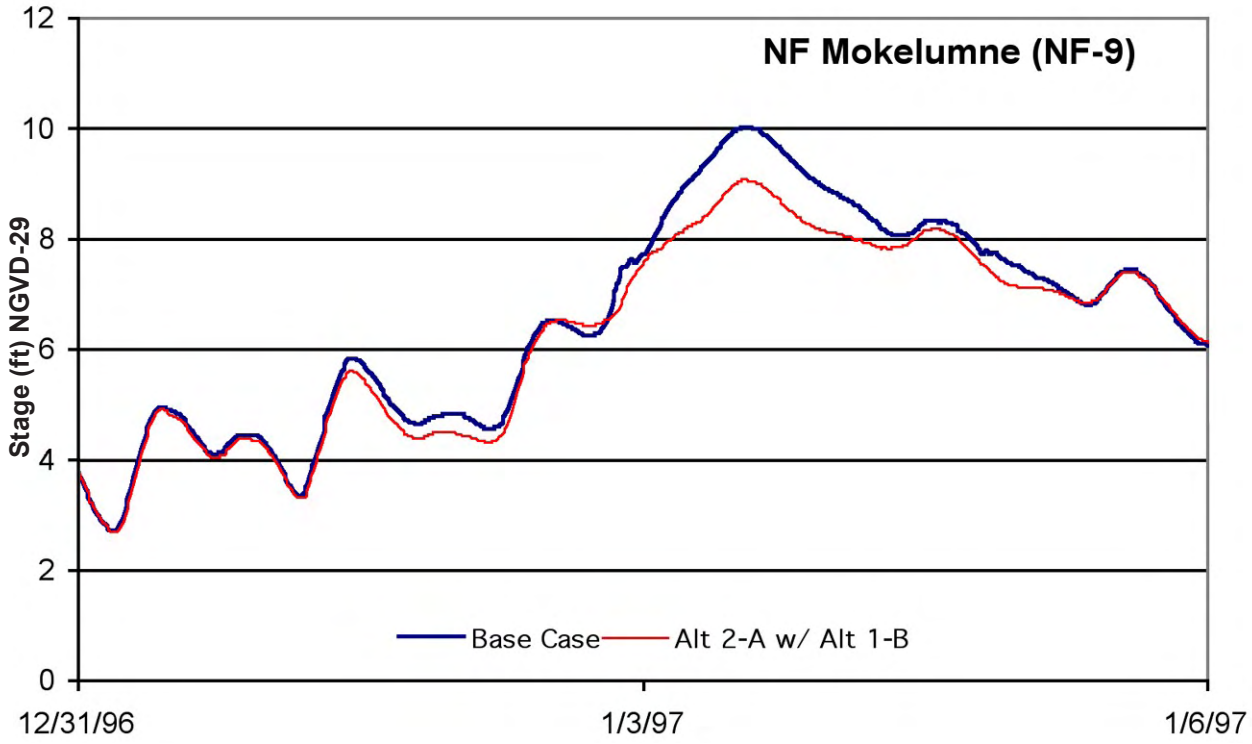
**Figure 3.1-25**
**Model Results at NF-9 for the 1997 Flood Showing the Impact of Alternative 1-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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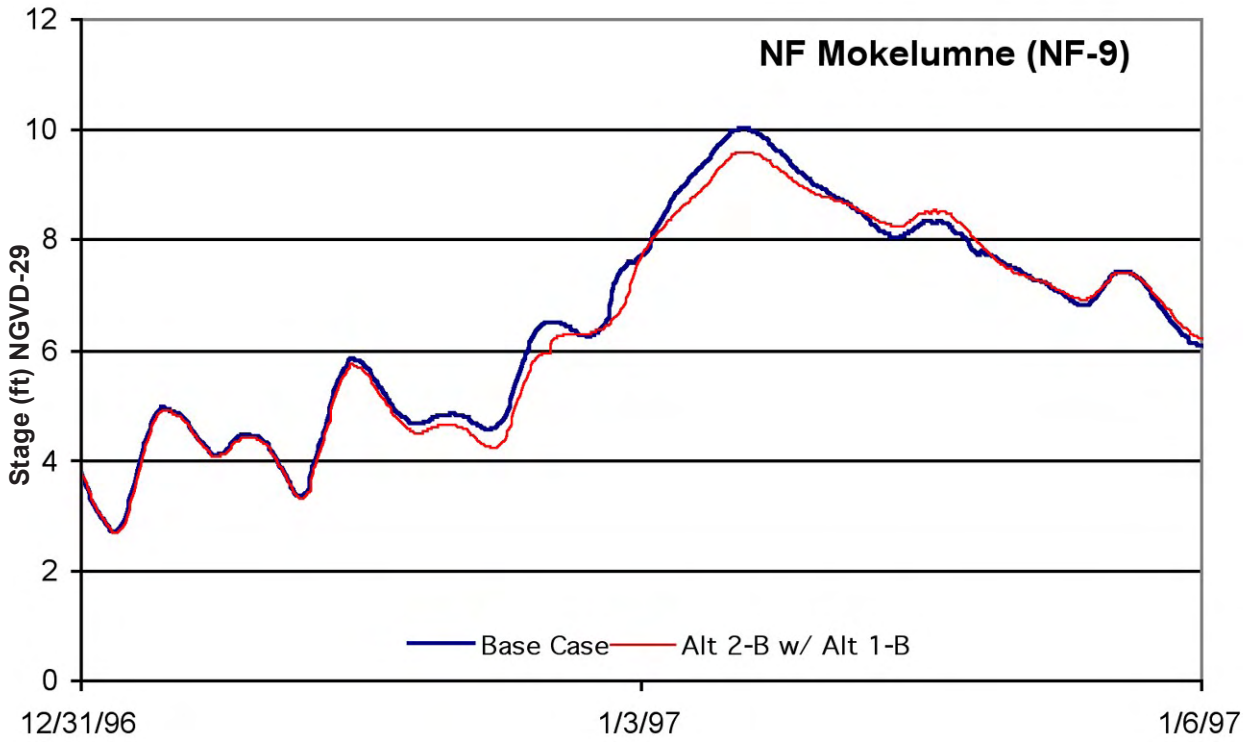
**Figure 3.1-26**
**Model Results at NF-9 for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-A Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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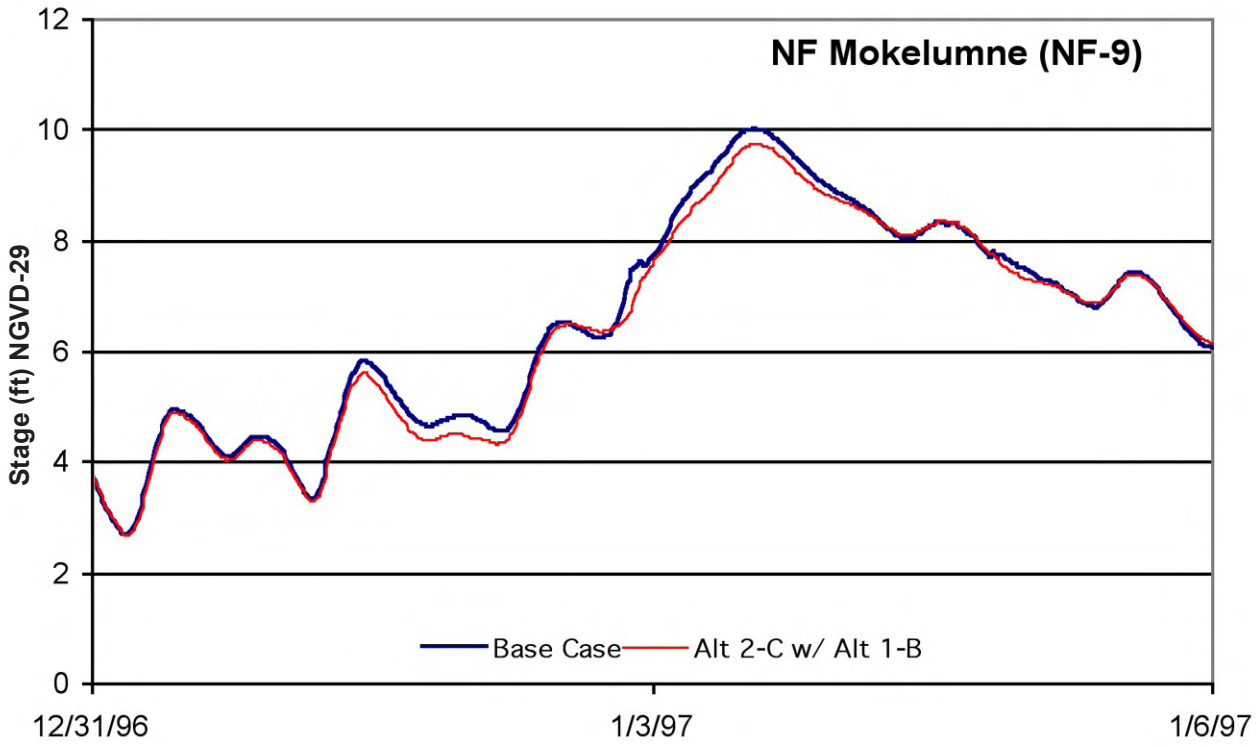
**Figure 3.1-27**
**Model Results at NF-9 for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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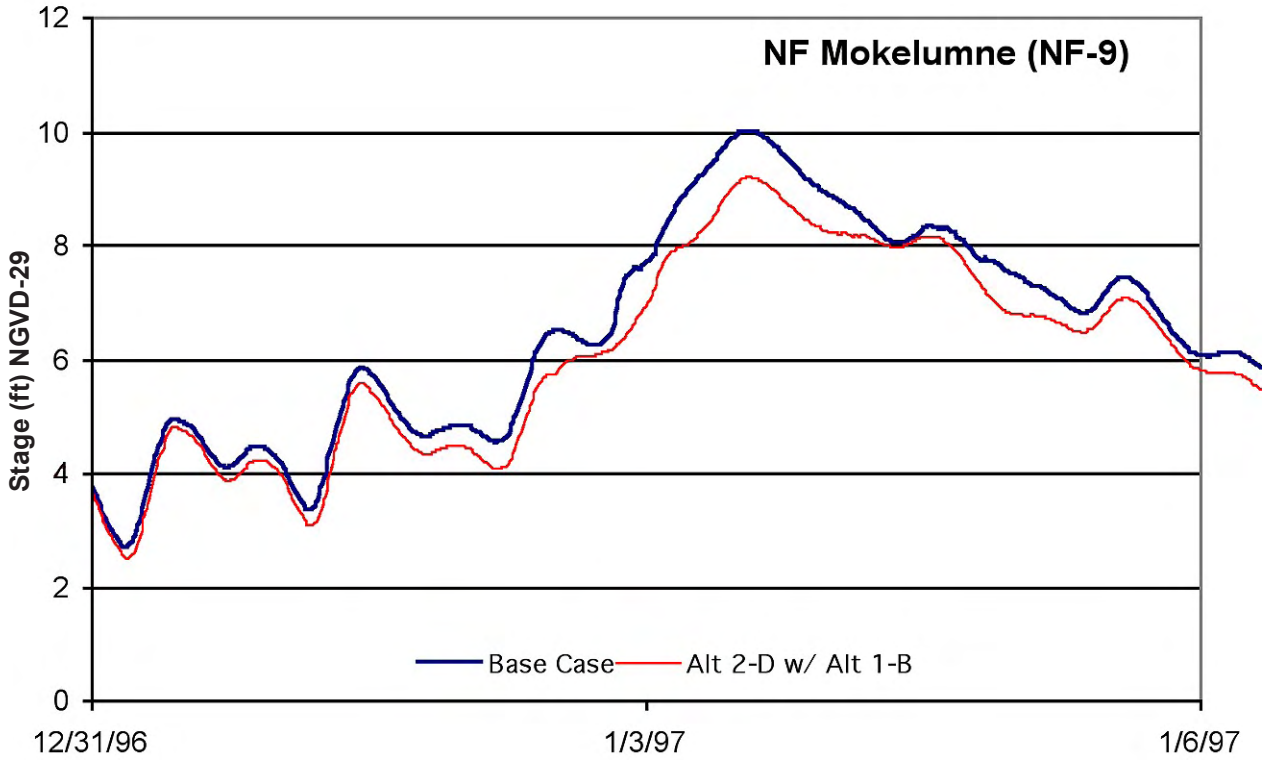
**Figure 3.1-28**
**Model Results at NF-9 for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-C Compared to Alternative NP (No Project)**

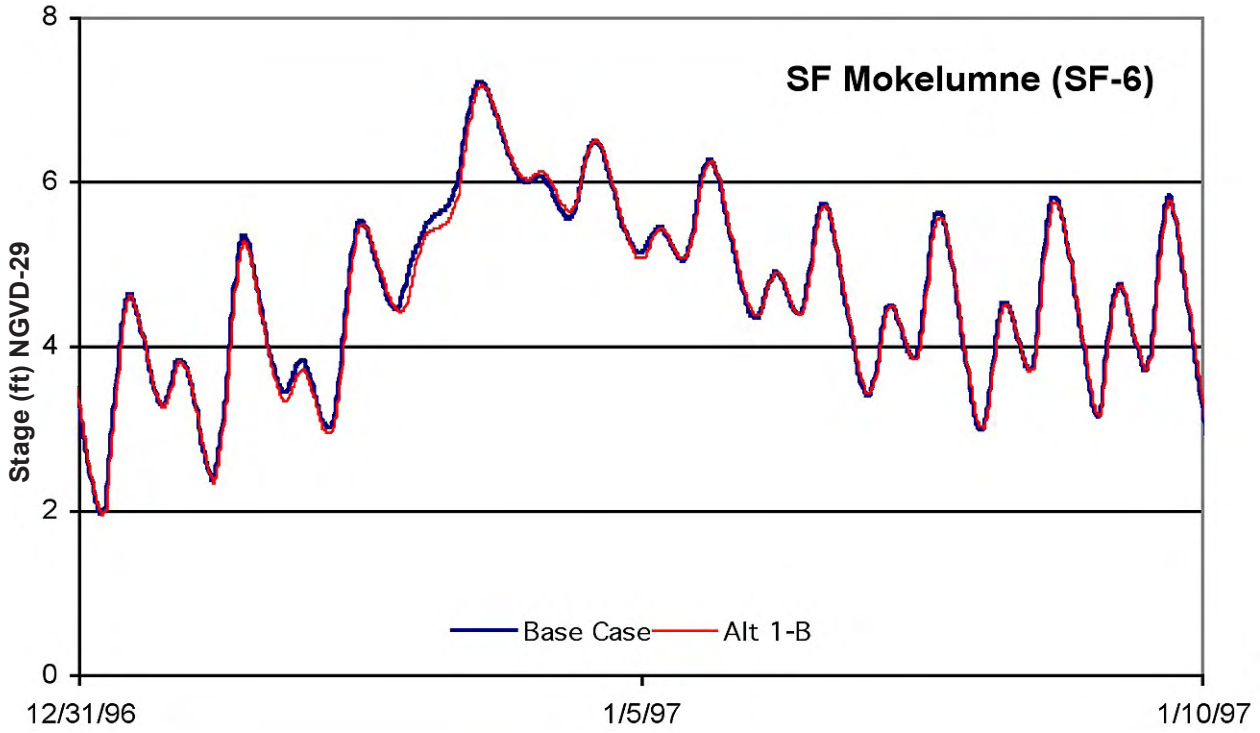



Source: DWR

01268.01 EIR

Jones & Stokes

**Figure 3.1-29**
**Model Results at NF-9 for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-D Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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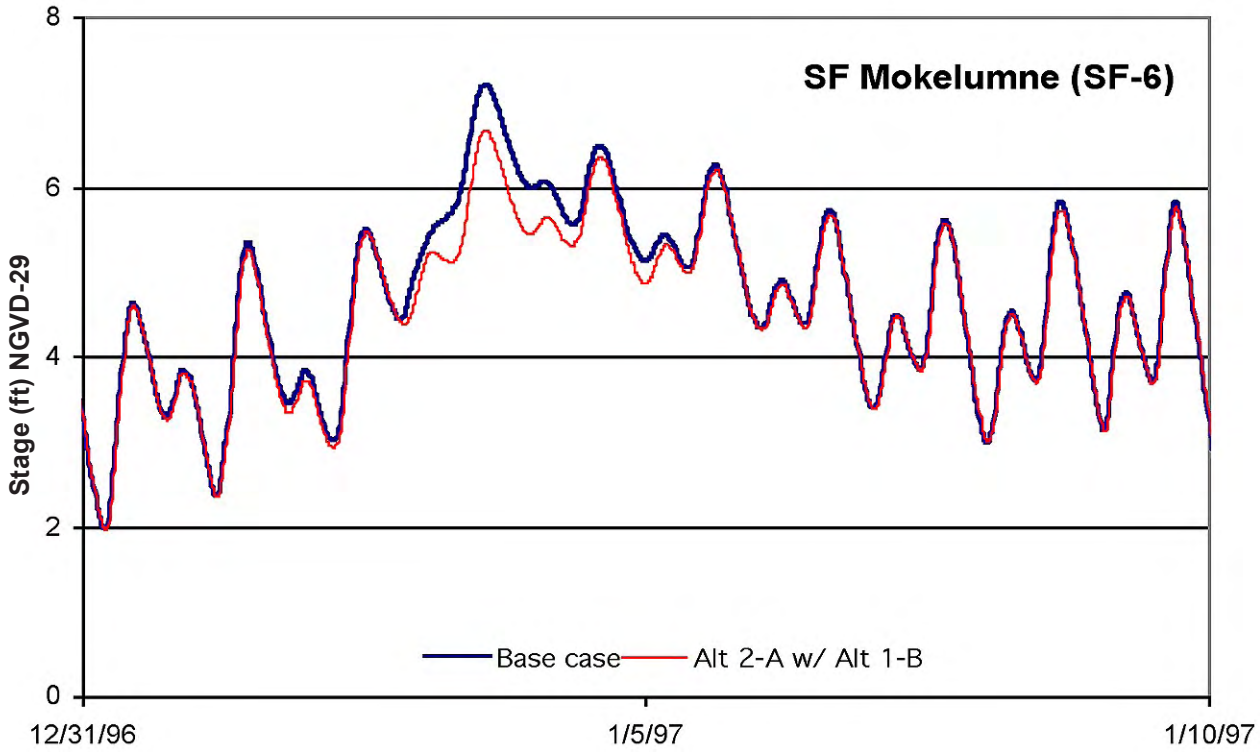
**Figure 3.1-30**
**Model Results at SF-6 for the 1997 Flood Showing the Impact of Alternative 1-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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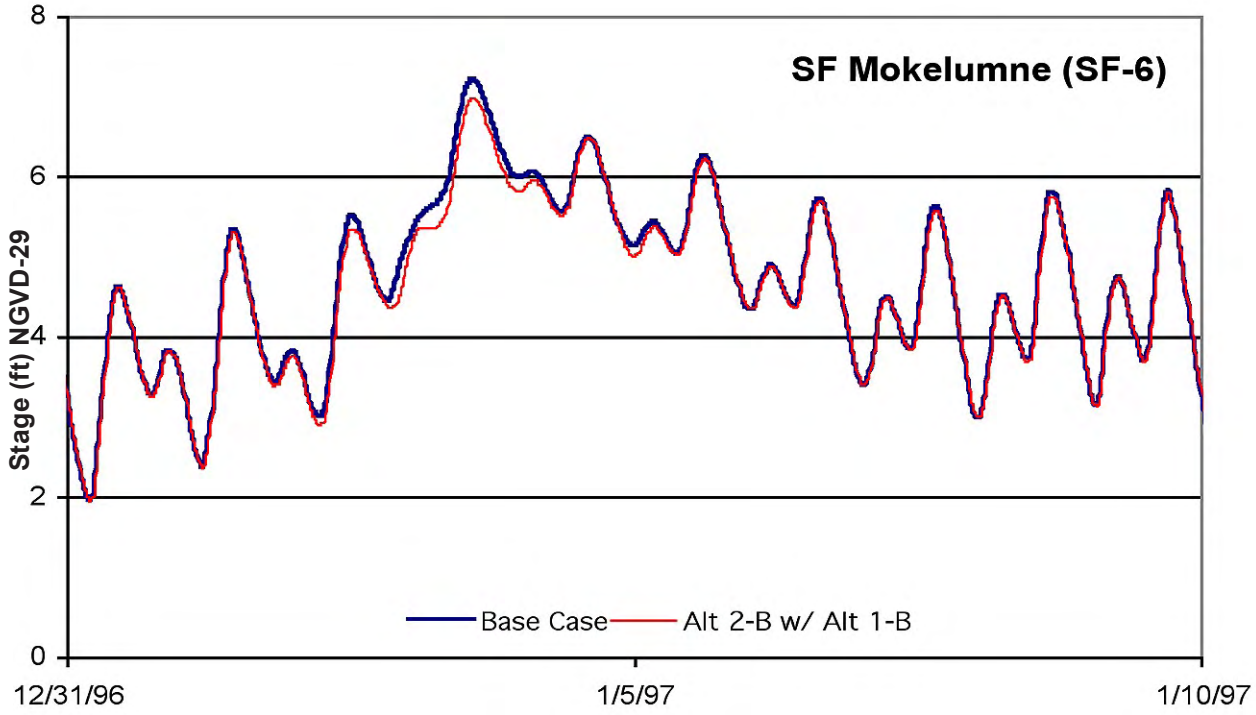
**Figure 3.1-31**
**Model Results at SF-6 for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-A Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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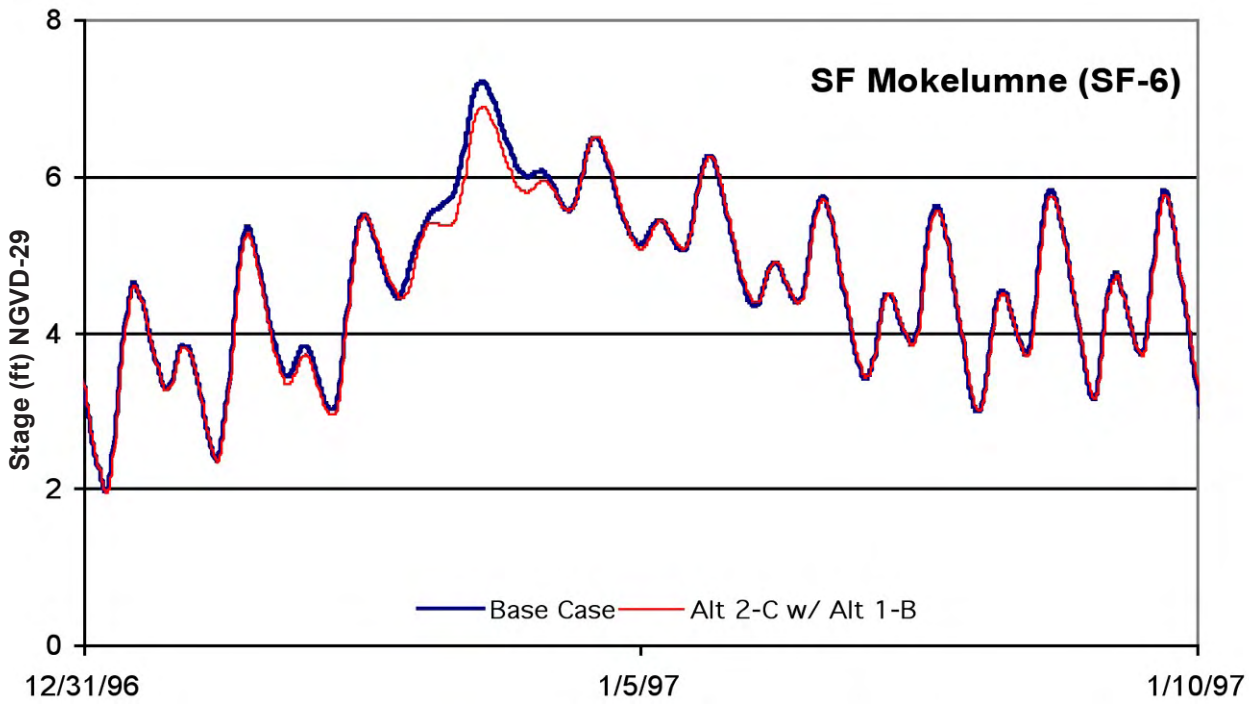
**Figure 3.1-32**
**Model Results at SF-6 for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-B Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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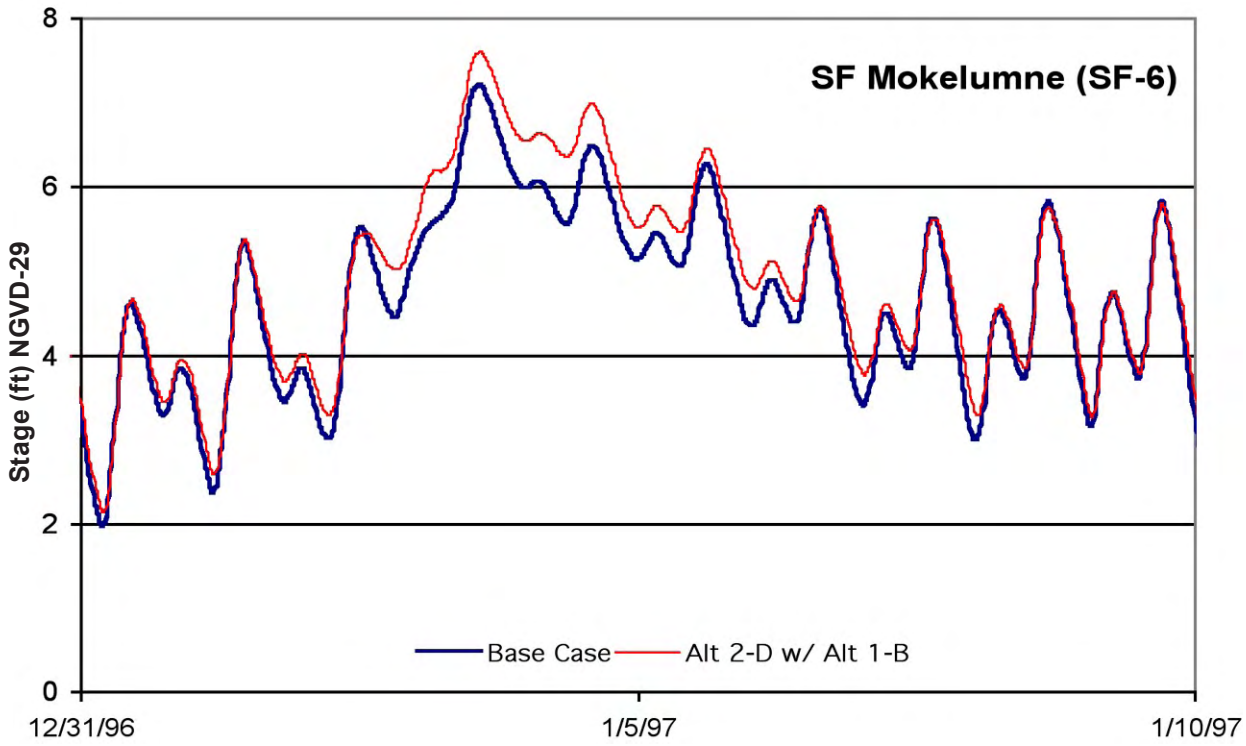
**Figure 3.1-33**
**Model Results at SF-6 for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-C Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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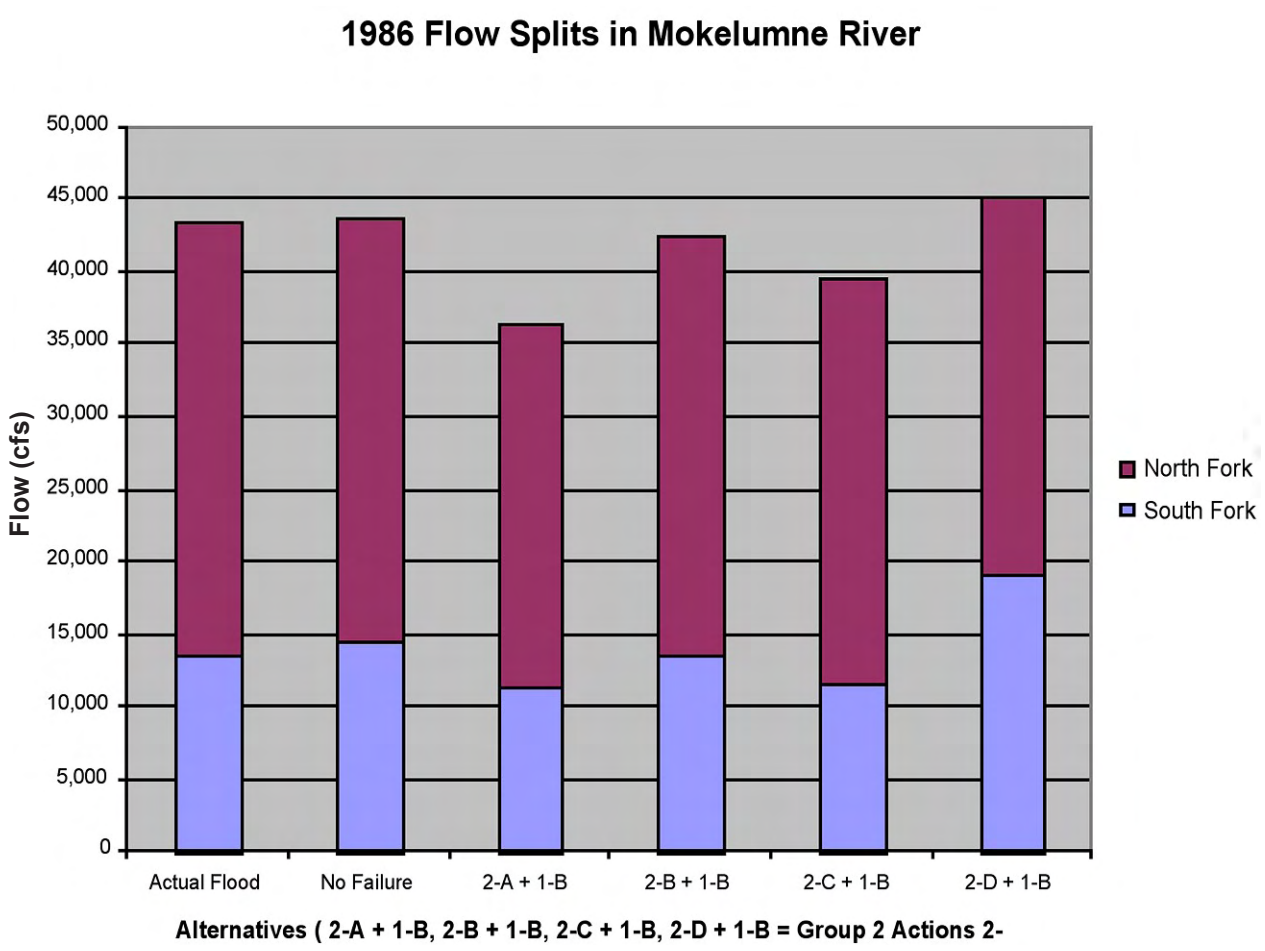
**Figure 3.1-34**
**Model Results at SF-6 for the 1997 Flood Showing the Impact of Alternative 1-B with Alternative 2-D Compared to Alternative NP (No Project)**




Source: DWR

01268.01 EIR

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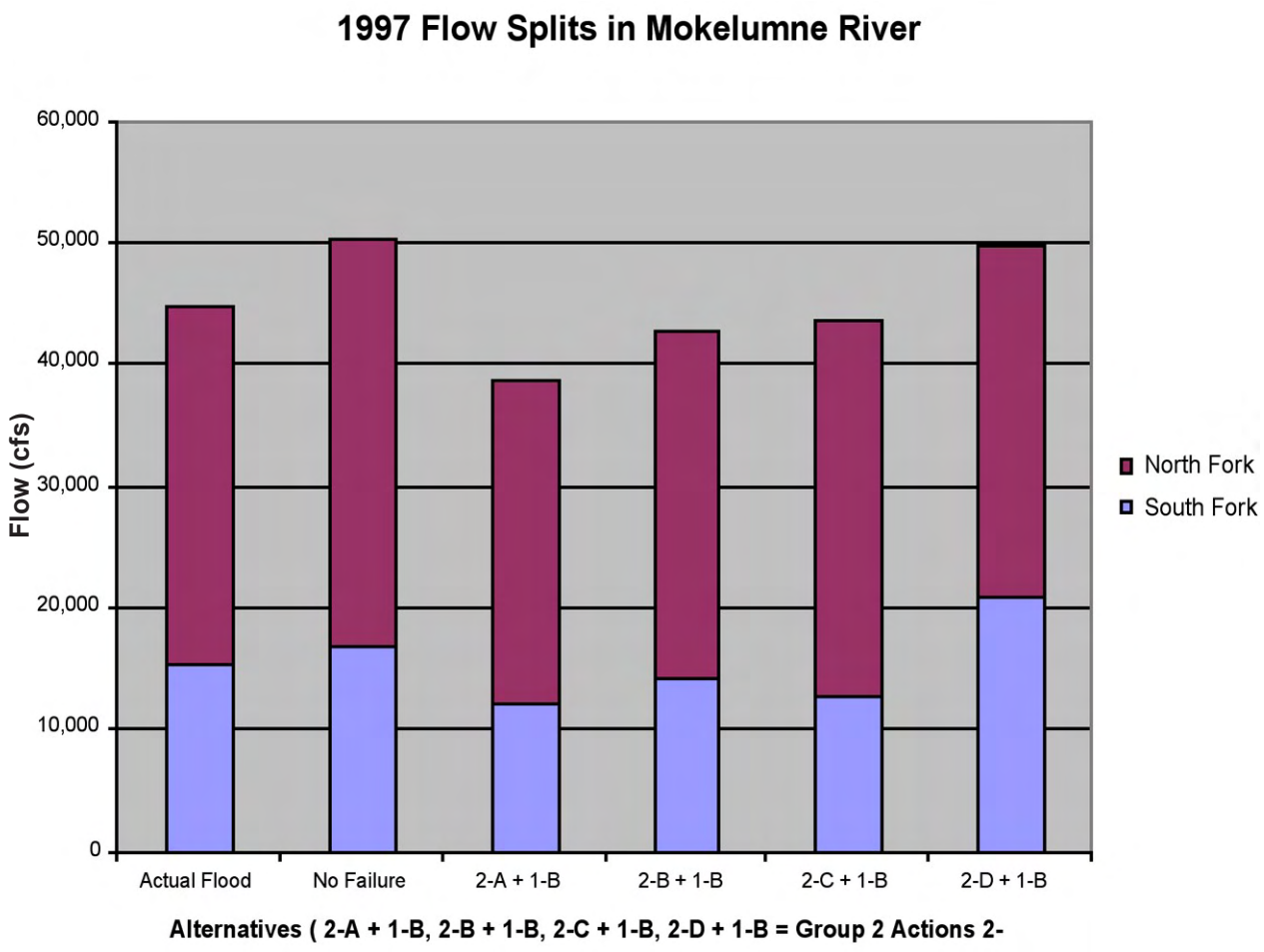
**Figure 3.1-35**
**Flow Splits in the South and North Fork of the Mokelumne River for the 1986 Flood**




Source: DWR

01268.01 EIR

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**Figure 3.1-36**
**Flow Splits in the South and North Fork of the Mokelumne River for the 1997 Flood**

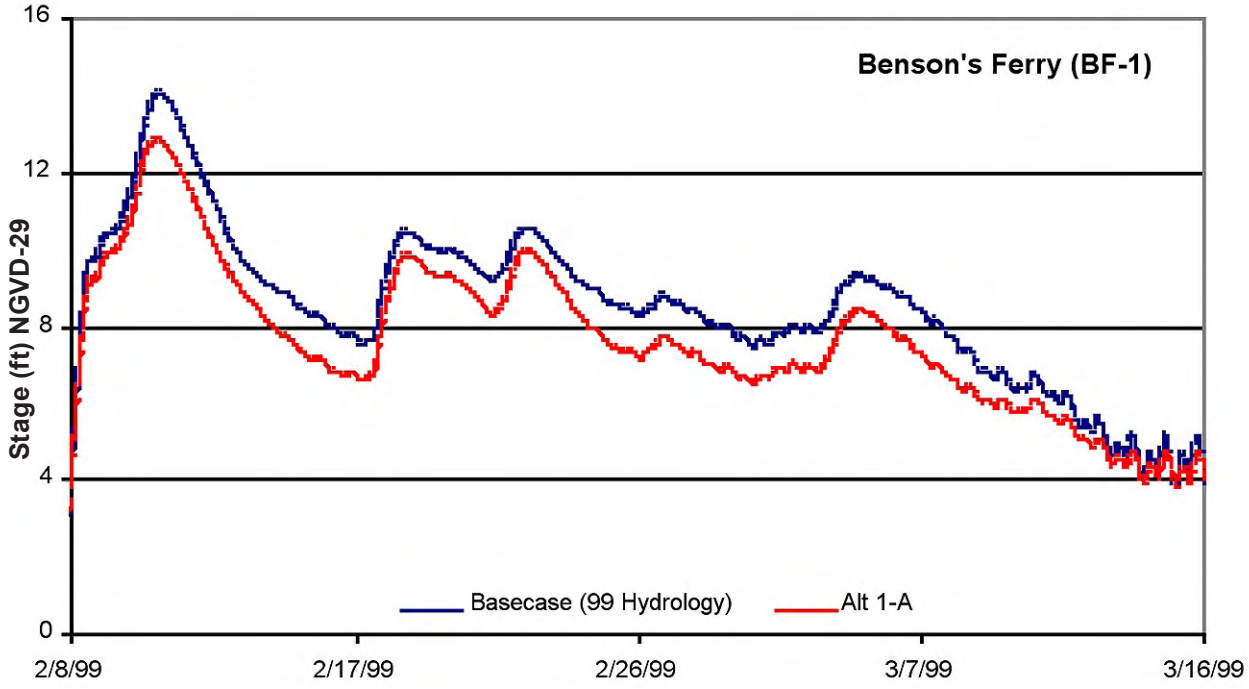


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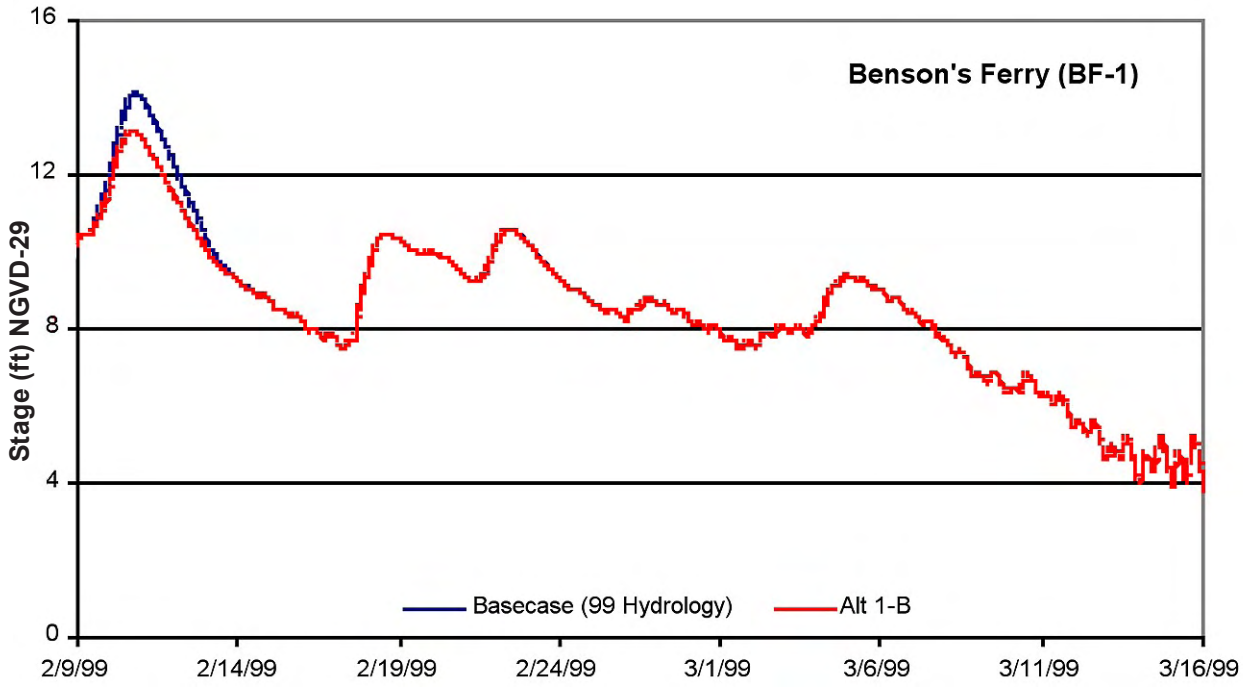
**Figure 3.1-37**
**Model Results at Benson's Ferry for the 1999 Flood Showing the Impact of Alternative 1-A Compared to Alternative NP (No Project)**




01268.01 EIR

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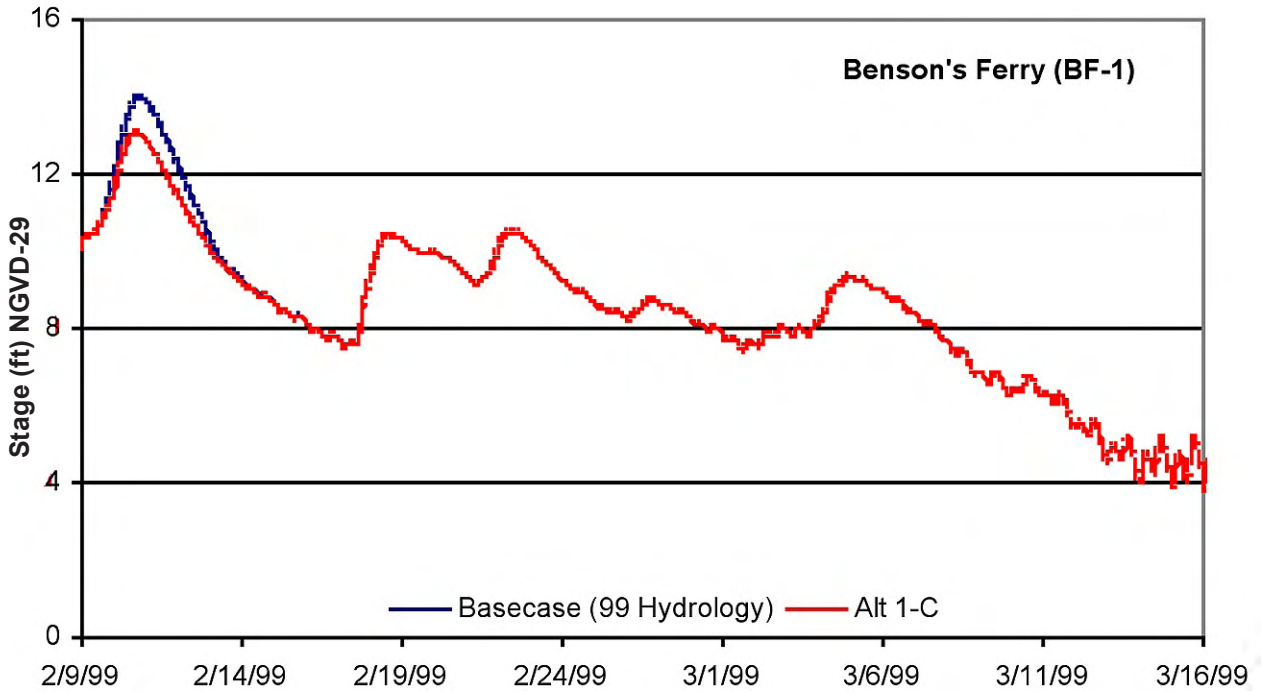
**Figure 3.1-38**
**Model Results at Benson's Ferry for the 1999 Flood Showing the Impact of Alternative 1-B Compared to Alternative NP (No Project)**




01268.01 EIR

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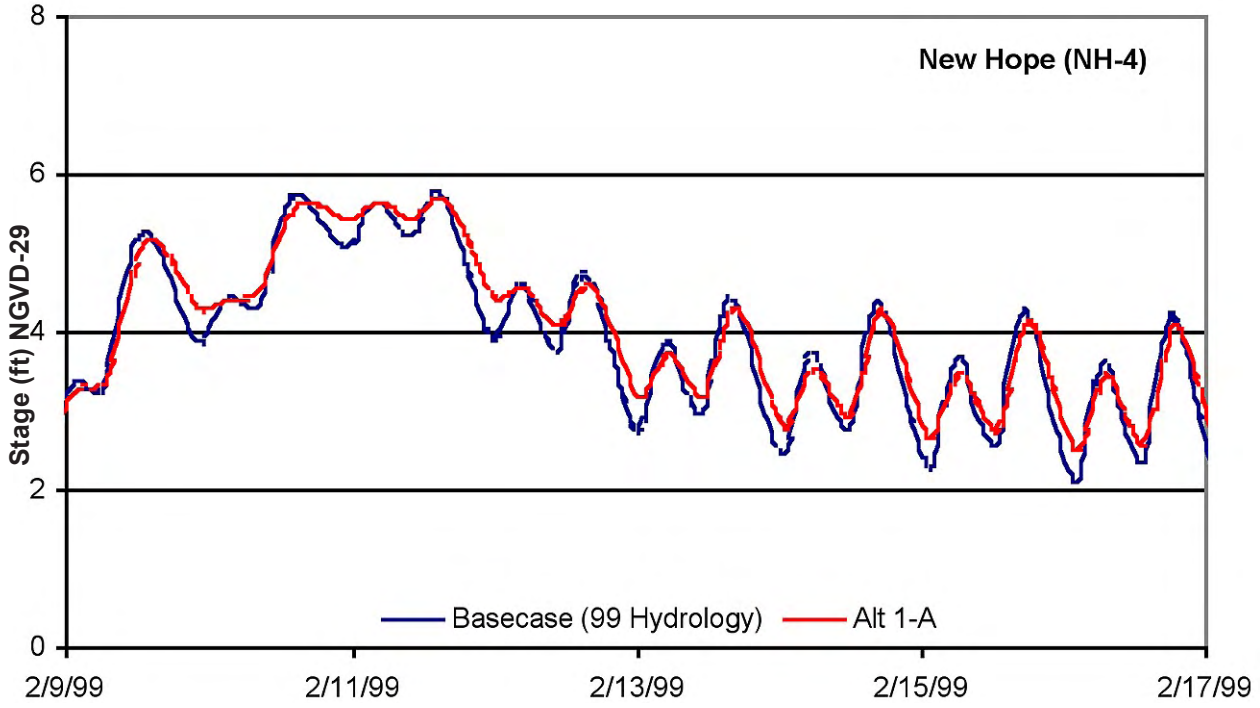
**Figure 3.1-39**
**Model Results at Benson's Ferry for the 1999 Flood Showing the Impact of Alternative 1-C Compared to Alternative NP (No Project)**




01268.01 EIR

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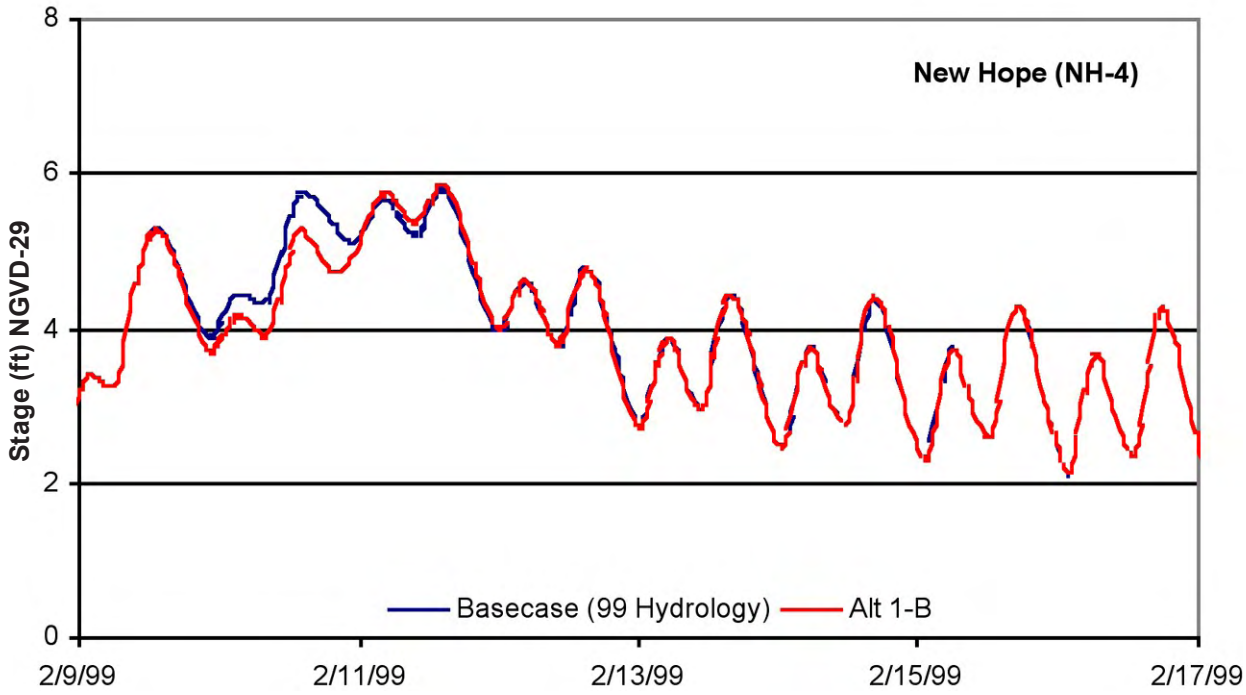
**Figure 3.1-40**
**Model Results at New Hope for the 1999 Flood Showing the Impact of Alternative 1-A Compared to Alternative NP (No Project)**




01268.01 EIR

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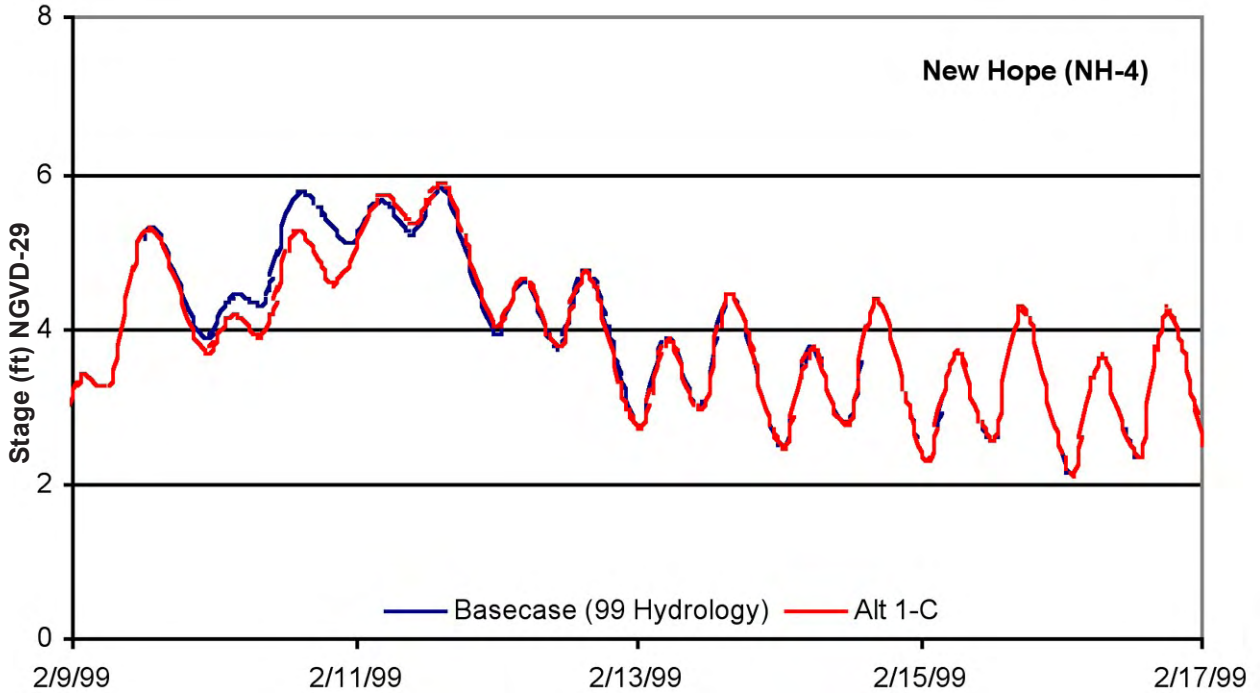
**Figure 3.1-41**
**Model Results at New Hope for the 1999 Flood Showing the Impact of Alternative 1-B Compared to Alternative NP (No Project)**




01268.01 EIR

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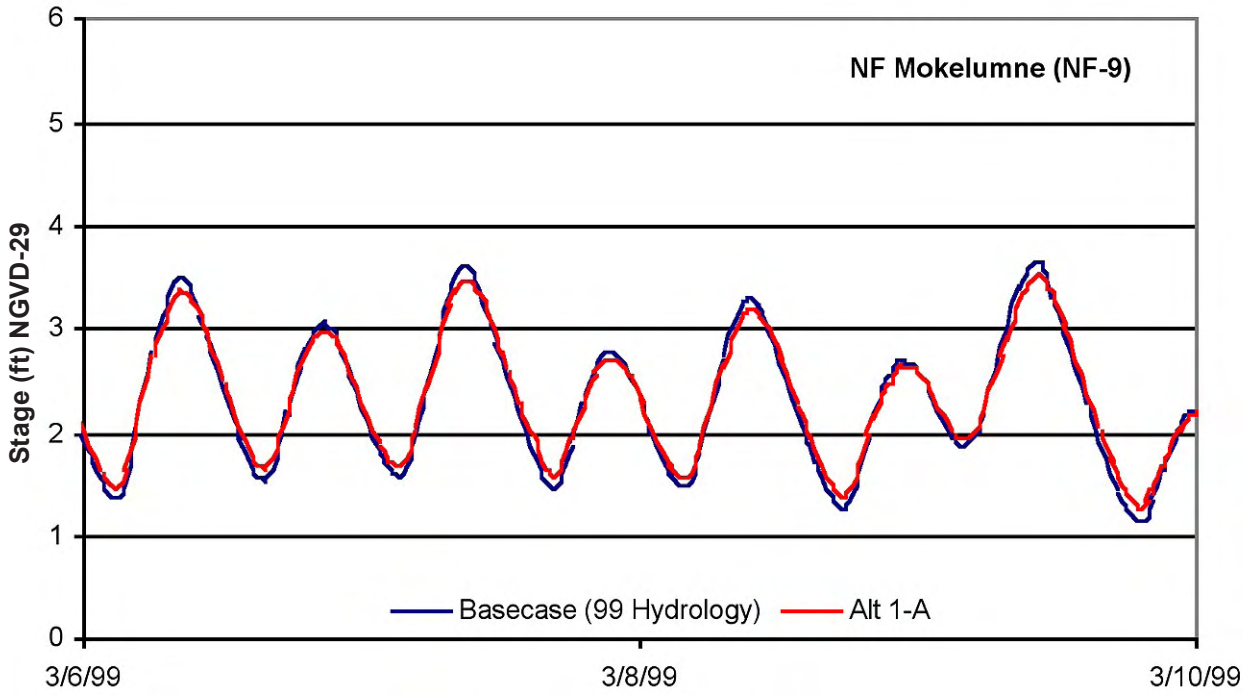
**Figure 3.1-42**
**Model Results at New Hope for the 1999 Flood Showing the Impact of Alternative 1-C Compared to Alternative NP (No Project)**




01268.01 EIR

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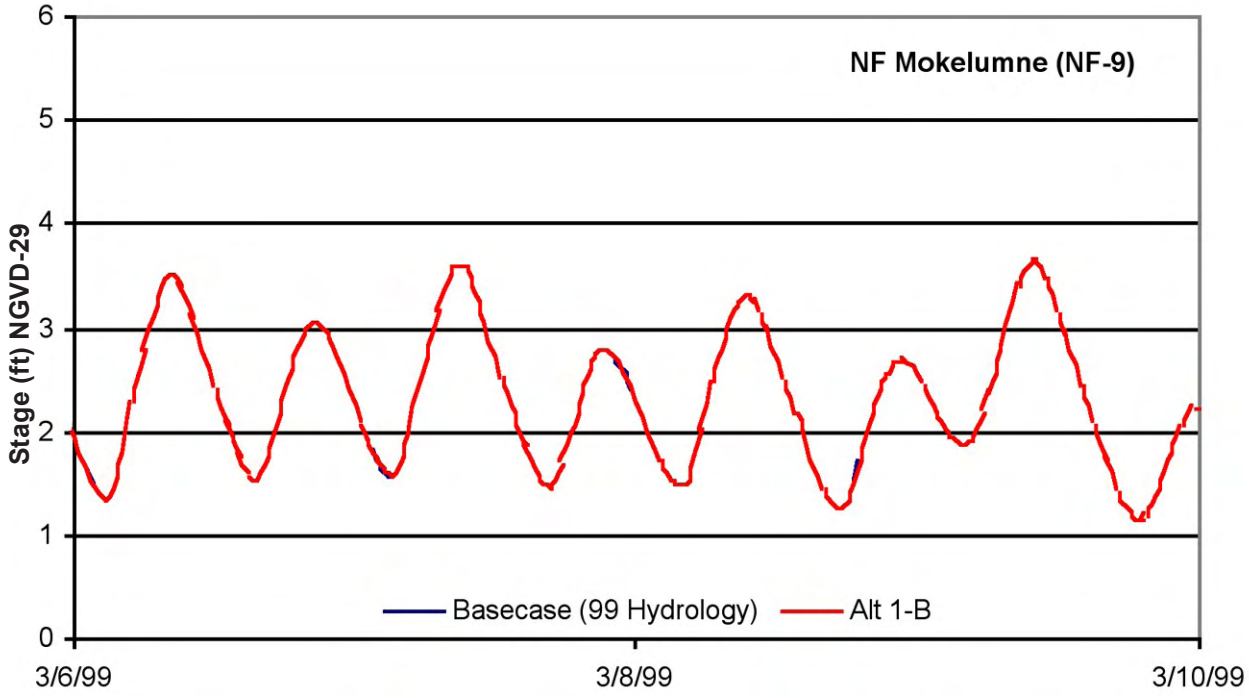
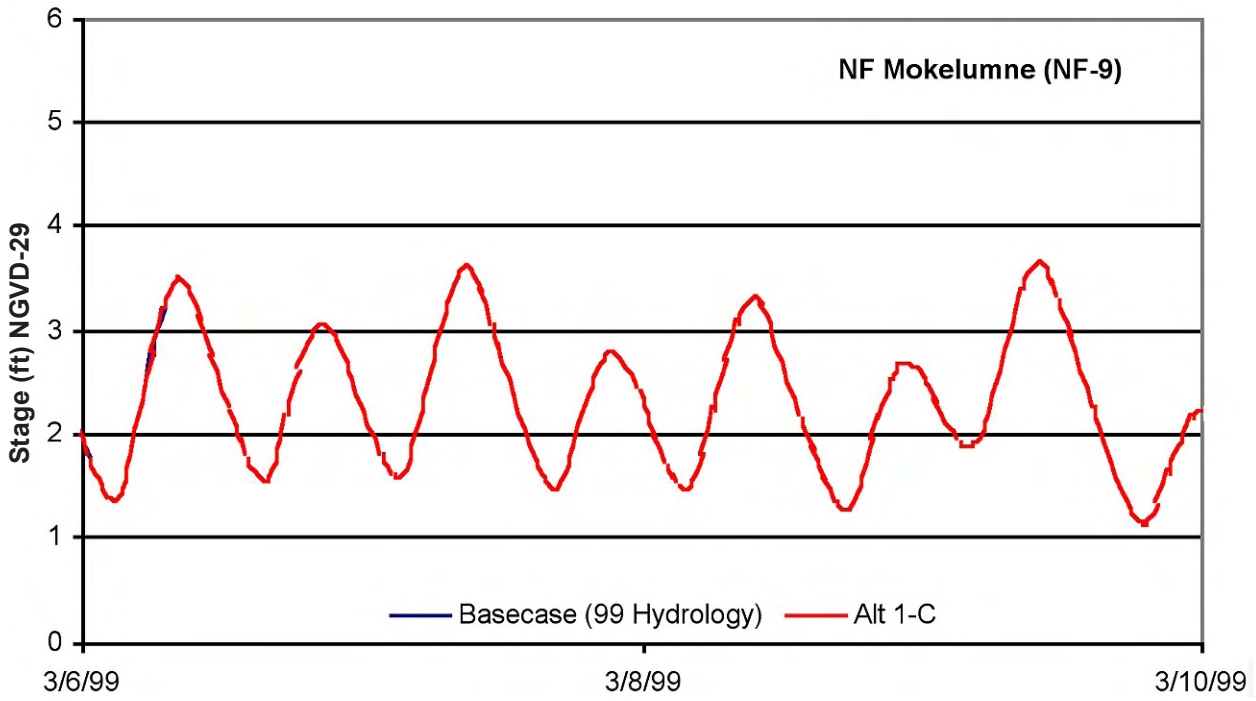
**Figure 3.1-43**
**Model Results at NF-9 for the 1999 Flood Showing the Impact of Alternative 1-A Compared to Alternative NP (No Project)**




01268.01 EIR

Jones & Stokes

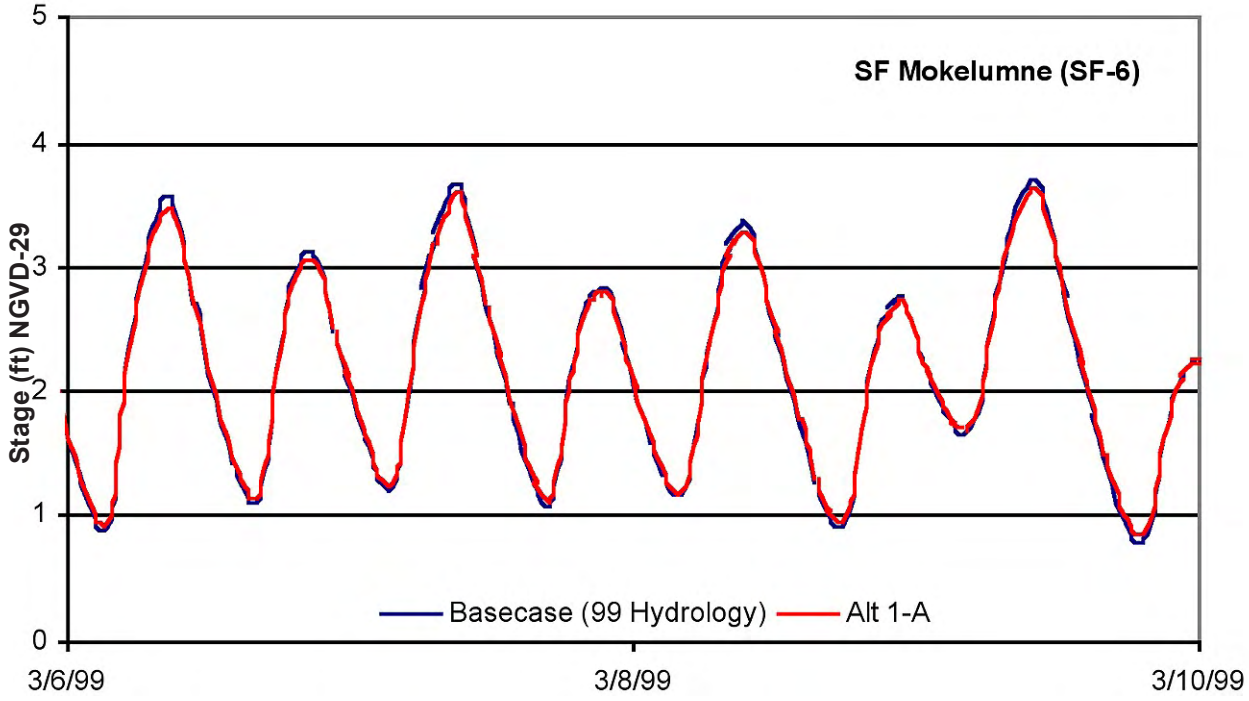
**Figure 3.1-44**
**Model Results at NF-9 for the 1999 Flood Showing the Impact of Alternative 1-B Compared to Alternative NP (No Project)**




01268.01 EIR

Jones & Stokes

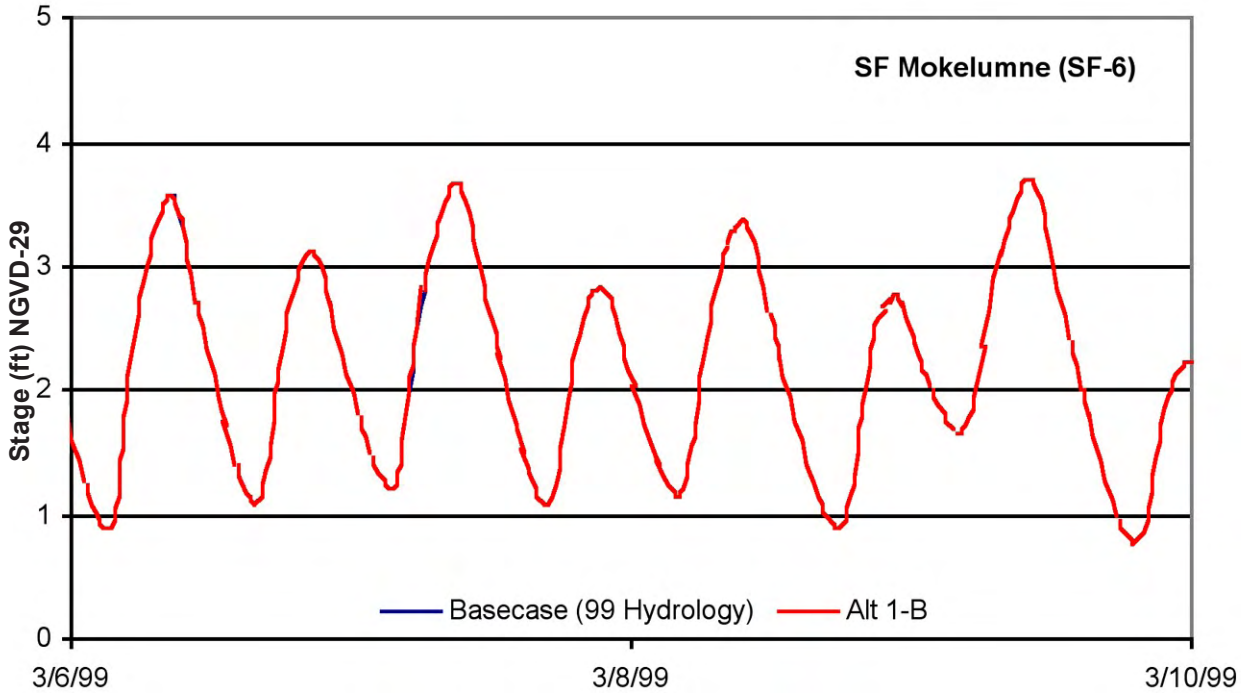
**Figure 3.1-45**
**Model Results at NF-9 for the 1999 Flood Showing the Impact of Alternative 1-C Compared to Alternative NP (No Project)**




01268.01 EIR

Jones & Stokes

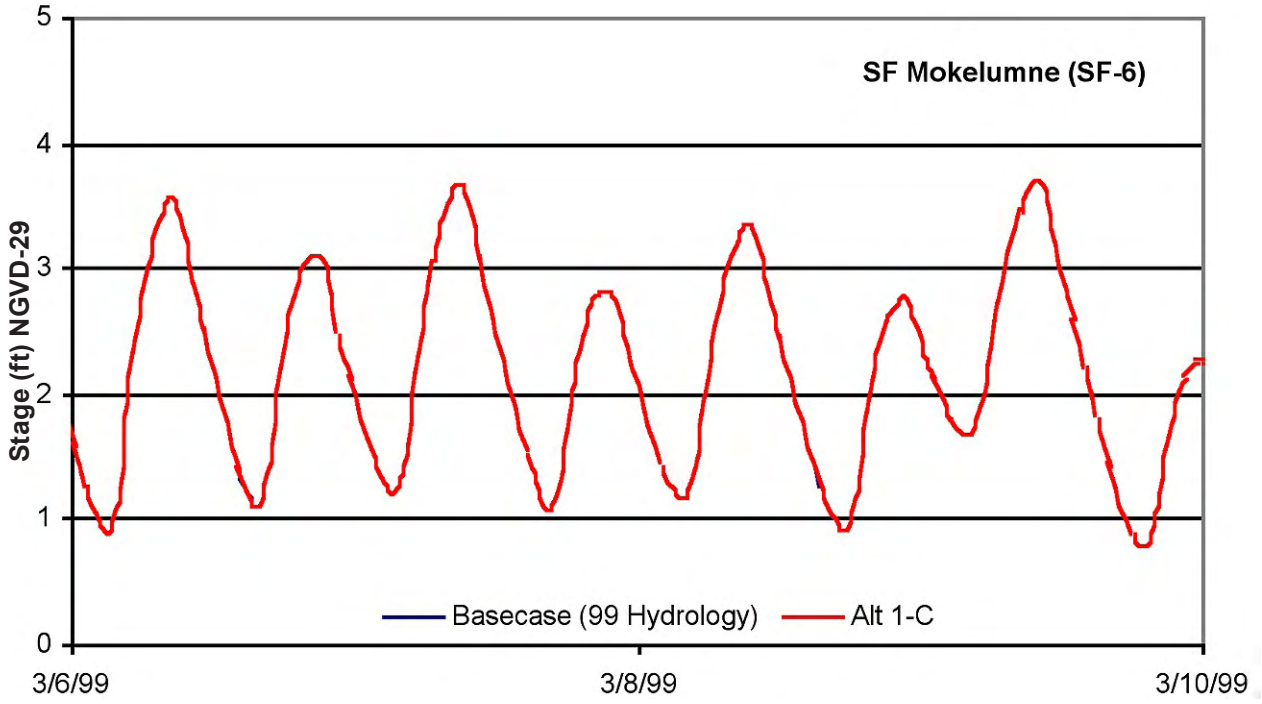
**Figure 3.1-46**
**Model Results at SF-6 for the 1999 Flood Showing the Impact of Alternative 1-A Compared to Alternative NP (No Project)**




01268.01 EIR

Jones & Stokes

**Figure 3.1-47**
**Model Results at SF-6 for the 1999 Flood Showing the Impact of Alternative 1-B Compared to Alternative NP (No Project)**




01268.01 EIR

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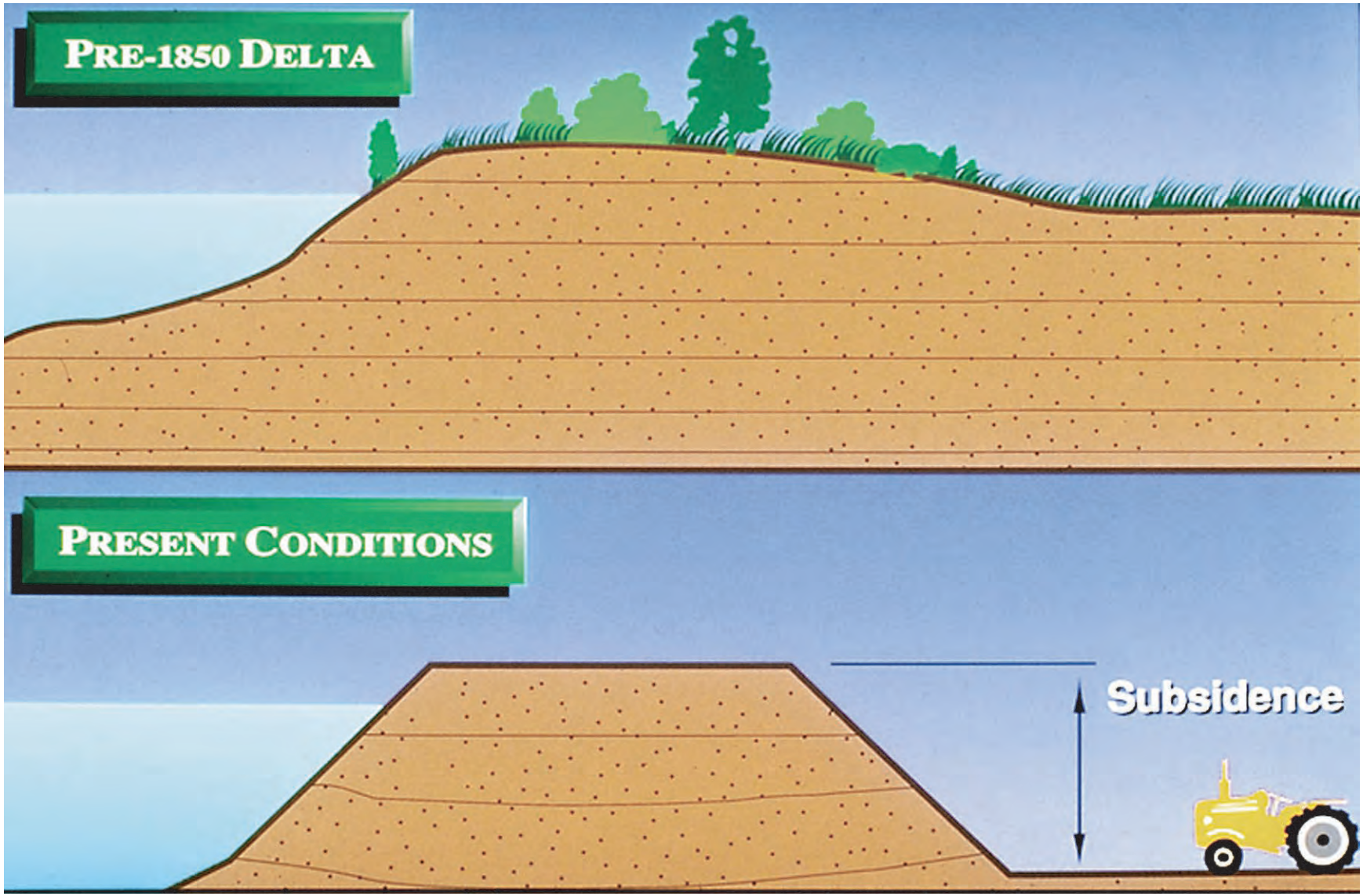
**Figure 3.1-48**
**Model Results at SF-6 for the 1999 Flood Showing the Impact of Alternative 1-C Compared to Alternative NP (No Project)**




Source: DWR.

01268.01 EIR

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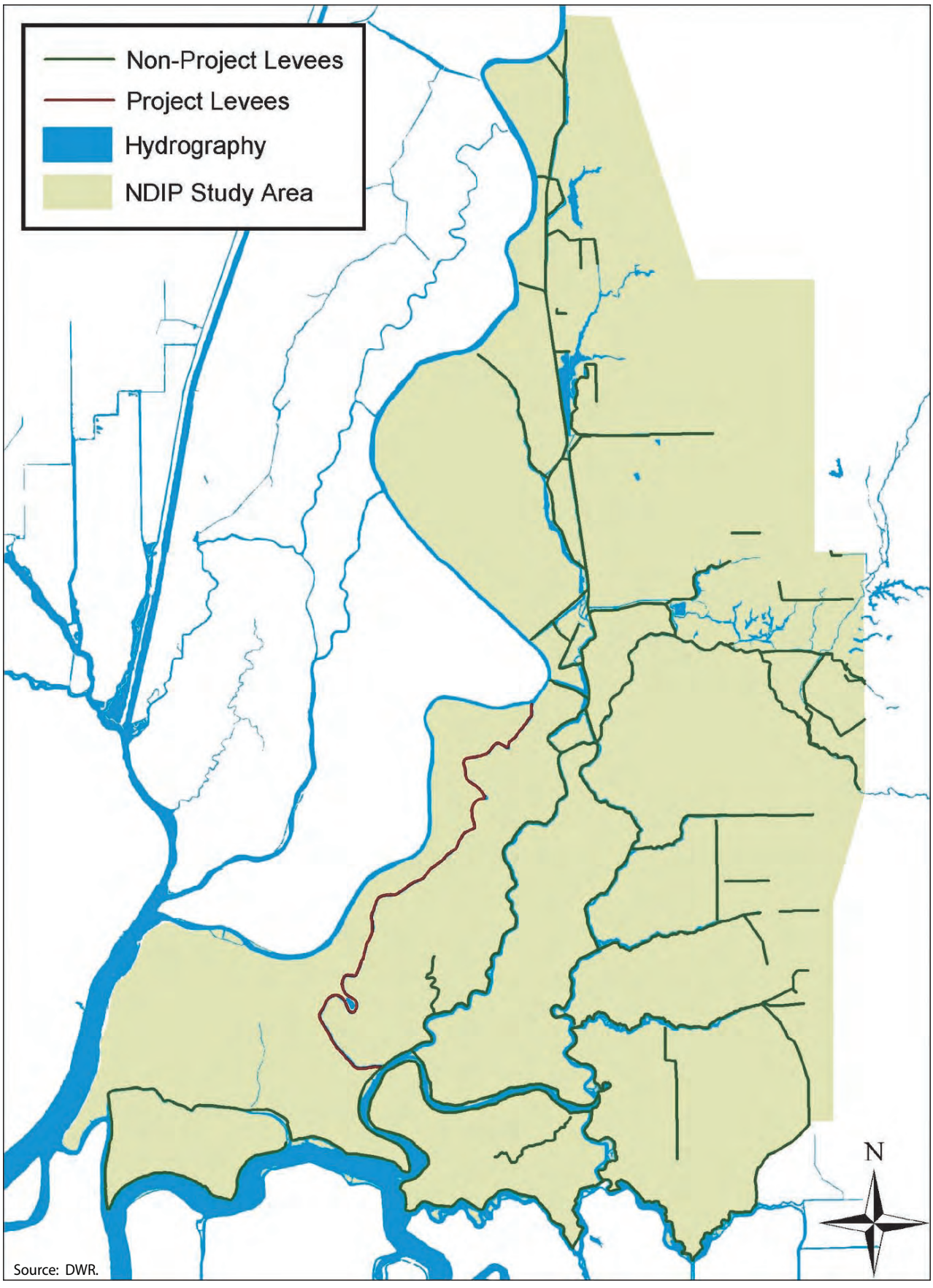
**Figure 3.2-1**
**Subsidence in the Delta**




01268.01 EIR

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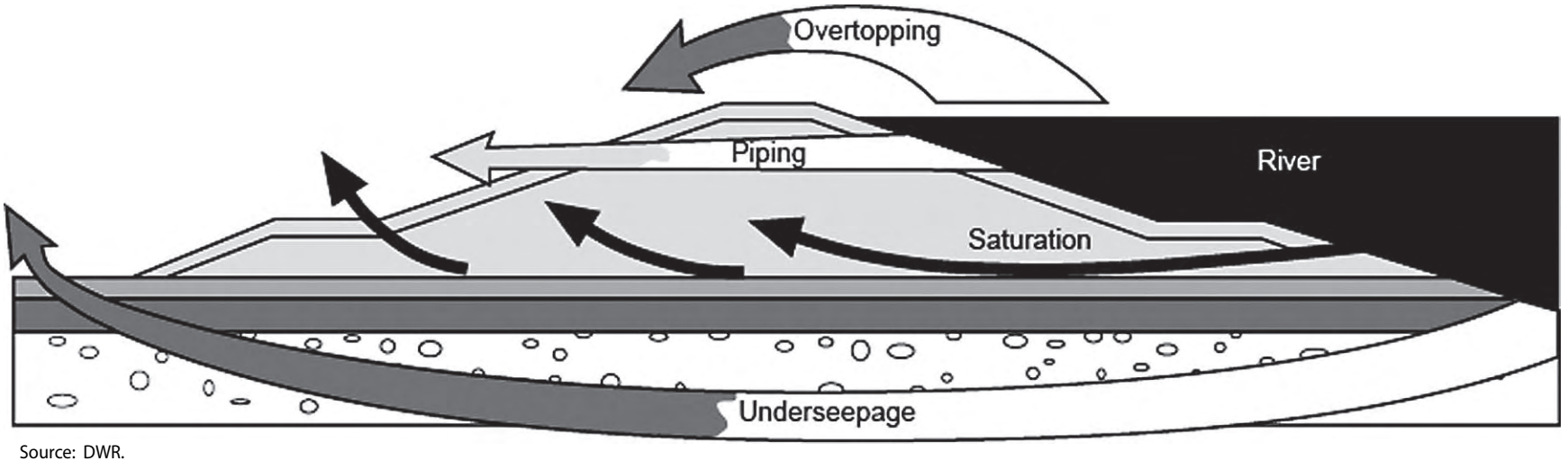
**Figure 3.2-2**
**Project and Non-Project Levees in the North Delta Study Area**




Source: DWR.

01268.01 EIR

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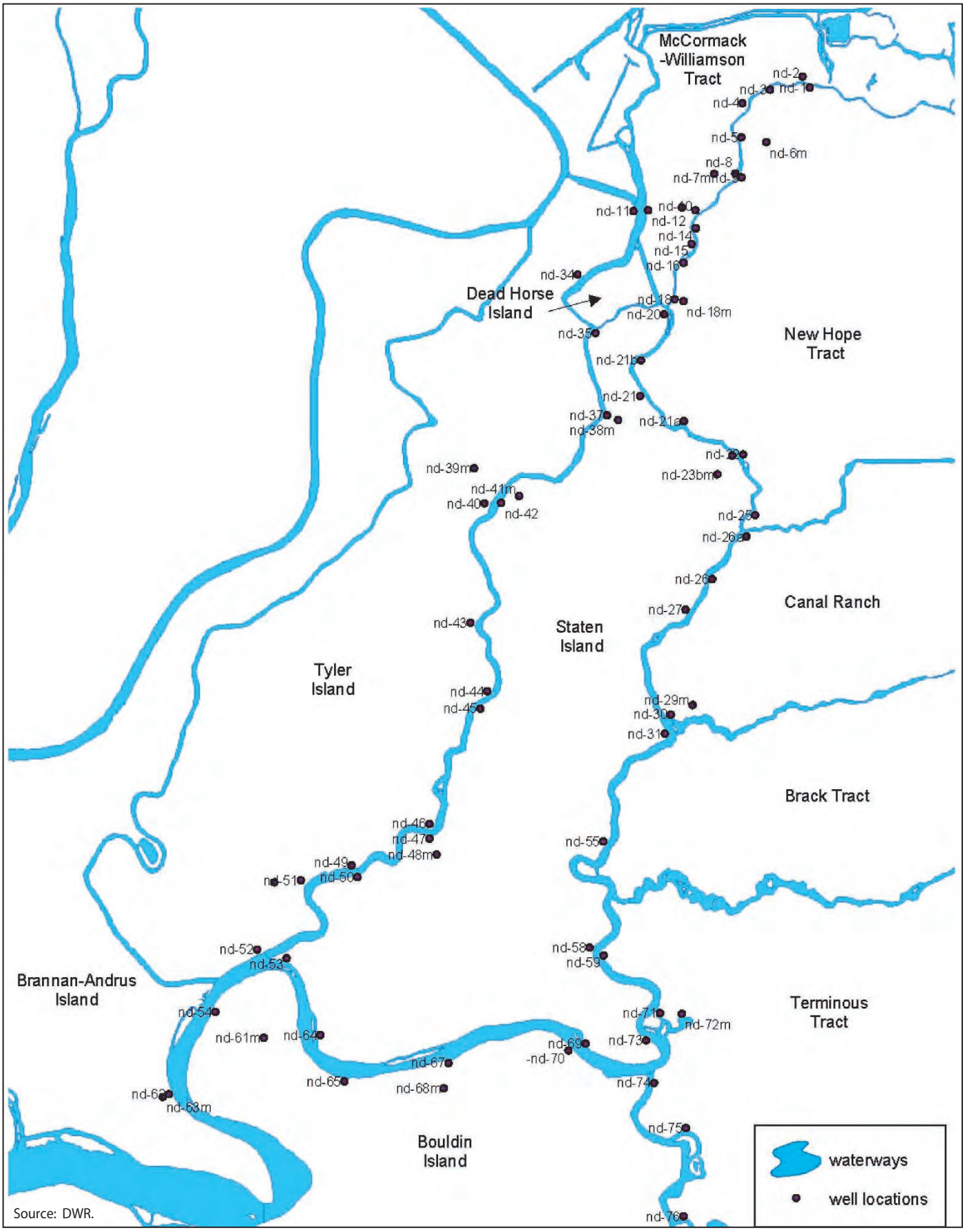
**Figure 3.2-3**
**Potential Levee Failure Scenarios**




01268.01 EIR

Source: DWR.

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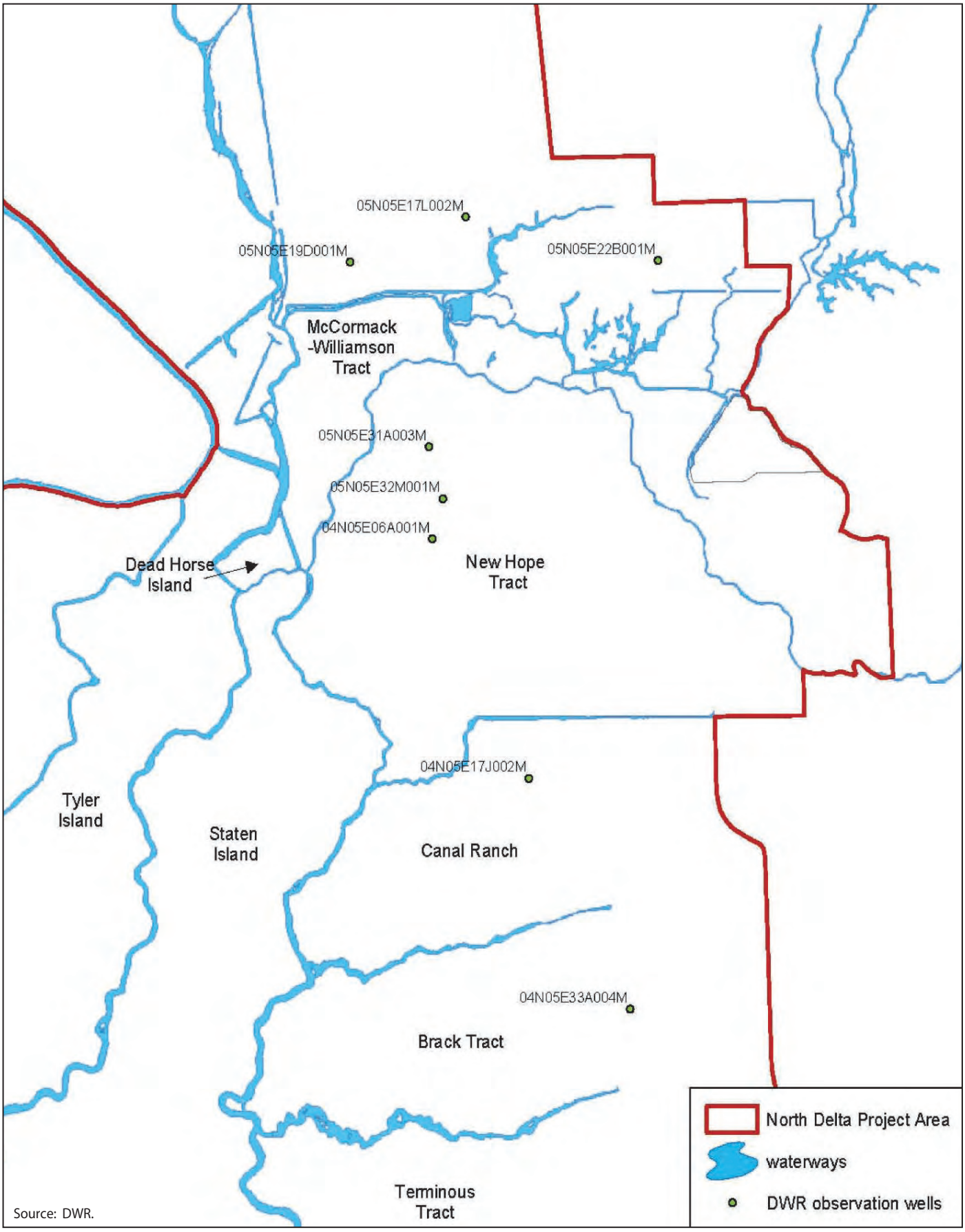
**Figure 3.6-1**
**Seepage Monitoring Wells in the North Delta Project Area**




01268.01 EIR

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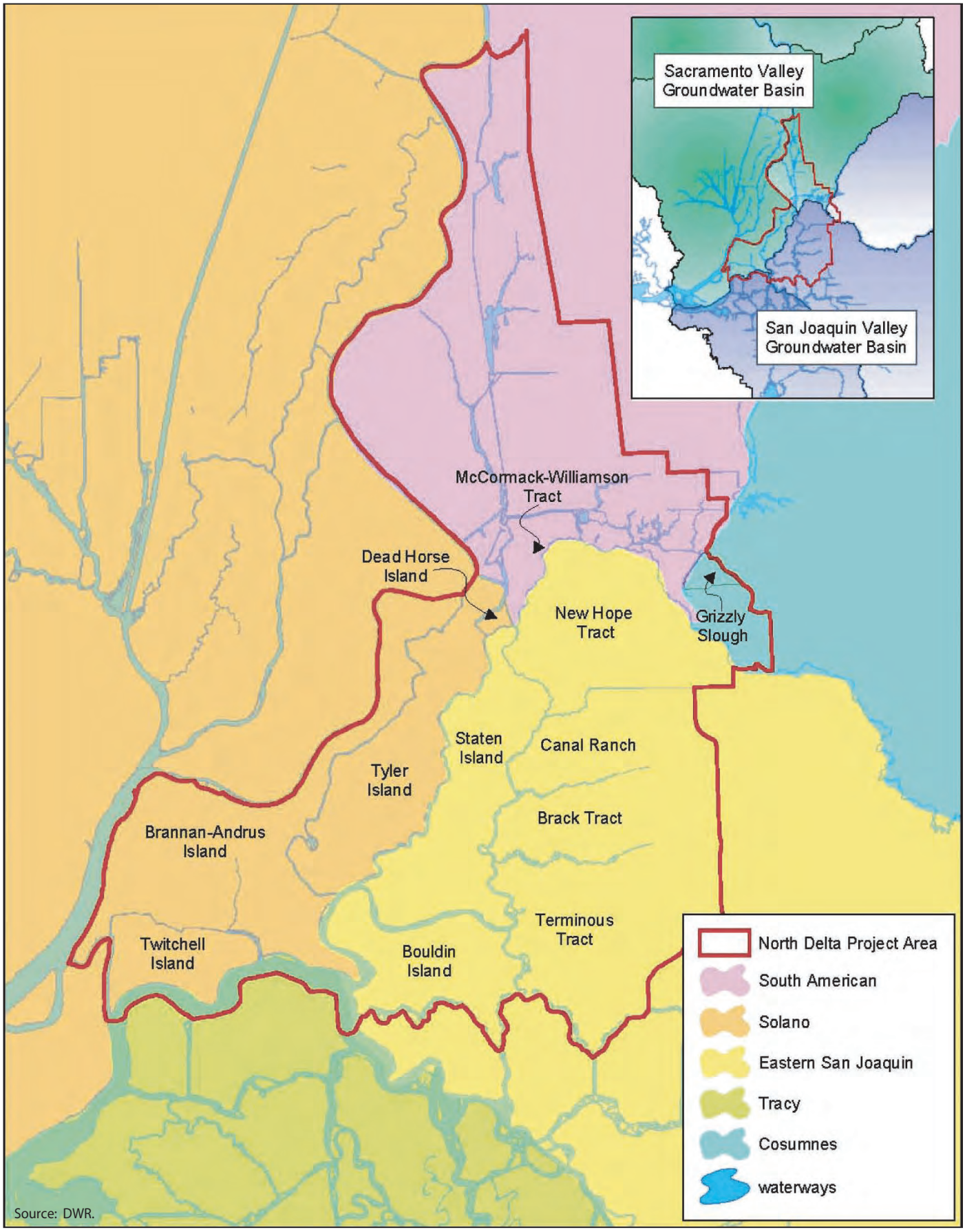
**Figure 3.6-2**
**Department of Water Resources Monitoring Wells**




01268.01 EIR

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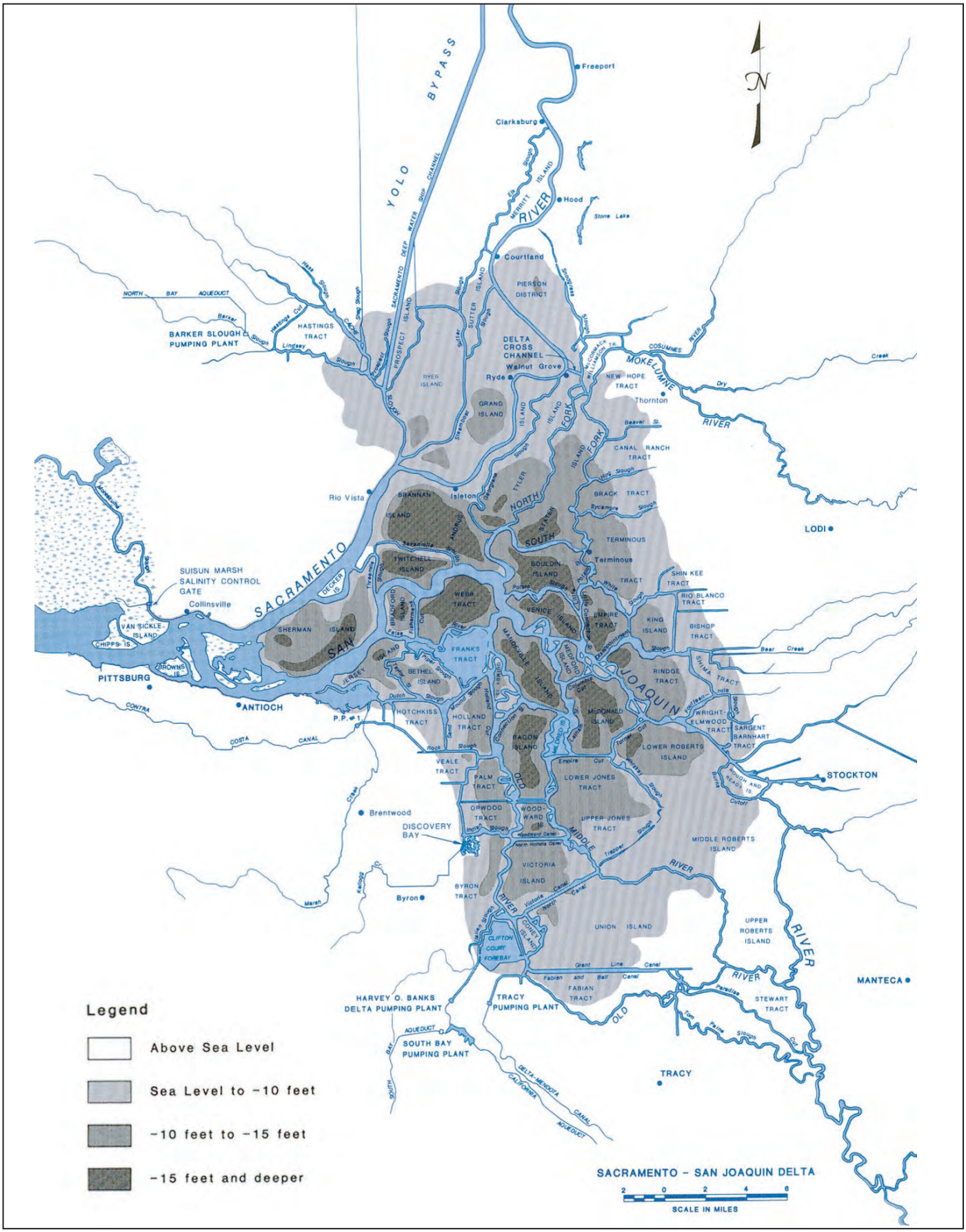
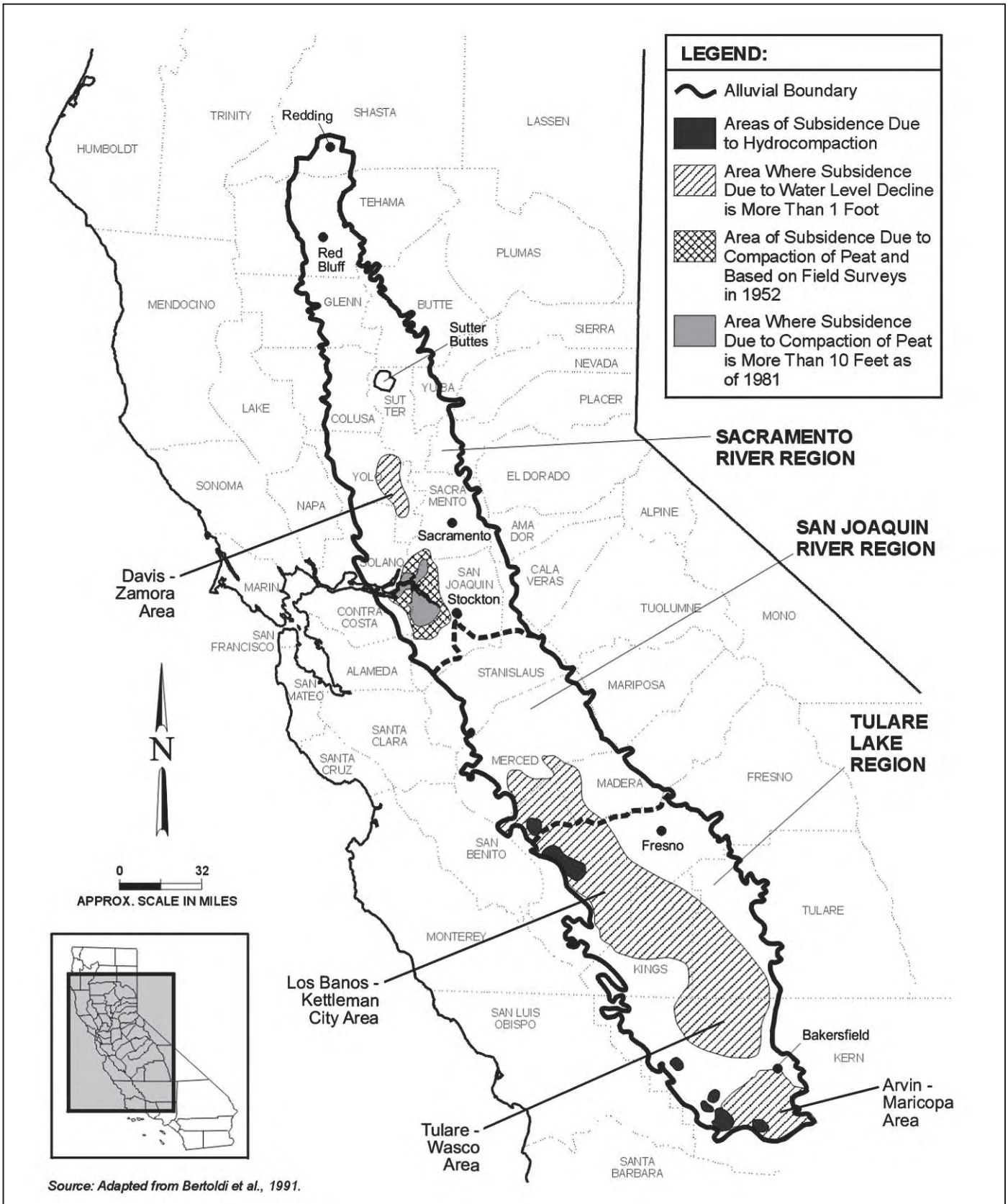
**Figure 3.6-3**
**North Delta Project Area**
**Contributing Groundwater Basins and Sub-Basins**




01268.01 EIR

Jones & Stokes

**Figure 3.7-1**
**North Delta Project Area**
**Contributing Groundwater Basins and Sub-Basins**




Source: U.S Fish and Wildlife Servcie, U.S. Bureau of Reclamation, Hoopa Valley Tribe, and Trinity County, 1999.

01268.01 EIR

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**Figure 3.7-2**
**Aerial Extent of Land Subsidence in the Central Valley Due to Declines in Groundwater Elevations**


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**Figure 3.9-1**
**Sensitive Receptors and Pump Locations**

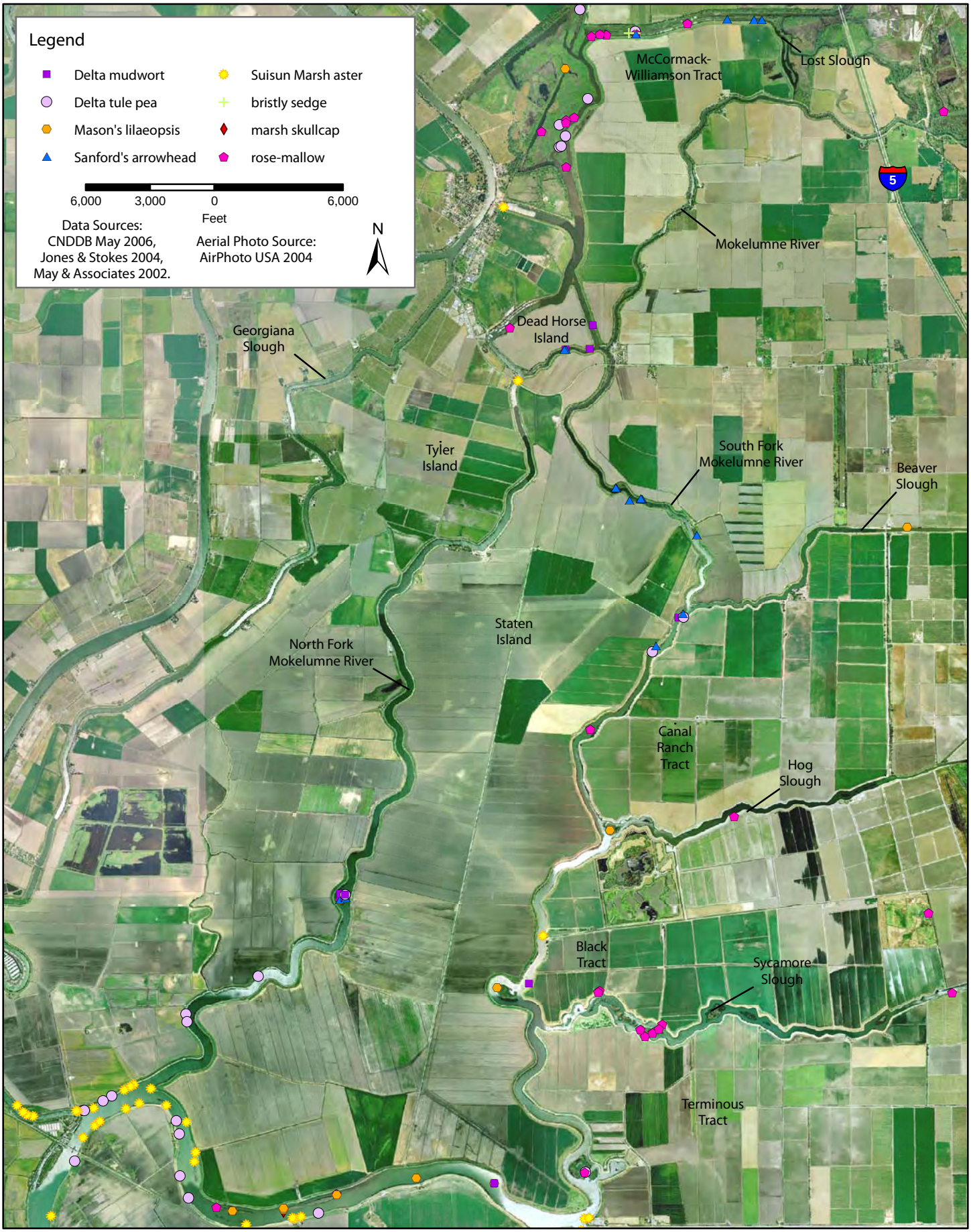


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**Figure 4.1-1**
**Special Status Plant Species in the Project Vicinity**

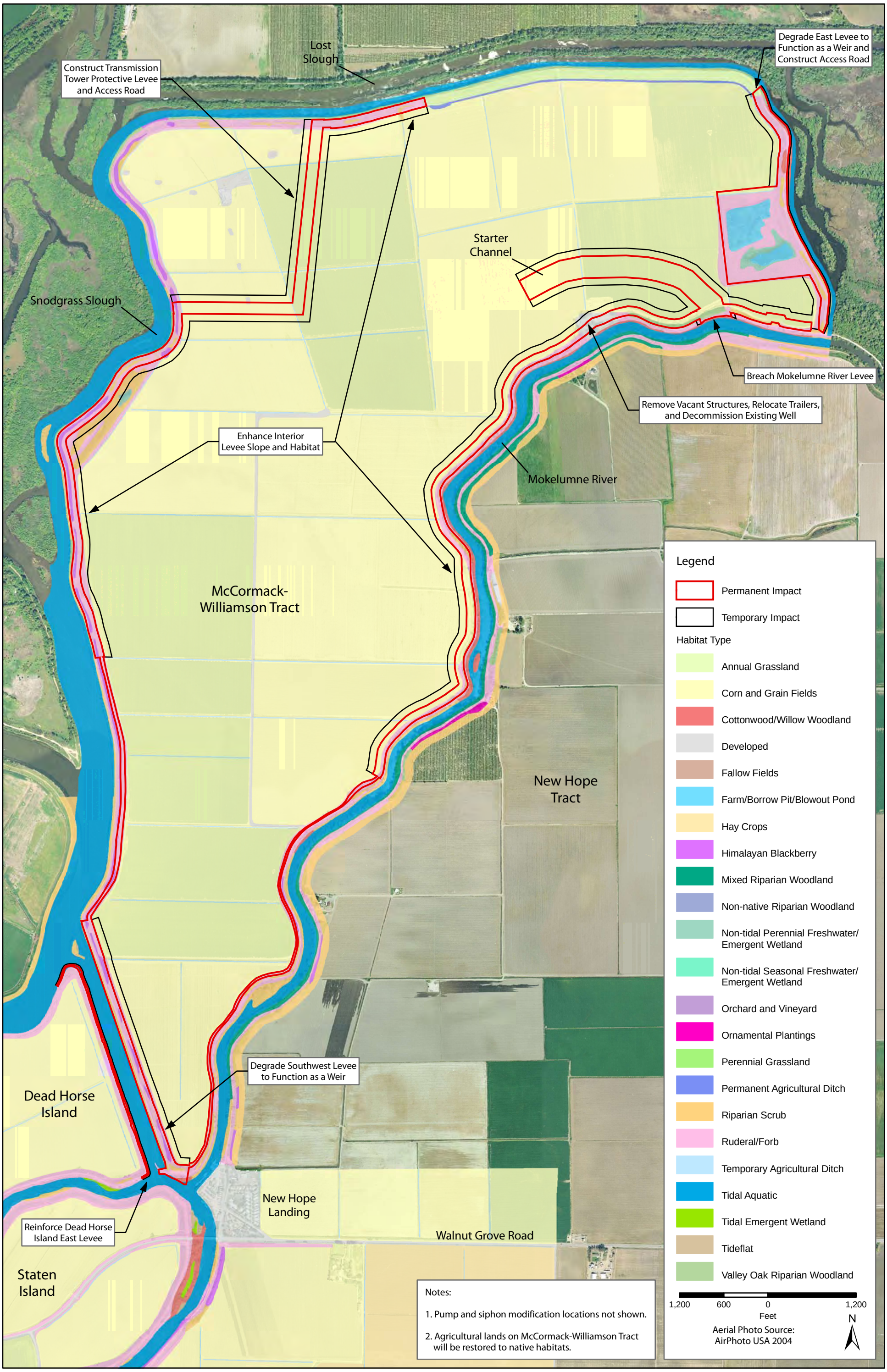


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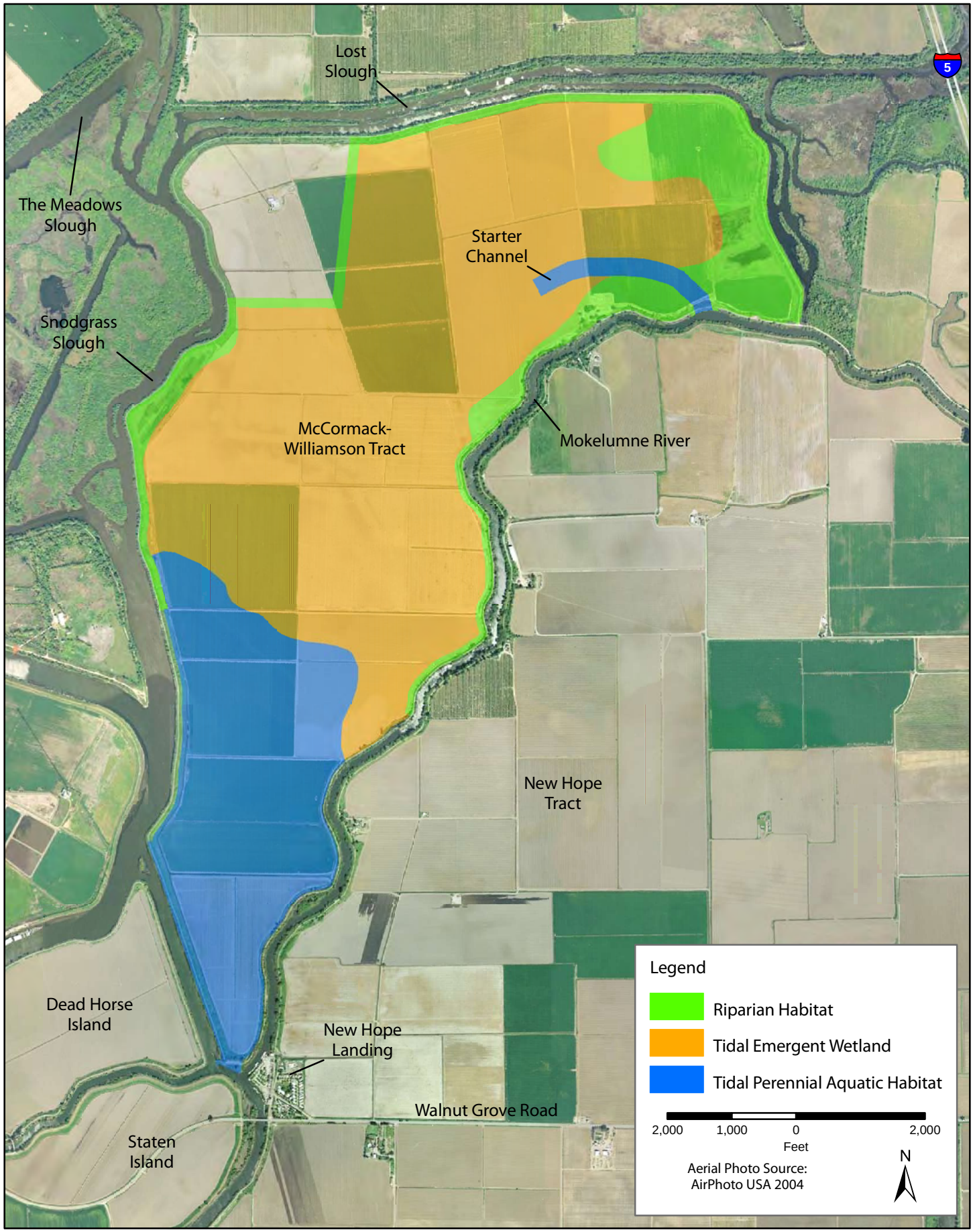
**Figure 4.1-2**
**Land Cover Types and Impact Areas on McCormack-Williamson Tract Under Alternative 1-A — Fluvial Process Optimization**

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Jones & Stokes

**Figure 4.1-3**
**Anticipated Native Land Cover Types from Alternative 1-A — Fluvial Process Optimization**

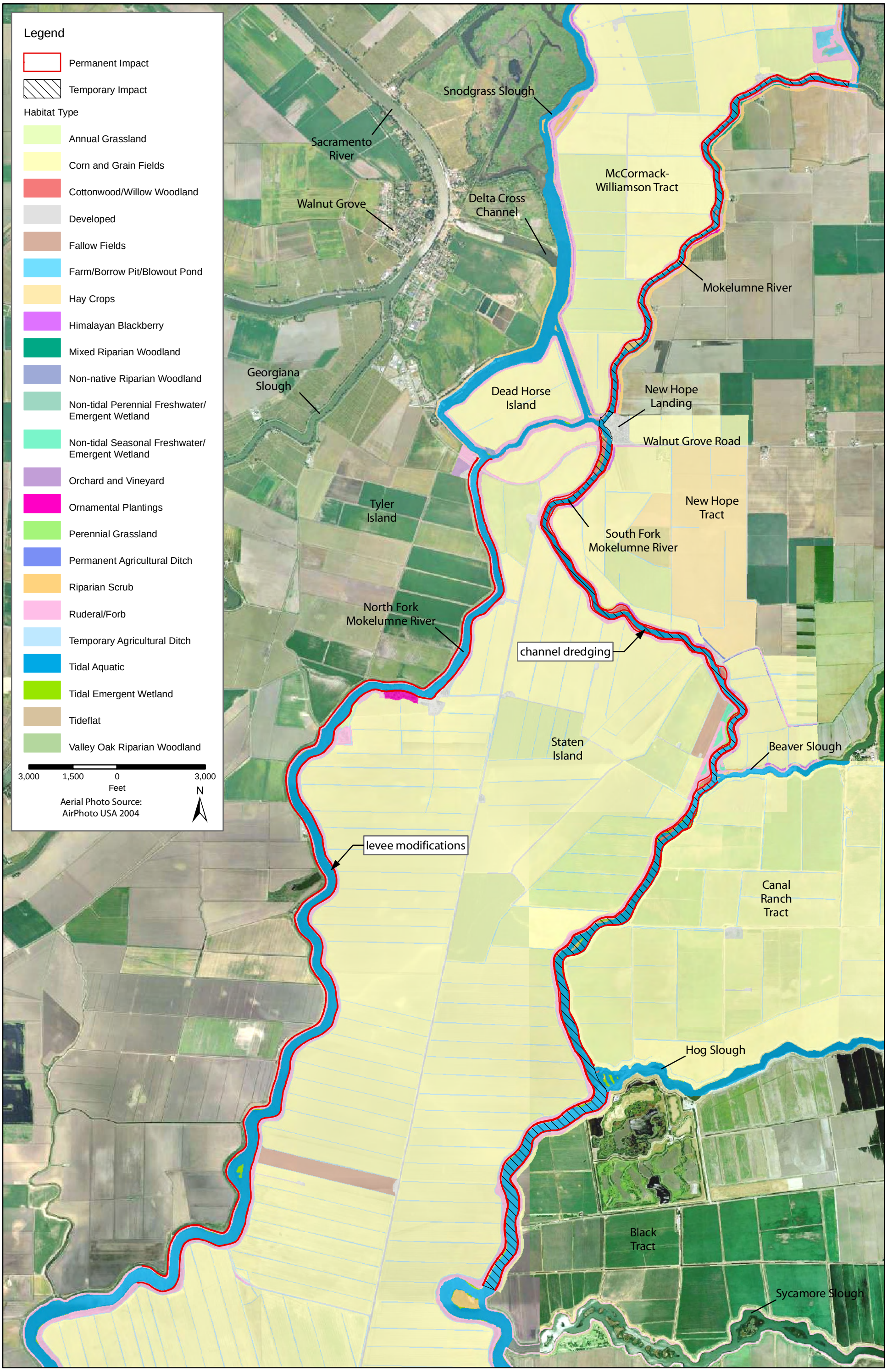


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**Figure 4.1-4**
**Land Cover Types and Impact Areas Under Alternative 1 — Levee Modifications and Dredging**

Lost Slough

Construct Transmission Tower Protective Levee and Access Road

Degrade East Levee to Function as a Weir and Construct Access Road

Snodgrass Slough

Remove Vacant Structures, Relocate Trailers, and Decommission Existing Well

Enhance Interior Levee Slope and Habitat

Mokelumne River

McCormack-Williamson Tract

New Hope Tract

Dead Horse Island

Degrade Southwest Levee to Function as a Weir

New Hope Landing

Reinforce Dead Horse Island East Levee

Walnut Grove Road

Staten Island

Notes:

1. Pump and siphon modification locations not shown.

2. Agricultural lands on McCormack-Williamson Tract will be restored to native habitats.

Legend

- Permanent Impact
- Temporary Impact

Habitat Type

- Annual Grassland
- Corn and Grain Fields
- Cottonwood/Willow Woodland
- Developed
- Fallow Fields
- Farm/Borrow Pit/Blowout Pond
- Hay Crops
- Himalayan Blackberry
- Mixed Riparian Woodland
- Non-native Riparian Woodland
- Non-tidal Perennial Freshwater/ Emergent Wetland
- Non-tidal Seasonal Freshwater/ Emergent Wetland
- Orchard and Vineyard
- Ornamental Plantings
- Perennial Grassland
- Permanent Agricultural Ditch
- Riparian Scrub
- Ruderal/Forb
- Temporary Agricultural Ditch
- Tidal Aquatic
- Tidal Emergent Wetland
- Tideflat
- Valley Oak Riparian Woodland

1,200 600 0 1,200

Feet

N

Aerial Photo Source: AirPhoto USA 2004

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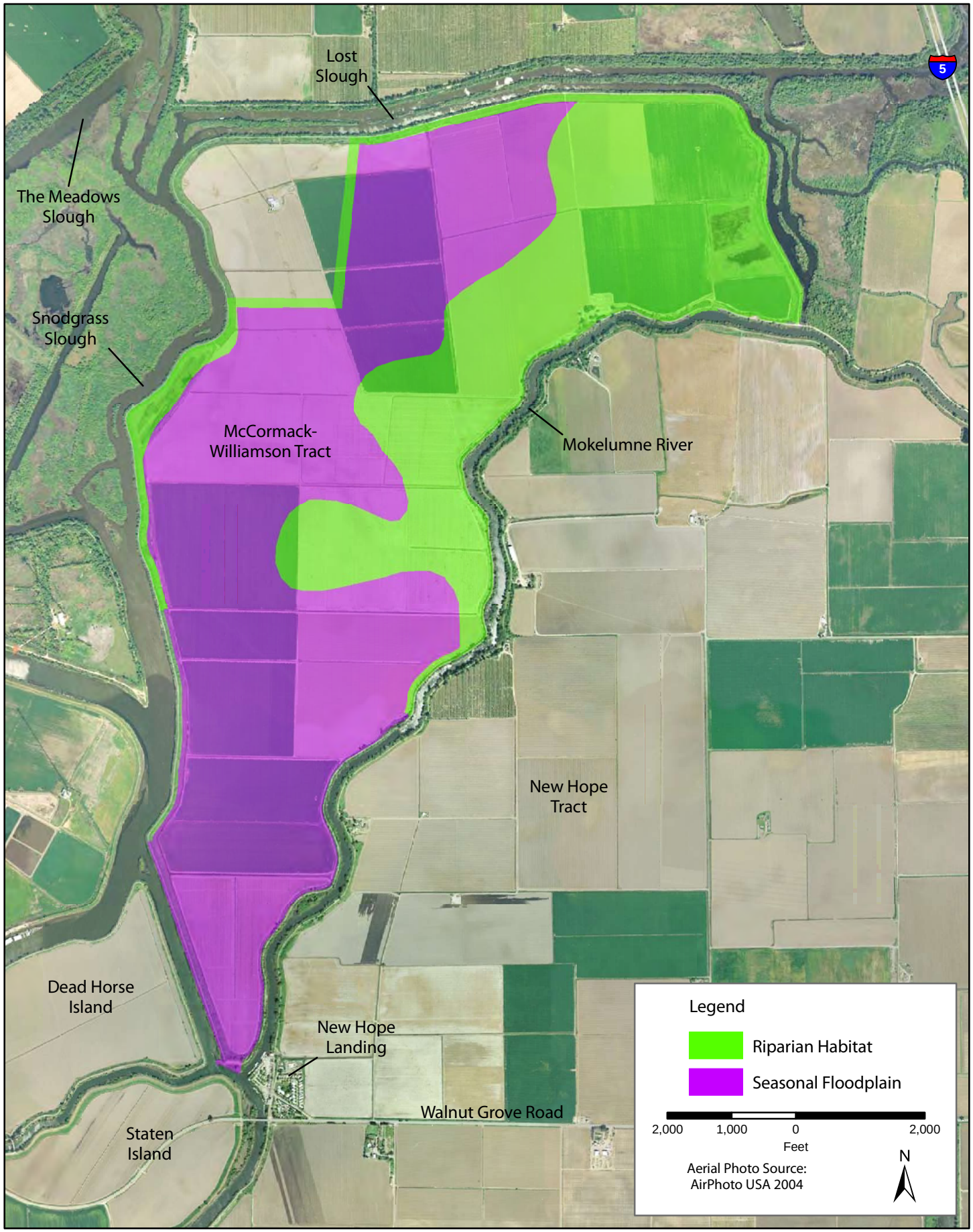
**Figure 4.1-5**
**Land Cover Types and Impact Areas on McCormack-Williamson Tract Under Alternative 1-B — Seasonal Floodplain Optimization**

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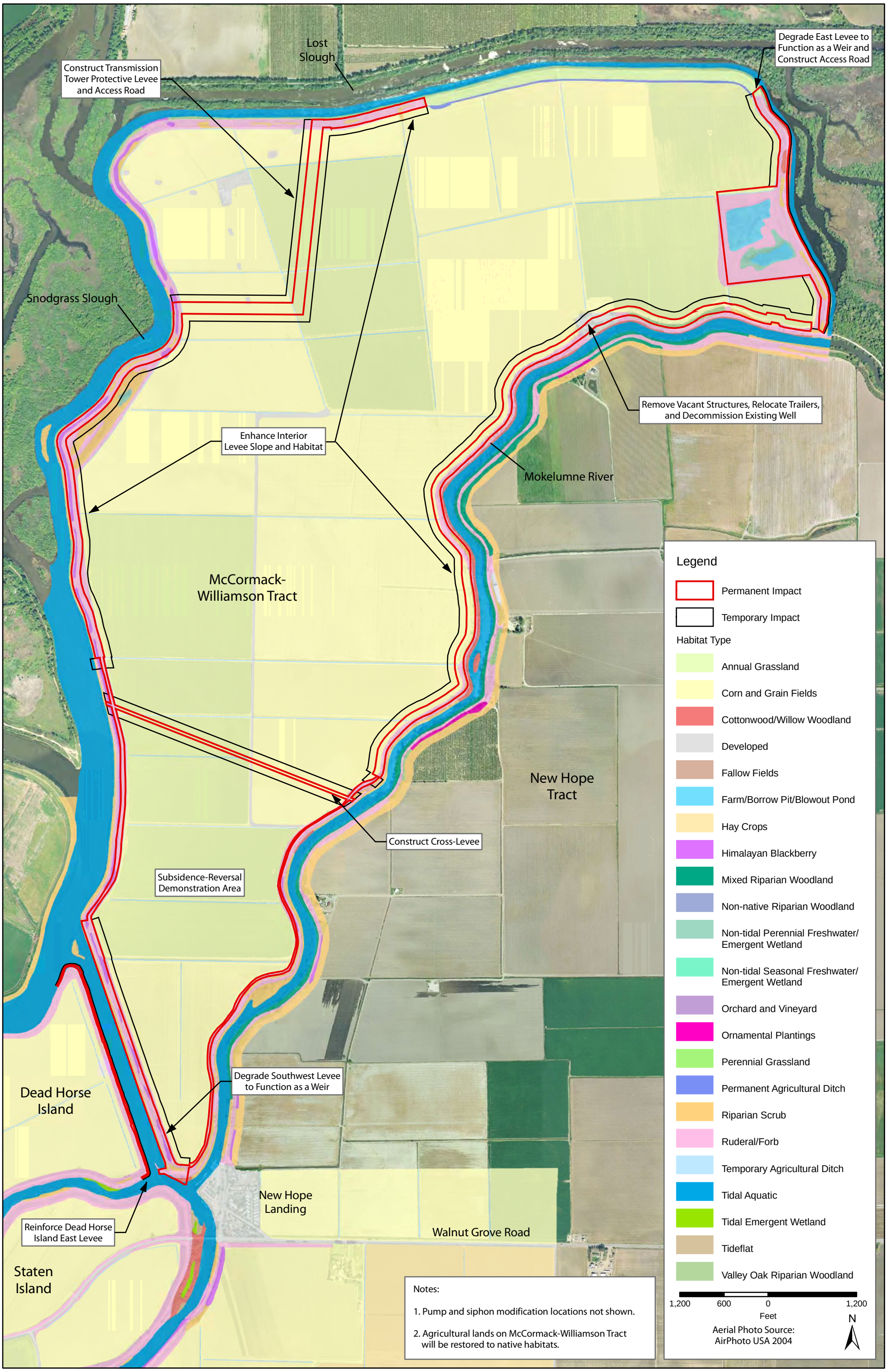
Jones & Stokes

**Figure 4.1-6**
**Anticipated Native Land Cover Types from Alternative 1-B — Seasonal Floodplain Optimization Plan**

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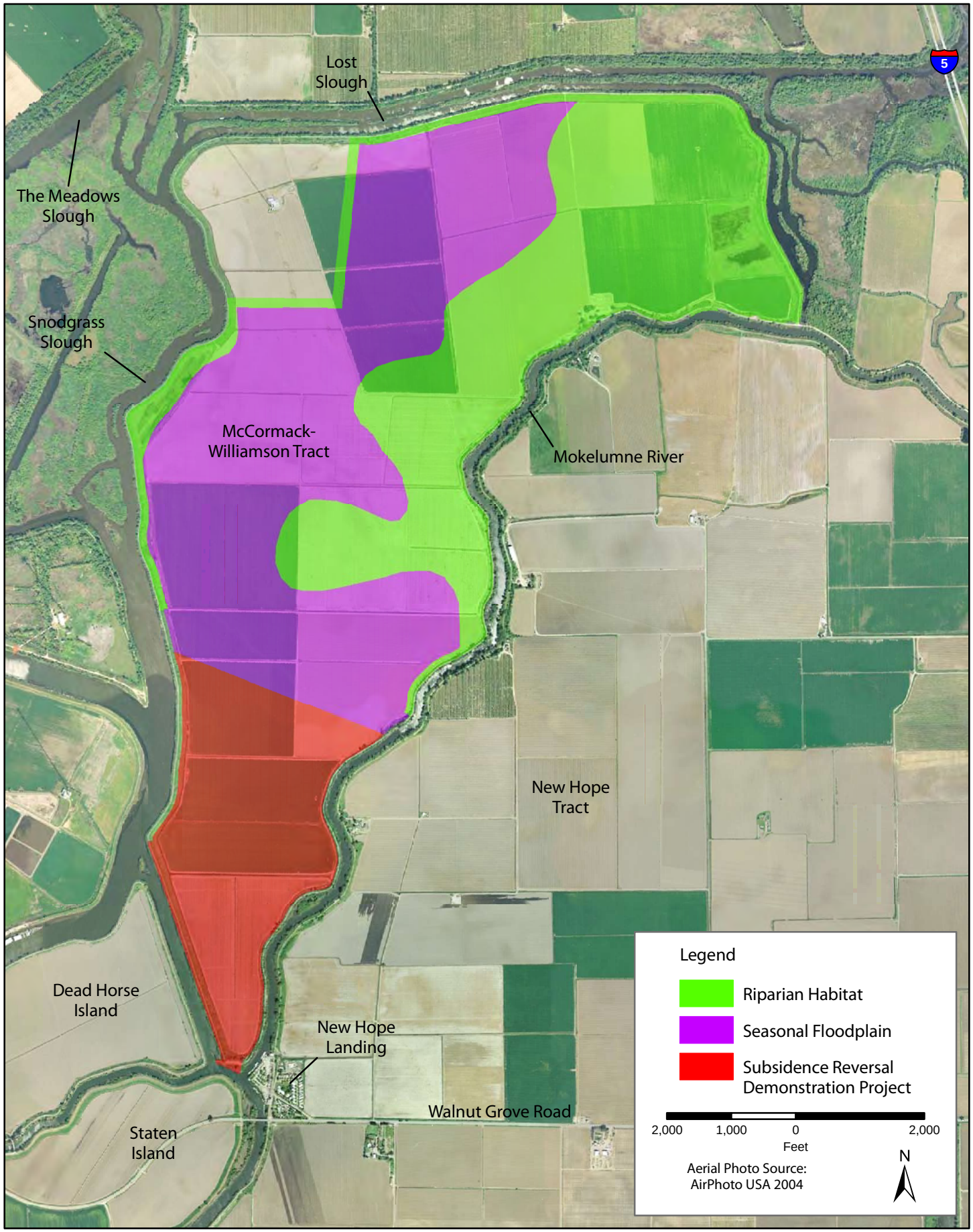
Jones & Stokes

**Figure 4.1-7**
**Land Cover Types and Impact Areas on McCormack-Williamson Tract Under Alternative 1-C — Seasonal Floodplain Enhancement and Subsidence Reversal**

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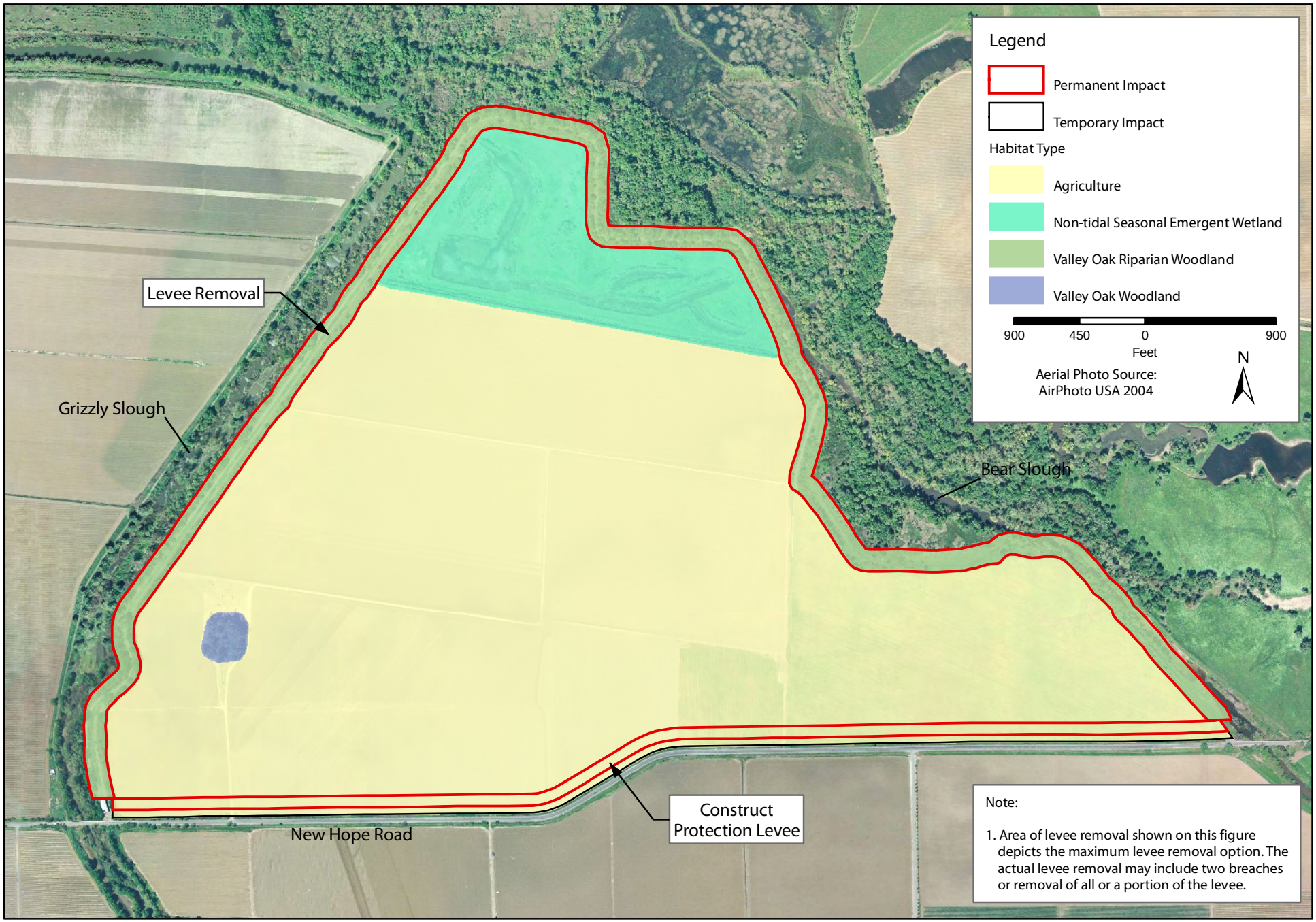
Jones & Stokes

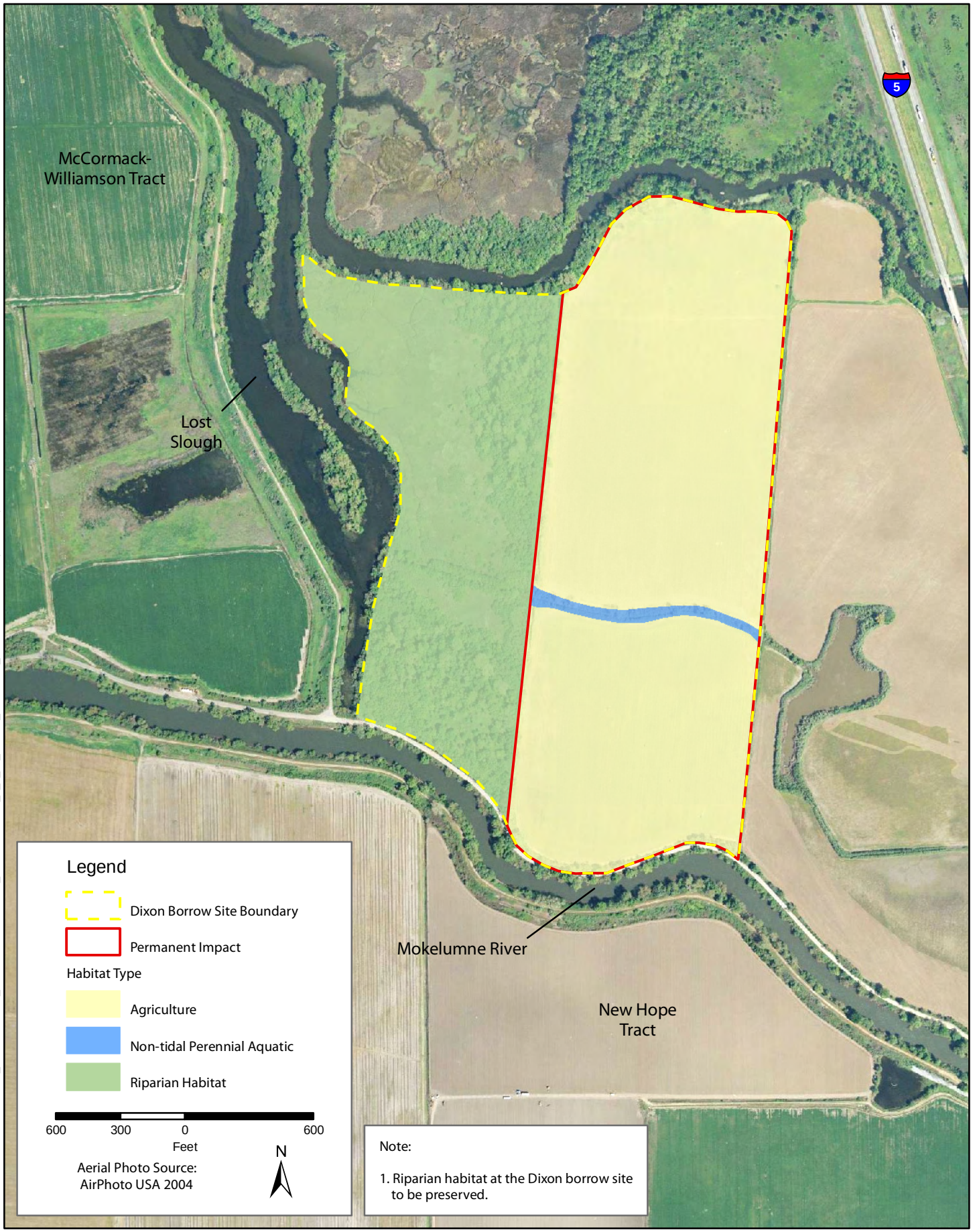
**Figure 4.1-8**
**Anticipated Native Land Cover Types from Alternative 1-C — Seasonal Floodplain and Subsidence Reversal Plan**




H:\GIS\PROJECTS\CALBAY_DELTA\01268_01\ARCMAP\ADEIR_FIGURES\FIG_4.1_9_GRIZZLY_IMPACTS.MXD LD (06-19-06)

Jones & Stokes

**Figure 4.1-9**
**Land Cover Types and Impact Areas on the Grizzly Slough Property**

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Jones & Stokes

**Figure 4.1-10**
**Land Cover Types and Impact Areas at the Dixon Borrow Site**

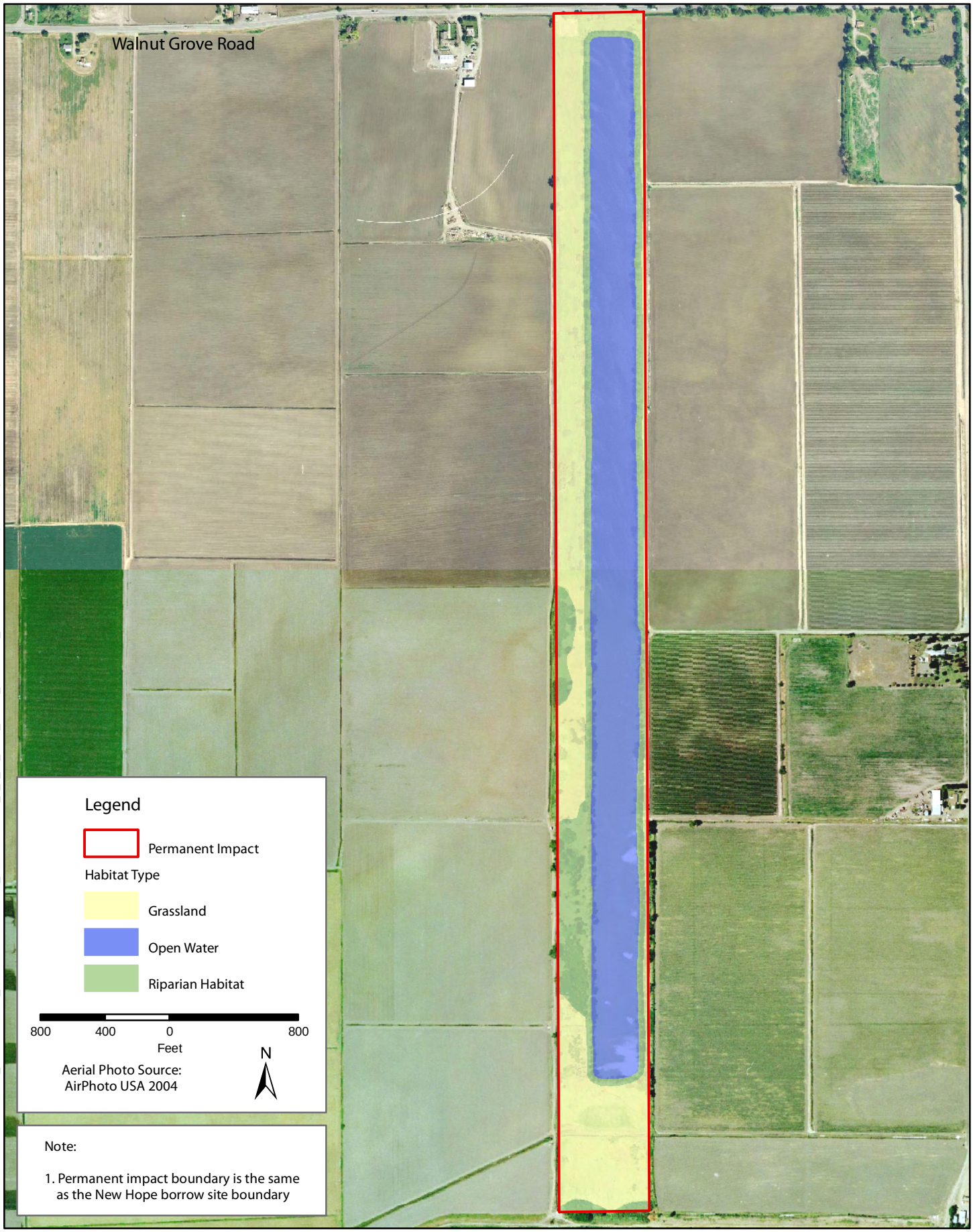


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**Figure 4.1-11**
**Land Cover Types and Impact Areas at the New Hope Borrow Site**

Georgiana Slough
Dead Horse Island
Degrade North Levee
New Hope Landing
Walnut Grove Road
New Hope Bridge
Miller's Ferry Bridge
Construct Inlet Weir and Road
New Hope Tract
Tyler Island
North Fork Mokelumne River
South Fork Mokelumne River
Reinforce Existing Levees
Staten Island
Construct Interior Detention Levee
Construct New Staten Island Road
Canal Ranch Tract
Detention Basin Outlet Weir
Pump Station (approximate location)

Legend

- Permanent Impact
- Temporary Impact

Habitat Type

- Annual Grassland
- Corn and Grain Fields
- Cottonwood/Willow Woodland
- Developed
- Fallow Fields
- Farm/Borrow Pit/Blowout Pond
- Hay Crops
- Himalayan Blackberry
- Mixed Riparian Woodland
- Non-native Riparian Woodland
- Non-tidal Perennial Freshwater/ Emergent Wetland
- Non-tidal Seasonal Freshwater/ Emergent Wetland
- Orchard and Vineyard
- Ornamental Plantings
- Perennial Grassland
- Permanent Agricultural Ditch
- Riparian Scrub
- Ruderal/Forb
- Temporary Agricultural Ditch
- Tidal Aquatic
- Tidal Emergent Wetland
- Tideflat
- Valley Oak Riparian Woodland

1,500 750 0 1,500
Feet

Aerial Photo Source:
AirPhoto USA 2004

N

Note:

1. Relocated structures and wildlife viewing area not shown.

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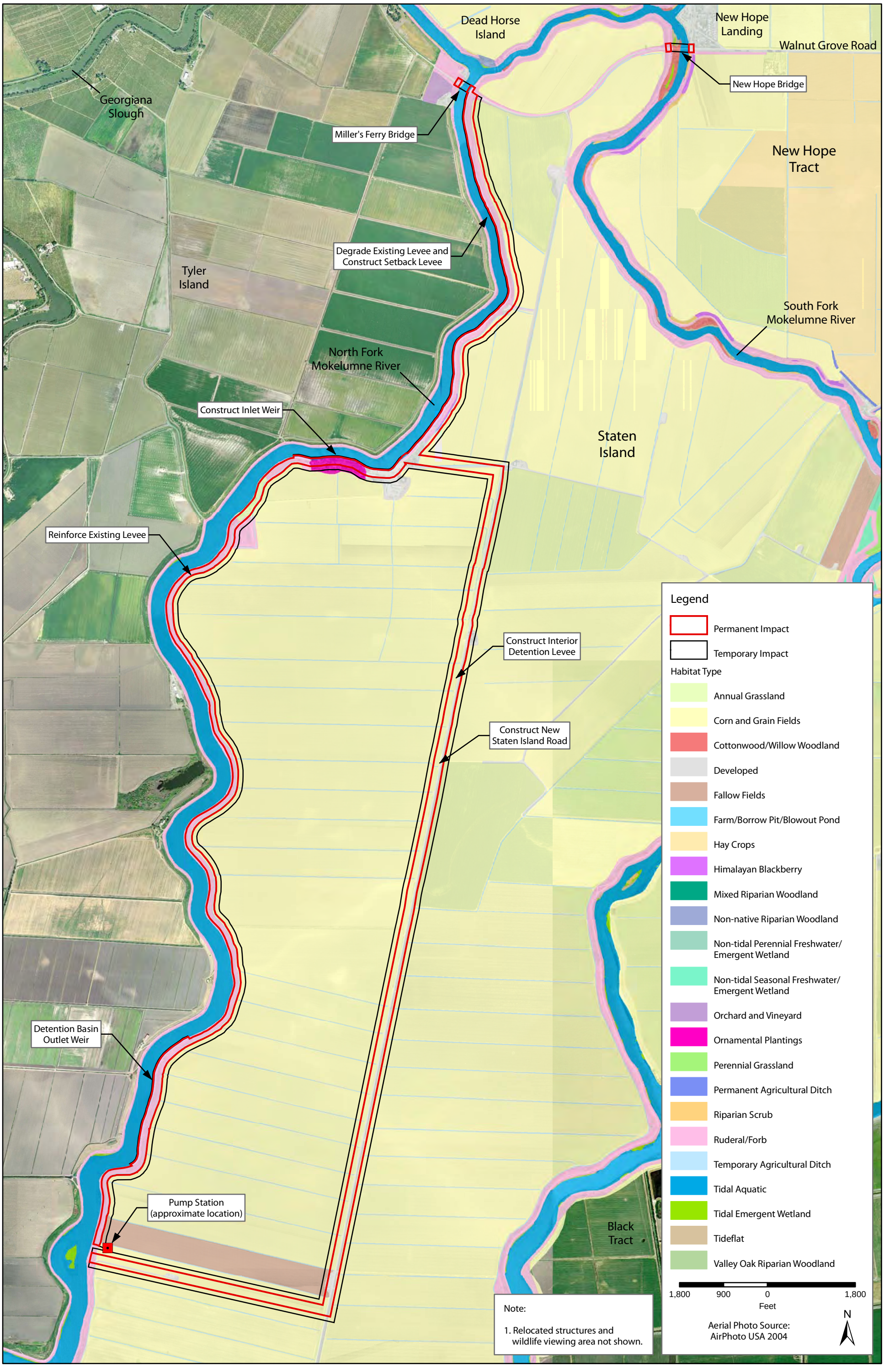
**Figure 4.1-12**
**Land Cover Types and Impact Areas Under Alternative 2-A — North Staten Detention**

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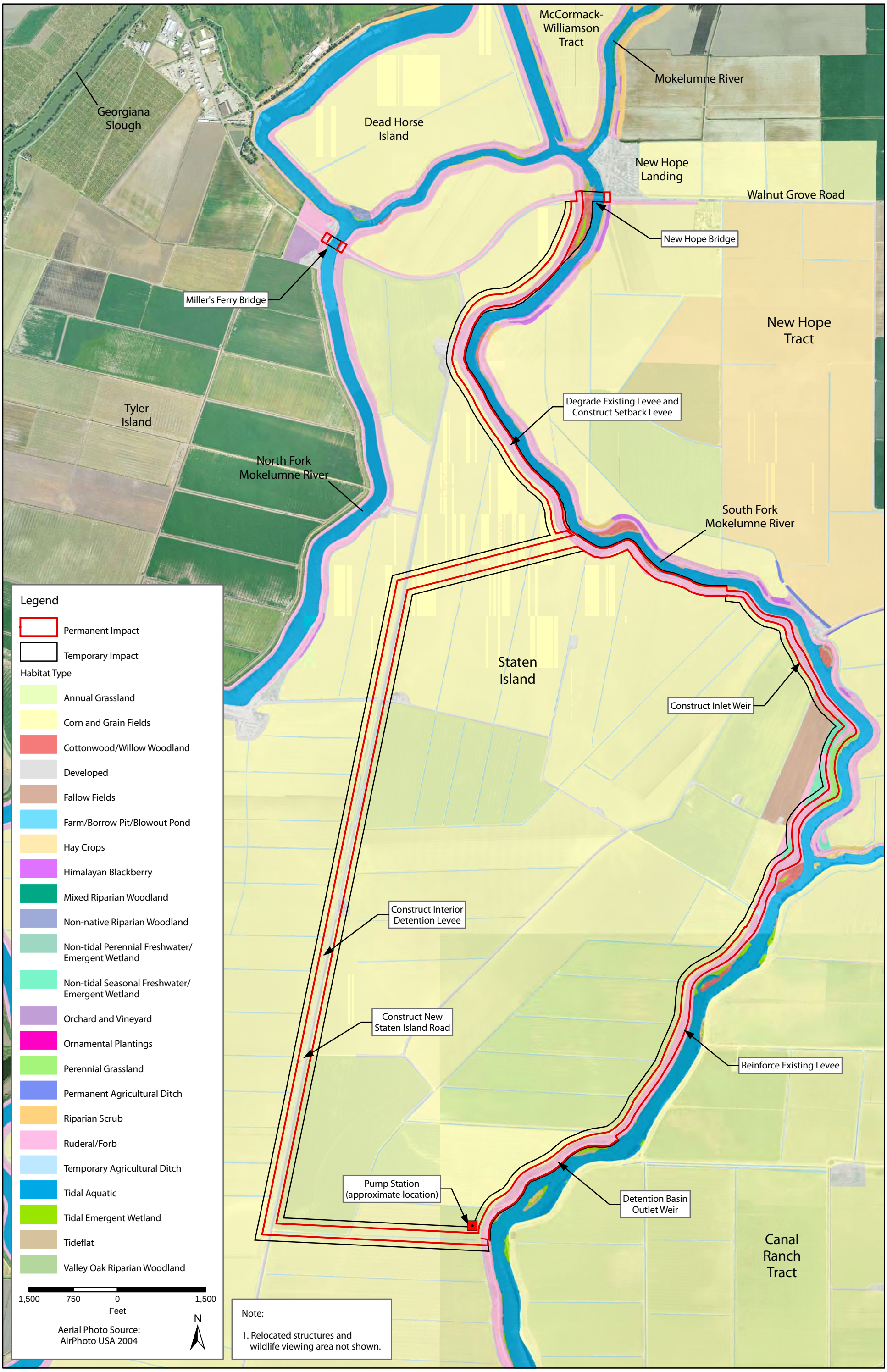
Jones & Stokes

**Figure 4.1-13**
**Land Cover Types and Impact Areas Under Alternative 2-B — West Staten Detention**




Jones & Stokes

**Figure 4.1-14**
**Land Cover Types and Impact Areas Under Alternative 2-C — East Staten Detention**

Legend

Permanent Impact

Temporary Impact

Habitat Type

Annual Grassland

Corn and Grain Fields

Cottonwood/Willow Woodland

Developed

Fallow Fields

Farm/Borrow Pit/Blowout Pond

Hay Crops

Himalayan Blackberry

Mixed Riparian Woodland

Non-native Riparian Woodland

Non-tidal Perennial Freshwater/ Emergent Wetland

Non-tidal Seasonal Freshwater/ Emergent Wetland

Orchard and Vineyard

Ornamental Plantings

Perennial Grassland

Permanent Agricultural Ditch

Riparian Scrub

Ruderal/Forb

Temporary Agricultural Ditch

Tidal Aquatic

Tidal Emergent Wetland

Tideflat

Valley Oak Riparian Woodland

4,300 2,150 0 4,300

Feet

Aerial Photo Source: AirPhoto USA 2004

N

Lost Slough

5

Sacramento River

McCormack-Williamson Tract

Walnut Grove

Delta Cross Channel

Mokelumne River

New Hope Tract

Dead Horse Island

Georgiana Slough

South Fork Mokelumne River

Tyler Island

North Fork Mokelumne River

Channel Dredge

Beaver Slough

Staten Island

Canal Ranch Tract

Hog Slough

Black Tract

Sycamore Slough

Levee Modifications (Typ.)

Terminous Tract

Bouldin Island

White Slough

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**Figure 4.1-15**

**Land Cover Types and Impact Areas Under Alternative 2-D — Dredging and Levee Modifications**

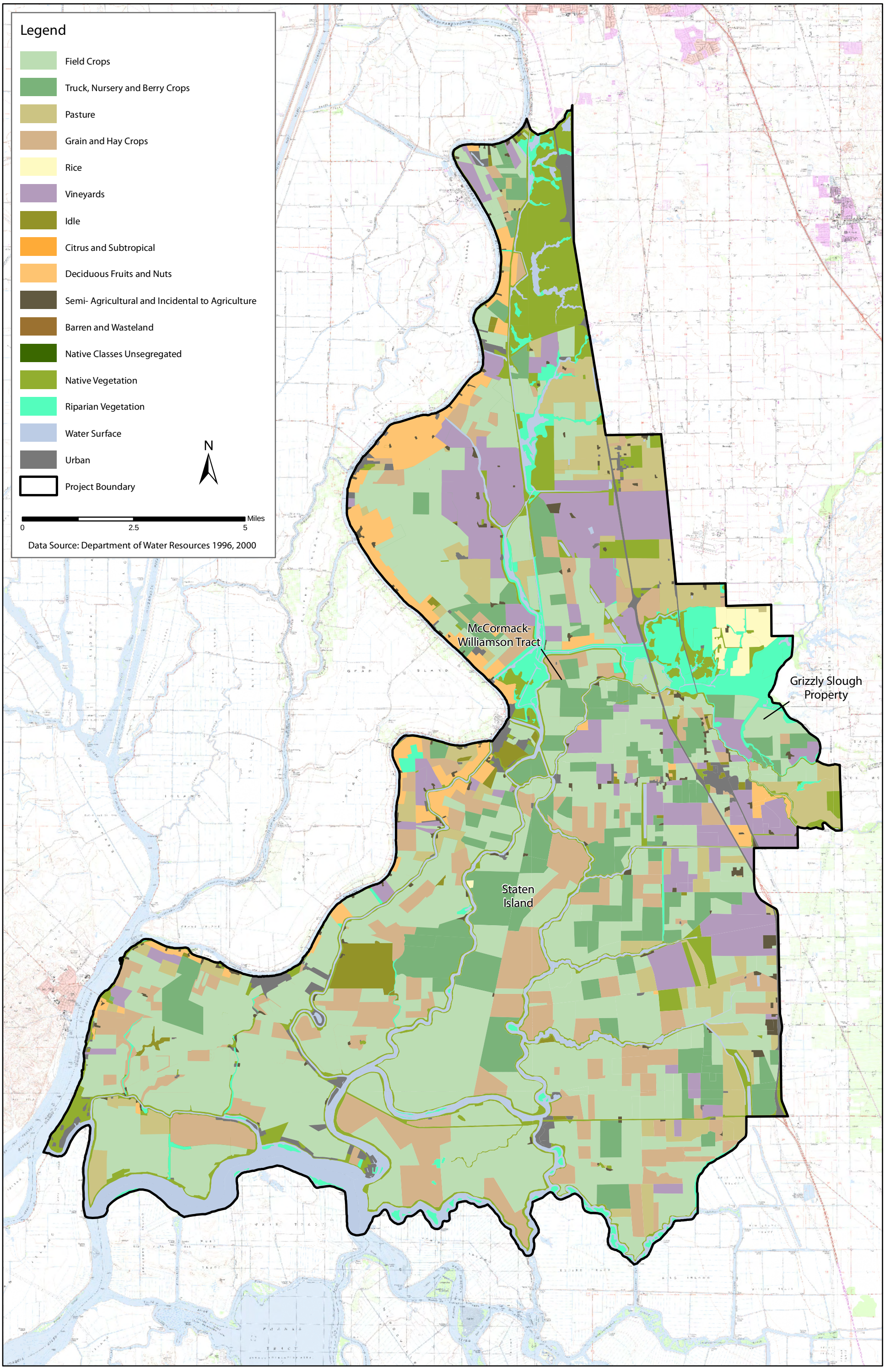


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**Figure 5.1-1**
**Crop Types and Land Use in the North Delta Project Area**

**Figure 5.5-1.** View of Wimpy's Marina, looking east from the Mokelumne River. Note boat launch ramp at left.

**Figure 5.5-2.** View of New Hope Landing, looking north from the Mokelumne River. Note low land surface elevation of recreational vehicle area at right.


**Figure 5.5-3.** View of New Hope Bridge from the South Fork of the Mokelumne River, looking north. Note Wimpy's/New Hope Marina complex visible beyond bridge. This bridge would be subject to retrofit or replacement under Alternatives 2-A through 2-C.


**Figure 5.5-4.** View of Millers Ferry Bridge, looking southeast at the intersection of Walnut Grove–Thornton Road and Old Walnut Grove–Thornton Road. This bridge would be subject to retrofit or replacement under Alternatives 2-A through 2-C.

**Figure 5.5-5.** View of typical anglers fishing for salmon on the Mokelumne River east of McCormack-Williamson Tract, looking north. The tree line across the middle of the photogtaph is the east levee of McCormack-Williamson Tract.

**Figure 5.5-6.** View of typical cruising boat in the South Fork Mokelumne River.

**Figure 5.5-7.** Typical view of interior of McCormack-Williamson Tract, looking west from east levee. Note transmission tower near center of photo in background (faintly visible, located near the Delta Meadows property and community of Locke. Ditch and utility poles in the foreground are part of infrastructure to support agricultural operations and would be modified to support habitat as part of Alternatives 1-A through 1-C.

**Figure 5.5-8.** View of McCormack-Williamson Tract, looking northwest from east levee. Note KCRA-3 transmission tower in middle ground (right of center). More distant transmission tower at center (faintly visible) is near Twin Cities Road. Note road and utility lines in foreground. The KCRA-3 transmission tower would be protected by a new levee and the road and utility lines would be modified under Alternatives 1-A through 1-C.

**Figure 5-5.9.** View of McCormack-Williamson Tract east levee, looking north. This levee would be degraded and armored as a weir under Alternatives 1-A through 1-C.

**Figure 5-5.10.** View of McCormack-Williamson Tract southwest levee, looking northwest. This levee would be removed or degraded and armored as a weir under Alternatives 1-A through 1-C.

**Figure 5.5-11.** View of McCormack-Williamson Tract, looking south from east levee (land side). Note drainage pump station at southern end of the tract in foreground, pumping return water to the Mokelumne River. Also note mature vegetation on the land side of the levee. The pump station and vegetation are subject to modification under Alternatives 1-A through 1-C.

**Figure 5.5-12.** View of McCormack-Williamson Tract, looking south from east levee (waterside). Note irrigation siphon in foreground, pumping irrigation water from the Mokelumne River. Also note mature vegetation on the waterside of the levee. The siphon and vegetation are subject to modification under Alternatives 1-A through 1-C.

**Figure 5.5-13.** View of riparian vegetation in the Delta Meadows area, typical along Lost Slough.

**Figure 5.5-14.** View of Dead Horse Island (flooded area between the levees running through the middle of the photo), looking west from the southwest levee of McCormack-Williamson Tract. Note east levee in foreground, which would be armored under Alternatives 1-A through 1-C. Controlled winter flooding (such as seen here) serves to decompose crop stubble, balance hydrostatic forces on the levee, and provide habitat.

**Figure 5.5-15.** Typical view of interior of Staten Island, looking northeast from west levee. Note farm headquarters and residences along horizon, which would be relocated under Alternative 2-B.

**Figure 5.5-16.** View of Staten Island Road, looking northeast toward intersection with Walnut Grove-Thornton Road (at stop sign visible at center of photo, being approached by white truck). The grain dryer facility is partially visible at left. KCRA-3 transmission tower is faintly visible in background at right center of photo. This area is subject to modification under Alternatives 2-A through 2-C.

**Figure 5.5-17.** View of SR 12 bridge at community of Terminous, looking southeast from south levee of Staten Island. Note South Fork Mokelumne River in foreground. This levee and the corresponding levee on the opposite bank would be subject to modification under Alternative 2-D.

**Figure 5.5-18.** View of greater sand hill cranes (foreground) taking flight on Staten Island under winter conditions when the fields are flooded for habitat.

**Figure 5.5-19.** View of New Hope Road, looking east. Grizzly Slough site is to the left, with trees along horizon forming the northeastern boundary. Note vegetation in foreground roadside drainage ditch.

**Figure 5.5-20.** View of Grizzly Slough site, looking north from New Hope Road. Note trees along horizon forming northwestern and northeastern boundary. Trees at center are included within the site. Member of the consultant team are in the foreground, from left to right: Marina Pelosi (noise analyst), Shannon Hatcher (air quality analyst), Harry Oakes (wildlife biologist), Jeff Peters (geomorphologist), Joy Nishida (botanist), and Martin Koenig (fish biologist).