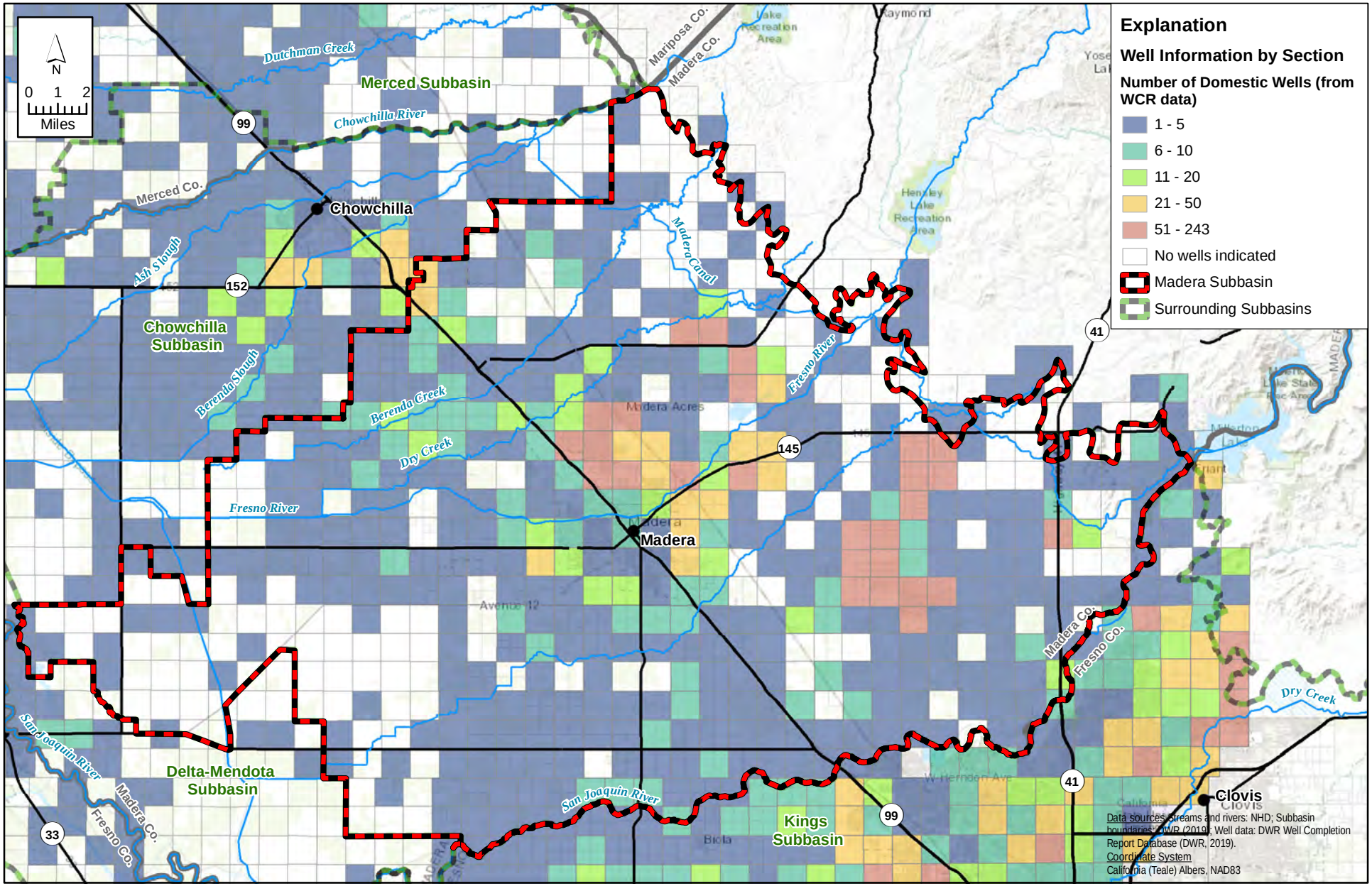

X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-5 Madera Subbasin Wells By Section Dom Well Count.mxd

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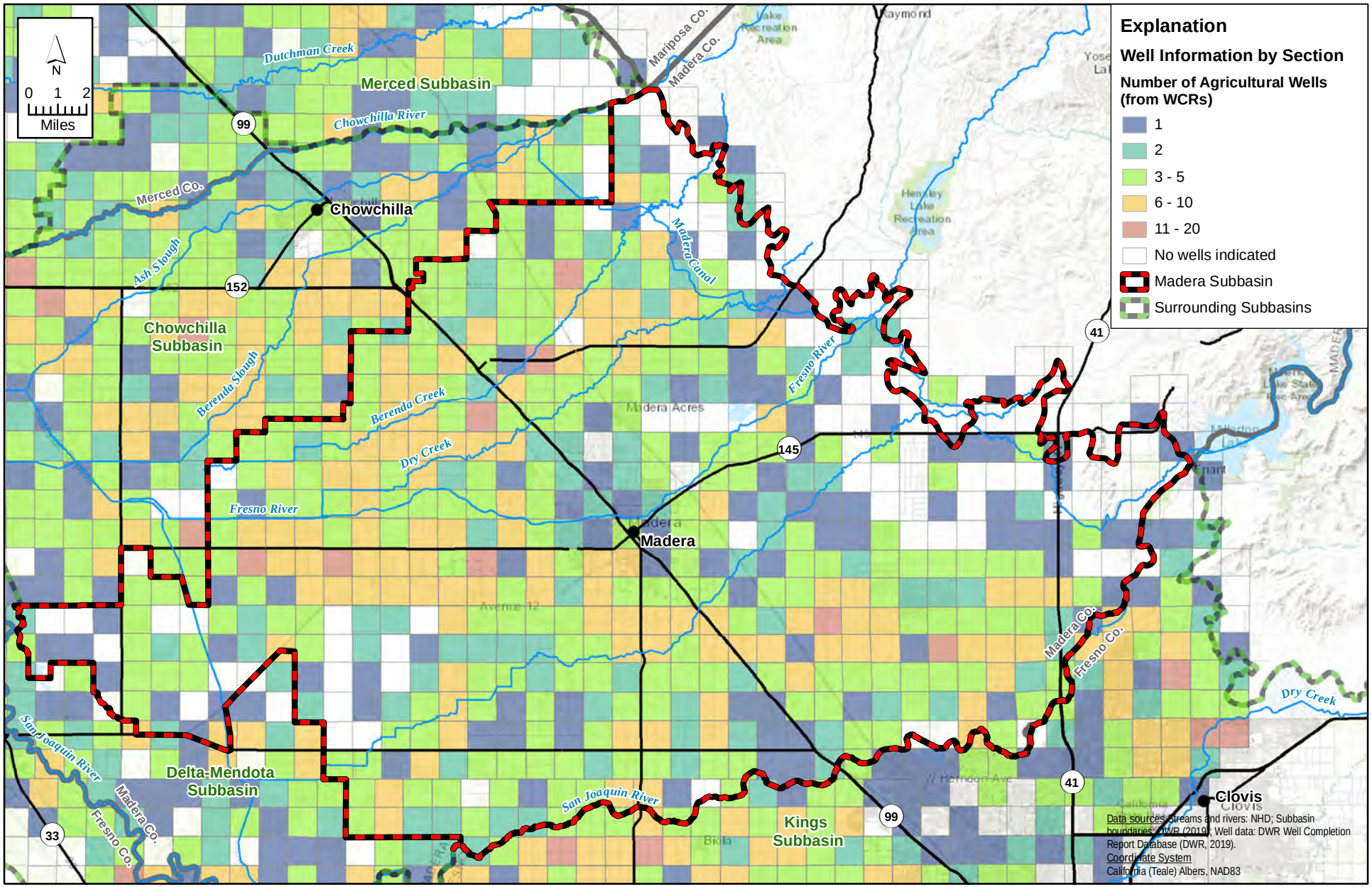
FIGURE 2-5
Map of Well Information by Section: Number of Domestic Wells (from WCR data)

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-6 Madera Subbasin Wells By Section Ag Well Count.mxd

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FIGURE 2-6
Map of Well Information by Section: Number of Agricultural Wells (from WCR data)

Madera Subbasin
Groundwater Sustainability Plan

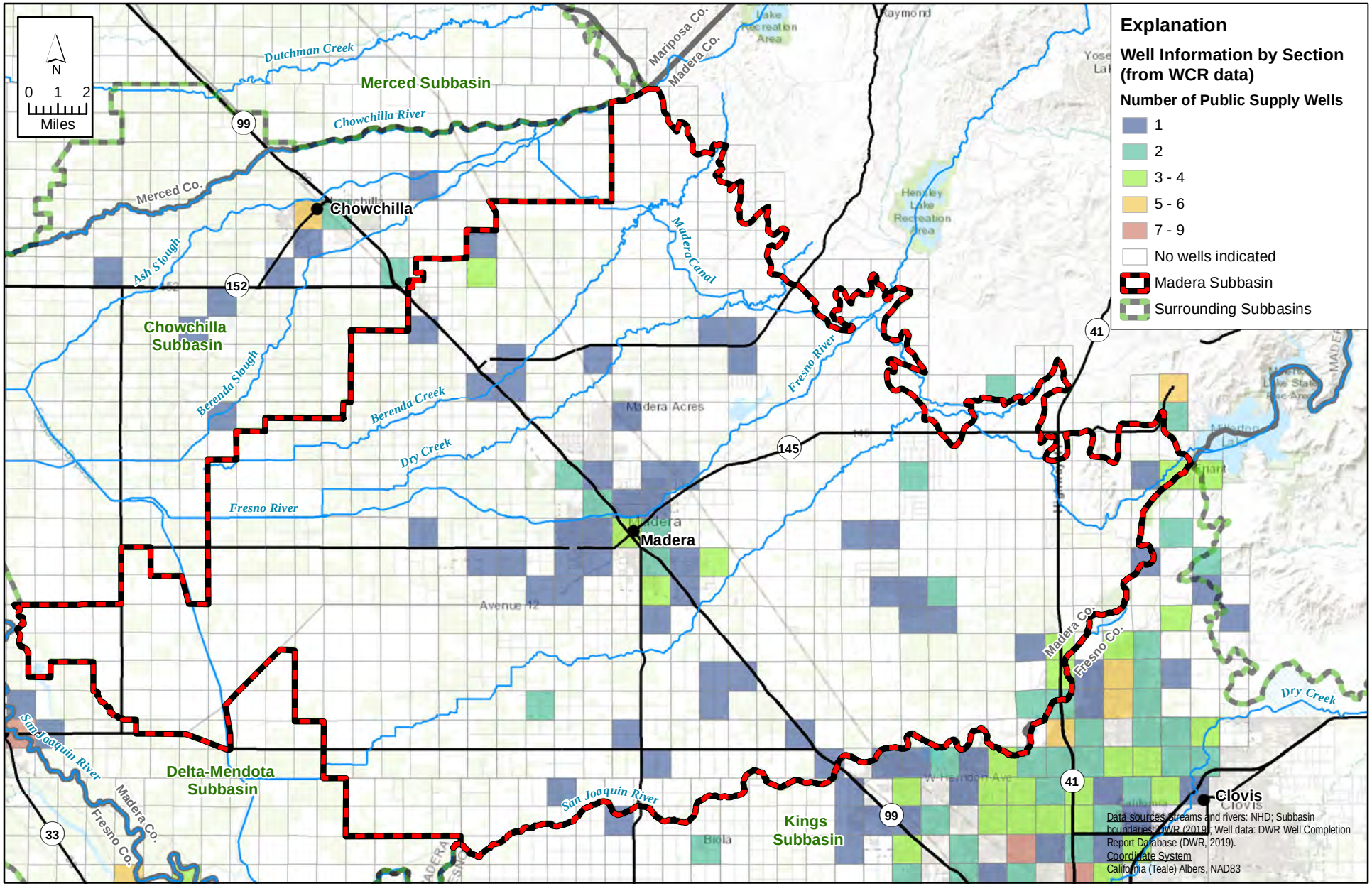

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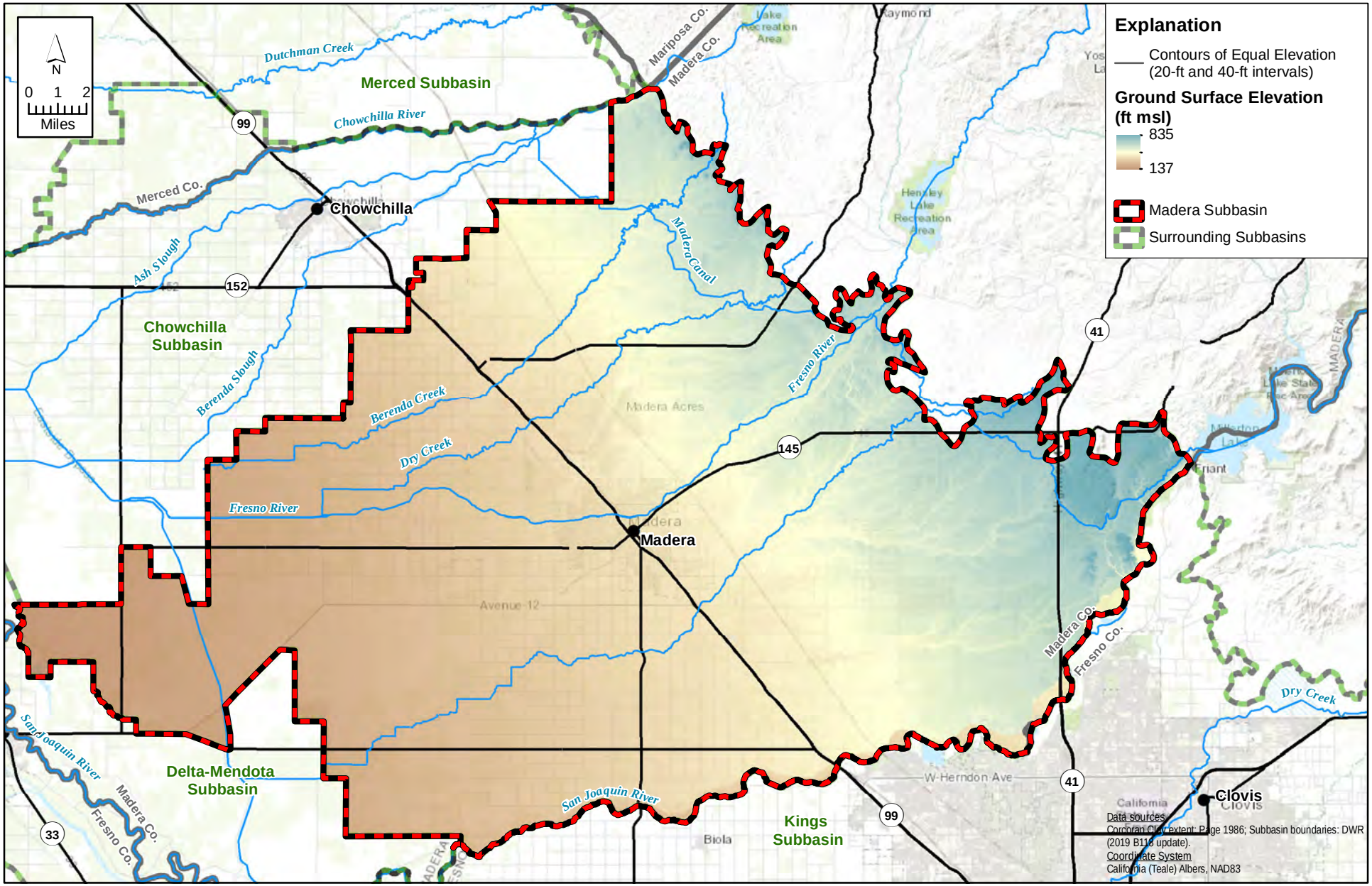
FIGURE 2-7
Map of Well Information by Section: Number of Public Supply Wells (from WCR data)

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-10 Madera Subbasin Topographic Map.mxd

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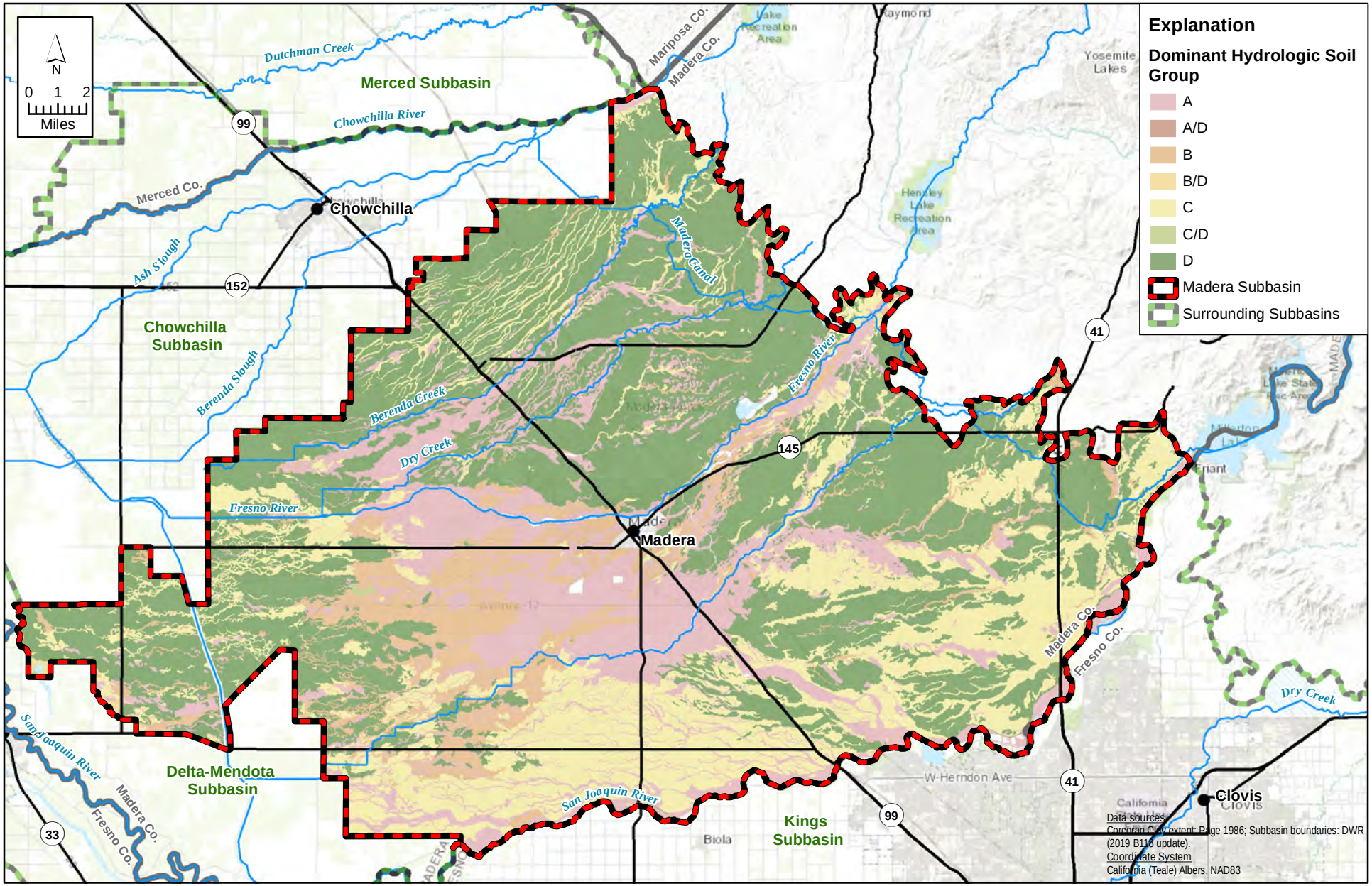
FIGURE 2-10

Topographic Map

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-11 Madera Subbasin Soil Unit Map.mxd

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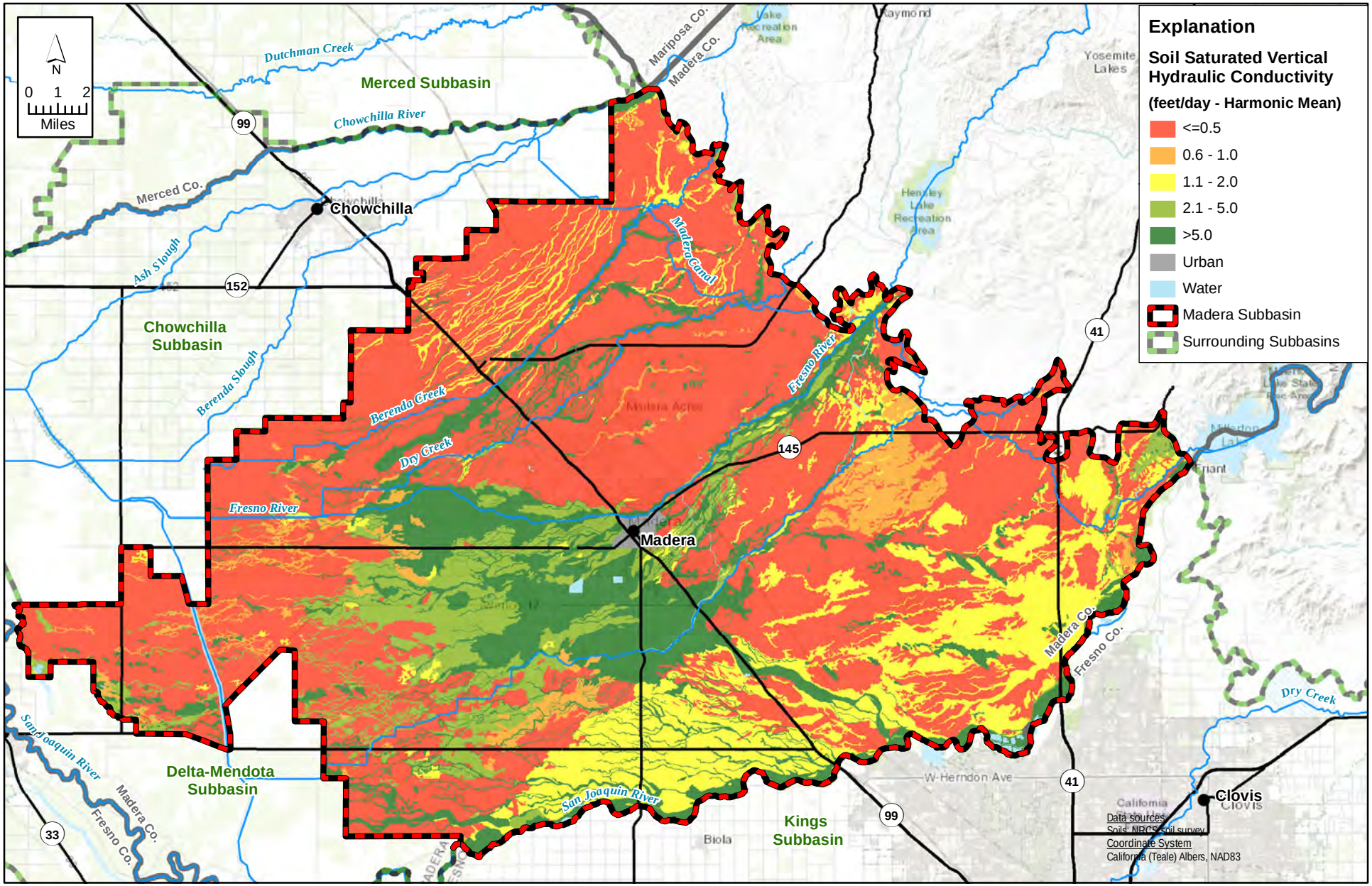
FIGURE 2-11

Soil Hydrologic Units Map

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-12 Madera Subbasin Soil Hydraulic Conductivity Map.mxd

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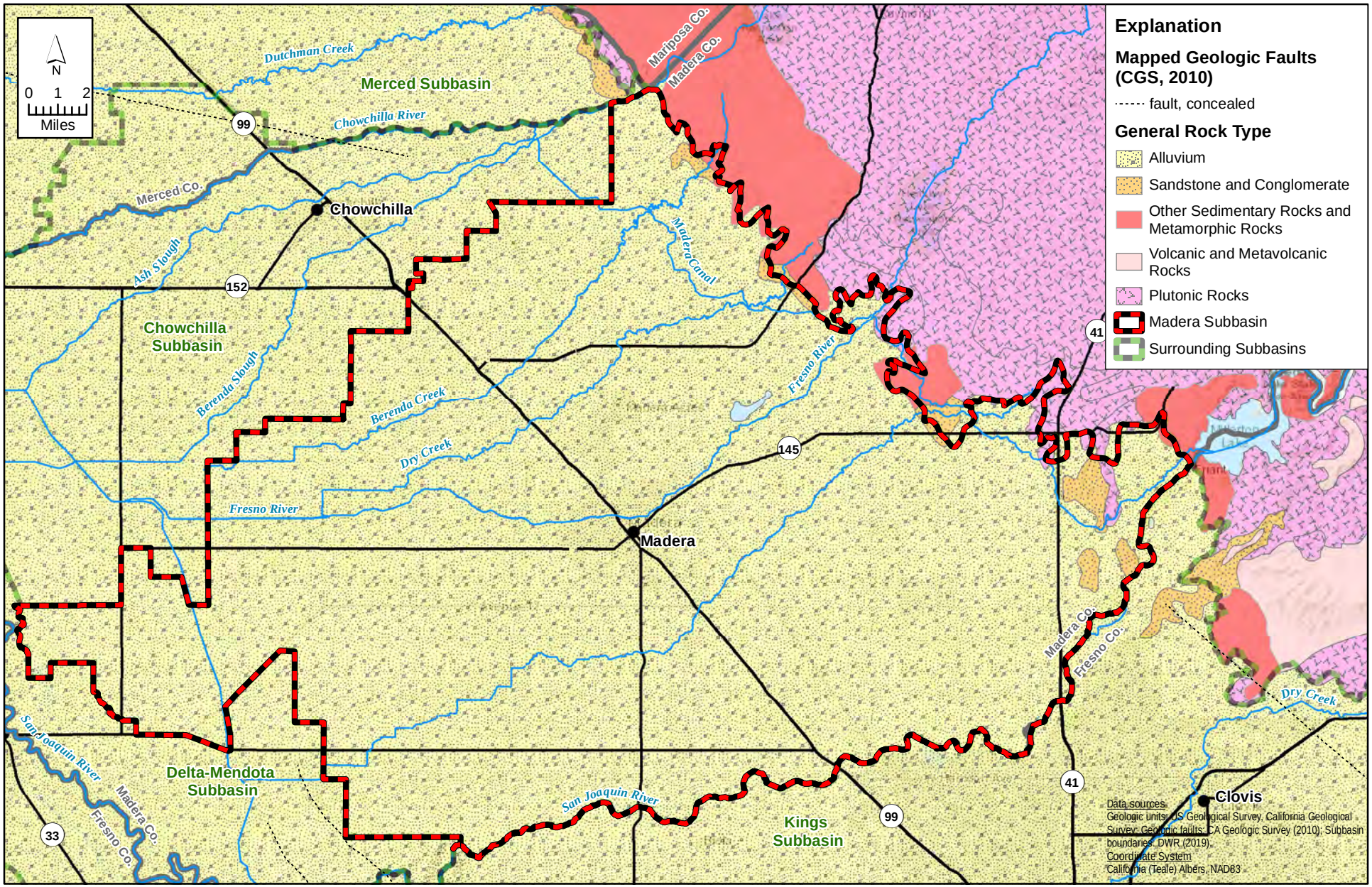
FIGURE 2-12

Soil Hydraulic Conductivity Map

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-13 Madera Subbasin General Geologic Map.mxd

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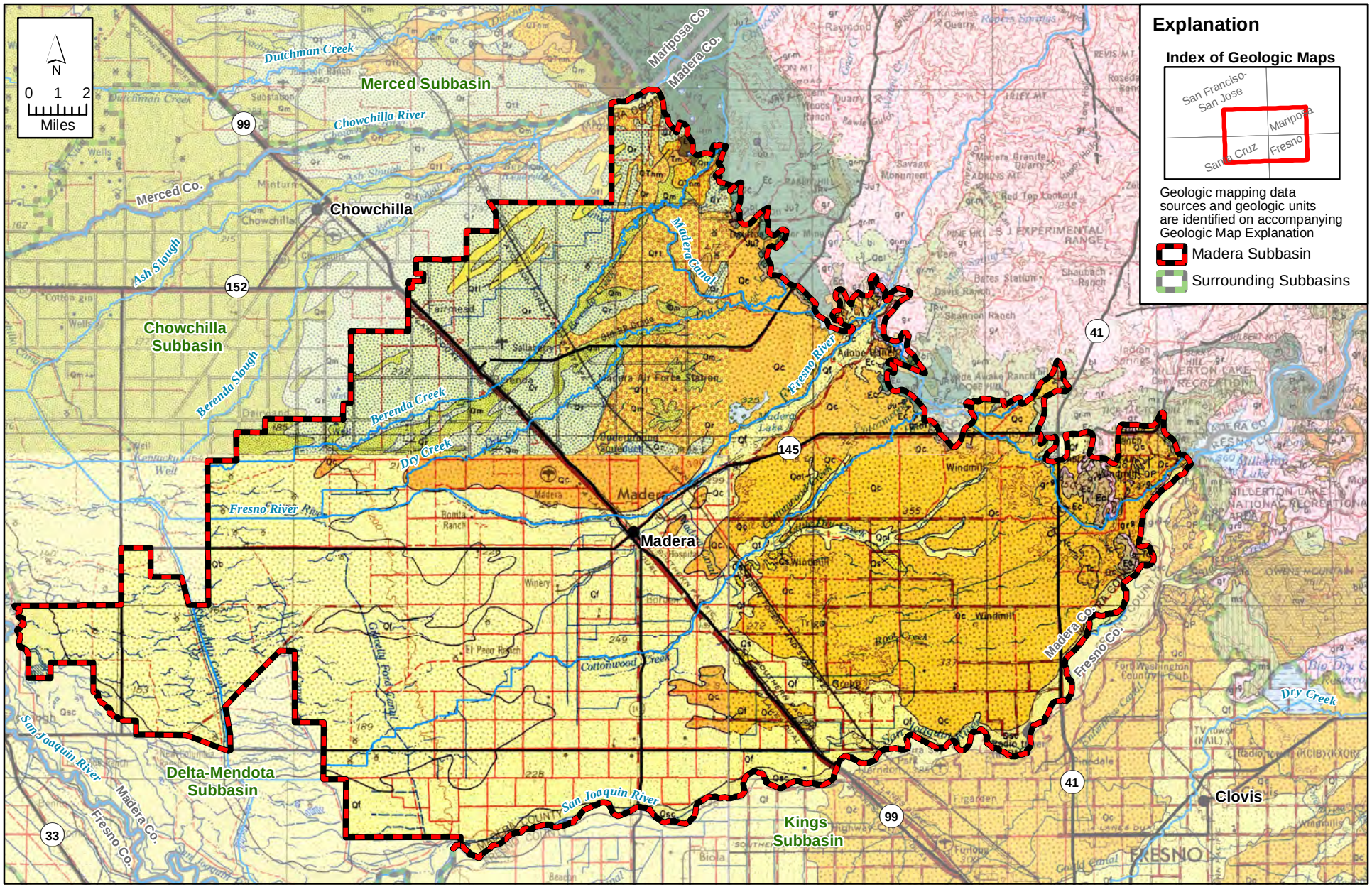
FIGURE 2-13

General Geologic Map

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-14a Madera Subbasin Surficial Geology Map.mxd

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FIGURE 2-14

Surficial Geology Map

Madera Subbasin
Groundwater Sustainability Plan

Compiled Geologic Map Explanation
San Francisco - San Jose Quadrangle

- Q — Alluvium
- Qdp — Dos Palos Alluvium
- Qf — Alluvial fan deposits
- Qsl — San Luis Ranch Alluvium
- Qp — Patterson Alluvium
- Qtl — Turlock Lake Formation *(Nonmarine sand, silt, and gravel)*
- Pl — Laguna Formation *(Consolidated alluvium)*
- Qm — Modesto Formation
- Qr — Riverbank Formation
- Qlb — Los Banos Alluvium
- QTnm — North Merced Gravel *(Thin pediment veneer)*
- Jjp — Jasper Point Formation *(Chert, tuff, pillow basalt; marine)*
- ms — Metasedimentary rocks*
- ls — Crystalline limestone and dolomite*
- Pzcc — Calaveras Complex *(Metasedimentary rocks)*
- mv — Metavolcanic rocks*
- Mtm — Table Mountain Latite
- Tm — Mehrten Formation *(Andesitic conglomerate)*
- Tvs — Valley Springs Formation *(Rhyolitic tuff and sedimentary rocks)*
- Ei — Ione Formation *(Quartzose sandstone and kaolinitic clay; mostly nonmarine)*
- Tg — "Auriferous" Gravels
- Pl — Locatelli Formation *(Marine sandstone and conglomerate)*
- Kl — Lower Cretaceous marine sandstone and shale
- Mzg — Granitic rocks
- Mzgb — Gabbroic rocks
- Um — Ultramafic rocks
- Jm — Mariposa Formation *(Slate, graywacke, and conglomerate; marine)*
- Jsm — Salt Springs and Merced Falls Slates
- Jms — Jurassic(?) metasedimentary rocks
- Jch — Copper Hill Volcanics
- Jlr — Logtown Ridge Volcanics
- Jgo — Gopher Ridge Volcanics
- Jpb — Penon Blanco Volcanics
- Jmv — Jurassic metavolcanic rocks

Santa Cruz, Mariposa, and Fresno Quadrangles

- Qal — Alluvium
- Qsc — Stream channel deposits
- Qf — Fan deposits
- Qb — Basin deposits
  (GREAT VALLEY)
- Qc — Pleistocene nonmarine
- QP — Plio-Pleistocene nonmarine
- Qpv — Pleistocene volcanic: Q_{pv}^{r} —rhyolite; Q_{pv}^{a} —andesite; Q_{pv}^{b} —basalt; Q_{pv}^{p} —pyroclastic rocks
- Tc — Tertiary nonmarine
- Pmv — Permian metavolcanic rocks
- Ec — Eocene nonmarine
- E — Eocene marine
- Tv — Tertiary volcanic: T_v^{r} —rhyolite; T_v^{a} —andesite; T_v^{b} —basalt; T_v^{p} —pyroclastic rocks
- Ju — Upper Jurassic marine
- m / ls — Pre-Cretaceous metamorphic rocks (ls = limestone or dolomite)
- ms — Pre-Cretaceous metasedimentary rocks
- gr-m — Pre-Cenozoic granitic and metamorphic rocks
- Pv — Paleozoic metavolcanic rocks
- Cv — Carboniferous metavolcanic rocks

Geologic Map compiled from:

1. Wagner, D.L., Bortugno, E.J., and Mc Junkin, R.D., 1991, Geologic Map of the San Francisco - San Jose Quadrangle, California Geological Survey, Regional Geologic Map No. 5A, 1:250,000 scale.
2. Jennings, C.W. and Strand, R.G., 1958, Geologic Atlas of California - Santa Cruz Quadrangle, California Geological Survey, Geologic Atlas of California Map No. 020, 1:250,000 scale.
3. Strand, R.G., 1967, Geologic Atlas of California - Mariposa Quadrangle, California Geological Survey, Geologic Atlas of California Map No. 009, 1:250,000 scale.
4. Matthews, R.A. and Burnett, J.L., 1965, Geologic Atlas of California - Fresno Quadrangle, California Geological Survey, Geologic Atlas of California Map No. 005, 1:250,000 scale.

X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-14b Madera Subbasin Surficial Geology Map Explanation.mxd

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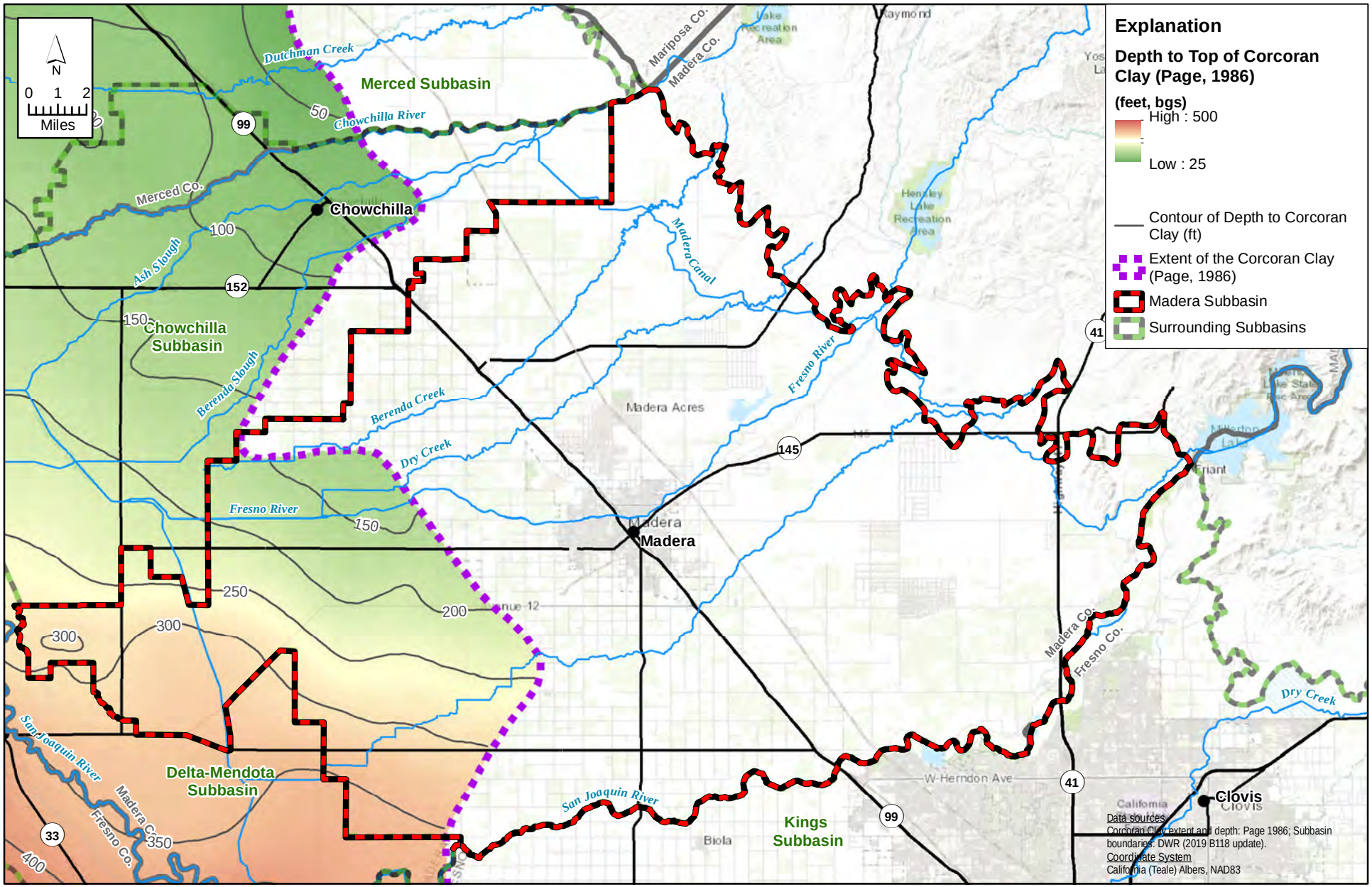
FIGURE 2-14 EXPLANATION

Surficial Geology Map Explanation

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-15 Madera Subbasin Extent and Depth of Corcoran Clay.mxd

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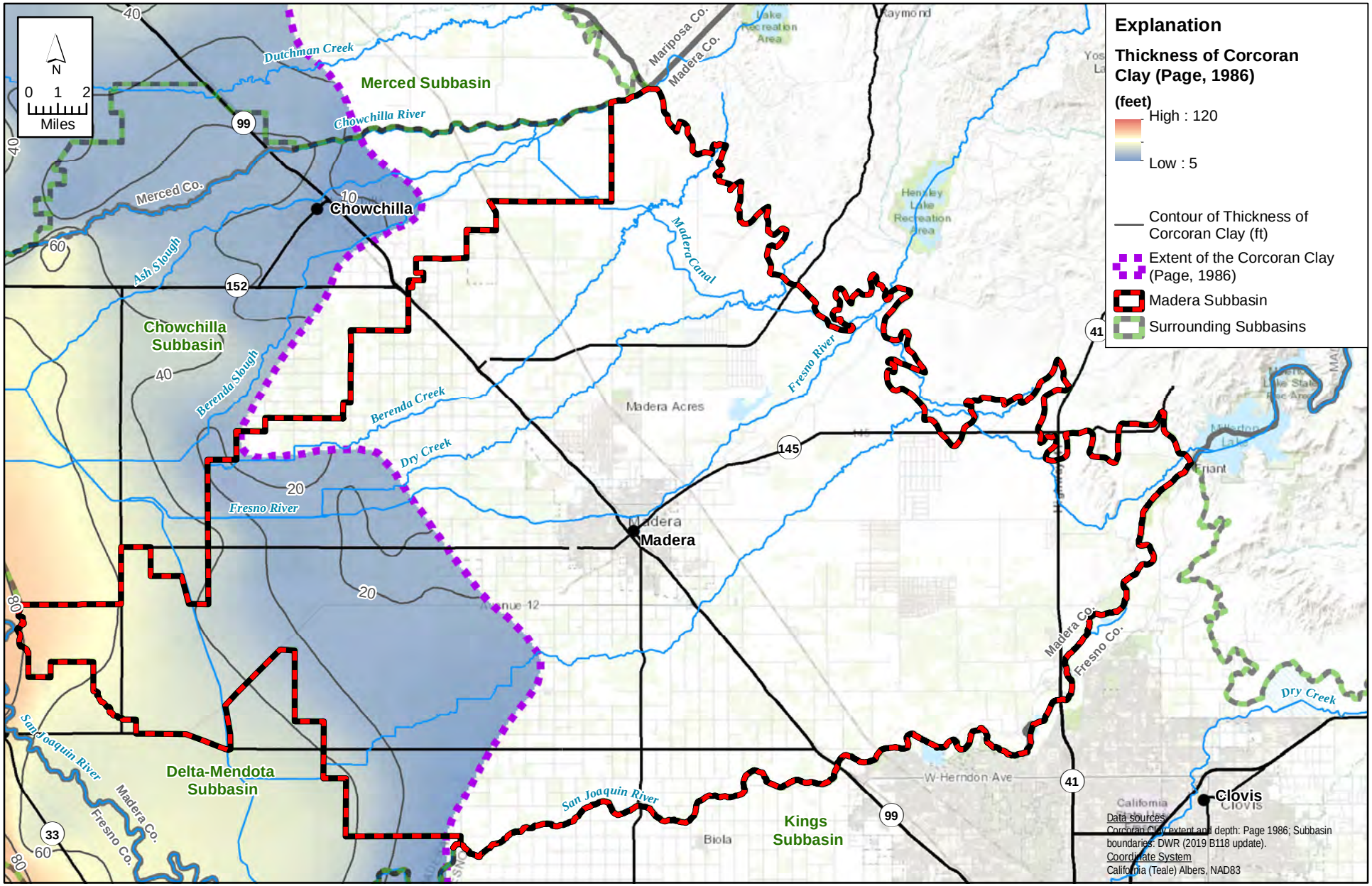
FIGURE 2-15
Extent and Depth of the Corcoran Clay: After Page (1986)

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-16 Madera Subbasin Thickness of Corcoran Clay.mxd

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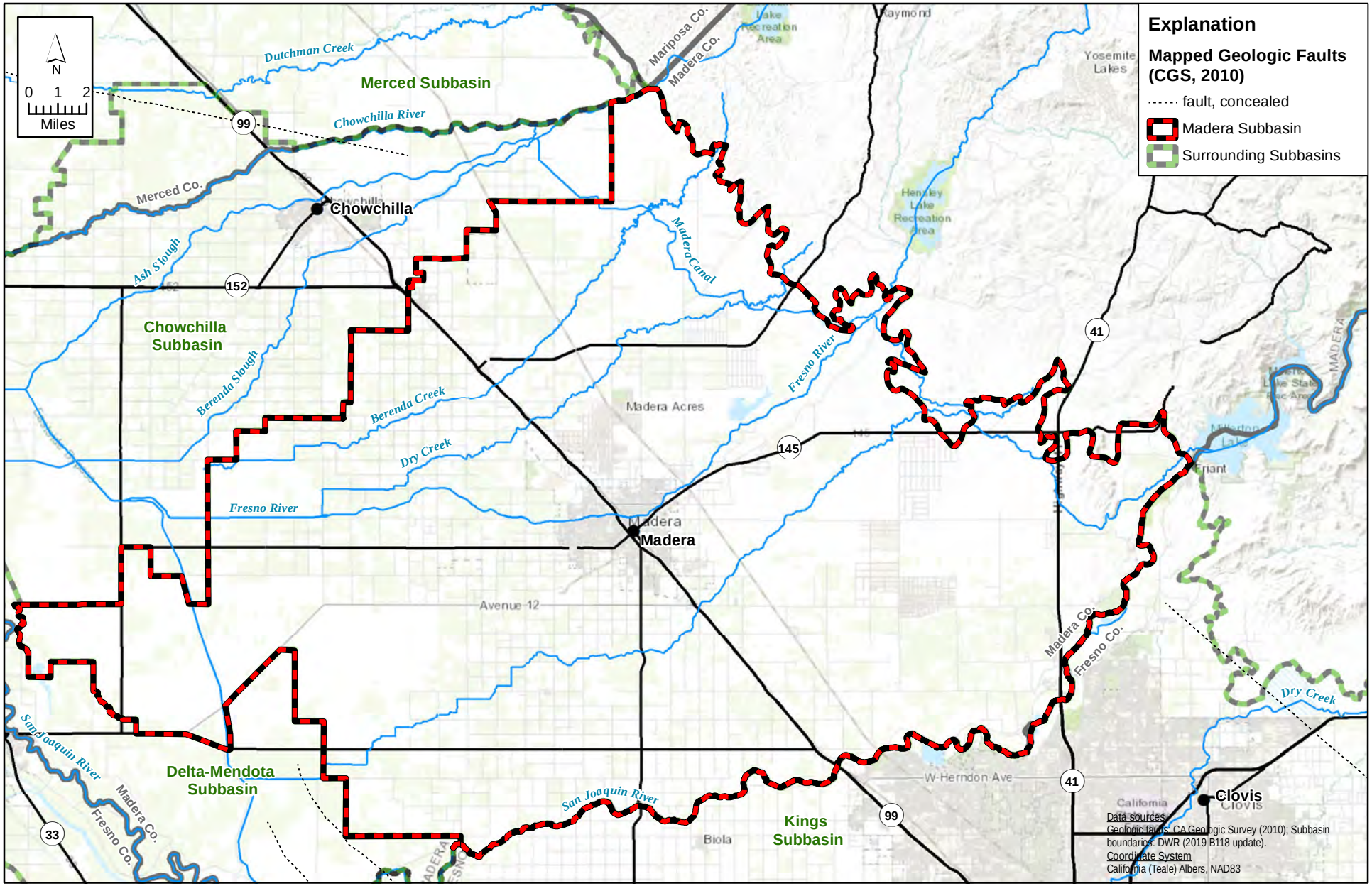
FIGURE 2-16
Thickness of the Corcoran Clay: After Page (1986)

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-17 Madera Subbasin Geologic Fault Map.mxd

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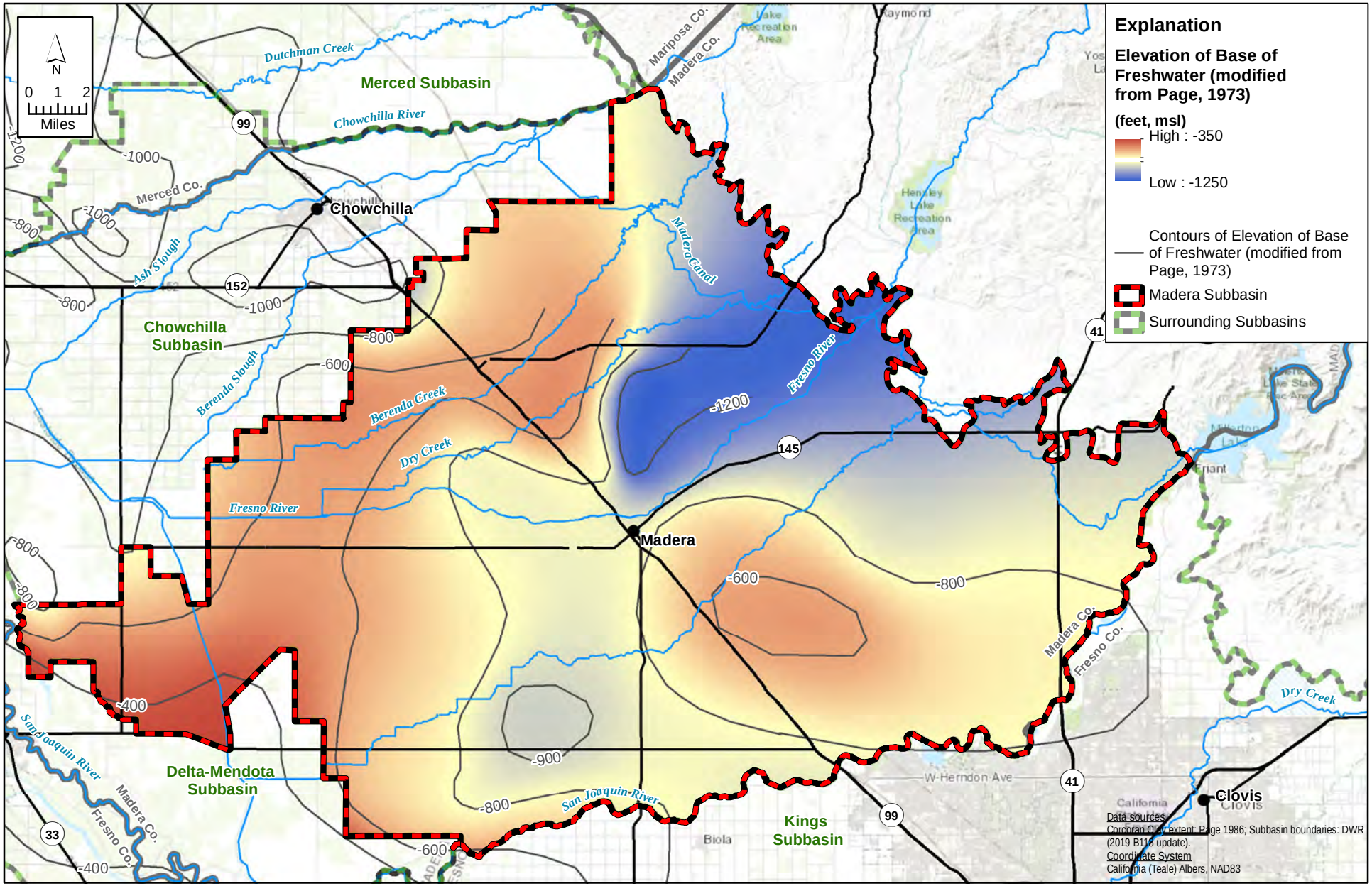
FIGURE 2-17

Geologic Fault Map

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-18 Madera Subbasin Base of Freshwater Map.mxd

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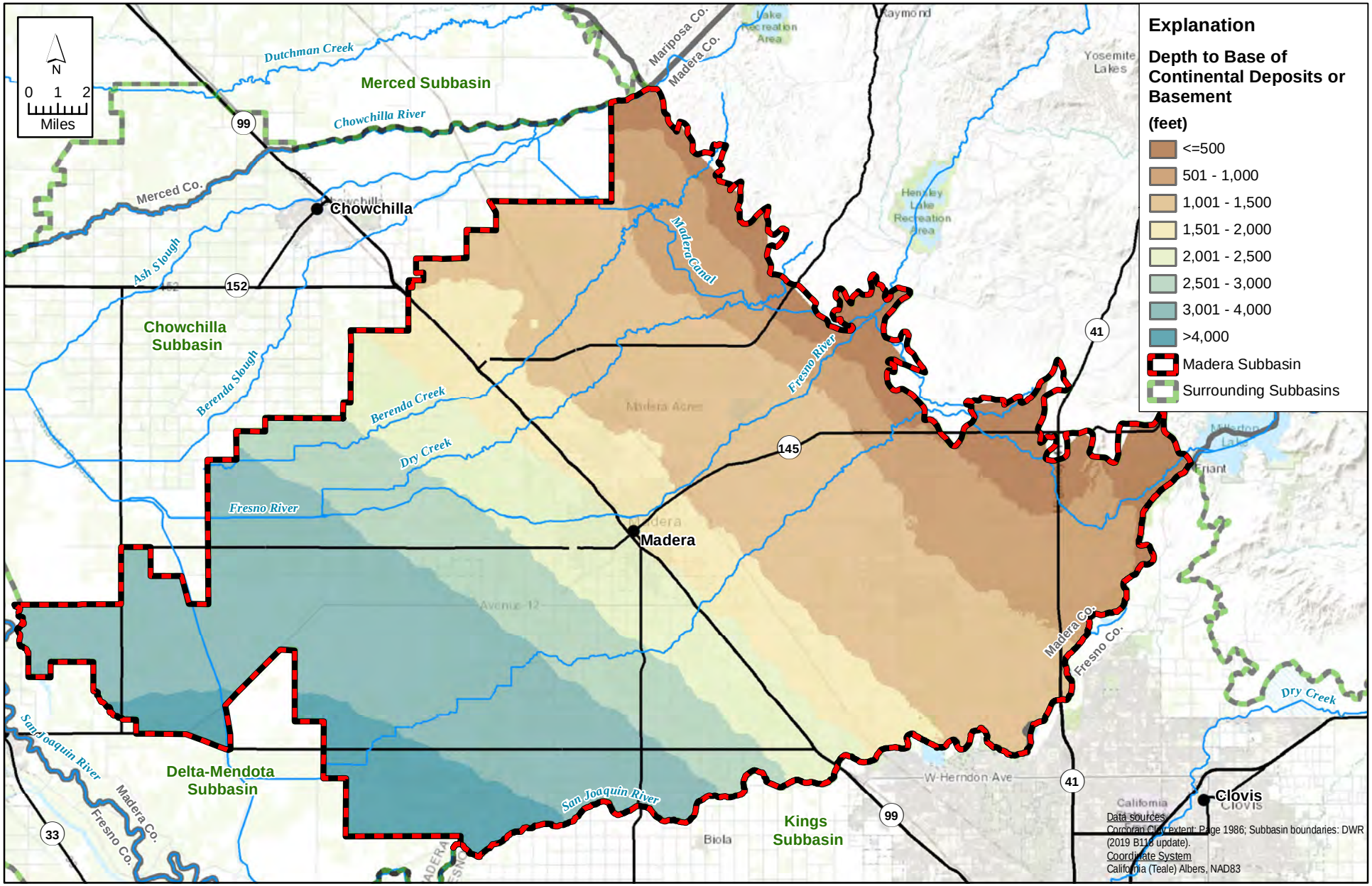
FIGURE 2-18
Elevation of Base of Freshwater: Modified from Page (1973)

Madera Subbasin
Groundwater Sustainability Plan

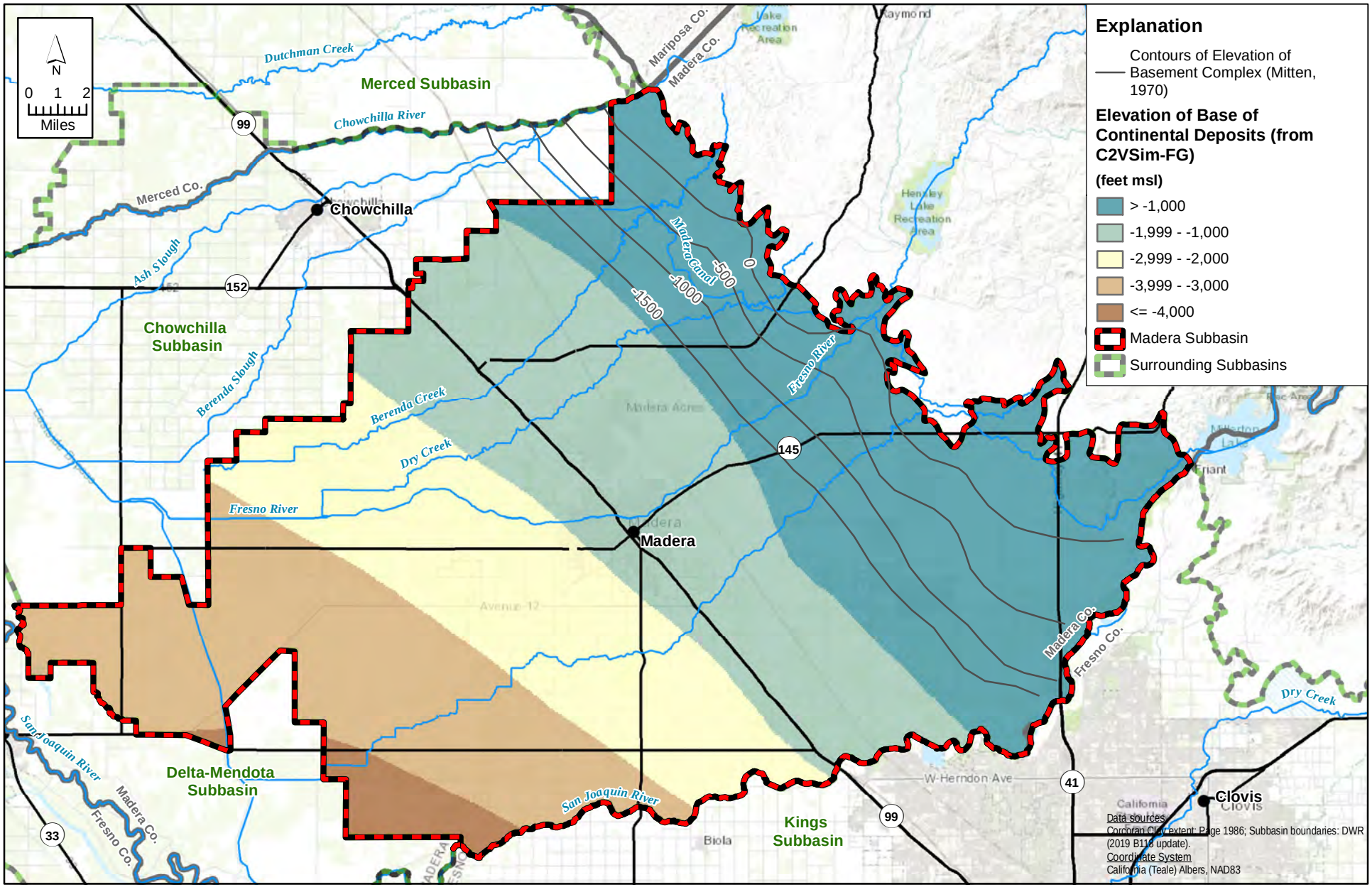


X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-19 Madera Subbasin Depth to Basement Map.mxd

FIGURE 2-19

Depth to Base of Continental Deposits or Basement Complex

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-20 Madera Subbasin Elevation of Basement Complex Map.mxd

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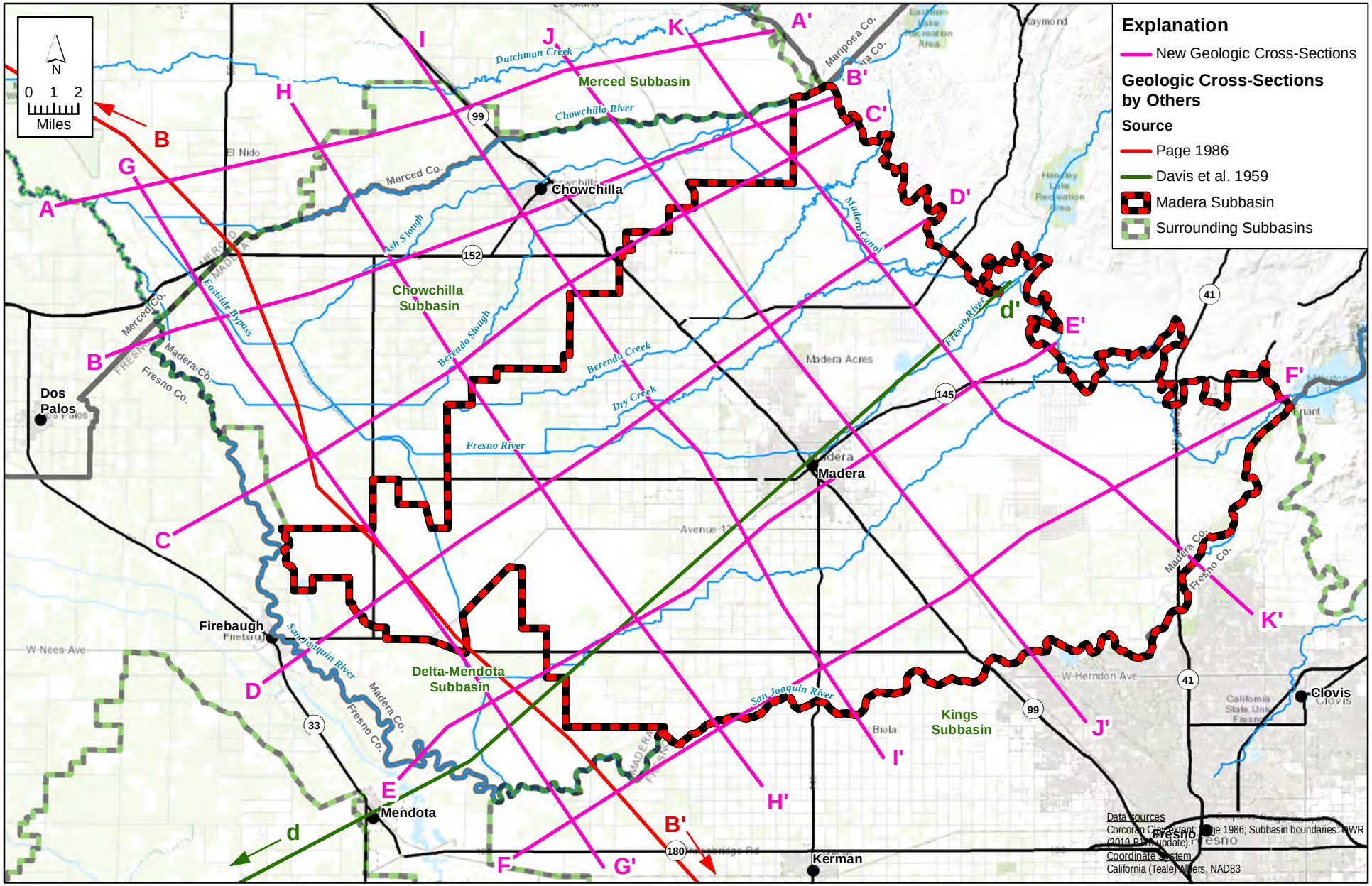
FIGURE 2-20
Elevation of Top of Basement Complex (from Mitten, 1970) and Bottom of Continental Deposits (from C2VSim-FG, 2018)

Madera Subbasin
Groundwater Sustainability Plan



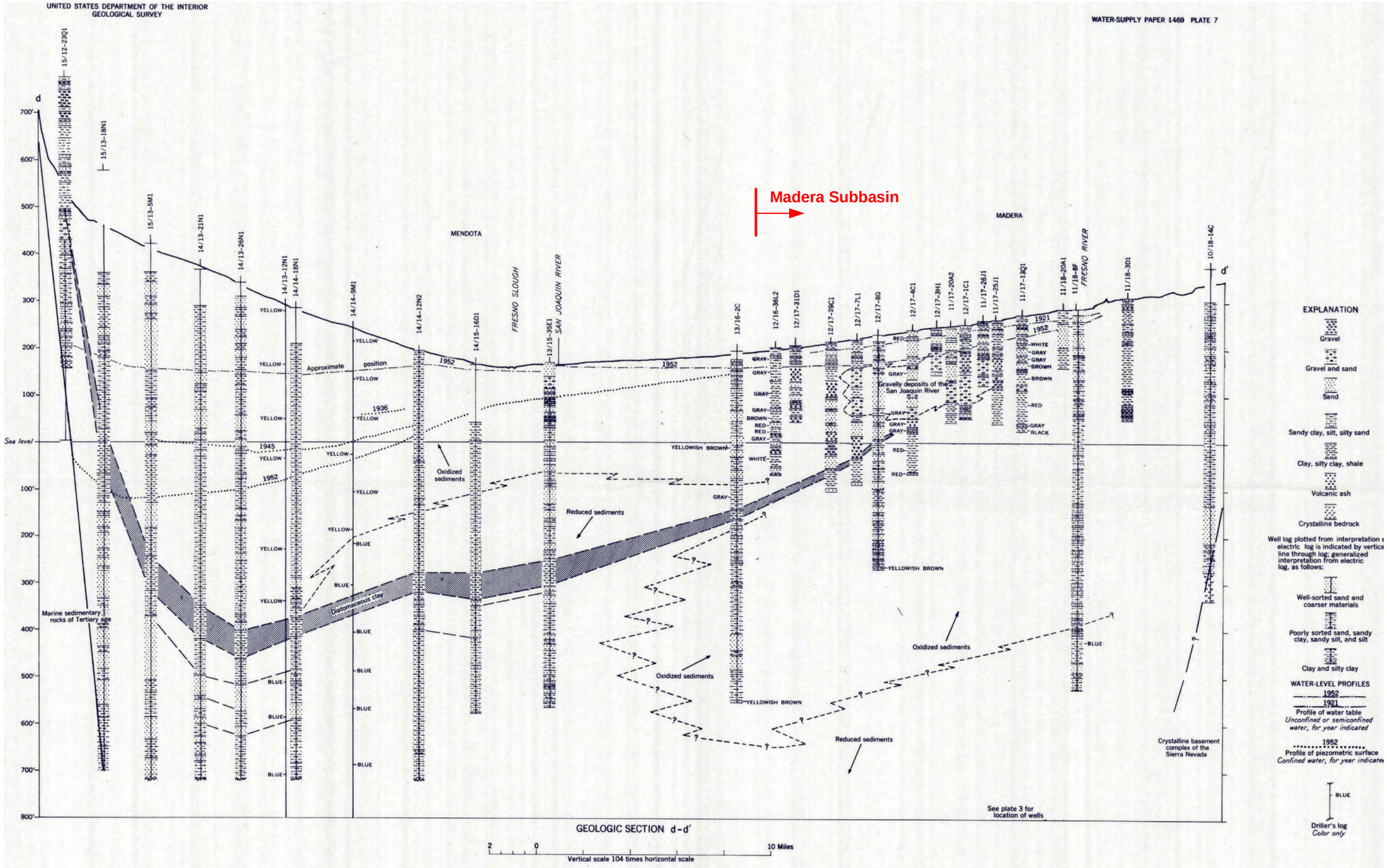
X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-21 Madera Subbasin Cross Section Location Map.mxd

FIGURE 2-21

Geologic Cross-Section Location Map

Madera Subbasin
Groundwater Sustainability Plan

Madera Subbasin



See plate 3 for location of wells

GEOLOGIC SECTION d-d'

2 0 10 Miles
Vertical scale 104 times horizontal scale

468433 O - 59 (In pocket)

X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-22 CrossSection_Davis1959_d.mxd

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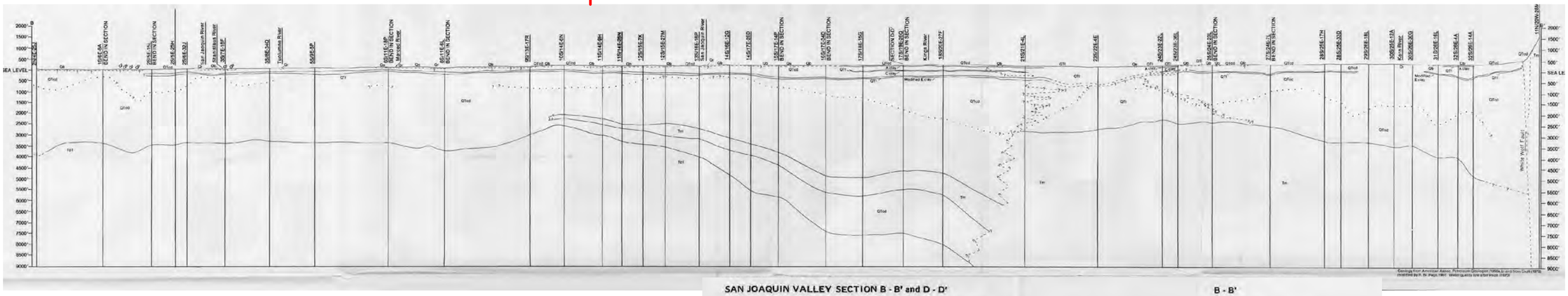
FIGURE 2-22
Geologic Cross-Section: Davis et al. (1959) Section d-d'

Madera Subbasin
Groundwater Sustainability Plan



SAN JOAQUIN VALLEY SECTION B - B' and D - D'

		B - B'
Qa	**Sand dunes (Holocene)** Windblown sand and dune sand	Description at left
Qb	**Flood-basin deposits (Holocene)** Clay, silt, and some sand;	Near northern end of section consist of muck, peat, and other organic soils
Qr	**River deposits (Holocene)** Gravel, sand, silt, and minor amounts of clay; deposited along channels, flood plains, and natural levees of main streams.	Description at left
QTl	**Lacustrine and marsh deposits (Pliocene to Holocene)** Clay, silt, and some sand; in subsurface include three widespread clays: A clay (Pleistocene and Holocene?), C clay (Pleistocene); and modified E clay (Pleistocene), includes Corcoran Clay Member of Tulare Formation	Description at left
QTcd	**Continental rocks and deposits (Oligocene to Holocene)** Heterogenerous mix of generally poorly sorted clay, silt, sand, and gravel, some beds of claystone, siltstone, sandstone, and conglomerate...	On this section, principal unit, continental rocks and deposits (Miocene to Holocene): in northern part of section may include continental rocks and deposits (Miocene and Pliocene)--mostly Mehrten Formation or an equivalent, and continental rocks and deposits (Oligocene and Miocene) -mostly Valley Springs Formation or an equivalent. Include continental rocks and deposits (Miocene and Pliocene)--chiefly the Chanac Formation (Miocene) at extreme southern end of section, and the Zilch Formation of informal subsurface usage, which is considered to be the continental equivalent of the Marine Temblor Formation (Oligocene and Miocene)
Tm	**Marine rocks and deposits (Eocene, Oligocene, Miocene, and Pliocene)** Sand, clay, silt, sandstone, shale, mudstone, and siltstone. On these section include marine rocks and deposits of Miocene and Pliocene age only	Description at left
TpT	**Continental and marine rocks and deposits (Pre-Tertiary to Oligocene)** Continental rocks and deposits of clay, shale, sand, sandstone and conglomerate; marine rocks and deposits of clay, shale, sandstone, and conglomerate...	On this section include marine rocks and deposits of Eocene and Oligocene age, also include some Paleocene marine rocks. Include continental rocks and deposits (Eocene to Miocene)-- chiefly Walker Formation (Eocene to Miocene) at depths off the section - greater than 13,000ft, where the Walker Formation underlies Eocene, marine sediments. Include marine rocks (Pre-Tertiary)
pTgm	**Granitic and metamorphic rocks (Pre-Tertiary)** Granitic rocks with some mafic intrusive rocks, and metasedimentary and metavolcanic rocks. Include granitic rocks (Pre-Tertiary) and metamorphic rocks (Pre-Tertiary)	Not present

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FIGURE 2-23
Geologic Cross-Section: Page (1986) Section B-B'

Madera Subbasin
Groundwater Sustainability Plan

A
(WEST)

A'
(EAST)

San Joaquin River

G-G'

Chowchilla Subbasin Boundary/H-H'

I-I'

Chowchilla Subbasin Boundary/Hwy 99

J-J'

K-K'

Spring 1988 Unconfined Groundwater Level

Spring 2014 Unconfined Groundwater Level

Upper Aquifer

Corcoran Clay

Lower Aquifer

Base of Freshwater

Top of Basement Complex/ Bottom of Continental Deposits

Vertical Exaggeration = 50X

Elevation (feet, msl)

500
400
300
200
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1000
-1100
-1200
-1300
-1400
-1500

0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
150000
160000
170000
180000
190000

Distance (feet)

Explanation

- Ground Surface
- Spring 1988 Unconfined Groundwater Level
- Spring 2014 Unconfined Groundwater Level

Borehole Lithology

- Top Soil
- Clay/Shale/Silt/Siltstone
- Sand/Sandstone/Conglomerate
- Gravel/Cobbles
- Hardrock
- Corcoran Clay - Separates Unconfined Upper Aquifer and Confined Lower Aquifer (Page, 1986; C2VSim-FG)
- Depth Delineation Between Upper and Lower Aquifers Outside the Corcoran Clay
- Base of Freshwater (modified from Page, 1973)
- Top of Basement/Bottom of Continental Deposits (modified from Mitten et al., 1970 and C2VSim-FG)

X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-24 CrossSection_LSCE_A.mxd

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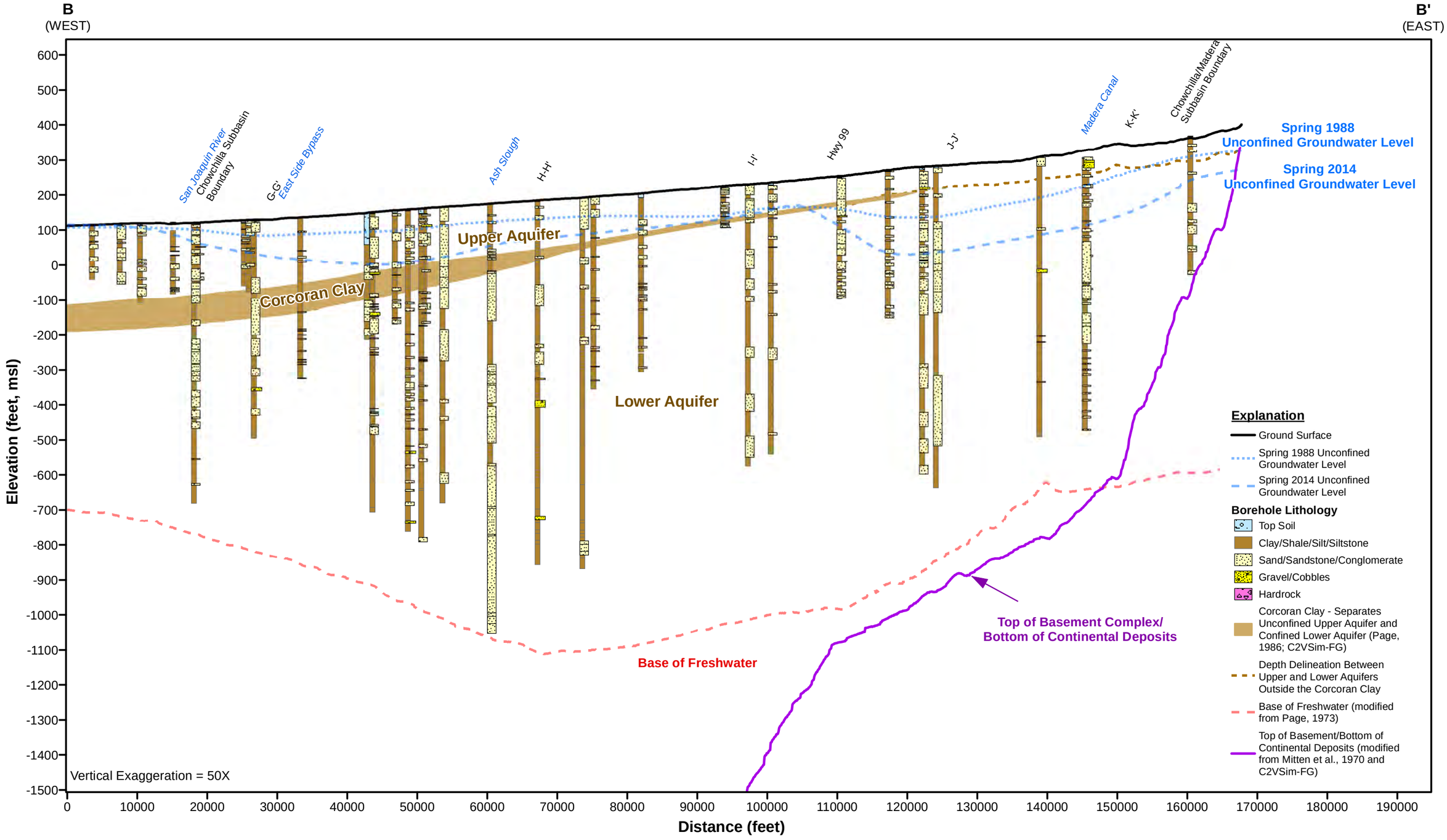
FIGURE 2-24

Madera County Geologic Cross-Section A

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-25 CrossSection_LSCE_B.mxd

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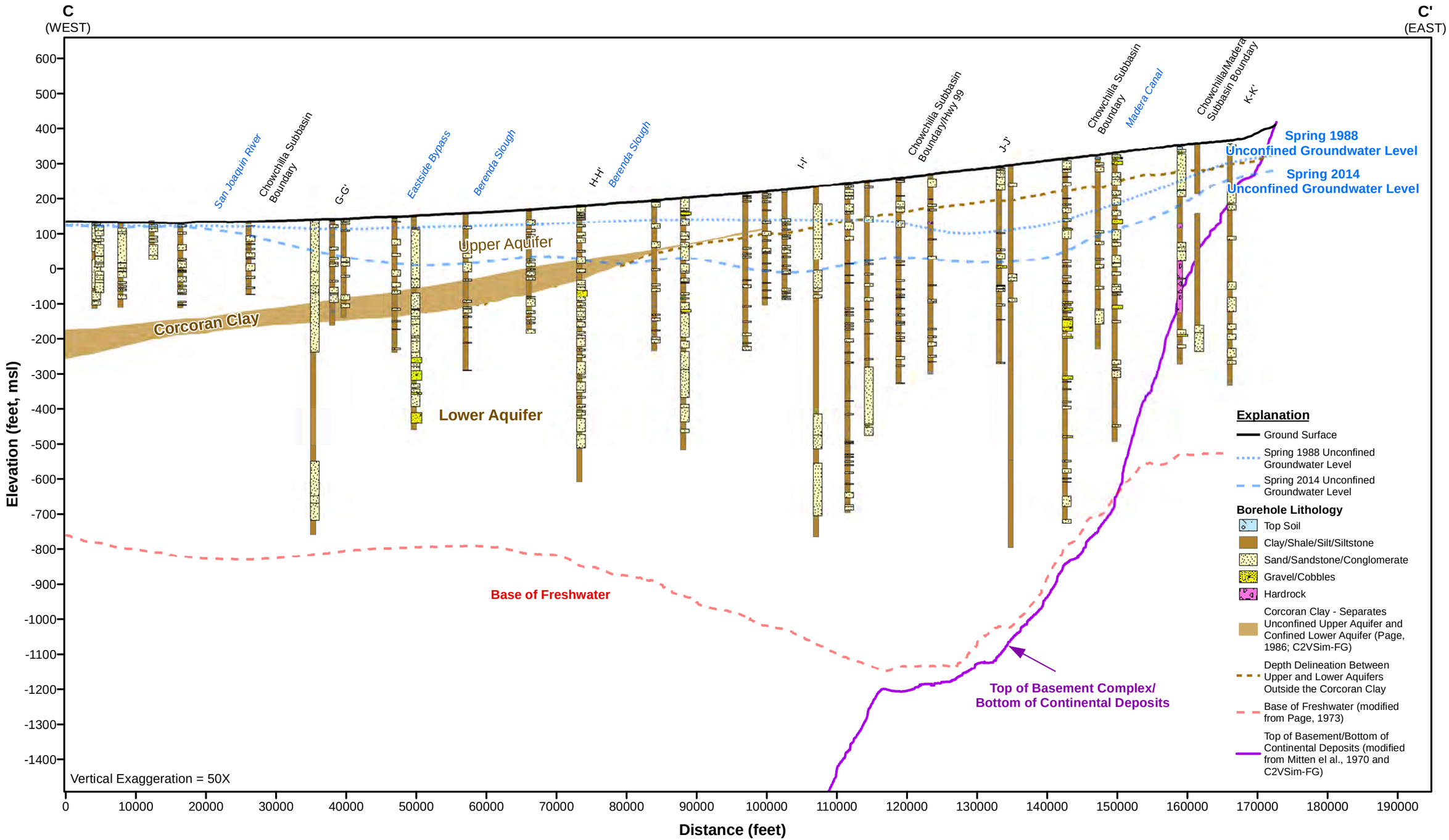
FIGURE 2-25

Madera County Geologic Cross-Section B

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-26 CrossSection_LSCE_C.mxd

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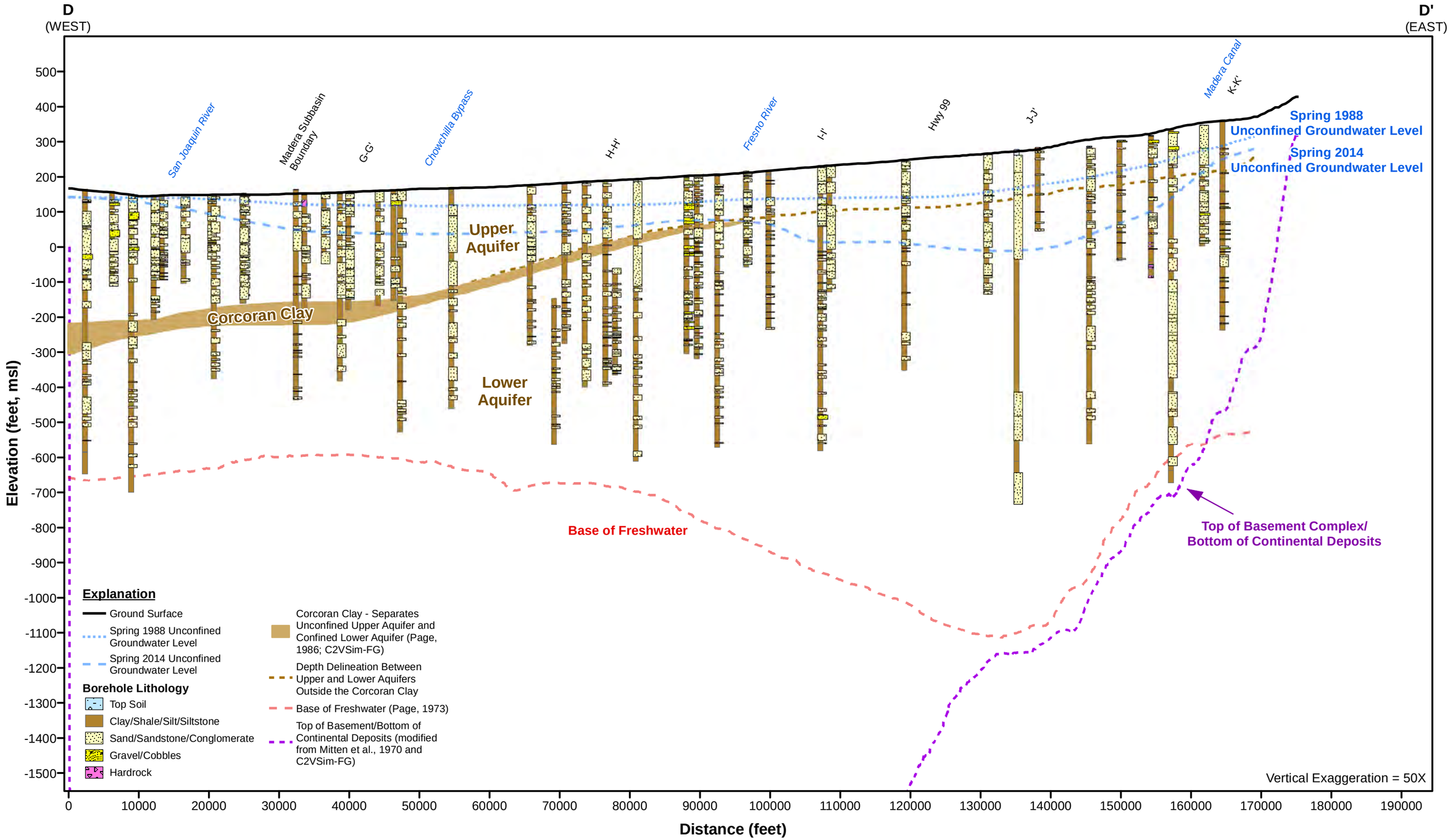
FIGURE 2-26

Madera County Geologic Cross-Section C

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-27 CrossSection_LSCE_D.mxd

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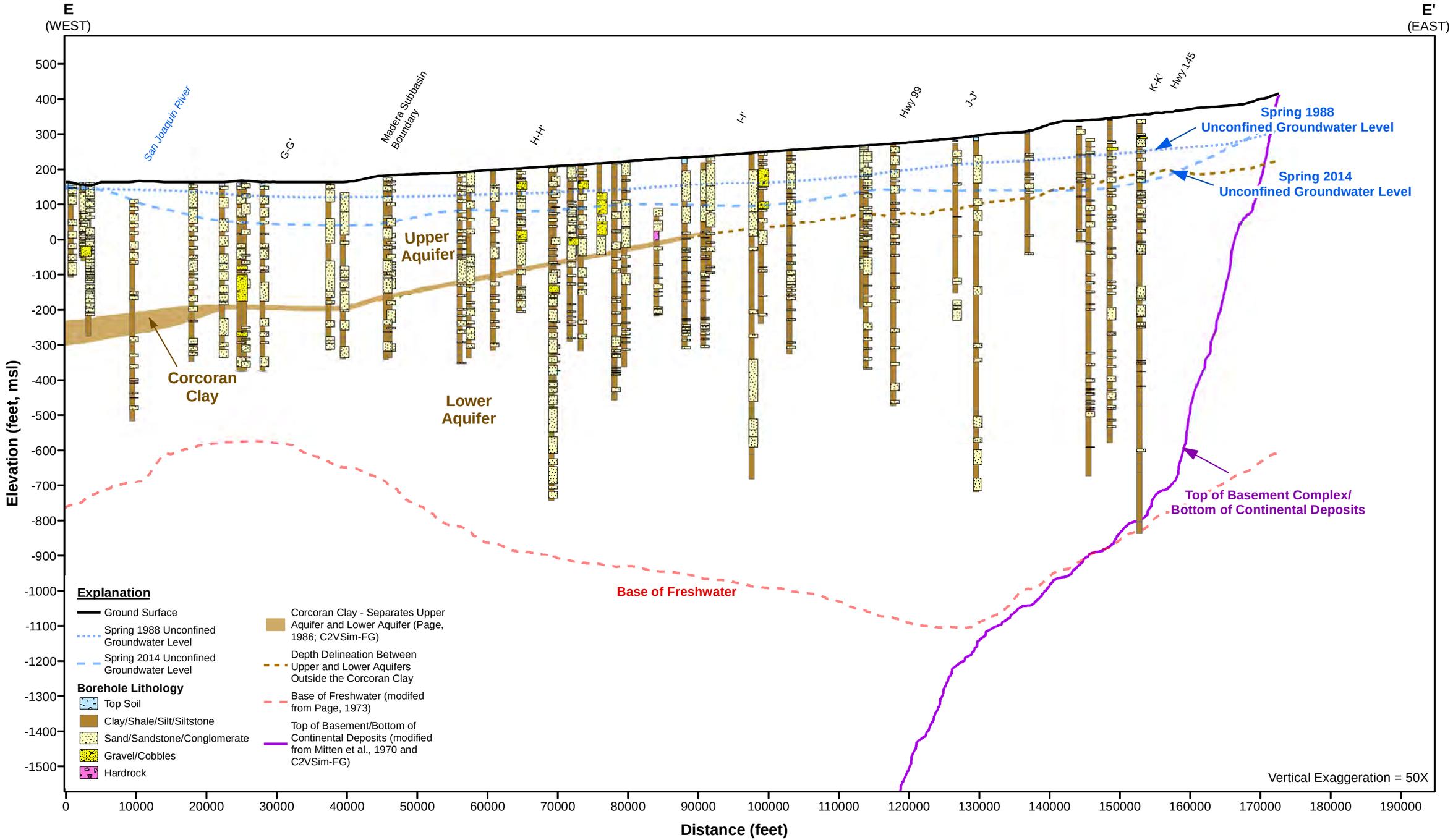
FIGURE 2-27

Madera County Geologic Cross-Section D

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-28 CrossSection_LSCE_E.mxd

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FIGURE 2-28

Madera County Geologic Cross-Section E

Madera Subbasin
Groundwater Sustainability Plan

F
(WEST)

F'
(EAST)

Elevation (feet, msl)

600
500
400
300
200
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1000
-1100
-1200
-1300
-1400

G-G'
H-H'
San Joaquin River
Madera Subbasin Boundary
I-I'
Hwy 99
J-J'
K-K'
Madera Canal

Spring 1988 Unconfined Groundwater Level
Spring 2014 Unconfined Groundwater Level
Upper Aquifer
Corcoran Clay
Lower Aquifer
Top of Basement Complex/ Bottom of Continental Deposits
Base of Freshwater

Explanation

- Ground Surface
- Spring 1988 Unconfined Groundwater Level
- Spring 2014 Unconfined Groundwater Level

Borehole Lithology

- Top Soil
- Clay/Shale/Silt/Siltstone
- Sand/Sandstone/Conglomerate
- Gravel/Cobbles
- Hardrock

- Corcoran Clay - Separates Upper Aquifer and Lower Aquifer (Page, 1986; C2VSim-FG)
- Base of Freshwater (modified from Page, 1973)
- Depth Delineation Between Upper and Lower Aquifers Outside the Corcoran Clay
- Top of Basement/Bottom of Continental Deposits (modified from Mitten et al., 1970 and C2VSim-FG)

Vertical Exaggeration = 50X

0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
150000
160000
170000
180000
190000

Distance (feet)

X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-29 CrossSection_LSCE_F.mxd

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FIGURE 2-29

Madera County Geologic Cross-Section F

Madera Subbasin
Groundwater Sustainability Plan

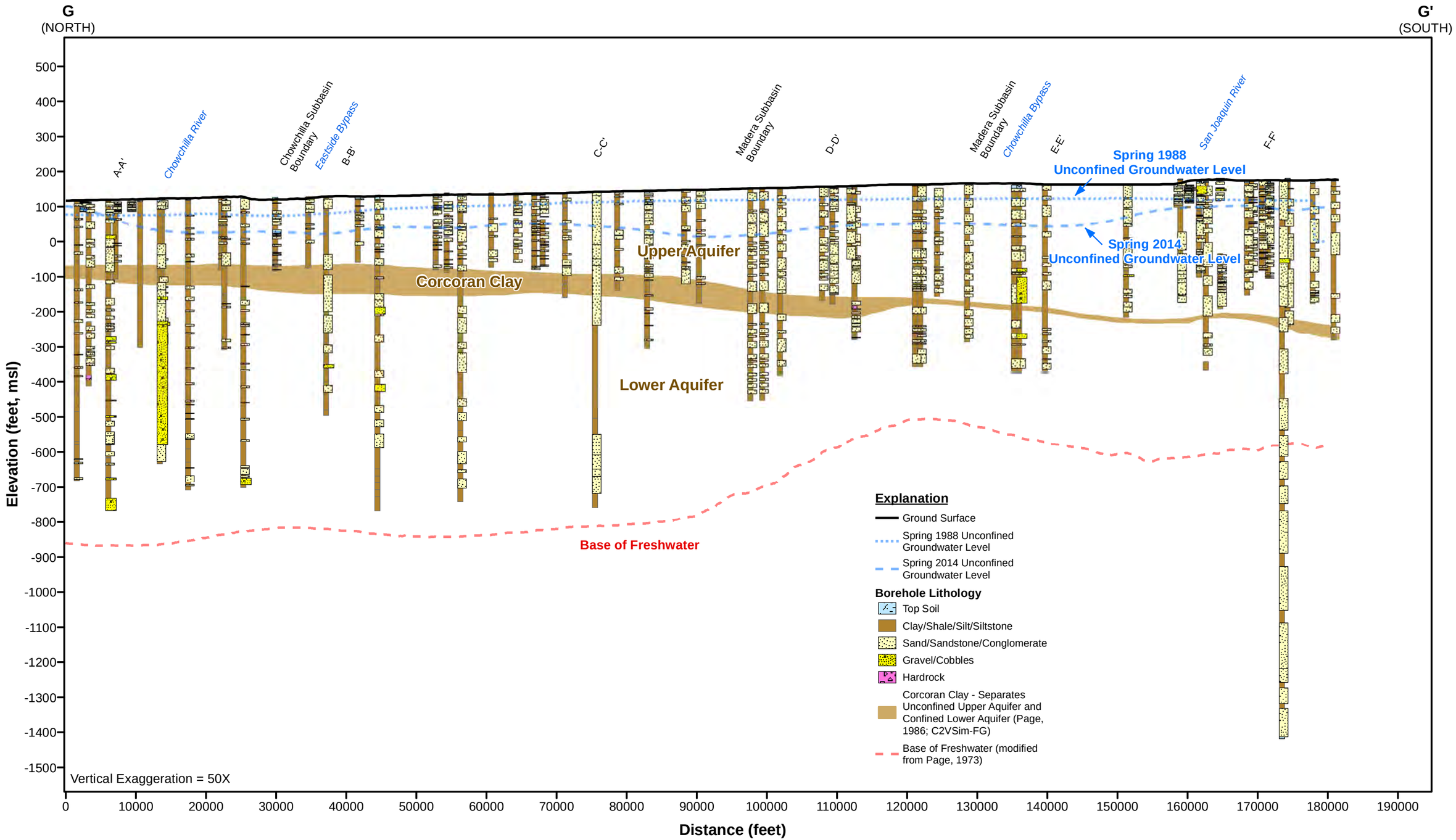

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FIGURE 2-30

Madera County Geologic Cross-Section G

Madera Subbasin
Groundwater Sustainability Plan

H
(NORTH)

H'
(SOUTH)

Chowchilla Subbasin Boundary/A-A'

Chowchilla River

B-B' Ash Slough

C-C' Berenda Slough

Madera Subbasin Boundary

Fresno Bypass

D-D'

E-E' Cottonwood Creek

San Joaquin River

Madera Subbasin Boundary F-F'

Spring 1988 Unconfined Groundwater Level

Spring 2014 Unconfined Groundwater Level

Upper Aquifer

Corcoran Clay

Lower Aquifer

Base of Freshwater

Elevation (feet, msl)

400
300
200
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1000
-1100
-1200
-1300
-1400
-1500
-1600

Vertical Exaggeration = 50X

0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
150000
160000
170000
180000
190000

Distance (feet)

Explanation

- Ground Surface
- Spring 1988 Unconfined Groundwater Level
- Spring 2014 Unconfined Groundwater Level

Borehole Lithology

- Top Soil
- Clay/Shale/Silt/Siltstone
- Sand/Sandstone/Conglomerate
- Gravel/Cobbles
- Hardrock
- Corcoran Clay - Separates Unconfined Upper Aquifer and Confined Lower Aquifer (Page, 1986; C2VSim-FG)
- Depth Delineation Between Upper and Lower Aquifers Outside the Corcoran Clay
- Base of Freshwater (modified from Page, 1973)

X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-31 CrossSection_LSCE_H.mxd

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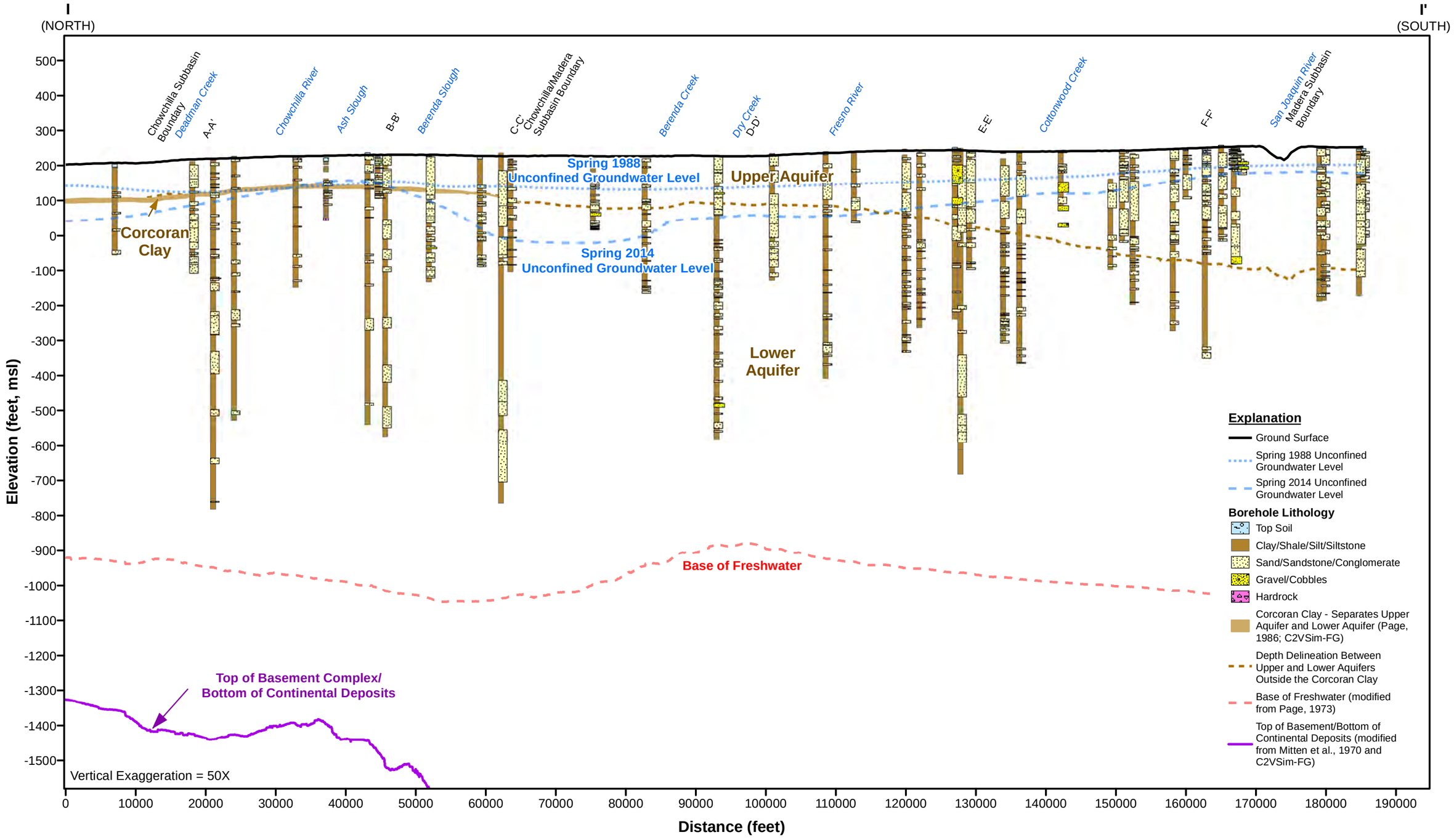
FIGURE 2-31

Madera County Geologic Cross-Section H

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-32 CrossSection_LSCE_I.mxd

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FIGURE 2-32

Madera County Geologic Cross-Section I

Madera Subbasin
Groundwater Sustainability Plan

J
(NORTH)

J'
(SOUTH)

Deadman Creek
A-A'
Chowchilla River
Chowchilla Subbasin Boundary
B-B'
Ash Slough/ Berenda Slough
C-C'
Chowchilla/Madera Subbasin Boundary
Berenda Creek
D-D'
Dry Creek
Fresno River
E-E'
Cottonwood Creek
F-F'
San Joaquin River
Madera Subbasin Boundary

Spring 1988 Unconfined Groundwater Level

Spring 2014 Unconfined Groundwater Level

Upper Aquifer

Lower Aquifer

Base of Freshwater

Top of Basement Complex/ Bottom of Continental Deposits

Vertical Exaggeration = 50X

Elevation (feet, msl)

600
500
400
300
200
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1000
-1100
-1200
-1300
-1400

0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
110000
120000
130000
140000
150000
160000
170000
180000
190000

Distance (feet)

Explanation

- Ground Surface
- Spring 1988 Unconfined Groundwater Level
- Spring 2014 Unconfined Groundwater Level

Borehole Lithology

- Top Soil
- Clay/Shale/Silt/Siltstone
- Sand/Sandstone/Conglomerate
- Gravel/Cobbles
- Hardrock

- Base of Freshwater (modified from Page, 1973)
- Depth Delineation Between Upper and Lower Aquifers Outside the Corcoran Clay
- Top of Basement/Bottom of Continental Deposits (modified from Mitten et al., 1970 and C2VSim-FG)

X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-33 CrossSection_LSCE_J.mxd

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FIGURE 2-33

Madera County Geologic Cross-Section J

Madera Subbasin
Groundwater Sustainability Plan

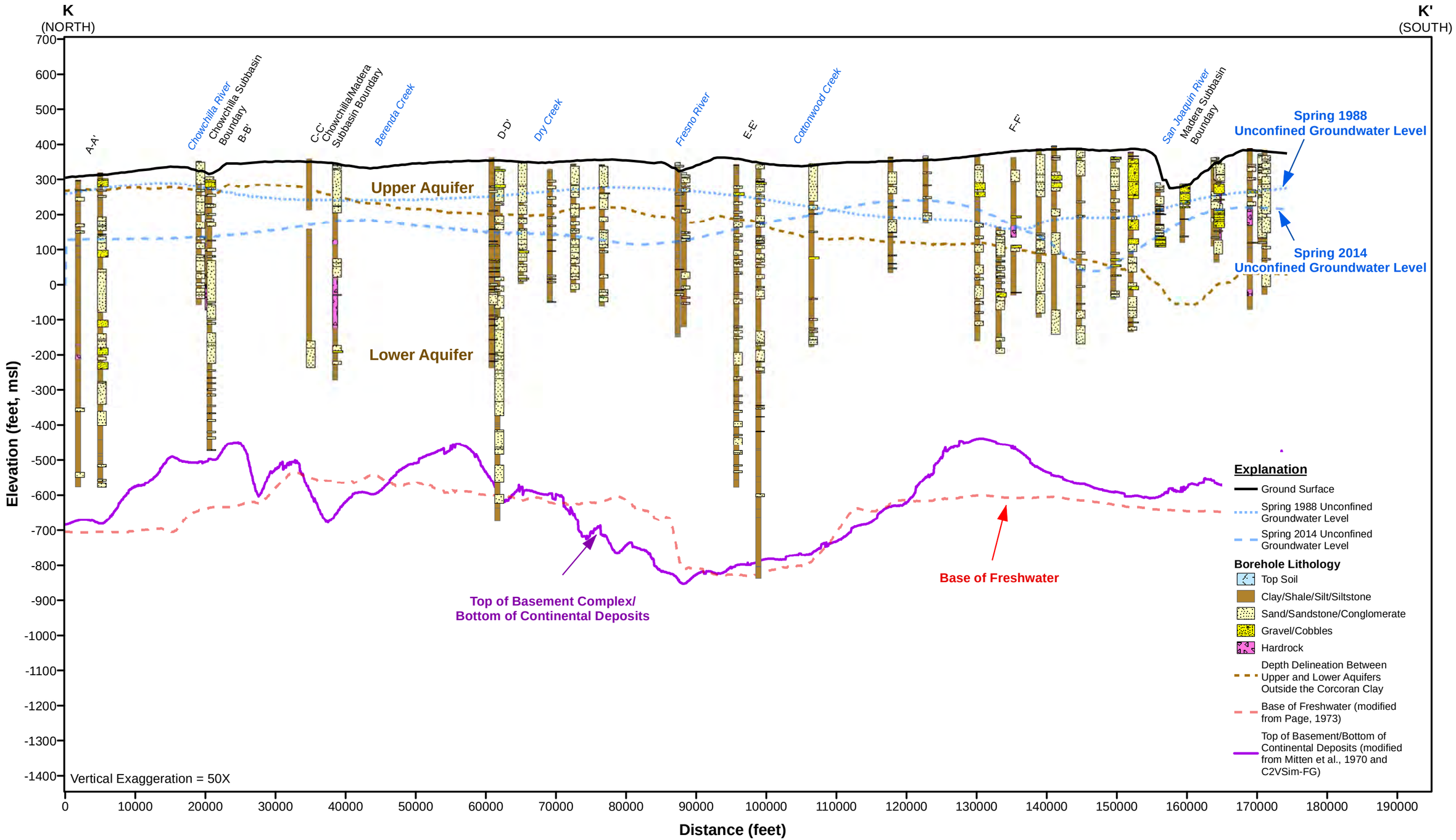

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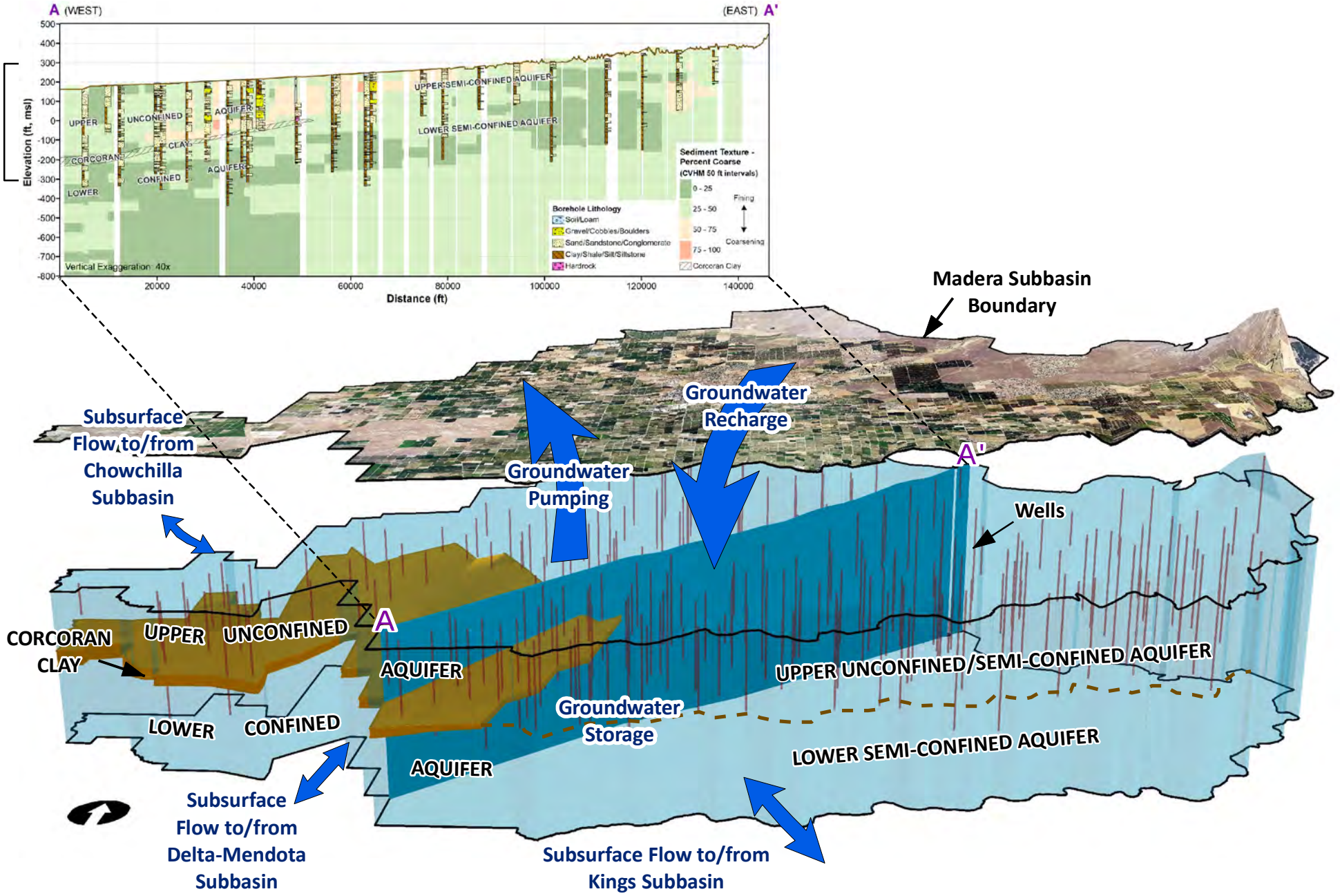
FIGURE 2-34

Madera County Geologic Cross-Section K

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-35 Madera Subbasin Hydrogeologic Conceptual Diagram.mxd

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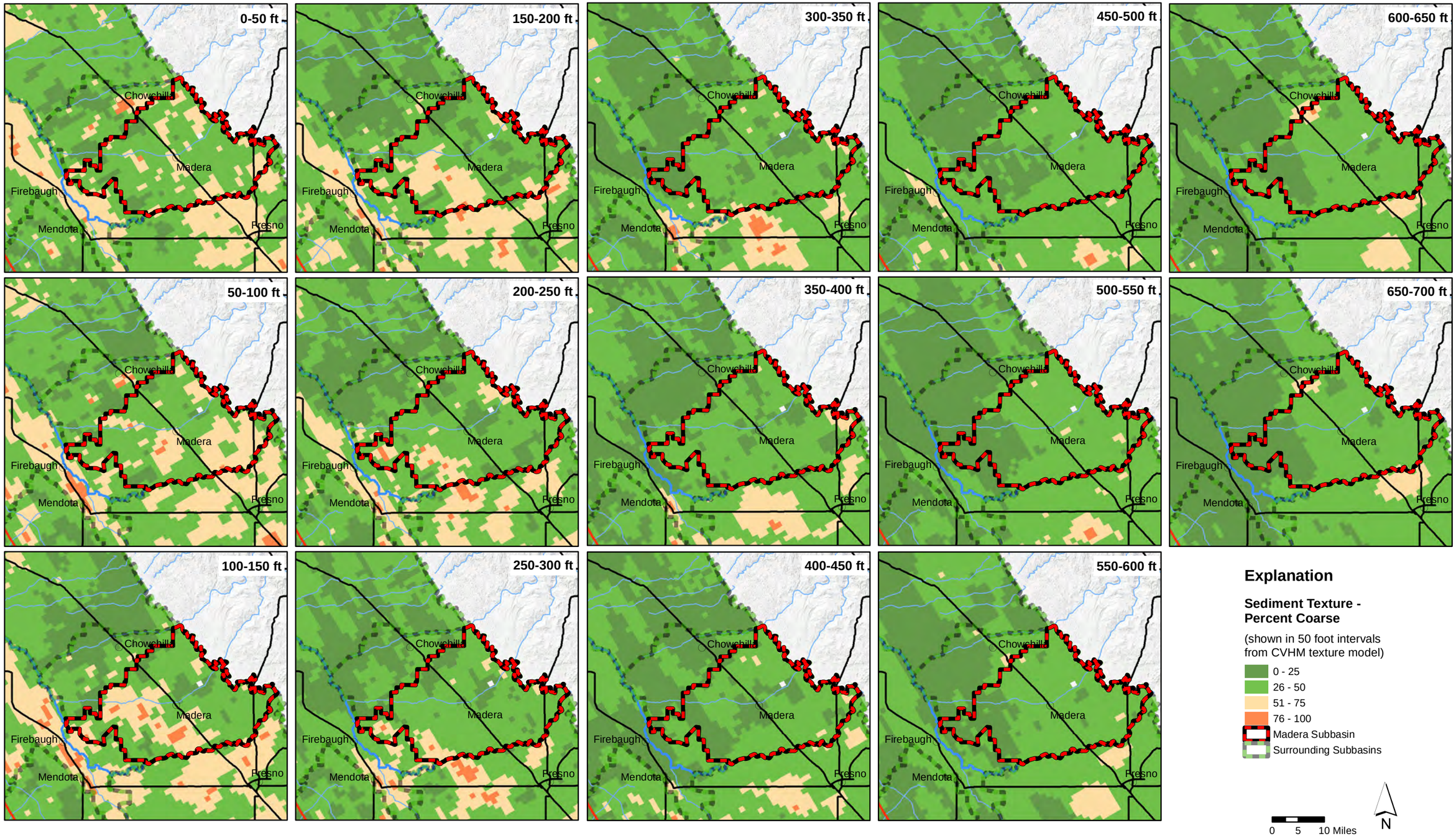
FIGURE 2-35

Conceptual Hydrogeologic System

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-36 CVHM Sediment Texture Model 0 to 700.mxd

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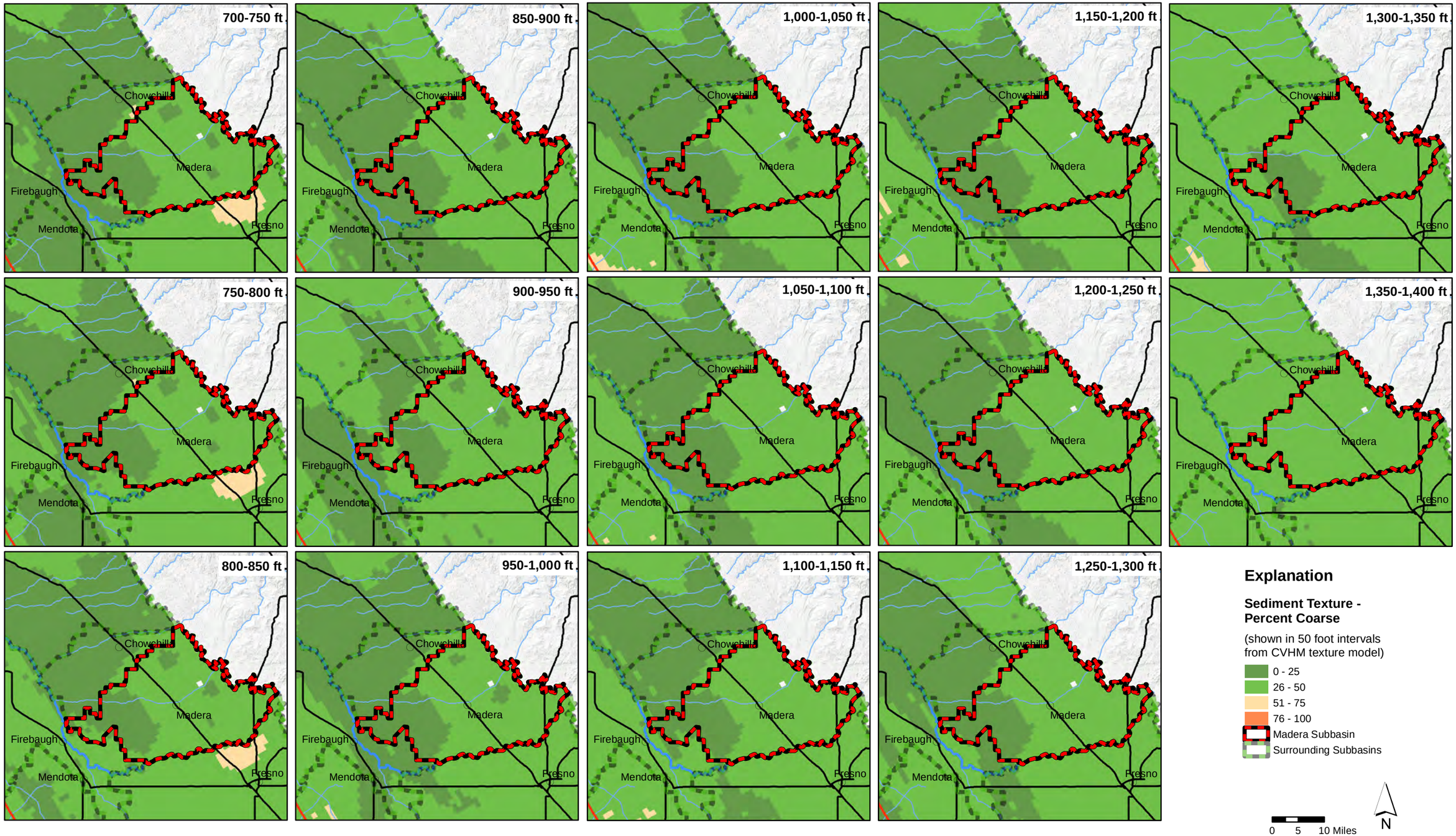
FIGURE 2-36

CVHM Sediment Texture Model: 0 to 700 feet

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-37 CVHM Sediment Texture Model 700 to 1400.mxd

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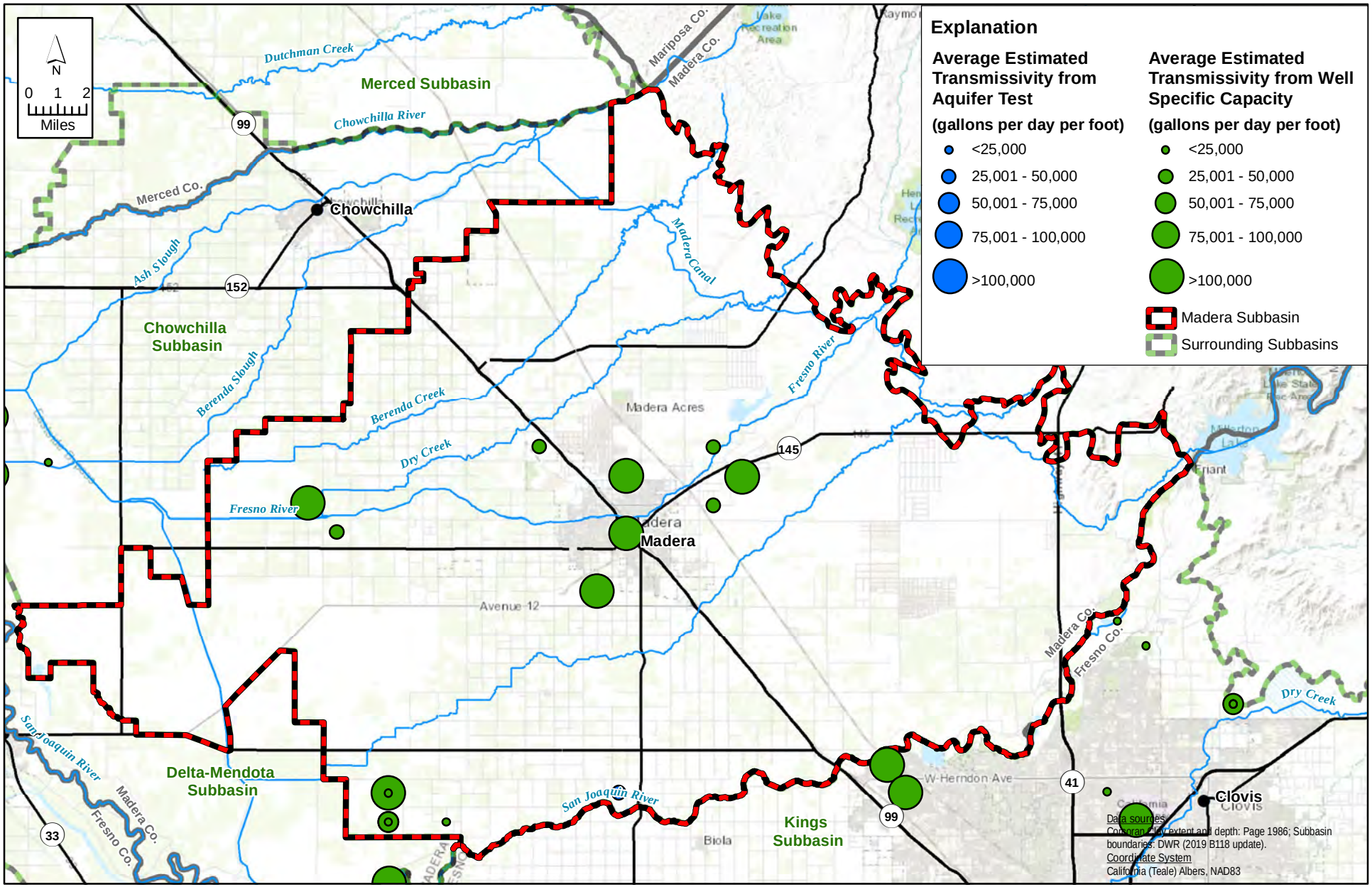
FIGURE 2-37

CVHM Sediment Texture Model: 700 to 1,400 feet

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-38 Madera Subbasin Aquifer Property Data_Upper.mxd

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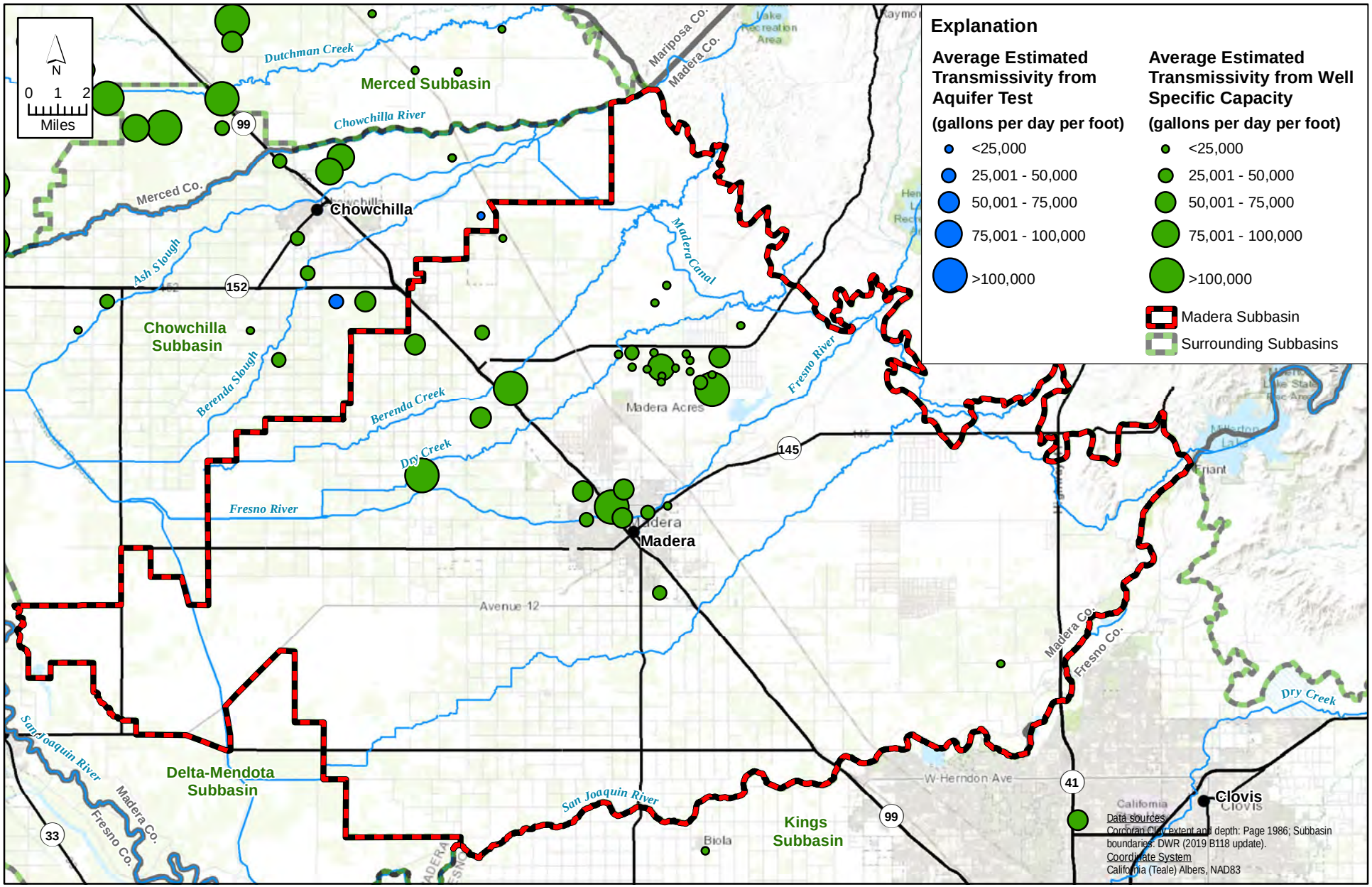
FIGURE 2-38
Map of Well Test Aquifer Property Data: Upper Aquifer

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-39 Madera Subbasin Aquifer Property Data_Lower.mxd

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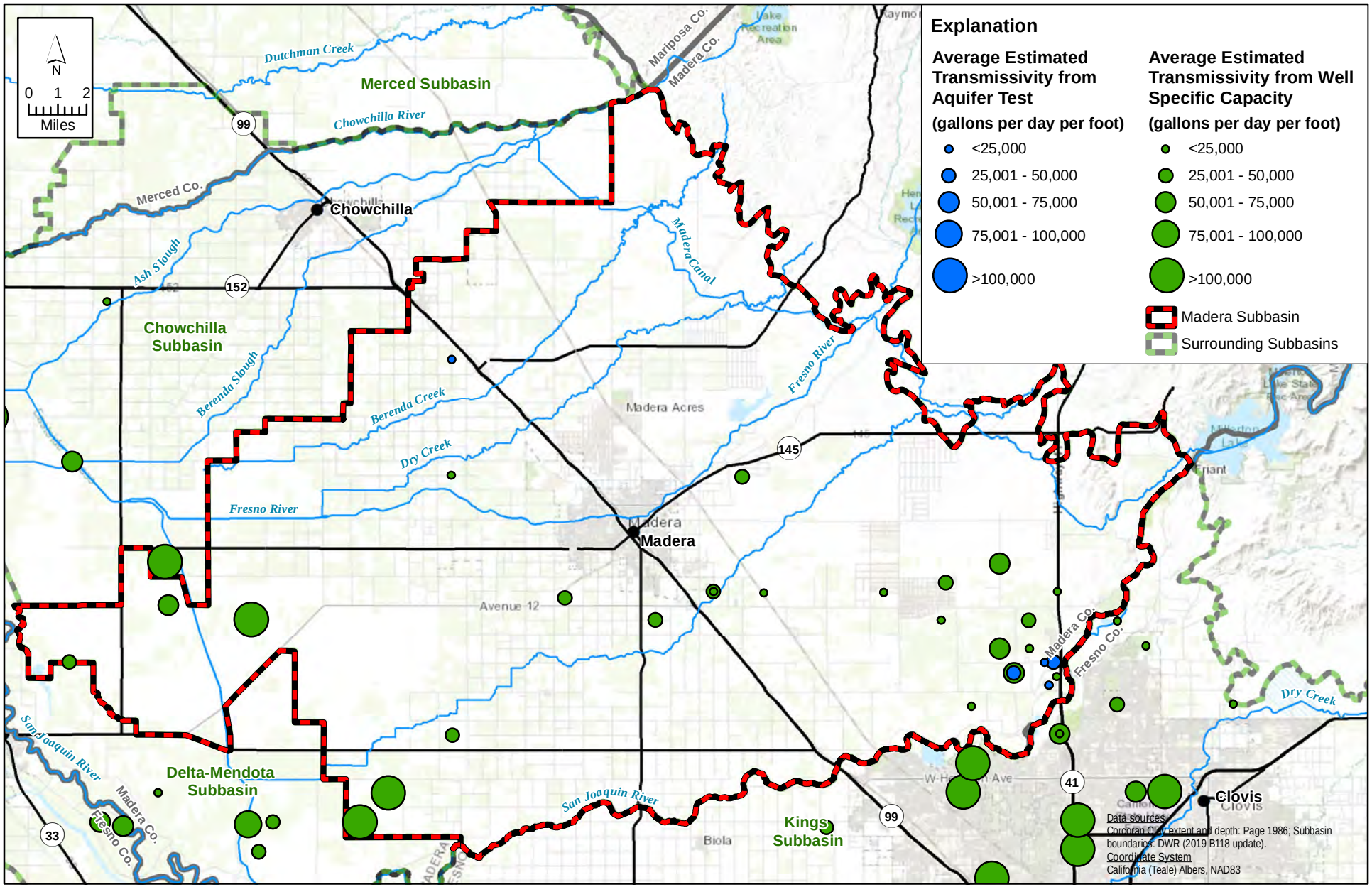
FIGURE 2-39
Map of Well Test Aquifer Property Data: Lower Aquifer

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-40 Madera Subbasin Aquifer Property Data_CompositeUnknown.mxd

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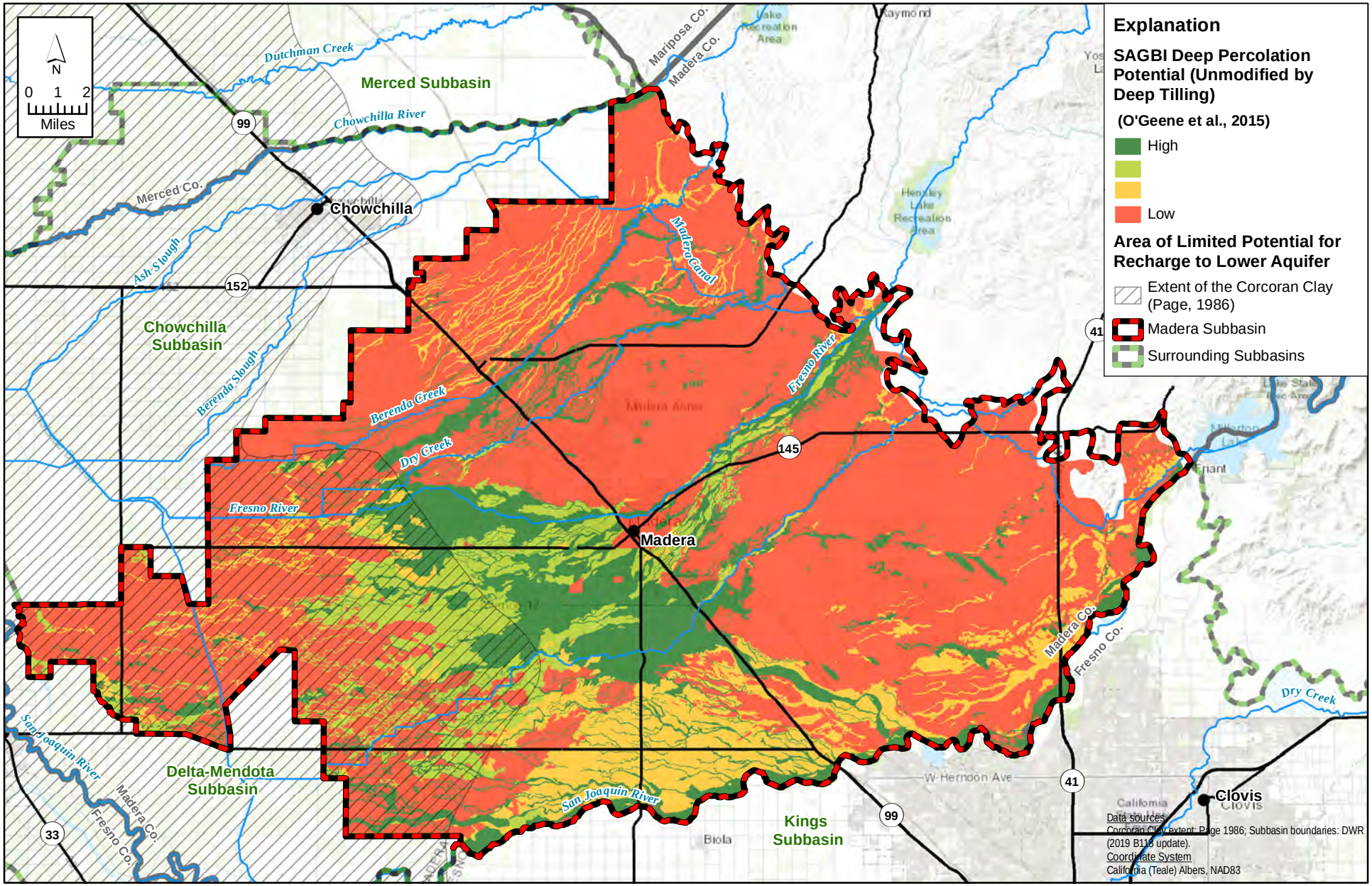
FIGURE 2-40
Map of Well Test Aquifer Property Data: Composite Wells or Unknown Depth

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-41 Madera Subbasin SAGBI Higher Recharge Potential Areas_unmodified.mxd

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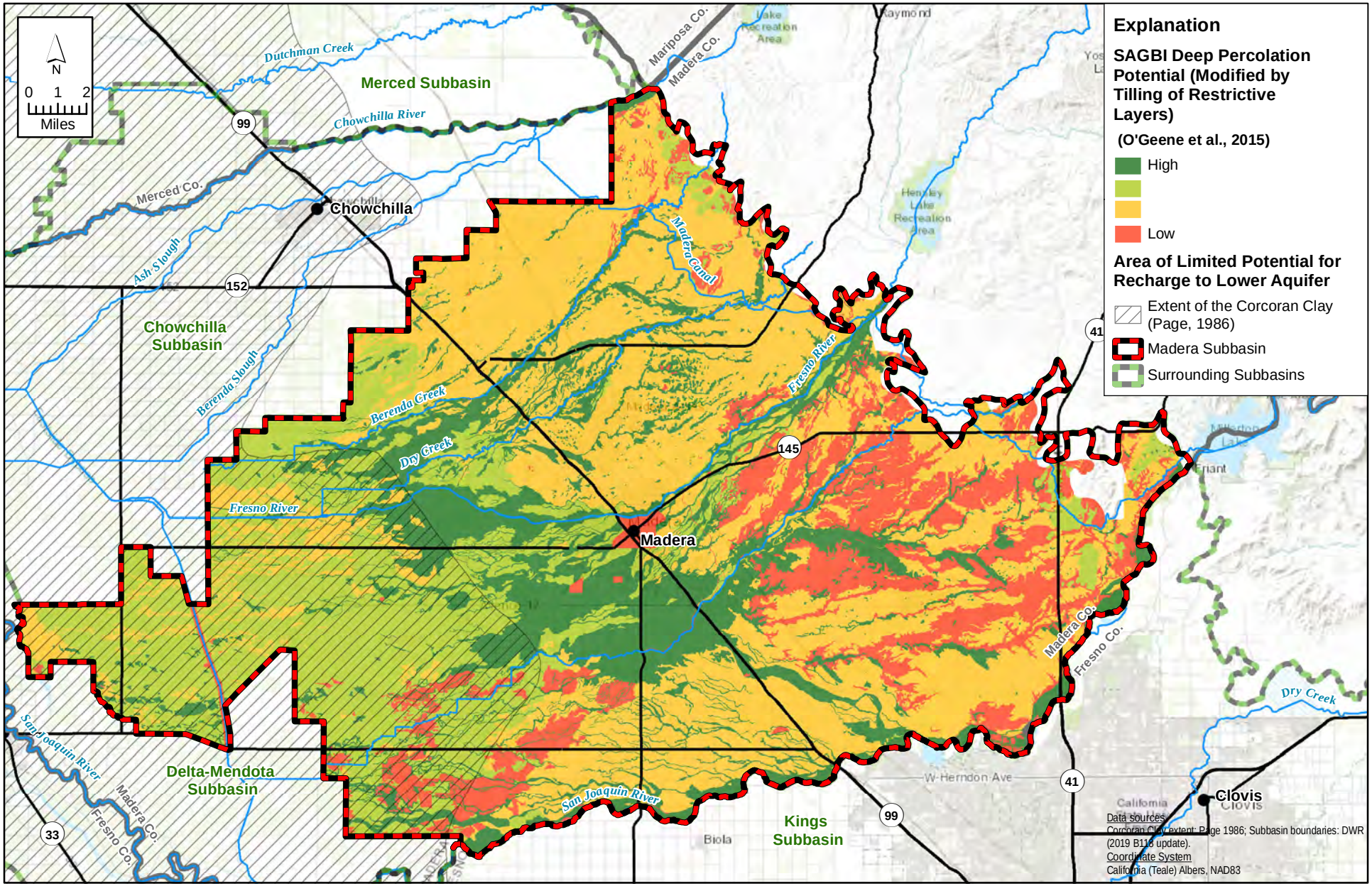
FIGURE 2-41
SAGBI Deep Percolation Potential: Unmodified by Tilling

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-42 Madera Subbasin SAGBI Higher Recharge Potential Areas_modified.mxd

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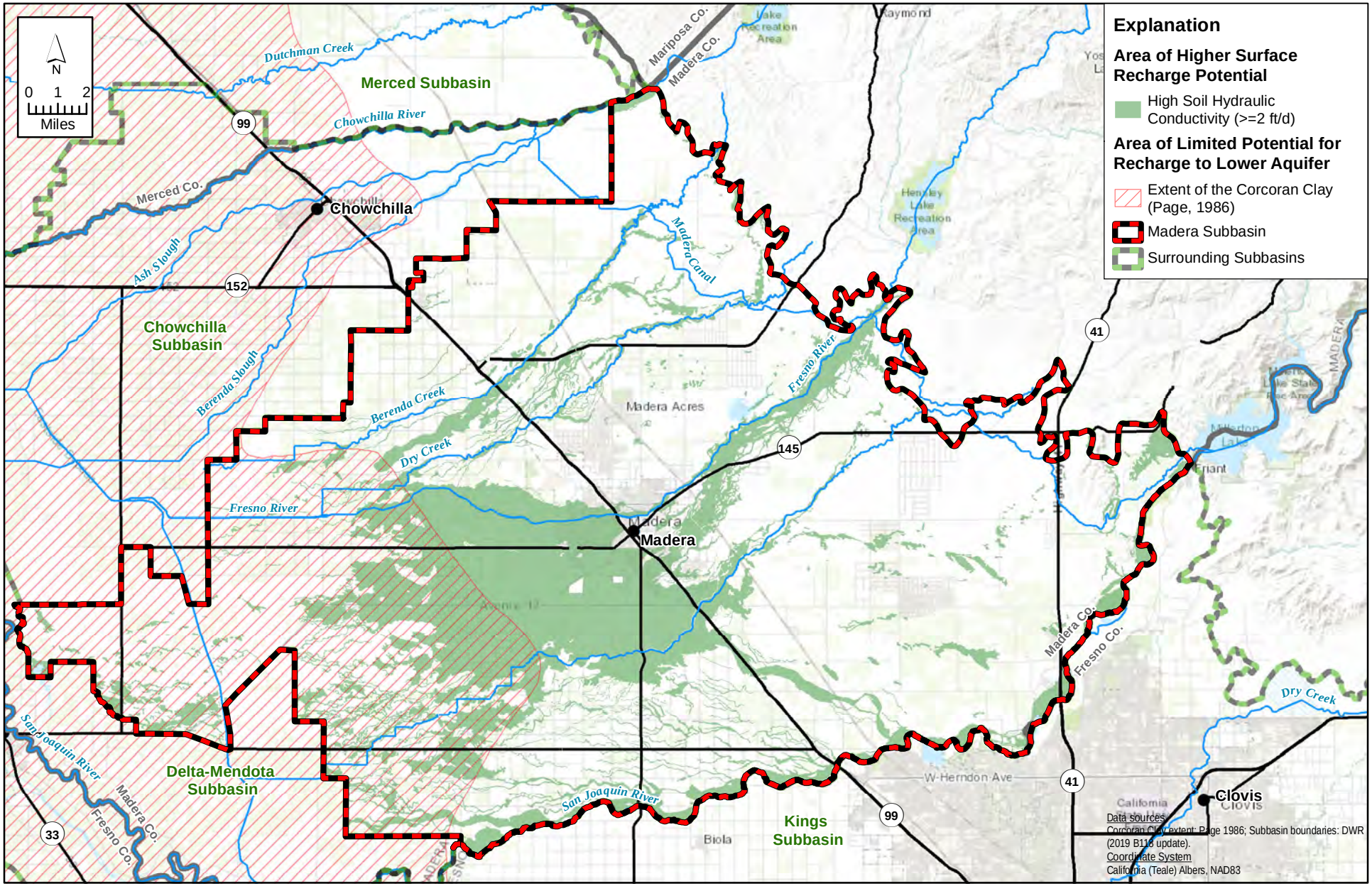
FIGURE 2-42

SAGBI Deep Percolation Potential: Modified by Tilling of All Restrictive Layers

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-43 Madera Subbasin Potential Recharge Areas.mxd

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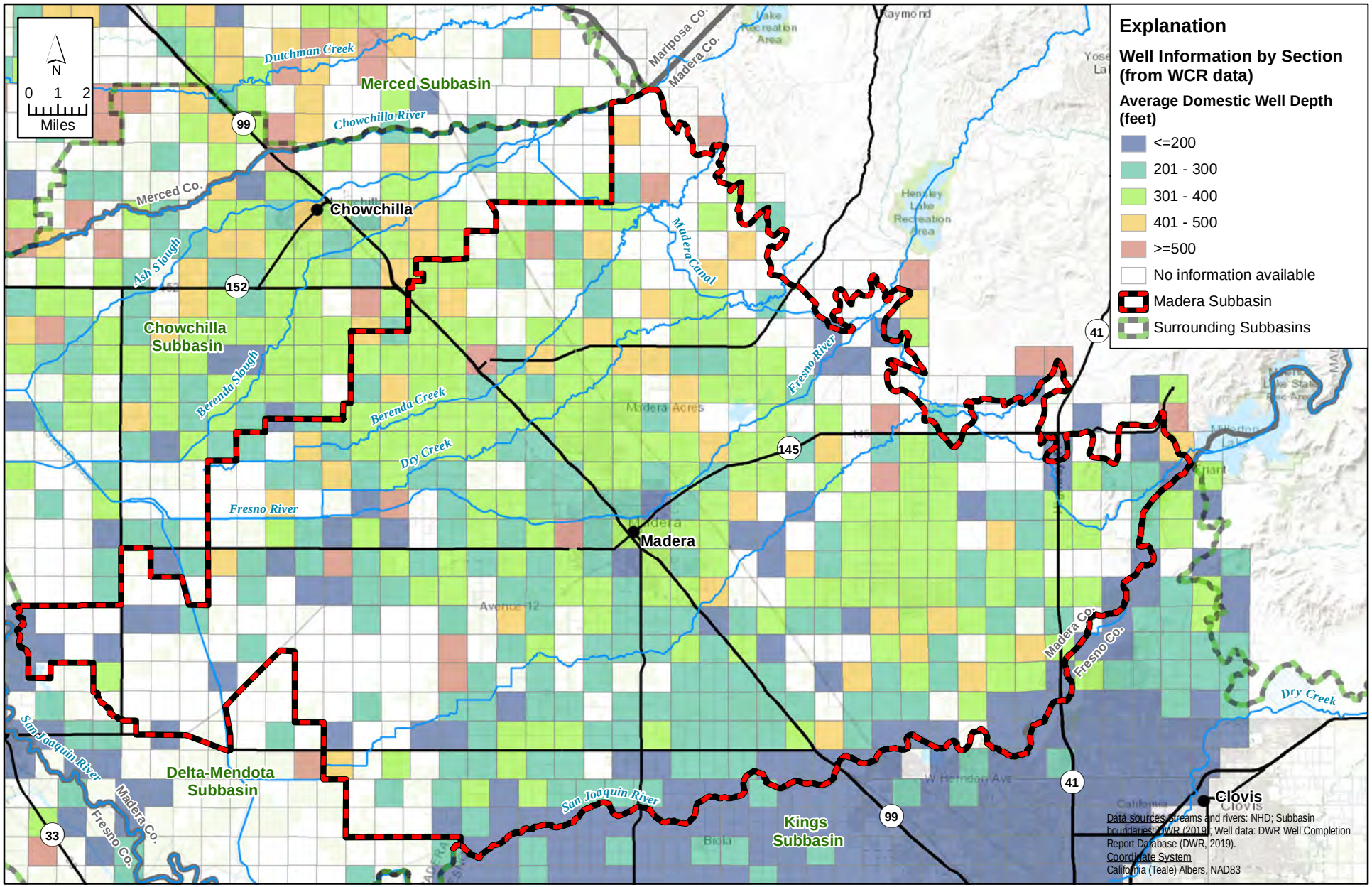
FIGURE 2-43

Areas of Higher Recharge Potential

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-44 Madera Subbasin Wells By Section Dom Well Depth.mxd

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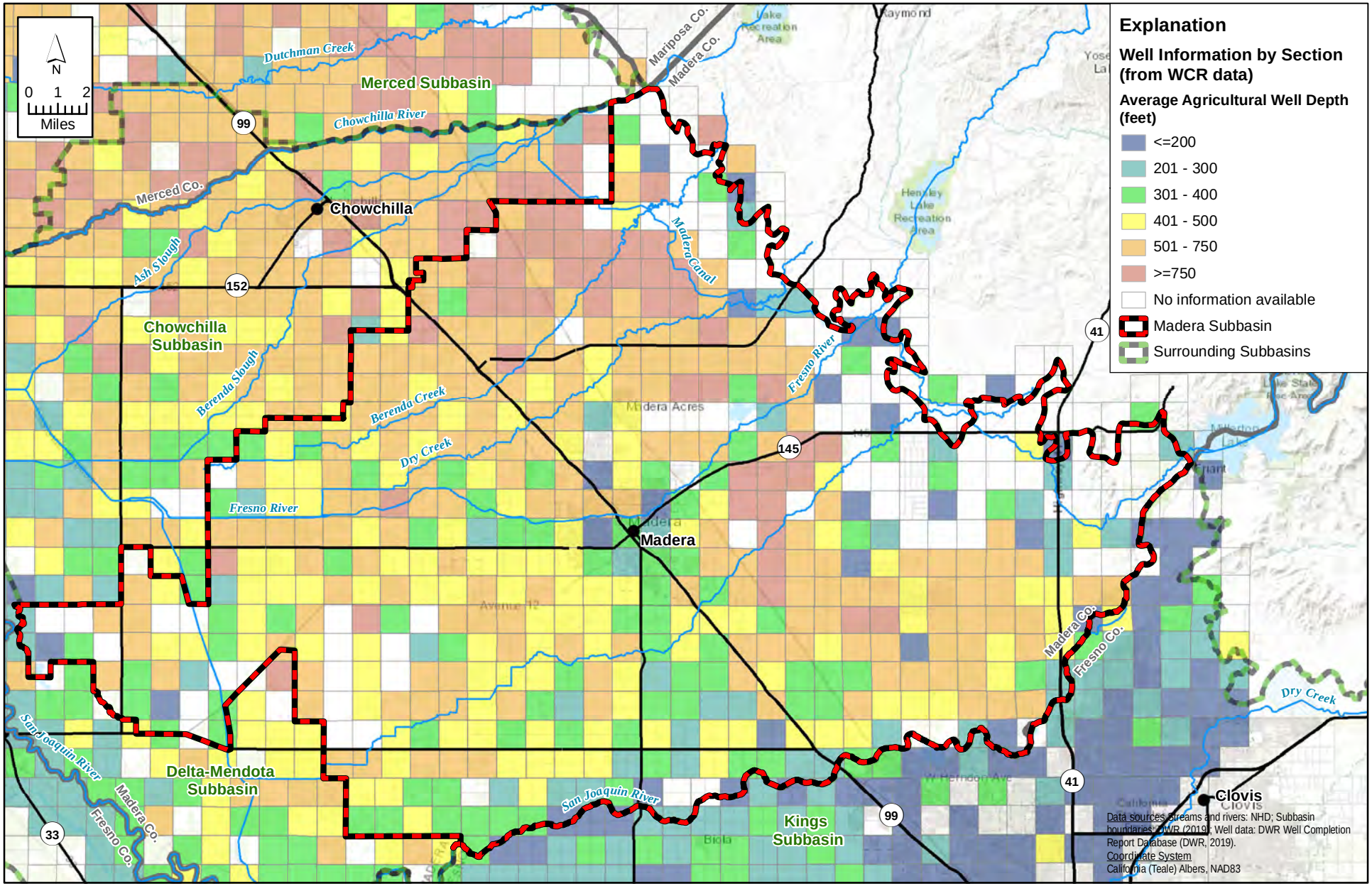
FIGURE 2-44
Map of Well Information by Section: Average Domestic Well Depth (from WCR data)

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-45 Madera Subbasin Wells By Section Ag Well Depth.mxd

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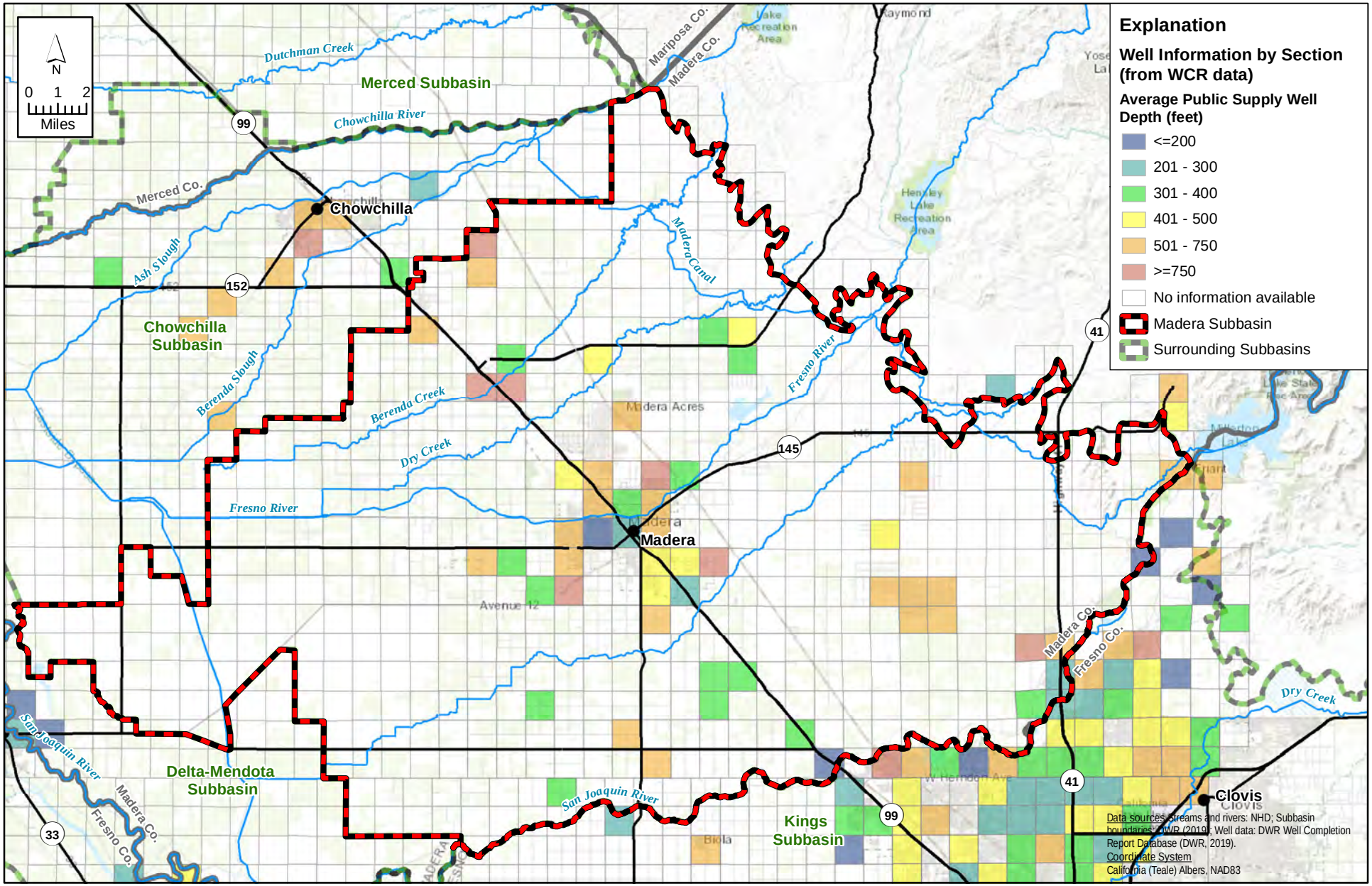
FIGURE 2-45
Map of Well Information by Section: Average Agricultural Well Depth (from WCR data)

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-46 Madera Subbasin Wells By Section PWS Well Depth.mxd

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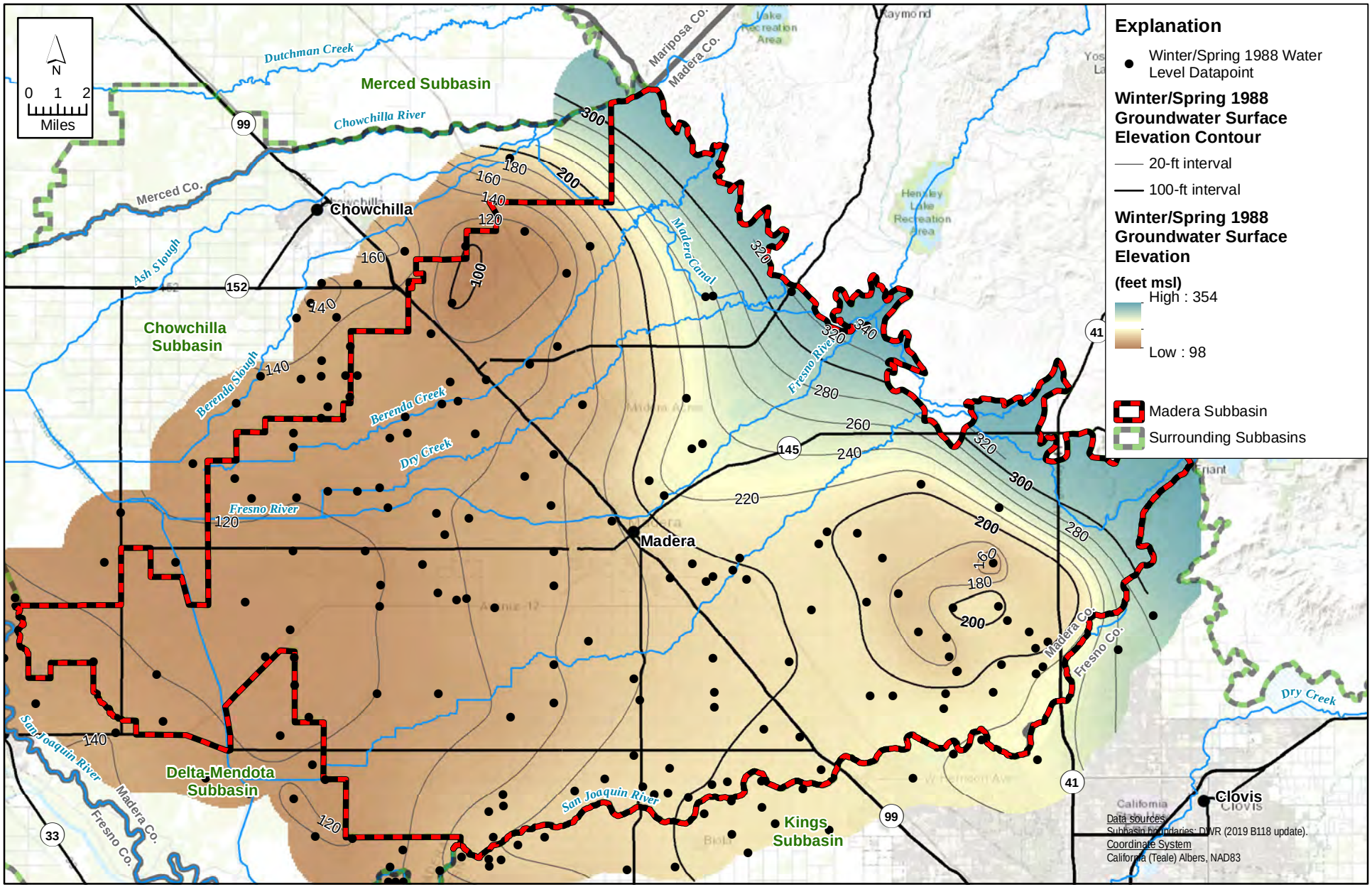
FIGURE 2-46
Map of Well Information by Section: Average Public Supply Well Depth (from WCR data)

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-47 Madera Subbasin SpW1988 GWEL Contours_Unconfined.mxd

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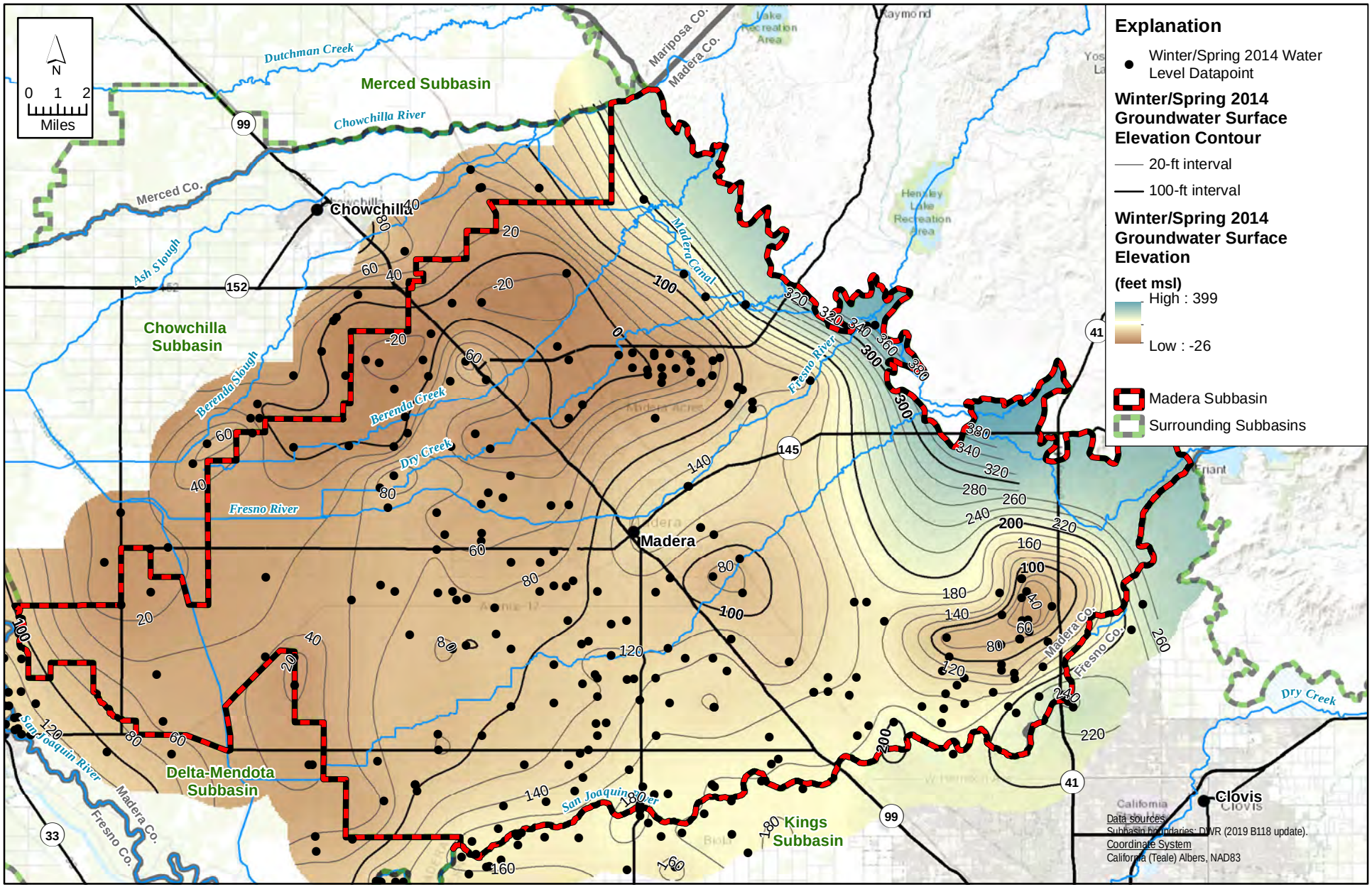
FIGURE 2-47
Groundwater Surface Elevation Map: Winter/Spring 1988 - Unconfined Groundwater

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-48 Madera Subbasin SpW2014 GWEL Contours_Unconfined.mxd

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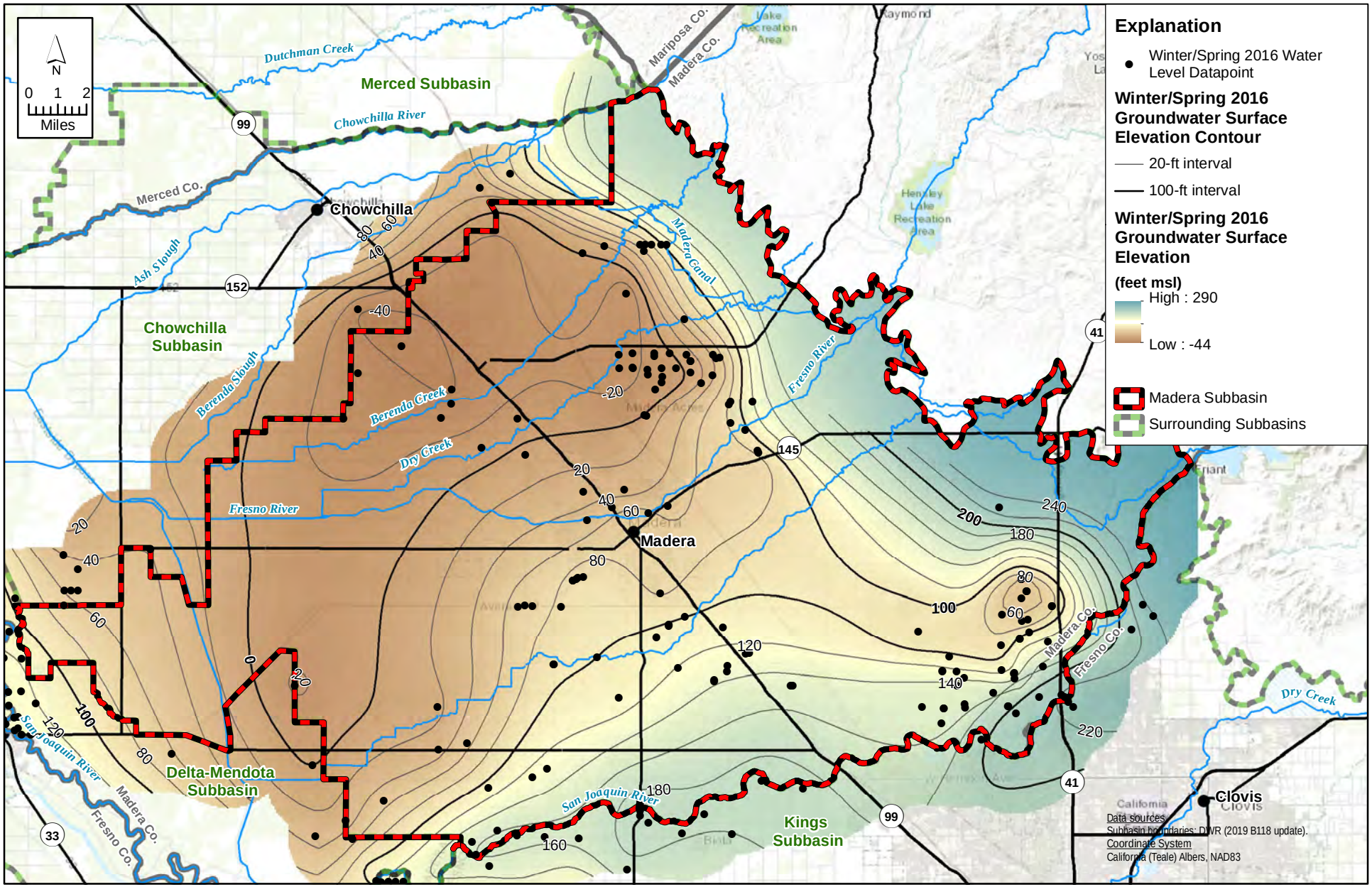
FIGURE 2-48
Groundwater Surface Elevation Map:
Winter/Spring 2014 - Unconfined Groundwater

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-49 Madera Subbasin SpW2016 GWEL Contours_Unconfined.mxd

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FIGURE 2-49
Groundwater Surface Elevation Map: Winter/Spring 2016 - Unconfined Groundwater

Madera Subbasin
Groundwater Sustainability Plan

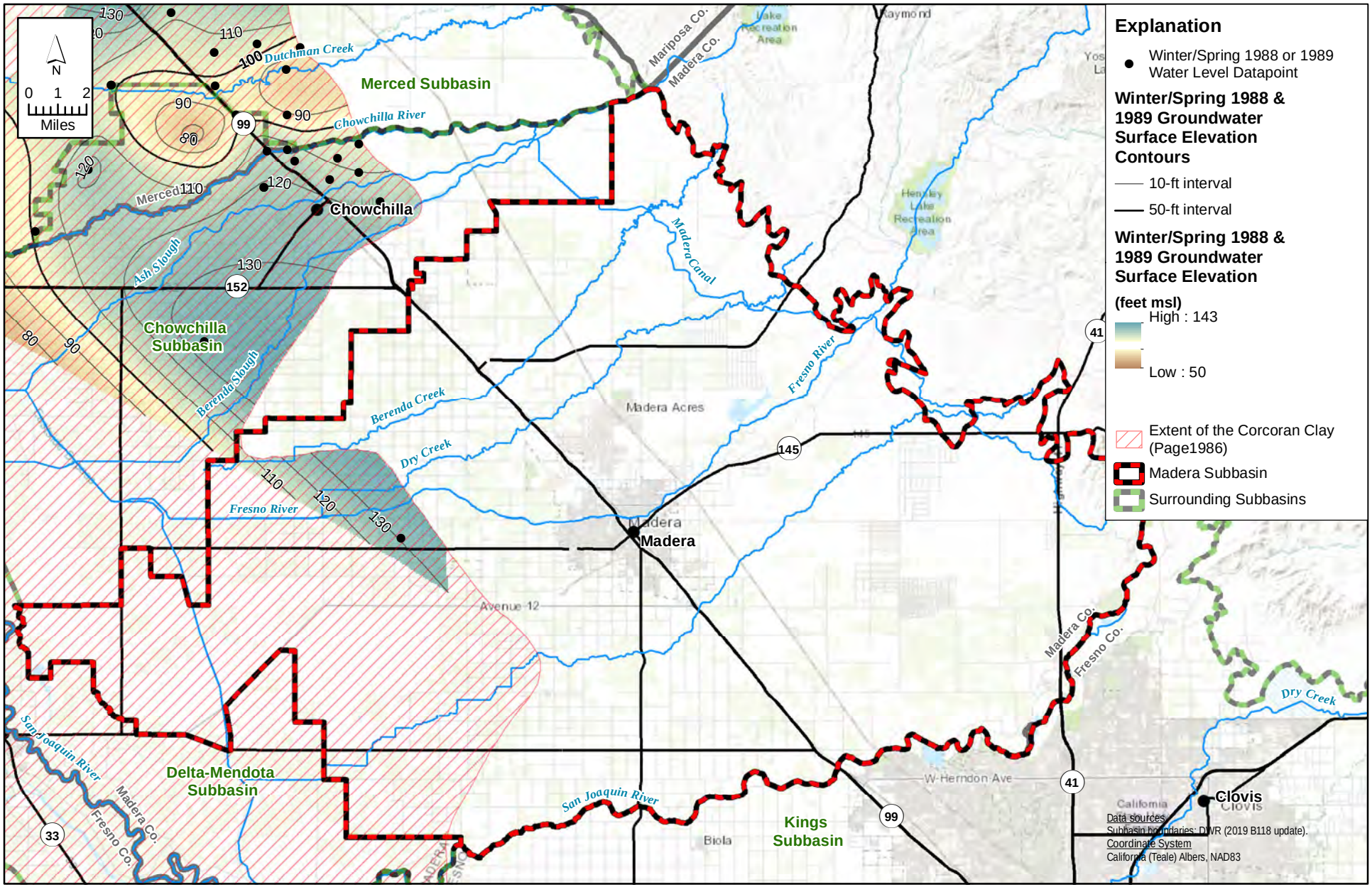

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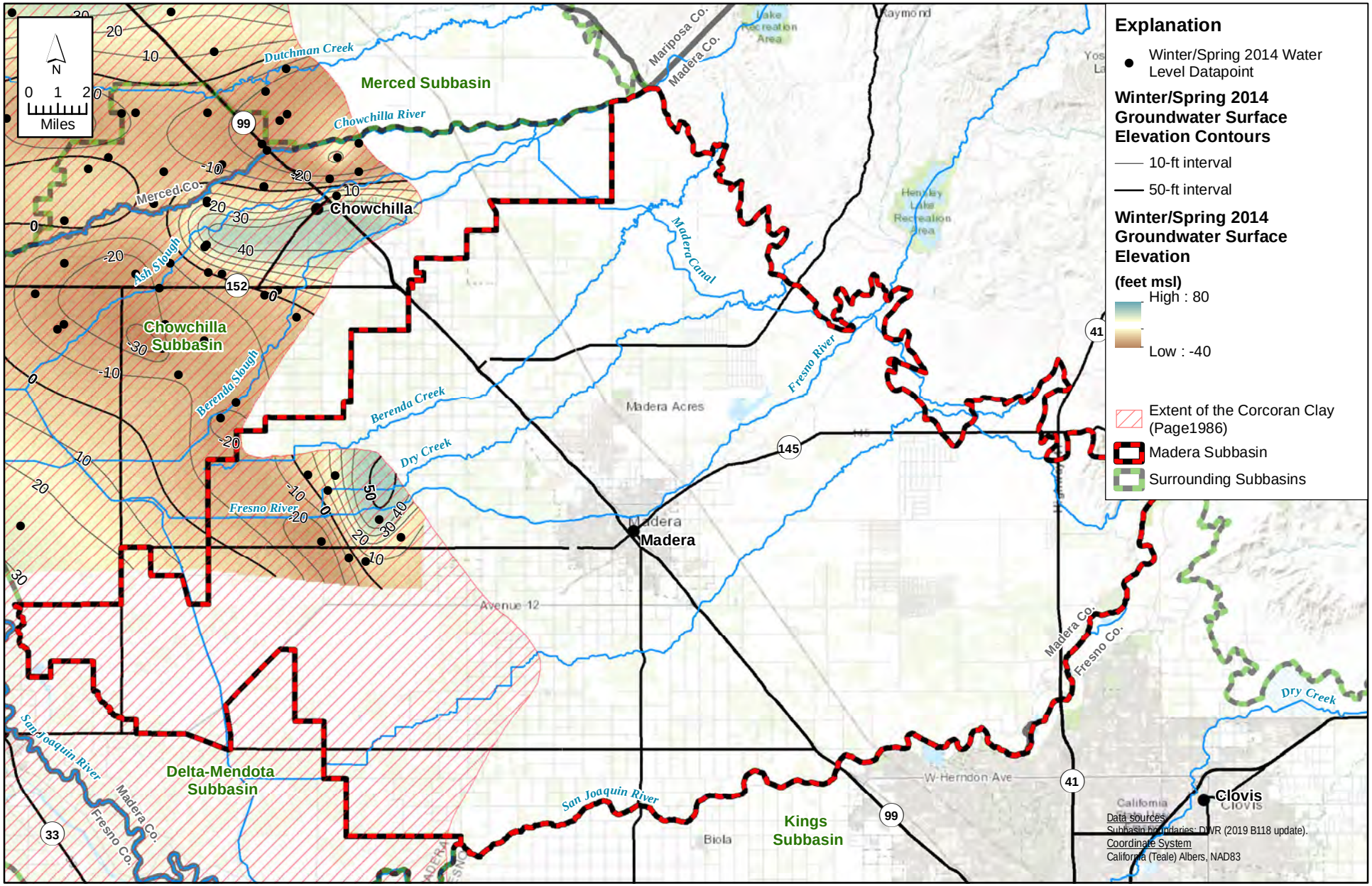
FIGURE 2-50
Groundwater Surface Elevation Map:
Winter/Spring 1988 and 1989 - Lower Aquifer within Corcoran Clay

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-51 Madera Subbasin SpW2014 GWEL Contours_Lower.mxd

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FIGURE 2-51
Groundwater Surface Elevation Map:
Winter/Spring 2014 - Lower Aquifer within Corcoran Clay

Madera Subbasin
Groundwater Sustainability Plan

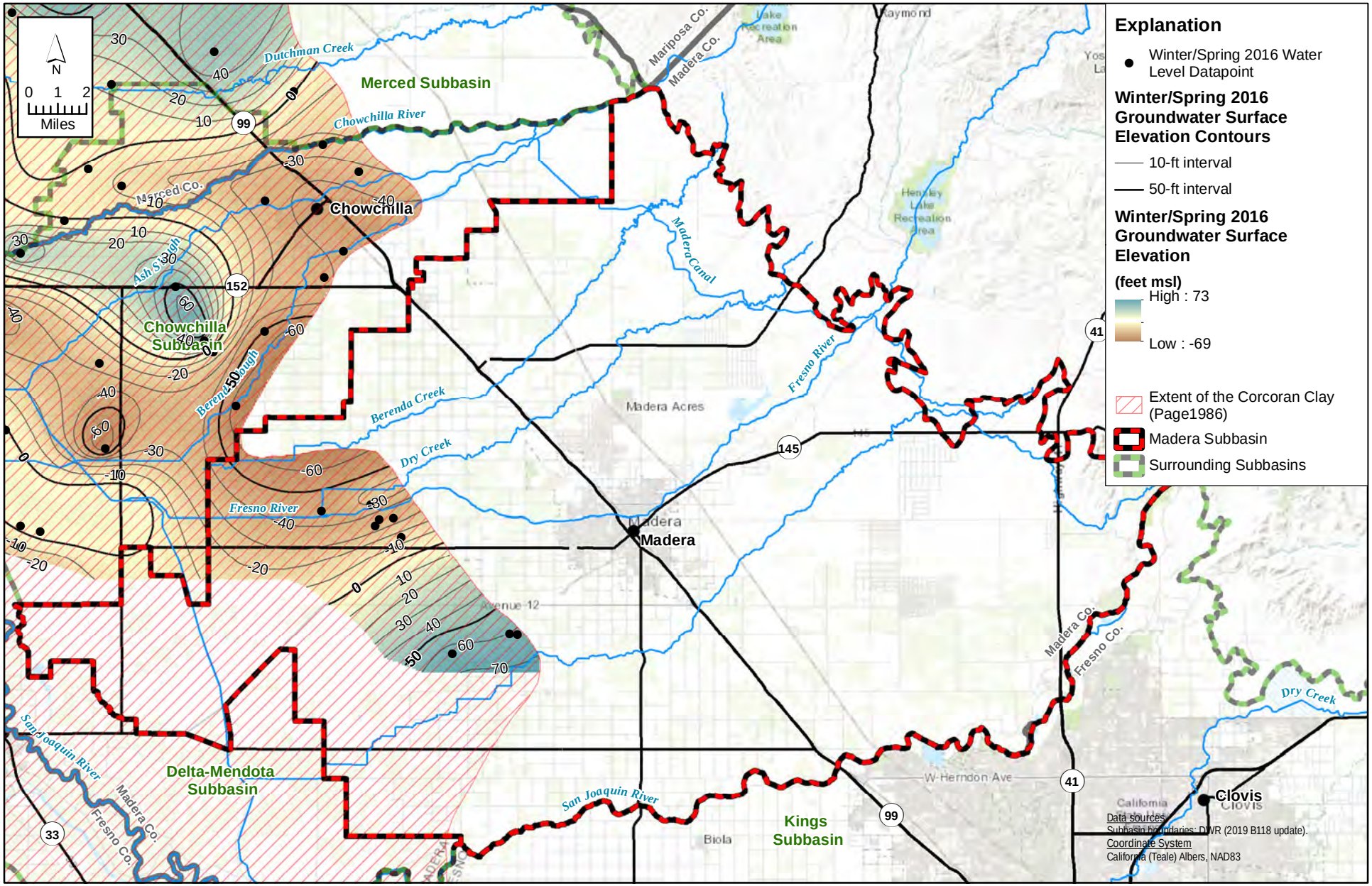

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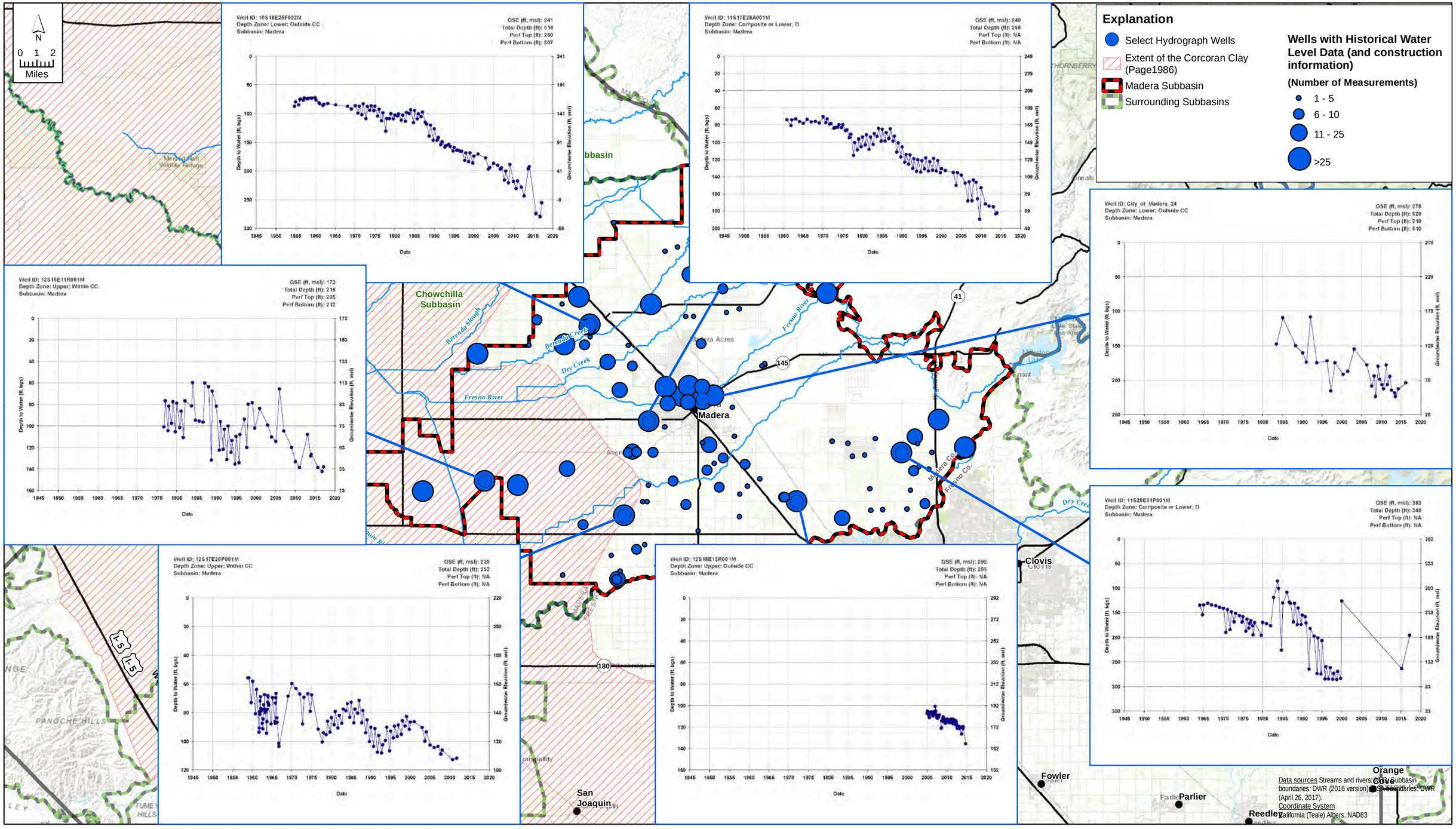
FIGURE 2-52
Groundwater Surface Elevation Map:
Winter/Spring 2016 - Lower Aquifer within Corcoran Clay

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-53 Madera Subbasin GW Level Hydrographs_Upper.mxd

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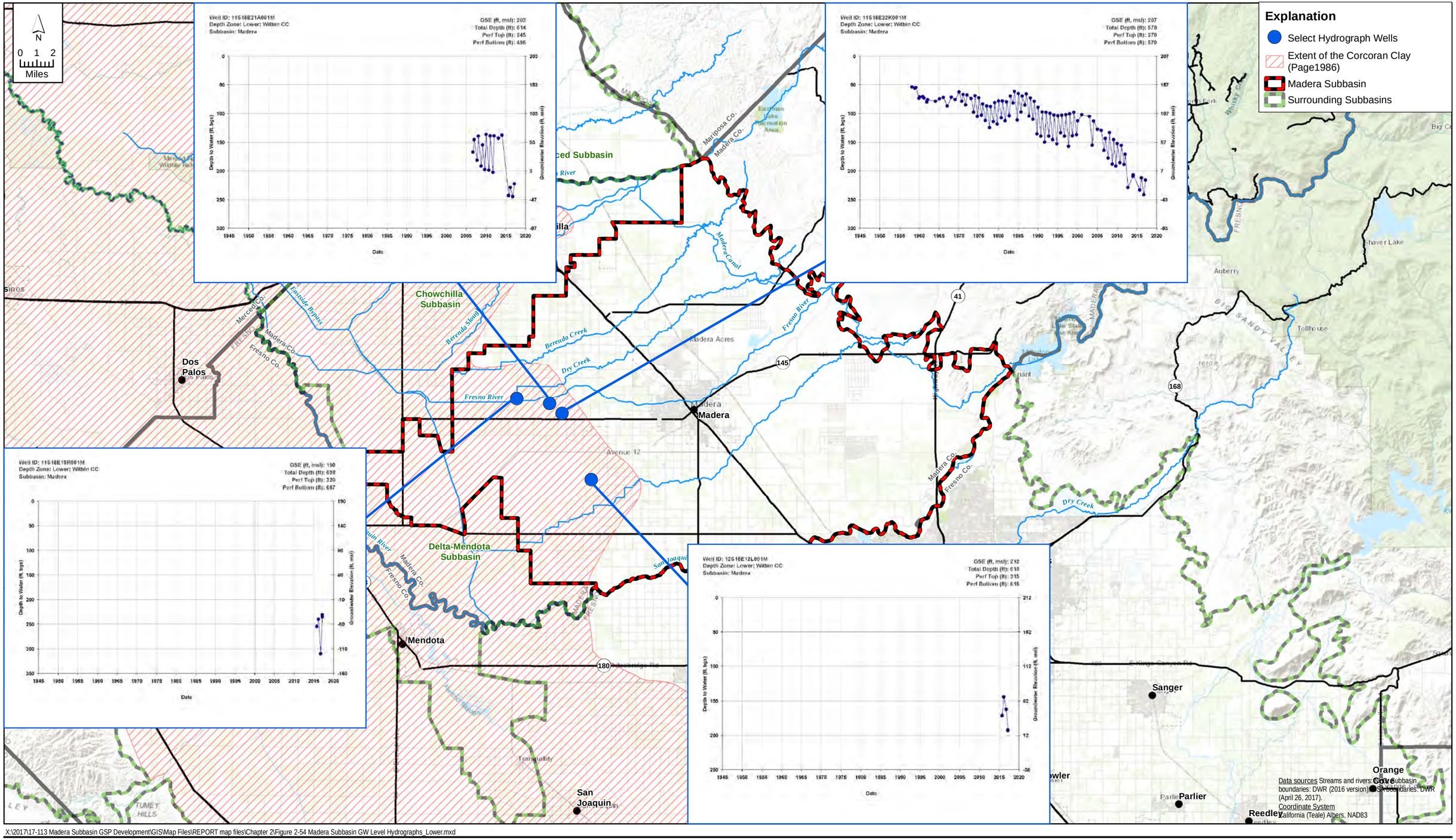
FIGURE 2-53
Select Groundwater Level Hydrographs:
Outside the Corcoran Clay or Upper Aquifer within the Corcoran Clay

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-54 Madera Subbasin GW Level Hydrographs_Lower.mxd

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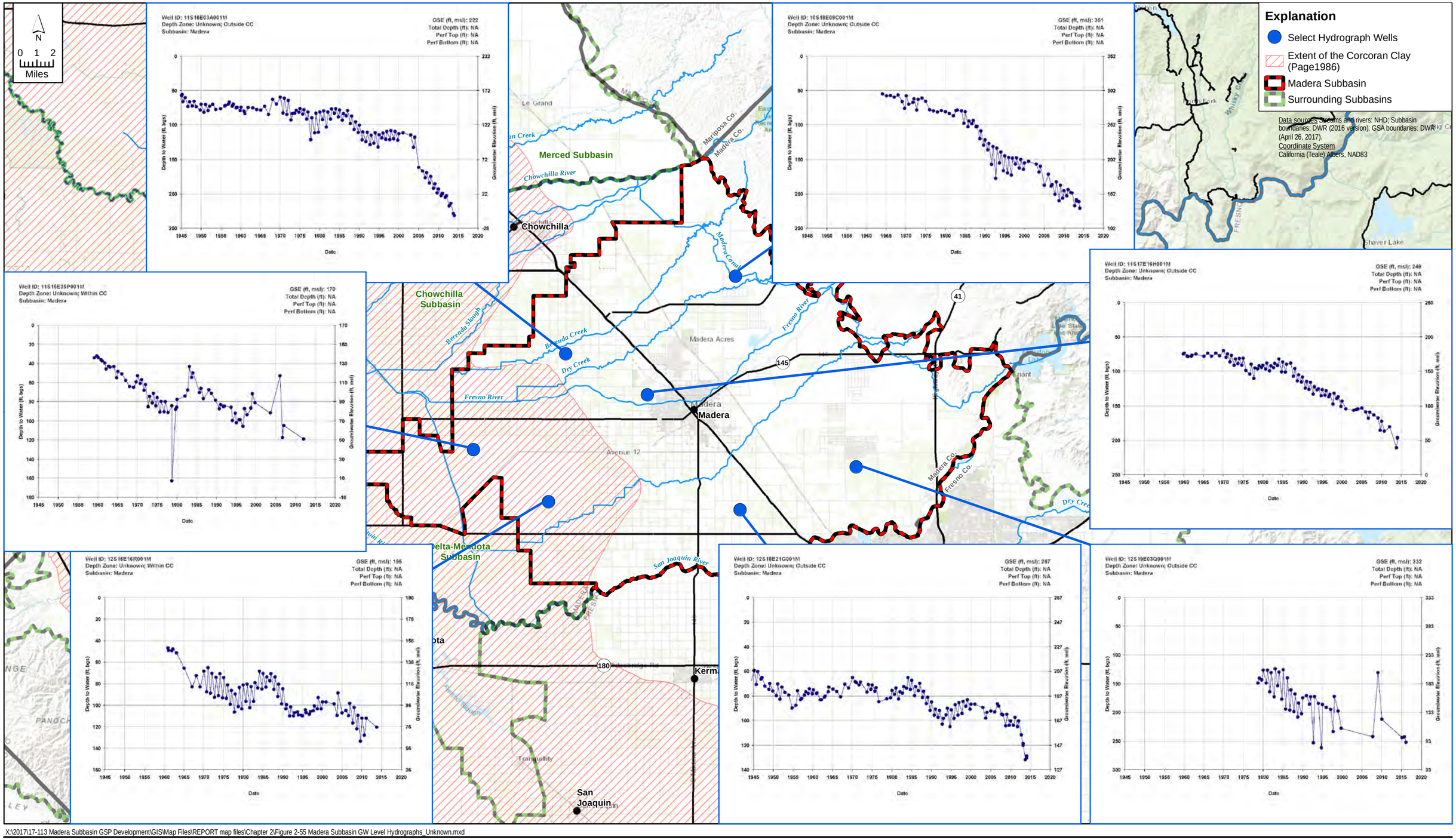
FIGURE 2-54
Select Groundwater Level Hydrographs: Lower Aquifer within the Corcoran Clay

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-55 Madera Subbasin GW Level Hydrographs_Unknown.mxd

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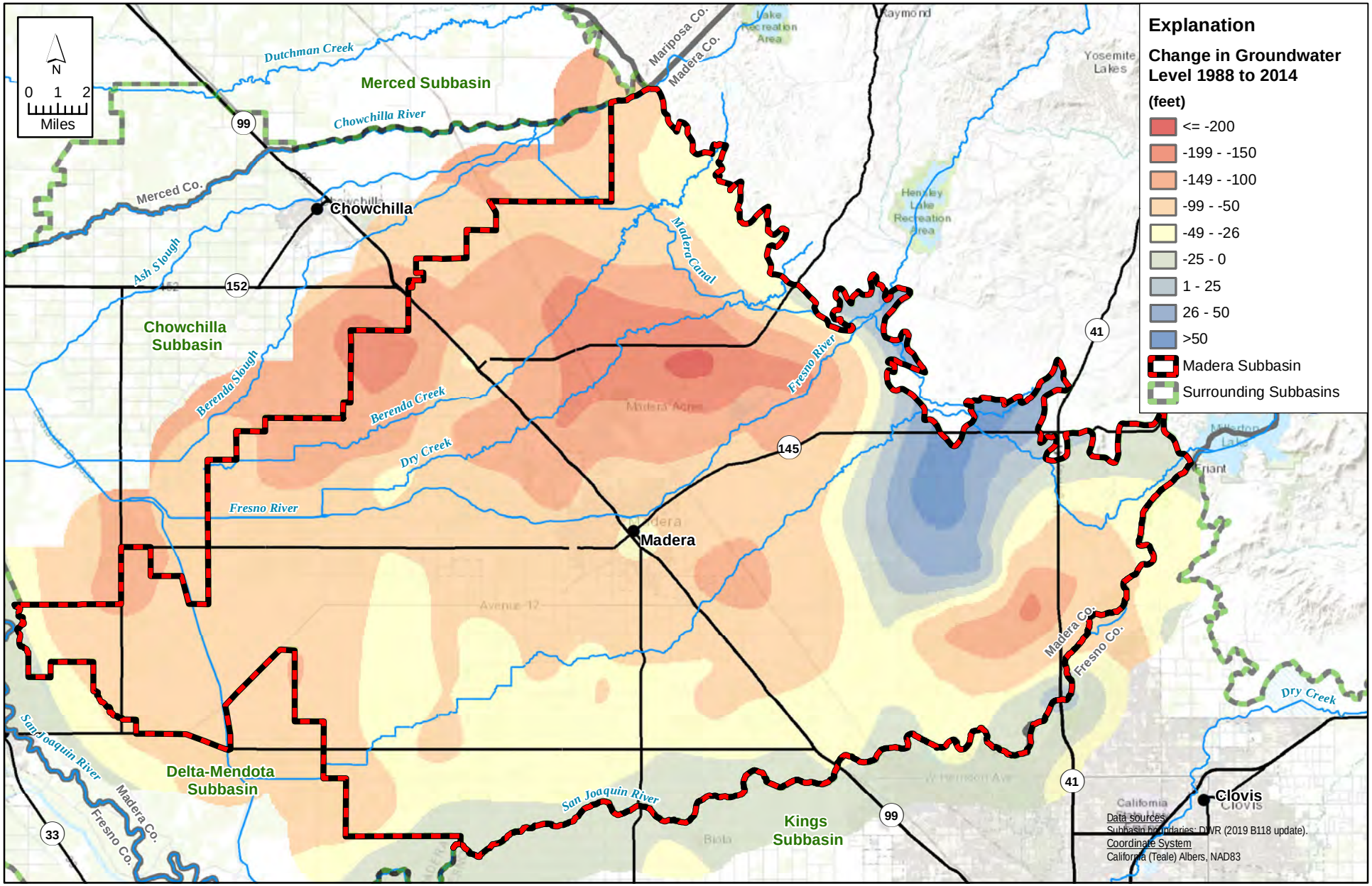
FIGURE 2-55
Select Groundwater Level Hydrographs: Wells of Unknown Construction

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-56 Madera Subbasin SpW1988 to 2014 GWEL Change_Unconfined.mxd

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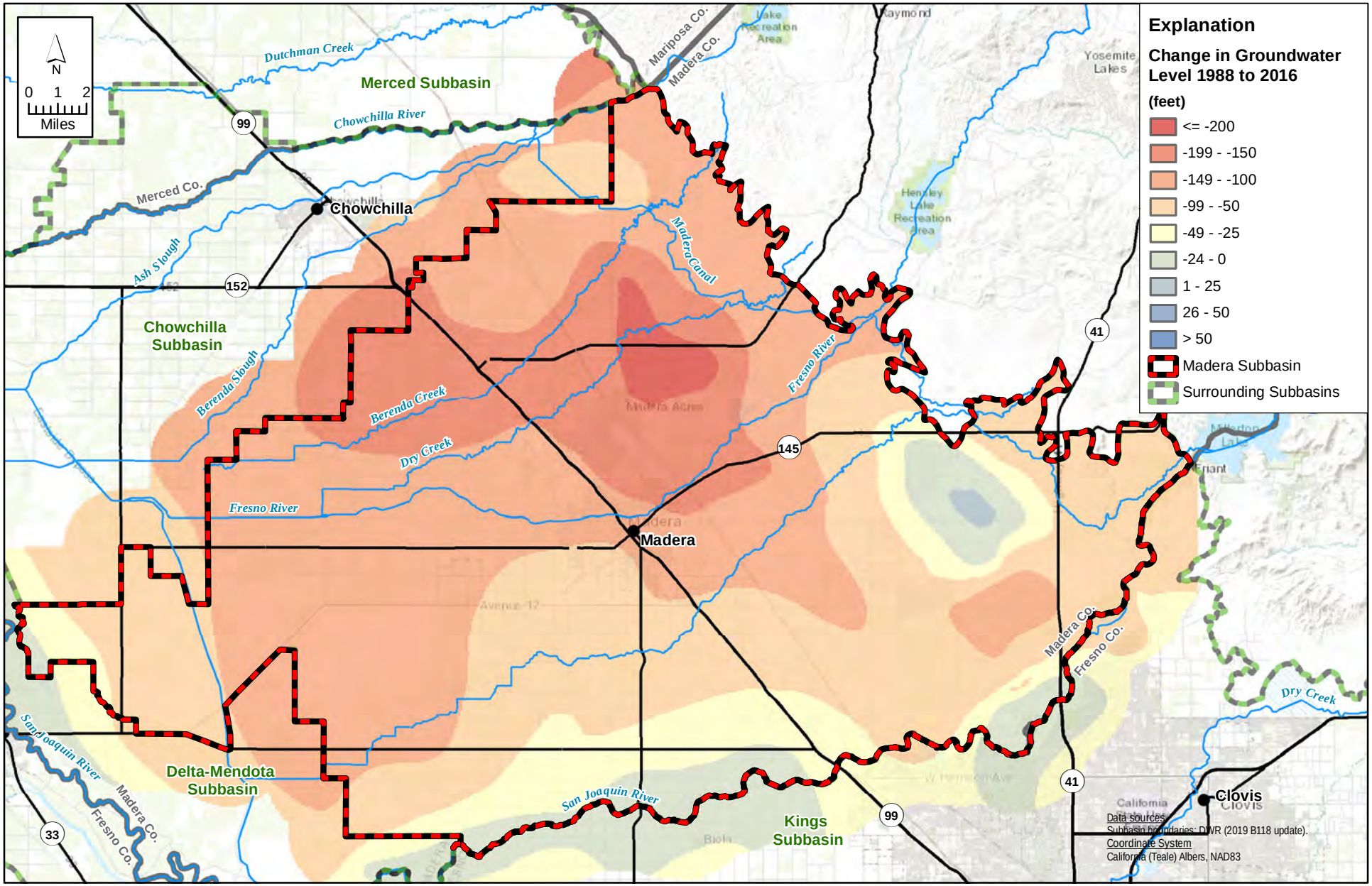
FIGURE 2-56
Groundwater Level Change Map:
Winter/Spring 1988 to 2014 - Unconfined Groundwater

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-57 Madera Subbasin SpW1988 to 2016 GWEL Change_Unconfined.mxd

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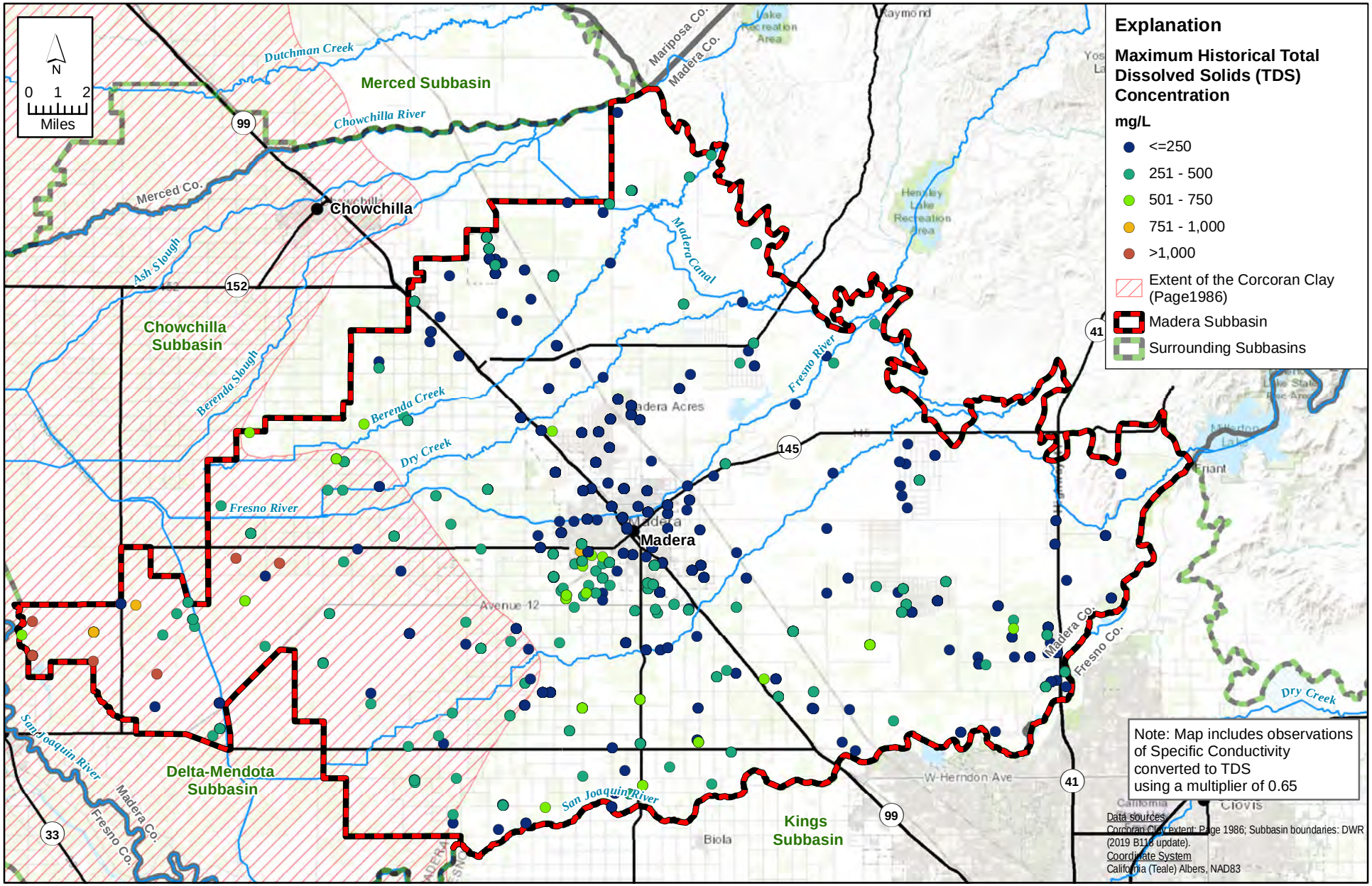
FIGURE 2-57
Groundwater Level Change Map:
Winter/Spring 1988 to 2016 - Unconfined Groundwater

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-58 Madera Subbasin GW Quality Map TDS All Wells_20190708.mxd

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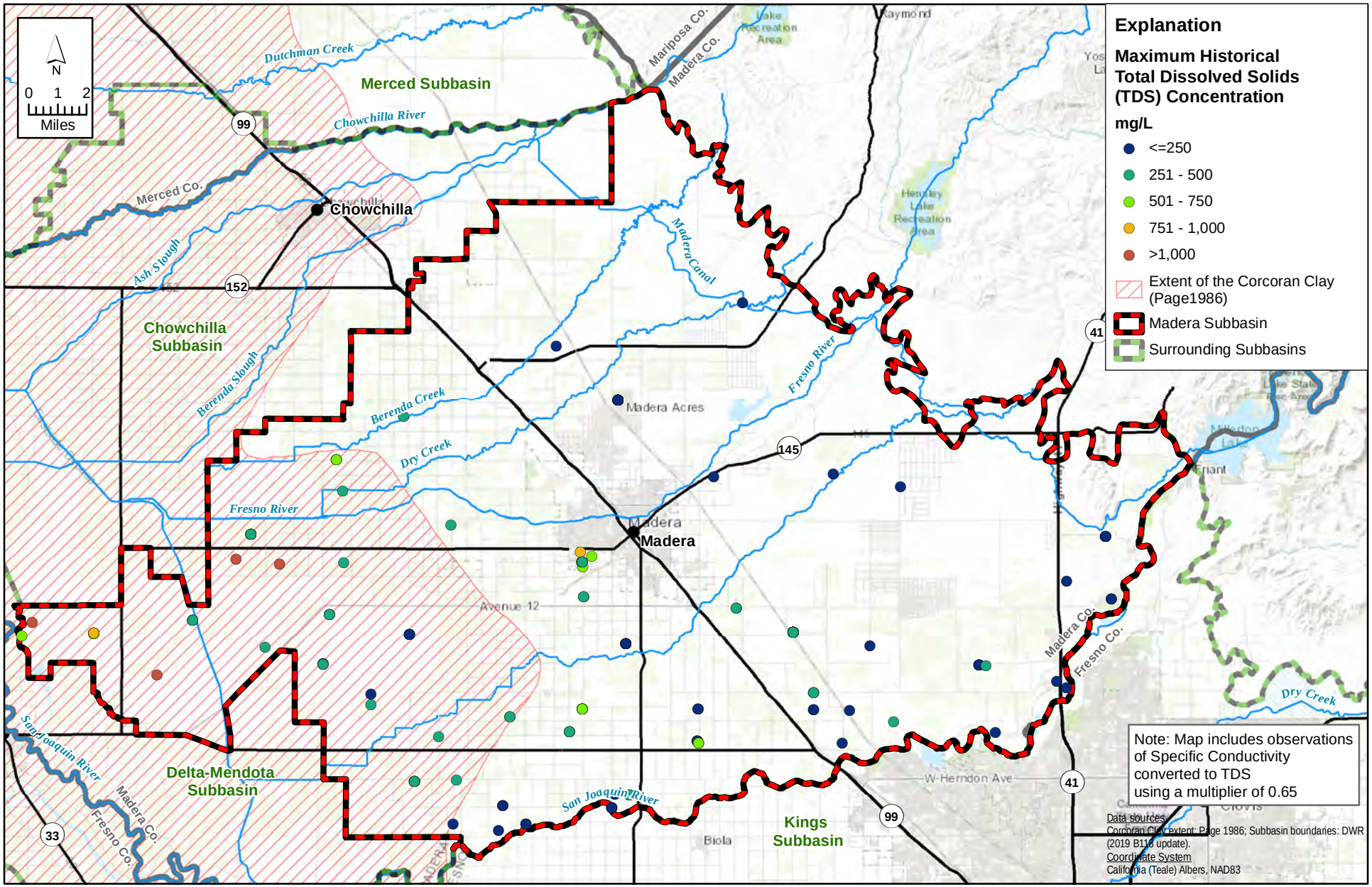
FIGURE 2-58
Groundwater Quality Map: Total Dissolved Solids Concentrations in All Wells

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-59 Madera Subbasin GW Quality Map TDS Upper_20190708.mxd

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FIGURE 2-59

Groundwater Quality Map: Total Dissolved Solids Concentrations in Upper Aquifer Wells

Madera Subbasin
Groundwater Sustainability Plan

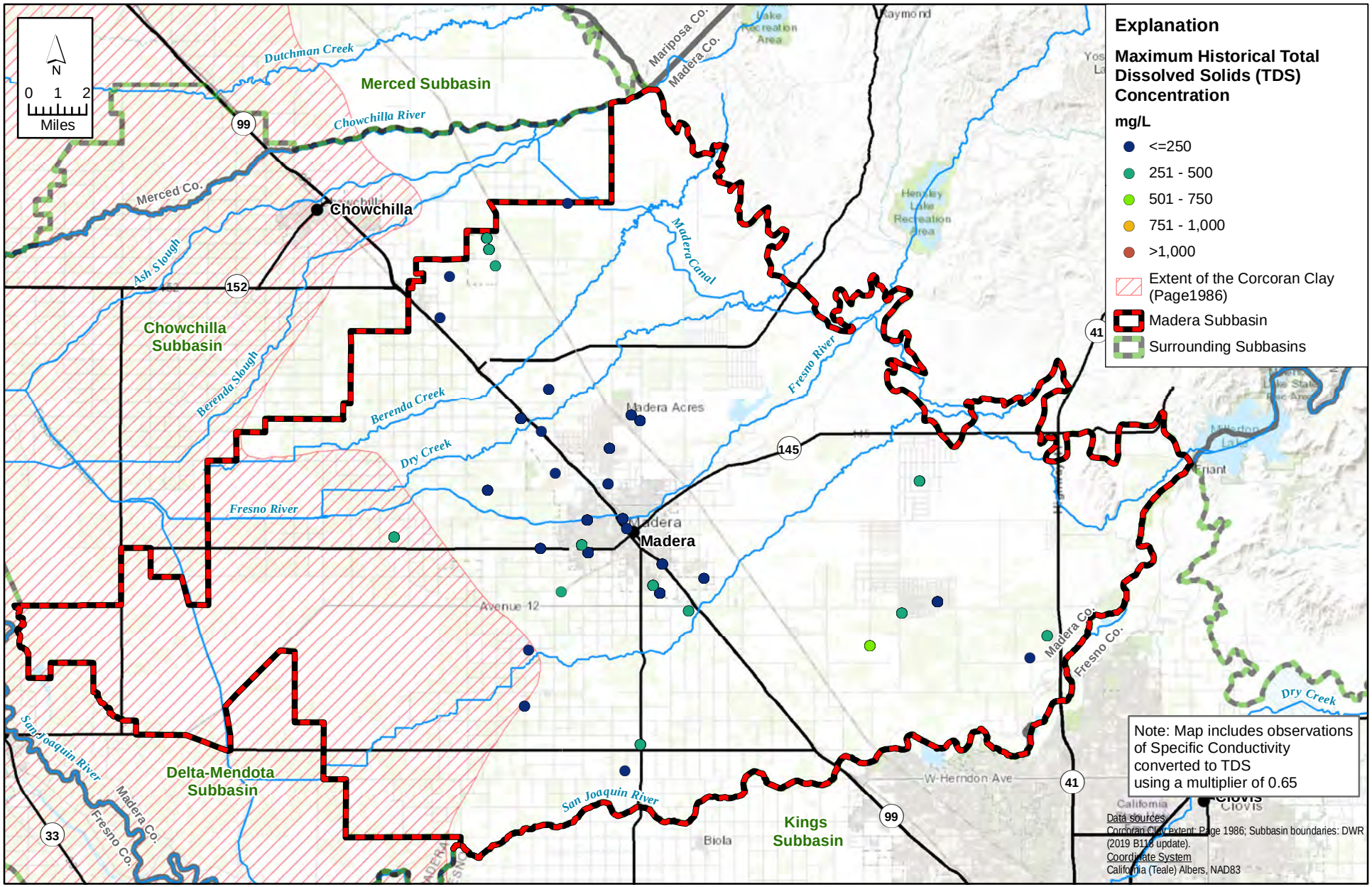

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FIGURE 2-60

Groundwater Quality Map: Total Dissolved Solids Concentrations in Lower Aquifer Wells

Madera Subbasin
Groundwater Sustainability Plan

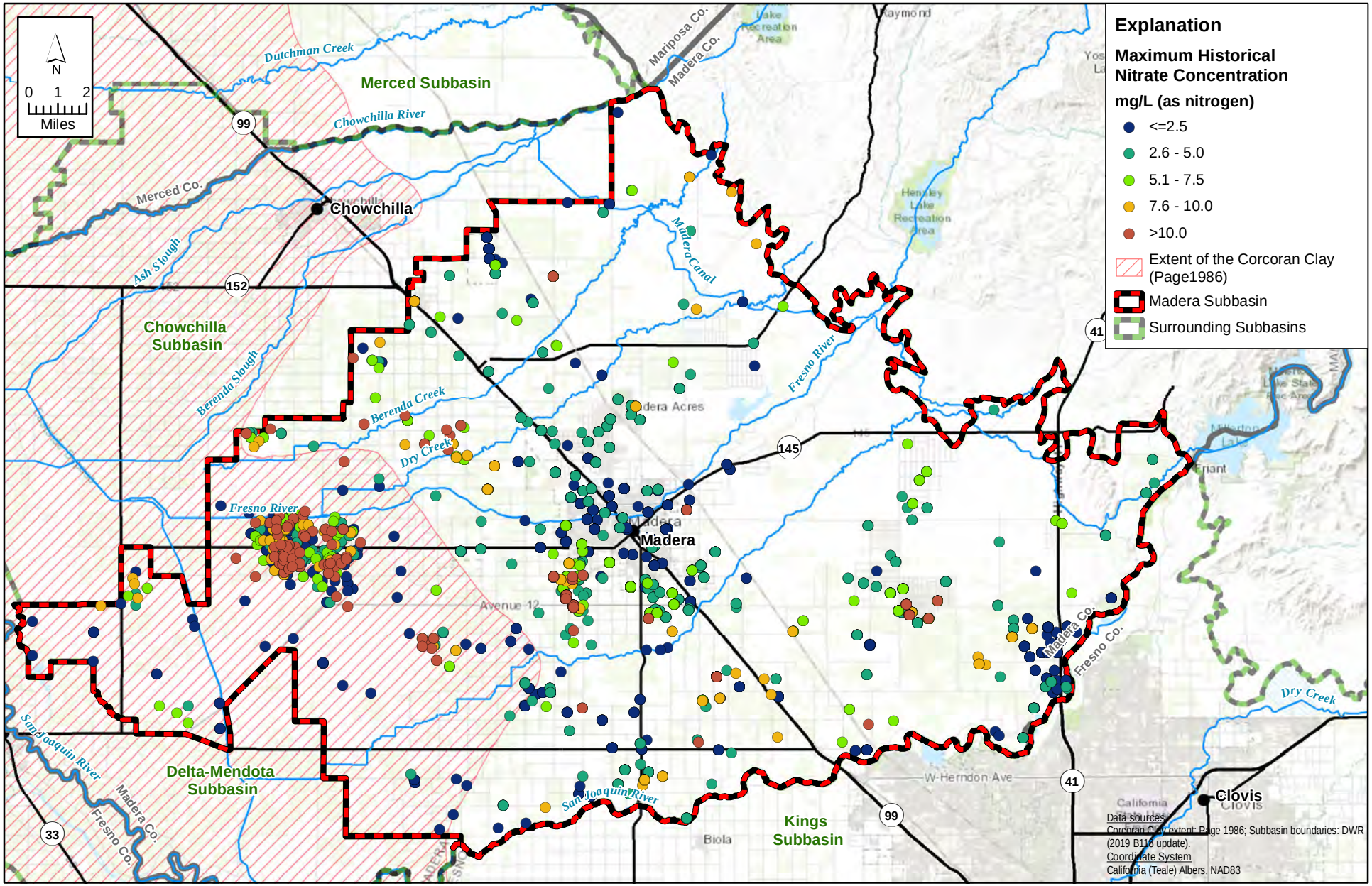

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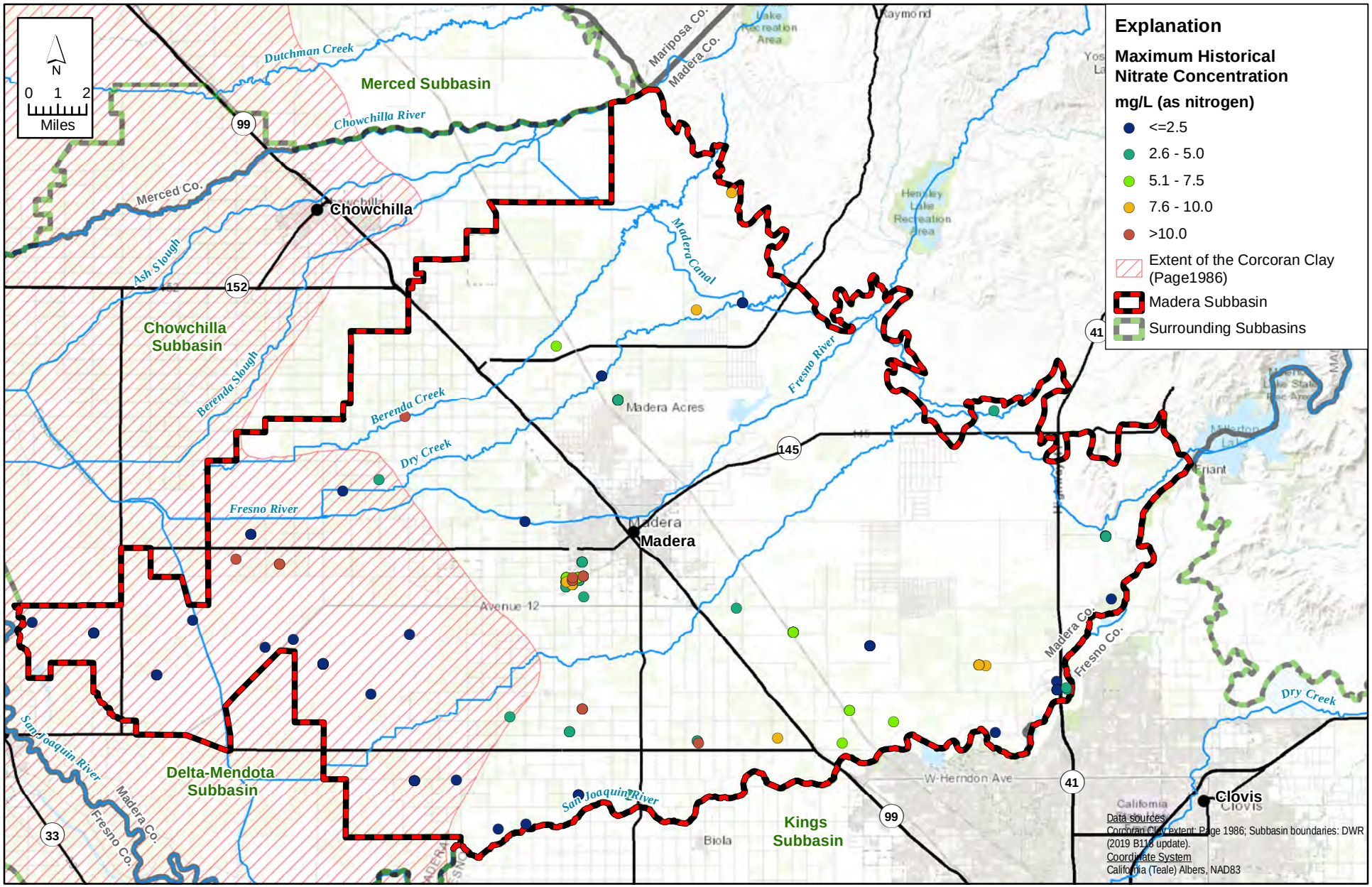
FIGURE 2-61
Groundwater Quality Map: Nitrate Concentrations in All Wells

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-62 Madera Subbasin GW Quality Map Nitrate Upper_20190708.mxd

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FIGURE 2-62
Groundwater Quality Map: Nitrate Concentrations in Upper Aquifer Wells

Madera Subbasin
Groundwater Sustainability Plan

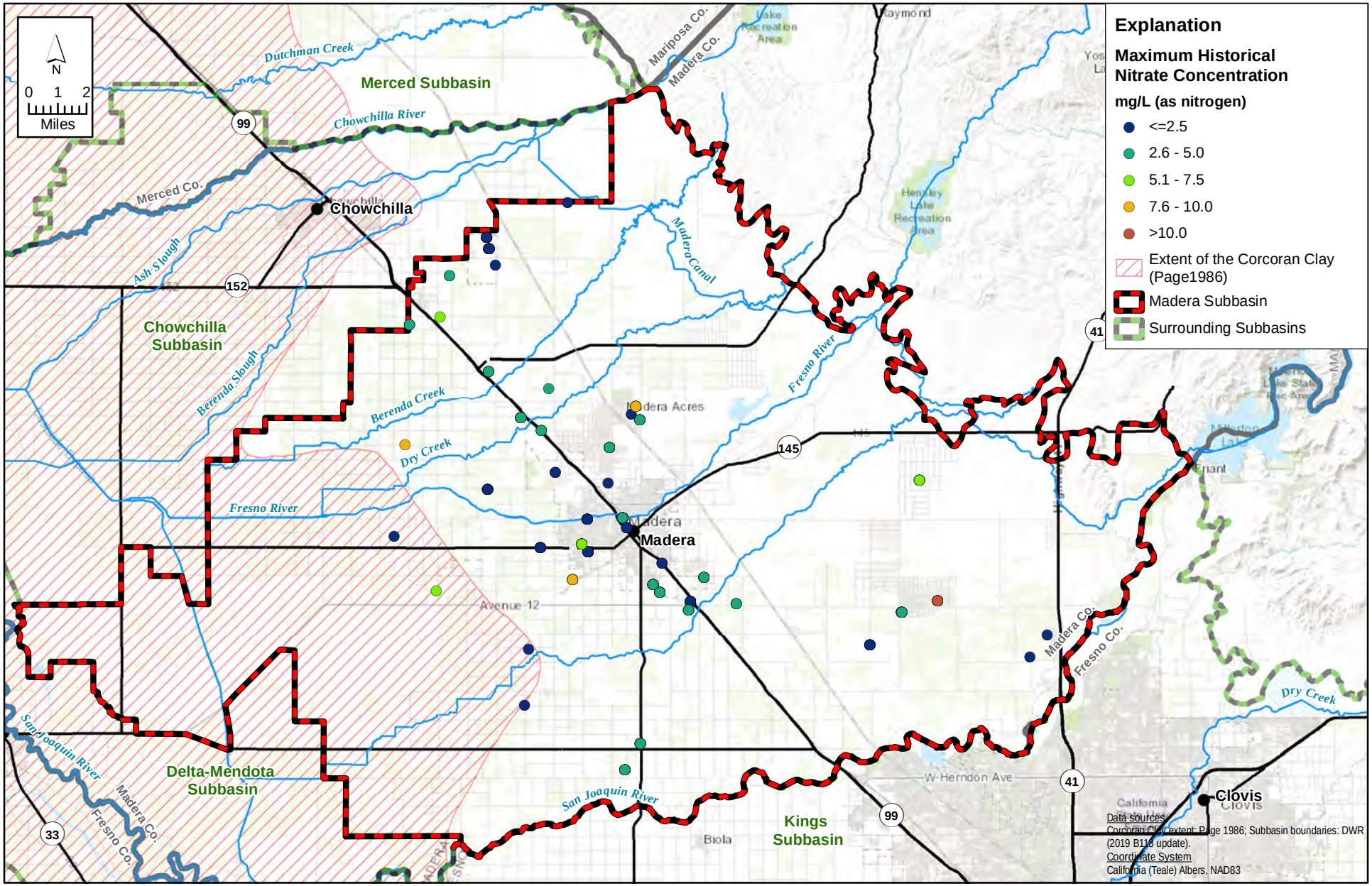

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FIGURE 2-63
Groundwater Quality Map: Nitrate Concentrations in Lower Aquifer Wells

Madera Subbasin
Groundwater Sustainability Plan

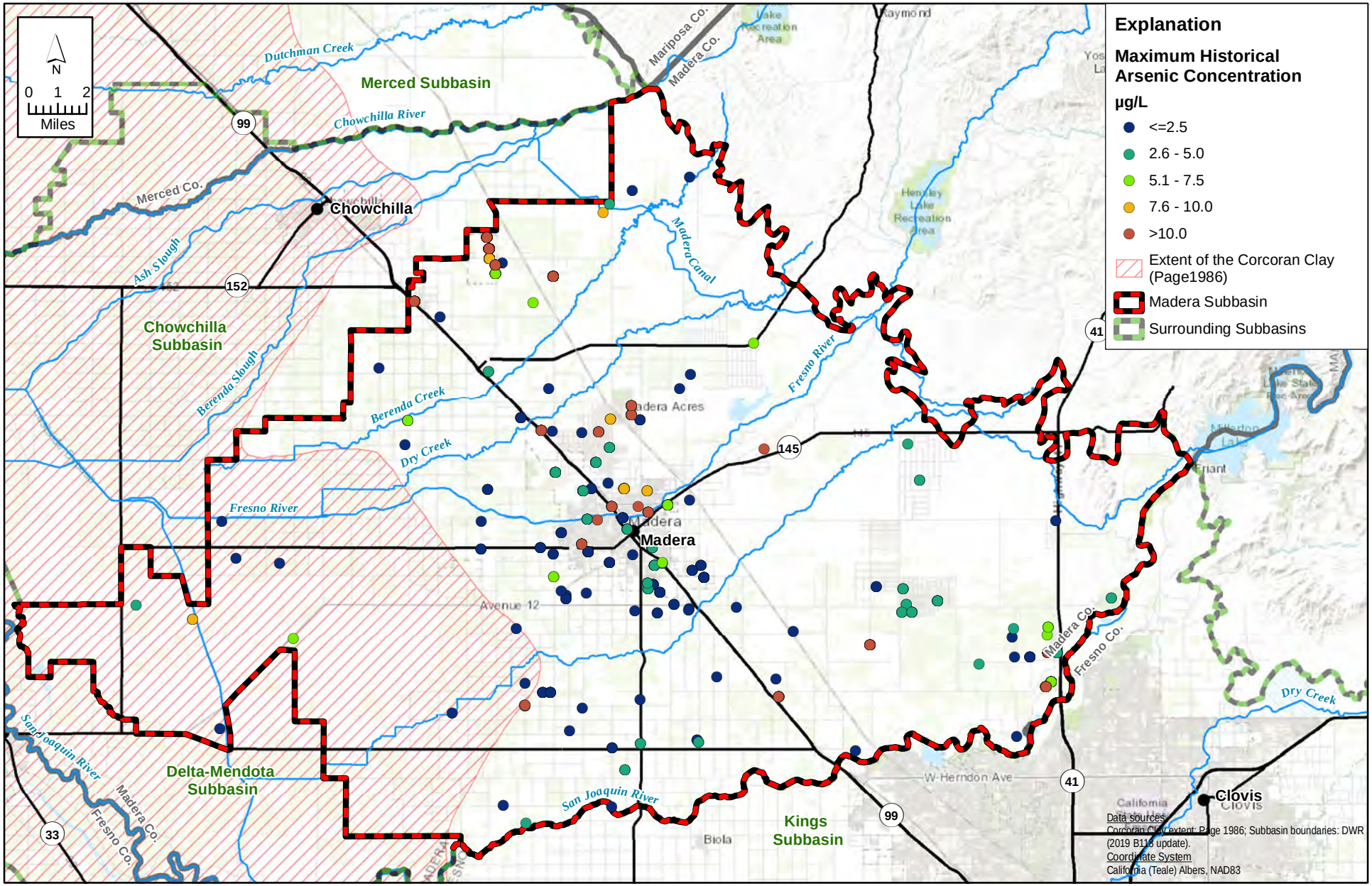

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FIGURE 2-64
Groundwater Quality Map: Arsenic Concentrations in All Wells

Madera Subbasin
Groundwater Sustainability Plan

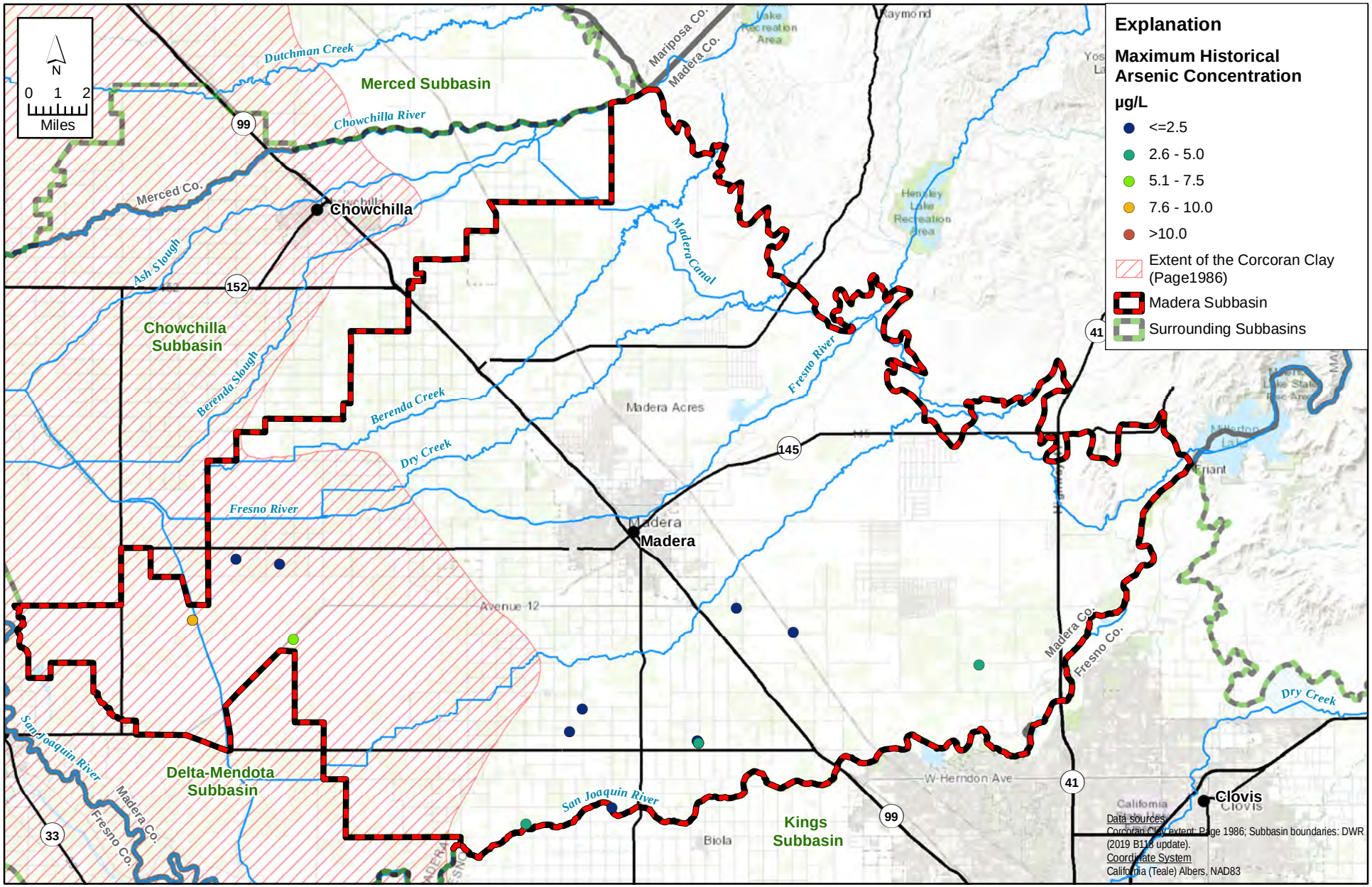

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FIGURE 2-65
Groundwater Quality Map: Arsenic Concentrations in Upper Aquifer Wells

Madera Subbasin
Groundwater Sustainability Plan

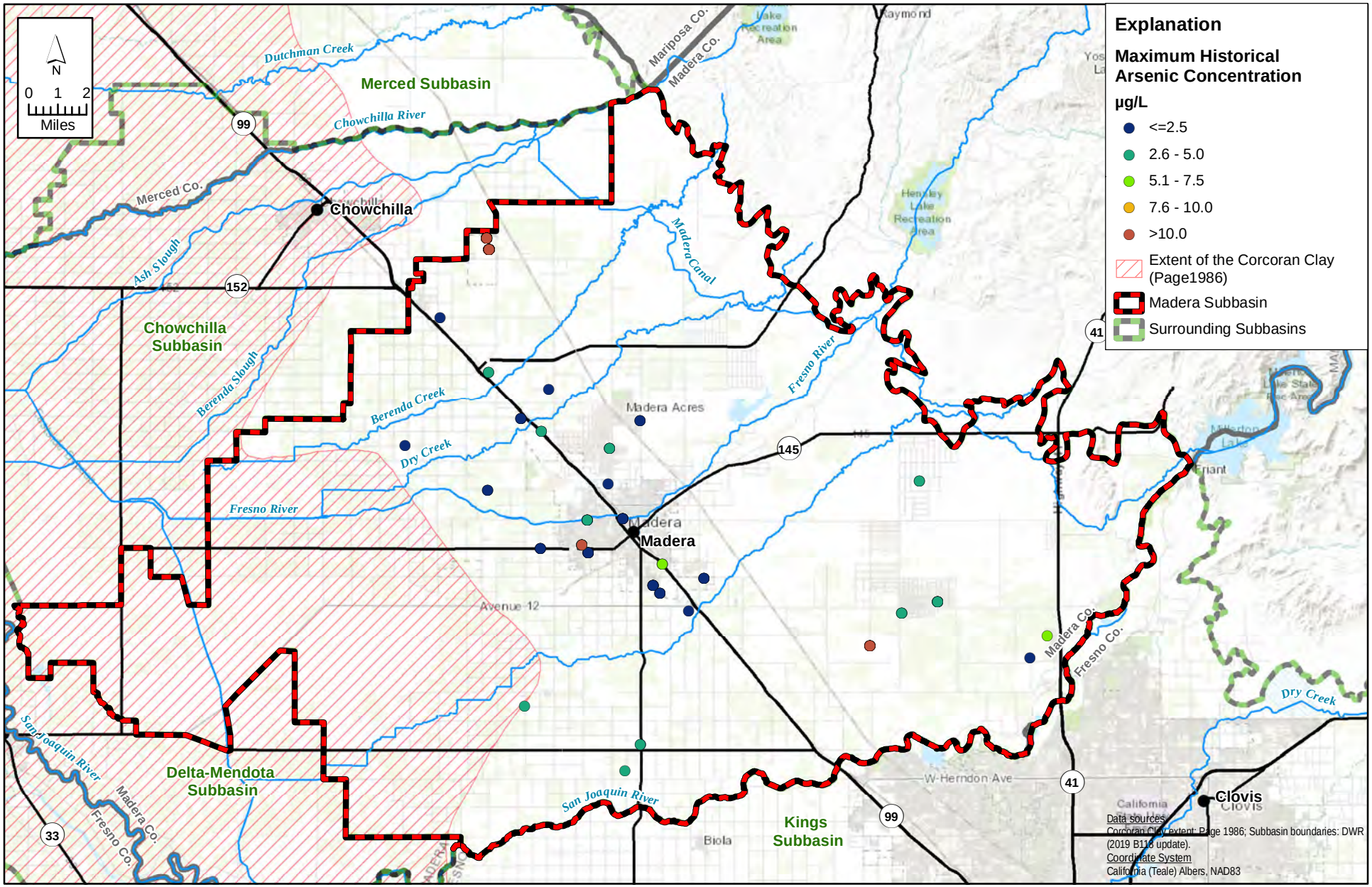

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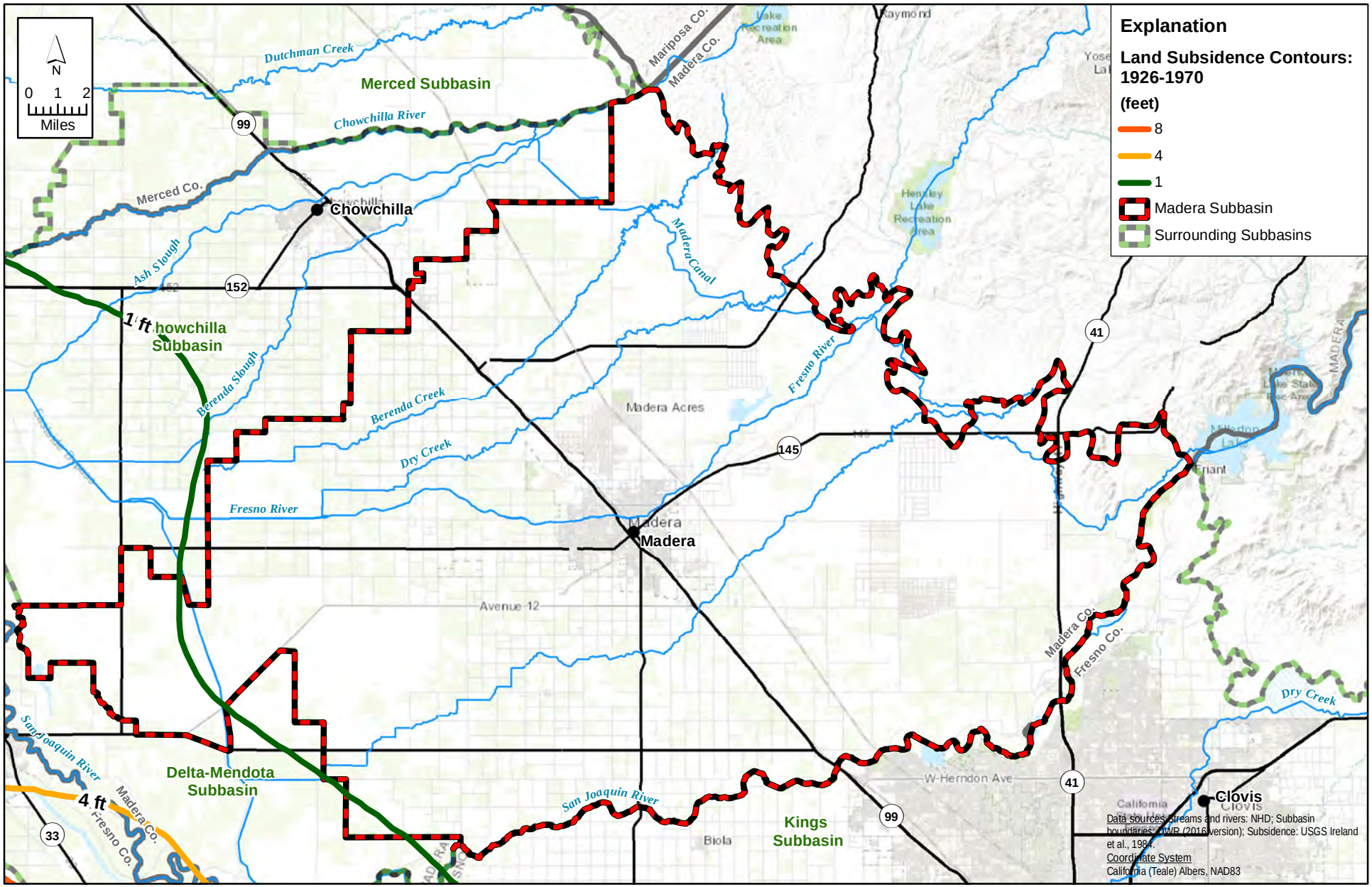
FIGURE 2-66
Groundwater Quality Map: Arsenic Concentrations in Lower Aquifer Wells

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-67 Madera Subbasin Land Subsidence 1926-1970.mxd

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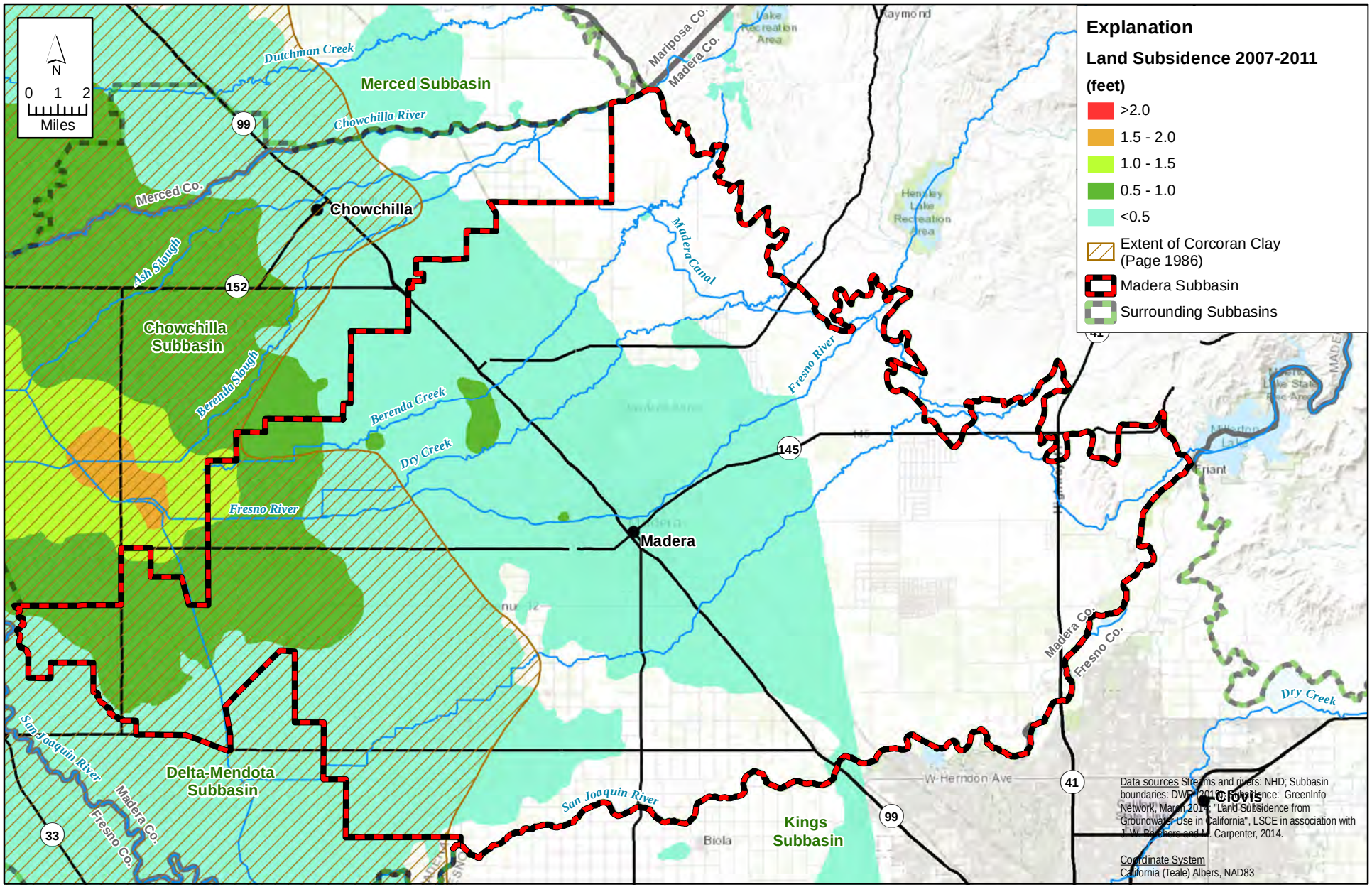
FIGURE 2-67

Map of Historical Land Subsidence Contours: 1926-1970

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-68 Madera Subbasin Land Subsidence 2007-2011.mxd

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FIGURE 2-68

Map of Historical Land Subsidence: 2007-2011

Madera Subbasin
Groundwater Sustainability Plan

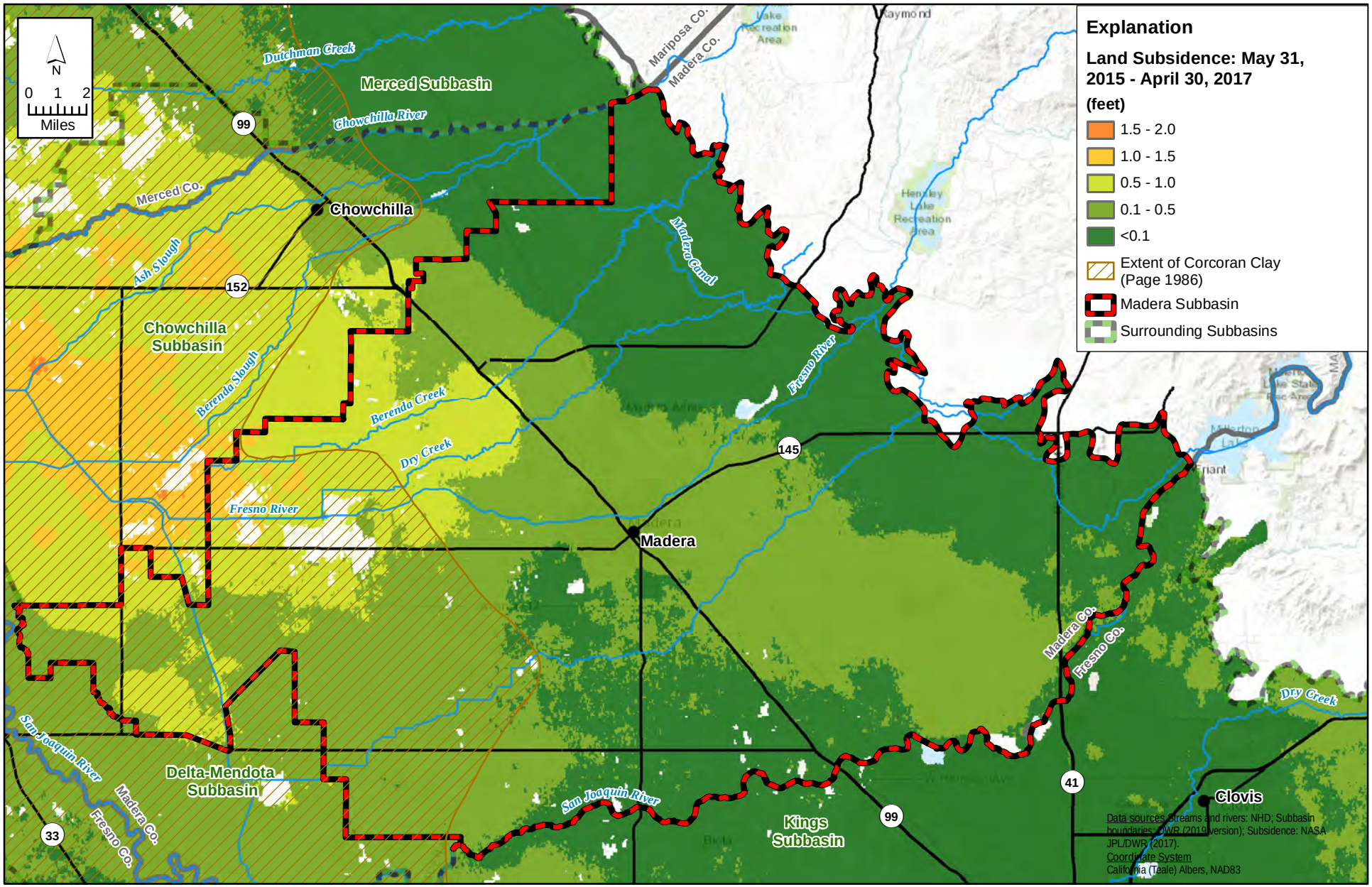

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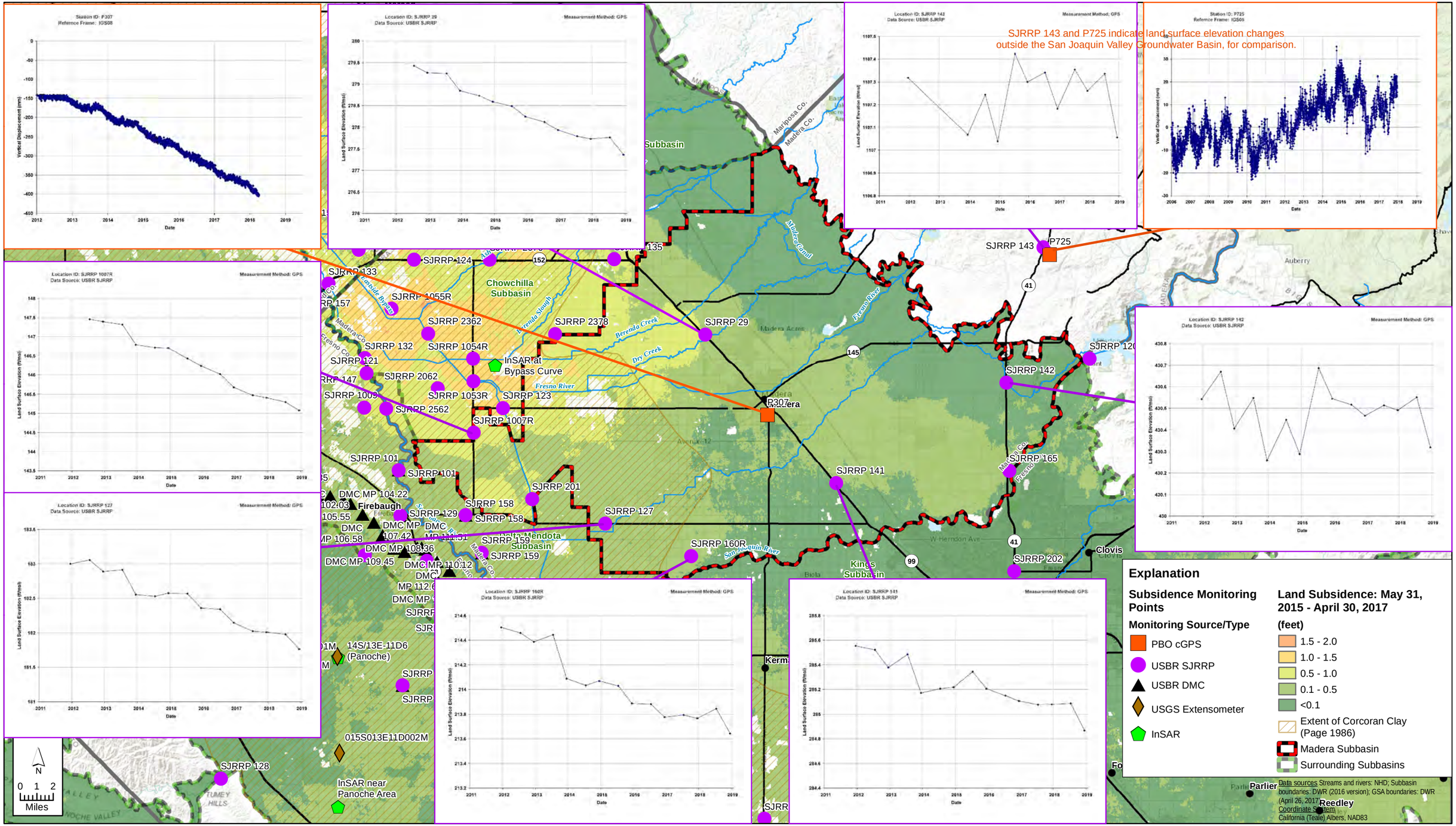
FIGURE 2-69

Map of Land Subsidence: 2015 to 2017

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-70 Madera Subbasin Land Subsidence Monitoring Point Trends_update20190708.mxd

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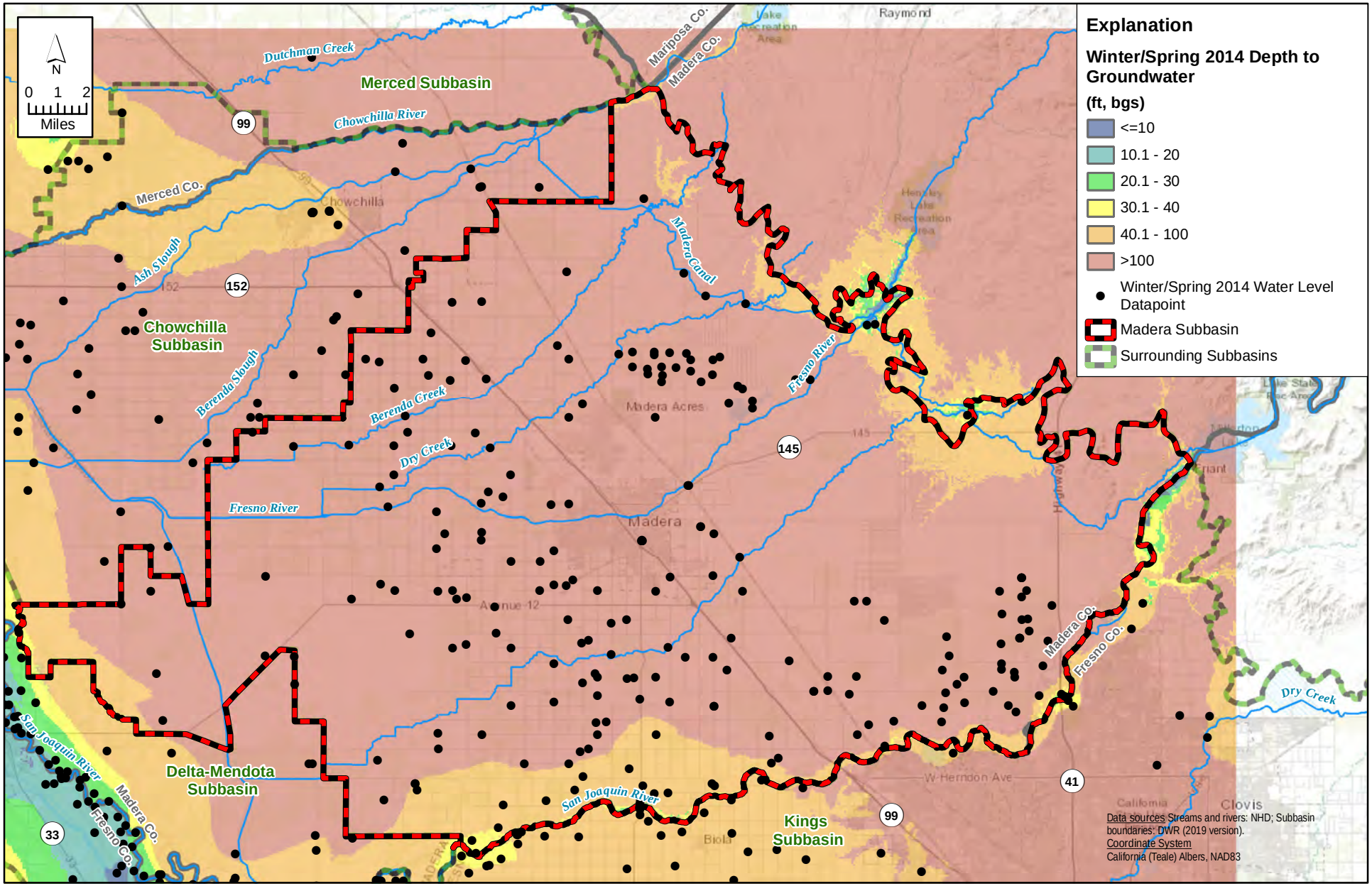
FIGURE 2-70

Map of Subsidence Monitoring Locations

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-71 Madera Subbasin Unconfined Depth to Water SpringWinter 2014.mxd

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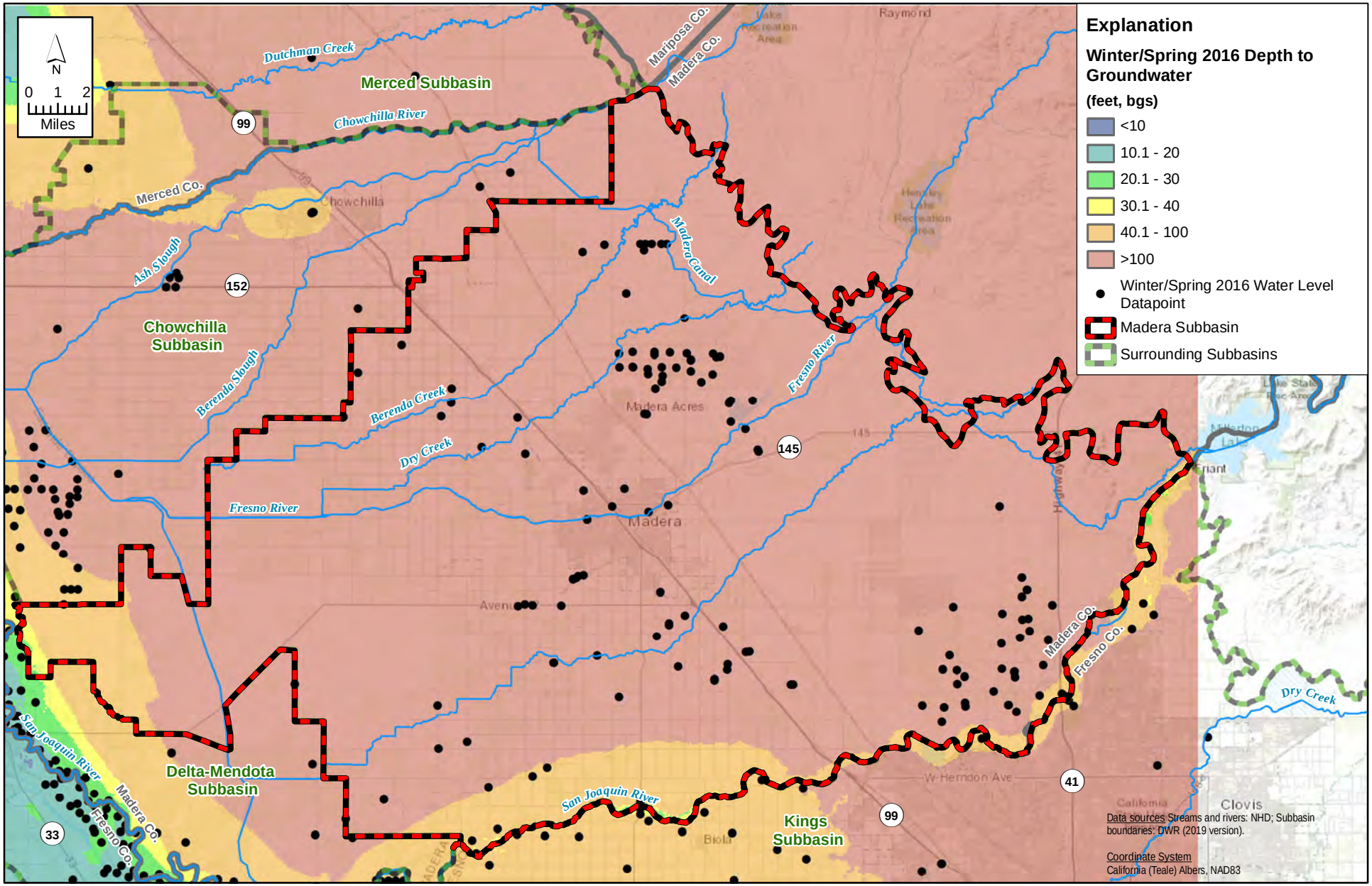
FIGURE 2-71
Map of Depth to Groundwater: Winter/Spring 2014 - Unconfined Groundwater

Madera Subbasin
Groundwater Sustainability Plan



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-72 Madera Subbasin Unconfined Depth to Water SpringWinter 2016.mxd

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FIGURE 2-72
Map of Depth to Groundwater: Winter/Spring 2016 - Unconfined Groundwater

Madera Subbasin
Groundwater Sustainability Plan

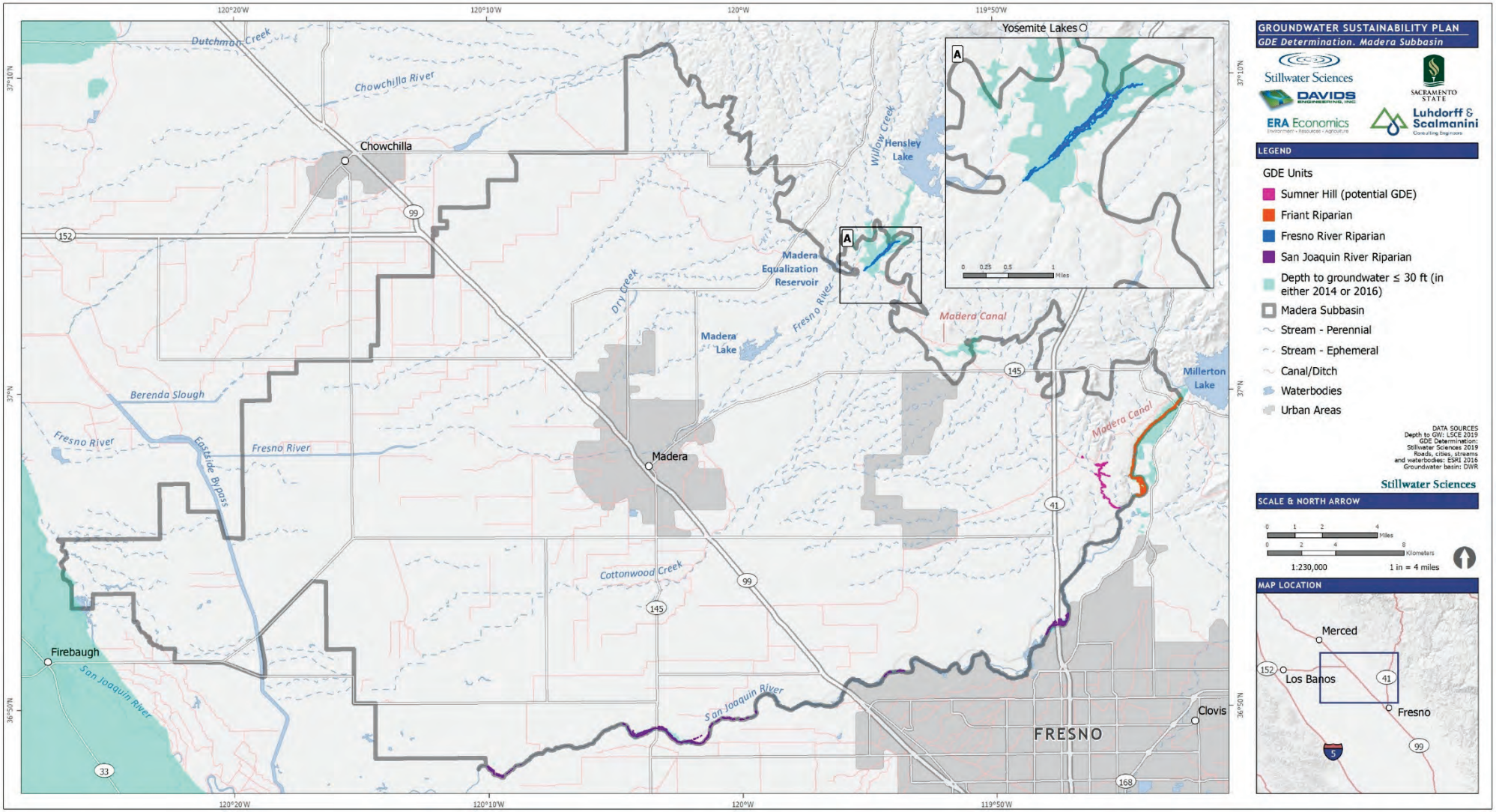

Figure 2-73. GDE units and depth to groundwater in the Madera Subbasin.

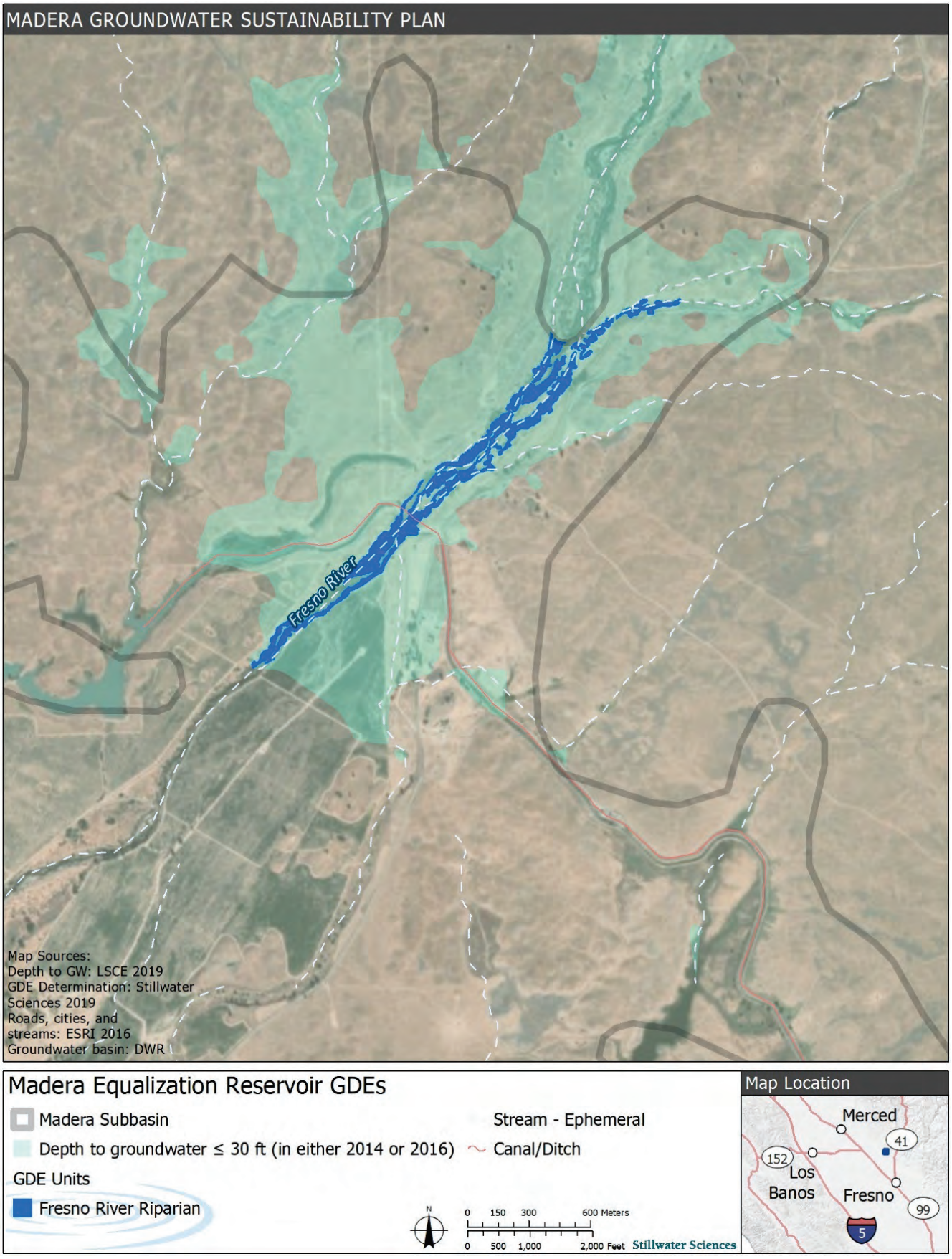

Figure 2-74. Fresno River Riparian GDE Unit.

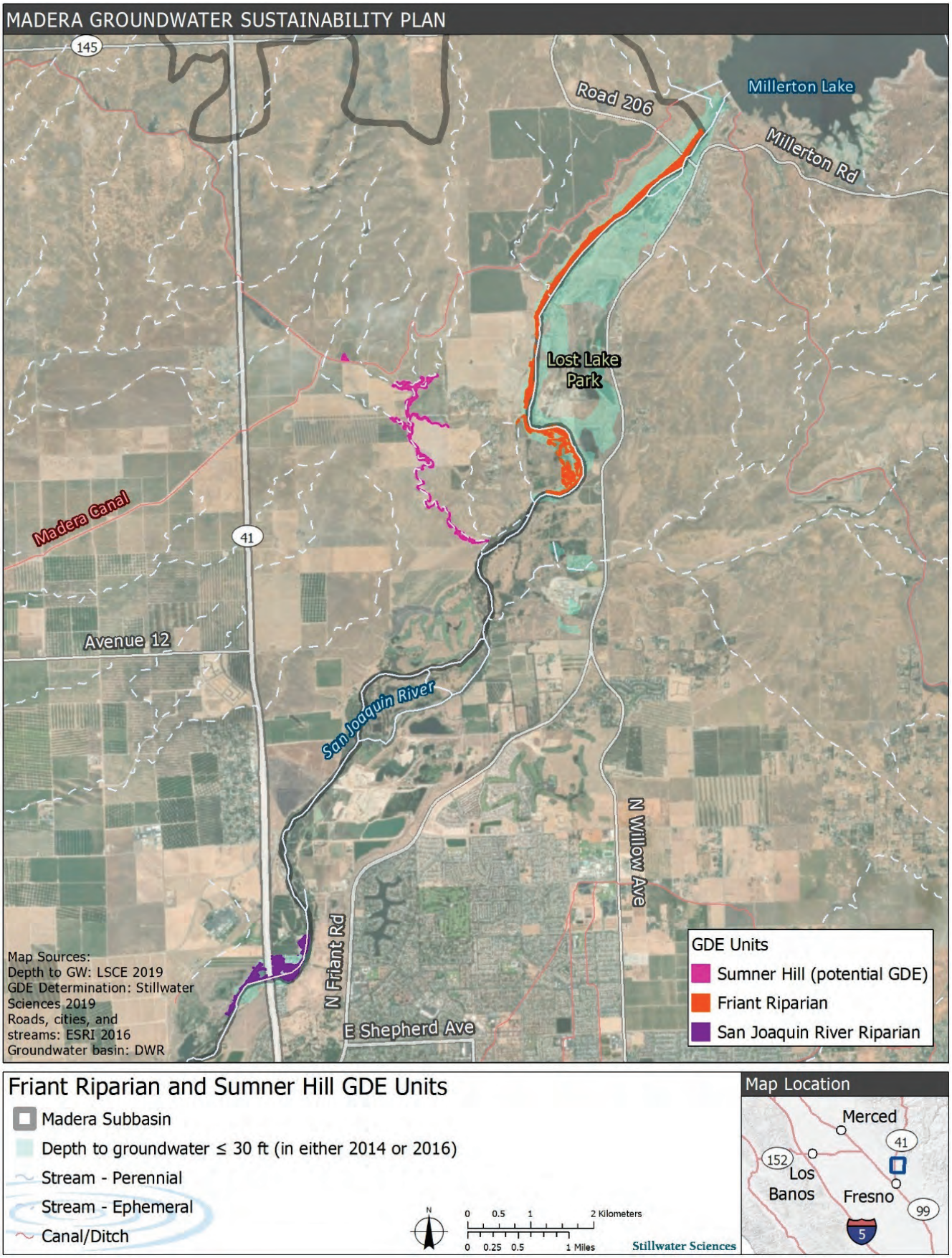

Figure 2-75. Sumner Hill potential GDE Unit, Friant Riparian GDE Unit, and upstream portion of San Joaquin River Riparian GDE Unit.

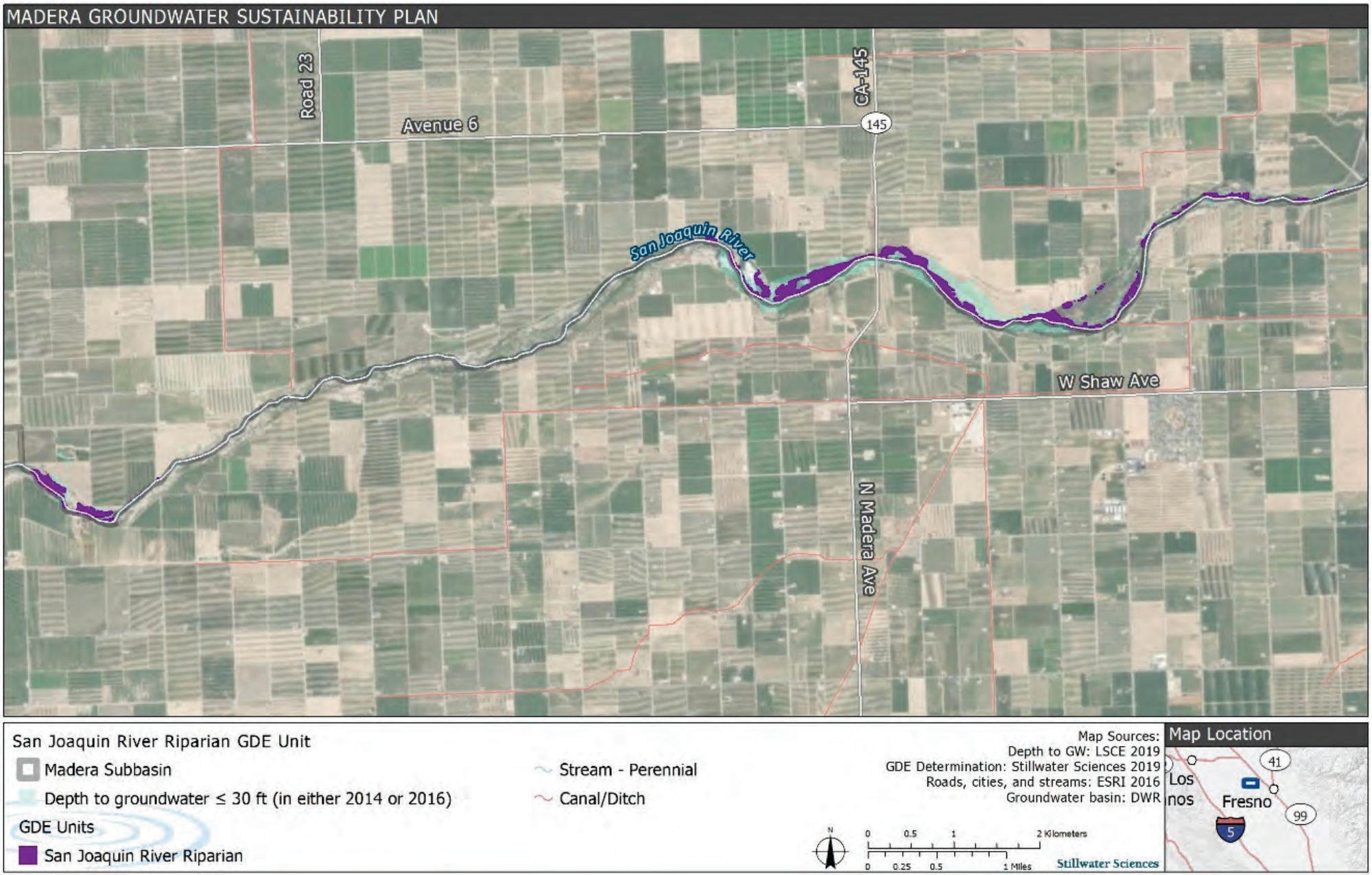

Figure 2-76. San Joaquin River Riparian GDE Unit, downstream portion.