3 BASIN SETTING

3.1 Hydrogeologic Conceptual Model (Reg. § 354.18)

3.1.1 Regional Geologic Setting

The following is a summary on the regional geologic conditions for the Subbasin with a focus on FWD and surrounding area. A more complete description of the regional geology can be found in Croft (1972).

FWD is located within the San Joaquin Valley geologic province (Valley). The Valley is a large structural trough bounded by the Sierra Nevada to the east and the Coast Range to the west. The Sierra Nevada are primarily composed of consolidated igneous and metamorphic rocks of pre-Tertiary age, overlain in the foothills by metamorphosed Tertiary age marine and non-marine sedimentary rocks. The Coast Range is composed of complexly folded and faulted, consolidated, marine and non-marine sedimentary rocks of Jurassic, Cretaceous, and Tertiary age. The Valley floor primarily consists of unconsolidated deposits of late Pliocene to Holocene age. Surficial geologic maps show that most of the Delta-Mendota Subbasin is mapped as alluvium with some consolidated sedimentary deposits on the western edge of the Subbasin where the Valley meets the Coast Range. The entire region surrounding FWD is mapped as alluvium. Consolidated sedimentary rocks are present west of the Subbasin (**Figure 3-1**) (USGS, CGS 2005). This unconsolidated material can be upwards of 4,000 ft thick near the axis of the Valley and primarily consists of alluvium/fluvium sourced from the Sierra Nevada and Coast Ranges subdivided into informal units by extensive fine-grained lacustrine deposits.

Most of the Subbasin has a ground surface elevation less than 200 ft msl with declining elevation to the north following the flow of the SJR. The greatest elevations and gradient are present along the western edge of the subbasin near the Coast Range which drains to the Subbasin. The entire FWD area is gently sloping with elevations between 100-200 ft msl (**Figure 3-2**).

3.1.2 Local Geologic Setting

As noted in Croft (1972), the characterization of sediments which make up the water-bearing units of the region surrounding FWD is dependent upon a few controlling factors: 1) depositional environment, 2) type of rock in the source area, and 3) competence of the streams that transport sediment to the region surrounding FWD. Oxidized sediments within FWD, characterized by red, brown, and yellow coloration, suggest areal deposition, most likely along fluvial systems and continental fans. Coarse-grained incised valley fill deposits, channel sands, and sand splays are common in this environment. Soil formation along the surface of alluvial fans is also common, often resulting in extensive, relatively impermeable paleosols upon burial and compaction. Reduced sediments, which are typically finer-grained, exhibit characteristic dark green, blue, and gray coloration. These sediments were generally deposited in flood basins, lakes, and marshes with coarser-grained sediments deposited in plains and deltas along the edges of these water features.

The cross-section locations for FWD can be seen in **Figure 3-3**. The A-A’ cross section can be seen in **Figure 3-4** and was modified from Miller et al. 1971. A-A’ runs from south west to north east and covers the southeast portion of FWD. Additions were made to the original cross-section based on well completion reports within FWD. These additions display the A-Clay, which separates the Shallow Zone and Deep Zone of the Upper Aquifer, the C-Clay, and the Corcoran Clay, which separates the Upper and Lower Aquifers. The A- and C- Clay create semi-confined zones within the Upper Aquifer. The A- Clay pinches-out to the northeast, as evident from the FWD-R-7 well completion report, and the full extent to the southwest is unknown. The well completion report for the Fordel Extensometer was also included in this cross section which provided minimal description for units in the Upper Aquifer but indicated the top of the Corcoran Clay. Cross section B-B’ runs west to east just north of cross section A-A’ (**Figure 3-5**). This cross section was modified from Bartow 1985 to provide a more regional picture of the Upper and Lower aquifers, separated by the Corcoran Clay, and the underlying geology.

Sedimentary deposits derived from the igneous and metamorphic rocks of the Sierra Nevada have been primarily deposited by the major rivers and streams which flow into the valley along the eastern margin. Fluvial deposition from the Sierra Nevada has also been strongly influenced by Plio-Pleistocene cyclical glaciation which produced significantly increased competence and sediment load during periods of glacial melt (Weissmann et. al., 2004). Deposits derived from the marine and non-marine sedimentary units of the Coastal Range are largely deposited by ephemeral streams which have significantly lower flows than those draining the Sierra Nevada. Sediments from these two sources inter-finger west of the axis of the valley and mix with fluvial sediments deposited along the axis of the valley where drainage turns to the north.

In the FWD and surrounding area, the distribution of sediments is consistent with the general trends described above, with the greatest propensity for coarse sediments within close vicinity to the current and historical flow path of the SJR. Additional coarse-grained sediment deposits are found in various locations east and west of FWD, generally consistent with the locations of present surface water features. The distribution of fine-grained sediments is also consistent with patterns expected along fluvial systems and alluvial fans.

Unconsolidated deposits of late Tertiary and Quaternary age contain most of the useable groundwater near FWD and throughout the southern part of the Valley. The principal aquifers within FWD consist of coarse oxidized continental and alluvial deposits of the Coast Range and the continental deposits and alluvium from the Sierra Nevada. Within these deposits, there are intervals of fine grade lacustrine clay. Lacustrine deposits consist of impermeable to semi-permeable gypsiferous fine sand, silt, and clay. Three such units, identified within the FWD and surrounding area, are referred to by Croft (1972) and others as the E-, C-, and A-clays. These units make up the main aquitard subsurface within FWD. The depth, thickness, and extent of these clays were defined in the FWD vicinity based on data from available geophysical logs, DWR Well Completion Reports, and conversations with Ken Schmidt of KDSA.

The E-clay, or the Corcoran Clay which underlies the A- and C-Clays, is an extensive confining unit identified throughout the Subbasin and the Valley. It is identified as the Corcoran Clay Member of the Tulare Formation. This unit is a distinct marker bed of Pleistocene age primarily consisting of dark greenish gray-blue diatomaceous silty-clay. The Corcoran Clay generally subdivides the San Joaquin Valley aquifer system into two distinct regional hydrologic units referred to as the "upper water-bearing zone" and the "lower water-bearing zone" described further below. The "lower water-bearing zone" is referred to as the lower aquifer in the FWD and Subbasin. The lower aquifer is hundreds of feet thick, confined, and composed of a series of interbedded sand and clay beds. In some localized areas within the FWD area, the uppermost portion of the lower aquifer has beds of coarse sands and gravels that directly underlie the Corcoran Clay. The depth below ground surface to the top of the Corcoran Clay within FWD and the surrounding area is shown in **Figure 3-6**. The depth to the Corcoran Clay within the FWD is between 400 and 450 below ground surface and increases in a north to south direction in FWD.

The C-Clay overlies the Corcoran Clay and is a fine-grained lacustrine deposit of Pleistocene age primarily consisting of bluish-gray silt and clay. The estimated depth to the top of the C-Clay for FWD and the surrounding area is shown in **Figure 3-7**. The depth to the top of the C-Clay ranges from 220 to 230 ft below ground surface (bgs) with the greatest depths in the southern portion of FWD. The extent of the C-Clay, or equivalent fine-grained materials, extends east toward the eastern extent of the FWD. The C-Clay is not always well defined or described on well logs. This is often the result of either availability of lithologic data near FWD or the quality of the description of subsurface materials on the well logs. In some areas, vertical variations in groundwater quality (salinity) was used to help identify the location of the C-Clay in the area around FWD if lithologic data was not adequate or unavailable (KDSA personal communication, 2013). This clay layer acts as a semi-confining layer within the Deep Zone of the Upper Aquifer which is bound by the Corcoran and the A-Clay.

The A-Clay overlies the C-Clay and is a fine-grained lacustrine or paludal deposit of Pleistocene and Holocene age consisting of blue or dark greenish-gray, plastic, highly organic clay. The extent and the depth to the top of the A-Clay, or its equivalent, is shown in **Figure 3-8**. The depth to the top of the A-Clay ranges from about 95 to 115 ft bgs. The A-Clay pinches out in the eastern portion of FWD near Aliso Water District, similar to what is depicted in **Figure 3-4**. In some areas, the A-Clay is composed of two or three clay units separated by several feet of sand. In FWD, the A-Clay represents the divide between two water-bearing zones, the shallow and Deep Zones, of the upper aquifer. The Shallow Zone overlies the A-Clay and the Deep Zone is located between the A-Clay and the Corcoran Clay. There are no supply wells in FWD that pump groundwater directly from the Shallow Zone, therefore, for purposes of this GSP, the focus on groundwater conditions for the Upper Aquifer is the Deep Zone, between the A-Clay and Corcoran Clay. The Shallow Zone is primarily composed of fine to coarse sand and gravel and is considered an unconfined unit. The Deep Zone is also composed primarily of fine to coarse sand and gravel with some interbedded clays. The vertical hydraulic conductivity of the A-Clay can be quite variable throughout the area surrounding FWD, exhibiting apparent gaps which could be postdepositional erosional features, or the result of poorly constructed Deep Zone wells completed below the A-Clay.

The structural geology of the San Joaquin Valley and FWD area is noted by Page (1986) that the large, asymmetrical, northwest trending trough of the Central Valley is the principal structure responsible for the movement of groundwater in the area. The confining deposits near the flanks of the valley tend to be thinner than those that underlie the axis of the valley, causing a majority of the confined groundwater to occur near the axis where deposits are the greatest. The flanks of the valley are at a higher elevation than the axis, allowing tributaries and rivers to produce higher heads of water than at the axis, which causes groundwater to move from the flanks towards the axis. Within the southern SJR, anticline folds can be found which restrict groundwater movement, but such folds occur far south, well beyond the FWD and Subbasin area. Two faults are located to the northeast of FWD, however, Page (1986) noted that they have not shown a definitive restriction of groundwater movement.

3.1.3 Aquifer and Aquitard Properties

Bulletin 118 defines three water-bearing units in the Subbasin. These zones include the confined lower aquifer with fresh water in the Tulare Formation, an upper zone which contains confined, semi-confined, and unconfined water in the upper sections of the Tulare Formation, and an unconfined zone (Shallow Zone) that contains groundwater within 25 feet of the surface (Davis 1959). This GSP defines two principal aquifers. The Lower Aquifer is defined as the lower zone in Bulletin 118, and the Upper Aquifer consists of the upper zone.

Aquifer properties which govern the movement and storage of groundwater were determined from field observations and existing technical studies. These properties are described in using Hydraulic Conductivity and Storativity. Hydraulic conductivity is the rate at which water flows through a porous medium and Storativity is the amount of water an aquifer can release or take into storage given a unit change in hydraulic head. When available, aquifer tests were used to quantify both parameters. Aquifer parameters were assigned using generally accepted values for sediment textures or the type of aquifer that is present, and, where possible, constrained using what limited aquifer test data may be available. Seasonal variation in groundwater levels, geology, and well construction features were used in estimating the type of aquifer and storage coefficient in the absence of aquifer test data.

3.1.3.1 Upper Aquifer

The Upper Aquifer, which lies above the Corcoran Clay, is an unconfined to semi-confined aquifer due to the intermittent presence of the A- and C-Clays. As described above, the A-Clay separates the Upper Aquifer into two zones; the Shallow Zone and the Deep Zone. The C-Clay further divides the Deep Zone into the upper Deep Zone and the lower Deep Zone. The focus of this description will be on the Shallow and Deep Zone separated by the A-Clay, as these aquifer zones have greater importance for groundwater management. Pumping restrictions currently exist (Herminghouse Agreement) for the Shallow Zone in FWD to minimize stream depletion.

The Shallow Zone of the Upper Aquifer lies above the A-Clay. The only beneficial uses of water from this portion of the Upper Aquifer are for environmental and domestic purposes. The Shallow Zone is used for irrigation outside of FWD. Regional pump test data shows the range of hydraulic conductivity values in the Shallow Zone. To the south of FWD in Fresno County Management Area A, there are a significant number of pumping tests where hydraulic conductivity (K) values range between 50 and 500 ft/day, with an average of 230 ft/day. To the west of FWD, K values range between 400 and 600 ft/day. Technical studies in the area have reported a range of values for the Shallow Zone between 10 and 230 ft/day, with the highest values occurring along the SJR (150-230 ft/day), and the lowest values west of the Fresno Slough and SJR(10-50 ft/day) (LSCE, 2018).

The Deep Zone of the Upper Aquifer is overlain by the A-Clay and extending to the top of the underlying Corcoran Clay. The primary use for this aquifer is irrigation. There are a significant number of pumping test results within Fresno County Management Area A that show values of K near Meyers Water Bank and the former Spreckels Sugar Company ranging from 20 to 170 ft/day with an average of 70 ft/day. Values to the west near the City of Mendota range from 50 to 250 ft/day. Values to the north near CCID, WO, and CCC have values that range from 30 to 260 ft/day. Technical studies in the area have reported a range of hydraulic conductivity values between 50 and 330 ft/day with higher values generally occurring in the lower portion of the Deep Zone between the C-Clay and Corcoran Clay (LSCE, 2018)

For the purpose of calculating change in storage, the Upper Aquifer is treated as an unconfined aquifer. Specific yield values have been estimated to be between 0.18 and 0.24. Specific yield is the ratio of the volume of water drained to the total volume of aquifer material.

3.1.3.2 Lower Aquifer

The Lower Aquifer is overlain by the Corcoran Clay. This aquifer will not be utilized for groundwater production in FWD; however, it is in adjacent GSAs to the north of FWD within the Subbasin. FWD currently has one well, which has a small portion of the well perforated in the upper portion of the Lower Aquifer. This well is planned to be destroyed as part of the San Joaquin River Restoration Project and currently is seldom used by FWD.

There is a total of five wells screened in the Lower Aquifer in the vicinity of FWD resulting in a limited amount of historical data available for review and analysis of lower aquifer groundwater conditions. There is no available aquifer test for the lower aquifer in the vicinity of FWD. Hydraulic conductivity values in the area generally range from 10 to 100 ft/day. Values near FWD are slightly lower with values ranging between 10 and 50 ft/day (LSCE, 2018).

The Lower Aquifer is a confined aquifer. A storativity value of 4.1×10^{-3} was estimated to develop estimates of change in storage.

3.1.4 Groundwater Quality

3.1.4.1 Local Groundwater Quality Monitoring

Existing groundwater monitoring programs include the Mendota Pool Group's annual monitoring program and the Groundwater Monitoring Program for the former Spreckels Sugar Beet Processing Facility located south of FWD in Fresno County's Management Area A. These programs monitor for general minerals and trace elements. The primary constituent of concern within FWD is total dissolved solids (TDS) due to the elevated TDS concentrations from the former Spreckels Sugar Company processing operations that have migrated northward onto FWD land. The impacts of high salinity will be discussed further in Section 3.2.5. **Table 3-1** below summarizes groundwater quality conditions for those constituents which are of concern for agricultural and private beneficial uses within FWD. The table shows the average (mean), maximum, minimum, and total number of measurements (count) for the constituents of interest. The constituents of interest are electrical conductivity (EC) and TDS for both the Upper and Lower Aquifers within FWD. No other constituents have exhibited concentrations that would impact beneficial uses of groundwater within FWD (further discussion in section 3.2.5). For the Upper Aquifer, there are historical EC and TDS data for 17 wells. Measurements date back to 1987, but most of the measurements were made since 1999. Water quality data on the Lower Aquifer is limited, as no wells in FWD are screened solely below the Corcoran Clay. Two wells located in Aliso Water District were used to represent the water quality of the lower aquifer, as they are screened below the Corcoran Clay and monitored for the constituents of interest.

Table 3-1: General Water Quality Data

Constituent	Mean	Max	Min	Count
Upper Aquifer				
EC (umhos/cm)	662	1,530	240	223
TDS (mg/L)	406	920	150	230
Lower Aquifer				
EC (umhos/cm)	2598	4,080	1200	6
TDS (mg/L)	1370	2,000	740	2

3.1.5 Soil Characteristics

Soil types within FWD were obtained from the USDA Natural Resources Conservation Service SSURGO data set of the Eastern Fresno Area, California Survey (USDA NRCS, 2007). The soil types at FWD are presented in **Figure 3-9.** FWD contains 15 different soil units which are floodplain and alluvial deposits derived from granite bedrock. The USDA describes the soil types to a depth of approximately six feet from the ground surface. Soils range in texture from clays to sandy loams. Almost all of the soils in FWD are designated as prime farmland. Three of the mapped units constitute over three quarters of the land within FWD and these are described below.

(1) Over half of FWD is mapped as Chino Loam (Cr). The Chino loam has a slope between 0 and 2 percent and is somewhat poorly drained. The Chino loam, although described as poorly drained, has a moderately high capacity to transmit water (0.2 to 0.6 in/hr).

(2) The next largest soil unit is the Tujunga Loamy Sand (TzbA) which encompasses about 16% of the FWD area and is located in the southern portion. This unit also contains a very low slope between 0 and 3%. Unlike most of the FWD area, this unit is described as somewhat excessively drained with a very high capacity to transmit water (6 to 20 in/hr).

(3) The third largest unit is the Grangeville fine sandy Loam (Gf) which covers of approximately 10% of FWD. This unit has a slope between 0 and 1% and is somewhat poorly drained. It has a high capacity to transmit water at a rate of 2 to 6 in/hr.

The remaining mapped units within FWD individually comprise less than 5% of the area. Most of these units have a slope of 0 to 2% and are described as somewhat poorly drained.

Areas of potential recharge were identified by reviewing the saturated hydraulic conductivity values of soils in FWD. Infiltration rates can range from 0.06 in/hr to 20 in/hr and are divided into four categories based on USDA classification: moderately low, moderately high, high, and high to very high. (**Figure 3-10**). Areas of moderately low infiltration constitutes about 3% of FWD, moderately high infiltration rates represent 65% of FWD, and 32% of FWD is considered to have a high or high to very high infiltration rate. The areas outlined in yellow indicate where recharge potential is greatest based on their higher infiltration rates (2-20 in/hr). The greatest area of infiltration in FWD that substantially contributes to replenishment of the basin is likely in the northern part of FWD where soils with high infiltration appear to boarder the San Joaquin River. A full description of each soil unit can be seen in **Appendix H**.

3.1.6 Definable Bottom of the Basin

The bottom of the Delta-Mendota Subbasin has been defined as the base of fresh water. Page (1973) estimates the base of fresh water as water with a maximum specific conductivity (EC) value of 3,000 micromhos per centimeter. In the area of FWD, the base of freshwater has been estimated to occur at approximately -400 ft msl (**Figure 3-11**).

3.1.7 Surface Water Features and Areas of Recharge

There are no natural surface water features within FWD. The primary surface water features near FWD include the San Joaquin River (SJR) and the Fresno Slough (including the Mendota Pool), and several canals including the Chowchilla Bypass, Delta-Mendota Canal (DMC), the Firebaugh Intake Canal, the Central California Irrigation District (CCID) Main Canal, and the CCID Outside Canal. There are three locations that monitor streamflow on the SJR that have the most comprehensive datasets. These gages are located at Gravelly Ford, downstream of the Chowchilla Bypass, and downstream of the Mendota Dam. The major canals have flows recorded near the discharge to the Pool (DMC at Check 21) or at the intakes from the Pool (the Firebaugh Intake Canal, the CCID Outside Canal, the CCID Main Canal, and Columbia Canal). All significant surface water features near FWD are illustrated in **Figure 3-12**.

Runoff from the Sierra Nevada provides all the major tributaries to the San Joaquin River, flowing west and southwest into the Millerton Reservoir. Discharge from the Millerton Reservoir flows into the SJR and flows west to the north end of the Pool. Prior to the Pool, the SJR is bifurcated at the Chowchilla Bypass. This bypass is used to divert flood flows that are beyond the capacity limits of the San Joaquin River below the Mendota Dam. The SJR continues north of the Mendota Dam and flows to the Sacramento-San Joaquin River Delta. Examination of flow data on the SJR at the Gravelly Ford and Chowchilla Bypass gage locations indicates that the SJR is a losing river with recharge to groundwater. Historically, the SJR had minimal to no flow between Gravelly Ford and the Pool during the irrigation season until the San Joaquin River Restoration Program (SJRRP) initiated interim flows in the San Joaquin River on October 1, 2009 as stipulated in the Settlement Judgement (Natural Resources Defense Council et al., 2006).

The Pool is a discharge and extraction point for major canals and also receives streamflow from the SJR and flood flows from the Kings River via the Fresno Slough and James Bypass. The primary canals are located at the north end of the Pool. Groundwater is also discharged into the Pool by the MPG and other landowners and Districts for exchange with the USBR and for adjacent use when the Pool is used as a conveyance for irrigation of adjacent lands. The San Luis Delta Mendota Water Authority (SLDMWA) oversees the operations of the Pool along with USBR. The SLDMWA monitors the inflows and outflows of the DMC and other major canals, along with groundwater discharged to the Pool, and water pumped from the Pool.

The DMC is an open, concrete-lined canal that conveys water that is pumped from the Sacramento-San Joaquin River Delta by the Bill Jones Pumping Plant near Tracy to the Pool, where the water is discharged with some of the water pumped into several irrigation canals at the north end of the Pool: CCID, Main Canal and Outside Canal, the Firebaugh Intake Canal, and the Columbia Canal. There are several parties that divert water from the southern end of the Pool, including the Mendota Wildlife Area, James Irrigation District, and others.

During flood events on the Kings River, flood flows are directed north into the Fresno Slough portion of the Pool (Fresno Slough or southern branch of the Pool), creating a northerly flow regime. Outside of these flood events, flow in the Pool is generally to the south towards the MWA. However, there are many locations in the MWA area of the Pool where there are substantial amounts of water discharged into the Pool and pumped from the Pool. The elevation of water in the Pool is managed by the San Joaquin River Exchange Contractors and is generally stable with stage fluctuations of approximately 0.25 feet. This maintenance of a relatively stable stage in the Pool by other parties besides for FWD prevents any control over the surface water flows and stage in the Pool by FWD and influence on groundwater dependent ecosystems.

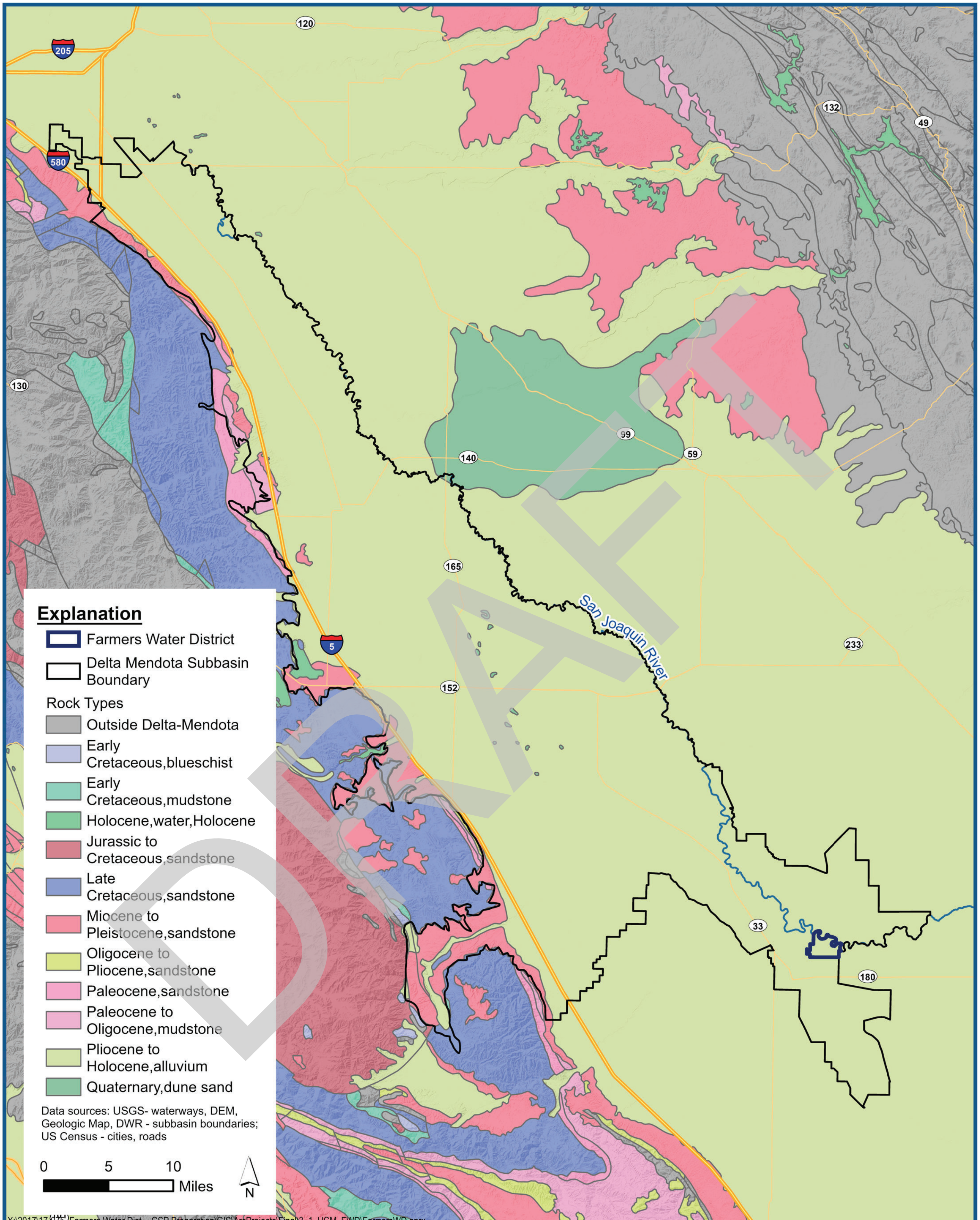
Much of the surface water adjacent to FWD is imported for agricultural beneficial uses. FWD does not utilize surface water for agricultural purposes.

There are not currently any long-term recharge projects within the boundaries of FWD. FWD may develop recharge projects in the future if necessary for GSP implementation. The SJR provides a significant source of recharge to FWD.

There are not any naturally occurring springs, seeps, or wetlands in FWD.

3.1.8 Data Gaps

There are no data gaps in the FWD GSP area.



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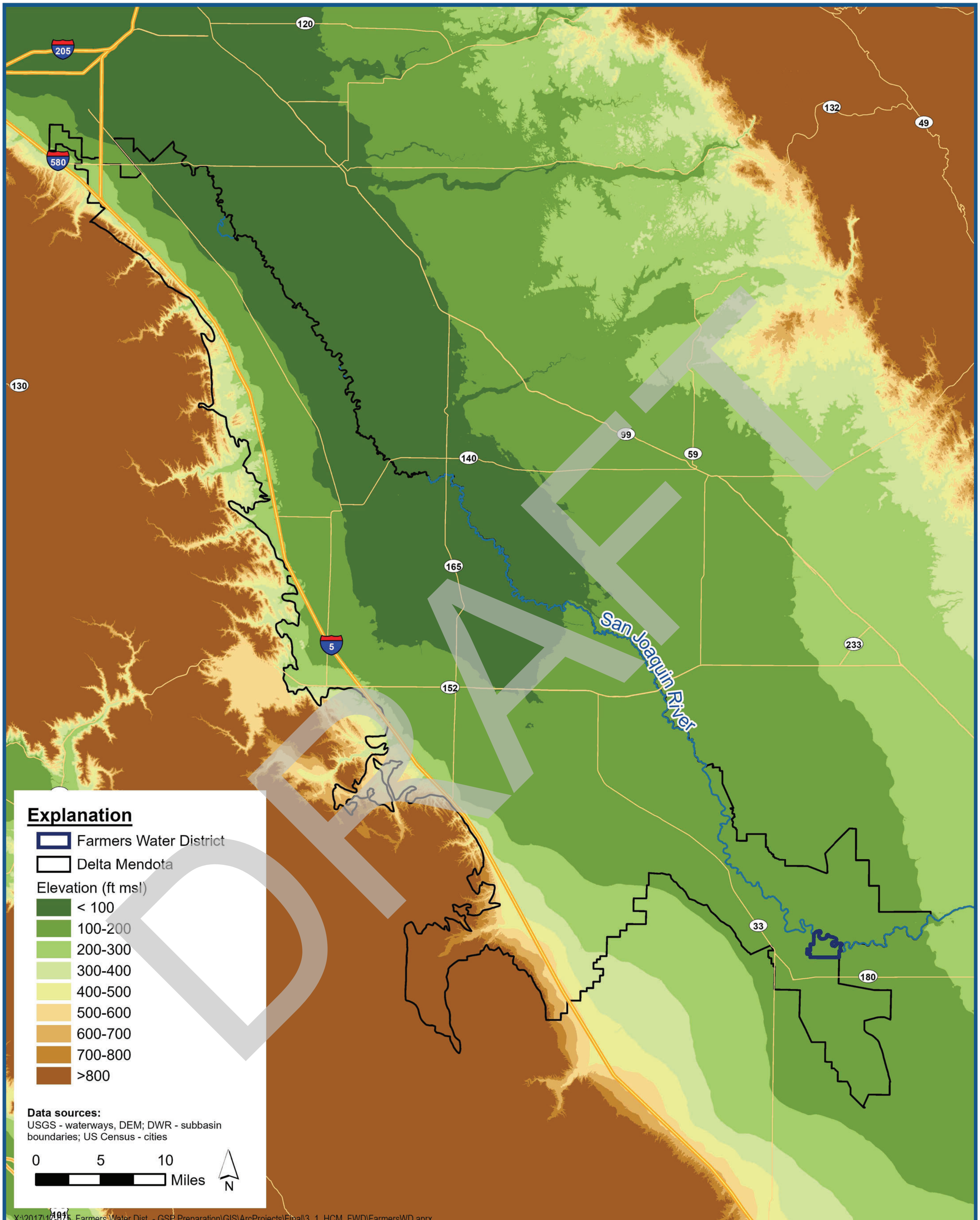
Surface Geology

Figure 3-1

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin



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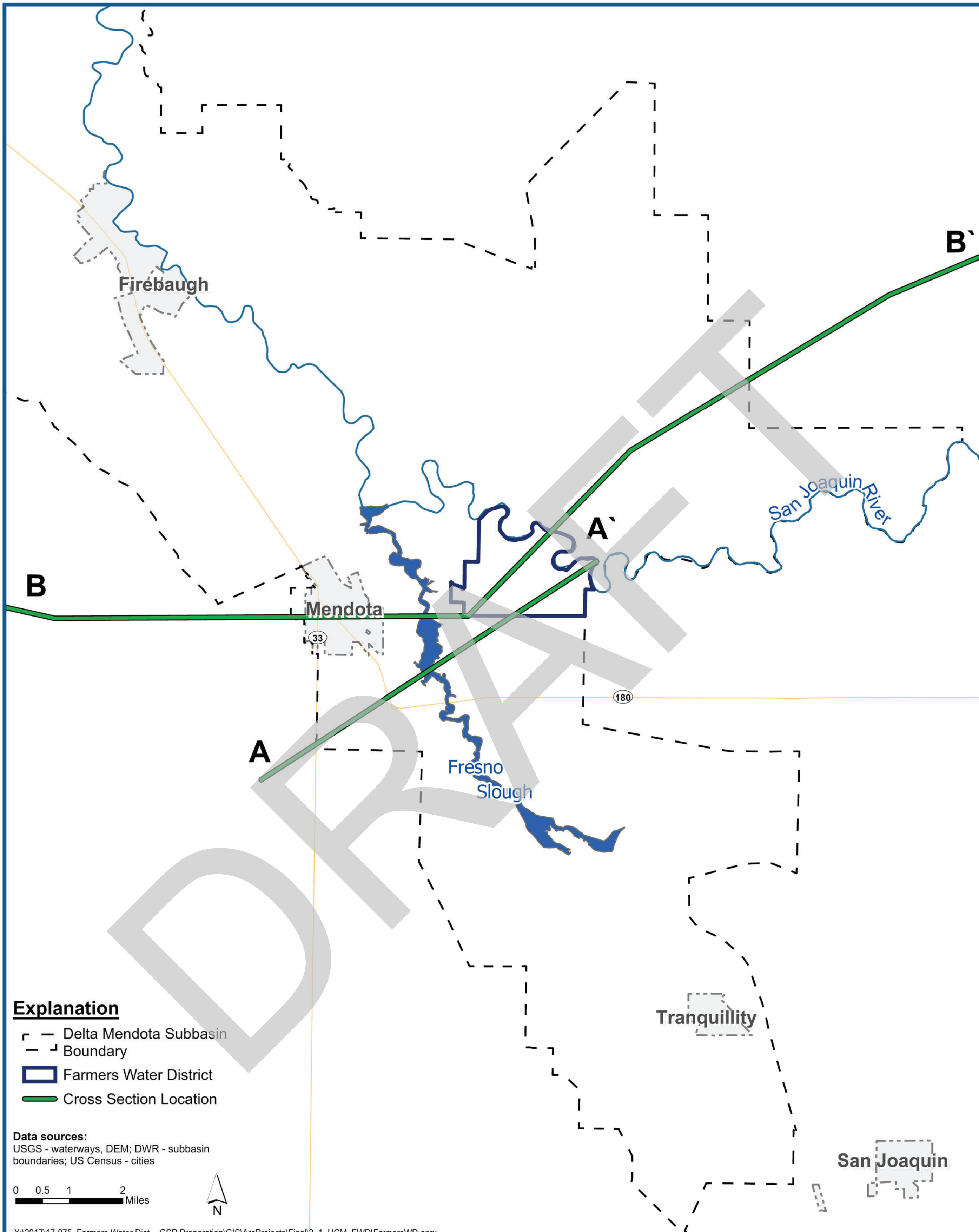
Ground Surface Elevation

Figure 3-2

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin



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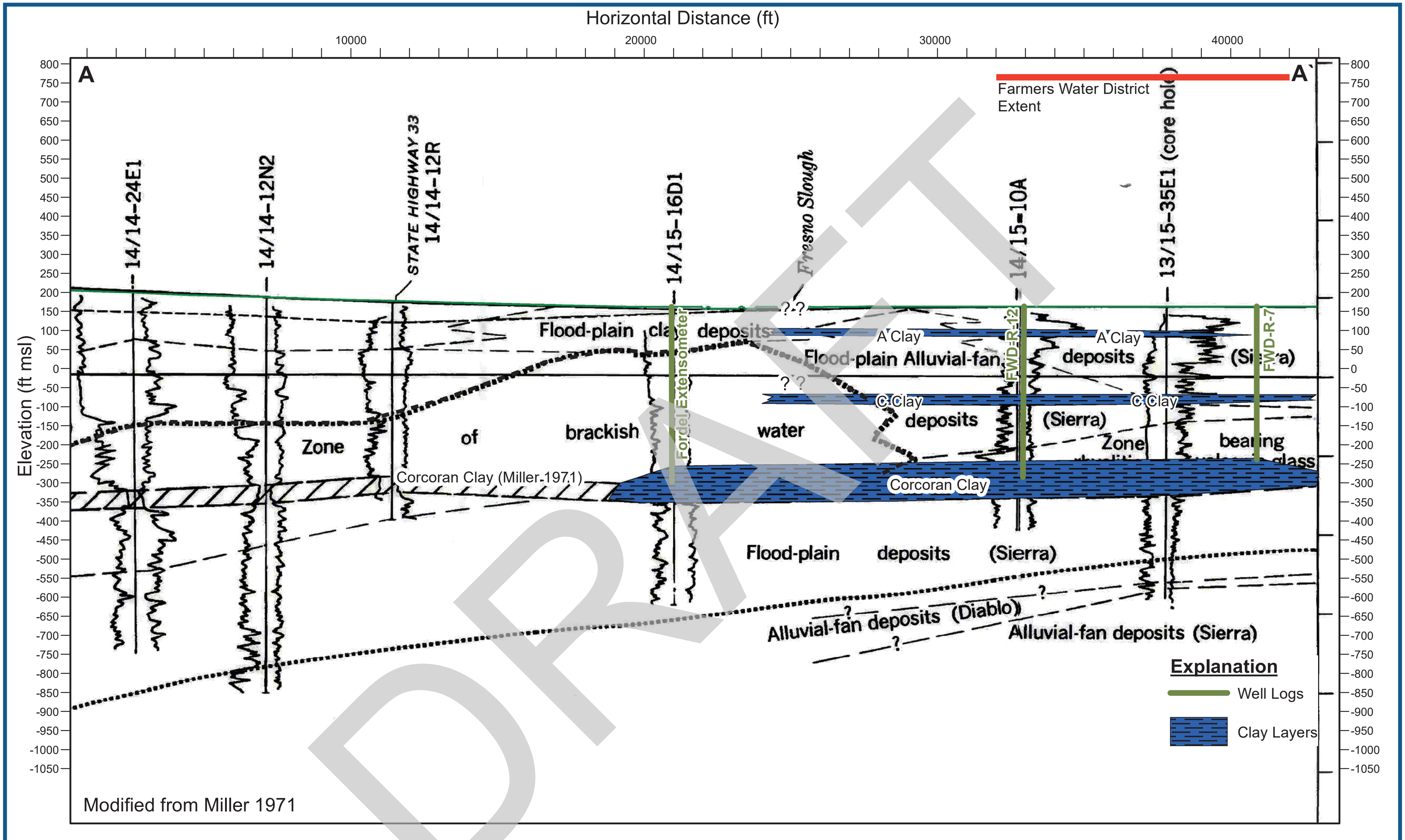
Geologic Cross-Section Locations

Figure 3-3

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin



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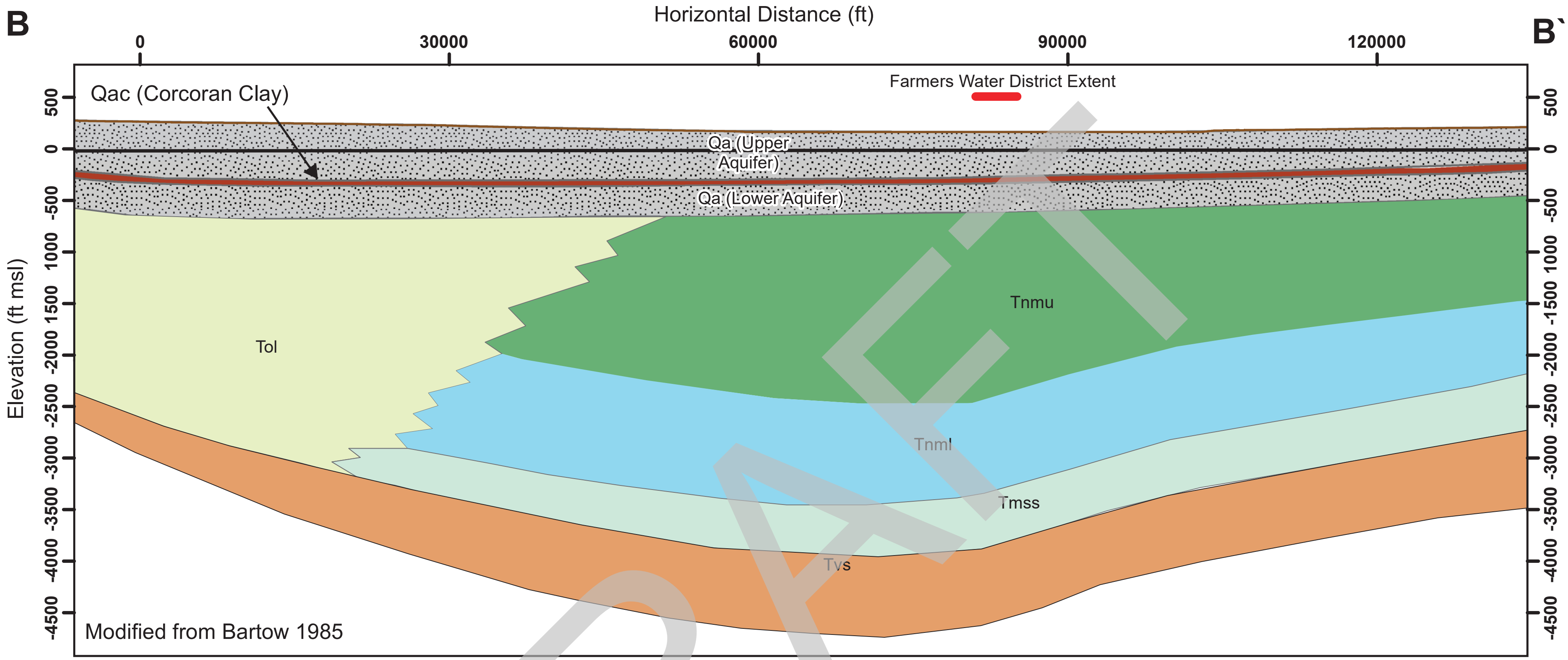
Cross Section A-A'

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin

Figure 3-4



Qa - Alluvial Deposits, Undivided (Holocene and Pleistocene)

Qac - Corcoran Clay Member of Turlock Lake Formation

Tol - Oro Loma Formation (Pliocene and Upper Miocene)

Tnmu - Nonmarine Sedimentary Rocks Upper Part (Pliocene and Miocene)

Tnml - Nonmarine Sedimentary Rocks Lower Part (Pliocene and Miocene)

Tmss - Marine Sandstone (Miocene)

Tvs - Valley Springs Formation (Lower Miocene and Upper Oligocene)

X:\2017\17-075 Farmers Water Dist. - GSP Preparation\GIS\CrossView_CrossSections\CrossSectionBB\Figure 3-4.mxd

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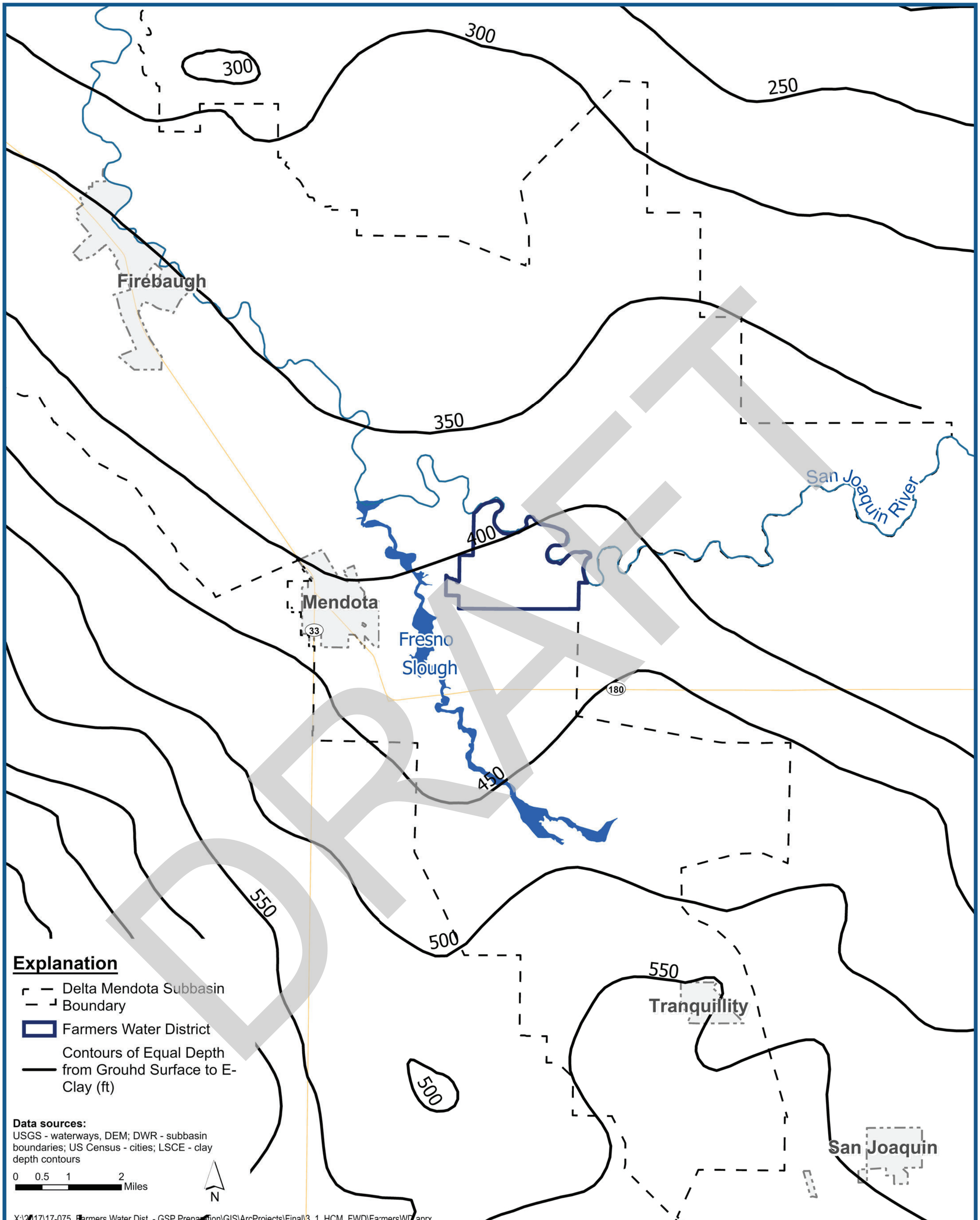
Cross Section B-B'

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin

Figure 3-5



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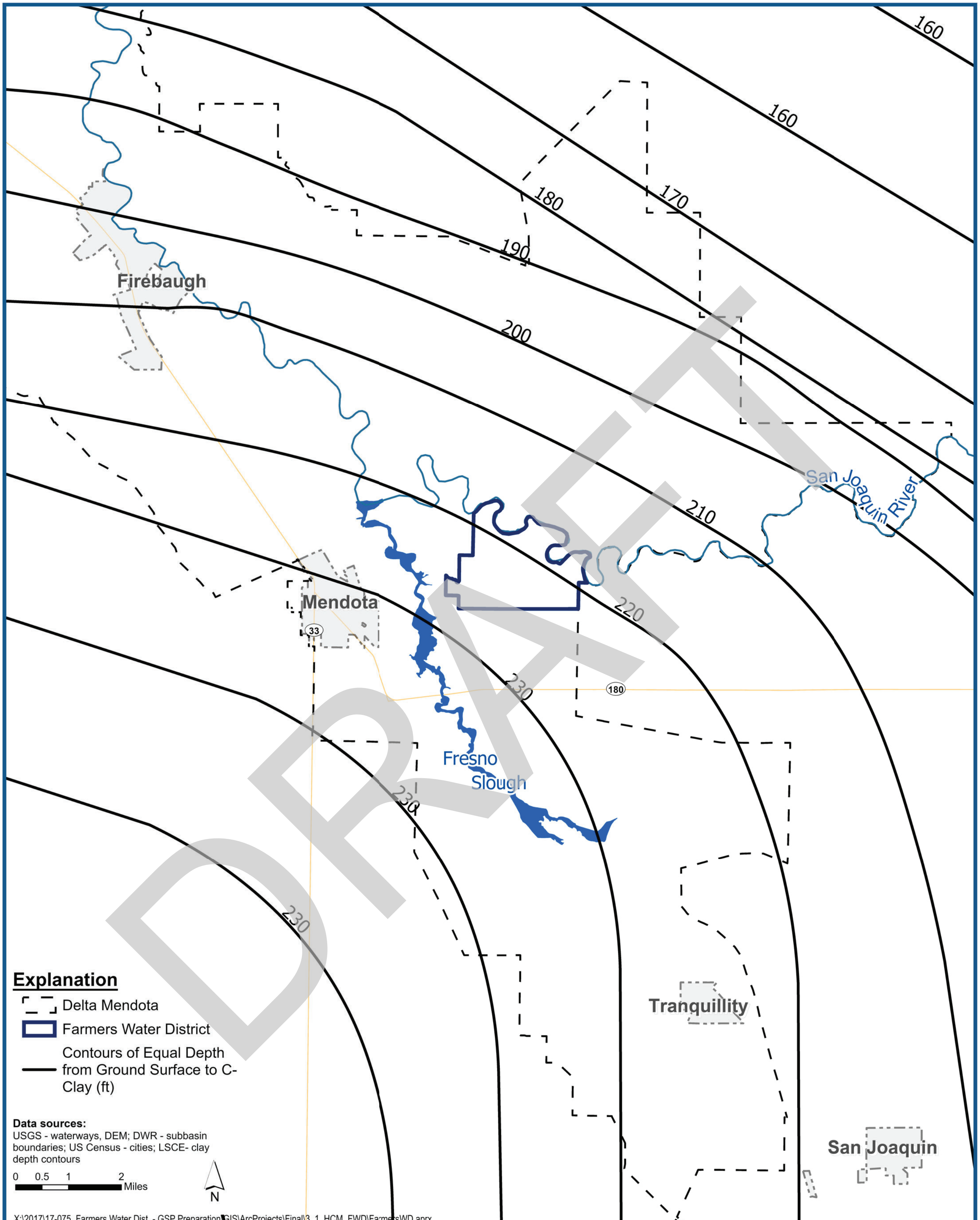
Depth to E-Clay (Corcoran)

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin

Figure 3-6



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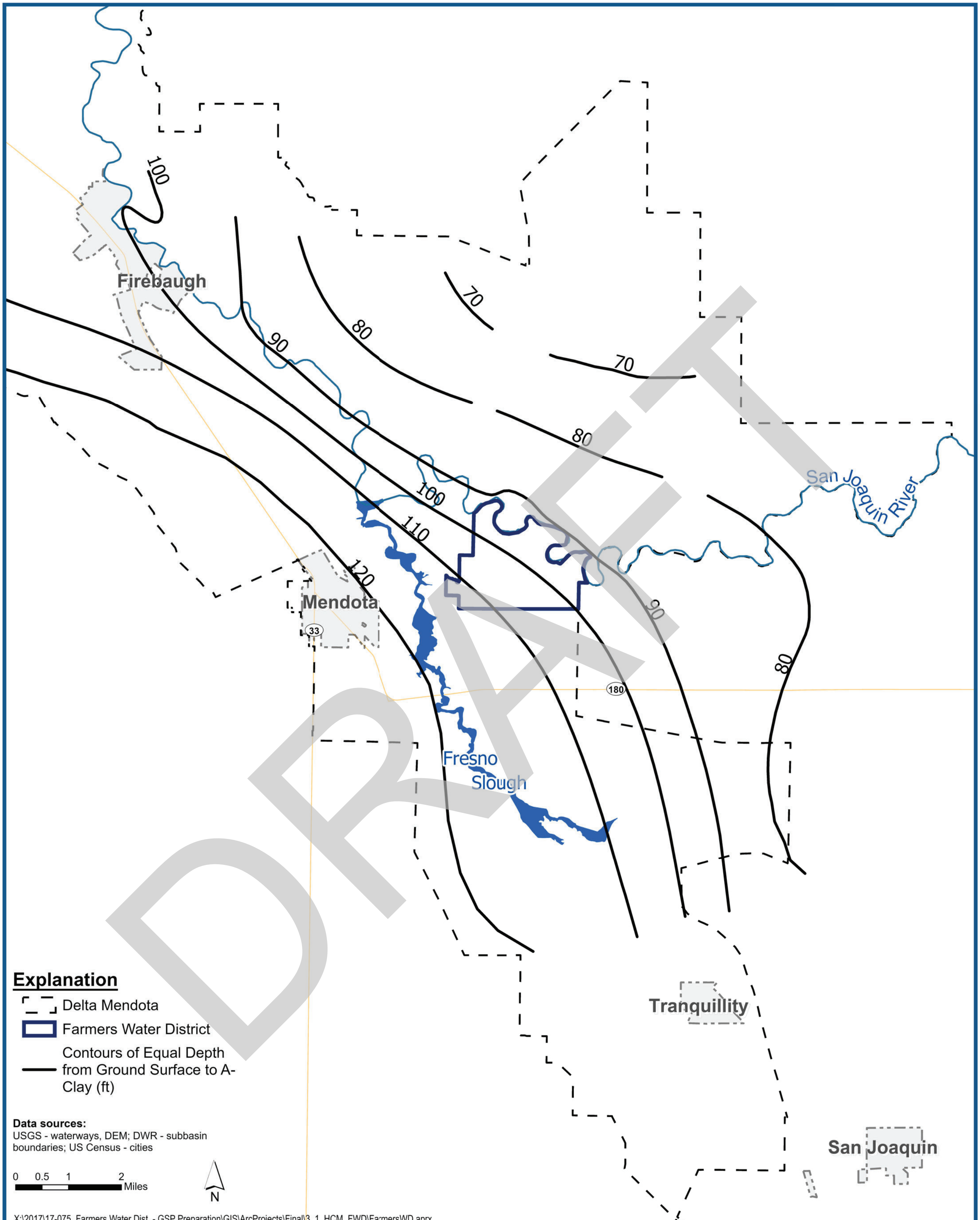
Depth to C-Clay

Figure 3-7

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin



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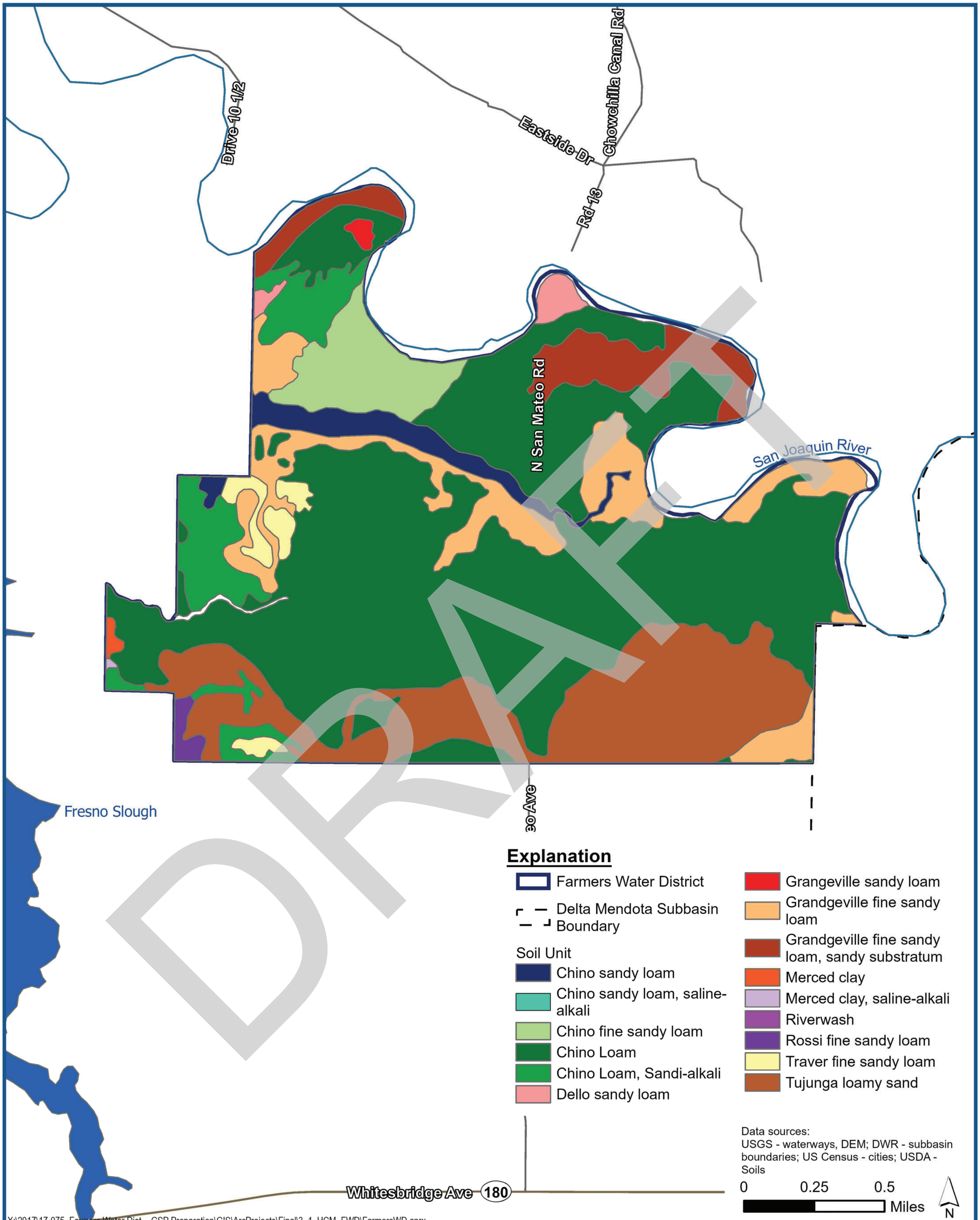
Depth to A-Clay

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin

Figure 3-8



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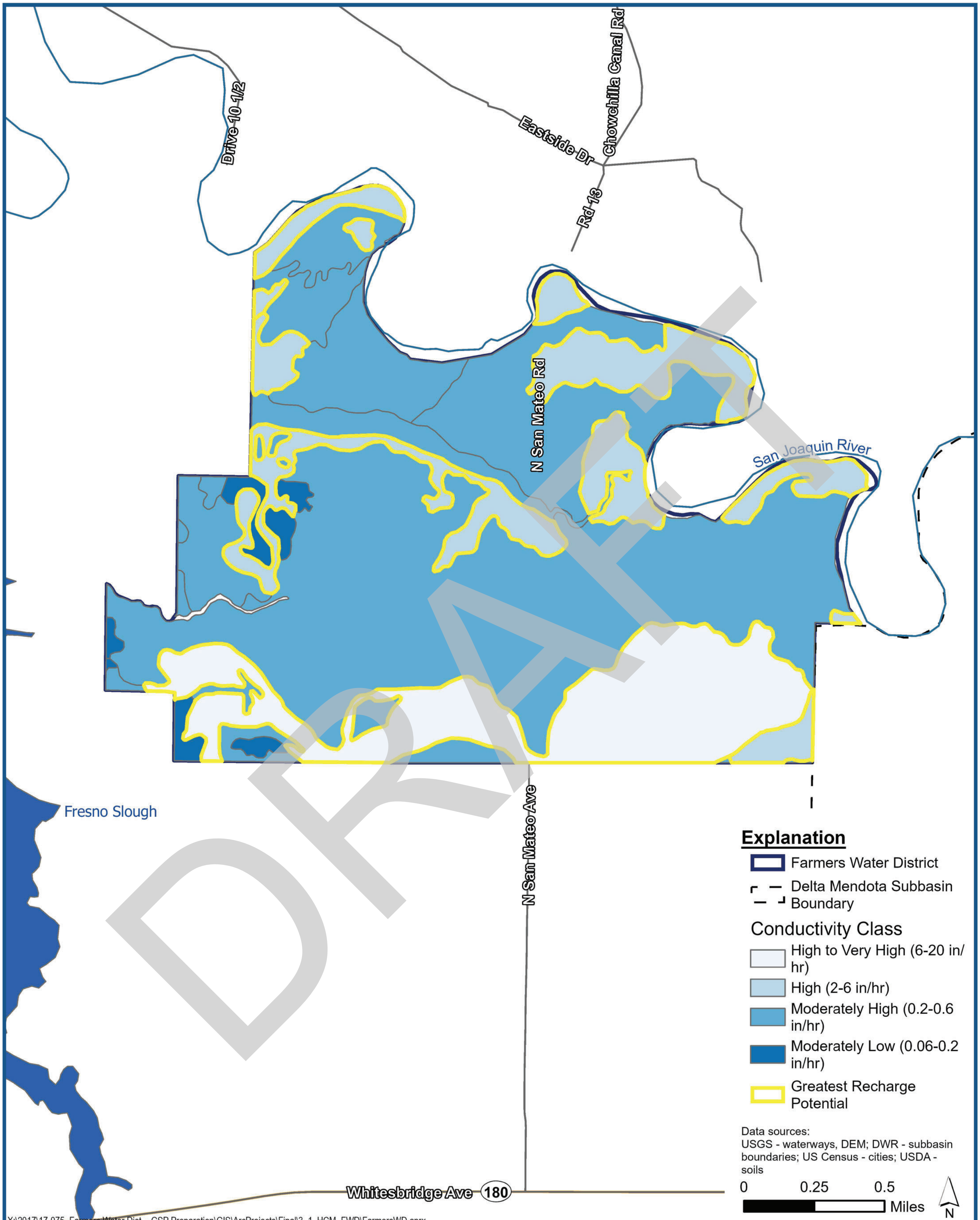
Soils Map, Farmers Water District

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin

Figure 3-9



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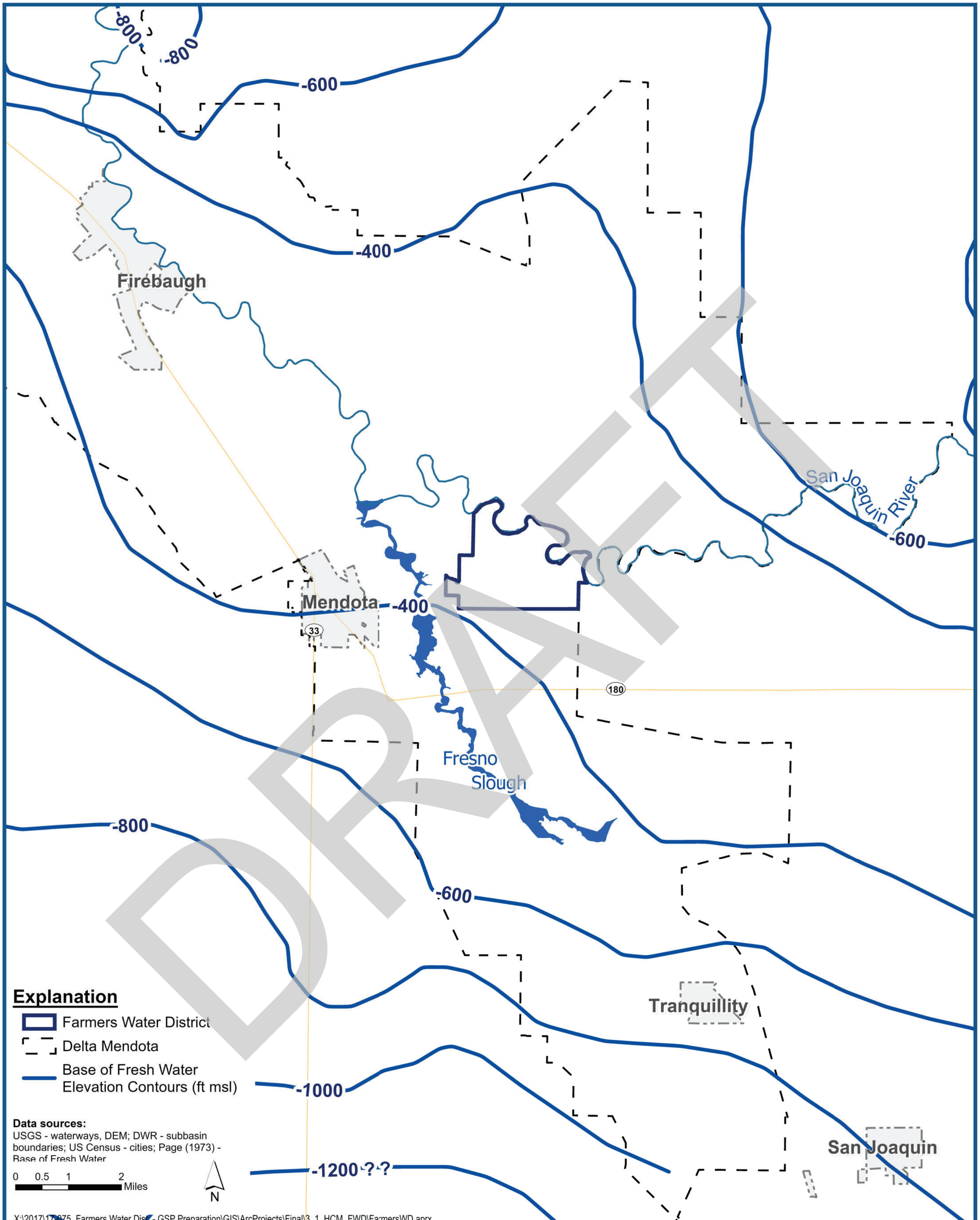
Soil Infiltration Rates

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin

Figure 3-10



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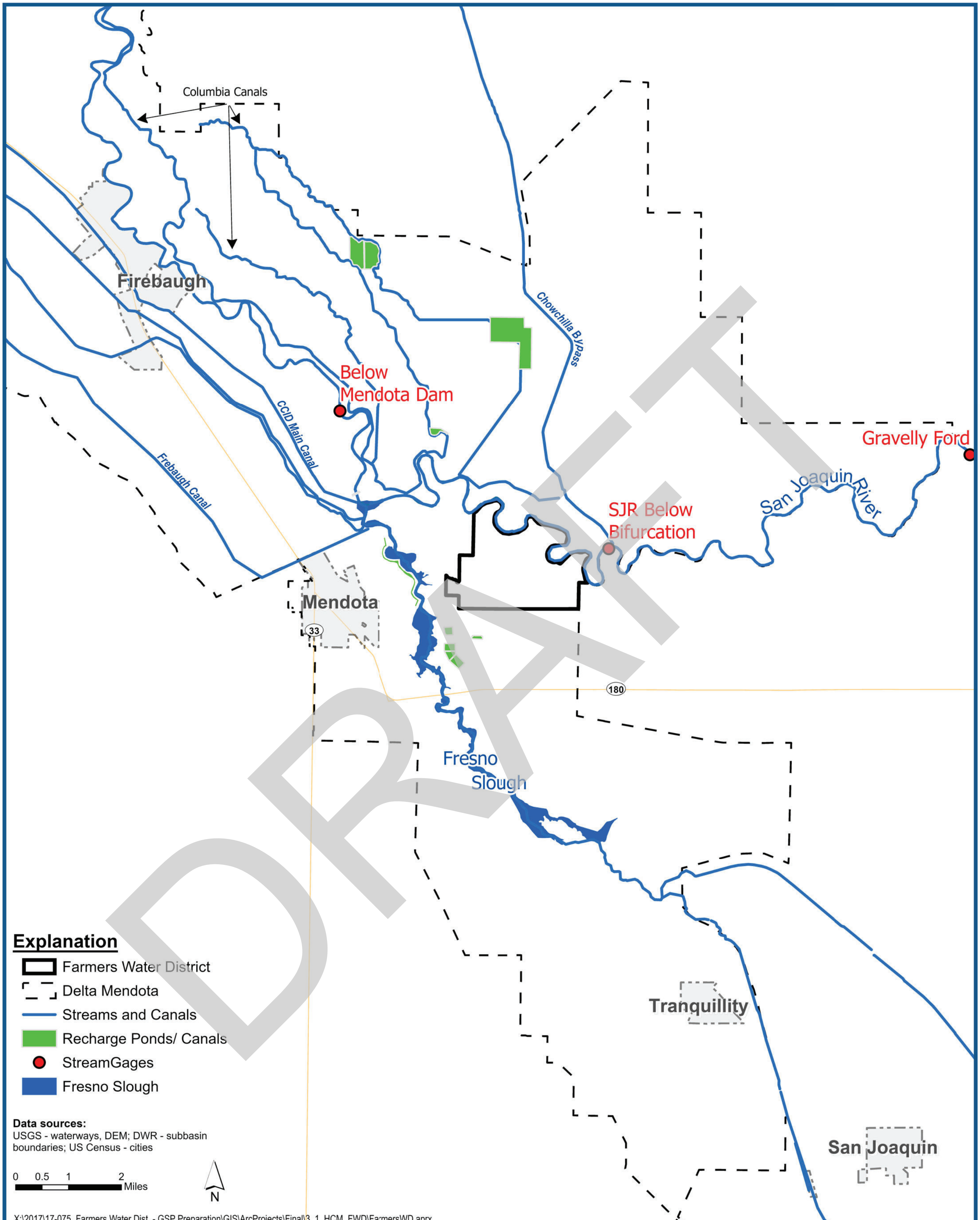
Base of Fresh Water

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin

Figure 3-11



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Surface Water Features

Groundwater Sustainability Plan
Farmers Water District
Delta-Mendota Subbasin

Figure 3-12