FILED
October 22, 2024
BY Paula Hig
DEPUTY CLERK OF THE BOARD

ORDINANCE NO. 1569

AN URGENCY ORDINANCE TEMPORARILY EXTENDING CERTAIN REQUIREMENTS ON THE ISSUANCE OF AGRICULTURAL WATER WELL PERMITS IN THE UNINCORPORATED AREA OF YOLO COUNTY PENDING COMPLETION OF LONG-TERM WELL ORDINANCE AMENDMENTS

THE BOARD OF SUPERVISORS OF THE COUNTY OF YOLO HEREBY ORDAINS AS FOLLOWS:

SECTION 1. FINDINGS, DECLARATION OF URGENCY

In accordance with California Constitution, article XI, section 7 and Government Code section 25123(d), which authorize adoption of an interim urgency ordinance for the immediate preservation of the public peace, health, or safety, the Board of Supervisors finds as follows:

A. SGMA and Creation of the Yolo Subbasin Groundwater Agency

On September 16, 2014, Governor Jerry Brown signed three bills into law that are collectively known as the Sustainable Groundwater Management Act ("SGMA"). SGMA provides for local control of groundwater while requiring the sustainable management of groundwater resources. SGMA required the establishment of local groundwater sustainability agencies ("GSA") with the authority to develop, adopt, and implement a Groundwater Sustainability Plan ("GSP").

Through the creation of a joint powers agency, of which Yolo County is a member, the Yolo Subbasin Groundwater Agency ("YSGA") was formed and is the recognized GSA for the entire Yolo Subbasin, which covers nearly all of Yolo County. The YSGA adopted a GSP in January 2022 for the Yolo Subbasin that addresses undesirable results related to sustainability indicators consisting of groundwater levels, groundwater storage, groundwater quality, land subsidence, and interconnected surface water.

Further, SGMA required the Department of Water Resources to classify groundwater basins throughout California as "high," "medium," or "low" priority. Yolo County overlaps three groundwater subbasins of the Sacramento Valley Groundwater Basin and includes additional areas outside of any designated groundwater basin. Groundwater basins and subbasins in California have been delineated by the Department of Water Resources (DWR) to coincide with the extent of unconsolidated geologic materials of alluvial origin. The groundwater subbasins overlapping the County include the Yolo Subbasin with small areas within the Solano and Colusa Subbasins. The Yolo and Colusa Subbasins are designated as high priority subbasins by DWR and the Solano Subbasin is a medium priority subbasin. The area of the County within the Yolo, Solano, and Colusa Subbasins are referred to as the "Valley Floor areas" of the County. The County also includes areas in the western part of the County that are outside of any designated groundwater basin or subbasin. The areas outside of the Valley Floor areas of the County are referred to as "Upland areas" of the County. **Exhibit A, attached hereto and incorporated herein,** presents the groundwater subbasin boundaries in relation to the County

and highlights the areas referred to as Valley Floor areas and Upland areas in this Urgency Ordinance.

B. County Well Permits

While the YSGA is responsible for the sustainability of the groundwater basin, the County's Division of Environmental Health (also known as "Yolo County Environmental Health" or "YCEH") is the local enforcement agency responsible for issuing permits for groundwater wells in the County, including new wells, alterations to existing wells, and replacement wells. YCEH reviews well permits for consistency with the Yolo County Code and other regulatory requirements to protect the quality of groundwater for public health reasons and to ensure the safe construction of wells.

C. Drought & Changes to the Well Permit Process to Comply with the Governor's Executive Order

On July 27, 2021, the Board of Supervisors adopted Resolution No. 21-98 proclaiming the existence of a local drought emergency and on October 19, 2021, Governor Newsom issued a proclamation extending the drought emergency statewide and further urging Californians to increase water conservation efforts.

Following a third consecutive dry winter, Governor Newsom issued Executive Order N-7-22 on March 28, 2022 and later EO N-3-23 ("EO") issued on February 13, 2023, requiring coordination between well permitting authorities and GSAs before issuing new well permits, exempting domestic wells and public water supply system wells. Recognizing that coordination between local entities that approve permits for new groundwater wells and local groundwater sustainability agencies is important to achieving sustainable levels of groundwater, the EO included a provision requiring additional review and analysis of applications for groundwater well permits in medium and high priority groundwater basins. As a high priority basin, wells in the Yolo Subbasin, and thus throughout the County were subject to the EO.

The pertinent paragraphs of the EO required the County to obtain a written verification from YSGA that the proposed well was not inconsistent with any sustainable groundwater management program established in the applicable Groundwater Sustainability Plan adopted by YSGA and would not decrease the likelihood of achieving a sustainability goal for the Yolo Subbasin.

The EO further required YCEH to determine that the proposed agricultural well was:(1) not likely to interfere with the production and functioning of existing nearby wells, and (2) not likely to cause subsidence that would adversely impact or damage nearby infrastructure.

Following the issuance of the EO, County staff collaborated with staff from the YSGA on implementation processes. The YSGA Board adopted Resolution No. 23-01 to formalize the YSGA's process of completing the GSP consistency review for compliance with the EO's written verification requirements required for new wells, i.e., that the groundwater extraction by the proposed well would not be inconsistent with the Yolo GSP and will not decrease the likelihood of achieving the YSGA's sustainability goals for the Yolo Subbasin. The YSGA,

working with hydrogeologists from West Yost, further identified areas of the County called "Focus Areas" that may be sensitive to groundwater pumping and warrant additional information and analysis. The Focus Area Map (the current version of which is attached hereto as **Exhibit B and incorporated herein**) identifies those sites in the Basin where local hydrogeology, data gaps, monitoring trends, or other considerations make it prudent for the agency to collect additional information from applicants prior to issuing a verification under the EOs. The YSGA Board of Directors developed a tiered review process on March 18, 2024 for their review of the wells within these Focus Areas that may be used to provide further direction for the YSGA and the County in establishing long-term well permitting procedures that will maintain sustainable groundwater use.

YCEH also worked with a hydrogeologist from Luhdorff & Scalmanini, Consulting Engineers ("LSCE"), to develop temporary well permit processing procedures to address the new EO requirements, which were most recently updated on March 28, 2024 and approved by the Board of Supervisors for non-exempt wells (primarily agricultural wells) on April 9, 2024. LSCE's updated Technical Memorandum. (the "TM") required well separation distances based on the data studied by LSCE that would demonstrate a proposed well is unlikely to interfere with the function and operation of existing nearby wells. Alternatively, a well applicant could submit a report prepared by a professional geologist or hydrogeologist (licensed in the State of California) analyzing whether a proposed well is unlikely to interfere with nearby wells. Additionally, the TM outlined the GSA verification review process required by the EO.

D. Lifting of EO Requirements

On September 5, 2024, Governor Newsom issued a new Executive Order N-3-24, which ended the drought state of emergency in 19 counties while maintaining it in the remaining 39 counties, including Yolo County, where it continues to support long-term recovery from the three driest year period on record. As part of EO N-3-24, however, the Governor rescinded certain provisions of prior EOs related to the drought, including the well permitting procedures required by EO N-3-23 (Paragraph 4).

E. Continued Need for Temporary Well Permitting Procedures

Although the State-wide EO process is no longer mandated, the EO review process in Yolo County developed with independent hydrogeologists, particularly with the Yolo Subbasin, identified Focus Areas and ensures the benefit of coordinated review of well permits by both the County and the applicable GSAs while the County completes long-term well permit ordinance updates. The County is awaiting DWR's completion of its updates to Bulletin 74 regarding California Well Standards. DWR is in the processing of updating Bulletin 74, which was last updated in 1991. The updated Bulletin 74 will be submitted to the State Water Resources Control Board (SWCRB) for adoption into a Statewide Model Ordinance. The County anticipates the updates to the County's long-term well permitting ordinance will also include continued submission of well permits for review by the applicable GSA to ensure proposed wells are consistent with the applicable GSP.

The GSAs within each of the three subbasins in the County are responsible for implementing the GSP covering their jurisdiction and managing groundwater in a manner that is consistent with the GSP. The GSPs have defined sustainable management criteria (SMC) including minimum thresholds, measurable objectives, and undesirable results for all applicable sustainability indicators. The GSAs in the three subbasins have the authority and responsibility to ensure groundwater management is sustainable in the subbasins and undesirable results are avoided including through implementation of management actions and projects, as needed. Given this authority and expertise of GSAs, continued coordination and GSA review of agricultural well permits are of significant importance, as the Legislature recognized with the adoption of SGMA and establishment of GSAs.

Failure to enact this Urgency Ordinance during the stated period (i.e., while the County completes long-term well permit ordinance updates) may result in significant irreversible change to groundwater levels to the detriment of the public health and safety if well permits are no longer subject to the separation requirements and coordination with the GSAs implemented under the EO. The interim EO well permit review process provided additional analysis resulting in the identification well separation distances to minimize interference with nearby wells. The interim EO process further resulted in the identification of Focus Areas, as further described herein, where there are areas in the Yolo Subbasin that warrant additional information and analysis to ensure new wells are consistent with the adopted GSP and do not exceed sustainable management criteria established in the GSP. Based on the foregoing, the Board of Supervisors does hereby declare this Urgency Ordinance is necessary to extend the well permitting procedures enacted in compliance with the EO, as modified herein based on the County's experience with the current EO process to date, to protect the public health, safety, and welfare while considering long-term revisions to well permitting regulations.

The Board of Supervisors further finds that immediate adoption of this Urgency Ordinance is necessary pursuant to Government Code section 25123(d) and 25131 for the immediate preservation of the public peace, health, or safety, as evidenced by the staff report accompanying this ordinance, the staff presentation and public testimony at the Board of Supervisors meeting, and any other information made available to the Board.

SECTION 2. MODIFIED TEMPORARY WELL PERMITTING PROCEDURES

Except as provided in Section 3 of this Urgency Ordinance, below, and subject to the well permit requirements in Title 6, Chapter 8 of the Yolo County Code, the County shall not approve or issue any permits or approval for the drilling of new wells unless the new well satisfies the following:

A. Minimum Well Separation Distances or Hydrogeologist Report to Minimize Interference with Nearby Wells

Well permit applications subject to the requirements of this Urgency Ordinance must demonstrate that a proposed new well or well alteration work is unlikely to interfere with the function and operation of nearby wells. There are two ways by which an applicant can demonstrate that a proposed new well or well alteration work is unlikely to interfere with the

function and operation of nearby wells: (1) meeting minimum separation distance from existing nearby wells providing the pumping capacity is below the threshold as described in Table 1, or (2) submitting a report by a professional geologist or hydrogeologist (licensed in the State of California) including associated information concluding that the proposed well or well alteration work will not interfere with the function and operation of nearby wells.

i. Minimum Well Separation Distances

The County requires minimum well separation distances for ensuring proposed new wells or well alterations are unlikely to interfere with the function and operation of nearby wells. **Table 1,** below, presents these minimum required distances from nearby active wells, excluding wells to be abandoned upon completion of the new replacement well if applicable, according to the proposed well pumping capacity and proposed well location in relation to Valley Floor or Upland areas. The minimum well separation distances in **Table 1** were developed with consideration of the hydrogeologic and well characteristics within the County.

LCSE's documentation of the methods used to develop the minimum well separation distance criteria is attached hereto as **Exhibit C** to this Urgency Ordinance and incorporated by reference (LSCE, December 16, 2022 TM).

Table 1. Minimum Well Separation Distances

Pumping Capacity (gallons per minute)	Minimum Well Separation Distance (feet)
Wells Within the Valley Floor Areas of the County	
<500	250
500-999	500
1000-1499	1000
1500-1999	2000
≥2000	Report Required
Wells in the Upland Areas of the County	
<15	500
15-99	1000
≥100	Report Required

For proposed wells within the Valley Floor areas with design pumping capacities greater than or equal to 2,000 gallons per minute, a report completed by a licensed professional geologist or hydrogeologist is required to conclude the well is unlikely to interfere with the function and operation of nearby wells. For proposed wells in the Upland areas with design pumping

capacities greater than or equal to 100 gallons per minute, a report by a licensed professional geologist or hydrogeologist will be required. If the location of the proposed new well or well alteration does not meet the minimum separation distances from existing wells presented in **Table 1**, the applicant may submit a report prepared by a licensed professional geologist or hydrogeologist presenting site-specific information (e.g., aquifer properties) and analyses concluding that the well is unlikely to interfere with the function and operation of nearby wells.

For all non-exempt well permit applications, the applicant must submit a map and list of known active wells within a radial distance equal to the minimum separation distance required for the well (as presented in **Table 1**) plus 500 feet. The map should include the proposed well site with known nearby active domestic, public supply, agricultural/irrigation, industrial, or other groundwater production wells. Active wells include wells recently operated (within last five years) as production wells and equipped with an operational pumping and discharge assembly, or wells in the process of being prepared to be operated. The table listing known nearby wells must include the well type, latitude/longitude coordinates, distance from the proposed well site (in feet), and Assessor's Parcel Number (APN). Any wells owned by the applicant should be indicated on the map and list of nearby wells. The County will review the information on nearby wells provided by the applicant in conjunction with additional review of available well location information from Environmental Health's database to confirm the minimum well separation is satisfied. However, it is the responsibility of the applicant to investigate and confirm the accuracy and completeness of the list of nearby wells.

ii. Alternative – Geologist or Hydrogeologist Report

Applications relying on the submittal of a report by a licensed professional geologist or hydrogeologist to address the minimum separation distance requirement must include a map and list of known wells within the appropriate separation distance demonstrated in the report, plus an additional 500 feet. The report must also include technical analyses and justification for why the proposed separation distance is unlikely to impact the function and operation of nearby wells

B. <u>GSA Verification – As Required by the Applicable GSA to Determine Consistency with Applicable GSP</u>

As explained in Section 1 of this Urgency Ordinance, the Yolo and Solano Subbasin GSAs have developed GSPs as required by SGMA that address undesirable results related to sustainability indicators consisting of groundwater levels, groundwater storage, groundwater quality, land subsidence, and interconnected surface water. The GSAs within each of the three subbasins in the County are responsible for implementing the GSP covering their jurisdiction and managing groundwater in a manner that is consistent with the GSP. The GSPs have defined SMCs including minimum thresholds, measurable objectives, and undesirable results for all applicable sustainability indicators. The GSAs in the three subbasins have the authority and responsibility to ensure groundwater management is sustainable in the subbasins and undesirable results are avoided.

Accordingly, the County will submit all well permit applications subject to this Urgency Ordinance to the applicable GSA for review and verification in accordance with the review

procedures of the pertinent GSA to determine whether the proposed well is consistent with the adopted GSP. Applicants must comply with all applicable verification requirements of the applicable GSA. Most of the County is within the Yolo Subbasin and well permits in the Yolo Subbasin will be referred to the YSGA for evaluation. If the applicable GSA includes best management or other proposed or recommended conditions for the well as part of its written verification, the County will include those items as required conditions of the well permit.

The YSGA has identified Focus Areas using various hydrologic data, reported citizen concerns, and professional judgment to delineate areas in the Yolo Subbasin that warrant additional information and analysis as part of the YSGA's written verification process, including a hydrogeologist report analyzing the proposed well's impact on groundwater conditions. The YSGA's current Focus Area map (Exhibit B hereto) and current well permit review process are posted on the YSGA website: https://www.yologroundwater.org/well-permit-verification. For well permit applications not located in Focus Areas, YSGA review will be based on the exceedance or lack of exceedance of sustainable management criteria established in the GSP. Applicants are advised to check with YSGA for changes to its written verification process and Focus Area map, which may be adjusted from time to time by action of the YSGA Board of Directors.

SECTION 3. EXCEPTIONS

A. Exempt Wells

The temporary well permitting procedures identified in Section 2, above, shall not apply to the following wells:

i. Wells producing less than two acre-feet per year for individual domestic water use on the same parcel as the well; domestic water uses include those non-commercial uses associated with a residential dwelling and related yard, garden and barnyard uses, and small personal crops within the same parcel as the residential dwelling;
ii. Public supply system wells as defined in Health & Safety Code § 116275;
iii. Monitoring wells or other wells not intended for extraction of groundwater; and
iv. Minor alterations of production wells that do not increase the discharge rate for the well or significantly alter the depth interval from which groundwater is extracted with the well. Minor alterations may include activities such as installing casing liners, patches, or other work although such work must not modify the well in a manner that increases the total groundwater pumping capacity.

B. Hardship Exception

Any person may apply for an exception from the provisions of this Ordinance on the grounds of economic hardship. Such application shall state the nature of the hardship and the reasons why an exception to this Ordinance is warranted. The application shall explain the need for the well and the impact the proposed well may have on surrounding groundwater levels. The

application shall state why the delay in pursuing the use until the County completes its evaluation of the regulations, and makes those amendments, revisions, or modifications to the regulations as the Board deems appropriate, would constitute a taking in contravention of the law. The application shall also explain whether there are alternatives to the proposed well which have been investigated and the applicant's opinion of such alternatives. Such explanation shall, if appropriate, be accompanied by technical information to support the explanation. The application for a hardship exemption shall be heard by the Planning Commission pursuant to the procedures established in Section 8-2.225 of the Yolo County Code of Ordinances. The Planning Commission's decision may be appealed to the Board of Supervisors upon payment of the necessary appeal fees.

SECTION 4. WELL PERMIT TERM

Notwithstanding Yolo County Code section 6-8.804(b), all well permits (exempt and non-exempt wells) will continue to be valid for two years from the date of issuance while this Urgency Ordinance is in effect. If a permittee cannot complete the permitted well within two years, and applies for an extension before the permit expires, the County may extend the permit for two additional years. All non-exempt well permit renewals are subject to compliance with the County's well permitting procedures that may be in effect at the time the renewal is approved, including this Urgency Ordinance, as applicable.

SECTION 5. CEQA FINDING

The Board of Supervisors hereby finds that it can be seen with certainty that there is no possibility that the adoption of this Urgency Ordinance will have a significant effect on the environment because the Urgency Ordinance will simply maintain requirements for well separation distances and GSA review to protect against impacts of new wells. It is therefore not a project under CEQA as the temporary well permit procedures on the will not result in a direct or reasonably foreseeable indirect change in the environment. (CEQA Guidelines, Section 15060(c)(2).) It is further exempt from CEQA pursuant to Sections 15307 and 15308 of the CEQA Guidelines (Class 7 and 8 categorical exemptions) as an action taken to assure the maintenance, restoration, enhancement, and protection of natural resources and the environment where the regulatory process involves procedures for protection of the environment. In addition, this ordinance is exempt from CEQA pursuant to Section 15061(b)(3) of the CEQA Guidelines because it can be seen with certainty that there is no possibility that this interim urgency ordinance may have a significant effect on the environment.

SECTION 6. SEVERABILITY

If any section, sub-section, sentence, clause, or phrase of this Urgency Ordinance is held by a court of competent jurisdiction to be invalid, such decision shall not affect the remaining portions this Urgency Ordinance. The Board of Supervisors hereby declares that it would have passed this Urgency Ordinance, and each section, sub-section, sentence, clause, and phrase hereof,

irrespective of the fact that one or more sections, sub-sections, sentences, clauses, and phrases be declared invalid.

SECTION 7. EFFECTIVE DATE

This uncodified Urgency Ordinance shall take effect upon its adoption by a 4/5 or greater vote of the Board of Supervisors and shall be in force immediately through and including October 31, 2025, unless extended prior to expiration.

I HEREBY CERTIFY that the foregoing Urgency Ordinance was introduced before the Board of Supervisors of the County of Yolo and that the Board passed and adopted this Urgency Ordinance on the 22nd day of October, 2024, by the following vote:

AYES: **Vixie Sandy, Barajas, Villegas, Frerichs.**
NOES: **None**.
ABSENT: **Provenza**.
ABSTAIN: **None**.

Lucas Frerichs, Chair
Yolo County Board of Supervisors

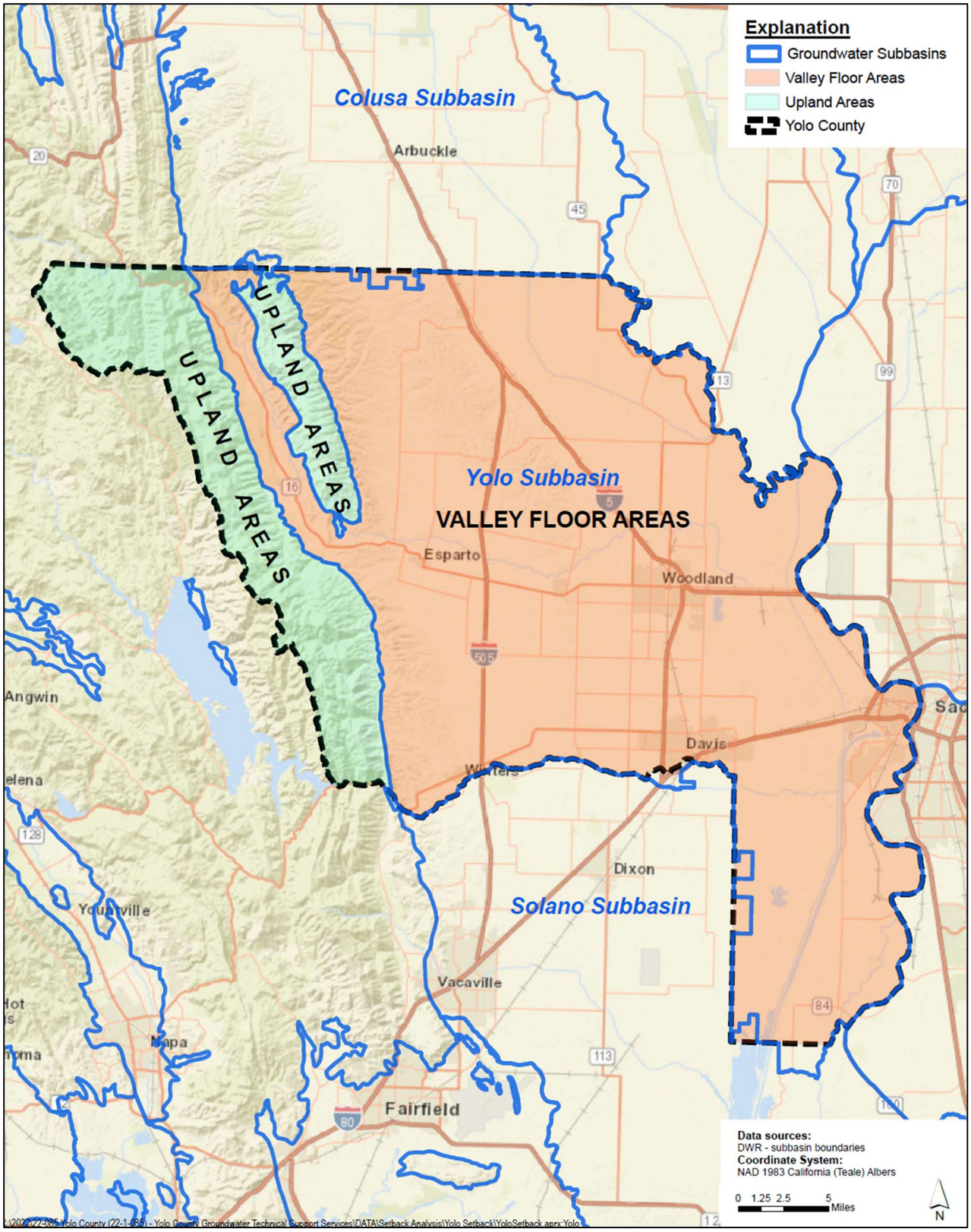
ATTEST:
Julie Dachtler, Senior Deputy Clerk
Board of Supervisors

By _____
Deputy (Seal)

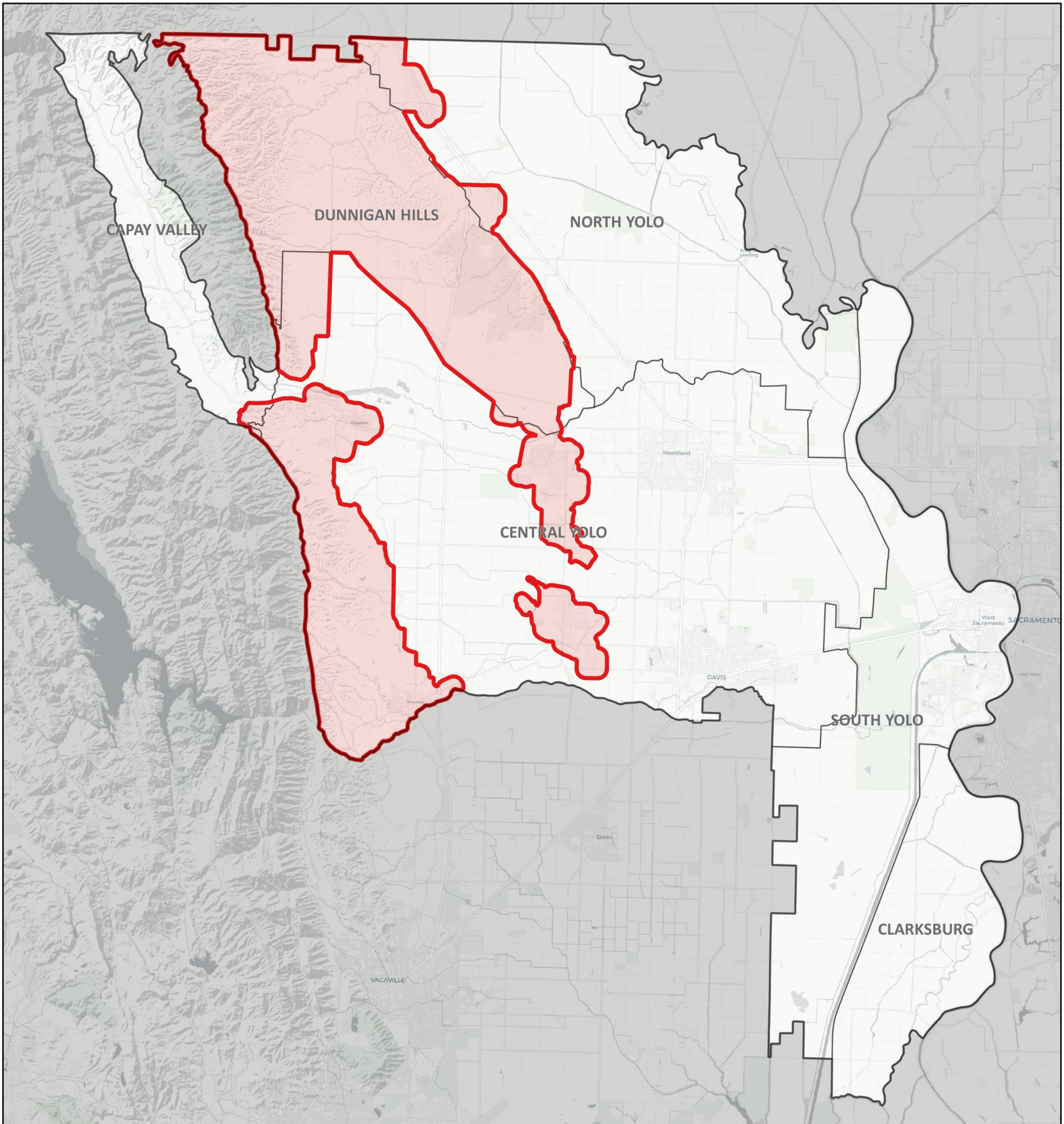
APPROVED AS TO FORM:
Philip J. Pogledich, County Counsel

By _____
Kimberly Hood
Chief Assistant County Counsel

EXHIBIT A



Map of Groundwater Subbasins Overlapping Yolo County



Legend

- YSGA Focus Areas
- YSGA Management Areas
- Yolo Subbasin Boundary

Data sources:
ESRI (basemap)

CRS:
NAD 1983 California (Teale) Albers

YSGA
Yolo Subbasin Groundwater Agency
YOLOGROUNDWATER.ORG

0 5 10 mi

Luhdorff & Scalmanini
Consulting Engineers

Technical Memorandum

DATE: December 16, 2022 PROJECT: 22-1-085

TO: Yolo County Department of Natural Resources, Environmental Health Division
Jianmin Huang
April Meneghetti
Elisa Sabatini

FROM: Luhdorff and Scalmanini, Consulting Engineers
Nick Watterson, PG, CHG
Matt Sturdivant
Vicki Kretsinger Grabert

SUBJECT: **DOCUMENTATION OF METHODS USED TO DEVELOP WELL SEPARATION DISTANCES TO ADDRESS EXECUTIVE ORDER N-7-22 SECTION 9**

This document was prepared for Yolo County Natural Resources Department, Environmental Health Division (County) by Luhdorff and Scalmanini, Consulting Engineers to support the County's development and implementation of modified water well permitting procedures to comply with the Governor's Executive Order N-7-22 (EO) issued on March 28, 2022. Included in Section 9 of the EO are requirements that prior to issuing a new well permit, all well permit applications must be evaluated and a determination must be made that the proposed well will not interfere with the operation and function of existing nearby wells. Yolo County is the well permitting entity for all areas of the County and responsible for addressing this requirement of the EO. The County has developed minimum well separation distances intended to address this requirement during review of water well permit applications. This Technical Memorandum (TM) provides a summary of the methods used to develop the well separation distances in modified well permitting procedures developed by the County.

1. METHODS

Yolo County overlaps three groundwater subbasins of the Sacramento Valley Groundwater Basin with additional areas outside of any groundwater basin. The unconsolidated sediments that occur within the Valley Floor areas of the County have potential to store and yield large quantities of groundwater. The geologic materials in the Valley Floor areas consist primarily of unconsolidated alluvial sediments ranging from fine-grained clay to coarser-grained sands and gravels, whereas the Upland Areas are primarily consolidated rock. The Valley Floor and Upland areas of the County are shown on **Figure 1**. Evaluations of appropriate well separation distances were conducted separately for Valley Floor and Upland areas because of the different hydrogeologic settings.

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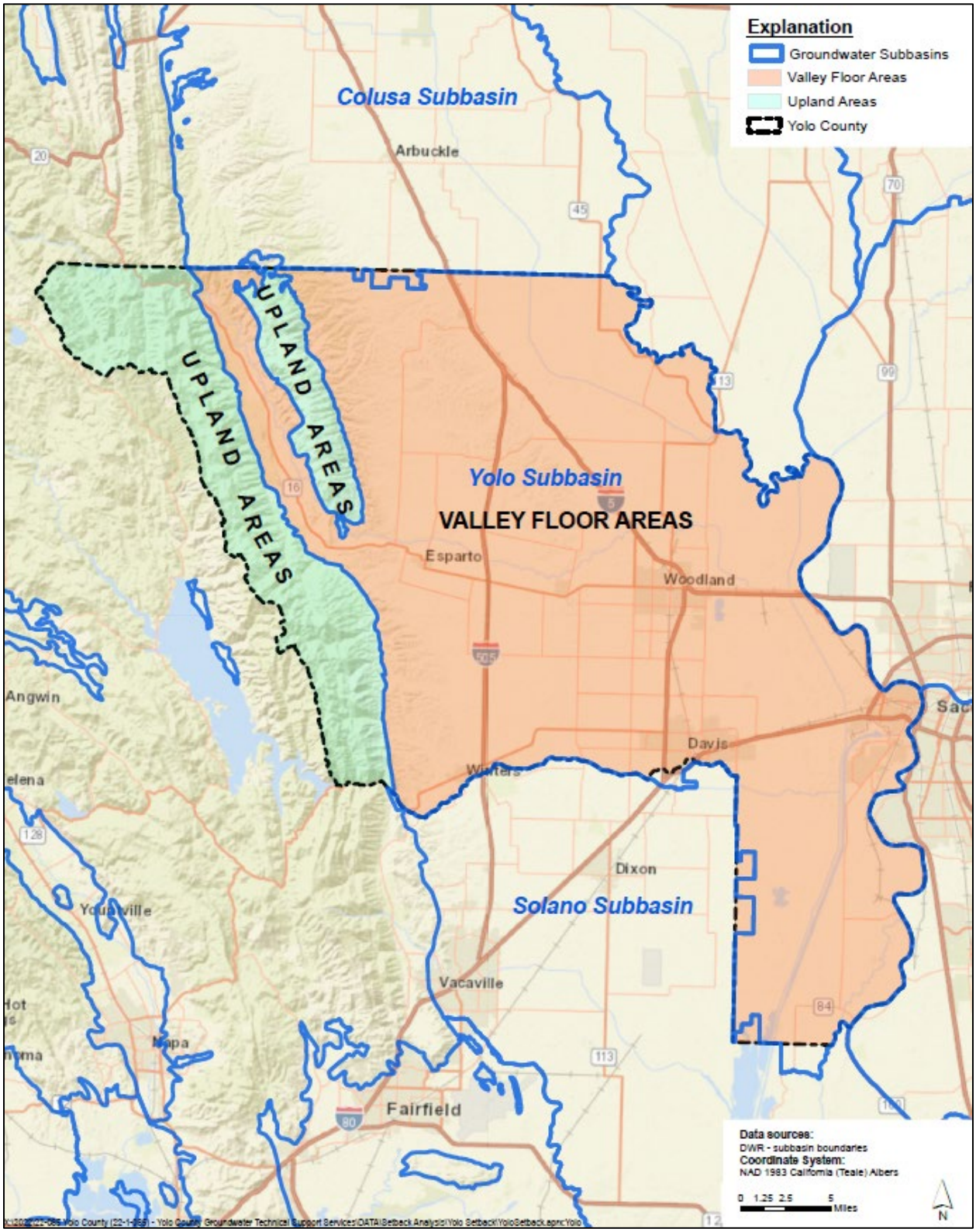

Figure 1. Map of Groundwater Well Permitting Areas in Yolo County

The selection of well separation distances was based on analyses of likely pumping drawdown impacts at different distances from a pumping well under a range of well operational considerations and aquifer properties representative of conditions in the County. The propagation of pumping drawdown depends on the duration and intensity of the well pumping and hydrogeologic characteristics related to the aquifer's ability to store and transmit water. An analytical modeling approach based on application of the Theis equation (Theis, 1935) was utilized to estimate the amount of water level drawdown expected at different distances from the pumping well. Important inputs for the analytical modeling include well operational parameters of well pumping rate and duration and aquifer parameters of transmissivity and storativity. Well operational inputs evaluated in the analytical modeling were developed based on review of agricultural well pumping rates from the Department of Water Resources' Well Completion Report (WCR) Database and from local knowledge of well operation in the County. Reported pumping rates from WCRs commonly represent maximum tested pumping capacity rather than the operational or design pumping rate for a well.

Valley Floor Area Analysis

Figure 2 presents pumping rates reported on WCRs for agricultural wells located within the Valley Floor. Considering these reported pumping rates, the separation distance analysis evaluated a range of pumping rates from 500 to 3,000 gallons per minute GPM (**Table 1**), although most wells are expected to have design pumping rates less than 2,000 GPM.

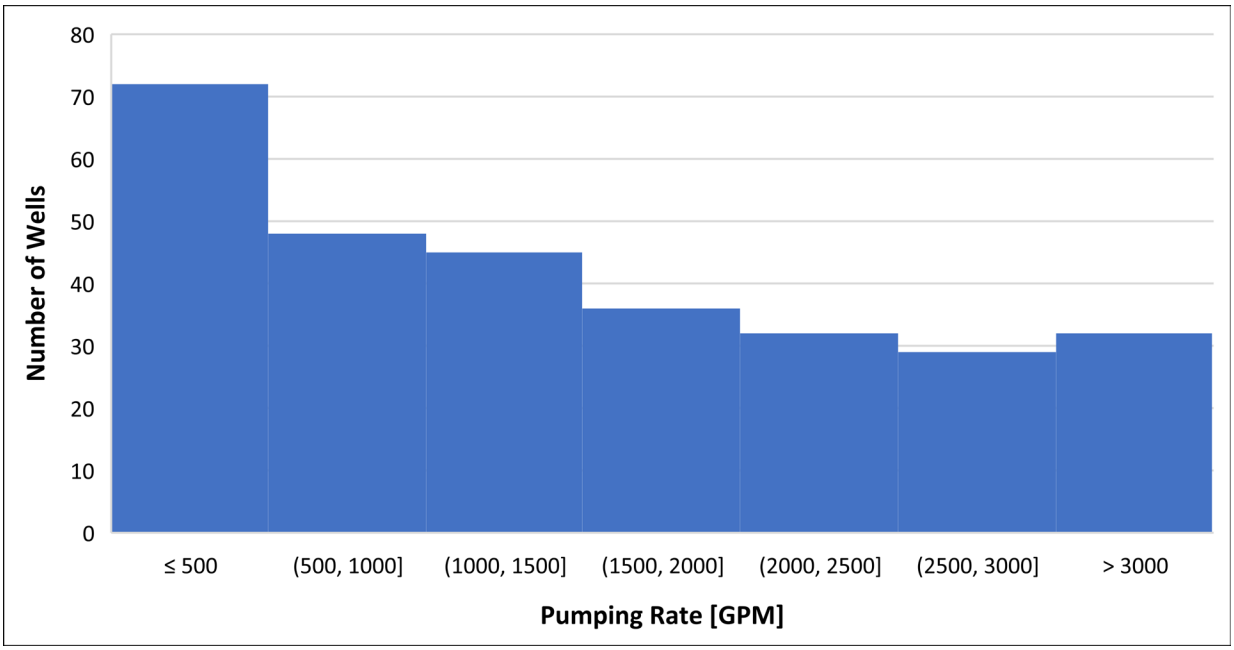

Figure 2. Yolo County Valley Floor Pumping Rates reported from WCRs

Typical pumping duration and aquifer parameters for use in the analysis were derived from the Sacramento Valley Groundwater-Surface Water Simulation Model (SVSim) (DWR, 2022). **Figure 3** presents the average applied water use by month within the Valley Floor area of Yolo County as simulated in the model. These data suggest much of the applied water use occurs during the six months from May through October. Therefore, a six-month pumping duration was assumed in the analysis.

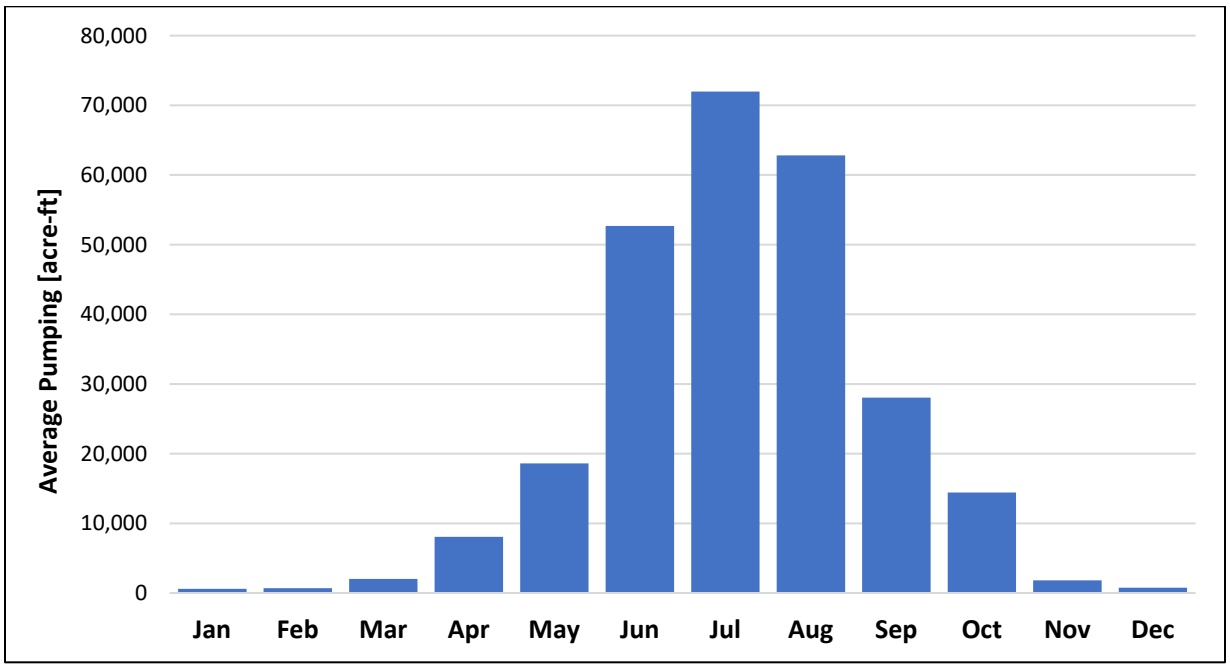

Figure 3. Yolo County Valley Floor Monthly Pumping reported from SVSim

Aquifer parameters were derived from SVSim for both confined and unconfined conditions. Aquifer conditions near the surface throughout the Valley Floor area are typically unconfined, but confinement increases with depth. Required well separation distances are not intended to be depth-dependent, and production wells are generally drilled to greater depths, commonly into zones that are more confined. Therefore, the analysis utilized more conservative aquifer parameters representative of confined conditions to determine appropriate well separation distances.

To evaluate many possible pumping scenarios that could occur within the Valley Floor area, drawdowns were estimated (using the Theis equation) for all of the different combinations of aquifer properties (storativity and transmissivity) represented in SVSim for the area within Yolo County. This was conducted for many different pumping rates with drawdown at different distances calculated for each scenario. **Table 1** presents the ranges of inputs included in this analysis.

A drawdown of five feet or less was considered not likely to interfere with the production and function of existing wells based on consideration of typical well characteristics and using professional judgment. Appropriate well separation distances for different pumping rates were then determined by evaluating the distance at which approximately 90 percent of possible scenarios resulted in less than five feet of drawdown (i.e., only 10 percent resulted in drawdown more than five feet). Minimum well separation distances were determined for pumping rates of 500, 1,000, 1,500, and 2,000 GPM for use in permitting guidance. The potential impacts on nearby wells from high-capacity wells with pumping rates greater than 2000 GPM should be subject to additional review by a licensed professional geologist or hydrogeologist because the cone of depression from such large wells could become quite large.

Table 1. Drawdown Model Parameters for Yolo County Valley Floor

Model Parameter	Value	Basis
Design Pumping Rate	500 – 3,000 GPM	Range of values evaluated based on range of pumping rates reported in DWR's WCR database
Sustained Pumping Rate Used in Analysis	250 – 1,500 GPM	Represents pumping 500-3,000 GPM; 12 hours on / 12 hours off daily over pumping duration
Pumping Duration	6 Months	Most pumping occurs May through Oct based on SVSim
Storativity Values	0.005 – 0.051	Parameters from SVSim hydrologic model
Transmissivity Values	3900 – 75,500 feet^2/day	Parameters from SVSim hydrologic model
Drawdown Threshold	5 feet	Maximum drawdown not likely to interfere with function of nearby wells

Upland Areas Analysis

Hydrogeologic conditions in the Upland areas of the County are much different than the Valley Floor areas. There are fewer wells, many wells are deeper than in the Valley Floor, and pumping rates tend to be much lower. Wells in the Upland areas are usually drilled into much more consolidated geologic formations where aquifer transmissivities are typically orders of magnitude lower than in the Valley Floor. Although pumping rates are much lower in the Upland areas, large drawdowns can be caused by well pumping because of the low transmissivity and storativity of the more consolidated aquifers. In the Upland areas, pumping scenarios resulting in ten feet or less of drawdown were considered not likely to interfere with the production and functioning of existing wells. Parameters used in the analysis in the Upland areas are summarized in **Table 2**.

Table 2. Drawdown Model Parameters for Yolo County Upland Areas

Model Parameter	Value	Basis
Design Pumping Rate	10 - 100 GPM	Range of values evaluated based on range of pumping rates reported in DWR's WCR database
Sustained Pumping Rate Used in Analysis	5 – 50 GPM	Represents pumping 10 - 100 GPM; 12 hours on / 12 hours off daily over pumping duration
Pumping Duration	1 Month	Represents potential long-term use in Upland areas
Storativity Values	0.0001 – 0.001	Typical of low storativites expected in consolidated aquifers
Transmissivity Values	1 – 250 feet^2/day	Parameters derived from specific capacities reported in DWR's WCR database
Drawdown Threshold	10 feet	Maximum drawdown not likely to interfere with function of nearby wells

2. WELL SEPARATION DISTANCES ANALYSIS RESULTS

Minimum well separation distances were developed based on the analysis described above to ensure proposed new wells or well alterations are unlikely to interfere with the function and operation of nearby wells. **Table 3** presents these minimum well separation distances from nearby active wells according to the proposed well pumping capacity and proposed well location (i.e., Valley Floor areas versus Upland areas).

Table 3. Minimum Well Separation Distances

Design Pumping Rate (gallons per minute)	Minimum Well Separation Distance (feet)
Wells Within the Valley Floor Areas of the County	
<500	250
500-1000	500
1000-1500	1000
1500-2000	2000
>2000	Report Required
Wells in the Upland Areas of the County	
<15	500
15-100	1000
>100	Report Required

For proposed wells within the Valley Floor areas with design pumping capacities greater than 2,000 GPM, a report completed by a licensed professional geologist or hydrogeologist is necessary to demonstrate the well is unlikely to interfere with the function and operation of nearby wells. For proposed wells in the Upland areas with design pumping capacities greater than 100 GPM a report by licensed professional geologist or hydrogeologist is necessary. If the location of the proposed new well or well alterations does not meet the minimum separation distances from existing wells presented in **Table 1**, the applicant may submit a report prepared by a licensed professional geologist or hydrogeologist presenting site-specific information (e.g., aquifer properties) and analyses demonstrating the well is unlikely to interfere with the function and operation of nearby wells.

3. REFERENCES

Theis, C.V., 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, Am. Geophys. Union Trans., vol. 16, pp. 519-524.

California Department of Water Resources (DWR), 2022. Sacramento Valley Groundwater-Surface Water Simulation Model (SVSim) Version 1.0. https://data.cnra.ca.gov/dataset/svsim