Water Use Management Plan

Purpose and Overview

MIT Farms, LLC is seeking a Major Use Permit from the County of Lake for a proposed A – Type 3 "Medium Outdoor" commercial cannabis cultivation operation at 22368 & 22430 Jerusalem Grade near Middletown and Lower Lake, California on Lake County APNs 136-071-02 & 03 (Project Property). The proposed commercial cannabis cultivation operation would be composed of three fenced outdoor cultivation areas, with up to 42,066 ft^2 of combined cannabis canopy. Proposed ancillary facilities include four 5,000-gallon water storage tanks, a 120 ft^2 Pesticides & Agricultural Chemicals Storage Area/Shed, and a 120 ft^2 Security Center/Shed. The growing medium of the proposed outdoor cultivation areas would be an imported organic soil mixture in above ground garden beds. Drip irrigation systems would be used to conserve water resources, and all water would come from two existing onsite groundwater wells.

This Water Use Management Plan (WUMP) is designed to conserve Lake County's water resources and to ensure that the proposed cultivation operation's water use practices are in compliance with applicable County, State, and Federal regulations at all times. This WUMP focuses on designing a water efficient delivery system and irrigation practices, and the appropriate and accurate monitoring and reporting of water use practices. Also included in this WUMP is a description of the Water Resources of the Project Property, a Water Availability Analysis, and an attached Hydrogeologic Assessment Report prepared by a Certified Hydrogeologist.

Description of Water Resources

Surface Water

Soda Creek, an intermittent Class I watercourse, flows from north to south through the Project Property. Multiple unnamed ephemeral and intermittent watercourses flow through the Project Property into Soda Creek. No cannabis cultivation activities nor agricultural chemicals storage would occur within 100 feet of any surface waterbody.

Groundwater

The Project Property is located at the northern end of Jerusalem Valley and is not within any of the Groundwater Management Plan Areas/Basins outlined in the 2006 Lake County Groundwater Management Plan. Soils of the Project Property are identified as the Maymen-Millsholm-Bressa complex, Millsholm-Bressa loams, and Skyhigh-Millsholm loams by the NRCS Web Soil Survey. The proposed cultivation areas and ancillary facilities would be located on soils identified as the Maymen-Millsholm-Bressa complex and Millsholm-Bressa loams, characterized as gravelly clay loams with a parent material of residuum weathered from sedimentary rock. The United States

Geological Survey Geologic Map of the Santa Rosa Quadrangle defines the area in the vicinity of the Project Property as the Franciscan Fanciscan Complex.

Water Resources Protection

Naturally occurring riparian vegetative cover (e.g., trees, shrubs, and grasses) in aquatic habitat areas will be protected to maintain riparian areas for streambank stabilization, erosion control, stream shading and temperature control, sediment and chemical filtration, aquatic life support, wildlife support, and to minimize waste discharges. Access roads and parking areas will be graveled to prevent the generation of fugitive dust, and vegetative ground cover will be preserved and/or re-established as soon as possible throughout the entire site to filter and infiltrate stormwater runoff from the access roads, parking areas, and the proposed cultivation operation. Personnel will have access to portable restroom facilities at all times when onsite, and those restroom facilities will be established in a location that is at least 100 feet from any surface water body, and serviced regularly.

The Project Property has been enrolled for coverage under the State Water Resources Control Board's (SWRCB) Cannabis General Order since October 30th, 2020 (WDID: 5S17CC429330). Site Management and Nitrogen Management Plans will be developed for the proposed cultivation operation, and submitted to the Central Valley Regional Water Quality Control Board (CVRWQCB) for review, prior to planting. Each year, prior to March 1st, an Annual Monitoring Report will be prepared and submitted to the CVRWQCB, demonstrating measures taken over the course of the previous year to comply with the Cannabis General Order. MIT Farms will maintain compliance with the Cannabis General Order for the protection of water resources for as long as the proposed cultivation operation is operating.

Water Sources, Storage, & Irrigation

All water for the proposed cultivation operation would come from two existing onsite groundwater wells:

- The groundwater well located at Latitude 38.834508° and Longitude -122.497737° on APN 136-071-03, was drilled in May of 2016, through multiple layers of sandstone and shale to a depth of 300 feet below ground surface. This well was screened between 138 and 198 feet below ground surface and had an estimated yield of 5 gallons per minute at the time it was drilled (Well Completion Report e0314964, attached).
- The groundwater well located at Latitude 38.83517° and Longitude -122.49787° on APN 136-071-02, was drilled in August of 2023, through clay, serpentine, shale, ash, and volcanic rock to a depth of 207 feet below ground surface. This well was screened between 61 and 161 feet below ground surface and 181 and 201 feet below ground surface, and had an estimated yield of 21 gallons per minute at the time it was drilled (Well Completion Report WCR2023-010071, attached).

Irrigation water for the proposed cultivation operation will be stored within four 5,000-gallon heavy-duty plastic water storage tanks. The water storage tanks will be equipped with float valves to shut off the flow of water from the wells and prevent the overflow and runoff of irrigation water when full. PVC water supply lines will be run from the water storage tanks to the irrigation systems of each proposed cultivation area. The water supply lines will be equipped with safety valves, capable of shutting off the flow of water so that waste of water and runoff is prevented/minimized when leaks occur and the system needs repair, and inline water meters compliant with California Code of Regulations, Title 23, Division 3, Chapter 2.7. MIT Farms will maintain daily water meter reading records for a minimum of five years, and will make those records available to Water Boards, CDFW, and Lake County staff upon request. The irrigation systems of the proposed cultivation/canopy areas will be composed of black poly tubing and drip tapes/lines.

Water Conservation

Per the Water Conservation and Use requirements outlined in the SWRCB's Cannabis General Order, the following Best Practical Treatment and Control (BPTC) measures will be implemented to conserve water resources:

- Regularly inspect the entire water delivery system for leaks and immediately repair any leaky faucets, pipes, connectors, or other leaks.
- Apply weed-free mulch in cultivation areas that do not have ground cover to conserve soil moisture and minimize evaporative loss.
- Implement water conserving irrigation methods (drip or trickle and micro-spray irrigation).
- Maintain daily records of all water used for irrigation of cannabis. Daily records will be calculated by using a measuring device (inline water meter) installed on the main irrigation supply line between the water storage area and cultivation areas.
- Install float valves on all water storage tanks to keep them from overflowing onto the ground.

Irrigation

From the CalCannabis Cultivation Licensing Program's Final Programmatic Environmental Impact Report (PEIR):

"According to Hammon et al. (2015), water use requirements for outdoor cannabis production (25-35 inches per year) are generally in line with water use for other agricultural crops, such as corn (20-25 inches per year), alfalfa (30-40 inches per year), tomatoes (15-25 inches per year), peaches (30-40 inches per year), and hops (20-30 inches per year). In a study of cannabis cultivation in Humboldt County, approximate water use for an outdoor cultivation site was 27,470 gallons (0.08 acre-feet) per year on average and ranged from approximately 1,220 to 462,000 gallons per year (0.004 to 1.4 acre-feet), with the size of the operation being a major factor in this range. Annual water uses for a greenhouse operation averaged approximately 52,300 gallons (0.16 acre-feet) and ranged from approximately 610 to 586,000 gallons (0.002 to 1.8 acre-feet) annually (Butsic and Brenner 2016). During a field visit conducted by technical staff to an outdoor cultivation site, one

cultivator reported using approximately 75,000 gallons (0.23 acre-feet) for 1 year's entire cannabis crop (approximately 66 plants), or approximately 1,140 gallons per plant per year."

The proposed outdoor canopy areas are expected to have an annual water use requirement of 24 inches per year (2 acre-feet per acre per year). The total proposed combined outdoor canopy area is 42,066 ft^2 (0.966 acres) with an estimated annual water use requirement of approximately 1.93 acre-feet (629,544 gallons). The cultivation season for the proposed cultivation operation would begin in May and end in November of each year. The following table presents the expected water use of the proposed cultivation operation by month during the cultivation season in gallons.

May	June	July	August	September	October	November
32,000	65,000	114,000	143,000	146,000	97,000	32,544

Water Availability Analysis

All water for the proposed cultivation operation would come from two existing onsite groundwater wells located at Latitude 38.83517° and Longitude -122.49787° on APN 136-071-02 and at Latitude 38.834508° and Longitude -122.497737° on APN 136-071-03. The proposed cultivation operation has an estimated peak daily water use requirement of approximately 4,785 gallons, and an estimated average water demand of approximately 3,045 gallons per day during the cultivation season. The two existing onsite groundwater wells have a combined estimate yield of 26 gallons per minute. At 26 gallons per minute, the two onsite groundwater wells could produce the maximum estimated daily demand for water of the proposed cultivation operation in less than 3 hours and 10 minutes. Additionally, MIT Farms proposes to establish 20,000 gallons of water storage capacity on the Project Property for irrigation, which is more than four times the peak anticipated daily water demand of the proposed cultivation operation. As such, the existing onsite groundwater wells are a sufficient water supply source for the proposed cannabis cultivation operation.

Monitoring and Reporting

Prior to cultivation, inline water meters compliant with California Code of Regulations, Title 23, Division 3, Chapter 2.7 will be installed on the main irrigation water supply lines running between the existing onsite groundwater wells and the water storage tanks of the proposed cultivation operation. Prior to cultivation, water level meters equipped with data logging capabilities, will be installed on the existing onsite groundwater wells. The Applicant will record daily water meter readings, and will maintain those records onsite for a minimum of five years. Those records will be made available to Water Boards, CDFW, and Lake County staff upon request.

HYDROGEOLOGIC ASSESSMENT REPORT

22368 and 22430 Jerusalem Grade Road
Lake County, CA 95453
APN 136-071-02 and 136-071-03

Prepared For:

MIT Farms LLC
729-380 Wendel Rd.
Wendel, CA 96136

December 11, 2023

Prepared By:

HURVITZ ENVIRONMENTAL SERVICES INC.
105 Morris Street, Suite 188
Sebastopol, California 95472

Lee S. Hurvitz, PG #7573 CHG #1015
Certified Hydrogeologist

Project No. 5207.01

HURVITZ ENVIRONMENTAL

GEOLOGIC & ENVIRONMENTAL CONSULTING

December 11, 2023
HES Project # 5207.01

MIT Farms LLC
729-380 Wendel Rd.
Wendel, CA 96136

RE: Hydrogeological Assessment Report
22368 and 22430 Jerusalem Grade Road,
Lake County, CA 95453
APN 136-071-020 and 136-071-030

Dear MIT Farms LLC:

Hurvitz Environmental Services, Inc. (HES) is pleased to submit this Hydrogeologic Assessment Report for the above referenced property. This Report was prepared to support of a Lake County Cannabis Cultivation Major Use Permit (MUP) application. The purpose of this Hydrogeologic Assessment was to outline the Site's proposed water usage rates and water conveyance systems, as well as, to evaluate whether or not the Site's water supply can adequately meet the proposed Project's water demands without creating aquifer overdraft, or significantly impacting nearby wells.

Based on the information and assessments contained herein, we conclude that the well discharge capacity and the rate of aquifer recharge are sufficient to sustainably provide for the projected annual water use for this Project. The quantity of groundwater to be used for the Project is unlikely to result in significant declines in regional groundwater availability or depletion of groundwater resources over time. The potential for the Project water-use to cause well interference or impacts to creeks are also considered minimal.

We appreciate the opportunity to provide you with these services. Please do not hesitate to contact us at your convenience, should you have any questions or comments regarding this report or our recommendations.

Sincerely,
HURVITZ ENVIRONMENTAL SERVICES, INC

Lee S. Hurvitz, PG #7573 CHG #1015
Certified Hydrogeologist

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1.0 INTRODUCTION AND SCOPE OF SERVICES

We understand that MIT Farms LLC, (the applicant) is applying to Lake County for approval to cultivate cannabis within three (3) fenced outdoor cultivation areas, with a total of 42,066 ft^2 of combined cannabis canopy (the Project). The proposed cultivation will be on the property identified as 22368 and 22430 Jerusalem Grade Road, Lake County, CA 95453 (the Site). The Project will be utilizing two parcels identified as Assessor's Parcel Number (APN) APN 136-071-02 and 136-071-03 with a combined total area of 37.39 acres.

We understand that on July 27, 2021, the Lake County Board of Supervisor's adopted Ordinance 3106, where it states that: "Due to the exceptional drought…. All projects that require a CEQA analysis of water use must include these additional items: a Hydrology Report and a Drought Management Plan. Therefore, on behalf of the applicant, Hurvitz Environmental Services (HES) prepared this Hydrogeological Assessment Report in accordance with the Lake County Use Permit requirements.

This Assessment Report includes the following elements:

- Estimates of existing and proposed water uses for the property.
- Characterization of local geologic and hydrogeologic conditions including defining water sheds and sub-basins.
- Evaluation of a 6-hour well yield test and recharge data.
- Well Completion Report investigation.
- Discussion on proposed methods for water level and water usage monitoring.
- Assess potential for well interference between the project well and neighboring wells, and between the project well and nearby streams.

2.0 SITE DESCRIPTION

The site is located in unincorporated Lake County, California, approximately 3.4 miles northeast of Hidden Valley Lake and 7.5 miles southeast of Lower Lake. Access to the property is obtained via a shared private gravel access road off Jerusalem Grade Road, (**Plate 1 – Site Location Map**). The Lake County Assessor's Office identified the Site as Assessor's Parcel No. (APN) 136-071-02 (deeded 16.61-acres) and 136-071-03 (deeded 20.78-acre) with a combined total area of 37.39 acres (**Plate 2 - Assessor's Parcel Map**). The two rectangular shaped parcels are vacant and undeveloped with the exception of a graded road and two groundwater wells.

The Site is situated across a valley created by Soda Creek which flows north to south through the site. A west flowing unnamed stream also insects the southern parcel (APN: 136-071-03) on its east side and coalesces with Soda Creek on the same parcel. The confluence of these creeks is covered with grasses, and upland areas have remnants of burned chaparral and oak woodland. The Site was severely burned by the Hennessey Fire (part of the LNU Lightning Complex) in August of 2020. The site boundaries and the location of the Site wells are presented on **Plate 3 – Site Plan**. Site photographs are presented in **Appendix A- Site Photographs**.

Cultivation activities are primarily planned on the northern parcel (APN 136-071-02). Minor cultivation activities, support structures and access to the project is located on the southern parcel (APN 136-071-03) as shown on the **Engineered Site Plans (Appendix B).**

2.1 USGS 7.5 MINUTE QUADRANGLE MAP

HES reviewed the United States Geological Survey (USGS) Middletown and Jerico Valley 7.5-minute Quadrangle Maps, 2015, (**Plate 4 – USGS Topographic Map**). The Site is situated across a valley created by Soda Creek which flows north to south across the site. Soda Creek is an intermittent watercourse and multiple unnamed ephemeral and intermittent watercourses flow through the Site and into Soda Creek.

The Site has a maximum elevation of approximately 1,150 feet above mean sea level (msl) located in the upland hills at the northeast corner of parcel APN 136-071-02 and a minimum elevation of approximately 950-feet above msl located along Soda Creek at the Site's southern boundary on parcel APN 136-071-03.

2.2 GEOLOGICAL CONDITIONS

HES reviewed the Geologic Map of California, 2010, prepared by the California Geologic Survey. According to the Map reviewed, the Site lies within a geologic region characterized by Mesozoic aged ultramafic rocks (Um) consisting of serpentine, minor peridotite, gabbro and diabase. The site is bordered to the north by Cretaceous and Jurassic sandstone with smaller amount of shale, chert, limestone and conglomerate (KJfm). A thrust fault also trends northwest/southeast across the northern portions of the site, **Plate 5 – Geologic Map**.

Well logs for the two (2) Site wells and surrounding properties show that the subsurface is composed of mainly Serpentine with minor amounts of ash, basalt and shale (decomposed

ultramafic rocks) these are discuss in Section 2.4 of this Report and the drillers soil log descriptions are presented in **Appendix C - Well Completion Reports** and summarized on **Table 1.**

2.3 REGIONAL GROUNDWATER

According to USGS[1] maps reviewed; the project site is located within the Soda Creek Sub-watershed (HUC-12 -180201620304) of the Middle Putah Groundwater Basin which is within the jurisdiction of the Central Valley Regional Water Quality Control Board. Soda Creek Watershed consists of 20,811 acres and Soda Creek flows southeast and is a tributary to Putah Creek.

The Middle Putah Groundwater Basin is bordered by Clear Lake to the north, the Clear Lake Volcanics to the east and the Franciscan Formation borders the basin to the west and south. The Middle Putah Inventory Unit is in the southeastern portion of Lake County. The Inventory Unit is rural and includes approximately 62,654 acres. The 2001 population of the Middle Putah Inventory Unit was 229. The primary irrigated crop types in this region are pasture and grapes. The total irrigated crop area in 2001 was 1,522 acres, and total dry-farmed crop area was 67 acres. Walnuts are the non-irrigated crops in this region. The Middle Putah Inventory Unit does not contain any water agencies that supply domestic or agricultural water; all domestic and agricultural water users are self-supplied. Groundwater is the primary source of supply for all water users.

Land use changes have occurred through the past several decades with an increase in residential development and more recently commercial cannabis cultivation. Currently, water resources are generally considered to be substantial with more than enough to sustain the current demands in most of the Middle Putah Groundwater Basin. However, with land use changes, drought, and increased development throughout California, there is becoming an increased regulatory framework designed to protect the water resources in California. Even with the evolving regulatory dynamics surrounding groundwater, this area is considered to be very low priority due to the rural setting and the developmental constraints in the area.

2.4 SITE GROUNDWATER

HES reviewed Well Completion Reports through the California Department of Water Resources (DWR) and identified 2 wells within approximately 1,500-feet of the Project as shown on **Plate 3 – Site Plan**. Well logs for these wells, and the two existing Site wells are included in **Appendix C - Well Completion Reports** and summarized on **Table 1.**

As discussed in section 2.2 above, the drillers soil descriptions indicated that the subsurface aquifer is fractured bedrock composed of serpentine and other mafic rocks. Well yields range from 5 to 25 gallons per minute (gpm) with an average specific capacity of 0.3 gpm/ft. drawdown, as summarized on **Table 1**.

[1] https://apps.nationalmap.gov/viewer/

TABLE 1 – WELL COMPLETION REPORT INVENTORY

APN/ Well Number	Well install/ Test Year	Distance to Site Well 1 (Feet)	Surface Elevation (Feet)	Total Well Depth (Feet)	Screen Interval (Feet)	Total Screen Thickness (Feet)	Well Yield (GPM)	Drawdown (Feet)	Specific Capacity	Aquifer Material	Map ID
136-071-03/ e0314964	2016	NA	1017	198	138-198	60	5	180	0.02	Gray Sandstone, and shale	Site Well #1
136-071-02/ 18727	2023	203	1036	201	61-161 181-201	120	25(a)	53.5(a)	0.47	Green clay, Serpentine, shale, ash Basalt	Site Well #2
136-071-06/ 014311	2018	2,140	1058	300	180-300	120	10	155	0.64	Shale, Serpentine	3
136-071-06/ 006017	2018	2,230	1058	136	40-136	94	10	104	0.096	Serpentine, ash, cobbles and shale	4
Average Well Total Depth = 209 ft bgs				Average Well Screen Thickness = 98 ft				Average Well Specific Capacity = 0.3			

a) Well yield data from aquifer testing on 11/26/2023 and not from well completion report.
NA – Not Available

3.0 SITE DEVELOPMENT AND WATER USE

The proposed commercial cannabis cultivation operation will be composed of three (3) fenced outdoor cultivation areas, with up to 42,066 ft^2 (0.966 acre) of combined cannabis canopy as shown in **Appendix B - Engineered Site Plans**. Proposed ancillary facilities include four (4) 5,000-gallon water storage tanks, a 120 ft^2 pesticide and agricultural chemicals storage shed, and a 120 ft^2 security center/shed. The growing medium of the proposed outdoor cultivation areas would be an imported organic soil mixture in above ground garden beds. Drip irrigation systems would be used to conserve water resources, and all water would come from two existing onsite groundwater wells.

3.1 CULTIVATION WATER USAGE

The applicant plans to cultivate up to 42,066 ft^2 (0.966 acre) from three (3) outdoor cultivation areas. The applicant has not had any specific experience growing cannabis at this location but the applicant is working with experienced cannabis cultivators and is designing the system to use the least amount of water possible.

It is our understanding that a cannabis irrigation water usage rate of 2-acre feet/acre/year for outdoor cultivation is generally consistent with northern California averages. Therefore, with the applicant proposing 0.966-acres of cultivation we can estimate that cannabis irrigation will require approximately 629,544 gallons/year (1.93 acre-ft/year) of groundwater, as outlined in **Table 2 – Total Project and Site Water Usage**.

With an estimated 210-day cultivation season from May through November, we estimate that the applicant will use an average of approximately 2,998 gallons/day for the cultivation season (629,544 gallons/210 days).

3.2 EMPLOYEE WATER USE

We understand that the Project will require one full-time farm manger, as well as, several part-time seasonal employees. Therefore, for the purpose of this assessment we estimate that the Project will require an average of three (3) full-time employees throughout the growing season. Potable water for farm workers will come from the onsite groundwater wells. Using the Napa County Water Availability Guidance Document[2] estimate of 15 gallons of water utilized per day per cultivation worker on site, we calculated the following groundwater usage for the Project:

> 3 (average number of daily employees) x 15 gallons/day (water usage) x 225 days/year = 10,125 gallons /year = 0.03 acre-feet/year = Employee Groundwater Use

[2] Water Availability Analysis (WAA) Guidance Document, Napa County, Adopted May 12, 2015.

3.3 TOTAL ANNUAL SITE WATER USE

The total groundwater use including the proposed cannabis cultivation, and employees is calculated below and tabulated on **Table 2 – Total Project and Site Water Usage 2**.

629,544 gallons (outdoor cultivation)
10,125 gallons (employee)
639,669 gallons or 1.96 acre-feet/year = Total Estimated Site Groundwater Use

TABLE 2 – TOTAL SITE WATER USAGE

Source	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total	Total
	---------Gallons---------													acre-ft
Outdoor Cultivation	0	0	0	0	32,000	65,000	114,000	143,000	146,000	97,000	32,544	0	629,544	1.93
Employees	0	0	0	0	1,446	1,446	1,446	1,446	1,446	1,449	1,446	0	10,125	0.03
TOTAL USAGE	0	0	0	0	33,446	66,446	115,446	144,446	147,446	98,449	33,990	0	639,669	1.96

Based on these estimates for onsite water use it appears that the peak water demand at the Site will occur annually between August and September with peak daily water demand being approximately **4,785** gallons/day. Average daily water demand at the Site over the entire growing season (210 days) is expected to be approximately **3,045** gallons/day.

3.4 IRRIGATION WELL INFORMATION

The two existing onsite groundwater wells are located at Latitude 38.83517° and Longitude -122.49787° (Site Well #1) and at Latitude 38.834508° and Longitude -122.497737° (Site Well #2) as shown on the **Plate 3 – Site Plan**. Well completion reports are included in **Appendix C - Well Completion Reports** and summarized on **Table 1 – Total Project Water Usage**.

The well completion report for existing Site Well #1 (DWR # e0314964) on APN 136-071-03 indicates the 5-inch PVC cased well was installed to a total depth of 198 feet on May 31, 2016. The well was installed with a 20-foot annular seal, and a well screen interval between 138 and 198 feet below grade (bg). Static water level was recorded at 137 feet bg and the estimated well yield was reported to be 5 gallons per minute (gpm).

The well completion report for existing Site Well #2 (DWR # WCR 2023 -010071) on APN 136-071-02 indicates the 5.5-inch PVC cased well was installed to a total depth of 201 feet on August 11, 2023. The well was installed with a 22-foot annular seal and a well screen interval between 61-161 feet bg, and between 181-201 feet bg. Static water level at the time of completion was recorded at 45 feet bg and the estimated well yield was reported to be 21 gpm at the time of well

installation. A subsequent well yield test was performed on this well and findings are discussed below in Section 3.5.

3.5 WELL YIELD TEST

On November 26, 2023, JAK Drilling and Pump performed a 6-hour well yield test on Site Well #2 using a solar array with hardwired generator back up and a 2 hp submersible pump. During the well test, the initial static water level was measured at 21.33 feet below the top of the well casing. The yield test began at 9:00 AM and ended at 3:00 PM (360 minutes) the same day. The pumping rate was reduced throughout the testing until reaching 25 gpm when water levels stabilized at 74.83 feet for the last 130 minutes. Approximately 9,763 gallons of water was pumped from the well during the 6-hour test which gives an average pumping rate of 27.12 gpm. The well recovered after the test to 98.7 % in one hour. The specific capacity was calculated to be 0.47 gpm/foot of drawdown (i.e., 25 gpm/53.5 ft). The JAK yield test data is attached in **Appendix D – Well Yield Test**.

The well yield testing shows that Site Well #2 alone can provide adequate water supply for the Project. The peak daily water (4,756 gallons/day) requires only 3 hours and 13 minutes (190 minutes) of pumping at 25 gpm. Site Well #1 is also available for use as a backup well however with a yield of 5gpm it would require almost 16 hours of pumping to meet the Sites anticipated peak demand and is therefore not ideal as a primary Project water supply.

3.6 MONITORING AND REPORTING

A totalizing water meter is not currently installed on the well and the well is not plumbed to any irrigation features. However, once cannabis operations begin at the site the applicant should monitor total monthly and annual usage using an inline totalizing meter or equivalent. Monthly water usage totals should be recorded by the applicant in a log book that should be kept onsite and provided to the oversight agencies upon request.

Depth to water measurements should also be recorded from the project well on a monthly basis throughout the year. The applicant can utilize a Solinist® Water Level Meter or equivalent to obtain monthly depth to water readings directly from the Irrigation Well. The readings should be taken on the same day of each month and prior to daily pumping activities. Results of the water level measurements should also be recorded in a log book and stored onsite and provided to the oversight agencies upon request.

4.0 WATER BALANCE INFORMATION

4.1 PRECIPITATION

Precipitation, primarily as rainfall is the major source of inflow to the Clear Lake area. Though there are no climate stations on the Site or in the immediate vicinity, we estimate that the seasonal precipitation for the Site is 38-inches/year (3.17 feet/year) based on data from Middletown[3]. With this precipitation rate it can be reasonably expected that the average annual precipitation equates to 118.53 acre-feet over the entire 37.39-acre Site.

4.2 GROUNDWATER STORAGE

As discussed in Section 2.4 of this Report, Well Completion Report information indicated that the average well screen interval is 98 feet. It can be assumed that the average screen length is consistent with aquifer thickness in this area and estimates for Specific yields range between 3%-8% for this area[4]. Thus, for the purpose of this assessment we conservatively assumed a specific yield of 5% to assess aquifer storage as follows.

> Aquifer Thickness (98 feet) x Specific Yield (0.05) x project area (37.39 -acres) = Estimated Aquifer Storage = 183.211 acre-feet

4.3 GROUNDWATER RECHARGE

Groundwater recharge is the replenishment of an aquifer with water from the land surface. It is usually expressed as an average rate of inches of water per year, similar to precipitation. Thus, the volume of recharge is the rate times the land area under consideration times the time period, and is usually expressed as acre-feet per year. In addition to precipitation, other sources of recharge to an aquifer are stream and lake or pond seepage, irrigation return flow (both from canals and fields), inter-aquifer flows, and urban recharge (from water mains, septic tanks, sewers, drainage ditches).

Long-term hydrographs in Lake County show that during drought periods the groundwater basins do not fully recover, possibly leading to short-term overdraft. However, long term trends on the Lake County hydrographs appear to indicate that annual groundwater extractions are not exceeding annual groundwater recharge in groundwater basins[4].

Drainage features that intersect or that are proximate to the Site have likely eroded through some of the overlying layers and are contributing to the recharge of the Site's aquifer through the stream bottom. However, it is also likely that a significant portion of the rain water falling directly on the Site infiltrates the ground surface and migrates downward through the soil matrix and recharges the relatively shallow aquifer.

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[3] http://rainharvestcalculator.com/Rainfall/CA/Middletown/95461 based on 5-year average (2013-2017)

[4] California Department of Water Resources (DWR), Northern District, March 2006.
Lake County Water Inventory and Analysis (Final) CDM

To estimate the groundwater recharge at the Site we first assumed that the recharge to the aquifer is primarily through rainfall and that most of the rainfall accumulated within the 37.39 - acre property drains to Soda Creek and the unnamed creek that intersect the Site. As discussed in section 4.1 the Estimated Annual Precipitation onsite is 118.53 acre-feet.

However, this estimate does not account for surface run-off, stream underflow, and evapo-transpiration that occurs in all watersheds. According to the Santa Rosa Plain Basin Advisory panel, the long-term average precipitation that is available for groundwater recharge in the nearby Santa Rosa Basin is approximately 15%[5]. However, in steep mountainous areas of the Alexander Valley, the groundwater recharge rate can be as low as 1.67%[6].

Since we do not have Site-specific information on aquifer recharge rates and topography at the site varies, we have estimated that the long-term average precipitation that recharges groundwater within the Site boundaries is approximately 10%, and below the average for the Santa Rosa Basin. With this data, and the precipitation data presented above, we can re-estimate the groundwater recharge within the Site using the following equation.

118.53 acre-feet (annual precipitation onsite) x 0.10 (estimated average for recharge) =
11.85 acre-feet/year = Estimated Annual Groundwater Recharge Onsite

Based on the estimated annual recharge to the site aquifer (11.85 acre-feet/year) and the estimated annual Project usage (1.96 acre-feet/year), it appears that the aquifer at the Site can support the groundwater demands of the proposed Project.

4.4 DROUGHT CONDITIONS

The recharge assessment presented above is based on a 5-year average rainfall from 2013 through 2017. The variations in rainfall over the 61-year dataset shows a high of 53.49 inches of precipitation and a low of 10.05 inches (0.8375 ft)[7]. If we were to perform a recharge analysis of one single year using the lowest recorded rainfall for the area, we could estimate the possible low-end value for annual aquifer recharge as follows.

0.8375 ft/year (severe drought rainfall year) x 37.39 - acres (property size) x
0.10 (long-term average for recharge) =
3.13 acre-feet/year - Estimated Groundwater Recharge for Extreme Drought Year

Based on the estimated annual recharge to the site aquifer during extreme drought (3.13 acre-feet/year) and the estimated total Site groundwater usage (1.96 acre-feet/year), it appears that the Site aquifer has sufficient groundwater resources to meet the proposed demands of the project without creating an aquifer overdraft condition.

[5] Santa Rosa Plain Groundwater Management Plan, Sonoma County Water Agency, 2014, Prepared by the Santa Rosa Plain Basin Advisory Panel.
[6] Metzger, L.F., Farrar, C.D., Koczot, K.M., and Reichard, E.G., 2006, Geohydrology and Water Chemistry of the Alexander Valley, Sonoma County, California: U.S. Geological Survey Scientific Investigations Report 2006-5115, 83 p.
[7] Table 2-2 California Department of Water Resources (DWR), Northern District, March 2006.
Lake County Water Inventory and Analysis (Final) CDM

5.0 POTENTIAL IMPACTS TO STREAMS AND NEIGHBORING WELLS

To evaluate potential well pumping impacts to wells on other properties, the potential lateral extent of pumping from the planned Project well was estimated. Using general relationships discussed in Driscoll (1986)[8]**,** we estimated the lateral pumping influence using information from the JAK Drilling and Pump well yield test performed November 26, 2023 (**Appendix D**). An approximate relationship between specific capacity calculated from the well yield test, and aquifer transmissivity was used to obtain aquifer characteristics and estimate a potential radius of pumping influence. Transmissivity was estimated for an unconfined aquifer using the relationship of Specific Capacity (yield/drawdown) x the coefficient of 1,500 (unconfined aquifer). To develop the slope of the drawdown curve from the pumping well, the value of Δs (drawdown over one log graph cycle) was calculated for a distance-drawdown relationship, where $T = 528Q/\Delta s$ (Driscoll,1986, Equation 9.11). The analysis is shown on the attached semi-log plot, **Appendix E – Radius of Pumping Influence**.

As estimated from the well yield test, pumping the project well at 25 gpm with a drawdown of 53.5 feet indicates a specific capacity of 0.47 gallons/foot drawdown. Using this data and applying it to the site, we calculated a zone of pumping influence extending approximately 160 feet from the well for an unconfined aquifer.

Distances between Site Well #2 and Soda Creek is approximately 370 feet, and the distance between Site Well #1 and Site Well #2 is approximately 200 feet. Therefore, based on the calculated radius of pumping influence (160ft), pumping and groundwater extraction from Site Well #2 is not expected to have an effect on water levels in Site Well #1 or the near-site wells (Well #3&4). The intermittent Soda Creek is also beyond the limits of the wells anticipated pumping influence.

[8] Groundwater and Wells, Second Edition, Fletcher G. Discoll, 1986, published by Johnson Division, St. Paul Minnesota, 1089p.

6.0 WATER QUALITY

A water quality assessment of the Site Well #1 and #2 was not performed as part of this Hydrogeologic Assessment Report. However, JAX Drilling and Pump did an analysis of water from Site Well #2 during well yield testing on November 26, 2023. These results indicated that total dissolved solids TDS were detected at 720 ppm, hardness at 8 g/gallon and Iron was not detectable. Results are shown in **Appendix D**.

Water quality assessment testing for bacteria, nitrates, arsenic and other common contaminants may also be necessary prior to beginning site operations to ensure potable water is available for potential onsite employees.

7.0 CONCLUSIONS

The project site is located in the Soda Creek Sub-watershed. The groundwater aquifer at the site consists primarily of fractured ultramafic rocks. The estimated groundwater usage for cannabis cultivation is approximately 1.93 acre-feet/year and the total estimated groundwater usage for the entire project including employee usage is 1.96 acre-feet/year. Average annual recharge to the site aquifer is estimated at 11.85 acre-feet/year while severe drought conditions could produce as low as 3.13 acre-feet/year of aquifer recharge. Based on well yield test data collected at the site, it appears that the aquifer storage and recharge area are sufficient to provide for sustainable annual water use at the site.

In summary:

Estimated Water for Cultivation = **1.93-acre-feet/year**
Employee Water Use = **0.03 acre-feet/year**
Total Estimated Site Water Use = **1.96 acre-feet/year**
Water use per Site Acre = **0.05 acre-feet/year**
Estimated Average Annual Recharge = **11.85 acre-feet**
Estimated Recharge During Severe Drought – **3.13 acre-feet/year**
Sustained Well Yield = **25 gpm**
Peak Daily Water Demand = **4,756 gallons/day**

- The quantity of groundwater to be used for the Project compared to the quantity of available groundwater indicates that pumping for the proposed Project is unlikely to result in significant declines in groundwater elevations or depletion of groundwater resources over time.

- The horizontal and vertical separations between the Site Well #2 and the nearest streams and neighboring properties are sufficient and groundwater pumping at the Site should not result in significant well interference or impacts to creeks.

- No water quality issues have been identified in the immediate area however additional analysis may be necessary before using as a potable water source.

8.0 Limitations

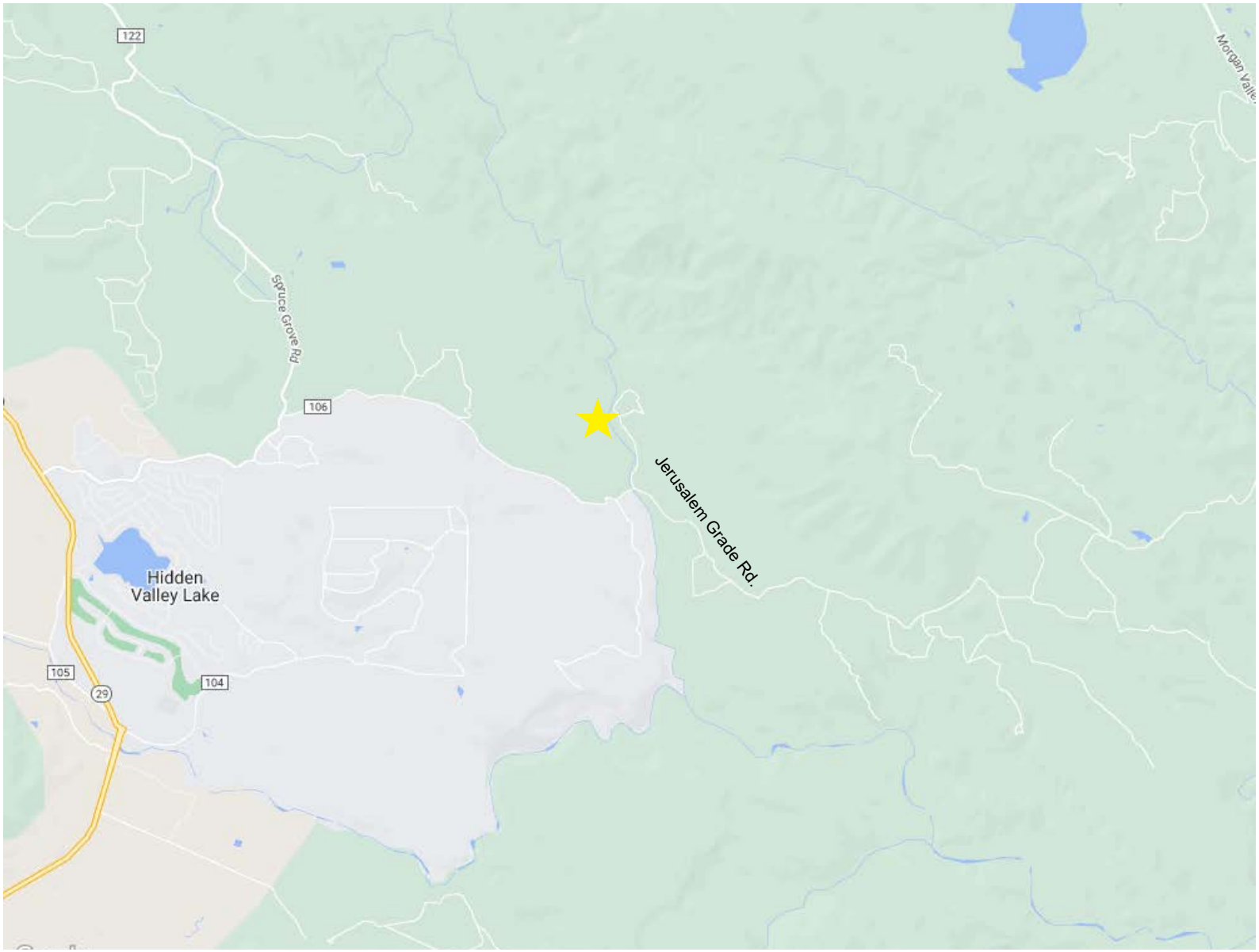
HES is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, laboratory test data and interpretations presented in this report.

Groundwater systems of Lake County are typically complex, and available data rarely allows for more than general assessment of groundwater conditions and delineation of aquifers. Hydrogeologic interpretations are based on the drillers' reports made available to us through the California Department of Water Resources, available geologic maps and hydrogeologic studies and professional judgment. This analysis is based on limited available data and relies significantly on interpretation of data from disparate sources of disparate quality.

It should be noted that hydro-geological assessments are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited research and site evaluation. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties. This report does not warrant against future operations or conditions, nor does this warrant operations or conditions present of a type or at a location not investigated.

This study is not intended to assess if any soil contamination, waste emplacement, or groundwater contamination exists by subsurface sampling through the completion of soil borings and the installation of monitoring wells. The scope of work, determined by the client, did not include these activities.

This Report is for the exclusive use of MIT Farms, LLC, its affiliates, designates and assignees and no other party shall have any right to rely on any service provided by Hurvitz Environmental Services without prior written consent.



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CA PG# 7573

Site Location Map

22368 & 22430 Jerusalem Grade Road

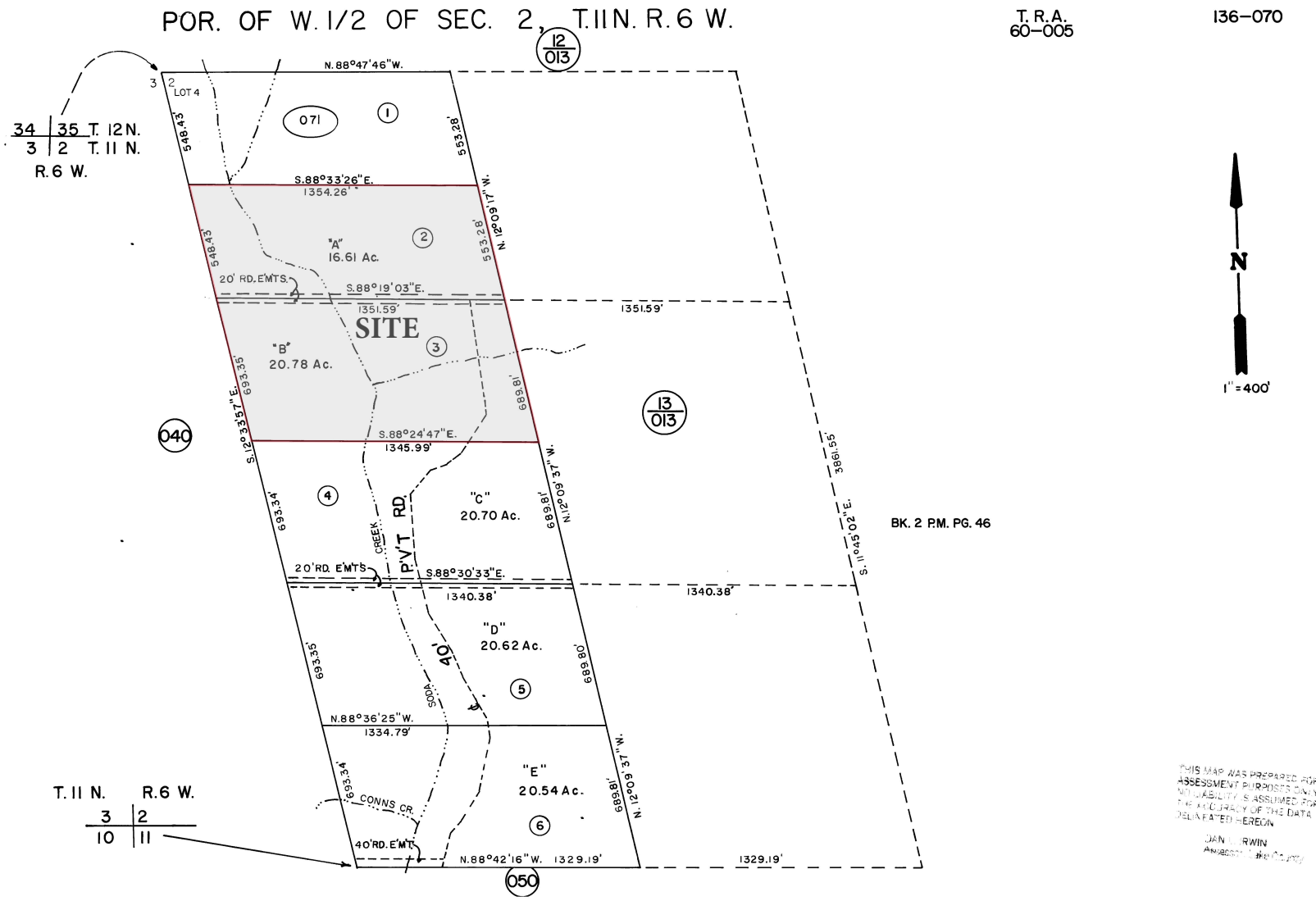
Lower Lake, CA

JOB NUMBER: **5207.01**

DATE: **12/07/23**

PLATE: **1**

Provided by:
PARCELQUEST



THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA DELINEATED HEREON
DAN ERWIN
Assessor #Napa County

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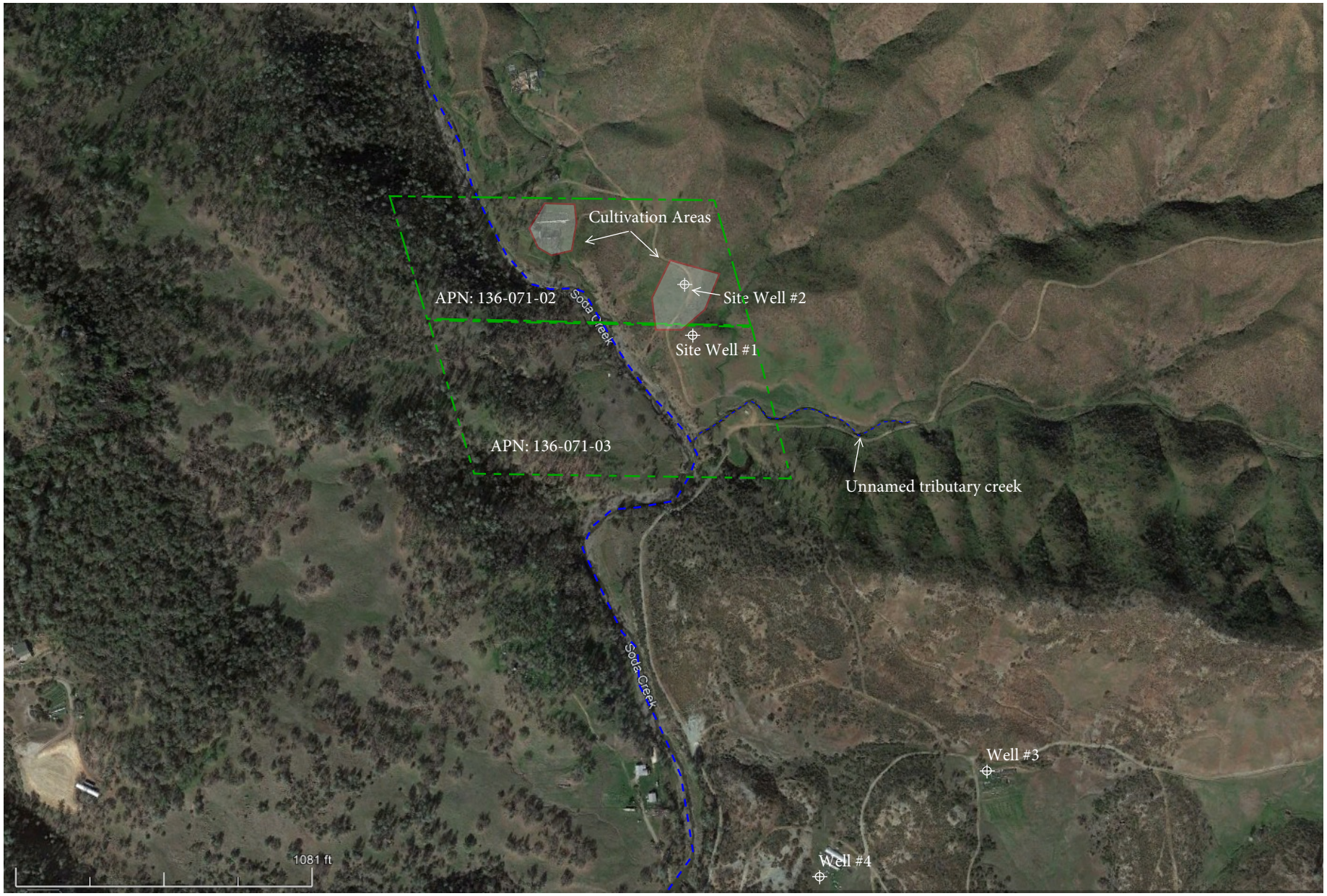
CA PG# 7573

Assessor's Parcel Map

22368 & 22430 Jerusalem Grade Road
Lower Lake, CA

JOB NUMBER: 5207.01
DATE: 12/07/23
PLATE: 2



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CA PG# 7573

Site Plan

22368 & 22430 Jerusalem Grade Road
Lower Lake, CA

JOB NUMBER: 5207.01
DATE: 12/07/23
PLATE: 3

HURVITZ ENVIRONMENTAL
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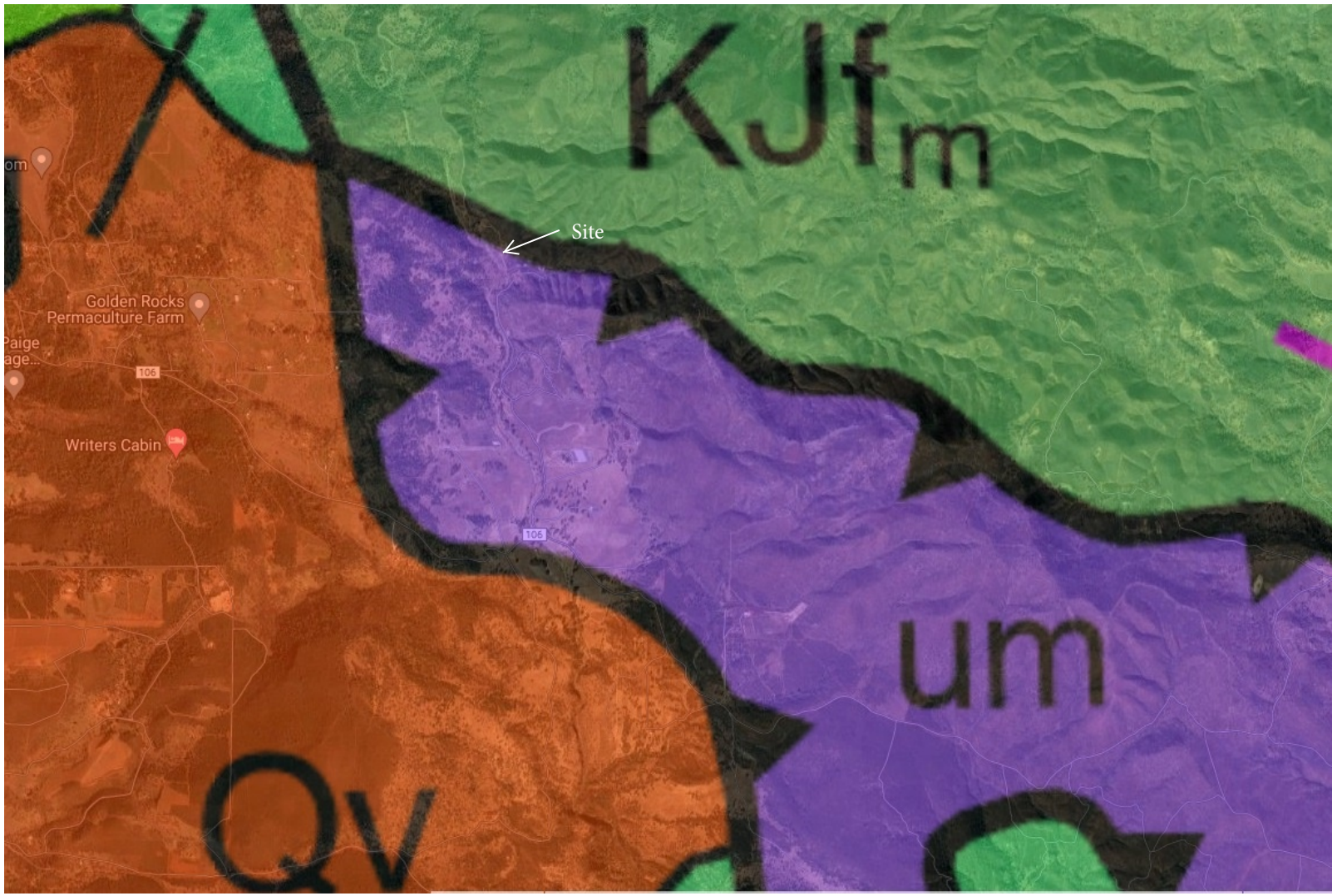
CA PG# 7573

Topographic Map

22368 & 22430 Jerusalem Grade Road
Lower Lake, CA

JOB NUMBER: 5207.01
DATE: 12/07/23
PLATE: 4



Um - Mesozoic ultra-mafic rocks consisting of serpentine, minor peridotite, gabbro and diabase

KJfm - Cretaceous and Jurassic sandstone with smaller amount of shale, chert, limestone and conglomerate

Qv -Quaternary volcanic flow rocks

Geologic Map of California, Dept. of Conservation, California Geologic Survey, 2010

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CA PG# 7573

Geologic Map
22368 & 22430 Jerusalem Grade Road
Lower Lake, CA

JOB NUMBER: **5207.01**
DATE: **12/07/23**
PLATE: **5**

APPENDIX A
SITE PHOTOGRAPHS

SITE PHOTOGRAPHS

Photo 1: View of Site Well #1 on APN: 136-071-02.

Photo 2: View southeasterly from Site Well # 1. The unnamed tributary creek in the background.

SITE PHOTOGRAPHS

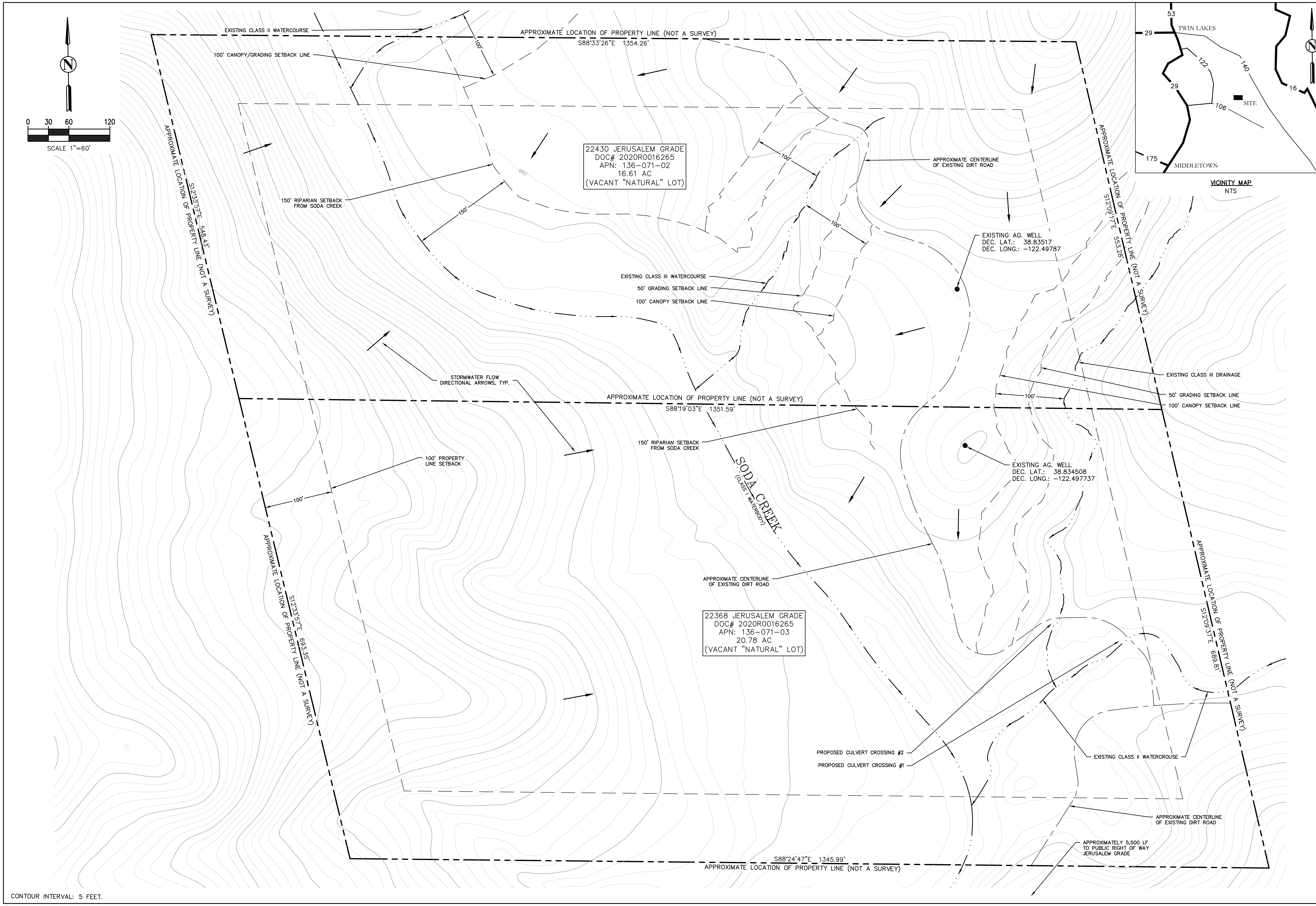
Photo 3: View of Site Well # 2 on APN: 136-071-02.

SITE PHOTOGRAPHS

Photo 4: View west from parcel 071-071-02 towards Soda Creek which bisects the site.

Photo 5: View north from Site Well #1 looking at one of the proposed cultivation areas.

APPENDIX B
ENGINEERED SITE PLANS



N
0 30 60 120
SCALE 1"=60'
EXISTING CLASS II WATERCOURSE
APPROXIMATE LOCATION OF PROPERTY LINE (NOT A SURVEY)
S88°33'26"E 1354.26'
100' CANOPY/GRADING SETBACK LINE
100'
22430 JERUSALEM GRADE
DOC# 2020R0016265
APN: 136-071-02
16.61 AC
(VACANT "NATURAL" LOT)
980
150' RIPARIAN SETBACK FROM SODA CREEK
150'
APPROXIMATE LOCATION OF PROPERTY LINE (NOT A SURVEY)
S12°33'57"E 548.43'
APPROXIMATE CENTERLINE OF EXISTING DIRT ROAD
EXISTING AG. WELL
DEC. LAT.: 38.83517
DEC. LONG.: -122.49787
EXISTING CLASS III WATERCOURSE
50' GRADING SETBACK LINE
100' CANOPY SETBACK LINE
APPROXIMATE LOCATION OF PROPERTY LINE (NOT A SURVEY)
S12°09'17"E 553.28'
STORMWATER FLOW DIRECTIONAL ARROWS, TYP.
APPROXIMATE LOCATION OF PROPERTY LINE (NOT A SURVEY)
S88°19'03"E 1351.59'
EXISTING CLASS III DRAINAGE
50' GRADING SETBACK LINE
100' CANOPY SETBACK LINE
150' RIPARIAN SETBACK FROM SODA CREEK
SODA CREEK
(CLASS I WATERBODY)
EXISTING AG. WELL
DEC. LAT.: 38.834508
DEC. LONG.: -122.497737
100' PROPERTY LINE SETBACK
APPROXIMATE CENTERLINE OF EXISTING DIRT ROAD
22368 JERUSALEM GRADE
DOC# 2020R0016265
APN: 136-071-03
20.78 AC
(VACANT "NATURAL" LOT)
APPROXIMATE LOCATION OF PROPERTY LINE (NOT A SURVEY)
S12°33'57"E 693.35'
APPROXIMATE LOCATION OF PROPERTY LINE (NOT A SURVEY)
S12°09'37"E 689.81'
PROPOSED CULVERT CROSSING #2
PROPOSED CULVERT CROSSING #1
EXISTING CLASS II WATERCROUSE
APPROXIMATE CENTERLINE OF EXISTING DIRT ROAD
APPROXIMATELY 5,500 LF TO PUBLIC RIGHT OF WAY JERUSALEM GRADE
S88°24'47"E 1345.99'
APPROXIMATE LOCATION OF PROPERTY LINE (NOT A SURVEY)
CONTOUR INTERVAL: 5 FEET.
53
29
TWIN LAKES
122
140
16
29
SITE
106
175
MIDDLETOWN
VICINITY MAP
NTS

REVISION	DESCRIPTION	BY	DATE

SWICEGOOD
CIVIL ENGINEERING, INC.
P.O. Box 924 | Healdsburg CA 95448 | phone: (707) 230-6063 | e-mail: ms@swicegood-civil.com

APN(S): 136-071-02 & -03

EXISTING CONDITIONS OVERALL SITE PLAN

MIT FARMS LLC
22430 & 22368 JERUSALEM GRADE
MIDDLETOWN, CA

Date: 10/25/23

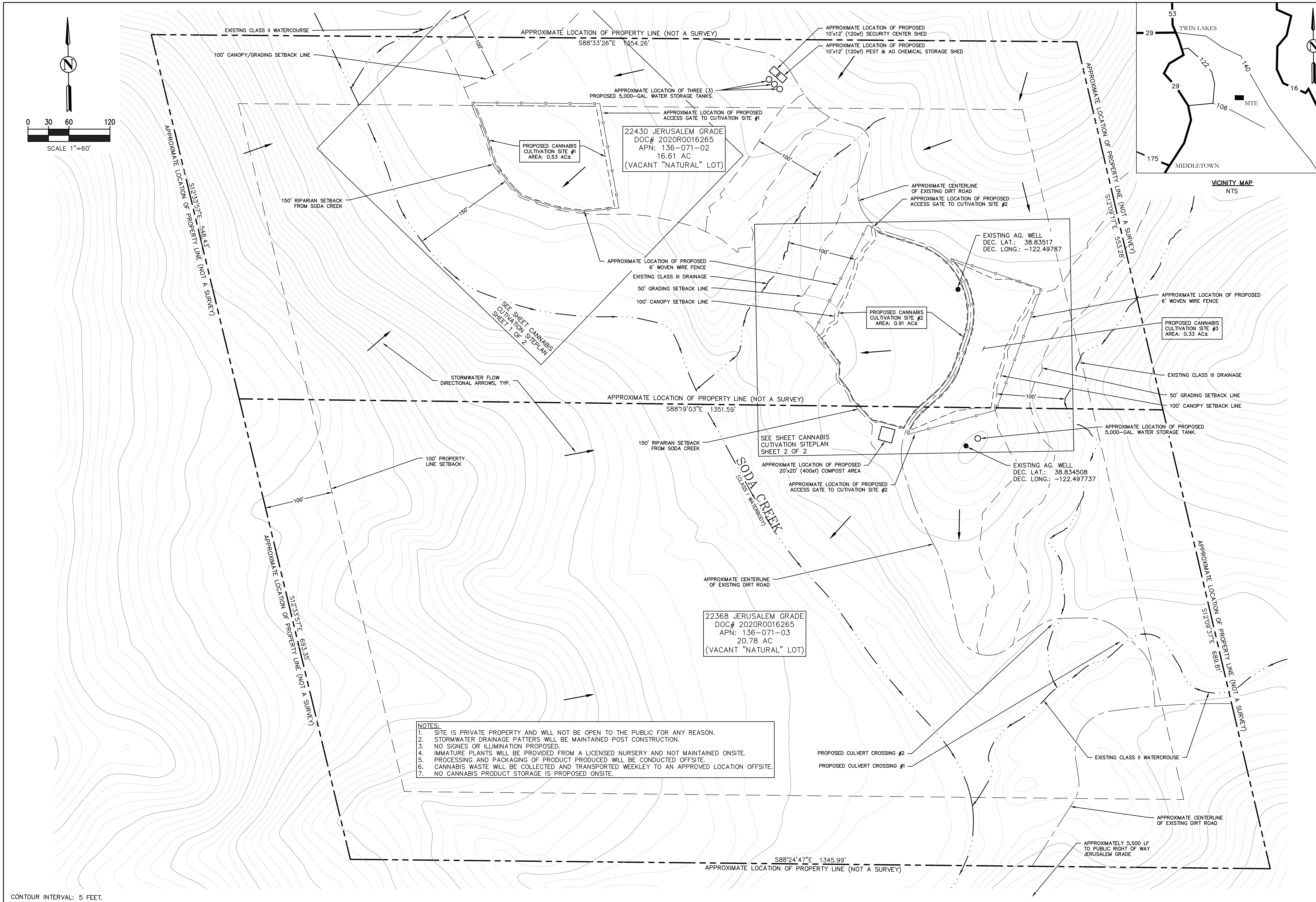
Scale: 1" = 60'

Drawn: DR

Job: 22-52

Sheet:

1 of 1



NOTES:
1. SITE IS PRIVATE PROPERTY AND WILL NOT BE OPEN TO THE PUBLIC FOR ANY REASON.
2. STORMWATER DRAINAGE PATTERS WILL BE MAINTAINED POST CONSTRUCTION.
3. NO SIGNES OR ILLIMINATION PROPOSED.
4. IMMATURE PLANTS WILL BE PROVIDED FROM A LICENSED NURSERY AND NOT MAINTAINED ONSITE.
5. PROCESSING AND PACKAGING OF PRODUCT PRODUCED WILL BE CONDUCTED OFFSITE.
6. CANNABIS WASTE WILL BE COLLECTED AND TRANSPORTED WEEKLEY TO AN APPROVED LOCATION OFFSITE.
7. NO CANNABIS PRODUCT STORAGE IS PROPOSED ONSITE.

CONTOUR INTERVAL: 5 FEET.

REVISION	DESCRIPTION	BY	DATE

SWICEGOOD CIVIL ENGINEERING, INC.
P.O. Box 924 | Healdsburg CA 95448
Phone: (707) 230-6063 | e-mail: ms@swicegood-civil.com

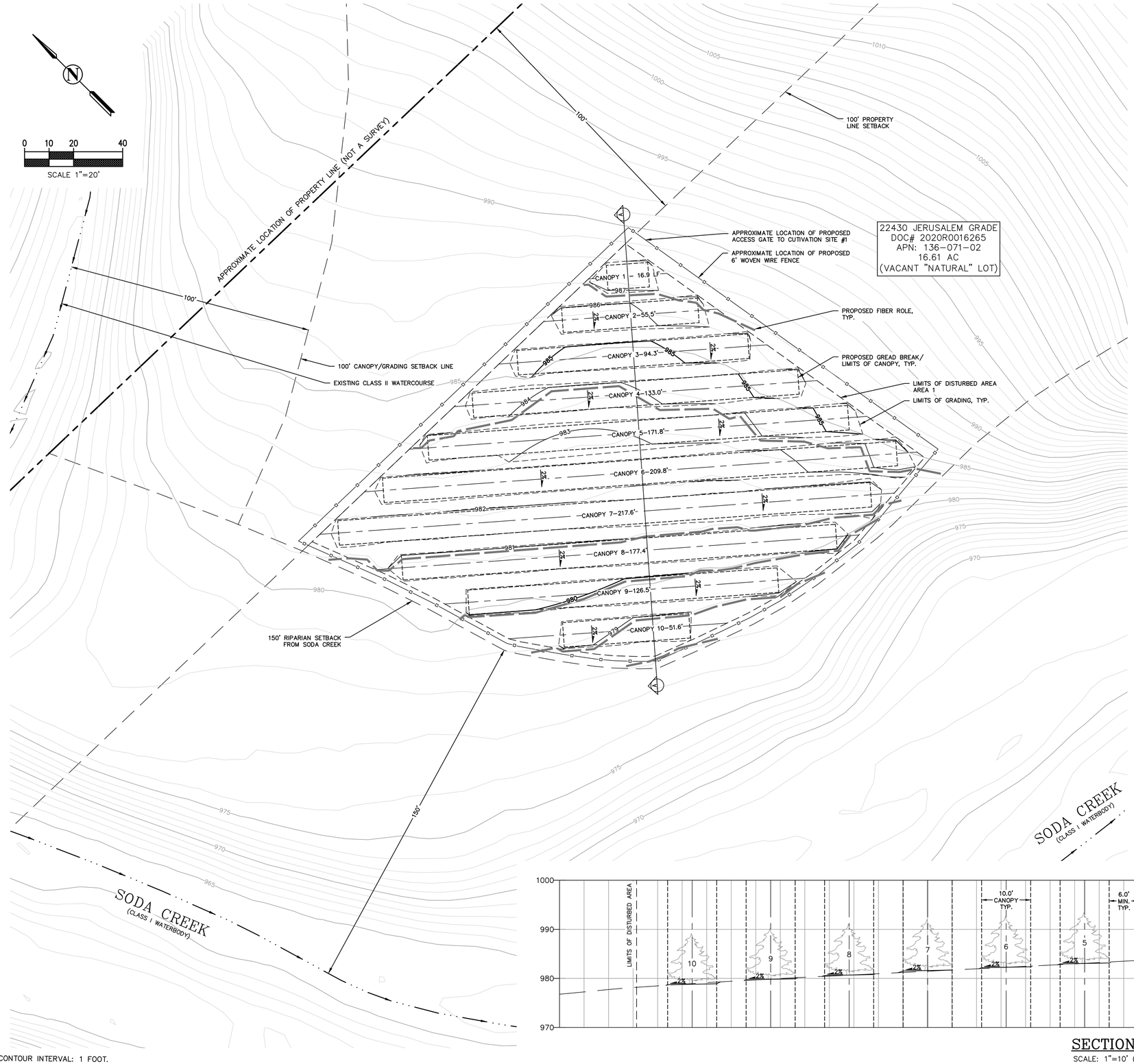
APN(S): 136-071-02 & -03

PROPOSED CONDITIONS OVERALL SITE PLAN

MIT FARMS LLC
22430 & 22368 JERUSALEM GRADE
MIDDLETOWN, CA

Date: 10/25/23
Scale: 1" = 60'
Drawn: DR
Job: 22-52
Sheet:

1 of 1

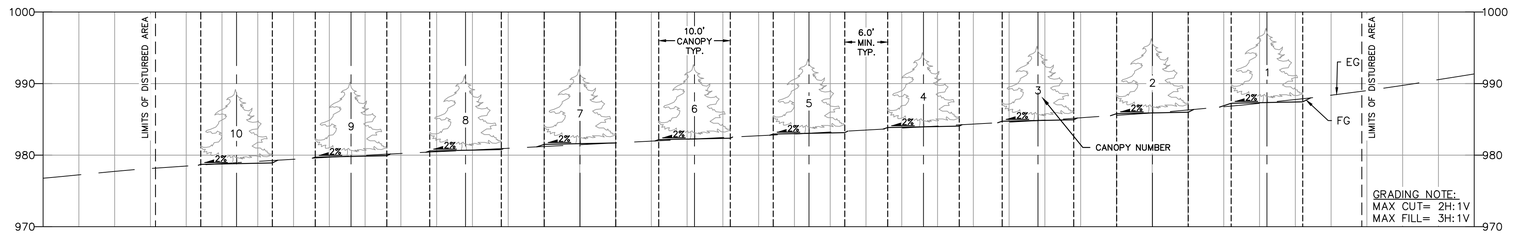


ESTIMATED AREA 1 CANOPY LAYOUT
1. (10'x16.9') = 169sf
2. (10'x55.5') = 555sf
3. (10'x94.3') = 943sf
4. (10'x133.0') = 1,330sf
5. (10'x171.8') = 1,718sf
6. (10'x209.8') = 2,098sf
7. (10'x217.6') = 2,176sf
8. (10'x177.4') = 1,774sf
9. (10'x126.5') = 1,265sf
10. (10'x51.6') = 516sf
TOTAL = 12,544sf / 0.288 AC

AREA 1 - PRELIMINARY
Earthwork Estimate

Cut = 47 cy
Fill = 31 cy
Net = 16 cy CUT
Disturbed Area = 0.53 acres
New or Replaced Impervious Area: 0 s.f.

Surface grading only. Contractor responsible for their own earthwork estimate.
Contractor shall include all required earthwork hauling on or offsite in bid.



SECTION A
SCALE: 1"=10' (H,V)

REVISION	DESCRIPTION	BY	DATE

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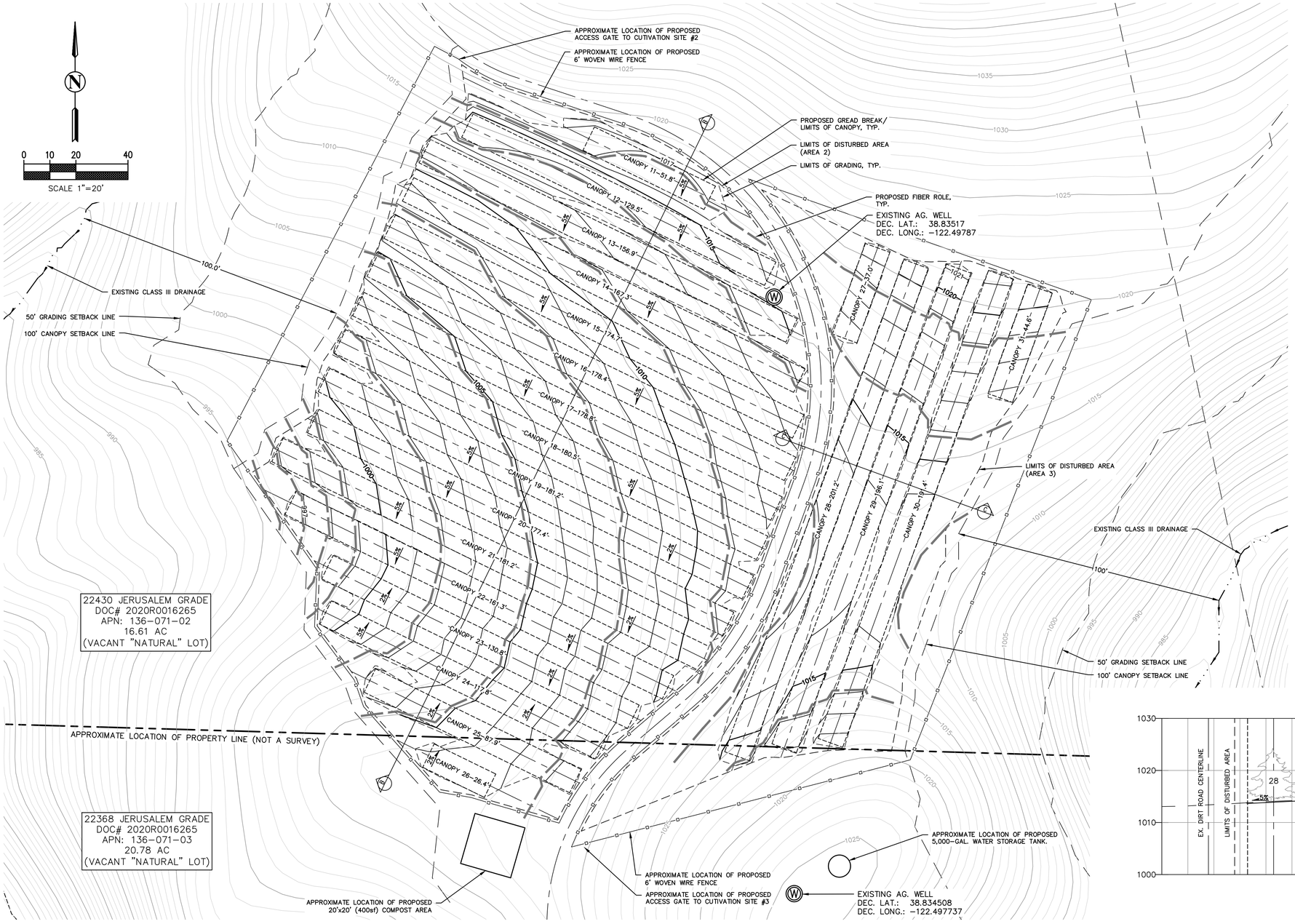
CANABIS CUTIVATION SITEPLAN
AREA 1

MIT FARMS LLC
22430 & 22368 JERUSALEM GRADE
MIDDLETOWN, CA

APN(S): 136-071-02 & -03

Date: 10/25/23
Scale: AS NOTED
Drawn: DR
Job: 22-52
Sheet:



CONTOUR INTERVAL: 1 FOOT.

ESTIMATED AREA 2 CANOPY LAYOUT

11. (10'x51.8') = 518sf
12. (10'x129.5') = 1,295sf
13. (10'x156.9') = 1,569sf
14. (10'x167.3') = 1,673sf
15. (10'x174.7') = 1,747sf
16. (10'x178.4') = 1,784sf
17. (10'x178.8') = 1,788sf
18. (10'x180.5') = 1,805sf
19. (10'x181.2') = 1,812sf
20. (10'x177.4') = 1,774sf
21. (10'x181.2') = 1,812sf
22. (10'x161.3') = 1,613sf
23. (10'x130.8') = 1,308sf
24. (10'x117.8') = 1,178sf
25. (10'x87.9') = 879sf
26. (10'x26.4') = 264sf

TOTAL = 22,819sf / 0.524 AC

ESTIMATED AREA 3 CANOPY LAYOUT

27. (10'x37.0') = 370sf
28. (10'x201.2') = 2,012sf
29. (10'x196.1') = 1,961sf
30. (10'x191.4') = 1,914sf
31. (10'x44.6') = 446sf

TOTAL = 6,703sf / 0.154 AC

AREA 2 - PRELIMINARY
Earthwork Estimate

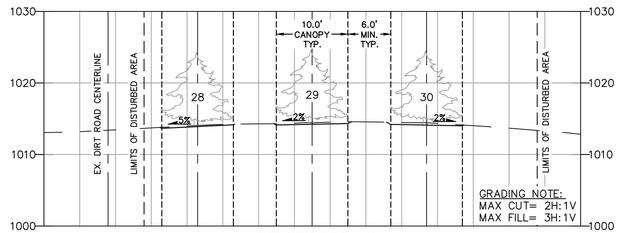
Cut = 129 cy
Fill = 143 cy
Net = 14 cy FILL
Disturbed Area = 0.91 acres
New or Replaced Impervious Area: 0 s.f.

Surface grading only. Contractor responsible for their own earthwork estimate. Contractor shall include all required earthwork hauling on or offsite in bid.

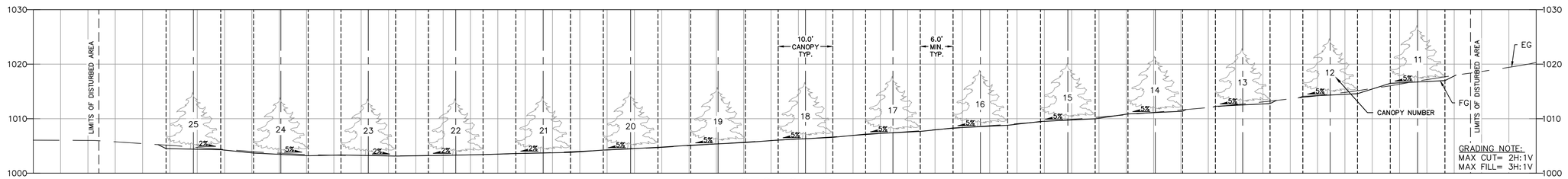
AREA 3- PRELIMINARY
Earthwork Estimate

Cut = 16 cy
Fill = 35 cy
Net = 19 cy FILL
Disturbed Area = 0.33 acres
New or Replaced Impervious Area: 0 s.f.

Surface grading only. Contractor responsible for their own earthwork estimate. Contractor shall include all required earthwork hauling on or offsite in bid.



SECTION C
SCALE: 1"=10' (H,V)



SECTION B
SCALE: 1"=10' (H,V)

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P.O. Box 924 | Healdsburg CA, 95448
Phone: (707) 230-6063 | e-mail:ms@swicegood-civil.com

APN(S): 136-071-02 & -03

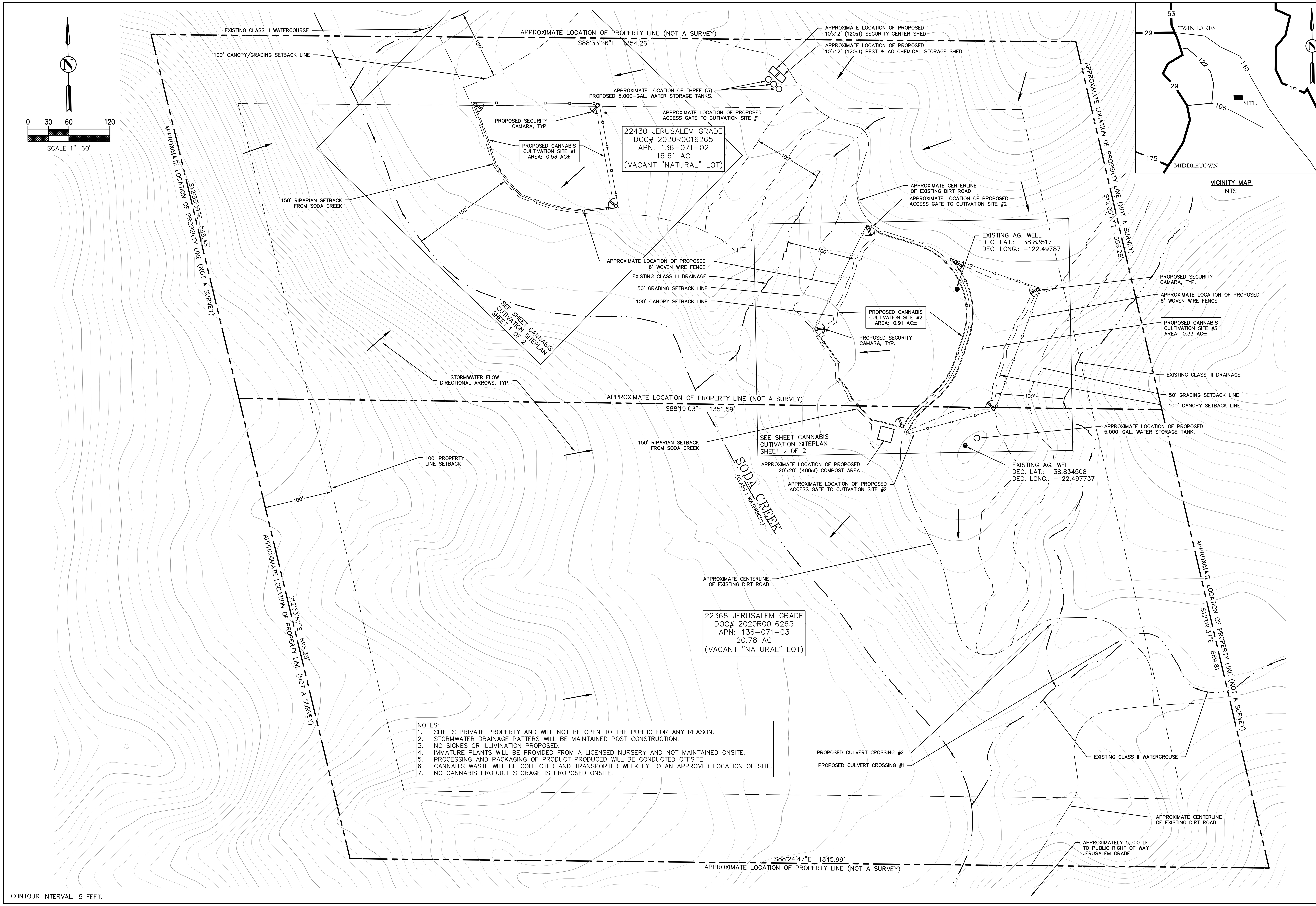
REGISTERED PROFESSIONAL ENGINEER
M. T. SWICEGOOD
67745
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

CANABIS CUTIVATION SITEPLAN
AREAS 2 & 3

MIT FARMS LLC
22430 & 22368 JERUSALEM GRADE
MIDDLETOWN, CA

Date: 10/25/23
Scale: AS NOTED
Drawn: DR
Job: 22-52
Sheet:

2 of 2



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APN(S): 136-071-02 & -03

SECURITY SITE PLAN

MIT FARMS LLC
22430 & 22368 JERUSALEM GRADE
MIDDLETOWN, CA

Date: 10/30/23

Scale: 1" = 60'

Drawn: DR

Job: 22-52

Sheet: 1 of 1

APPENDIX C
WELL COMPLETION REPORTS

State of California

Well Completion Report

Form DWR 188 Submitted 9/13/2023

WCR2023-010071

Owner's Well Number | Date Work Began: 08/10/2023 | Date Work Ended: 08/11/2023

Local Permit Agency: Lake County Health Services Department - Environmental Health Division

Secondary Permit Agency | Permit Number: WE-5884 AG | Permit Date: 10/05/2022

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: NICHOLAS TAIX

Mailing Address: 578 SUTTON WAY

PMB307

City: GRASS VALLEY | State: CA | Zip: 95945

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Irrigation - Agriculture

Well Location

Address: 22430 JERUSALEM GRADE RD

City: LOWER LAKE | Zip: 95457 | County: Lake

Latitude: 38 Deg. 50 Min. 6.612 Sec. N | Longitude: -122 Deg. 29 Min. 52.332 Sec. W

Dec. Lat.: 38.83517 | Dec. Long.: -122.49787

Vertical Datum | Horizontal Datum: WGS84

Location Accuracy: Unknown | Location Determination Method: GPS

APN: 136-071-02

Township: 11 N

Range: 06 W

Section: 02

Baseline Meridian: Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation: Vertical | Specify

Drilling Method: Downhole Rotary Hammer | Drilling Fluid: Foam

Total Depth of Boring: 207 Feet

Total Depth of Completed Well: 201 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level: 45 (Feet) | Date Measured: 08/11/2023

Estimated Yield*: 21 (GPM) | Test Type: Pump

Test Length: 2 (Hours) | Total Drawdown: 66 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	6	RED DIRT/CLAY
6	18	GREEN CLAY
18	23	SERPENTINE
23	24	SOFT SHALE CLAY
24	51	FIRM SHALE
51	54	FRACTURES, FIRM SHALE
54	90	FIRM SHALE
90	105	ASH
105	117	DARK SHALE FRACTURED ADDING WATER
117	155	ASH FRACTURE LAYERS
155	180	FIRM LAYERS SHALE
180	207	BASALT/VOLCANIC MIX

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	61	Blank	PVC	N/A	0.265	5.563			
1	61	161	Screen	PVC	N/A	0.265	5.563	Milled Slots	0.032	
1	161	181	Blank	PVC	N/A	0.265	5.563			
1	181	201	Screen	PVC	N/A	0.265	5.563	Milled Slots	0.0625	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	2	Cement	Other Cement		
2	22	Bentonite	Other Bentonite		hydrated bentonite seal
22	201	Filter Pack	Other Gravel Pack	pea gravel	double washed
201	207	Other Fill	See description.		native soils

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	25	10.875
25	207	7.875

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: JAK DRILLING AND PUMP, Kharom Hellwege
Person, Firm or Corporation

PO Box 250 (Address) | Middletown (City) | CA (State) | 95461 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 09/13/2023 (Date Signed) | 1013957 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

Page 1 of 1 AUG 0 2 2016

State of California
Well Completion Report

Refer to Instruction Pamphlet

No. e0314964

Owner's Well Number Well #1

Date Work Began 05/26/2016 Date Work Ended 5/31/2016

Local Permit Agency Lake County Environmental Health

Permit Number WE-4693 Permit Date 5/3/16

DWR Use Only – Do Not Fill In

State Well Number/Site Number: 11N/06W-02

Latitude N Longitude W

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Direct Rotary Drilling Fluid Air

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	12	Gray sandstone
12	23	Shale
23	37	Gray sandstone
37	63	Shale and sandstone
63	71	Gray sandstone
71	108	Shale
108	147	Shale and sandstone
147	163	Gray sandstone, blue sandstone with quartz
163	300	Black shale

Total Depth of Boring 300 Feet

Total Depth of Completed Well 198 Feet

Well Owner

[redacted]

Well Location

Address 22368 Jerusalem Grade Road

City Middletown County Lake

Latitude 38 Deg. 50 Min. 2 Sec. N Longitude 122 Deg. 29 Min. 51 Sec. W

Datum Dec. Lat. Dec. Long.

APN Book 136 Page 071 Parcel 03

Township 11N Range 6W Section 2

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North / West / East / South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

◉ Water Supply
☑ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water 147 (Feet below surface)

Depth to Static Water Level 137 (Feet) Date Measured 05/27/2016

Estimated Yield * 5 (GPM) Test Type Air Lift

Test Length 1.0 (Hours) Total Drawdown 190 (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	20	11						
20	300	8						
0	138		Blank	PVC Sch. 40	SDR21	5		
138	198		Screen	PVC Sch. 40	SDR21	5	Milled Slots	0.032

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	20	Bentonite	
20	198	Filter Pack	3/8 Pea Gravel

Attachments

☐ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☑ Other Site Map

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name Weeks Drilling & Pump Company
Person, Firm or Corporation

P.O. Box 176 Address, Sebastopol City, CA State, 95473 Zip

Signed [signature] C-57 Licensed Water Well Contractor

7/15/16 Date Signed

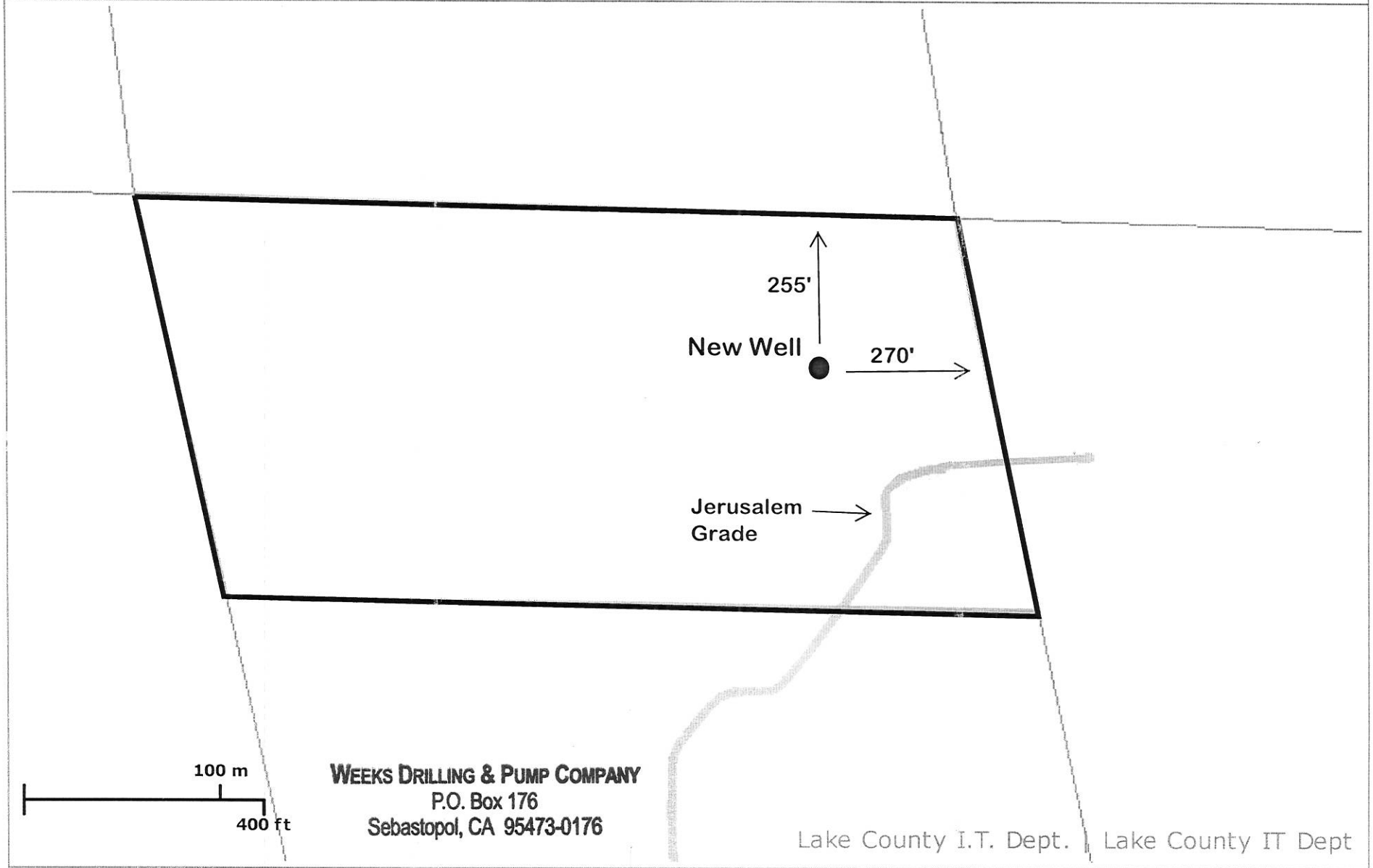
177681 C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

Lake County, CA

My Map



All parcel boundaries are approximate. Discrepancies in acreage, shape and location are common. This map is not a legal survey document to be used in single site determinations. Consult your deed for a legal parcel description. http://qispublic.co.lake.ca.us/flexviewer

Printed: 07/15/16 9:33:26 AM

State of California

Well Completion Report

Form DWR 188 Auto-Completed 12/7/2020

WCR2020-014311

Owner's Well Number | Date Work Began 10/23/2017 | Date Work Ended 01/22/2018

Local Permit Agency Lake County Health Services Department - Environmental Health Division

Secondary Permit Agency | Permit Number WP0002117 | Permit Date 09/18/2017

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 22796 Jerusalem Grade

City Lower Lake Zip 95457 County Lake

Latitude 38 Deg. 49 Min. 47.5716 Sec. N Longitude -122 Deg. 29 Min. 18.798 Sec. W

Dec. Lat. 38.829881 Dec. Long. -122.488555

Vertical Datum | Horizontal Datum WGS84

Location Accuracy Unknown Location Determination Method GPS

APN 013-013-06

Township

Range

Section

Baseline Meridian

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Downhole Rotary Hammer Drilling Fluid Foam

Total Depth of Boring 320 Feet

Total Depth of Completed Well 300 Feet

Water Level and Yield of Completed Well

Depth to first water 160 (Feet below surface)

Depth to Static Water Level 145 (Feet) Date Measured 01/19/2018

Estimated Yield* 10 (GPM) Test Type Air Lift

Test Length 2 (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	40	Extremely soft gravel
40	130	soft shale
130	210	HARD serpentine
210	320	Serpentine with shell

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	180	Blank	PVC	N/A	0.265	5.563			Solid
1	180	300	Screen	PVC	N/A	0.265	5.563	Milled Slots	0.032	Screen

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
25	320	Filter Pack	Other Gravel Pack	Pea Gravel	double washed pea gravel
0	25	Bentonite	Other Bentonite		Sanitary Seal

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	25	10.875
25	320	7.875

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: JAK DRILLING AND PUMP, Kharom Hellwege
Person, Firm or Corporation

PO Box 250 (Address) | Middletown (City) | CA (State) | 95461 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 10/08/2020 (Date Signed) | 1013957 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

			N					W

Latitude Deg/Min/Sec **Longitude Deg/Min/Sec**

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Auto-Completed 7/1/2019

WCR2019-006017

Owner's Well Number: Well #1 | Date Work Began: 10/30/2017 | Date Work Ended: 01/22/2018

Local Permit Agency: Lake County Health Services Department - Environmental Health Division

Secondary Permit Agency: | Permit Number: WE-4965 | Permit Date: 10/30/2017

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 22182 Jerusalem Grade RD

City: Middletown | Zip: 95461 | County: Lake

Latitude: 38 Deg. 49 Min. 43.97 Sec. N | Longitude: -122 Deg. 29 Min. 45.44 Sec. W

Dec. Lat.: 38.8288806 | Dec. Long.: -122.4959556

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: Unknown | Location Determination Method: Other

APN: 136-071-06

Township: 11 N

Range: 06 W

Section: 02

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Downhole Rotary Hammer | Drilling Fluid: Air

Total Depth of Boring: 140 Feet

Total Depth of Completed Well: 136 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: 32 (Feet) | Date Measured: 10/30/2017

Estimated Yield*: 10 (GPM) | Test Type: Air Lift

Test Length: 4 (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	10	Top Soil, loose unconsolidated
10	105	Intermittent layers of serpentine, ash and cobble
105	140	Shale

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	40	Blank	PVC	N/A	0.265	5.563			
1	40	136	Screen	PVC	N/A	0.265	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
115	140	Filter Pack	Other Gravel Pack		double washed pea gravel
0	115	Bentonite	Non Hydrated Bentonite		

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	25	12.75
25	140	7.875

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: JAK DRILLING AND PUMP, Kharom Hellwege
Person, Firm or Corporation

PO Box 250 (Address) | Middletown (City) | CA (State) | 95461 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 05/01/2019 (Date Signed) | 1013957 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

			N					W

Latitude Deg/Min/Sec **Longitude Deg/Min/Sec**

TRS:

APN:

APPENDIX D
WELL YIELD TEST

Date: **11/26/2023** Technician: **Kharom Hellwege**

Client Name: **Nick Taix** **Ag Well 1**

Site Address: **22430 Jerusalem Grade Rd, Lower Lake 95457** APN: **136-071-02**

Well Pump Info (size, type, brand, etc.): **2HP20GPM (2horse Franklin motor with 20GPM Goulds pump)**

Power Source (hardwired, generator, solar only, solar with generator back up): **Generator**

Total Depth of Well? **201-Feet** Static Water Level? **21.33-Feet**

Diameter of Well? **5-inches** Casing Type? **PVC**

Last time the water was pumped from the well? **NEW WELL - Developed 8/11/2023**

Was the pumping level measured from ground surface or top of casing? **Top of Casing**

Interval	Time	Flow Rate*	Pumping Level
5	9:00	32.0	24.83
5	9:05	31.5	27.67
5	9:15	31.0	33.33
5	9:20	31.0	38.92
5	9:25	30.5	43.17
5	9:30	30.5	49.83
10	9:40	30.0	56.33
10	9:50	29.5	60.00
10	10:00	29.0	64.67
10	10:10	28.5	66.33
10	10:20	28.5	67.83
10	10:30	28.0	68.42
30	11:00	28.0	69.58
30	11:30	27.5	71.17
30	12:00	27.0	73.17
30	12:30	27.0	74.25
30	13:00	26.0	74.58
30	13:30	26.0	74.75
30	14:00	25.0	74.83
30	14:30	25.0	74.83
30	15:00	25.0	74.83
STOP			
30	15:30	RECHARGE	47.6
30	16:00	RECHARGE	22.0

*Flow Rate Measured via ~~Bucket~~ or **Meter**

Meter Start: 1918.85

Meter Stop: 11681.85

Total Gallons Produced: 9763

Average GPM: **27.12**

*NOTE: Average GPM is total gallons produced divided by 360 minutes. However the pumping rate stabilized at 25GPM at 74.83-feet below top of casing.

GPS: **38.83517°, -122.49787°**

pH: **8.18**

TDS: **720 ppm**

Hardness: **8 grains per gallon**

Iron: **Non Detectable**

Recharge Rate: **98.75%**

DISCLAIMER

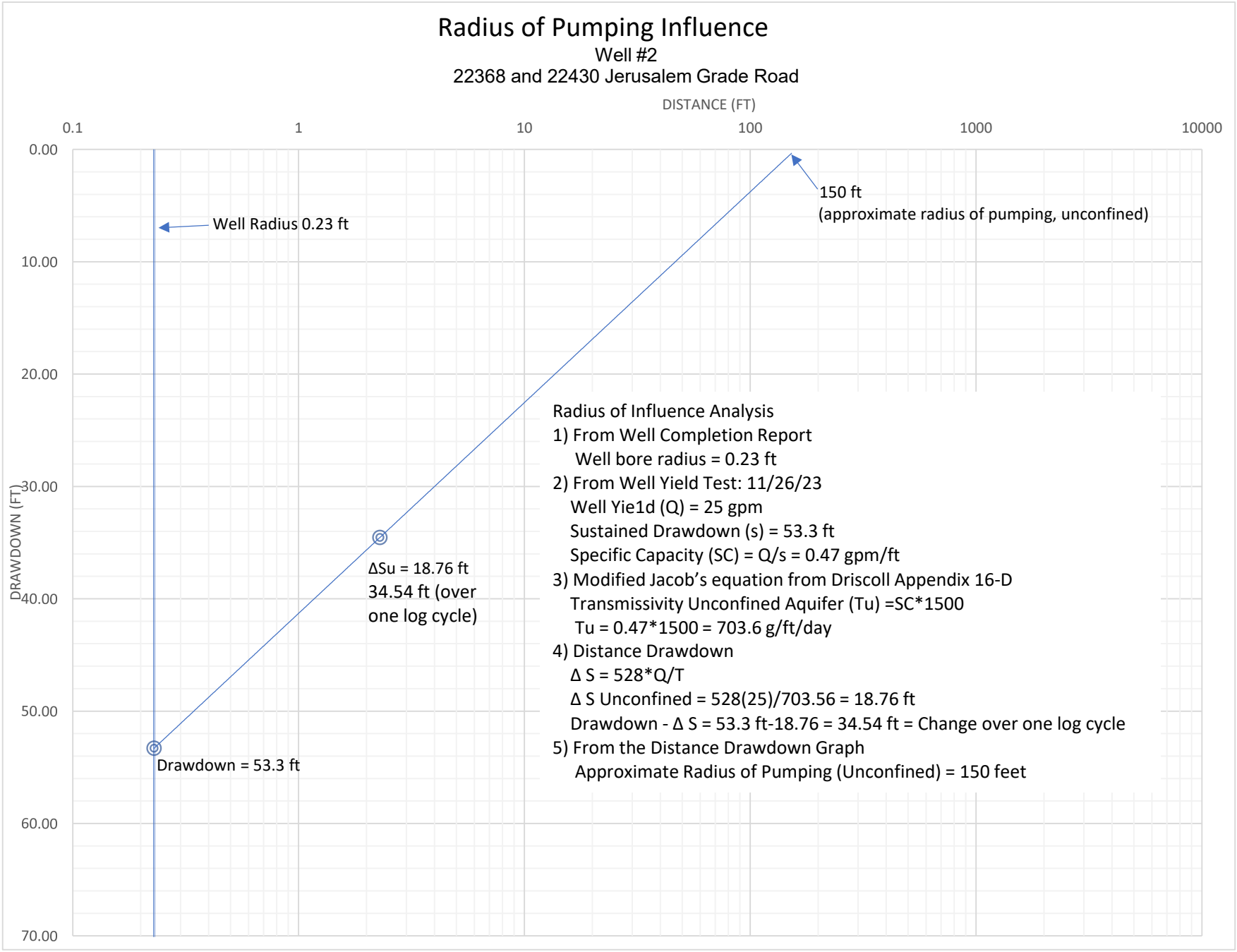
Observations made of the well(s) are strictly limited to the date and time that the test(s) was conducted and are in no way a guarantee of future conditions, including but not limited to the quantity and/or quality of the water produced by this well.

APPENDIX E
RADIUS OF PUMPING INFLUENCE

Radius of Pumping Influence

Well #2

22368 and 22430 Jerusalem Grade Road



Radius of Influence Analysis

1) From Well Completion Report
   Well bore radius = 0.23 ft
2) From Well Yield Test: 11/26/23
   Well Yie1d (Q) = 25 gpm
   Sustained Drawdown (s) = 53.3 ft
   Specific Capacity (SC) = Q/s = 0.47 gpm/ft
3) Modified Jacob's equation from Driscoll Appendix 16-D
   Transmissivity Unconfined Aquifer (Tu) =SC*1500
   Tu = 0.47*1500 = 703.6 g/ft/day
4) Distance Drawdown
   Δ S = 528*Q/T
   Δ S Unconfined = 528(25)/703.56 = 18.76 ft
   Drawdown - Δ S = 53.3 ft-18.76 = 34.54 ft = Change over one log cycle
5) From the Distance Drawdown Graph
   Approximate Radius of Pumping (Unconfined) = 150 feet