



TO: Jason Moriarty
Cat Canyon, LLC

FROM: Kear Groundwater
P.O. Box 2601
Santa Barbara, CA 93120-2601

DATE: May 15, 2024

SUBJECT: *Groundwater supply availability and irrigation plan, Cat Canyon, LLC,
Santa Barbara County*

Dear Mr. Moriarty,

Kear Groundwater (KG) presents this brief evaluation of water supply availability for irrigation of cannabis crops at the subject property. Our efforts herein follow, and incorporate by reference, our aquifer testing conducted in April 2021 as reported in our June 18, 2021 water source yield assessment.

Updated plans for the Cat Canyon LLC project have refined to growing operations under 5.19 acres of hoops south of Cat Canyon Creek and north of Cat Canyon Road, to incorporate growth in pots containing soil-less media. Each plant will be grown in a 5-gallon pot at a density of 200 pots per 1,000 square feet of hooped area. This totals approximately 42,336 plants in cylindrical pots of 12-inch-diameter (0.854 square ft per pot), for a total applied cannabis irrigation area of 36,155 square feet or 0.83 acre.

Two planting cycles are planned each year, the first from March 1 to May 25 with 27 days of irrigation and the second from June 1 to September 15 with 40 days of irrigation. Based on evapotranspiration and applied irrigation values prepared by AgroSource (2024), peak irrigation occurs on or about August 25 where 0.55 inch of water is applied to the planted surface while a minimum application of 0.2 inch of water would be applied on several irrigation days (Tables 1 and 2). Native plantings of landscape screening irrigation is projected to require 0.37 acre-feet of water per year for 5 years until established. Mimicking local precipitation, most water applied to



the native plants will augment rainfall during non-cannabis irrigation periods (November to April).

Table 1 - Cat Canyon, LLC Applied Irrigation Water Volumes and Rates							
Irrigation Date	Inches of water applied (after Agrosource, 2024)	Feet applied (or Acre feet applied/acre)	Acre feet applied to 0.83 acre	Gallons applied to 0.83 acre	gpm at 48 hours	gpm at 24 hours	gpm at 12 hours
1-Mar	0.3	0.025	0.02	6761	2.3	4.7	8.8
4-Mar	0.2	0.017	0.01	4508	1.6	3.1	5.9
9-Mar	0.2	0.017	0.01	4508	1.6	3.1	5.9
16-Mar	0.2	0.017	0.01	4508	1.6	3.1	5.9
22-Mar	0.2	0.017	0.01	4508	1.6	3.1	5.9
27-Mar	0.2	0.017	0.01	4508	1.6	3.1	5.9
30-Mar	0.2	0.017	0.01	4508	1.6	3.1	5.9
4-Apr	0.2	0.017	0.01	4508	1.6	3.1	5.9
10-Apr	0.3	0.025	0.02	6761	2.3	4.7	8.8
14-Apr	0.2	0.017	0.01	4508	1.6	3.1	5.9
16-Apr	0.3	0.025	0.02	6761	2.3	4.7	8.8
21-Apr	0.2	0.017	0.01	4508	1.6	3.1	5.9
23-Apr	0.3	0.025	0.02	6761	2.3	4.7	8.8
25-Apr	0.4	0.033	0.03	9015	3.1	6.3	11.7
27-Apr	0.3	0.025	0.02	6761	2.3	4.7	8.8
29-Apr	0.4	0.033	0.03	9015	3.1	6.3	11.7
1-May	0.3	0.025	0.02	6761	2.3	4.7	8.8
3-May	0.4	0.033	0.03	9015	3.1	6.3	11.7
5-May	0.3	0.025	0.02	6761	2.3	4.7	8.8
7-May	0.5	0.042	0.03	11269	3.9	7.8	14.6
9-May	0.4	0.033	0.03	9015	3.1	6.3	11.7
11-May	0.3	0.025	0.02	6761	2.3	4.7	8.8
13-May	0.4	0.033	0.03	9015	3.1	6.3	11.7
15-May	0.3	0.025	0.02	6761	2.3	4.7	8.8
17-May	0.4	0.033	0.03	9015	3.1	6.3	11.7
19-May	0.3	0.025	0.02	6761	2.3	4.7	8.8
21-May	0.3	0.025	0.02	6761	2.3	4.7	8.8
		TOTAL AF FIRST CYCLE	0.55				

Our April 2021 testing of the source well included pumping at over 16 gpm for a 24-hour period with observations of water level drawdown in observation wells at 103.5 feet east and 223 feet east-northeast. Based on the anticipated project cannabis irrigation demand of 1.28 acre-feet annually, 50,000-gallons of storage tank capacity, and maximum 12-hour applied rates of 17.3 gpm, KG recommends equipping the well with a 10 gpm pump that can meet irrigation demands.

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Table 2 - Cat Canyon, LLC Applied Irrigation Water Volumes and Rates

Irrigation Date	Inches of water applied (after Agrosource, 2024)	Feet applied	Acre feet applied to 0.83 acre	Gallons applied to 0.83 acre	gpm at 48 hours	gpm at 24 hours	gpm at 12 hours
1-Jun	0.3	0.025	0.02	6761	2.3	4.7	8.8
4-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
7-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
9-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
11-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
13-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
15-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
17-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
19-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
22-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
25-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
28-Jun	0.2	0.017	0.01	4508	1.6	3.1	5.9
1-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
4-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
7-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
10-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
13-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
17-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
20-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
23-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
26-Jul	0.25	0.021	0.02	5635	2.0	3.9	7.3
28-Jul	0.2	0.017	0.01	4508	1.6	3.1	5.9
30-Jul	0.3	0.025	0.02	6761	2.3	4.7	8.8
1-Aug	0.3	0.025	0.02	6761	2.3	4.7	8.8
5-Aug	0.2	0.017	0.01	4508	1.6	3.1	5.9
7-Aug	0.3	0.025	0.02	6761	2.3	4.7	8.8
9-Aug	0.3	0.025	0.02	6761	2.3	4.7	8.8
11-Aug	0.4	0.033	0.03	9015	3.1	6.3	11.7
13-Aug	0.3	0.025	0.02	6761	2.3	4.7	8.8
15-Aug	0.4	0.033	0.03	9015	3.1	6.3	11.7
17-Aug	0.3	0.025	0.02	6761	2.3	4.7	8.8
19-Aug	0.4	0.033	0.03	9015	3.1	6.3	11.7
21-Aug	0.3	0.025	0.02	6761	2.3	4.7	8.8
23-Aug	0.4	0.033	0.03	9015	3.1	6.3	11.7
25-Aug	0.55	0.046	0.04	12396	4.3	8.6	16.1
27-Aug	0.4	0.033	0.03	9015	3.1	6.3	11.7
29-Aug	0.3	0.025	0.02	6761	2.3	4.7	8.8
1-Sep	0.4	0.033	0.03	9015	3.1	6.3	11.7
5-Sep	0.3	0.025	0.02	6761	2.3	4.7	8.8
7-Sep	0.2	0.017	0.01	4508	1.6	3.1	5.9
		TOTAL AF SECOND CYCLE	0.73				

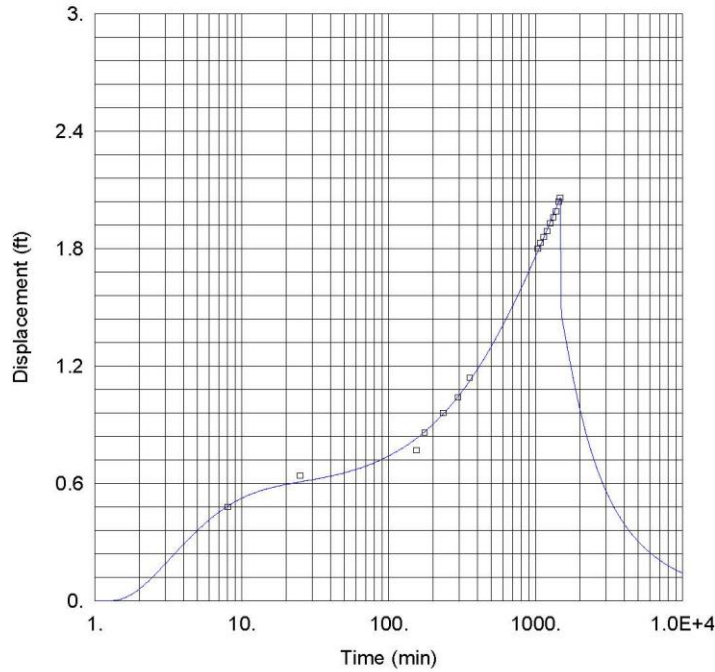
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Using the information derived from our April 2021 aquifer test, namely a transmissivity of 2149.6 gpd/ft and a storativity/specific yield of 0.006469 in the 25-ft thick unconfined aquifer, the drawdown of 0.1 foot would be induced at a radial distance of 400 feet in a 14-hour pumping cycle. Plots of the aquifer solution and modeled distance-drawdown at 10 gpm for 14 hours are presented as Figures 1 and 2. This 8900-gallon maximum 14-hour yield can be well-managed to start each planting cycle with full storage tanks and replace the water applied to irrigation over the two-to-three-day periods between applications, with recovery periods equal to or longer than pumping periods between pumping cycles. The capacity of the well is great enough to meet landscape irrigation demands as well and will be pumped at times separate from the cannabis irrigation cycles due to the perennial nature of the native plant growth and dormancy cycles.

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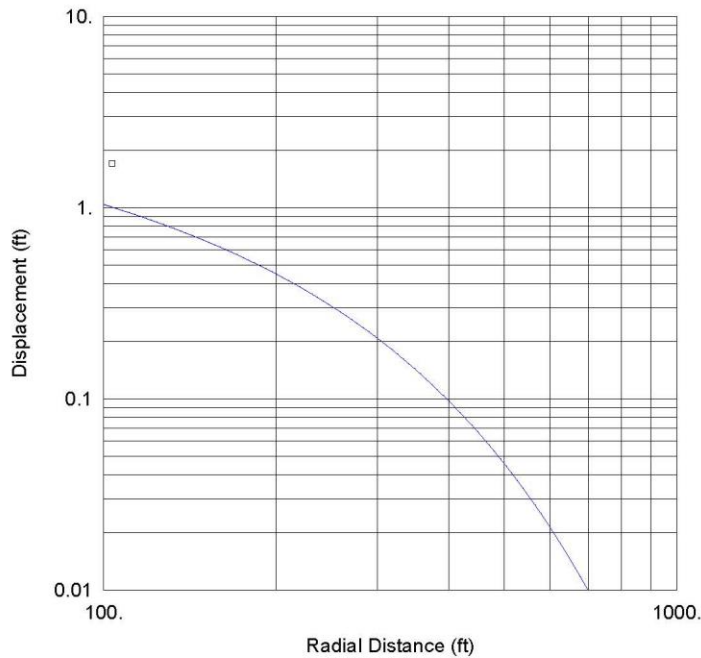


<u>CAREAGA TEST</u>					
Data Set: F:\Cat Canyon 4-2021 Aquifer test 25 ft b.aqt					
Date: <u>04/29/24</u>			Time: <u>14:18:02</u>		
<u>PROJECT INFORMATION</u>					
Company: <u>KG</u>					
Client: <u>Cat Canyon LLC</u>					
Location: <u>Careaga</u>					
Test Well: <u>West domestic</u>					
Test Date: <u>4/14/21</u>					
<u>AQUIFER DATA</u>					
Saturated Thickness: <u>25. ft</u>					
<u>WELL DATA</u>					
Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
West domestic	0	0	□ Central Domstic	103.5	0
<u>SOLUTION</u>					
Aquifer Model: <u>Unconfined</u>			Solution Method: <u>Neuman</u>		
T = <u>2149.6 gal/day/ft</u>			S = <u>0.0001189</u>		
Sy = <u>0.006469</u>			β = <u>0.4401</u>		

Figure 1. Aquifer testing data and Neuman Unconfined solution, 24-hour test at 16 gpm, data from proximal observation well at a distance of 103.5 feet

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<u>CAREAGA TEST</u>					
Data Set: F:\Cat Canyon 4-2021 Aquifer test 25 ft b.aqt					
Date: 05/07/24			Time: 17:34:29		
<u>PROJECT INFORMATION</u>					
Company: KG					
Client: Cat Canyon LLC					
Location: Careaga					
Test Well: West domestic					
Test Date: 4/14/21					
<u>AQUIFER DATA</u>					
Saturated Thickness: 25 ft					
<u>WELL DATA</u>					
Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
West domestic	0	0	Central Domstic	103.5	0
<u>SOLUTION</u>					
Aquifer Model: Unconfined			Solution Method: Neuman		
T = 2149.6 gal/day/ft			S = 0.0001189		
Sy = 0.006469			β = 0.4401		

Figure 3. Modeled distance-drawdown at 10 gpm pumping for 890 minutes (14 hours); note 0.1 ft drawdown at 400 ft radius and 0.01 ft drawdown at 700 ft radius

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The 400-foot radius is the distance between the pumping well and the creek and is less than the distance to the nearest off-property well (Figure 3). Two wells on the property are operated under an easement agreement to serve off-property parcels and will be used as sentinel wells to monitor changes in water levels for the life of the project. The production well will also be equipped with a water level logger and a totalizing flow meter to record quantities of produced groundwater.



Figure 3. Cat Canyon LLC production well indicating 400-foot radius which represents modeled limit of 0.1-ft water level drawdown with 14 hours of pumping at 10 gpm; creek and off-property wells are outside of this radius.

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In sum, the existing well at Cat Canyon LLC is adequate to supply the much-reduced anticipated demand of the project. By pumping groundwater at 10 gpm and for 14-hour maximum durations, with equivalent recovery periods between pumping cycles and storage, project demands will apparently be met without inducing acute water level drawdown at greater than 0.1 foot at a radial distance of 400 feet, which is the distance to the proximal creek and less than the distance to the nearest off-property wells. Continuing monitoring and adaptive management will help refine and record practiced production rates and operations.

Please do not hesitate to contact us with any questions.

Best Regards,

A handwritten signature in black ink, appearing to read 'Jordan Kear', with a stylized flourish at the end.

Jordan Kear
Principal Hydrogeologist
Professional Geologist No. 6960
Certified Hydrogeologist No. 749

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