Rainwater Irrigation and Storage Calculations
PLN: 13295, 13351, &13359

Over view:

Water for cannabis irrigation on APN:218-091-006 PLN:13295 and APN: 218-101-002 PLN: 13351 will be supplied by approved SIUR water right REGISTRATION H508126 CERTIFICATE H100583. This water right with a maximum allowable storage of 1.59 acre feet of water or 518,103 gallons (1.59 x 325,851 gallon = 518,103.09). This water right only allows use of 1.19 acre feet of water per year (1.19 x 325,851 = 387,763 gallons). Water on these properties will be supplemented with rainwater catch available from the pond located on 218-091-004.

Water use on APN 218-091-004 PLN# 13359 will be 100% rainwater catch coming from the onsite rainwater catch pond with an approximate storage capacity of 2,155,507gallons.

The combination of water stored from SIUR water right and the rainwater pond will provide over 1,511,116 gallons of water, plenty to meet the 937,000 gallon projected irrigation need, including consideration for evaporation from the pond. The breakdown of water catchment, water use, and water storage numbers are provided below.

Note: although the 50 year average for annual rainfall is 66.68", the rainfall volumes below are calculated using the average precipitation value in the ten lowest rain years (40.105"). *See rainfall data Page 4

Calculations

Volumes by source:

Pond APN 218-091-004 potential volume of water availability calculated low average rainfall. :
4,931.5sf x 40.105" x 0.6234= 1,123,353gallons
*Note: although the 50 average for annual rainfall is 66.68", the rainfall volume above is calculated using the average precipitation value for the ten lowest rain years in the available data set (40.105")

SIUR maximum storage allowed 218-091-006 &218-101-002: 518,103 gallons
SIUR maximum use allowed 218-091-006 &218-101-002: 387,763 gallons
Currently established storage capacity for SIUR: 212,500
*See water right for more information, *See attached rainwater distribution system map for hard tank locations

Total water volume available when SIUR storage complete:
1,123,353 Rainwater + 387,763 SIUR= 1,511,116 gallons

Total water storage volume currently available:
1,123,353 Rainwater + 212,500 SIUR storage = 1,335,853 gallons

Estimated water use:
PLN#: 13359=291,900
PLN#: 13295=100,100
PLN#: 13351=545,000
=937,000

Evaporation Loss:

Willow creek 1 NW
Monthly Pan evaporation (inches)

	Period of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	oct	Nov	Dec	Total
WILLOW CREEK 1 NW	1968-2005	0.58	1.35	1.81	2.74	4.73	6.50	7.53	6.05	3.79	1.94	0.75	0.92	38.69

*multiply by .7 correction factor for offset heat exchange

Pond surface area (Median): 13,541

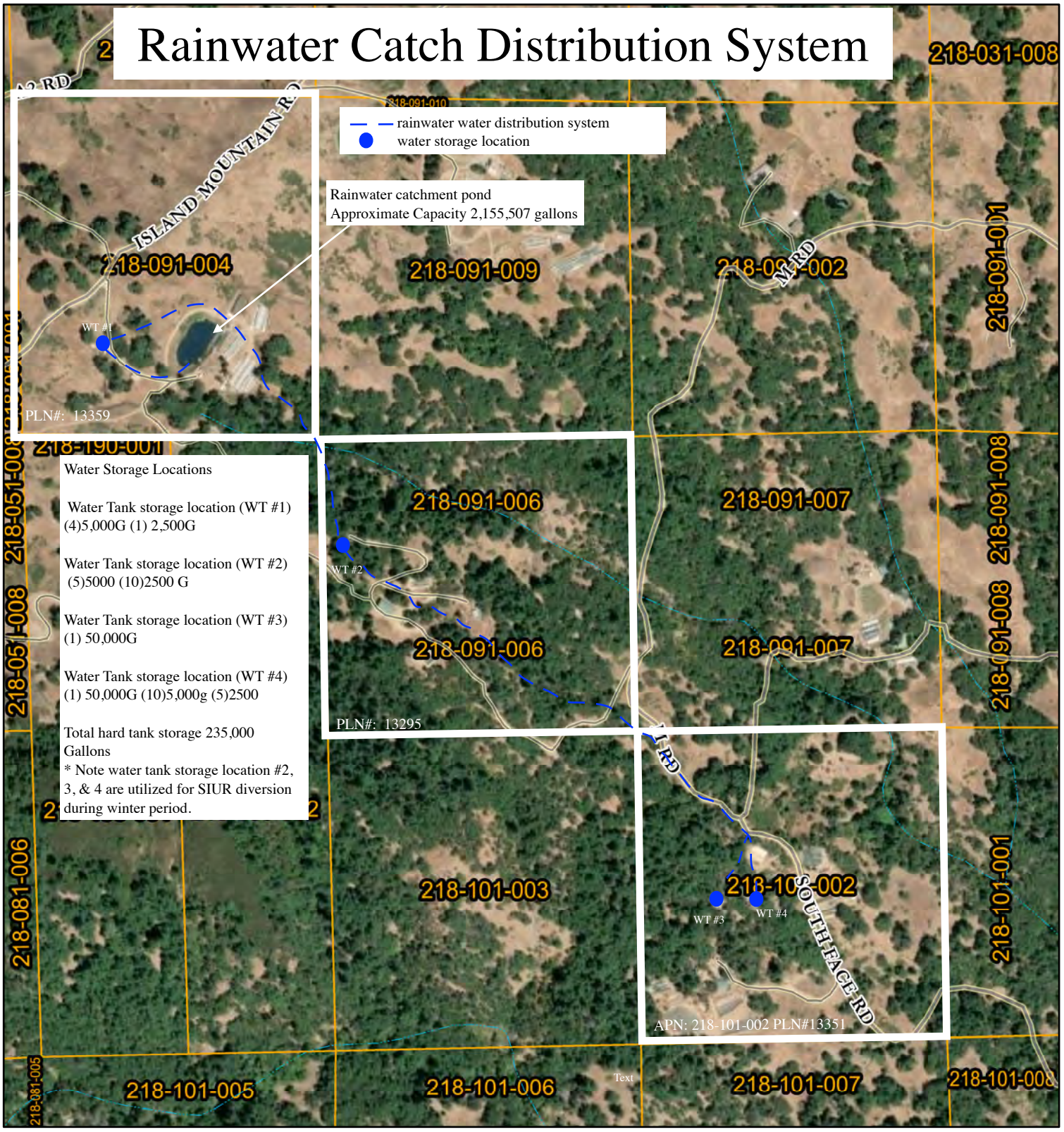
Class A Pan seasonal evaporation rate-37 year average: 38.69'
Corrected Pan evaporation: 38.69x.7= 27.083"/12= 2.257ft

median surface area x corrected pan evaporation rate
13,541sf.x=30,563.165cf.
x7.48052gallon conversion
=228,628gallons

Annual water need: (=937,000 use)+ (228,628evap-loss) = 1,165,628 gallon

Sources:
Rainfall records: https://prism.oregonstate.edu/explorer/
Evaporation Loss: https://wrcc.dri.edu/Climate/comp_table_show.php?stype=pan_evap_avg

Rainwater Catch Distribution System



Humboldt County WebGIS

Humboldt County Planning and Building Department

0 0.05 0.1 0.2 mi

RF= 1:9,028 1 in = 752 ft

N W E S

7/31/2024, 11:26:32 AM Web AppBuilder 2.0 for ArcGIS

Table 1

PRISM Time Series Data		
Location: Lat: 40.0366 Lon: -123.5964 Elev: 1762ft		
Climate variable: ppt		
Spatial resolution: 4km		
Period: 1970 - 2020		
Dataset: AN91m		
PRISM day definition: 24 hours ending at 1200 UTC on the day shown		
Grid Cell Interpolation: Off		
Time series generated: 2024-Jul-25		
Details: http://www.prism.oregonstate.edu/documents/PRISM_datasets.pdf		
Date	ppt (inches)	ppt(inches
1970	89.23	
1971	61.78	
1972	62.48	
1973	92.57	
1974	71.21	
1975	76.59	
1976	31.43	31.43
1977	52.04	
1978	60.3	
1979	68.49	
1980	60.23	
1981	83.06	
1982	91.54	
1983	125.52	
1984	61.43	
1985	36.87	36.87
1986	80.96	
1987	64.79	
1988	50.97	50.97
1989	44.98	44.98
1990	46.44	46.44
1991	38.61	38.61
1992	64.15	
1993	69.91	
1994	48.13	48.13
1995	102.74	
1996	98.09	
1997	66.06	
1998	103.01	
1999	66.78	
2000	58.82	
2001	63.49	
2002	71.17	
2003	70.7	
2004	57.68	
2005	86.05	
2006	76.67	
2007	48.56	48.56
2008	51.11	
2009	53.97	
2010	92.29	
2011	58.58	
2012	90.43	
2013	21.48	21.48
2014	64.93	
2015	51.01	
2016	98.31	
2017	86.93	
2018	54.97	
2019	77	
2020	34.03	34.03
Average	66.68	
Low rainfall years		40.105