

ACTUAL EVAPOTRANSPIRATION ANALYSIS

September 2021

Prepared for
Eastern Tule Groundwater Sustainability Agency

Prepared by
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SUMMARY

TABLE 1. SUMMARY OF DISTRICT ET AND PRECIPITATION (161,257 AC)

Timeframe	ET (ac-ft)	Precipitation (in)
Past 12 months	292,080	3.8
Prior water year (OCT 1 – SEP 30)	292,080	3.8
Prior calendar year (JAN 1 – SEP 30)	263,736	3.0

TABLE 2. SENSORS USED IN DAILY AND MONTHLY ET_A ANALYSIS BY CROP CATEGORY

Crop Type	Number of Active Stations	Number of Used Stations in Model
Alfalfa	11	9
Almonds	23	16
Annuals	6	6
Citrus	14	12
Fallow/Native	6	6
Grapes	10	7
Olives	2	1
Pistachios	11	9
Pomegranates	1	1
Walnuts	1	1

TABLE 3. PRECIPITATION MEASURED BY FIELD STATIONS

Station ID	Source	September Precipitation (in)
LandIQ_ET_Full_Murcotts	Land IQ	0
LandIQ_ET_Full_Fallow	Land IQ	0
CIMIS #205: Coalinga	CIMIS	0.09
CIMIS #5: Shafter	CIMIS	0
CIMIS #15: Stratford	CIMIS	0
CIMIS #54: Blackwells Corner (westside)	CIMIS	0
CIMIS #2: FivePoints	CIMIS	0
CIMIS #146: Belridge	CIMIS	0
CIMIS #39: Parlier	CIMIS	0.06
CIMIS #105: Westlands	CIMIS	0.01
CIMIS # 80: Fresno State	CIMIS	0
CIMIS #182: Delano	CIMIS	0
CIMIS #169: Porterville	CIMIS	0
FTNC1	CNRFC	0.01
KTLC1	CNRFC	0
PNOC1	CNRFC	0
SCSC1	CNRFC	0.02
USW00023155	GHCN	0
USW00093193	GHCN	0
USW00053119	GHCN	0
USC00044890	GHCN	0
USW00023110	GHCN	0
USC00049367	GHCN	0.02

CIMIS - California Irrigation Management Information System; CNRFC - California Nevada River Forecast Center; GHCN - Global Historical Climate Network.

REMOTE SENSING RESULTS

TABLE 4. IMAGE DATES AND SOURCES

Date	Image Source
September 03, 2021	Sentinel 2
September 08, 2021	Sentinel 2
September 18, 2021	Sentinel 2

TABLE 5. MONTHLY DISTRICT ET_A

Unit	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
(mm)	16.9	17.8	36.9	53.6	72.0	87.5	89.2	72.6	51.9
(inch)	0.7	0.7	1.5	2.1	2.8	3.4	3.5	2.9	2.0
(AF)	8,936	9,399	19,535	28,375	38,112	46,307	47,188	38,408	27,476

TABLE 6. MONTHLY FIELD ET_A

ET _A (in) Including Fallow										
	Field Size (ac)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Maximum	634	1.7	2.2	3.9	5.4	7.9	8.8	8.1	7.7	5.5
Minimum	0.02	0.2	0.0	0.4	0.2	0.2	0.2	0.0	0.0	0.0
Average	17.1	0.8	0.9	1.6	2.5	3.3	3.9	4.1	3.4	2.6
ET _A (in) Excluding Fallow										
	Field Size (ac)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Maximum	160.5	1.7	2.2	3.9	5.4	7.9	8.8	8.1	7.7	5.5
Minimum	0.02	0.3	0.0	0.4	0.3	0.2	0.2	0.1	0.1	0.0
Average	15.4	0.9	1.1	1.7	2.8	3.9	4.6	5.0	4.1	3.2

TABLE 7. MONTHLY DISTRICT PRECIPITATION

Precipitation Unit	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
(mm)	37.8	6.0	27.7	4.6	0.1	0.1	0.2	0.0	0.1
(inch)	1.5	0.2	1.1	0.2	0.0	0.0	0.0	0.0	0.0
(AF)	19,996	3,170	14,661	2,449	44	48	106	0	71

ACCURACY OF REMOTE SENSING RESULTS

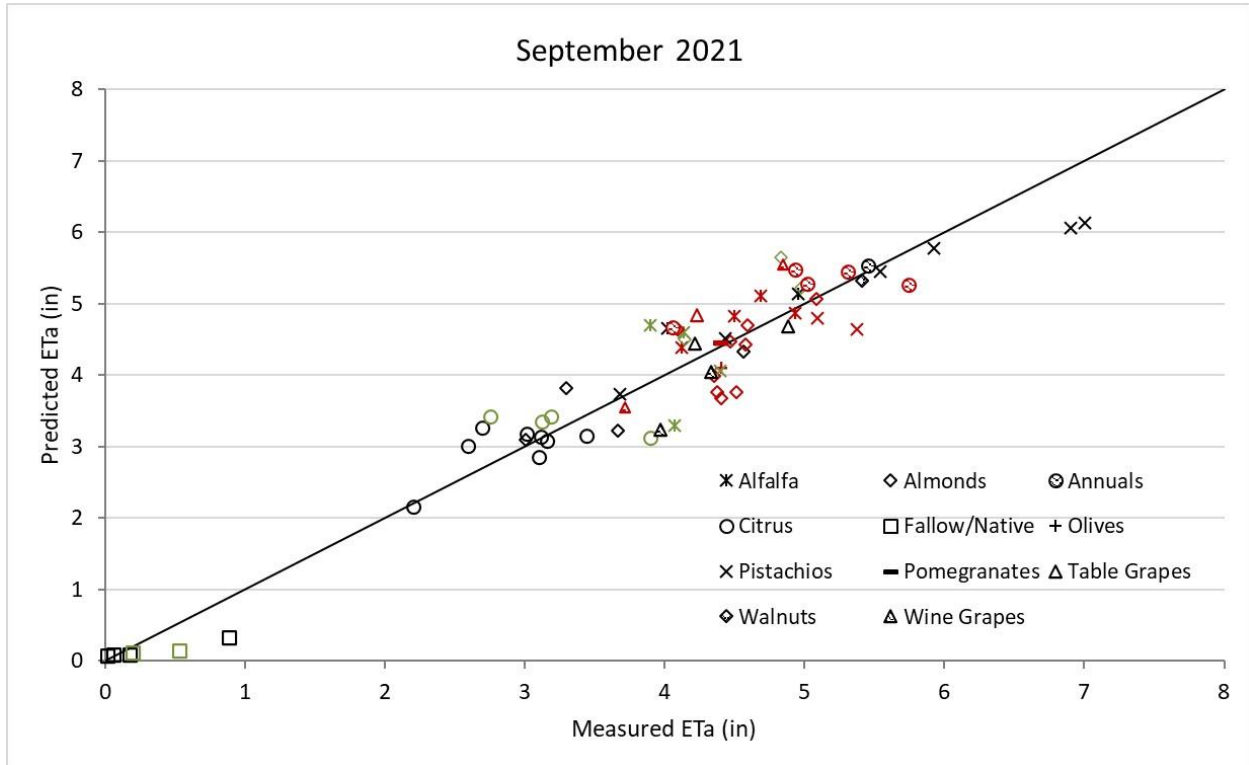


FIGURE 1. MEASURED VERSUS PREDICTED ET_A FOR THE MONTH. SYMBOL COLORS REPRESENT THE STATION TYPES (BLACK = FULL, GREEN = WATER IQ (WIQ), RED = TULE TECH)

TABLE 8. MEASURED VS. PREDICTED MONTHLY ET_A

R²	RMSE (in)
0.9	0.4

Note: The R² value is the relative measure of fit of the observed data to the predicted result, where a value of 1 indicates a perfect fit. RMSE can be interpreted as the standard deviation, where a value of 0 indicates perfect fit to the observed data.