WATER RESOURCES CENTER ARCHIVES
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

MS/76/1
98L20c

STATEMENT

SHOWING COMPARISON AVERAGE ANNUAL INFLOW INTO OWENS VALLEY AND AVERAGE ANNUAL EVAPO-TRANSPIRATION LOSS PRIOR TO AQUEDUCT DIVERSION

AVERAGE ANNUAL RUNOFF AT MOUTH OF CANYON OF STREAMS ENTERING OWENS VALLEY 1904 - 1931: ..... 550,000 ACRE FEET (a)

AVERAGE ANNUAL EVAPO-TRANSPIRATION FROM OWENS VALLEY:

ROUND VALLEY	13,600 ACRE FEET	(a)
BISHOP-BIG PINE REGION	168,600 ACRE FEET	(c)
INDEPENDENCE REGION	92,000 ACRE FEET	(b)
LONE PINE REGION	6,200 ACRE FEET	
OWENS LAKE	280,000 ACRE FEET	(d)
OWENS LAKE MARGINAL MEADOWS	6,000 ACRE FEET	(a)
CHANNEL OWENS RIVER INTAKE TO OWENS LAKE	3,800 ACRE FEET	(a)
CREEK CHANNELS TABOOSE CREEK SOUTH..	1,300 ACRE FEET	(a)
	571,500 ACRE FEET	
DEDUCT LOCAL RAINFALL ON OWENS LAKE AS IN 1906-1914:		
(58,000 AC. x 0.26 FT.)	15,000 ACRE FEET	
	556,500 ACRE FEET	

NOTES:

(a) REPORT BY CHARLES H. LEE - JULY 1932
(b) TR. - AM.SOC.C.E. - VOL. 78 - P. 204
(c) TR. - AM.SOC.C.E. - VOL. 94 - P.1395
(d) TR. - AM.SOC.C.E. - VOL. 90 - P. 334

+++++ D R A F T +++++

STATEMENT

SHOWING RELATION OF FULL AQUEDUCT DIVERSION
TO AVERAGE WATER CROP OF OWENS VALLEY
WITH MAXIMUM SALVAGE OF EVAPO-TRANSPIRATION LOSSES

FULL AQUEDUCT DIVERSION:

NET DRAFT FROM HAIWEE RESERVOIR	480 SEC.FT.	=	347,000 AC.FT.
EVAPORATION LOSS FROM HAIWEERESERV.	15 " "	=	10,800 " "
EVAPORATION LOSS IN OPEN CANAL	2 " "	=	1,400 " "
TOTAL:			359,200 " "

AVERAGE ANNUAL RUNOFF OF STREAMS INTO VALLEY AT MOUTHS OF CANYONS:

PERIOD OF 28 YEARS, 1904 TO 1931	550,000 AC.FT.
PERIOD OF 10 YEARS, 1921 TO 1931	378,560 AC.FT.

AVERAGE ANNUAL EVAPO-TRANSPIRATION LOSSES FOR CONDITIONS OF 1931:

TOTAL	133,770 AC.FT.
SALVAGED BY SUBSEQUENT PURCHASE OF LAND	28,850 " "
ECONOMICALLY SALVAGABLE IN INDEPENDENCE REGION	13,800 " "
SALVAGABLE BY ADDITIONAL FARM LAND PURCHASES ON BISHOP CREEK CONE	16,300 " "
NON SALVAGABLE	74,820 " "
	133,770 " "

AVERAGE ANNUAL SURFACE WASTE TO OWENS LAKE FOR PERIOD 1904 TO 1931:

AVERAGE ANNUAL RUNOFF	550,000 AC.FT.
FULL AQUEDUCT DIVERSION	359,200 " "
NON SALVAGABLE WATER	74,800 " "
WASTE TO OWENS LAKE AND INCREASED EVAPO-TRANSPIRATION IN WET YEARS	116,000 " "
	550,000 " "

PERCENT WATER CROP HARVESTED

$$\frac{359,200}{550,000} = 65\%.$$

FOR PERIOD 1921 TO 1931:

AVERAGE ANNUAL RUNOFF	378,560 AC.FT.
NON SALVAGABLE WATER	74,800 " "
PARTIAL AQUEDUCT DIVERSION	303,760 " "
WASTE TO OWENS LAKE	0 " "
	378,560 " "

SHORTAGE IN SUPPLY TO BE DRAWN FROM GROUND STORAGE OR OUTSIDE SOURCE SUCH AS MONO BASIN 74,800 " "

PERCENT WATER CROP HARVESTED

$$\frac{303,760}{378,560} = 80\%.$$

STATEMENT

SHOWING EVAPO - TRANSPIRATION LOSSES
FROM OWENS LAKE

CLASSIFICATION	AREA ACRES	CONSUMPTIVE USE FEET	TOTAL EVAPO-TRANSPIRATION LOSS ACRE FEET
OPEN BRINE POOL:	200	3.83 (a)	770
CRYSTAL BODY:	17600	0.82 (b)	14,400
CRUSTED MUD:	21200	0.37 (c)	7,800
OLANCHO AND CARTAGO:	1037	2.3 (d)	2,400
CREEK CONES:	691	1.0 (e)	690
BRALY CREEK CONE	78	2.3 (d)	180
CARROLL CREEK CONE - (MEADOW)	49	2.3 (d)	112
CARROLL CREEK CONE - (MUD)	415	1.6 (f)	1,650
	41,260		27,002

NOTES:

(a) = EVAPORATION HAIWEE RESERVOIR: 5.9 x .14 = 3.83 FEET

(b) = EVAPORATION HAIWEE RESERVOIR: 5.9 x .65 = 0.82 FEET

(c) = EVAPORATION HAIWEE RESERVOIR: 5.9 x .14 x .89 x .50 = 0.37 FEET

(d) = AVERAGE EVAPORATION SALT GRASS INDEPENDENCE REGION = 2.3 FEET

(e) = AVERAGE EVAPORATION SPARSE SALT GRASS INDEP.REGION = 1.0 FEET

(f) = EVAPORATION HAIWEE RESERVOIR: 5.9 x .75 x .89 x .40 = 1.6 FEET.

2nd

STATEMENT

SHOWING EVAPO-TRANSPIRATION LOSSES
FROM EATON RANCH LANDS IN LONG VALLEY

CLASSIFICATION	AREA ACRES	CONSUMPTIVE USE FEET	TOTAL EVAPO-TRANSPIRATION LOSS ACRE FEET
MEADOW GRASS IRRIGATED:	4,770	1.8 (a)	12,050
MEADOW GRASS NATURAL SUBIRRIGATED:	1,927	1.8 (a)	
SAGE BRUSH AND GRASS IRRIGATED:	683	1.0	683
SAGE BRUSH IRRIGATED:	1,387	0.75	1,040
			13,773

NOTE (a):

RATIO AVERAGE ANNUAL EVAPO-TRANSPIRATION BISHOP-BIG PINE REGION:

$$\frac{168{,}600 \text{ AC.FT.}}{55{,}784 \text{ AC.}} = 3.0 \text{ FT.}$$

TO AVERAGE ANNUAL EVAPORATION AT BISHOP AND INDEPENDENCE:

$$\frac{5.0 \text{ FT.} + 5.6 \text{ FT.}}{2} = 5.3 \text{ FT.}$$

IS 0.56. THIS RATIO TIMES AVERAGE EVAPORATION AT CROOKED CREEK 3.25 FT. IS = 1.80 FT.

Summary Owens Lake

Item	Authority	
	Stubbens	CHN
Counted runoff surface "of ed water"	100,000 ac ft annually 16,600 ac × 72 ins ÷ 12 could be salvaged	14,900 ac. ft. 17,800 ac × 67 ins × .15 ÷ 12
Counted rund "unsaturated ooze"	Not est. but exceeds rainfall 60,000 ac × 3/12 = 15,000 ac ft annually	7,900 ac. ft 21,000 ac × 67 × .89 × .15 × .50 ÷ 12
Marginal needs	Not est.	4238 ac. ft.

Photo of Owens Lake

Area Brine Pool in Owens Lake

① Location from which photo by Allan W. Ramsey May 20, 1950 taken was on Portuguese Road about 2 mi. south of Carroll Cr at first sharp turn to north + at crest of ridge. Grade of road 7%. Elev. of Carroll Cr crossing (Hockett Trail) 5600 ft. Elev. from which picture taken $5600 + 2(.07 \times 5280) = 6339$ ft.

∴ Length main brine pool as shown on photo 2 mi

Length narrow channel north 3½ mi.

Width main pool ave = ¼ mi

Width narrow channel 200 ft.

Area pool $2 \times \frac{1}{4} = 0.5$ sq. mi.

Area chan. $3\frac{1}{2} \times \frac{200}{5280} = 1.3$ sq. mi

0.63 sq mi

$\frac{3.5}{2.60}$

= 400 ac.

Year	ORatPV	Fish &	Bishop &	Rawnsley	Baker &	Big Pan &	ORat CB
1929-30	119,026	7623	37430		2480	16,858	211,682
1930-31	97742	7097	30,938		2173	17,115	222,185
1931-32	186,721	6121	53,482	1773	4609	34,339	232,274

119,026
7623
37,430
2480
16,858

183,417
211,682

97742
7097
30938
2173
17,115

186,721
6,121
53,482
1773
4609
34,339

40,000
52c
4,000,000
.10 of.
400,000 of
723 of = 553

Summary Long Valley

80000 SCWP
d. 2036

Item	Authority		
	Tumbler	Stubbins	City
Storage	2700 af/yr 40,000 ac × 5 ft × 30% × 1/3 ÷ 723 = 2700 af/yr	1036 acre-ft/yr ? 40,000 ac × 5 ft × 30% × 15% = 1245 af/yr	
Evapo-transpiration	50 af/annum 8000 ac × 5 ft × .90	46,000 af/annum 8000 ac × 5 2/3 ft (63 af)	CHL = 18,900 ac ft/annum 11,392 ac × 1.5 = 17,100 758 " × 1.0 = 758 1395 " × .75 = 1047 18,900 Conveyance 8.450 af/yr less capture + use at Hott, Caldwell & Whitehead

$9^{0}6^{1}$

3^{240}

9^{48}

4^{238}

(9) P Willetts 26 year
study-safe yield - 356
do 28 year study - 350+
Band campaign statement
by JZP — 336

(10) Tr 329-16 - JZP
testif. area w.s. 1000 ac ±
road.
Tr 330-17 - O.L. plot 0 ft
62" - less for Crime

(11) Fredele L.V. testimony
Tr. 378-5 & 394-17
Vol. 4

(12) Stebbins
Tr. 655-718 - Vol. 7

(over)

Finkle

381-1 — 40,000 ac. of L.V. alluvial fill
McCoutwah Conn.

382-15 — Av. depth 500 ft.

384-7 — porosity 30%

384-18 — recoverable 1/3 or 10% of vol.

385-5 — flow for year — 2700 ft.

387-23 — 8000 ac., mount Laud
from which water-transf.
very active rill cannels by
rain or water alone & impos.

389-7 Water-transf 5 ft per ann
Cannelure length gaining rear

390-9 Total loss 40,000 ac ft per ann
= 55%

393-14 Could recover 90% by
drainage tubes & pumped
wells. = 50%

Stebbins

Tr. 663-3
Area within 200 ft. contour
= valley floor - 84,000 ac
663-14
Area mainly land 8000 ac
grasses + tules - major
portion grass
666-6
Combined evap + transp 5 2/3 ft
666-20 evap alone 40 ins
transp from plants and
water grasses in unsaturated soil twice that
of evap. from water -
tules 4 times but did not
include
grazing season Mar 15 - Oct 30
667-19
46,000 ac ft. loss
annum.

672-14-

depth L.V. valley fill
1000-2000 ft
granitic debris

679-15
25% void - same as Judy, Region WSP 294-74.

682-19
75% of 25% recoverable

683-22
40,000 ac × 500 ft × .25 = 5,000,000 ac ft
× .15 = 750,000 ac ft
= 1036 cfs. 1 yr

668-23 Advisability of living side streams - because water lost from chan. by seepage & only a portion can ever be recovered.

Willows & veget. along R.
Judy - south & O.L. & noted below Whitney Pump-ing Pl.

699-16

Actual water surface O.L = 16,600 sq. computed from Regional Land map.

Around open water was crystal "trona" overlying soft supersaturated ooze.

709-22

Rate evap. O.L. by Clark in WSP 294, p. 53. - 80 ins

710-24.

He used 72 ins. & correct for saline solution.

711-1

Loss from open w. S. O.L. = 100,000 acft annually

T11 – 18

Area mud + trona deposit between shoreline + meander line 40,000 & 45,000 ac.

T11 – 26

Total area within meander line 60,000 ac.

T11 – 23 –

Area underlain 3 m.

T11 – 27 –

Rain can tubules 15,000 sq ft.

T12 – 9 – ref. zones from mud + trona great then rainfall can tubules

T13 – 20 – Source of 100,000 c sq ft "zones laterally from upper reaches of DR. + tributaries