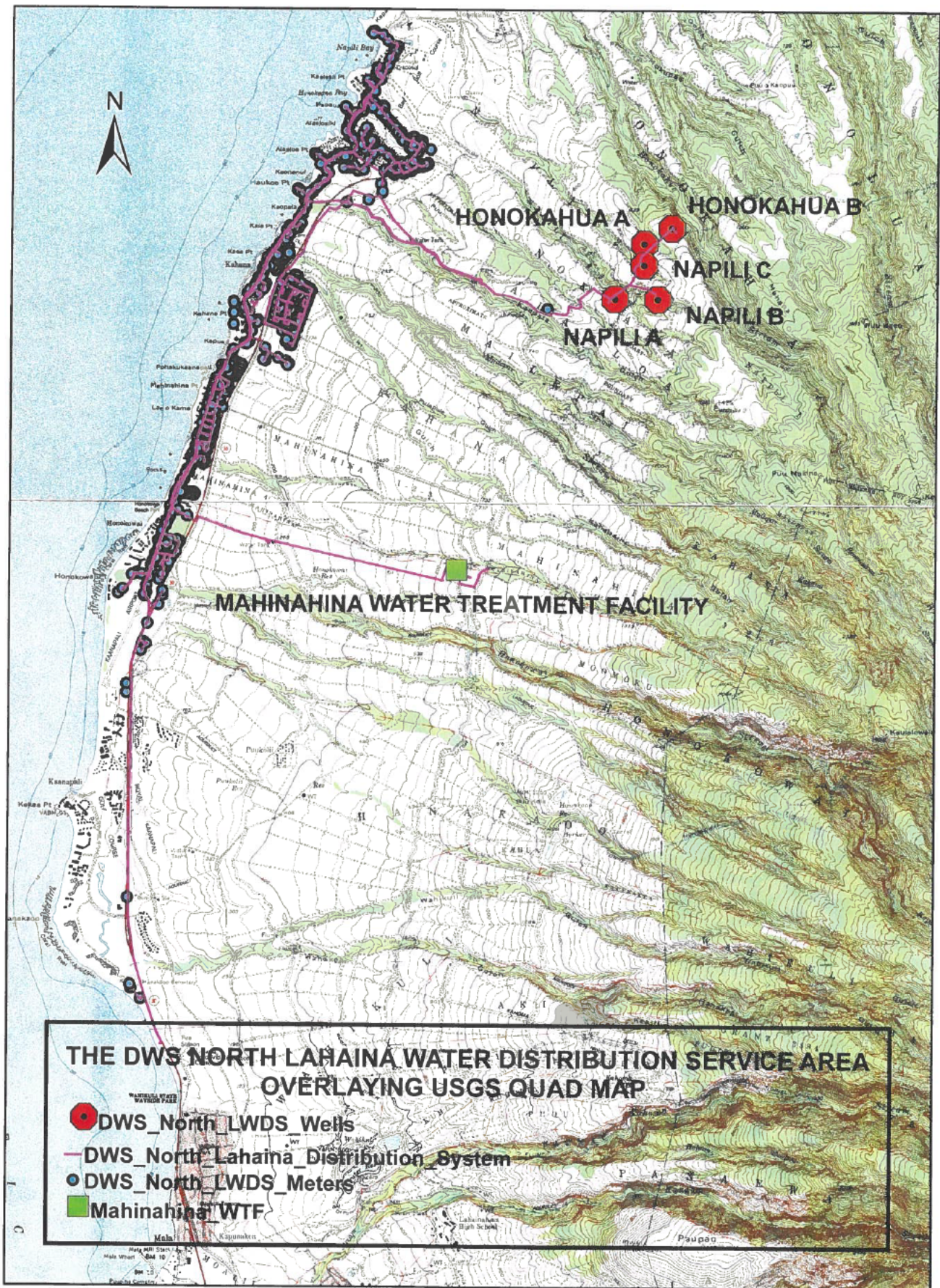


**THE DWS NORTH LAHAINA WATER DISTRIBUTION SERVICE AREA
OVERLAYING USGS QUAD MAP**

- DWS_North_LWDS_Wells
- DWS_North_Lahaina_Distribution_System
- DWS_North_LWDS_Meters
- Mahinahina_WTF



APPENDIX B

Consump_A v	Consump_1	Tmk_val	Wuz_val	Units_v	Install_dt	Casprem_va	Prem_type_	Entity_nam	ZONE_CLASS	ZONE_ABB RE	LUDCO DE	TaxAcres
223.86	7,339.64	2-4-3-003:122	515	1	12/16/1985	1023466	COM		A-1 Apartment	A-1	U	2.42
120.68	3,956.83	2-4-3-003:122	515	1	5/29/2002	1034868	LO-RISE		A-1 Apartment	A-1	U	2.42
224.53	7,361.69	2-4-3-003:122	515	1	5/29/2002	1034869	LO-RISE		A-1 Apartment	A-1	U	2.42
207.72	6,810.55	2-4-3-003:123	515	1	5/29/2002	1034867	LO-RISE		A-1 Apartment	A-1	U	2.42
417.39	13,684.81	2-4-3-003:122	515	1	1/29/2002	1034618	LO-RISE		A-1 Apartment	A-1	U	7.45
395.21	12,957.54	2-4-3-003:122	515	1	1/28/2002	1034616	LO-RISE		A-1 Apartment	A-1	U	7.45
524.94	17,210.98	2-4-3-003:108	515	64	9/19/1997	1006191	LO-RISE		A-1 Apartment	A-1	U	3.85
404.50	13,262.13	2-0-0-000:000	513	56	12/8/1994	1019673	LO-RISE		A-1 Apartment	A-1	U	1.96
228.90	7,504.84	2-0-0-000:000	513	16	3/1/1994	1017105	LO-RISE		A-1 Apartment	A-1	U	0.00
21.89	717.57	2-4-4-001:074	513	1	3/31/1988	1007594	LO-RISE		A-1 Apartment	A-1	U	0.15
6.00	196.64	2-0-0-000:000	513	2	6/2/1986	1007722	LO-RISE		A-1 Apartment	A-1	U	1.12
129.08	4,232.05	2-4-4-001:023	513	29	6/2/1986	1017043	LO-RISE		A-1 Apartment	A-1	U	1.12
0.00	0.00	2-4-3-008:001	513	32	5/10/1984	1017034	LO-RISE		A-1 Apartment	A-1	U	1.78
423.60	13,888.61	2-4-3-008:001	513	32	5/10/1984	1007729	LO-RISE		A-1 Apartment	A-1	U	1.78
165.30	5,419.70	2-4-3-006:005	513	43	9/30/1980	1017069	LO-RISE		A-1 Apartment	A-1	U	4.96
199.33	6,535.46	2-4-3-006:005	513	43	9/30/1980	1017068	LO-RISE		A-1 Apartment	A-1	U	4.96
89.40	2,931.01	2-0-0-000:000	513	16	11/1/1978	1007731	LO-RISE		A-1 Apartment	A-1	U	0.60
397.47	13,031.78	2-0-0-000:000	513	18	11/1/1978	1007602	LO-RISE		A-1 Apartment	A-1	U	0.83
379.00	12,426.28	2-4-3-008:002	513	52	11/1/1978	1017080	LO-RISE		A-1 Apartment	A-1	U	1.06
596.63	19,561.50	2-0-0-000:000	513	42	8/28/1978	1007579	LO-RISE		A-1 Apartment	A-1	U	3.20
409.69	13,432.43	2-4-3-003:122	515	1	1/29/2002	1034620	SFD		A-1 Apartment	A-1	U	7.45
6.69	219.37	2-4-3-005:074	515	1	3/6/1997	1007243	SFD		A-1 Apartment	A-1	U	0.07
6.67	218.63	2-0-0-000:000	515	1	2/20/1997	1007242	SFD		A-1 Apartment	A-1	U	0.07
8.76	287.16	2-4-3-005:075	515	1	2/20/1997	1007244	SFD		A-1 Apartment	A-1	U	0.07
59.20	1,940.90	2-4-3-009:003	513	1	1/26/1989	1007728	SFD		A-1 Apartment	A-1	U	0.88
21.76	713.52	2-4-4-001:084	513	1	8/3/1987	1017044	SFD		A-1 Apartment	A-1	U	0.31
46.75	1,532.68	2-4-4-001:073	513	1	1/10/1986	1004759	SFD		A-1 Apartment	A-1	U	0.14
8.17	267.70	2-4-3-009:007	513	1	11/1/1978	1017081	SFD		A-1 Apartment	A-1	U	0.86
211.03	6,919.04	2-4-4-001-042-0000	513	40	3/5/2019	1017056	HOTEL		A-2 Apartment	A-2	U	1.06
217.57	7,133.28	2-4-3-006:014	513	28	12/5/2018	1017070	HOTEL		A-2 Apartment	A-2	U	0.88
0.00	0.00	2-4-3-006:014	513	0	7/11/1988	1017070	HOTEL		A-2 Apartment	A-2	U	0.88
0.00	0.00	2-4-4-001-042-0000	513	0	11/1/1978	1017056	HOTEL		A-2 Apartment	A-2	U	1.06
346.69	11,366.80	2-4-3-021:082	515	1	10/22/2004	1037056	LO-RISE		A-2 Apartment	A-2	U	5.08
369.68	12,120.77	2-4-3-021:082	515	1	10/22/2004	1037057	LO-RISE		A-2 Apartment	A-2	U	5.08
618.48	20,277.95	2-4-3-006:002	513	32	5/8/2009	1040102	LO-RISE		A-2 Apartment	A-2	U	3.05
306.75	10,057.40	2-4-3-006:041	513	53	1/12/1995	1017078	LO-RISE		A-2 Apartment	A-2	U	1.60
0.00	0.00	2-4-3-006:002	513	18	10/1/1990	1017058	LO-RISE		A-2 Apartment	A-2	U	3.05
294.30	9,649.13	2-0-0-000:000	513	51	2/7/1990	1007724	LO-RISE		A-2 Apartment	A-2	U	1.46
222.13	7,282.79	2-0-0-000:000	513	67	10/1/1989	1017073	LO-RISE		A-2 Apartment	A-2	U	1.77
293.37	9,618.66	2-4-3-006:004	513	1	9/26/1989	1017063	LO-RISE		A-2 Apartment	A-2	U	4.12
279.41	9,161.07	2-4-4-001:054	513	56	4/4/1989	1017045	LO-RISE		A-2 Apartment	A-2	U	1.17
128.32	4,207.05	2-4-4-001:055	513	366	12/28/1978	1017046	LO-RISE		A-2 Apartment	A-2	U	12.28
326.08	10,691.09	2-4-3-005:009	513	89	11/1/1978	1007611	LO-RISE		A-2 Apartment	A-2	U	1.96
211.36	6,929.89	2-4-3-006:012	513	30	11/1/1978	1017066	LO-RISE		A-2 Apartment	A-2	U	0.89
212.88	6,979.78	2-4-3-006:013	513	67	11/1/1978	1017067	LO-RISE		A-2 Apartment	A-2	U	1.26
68.77	2,254.86	2-4-3-006:063	513	12	11/1/1978	1017057	LO-RISE		A-2 Apartment	A-2	U	1.06
33.71	1,105.14	2-4-3-006-006-0000	513	13	11/1/1978	1007733	LO-RISE		A-2 Apartment	A-2	U	0.55
3,723.12	122,069.51	2-4-4-001-055-0000	513	366	11/1/1978	1017047	LO-RISE		A-2 Apartment	A-2	U	12.28
500.63	16,414.13	2-4-4-001:038	513	96	7/21/1978	1017055	LO-RISE		A-2 Apartment	A-2	U	1.74
359.79	11,796.48	2-4-3-009:002	513	50	3/2/1977	1007727	LO-RISE		A-2 Apartment	A-2	U	1.43
187.41	6,144.64	2-4-3-006:007	513	29	12/2/1975	1017060	LO-RISE		A-2 Apartment	A-2	U	0.84
184.77	6,057.92	2-4-3-006:016	513	36	1/6/1972	1017074	LO-RISE		A-2 Apartment	A-2	U	1.35
157.90	5,177.05	2-0-0-000:000	513	42	7/25/1967	1019672	LO-RISE		A-2 Apartment	A-2	U	0.00
590.38	19,356.69	2-4-4-001:052	513	76	6/1/1965	1017048	LO-RISE		A-2 Apartment	A-2	U	1.15
49.05	1,608.09	2-0-0-000:000	513	8	8/17/1963	1019671	LO-RISE		A-2 Apartment	A-2	U	1.43
156.34	5,125.87	2-4-4-001:041	513	30	4/3/1963	1017054	LO-RISE		A-2 Apartment	A-2	U	1.17
9.68	317.38	2-4-3-006:041	513	53	11/15/1962	1017079	LO-RISE		A-2 Apartment	A-2	U	1.60
1.56	51.09	2-4-4-001:079	513	1	9/13/1983	1017049	SFD		A-2 Apartment	A-2	U	0.38
9.60	314.70	2-4-3-004:021	515	1	5/23/1996	1008483	COM		AG Agriculture	AG	A	220.04
13.51	442.87	2-4-3-004:019	515	1	8/6/1986	1019817	COM		AG Agriculture	AG	A	220.04
81.12	2,659.78	2-4-3-001:001	515	1	11/1/1978	1023476	COM		AG Agriculture	AG	A	13.80
0.00	0.00	2-0-0-000:000	513	1	6/20/1983	1007564	COM		AG Agriculture	AG	A	13.80
14.87	487.43	2-4-3-010:029	515	1	1/21/1999	1006737	SFD		AG Agriculture	AG	A	2.00
15.86	520.03	2-4-3-017:006	515	1	2/4/1987	1002380	SFD		AG Agriculture	AG	A	0.16
10.50	344.10	2-4-3-017:005	515	1	8/29/1986	1002382	SFD		AG Agriculture	AG	A	0.14
10.71	351.20	2-4-3-017:035	515	1	10/1/1985	1008730	SFD		AG Agriculture	AG	A	0.14
23.98	786.17	2-4-3-017:036	515	1	10/1/1985	1008729	SFD		AG Agriculture	AG	A	0.14
10.82	354.64	2-4-3-017:038	515	1	10/1/1985	1008726	SFD		AG Agriculture	AG	A	0.15
3.59	117.81	2-4-3-017:039	515	1	10/1/1985	1008728	SFD		AG Agriculture	AG	A	0.16
9.75	319.56	2-4-3-017:021	515	1	9/26/1985	1005127	SFD		AG Agriculture	AG	A	0.15
4.53	148.50	2-4-3-017:022	515	1	9/26/1985	1005125	SFD		AG Agriculture	AG	A	0.14
7.11	233.06	2-4-3-017:054	515	1	8/13/1985	1018873	SFD		AG Agriculture	AG	A	0.15
2.12	69.34	2-4-3-010:031	513	1	1/29/2008	1039880	SFD		AG Agriculture	AG	A	2.28
62.54	2,050.49	2-4-3-010:025	513	1	4/2/2004	1036635	SFD		AG Agriculture	AG	A	2.14
42.54	1,394.64	2-4-3-010:024	513	1	6/6/2000	1033383	SFD		AG Agriculture	AG	A	2.23
23.82	780.85	2-4-3-010:021	513	1	4/1/1998	1001577	SFD		AG Agriculture	AG	A	2.01
176.98	5,802.76	2-4-3-010:027	513	1	11/15/1995	1001578	SFD		AG Agriculture	AG	A	1.48
38.73	1,269.86	2-4-3-010:026	513	1	5/24/1994	1001569	SFD		AG Agriculture	AG	A	1.48
17.78	583.03	2-4-3-003:110	515	1	8/2/1991	1023470	CGOVT		AG Agriculture	AG	U	1.09
0.00	0.00	2-0-0-000:000	513	1	1/12/1983	1006127	COM		AG Agriculture	AG	U	1.00
147.89	4,848.85	2-0-0-000:000	511	1	8/18/1983	1006129	COM		AG Agriculture	AG	U	3.69
311.24	10,204.43	2-0-0-000:000	511	1	8/18/1983	1006128	COM		AG Agriculture	AG	U	0.00
30.83	1,010.93	2-0-0-000:000	515	1	4/18/1986	1015229	RELIGION		AG Agriculture	AG	U	1.00
6.97	228.47	2-4-3-018:027	515	1	11/2/1998	1027430	SFD		AG Agriculture	AG	U	0.14
6.22	203.91	2-4-3-018:002	515	1	10/21/1992	1027438	SFD		AG Agriculture	AG	U	0.18
17.29	566.75	2-4-3-018:026	515	1	10/21/1992	1019758	SFD		AG Agriculture	AG	U	0.14
5.64	184.89	2-4-3-018:036	515	1	10/21/1992	1019763	SFD		AG Agriculture	AG	U	0.13
8.59	281.67	2-4-3-018:007	515	1	11/13/1991	1027444	SFD		AG Agriculture	AG	U	0.14
28.67	939.95	2-4-3-018:014	515	1	10/1/1991	1027453	SFD		AG Agriculture	AG	U	0.13
19.12	626.80	2-4-3-018:043	515	1	10/1/1991	1019764	SFD		AG Agriculture	AG	U	0.13
16.26	532.98	2-4-3-018:003	515	1	9/5/1991	1027440	SFD		AG Agriculture	AG	U	0.22
15.77	517.13	2-4-3-018:005	515	1	8/22/1991	1027375	SFD		AG Agriculture	AG	U	0.48
7.19	235.60	2-4-3-001:040	515	1	7/16/1991	1027436	SFD		AG Agriculture	AG	U	0.18
11.06	362.54	2-4-3-018:010	515	1	5/22/1991	1027447	SFD		AG Agriculture	AG	U	0.15
8.43	276.48	2-4-3-018:030	515	1	4/22/1991	1027435	SFD		AG Agriculture	AG	U	0.27
12.31	403.50	2-4-3-018:009	515	1	3/11/1991	1027446	SFD		AG Agriculture	AG	U	0.12
11.83	387.92	2-4-3-018:025	515	1	2/25/1991	100						

19.01	623.22	2-4-3-017-002	515	1	11/25/1985	1002377	SFD	AG Agriculture	AG	U	0.15
1.26	41.39	2-4-3-017-003	515	1	11/25/1985	1002375	SFD	AG Agriculture	AG	U	0.14
10.25	336.04	2-4-3-017-014	515	1	11/21/1985	1015220	SFD	AG Agriculture	AG	U	0.15
14.48	474.62	2-4-3-017-018	515	1	11/20/1985	1005133	SFD	AG Agriculture	AG	U	0.14
8.49	278.50	2-4-3-017-029	515	1	11/20/1985	1005123	SFD	AG Agriculture	AG	U	0.14
12.42	407.21	2-4-3-017-045	515	1	10/2/1985	1015223	SFD	AG Agriculture	AG	U	0.14
7.35	241.07	2-4-3-017-023	515	1	9/30/1985	1005124	SFD	AG Agriculture	AG	U	0.14
3.26	106.80	2-4-3-017-030	515	1	9/30/1985	1015221	SFD	AG Agriculture	AG	U	0.14
2.33	76.53	2-4-3-017-033	515	1	9/30/1985	1008722	SFD	AG Agriculture	AG	U	0.14
20.62	675.96	2-4-3-017-001	515	1	9/27/1985	1002378	SFD	AG Agriculture	AG	U	0.15
4.94	161.89	2-4-3-017-004	515	1	9/27/1985	1002384	SFD	AG Agriculture	AG	U	0.14
3.45	113.09	2-4-3-017-015	515	1	9/26/1985	1005122	SFD	AG Agriculture	AG	U	0.14
4.26	139.73	2-4-3-017-020	515	1	9/26/1985	1005129	SFD	AG Agriculture	AG	U	0.14
0.97	31.80	2-4-3-017-024	515	1	9/26/1985	1005126	SFD	AG Agriculture	AG	U	0.14
9.81	321.53	2-4-3-017-046	515	1	8/14/1985	1018864	SFD	AG Agriculture	AG	U	0.14
5.99	196.26	2-4-3-017-047	515	1	8/14/1985	1018861	SFD	AG Agriculture	AG	U	0.00
5.94	194.70	2-4-3-017-048	515	1	8/14/1985	1018883	SFD	AG Agriculture	AG	U	0.14
5.56	182.13	2-4-3-017-050	515	1	8/14/1985	1018880	SFD	AG Agriculture	AG	U	0.16
13.12	430.14	2-4-3-017-051	515	1	8/14/1985	1018878	SFD	AG Agriculture	AG	U	0.17
9.93	325.49	2-4-3-017-052	515	1	8/13/1985	1018876	SFD	AG Agriculture	AG	U	0.15
10.27	336.75	2-4-3-017-056	515	1	8/13/1985	1018870	SFD	AG Agriculture	AG	U	0.14
3.18	104.13	2-4-3-017-057	515	1	8/13/1985	1018868	SFD	AG Agriculture	AG	U	0.15
12.63	414.04	2-0-0-000-000	515	1	6/25/1985	1015226	SFD	AG Agriculture	AG	U	0.14
258.53	8,476.42	2-4-4-001-014	513	1	7/27/1998	1007589	COM	B-2 Business - Community	B-2	A	0.00
127.05	4,165.46	2-4-4-001-002	513	1	7/27/1998	1007588	IND	B-2 Business - Community	B-2	A	3.35
63.19	2,071.78	2-4-4-001-002-0000	513	1	7/27/1998	1007587	IND	B-2 Business - Community	B-2	A	3.35
598.83	19,633.66	2-0-0-000-000	515	1	12/12/1990	1007818	COM	B-2 Business - Community	B-2	A	3.35
54.18	1,776.50	2-4-4-001-014	513	1	7/27/1998	1007590	COM	B-2 Business - Community	B-2	U	0.91
39.17	1,284.40	2-4-4-001-057	513	1	1/21/1985	1007736	COM	B-2 Business - Community	B-2	U	0.43
55.57	1,822.02	2-4-4-001-060	513	1	11/1/1978	1007737	COM	B-2 Business - Community	B-2	U	0.73
528.10	17,314.62	2-4-3-003-109	515	1	1/27/1999	1023481	IND	B-2 Business - Community	B-2	U	0.32
357.89	11,734.10	2-4-3-005-034	515	1	12/12/1990	1007609	IND	B-2 Business - Community	B-2	U	4.05
364.97	11,966.17	2-4-3-005-034	515	1	12/12/1990	1007610	IND	B-2 Business - Community	B-2	U	3.95
0.00	0.00	2-4-4-001-000	513	1	9/4/1998	1007592	IND	B-2 Business - Community	B-2	U	3.95
279.52	9,164.45	2-4-4-001-014	513	1	7/27/1998	1007591	IND	B-2 Business - Community	B-2	U	0.88
33.62	1,102.38	2-4-3-005-034	513	1	5/30/1990	1007819	IND	B-2 Business - Community	B-2	U	0.00
560.51	18,377.46	2-0-0-000-000	515	73	12/12/1990	1007608	LO-RISE	B-2 Business - Community	B-2	U	0.65
0.00	0.00	2-4-4-001-034	513	48	6/29/1988	1017051	LO-RISE	B-2 Business - Community	B-2	U	3.95
1,043.46	34,211.80	2-4-4-001-034	513	144	6/23/1988	1017053	LO-RISE	B-2 Business - Community	B-2	U	6.75
151.81	4,977.27	2-4-4-001-034	513	96	2/3/1988	1017052	LO-RISE	B-2 Business - Community	B-2	U	6.75
242.91	7,964.18	2-4-3-006-011	513	42	11/1/1978	1017064	LO-RISE	B-2 Business - Community	B-2	U	1.16
12.36	405.38	2-4-4-001-072	513	1	11/1/1978	1007595	SFD	B-3 Business - Central District	B-3	U	0.30
21.61	708.66	2-4-4-001-029	513	1	10/12/1972	1007596	SFD	B-3 Business - Central District	B-3	U	0.51
1.87	61.42	2-0-0-000-000	515	1	7/21/1987	1012404	CGOVT	Beach Right-of-Way	BRW	U	1.01
0.00	0.00	2-0-0-000-000	515	1	11/1/1978	1012403	COM	Beach Right-of-Way	BRW	U	1.01
211.58	6,937.19	2-4-3-002-049	515	15	8/9/1991	1017144	LO-RISE	CID Napili Bay Civic Improvement Di	CID	A	0.95
303.28	9,943.47	2-4-2-002-015	515	1	1/15/2004	1036531	HOTEL	CID Napili Bay Civic Improvement Di	CID	U	1.28
1,408.45	46,178.74	2-4-3-002-029	515	1	1/15/2004	1036530	HOTEL	CID Napili Bay Civic Improvement Di	CID	U	1.37
247.92	8,128.44	2-4-3-002-061	515	1	12/20/1994	1017165	HOTEL	CID Napili Bay Civic Improvement Di	CID	U	6.33
1,103.76	36,188.96	2-4-3-002-061	515	1	12/20/1994	1017166	HOTEL	CID Napili Bay Civic Improvement Di	CID	U	6.33
225.09	7,380.11	2-4-2-002-001	515	1	11/1/1978	1007663	HOTEL	CID Napili Bay Civic Improvement Di	CID	U	1.03
1,391.07	45,608.69	2-4-3-002-061	515	1	11/1/1978	1007657	HOTEL	CID Napili Bay Civic Improvement Di	CID	U	6.33
291.10	9,544.34	2-4-3-002-029	515	1	11/15/1967	1007664	HOTEL	CID Napili Bay Civic Improvement Di	CID	U	1.37
136.57	4,477.65	2-4-3-002-052	515	34	9/14/1994	1007567	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	0.99
191.89	6,291.34	2-4-3-016-032	515	20	6/25/1979	1008423	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	1.37
256.48	8,409.23	2-0-0-000-000	515	20	11/1/1978	1004761	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	1.37
367.74	12,056.97	2-0-0-000-000	515	37	11/1/1978	1007665	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	0.78
117.96	3,867.65	2-4-3-002-054-0000	515	15	11/1/1978	1008472	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	1.98
712.25	23,352.32	2-4-3-016-006	515	132	11/1/1978	1008418	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	1.39
479.89	15,733.93	2-0-0-000-000	515	75	10/12/1977	1007566	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	3.66
195.26	6,401.83	2-0-0-000-000	515	20	6/13/1977	1007666	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	1.01
141.86	4,651.26	2-4-3-002-053-0000	515	12	1/22/1975	1008470	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	0.49
253.93	8,325.41	2-4-3-002-019	515	38	5/9/1968	1017142	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	1.46
266.30	8,731.09	2-4-3-002-040	513	35	1/31/1990	1017156	LO-RISE	CID Napili Bay Civic Improvement Di	CID	U	1.38
14.11	462.46	2-4-3-016-053	515	2	3/12/1986	1032544	SFD	CID Napili Bay Civic Improvement Di	CID	U	0.23
0.03	0.90	2-4-3-016-055	515	2	1/31/1985	1032545	SFD	CID Napili Bay Civic Improvement Di	CID	U	0.23
7.85	257.49	2-4-3-016-054	513	2	2/21/1984	1008454	SFD	CID Napili Bay Civic Improvement Di	CID	U	0.23
599.45	19,653.96	2-0-0-000-000	513	85	5/27/1993	1007578	LO-RISE	D-1 Duplex	D-1	U	8.06
506.33	16,601.09	2-0-0-000-000	513	8	2/1/1989	1007671	LO-RISE	D-1 Duplex	D-1	U	8.06
0.00	0.00	2-4-3-005-030	513	1	10/19/2006	1038471	SFD	D-1 Duplex	D-1	U	0.46
1,011.86	33,175.74	2-4-4-001-098-0000	513	1	2/2/1995	1009562	HOTEL	H Hotel	H	U	7.57
1,094.47	35,884.32	2-4-4-001-098-0000	513	1	5/19/1994	1009561	HOTEL	H Hotel	H	U	7.57
1,102.77	36,156.26	2-4-4-001-098-0000	513	1	6/17/1993	1009559	HOTEL	H Hotel	H	U	7.57
702.66	23,037.90	2-4-4-001-098-0000	513	1	12/9/1988	1009560	HOTEL	H Hotel	H	U	7.57
4,090.48	134,114.02	2-4-4-001-098-0000	513	1	12/9/1988	1009557	HOTEL	H Hotel	H	U	7.57
1,150.65	37,726.34	2-4-4-001-099	513	217	11/1/1978	1009558	LO-RISE	H Hotel	H	U	5.01
445.24	14,598.01	2-4-4-001-100	513	79	11/1/1978	1009563	LO-RISE	H Hotel	H	U	1.72
0.00	0.00	2-4-4-014-006	515	0	1/1/2022	1039315	HOTEL	H-2 Hotel	H-2	U	34.65
1,291.48	42,343.69	2-4-4-014-006	515	1	9/6/2007	1039314	HOTEL	H-2 Hotel	H-2	U	34.65
1,985.58	65,101.04	2-4-4-014-006	515	1	9/6/2007	1039315	HOTEL	H-2 Hotel	H-2	U	34.65
0.00	0.00	2-4-4-014-006	515	1	2/21/2006	1037996	HOTEL	H-2 Hotel	H-2	U	34.65
310.51	10,180.49	2-4-3-010-004	513	1	1/10/1994	1030172	HOTEL	H-2 Hotel	H-2	U	3.05
385.33	12,633.63	2-4-3-010-004	513	1	1/10/1994	1030173	HOTEL	H-2 Hotel	H-2	U	3.05
116.20	3,809.81	2-4-3-010-009	515	31	2/20/1986	1017100	LO-RISE	H-2 Hotel	H-2	U	1.43
255.61	8,380.52	2-4-3-010-009	515	32	10/15/1974	1017101	LO-RISE	H-2 Hotel	H-2	U	1.43
13.04	427.57	2-0-0-000-000	513	21	2/1/1994	1017102	LO-RISE	H-2 Hotel	H-2	U	8.06
248.12	8,135.14	2-4-3-010-001	513	42	11/1/1978	1007606	LO-RISE	H-2 Hotel	H-2	U	1.02
375.39	12,307.95	2-4-3-010-007	513	236	9/9/1975	1017098	LO-RISE	H-2 Hotel	H-2	U	0.00
887.92	29,112.13	2-4-3-010-007	513	236	9/9/1975	1017099	LO-RISE	H-2 Hotel	H-2	U	3.31
6.10	199.84	2-4-3-021-007	515	1	6/9/2000	1033386	SFD	H-2 Hotel	H-2	U	3.05
134.99	4,425.85	2-4-3-010-013	513	1	8/11/1981	1017087	HOTEL	H-M Hotel	H-M	U	5.08
197.66	6,480.71	2-4-3-010-013	513	1	8/11/1981	1017088	HOTEL	H-M Hotel	H-M	U	5.08
316.10	10,363.83	2-4-3-010-013	513	1	8/11/1981	1017086	HOTEL	H-M Hotel	H-M	U	5.08
343.97	11,277.57	2-4-3-010-032	515	36	8/22/1991	1017091	LO-RISE	H-M Hotel	H-M	U	2.63
483.75	15,860.63	2-4-3-010-032	515	36	8/22/1991	1017090	LO-RISE	H-M Hotel	H-M	U	2.63
326.65	10,709.73	2-4-3-010-011	513	85	3/17/1981	1017096	LO-RISE	H-M Hotel	H-M	U	2.30
91.55	3,001.72	2-4-3-010-013	513	8	5/11/1978	1017089	LO-RISE	H-M Hotel	H-M	U	5.08
143.06	4,690.57	2-0-0-000-000	513	1	12/13/1977	1005306	COM	M-1 Light Industrial	M-1	A	2.40
10.24	335.68	2-4-3-001-033	515	0	9/25/2013	0	LO-RISE	M-1 Light Industrial	M-1	A	9.65
0.00	0.00	2-0-0-000-000	515	1	11/1/1978	1					

26.65	873.77	2-4-4-001:004	513	1	5/22/1991	1017041	CGOVT	P-1 Public/Quasi-Public	P-1	U	6.50
14.77	484.15	2-4-4-002:029	513	1	1/29/1986	1007570	CGOVT	P-1 Public/Quasi-Public	P-1	U	7.93
13.22	433.47	2-4-4-001-104-0000	513	1	7/9/1980	1007572	CGOVT	P-1 Public/Quasi-Public	P-1	U	6.50
117.35	3,847.43	2-4-4-001:046	513	1	11/1/1978	1007744	CGOVT	PK Park	PK	U	2.73
6.77	221.83	2-4-3-022:010	513	1	4/8/1999	1016990	SFD	R-0 Residential	R-0	U	0.07
8.89	291.31	2-4-3-022:008	513	1	3/12/1999	1017007	SFD	R-0 Residential	R-0	U	0.09
8.90	291.94	2-4-3-022:009	513	1	3/12/1999	1017008	SFD	R-0 Residential	R-0	U	0.08
8.67	284.21	2-4-3-022:017	513	1	3/12/1999	1016997	SFD	R-0 Residential	R-0	U	0.08
13.36	438.03	2-4-3-022:018	513	1	3/12/1999	1016998	SFD	R-0 Residential	R-0	U	0.08
10.55	345.96	2-4-3-022:019	513	1	3/12/1999	1016999	SFD	R-0 Residential	R-0	U	0.08
16.05	526.37	2-4-3-022:001	513	1	2/17/1999	1016989	SFD	R-0 Residential	R-0	U	0.12
7.33	240.30	2-4-3-022:002	513	1	2/17/1999	1017000	SFD	R-0 Residential	R-0	U	0.12
9.76	319.92	2-4-3-022:011	513	1	2/17/1999	1016991	SFD	R-0 Residential	R-0	U	0.10
15.12	495.85	2-4-3-022:012	513	1	2/17/1999	1016992	SFD	R-0 Residential	R-0	U	0.12
6.67	218.55	2-4-3-022:013	513	1	2/17/1999	1016993	SFD	R-0 Residential	R-0	U	0.08
5.90	193.28	2-4-3-022:014	513	1	2/17/1999	1016994	SFD	R-0 Residential	R-0	U	0.59
10.05	329.45	2-4-3-006:059	513	1	12/15/1997	1005114	SFD	R-0 Residential	R-0	U	0.09
5.88	192.70	2-4-3-006:072	513	1	12/15/1997	1005096	SFD	R-0 Residential	R-0	U	0.09
7.27	238.42	2-4-3-006:073	513	1	12/15/1997	1005097	SFD	R-0 Residential	R-0	U	0.08
0.24	7.84	2-4-3-006:074	513	1	12/15/1997	1005099	SFD	R-0 Residential	R-0	U	0.09
5.15	168.85	2-4-3-006:076	513	1	12/15/1997	1005103	SFD	R-0 Residential	R-0	U	0.10
8.48	277.90	2-4-3-006:077	513	1	12/12/1997	1005105	SFD	R-0 Residential	R-0	U	0.10
5.11	167.46	2-4-3-006:080	513	1	12/12/1997	1005111	SFD	R-0 Residential	R-0	U	0.10
17.53	574.67	2-4-3-006:092	513	1	12/12/1997	1005100	SFD	R-0 Residential	R-0	U	0.09
8.48	277.95	2-4-3-006:093	513	1	12/12/1997	1005098	SFD	R-0 Residential	R-0	U	0.10
9.90	324.56	2-4-3-006:075	513	1	12/10/1997	1005101	SFD	R-0 Residential	R-0	U	0.09
5.26	172.43	2-4-3-006:078	513	1	12/10/1997	1005108	SFD	R-0 Residential	R-0	U	0.10
5.05	165.55	2-4-3-006:079	513	1	12/10/1997	1005109	SFD	R-0 Residential	R-0	U	0.10
4.61	151.07	2-4-3-006:081	513	1	12/10/1997	1005113	SFD	R-0 Residential	R-0	U	0.09
5.84	191.58	2-4-3-006:082	513	1	12/10/1997	1005115	SFD	R-0 Residential	R-0	U	0.11
0.00	0.00	2-4-3-006:083	513	1	12/10/1997	1005117	SFD	R-0 Residential	R-0	U	0.11
6.73	220.49	2-4-3-006:084	513	1	12/5/1997	1005116	SFD	R-0 Residential	R-0	U	0.12
4.35	142.76	2-4-3-006:094	513	1	12/5/1997	1005095	SFD	R-0 Residential	R-0	U	0.12
8.17	267.70	2-4-3-006:042	513	2	11/1/1978	1007597	SFD	R-0 Residential	R-0	U	0.12
10.78	353.33	2-4-3-006:055	513	1	11/1/1978	1017061	SFD	R-0 Residential	R-0	U	0.05
6.63	217.32	2-4-3-006:057	513	1	11/1/1978	1007725	SFD	R-0 Residential	R-0	U	0.11
0.07	2.43	2-4-3-021-024-0000	515	1	2/12/2018	0	SFD	R-1 Residential	R-1	A	0.16
11.40	373.61	2-4-3-021:022	515	1	10/19/2015	0	SFD	R-1 Residential	R-1	A	0.20
14.34	470.00	2-4-3-021:018	515	1	9/3/2003	1036313	SFD	R-1 Residential	R-1	A	0.19
5.50	180.16	2-4-3-021:023	515	1	2/6/2002	1034635	SFD	R-1 Residential	R-1	A	0.20
19.28	632.27	2-4-3-005:070	515	1	10/17/2001	1034410	SFD	R-1 Residential	R-1	A	0.14
19.39	635.74	2-4-3-005:093	515	1	10/16/2001	1034398	SFD	R-1 Residential	R-1	A	0.14
17.51	574.02	2-4-3-021:020	515	1	9/18/2001	1034344	SFD	R-1 Residential	R-1	A	0.18
12.42	407.05	2-4-3-005:092	515	1	9/5/2001	1034306	SFD	R-1 Residential	R-1	A	0.14
6.76	221.50	2-4-3-021:019	515	1	8/28/2001	1034277	SFD	R-1 Residential	R-1	A	0.18
21.96	720.03	2-4-3-021:021	515	1	4/25/2001	1034047	SFD	R-1 Residential	R-1	A	0.18
9.72	318.83	2-4-3-021:015	515	1	12/13/2000	1033754	SFD	R-1 Residential	R-1	A	0.16
14.50	475.33	2-4-3-021:016	515	1	2/18/2000	1033200	SFD	R-1 Residential	R-1	A	0.16
8.54	280.08	2-4-3-021:017	515	1	11/9/1999	1033009	SFD	R-1 Residential	R-1	A	0.15
0.34	11.26	2-0-0-000:000	513	1	3/10/1986	1017033	CGOVT	R-1 Residential	R-1	U	0.37
31.84	1,043.93	2-4-3-020:096	515	1	7/18/2001	1034237	COM	R-1 Residential	R-1	U	0.17
18.45	604.95	2-4-3-020-093-0000	515	1	10/1/2018	0	SFD	R-1 Residential	R-1	U	0.14
12.91	423.33	2-4-3-021:056	515	1	9/18/2014	0	SFD	R-1 Residential	R-1	U	0.19
18.65	611.61	2-4-3-020:119	515	1	1/22/2014	0	SFD	R-1 Residential	R-1	U	0.20
19.21	629.86	2-4-3-020:064	515	1	9/27/2012	1040601	SFD	R-1 Residential	R-1	U	0.17
20.44	670.27	2-4-3-020:101	515	1	2/27/2012	1040466	SFD	R-1 Residential	R-1	U	0.17
8.46	277.51	2-4-3-020:111	515	1	10/9/2009	1040155	SFD	R-1 Residential	R-1	U	13.04
13.85	454.23	2-4-3-021:047	515	1	8/25/2009	1040130	SFD	R-1 Residential	R-1	U	0.19
12.13	397.70	2-4-3-020:039	515	1	11/8/2006	1038500	SFD	R-1 Residential	R-1	U	0.16
14.04	460.46	2-4-3-020:094	515	1	3/14/2006	1038114	SFD	R-1 Residential	R-1	U	0.15
15.97	523.55	2-4-3-021:026	515	1	10/26/2005	1037754	SFD	R-1 Residential	R-1	U	0.15
19.29	632.54	2-4-3-020:019	515	1	6/7/2005	1037515	SFD	R-1 Residential	R-1	U	0.15
1.69	55.38	2-4-3-020:086	515	1	12/8/2004	1037089	SFD	R-1 Residential	R-1	U	0.15
9.47	310.63	2-4-3-020:043	515	1	11/18/2004	1037064	SFD	R-1 Residential	R-1	U	0.15
5.89	193.14	2-4-3-021:055	515	1	11/18/2004	1037066	SFD	R-1 Residential	R-1	U	0.25
11.38	372.98	2-4-3-020:030	515	1	9/16/2004	1037015	SFD	R-1 Residential	R-1	U	0.16
22.03	722.32	2-4-3-020:107	515	1	6/7/2004	1036699	SFD	R-1 Residential	R-1	U	0.17
8.92	292.51	2-4-3-020:040	515	1	4/21/2004	1036642	SFD	R-1 Residential	R-1	U	0.16
12.46	408.42	2-4-3-021:045	515	1	12/5/2003	1036476	SFD	R-1 Residential	R-1	U	0.19
10.55	345.87	2-4-3-020:033	515	1	9/19/2003	1036323	SFD	R-1 Residential	R-1	U	0.15
5.92	194.04	2-4-3-021:087	515	1	9/9/2003	1036317	SFD	R-1 Residential	R-1	U	0.18
19.41	636.48	2-4-3-021:097	515	1	8/5/2003	1036237	SFD	R-1 Residential	R-1	U	0.16
11.56	379.07	2-4-3-020:062	515	1	8/4/2003	1036230	SFD	R-1 Residential	R-1	U	0.17
15.94	522.62	2-4-3-020:092	515	1	7/10/2003	1036074	SFD	R-1 Residential	R-1	U	0.18
7.85	257.46	2-4-3-021:041	515	1	5/21/2003	1035830	SFD	R-1 Residential	R-1	U	0.15
6.47	212.10	2-4-3-020:120	515	1	4/7/2003	1035775	SFD	R-1 Residential	R-1	U	0.17
20.26	664.29	2-4-3-021:053	515	1	3/10/2003	1035601	SFD	R-1 Residential	R-1	U	0.18
7.84	257.16	2-4-3-020:117	515	1	2/11/2003	1035565	SFD	R-1 Residential	R-1	U	0.14
5.68	186.34	2-4-3-020:114	515	1	10/1/2002	1035244	SFD	R-1 Residential	R-1	U	0.14
6.58	215.77	2-4-3-021:109	515	1	8/20/2002	1035191	SFD	R-1 Residential	R-1	U	0.17
16.09	527.54	2-4-3-020:059	515	1	8/2/2002	1035166	SFD	R-1 Residential	R-1	U	0.17
19.25	631.04	2-4-3-021:013	515	1	8/1/2002	1035157	SFD	R-1 Residential	R-1	U	0.15
11.15	365.46	2-4-3-021:030	515	1	8/1/2002	1035158	SFD	R-1 Residential	R-1	U	0.14
12.68	415.74	2-4-3-021:052	515	1	7/29/2002	1035038	SFD	R-1 Residential	R-1	U	0.14
23.89	783.36	2-4-3-020:115	515	1	7/26/2002	1035013	SFD	R-1 Residential	R-1	U	0.19
16.63	545.14	2-4-3-021:025	515	1	7/25/2002	1035007	SFD	R-1 Residential	R-1	U	0.15
7.04	230.77	2-4-3-021:054	515	1	7/2/2002	1034952	SFD	R-1 Residential	R-1	U	0.18
22.25	729.56	2-4-3-020:035	515	1	6/27/2002	1034944	SFD	R-1 Residential	R-1	U	0.18
10.23	335.38	2-4-3-021:084	515	1	6/26/2002	1034943	SFD	R-1 Residential	R-1	U	0.19
78.74	2,581.53	2-4-3-020:045	515	1	6/25/2002	1034935	SFD	R-1 Residential	R-1	U	0.14
4.90	160.55	2-4-3-020:113	515	1	6/14/2002	1034915	SFD	R-1 Residential	R-1	U	0.17
13.04	427.62	2-4-3-021:107	515	1	5/8/2002	1034789	SFD	R-1 Residential	R-1	U	0.17
6.20	203.42	2-4-3-021:051	515	1	5/3/2002	1034774	SFD	R-1 Residential	R-1	U	0.15
6.23	204.15	2-4-3-021:050	515	1	2/25/2002	1034659	SFD	R-1 Residential	R-1	U	0.19
17.14	562.08	2-4-3-021:043	515	1	2/21/2002	1034657	SFD	R-1 Residential	R-1	U	0.19
28.91	947.92	2-4-3-020:015	515	1	2/20/2002	1034649	SFD	R-1 Residential	R-1	U	0.15
12.11	397.13	2-4-3-020:076	515	1	2/12/2002	1034643	SFD	R-1 Residential	R-1	U	0.15
16.64	545.68	2-4-3-020:087	515	1	1/8/2002	1034576	SFD	R-1 Residential	R-1	U	0.15
0.00	0.00	2-4-3-020:055	515	1	12/27/2001	1034570	SFD	R-1 Residential	R-1	U	0.17
11.13	364.92	2-4-3-005:070	515	1	12/3/2001	1034519	SFD	R-1 Residential	R-1	U	0.14
9.44	309.48	2-4-3-020:061	515	1	11/8/2001	1034500	SFD	R-1 Residential	R-1	U	0.17
15.90	521.28	2-4-3-021:046	515	1	11/8/2001	1034501	SFD	R-1 Residential	R-1	U	0.15
9.41	308.63	2-4-3-021:038	515	1	11/2/2001	1034493	SFD	R-1 Residential	R-1	U	0.19
6.37	208.69	2-4-3-021:048	515								

16.95	555.68	2-4-3-020:121	515	1	10/22/2001	1034416	SFD	R-1 Residential	R-1	U	0.17
24.13	791.17	2-4-3-020:060	515	1	10/19/2001	1034415	SFD	R-1 Residential	R-1	U	0.17
15.16	497.16	2-4-3-005:094	515	1	10/17/2001	1034412	SFD	R-1 Residential	R-1	U	0.17
19.90	652.38	2-4-3-005:095	515	1	10/11/2001	1034389	SFD	R-1 Residential	R-1	U	0.17
14.34	470.25	2-4-3-020:029	515	1	10/8/2001	1034383	SFD	R-1 Residential	R-1	U	0.14
4.68	153.50	2-4-3-021:012	515	1	10/2/2001	1034371	SFD	R-1 Residential	R-1	U	0.19
13.35	437.76	2-4-3-005:096	515	1	9/11/2001	1034322	SFD	R-1 Residential	R-1	U	0.15
1.91	62.51	2-4-3-020:028	515	1	8/30/2001	1034281	SFD	R-1 Residential	R-1	U	0.16
18.25	598.39	2-4-3-020:056	515	1	7/30/2001	1034247	SFD	R-1 Residential	R-1	U	0.16
12.33	404.40	2-4-3-021:114	515	1	7/18/2001	1034234	SFD	R-1 Residential	R-1	U	0.17
7.93	259.89	2-4-3-020:077	515	1	7/11/2001	1034171	SFD	R-1 Residential	R-1	U	0.16
23.50	770.38	2-4-3-021:081	515	1	6/21/2001	1034110	SFD	R-1 Residential	R-1	U	0.15
10.82	354.86	2-4-3-021:086	515	1	6/14/2001	1034105	SFD	R-1 Residential	R-1	U	0.18
5.69	186.45	2-4-3-020:027	515	1	6/1/2001	1034097	SFD	R-1 Residential	R-1	U	0.18
32.22	1,056.45	2-4-3-020:063	515	1	5/11/2001	1034076	SFD	R-1 Residential	R-1	U	0.16
7.08	232.13	2-4-3-021:049	515	1	4/6/2001	1033956	SFD	R-1 Residential	R-1	U	0.17
12.85	421.20	2-4-3-020:057	515	1	4/4/2001	1033954	SFD	R-1 Residential	R-1	U	0.15
5.16	169.30	2-4-3-020:095	515	1	3/9/2001	1033890	SFD	R-1 Residential	R-1	U	0.17
5.59	183.39	2-4-3-020:085	515	1	1/26/2001	1033812	SFD	R-1 Residential	R-1	U	0.15
12.40	406.61	2-4-3-020:042	515	1	1/8/2001	1033776	SFD	R-1 Residential	R-1	U	0.15
8.97	293.93	2-4-3-021:008	515	1	12/29/2000	1033767	SFD	R-1 Residential	R-1	U	0.15
12.18	399.40	2-4-3-021:008	515	1	12/13/2000	1033753	SFD	R-1 Residential	R-1	U	0.15
6.85	224.51	2-4-3-021:040	515	1	12/13/2000	1033755	SFD	R-1 Residential	R-1	U	13.04
5.69	186.39	2-4-3-020:081	515	1	11/28/2000	1033732	SFD	R-1 Residential	R-1	U	0.15
11.93	391.01	2-4-3-020:103	515	1	11/3/2000	1033707	SFD	R-1 Residential	R-1	U	0.21
8.39	274.92	2-4-3-021:093	515	1	10/2/2000	1033587	SFD	R-1 Residential	R-1	U	0.16
14.06	460.82	2-4-3-021:104	515	1	9/22/2000	1033576	SFD	R-1 Residential	R-1	U	0.18
25.40	832.76	2-4-3-020:082	515	1	9/20/2000	1033574	SFD	R-1 Residential	R-1	U	0.14
33.66	1,103.58	2-4-3-021:004	515	1	9/20/2000	1033572	SFD	R-1 Residential	R-1	U	0.21
16.80	550.71	2-4-3-021:071	515	1	9/20/2000	1033573	SFD	R-1 Residential	R-1	U	0.15
16.42	538.22	2-4-3-021:035	515	1	9/18/2000	1033567	SFD	R-1 Residential	R-1	U	0.18
12.90	422.95	2-4-3-021:037	515	1	9/18/2000	1033569	SFD	R-1 Residential	R-1	U	0.19
3.77	123.74	2-4-3-021:115	515	1	9/18/2000	1033568	SFD	R-1 Residential	R-1	U	0.14
0.00	0.00	2-4-3-020:088	515	1	8/24/2000	1033541	SFD	R-1 Residential	R-1	U	0.16
24.69	809.64	2-4-3-020:091	515	1	8/16/2000	1033529	SFD	R-1 Residential	R-1	U	0.16
10.20	334.45	2-4-3-021:042	515	1	8/2/2000	1033501	SFD	R-1 Residential	R-1	U	0.18
2.29	75.22	2-4-3-020:116	515	1	7/19/2000	1033471	SFD	R-1 Residential	R-1	U	0.15
19.64	644.04	2-4-3-021:034	515	1	6/27/2000	1033417	SFD	R-1 Residential	R-1	U	0.14
20.51	672.35	2-4-3-021:103	515	1	6/27/2000	1033427	SFD	R-1 Residential	R-1	U	0.19
9.09	298.03	2-4-3-021:102	515	1	6/9/2000	1033385	SFD	R-1 Residential	R-1	U	0.14
21.24	696.31	2-4-3-020:012	515	1	5/17/2000	1033356	SFD	R-1 Residential	R-1	U	0.15
13.05	427.76	2-4-3-020:089	515	1	4/28/2000	1033326	SFD	R-1 Residential	R-1	U	0.18
2.76	90.63	2-4-3-021:110	515	1	4/26/2000	1033313	SFD	R-1 Residential	R-1	U	0.15
4.75	155.87	2-4-3-020:006	515	1	3/14/2000	1033225	SFD	R-1 Residential	R-1	U	0.19
1.94	63.72	2-4-3-021:073	515	1	12/27/1999	1033071	SFD	R-1 Residential	R-1	U	0.17
7.22	236.64	2-4-3-021:075	515	1	12/27/1999	1033070	SFD	R-1 Residential	R-1	U	0.15
19.95	653.96	2-4-3-021:076	515	1	12/27/1999	1033072	SFD	R-1 Residential	R-1	U	0.17
9.57	313.85	2-4-3-020:021	515	1	12/21/1999	1033053	SFD	R-1 Residential	R-1	U	0.15
17.70	580.27	2-4-3-021:014	515	1	12/21/1999	1033054	SFD	R-1 Residential	R-1	U	0.15
7.63	250.19	2-4-3-021:105	515	1	10/7/1999	1032957	SFD	R-1 Residential	R-1	U	0.15
6.24	204.67	2-4-3-020:010	515	1	9/9/1999	1032919	SFD	R-1 Residential	R-1	U	0.17
11.97	392.32	2-4-3-021:072	515	1	9/3/1999	1032914	SFD	R-1 Residential	R-1	U	0.15
14.72	482.51	2-4-3-021:074	515	1	9/3/1999	1032915	SFD	R-1 Residential	R-1	U	0.18
4.00	131.15	2-4-3-021:078	515	1	9/3/1999	1032916	SFD	R-1 Residential	R-1	U	0.15
11.90	390.03	2-4-3-020:011	515	1	8/30/1999	1032909	SFD	R-1 Residential	R-1	U	0.17
14.51	475.82	2-4-3-021:036	515	1	8/3/1999	1032885	SFD	R-1 Residential	R-1	U	0.15
12.58	412.57	2-4-3-021:100	515	1	6/16/1999	1032818	SFD	R-1 Residential	R-1	U	0.26
28.54	935.63	2-4-3-020:017	515	1	4/30/1999	1009701	SFD	R-1 Residential	R-1	U	0.14
8.24	270.16	2-4-3-021:044	515	1	4/7/1999	1026896	SFD	R-1 Residential	R-1	U	0.15
7.88	258.44	2-4-3-021:005	515	1	4/5/1999	1011050	SFD	R-1 Residential	R-1	U	0.15
11.74	384.84	2-4-3-021:098	515	1	4/5/1999	1026897	SFD	R-1 Residential	R-1	U	0.14
11.68	383.09	2-4-3-020:016	515	1	2/17/1999	1009711	SFD	R-1 Residential	R-1	U	0.15
20.39	668.52	2-4-3-020:067	515	1	2/3/1999	1009689	SFD	R-1 Residential	R-1	U	0.17
8.36	274.23	2-4-3-020:083	515	1	1/29/1999	1024445	SFD	R-1 Residential	R-1	U	0.17
13.43	440.27	2-4-3-020:018	515	1	1/21/1999	1009712	SFD	R-1 Residential	R-1	U	0.15
11.37	372.87	2-4-3-020:020	515	1	1/15/1999	1009713	SFD	R-1 Residential	R-1	U	0.15
14.23	466.56	2-4-3-021:039	515	1	1/15/1999	1029462	SFD	R-1 Residential	R-1	U	0.15
9.01	295.36	2-4-3-020:009	515	1	1/14/1999	1009708	SFD	R-1 Residential	R-1	U	0.16
20.66	677.24	2-4-3-020:014	515	1	11/27/1998	1009702	SFD	R-1 Residential	R-1	U	0.15
8.34	273.50	2-4-3-021:001	515	1	11/27/1998	1009706	SFD	R-1 Residential	R-1	U	0.15
14.68	481.17	2-4-3-021:006	515	1	11/27/1998	1009705	SFD	R-1 Residential	R-1	U	0.15
12.43	407.68	2-4-3-020:080	515	1	11/9/1998	1024446	SFD	R-1 Residential	R-1	U	0.16
12.65	414.67	2-4-3-020:013	515	1	10/30/1998	1009703	SFD	R-1 Residential	R-1	U	0.15
16.52	541.69	2-4-3-021:009	515	1	4/16/1998	1009715	SFD	R-1 Residential	R-1	U	0.15
11.22	367.90	2-4-3-020:072	515	1	4/2/1998	1009271	SFD	R-1 Residential	R-1	U	0.20
3.80	124.70	2-4-3-019:009	515	1	8/8/1996	1024781	SFD	R-1 Residential	R-1	U	0.15
5.53	181.17	2-4-3-019:015	515	1	8/8/1996	1024770	SFD	R-1 Residential	R-1	U	0.07
5.09	166.97	2-4-3-019:016	515	1	8/8/1996	1024767	SFD	R-1 Residential	R-1	U	0.09
9.85	322.90	2-4-3-019:019	515	1	8/8/1996	1024765	SFD	R-1 Residential	R-1	U	0.13
2.68	87.73	2-4-3-019:021	515	1	8/8/1996	1024771	SFD	R-1 Residential	R-1	U	0.09
12.75	418.17	2-4-3-019:017	515	1	7/29/1996	1024787	SFD	R-1 Residential	R-1	U	0.13
8.82	289.10	2-4-3-019:014	515	1	7/25/1996	1024773	SFD	R-1 Residential	R-1	U	0.09
8.53	279.56	2-4-3-019:022	515	1	7/11/1996	1024772	SFD	R-1 Residential	R-1	U	0.09
3.17	103.85	2-4-3-019:023	515	1	7/11/1996	1024777	SFD	R-1 Residential	R-1	U	0.09
2.43	79.56	2-4-3-019:011	515	1	7/3/1996	1024782	SFD	R-1 Residential	R-1	U	0.10
6.00	196.64	2-4-3-019:024	515	1	7/3/1996	1024778	SFD	R-1 Residential	R-1	U	0.09
6.79	222.76	2-4-3-019:026	515	1	7/3/1996	1024784	SFD	R-1 Residential	R-1	U	0.10
3.60	118.01	2-4-3-019:012	515	1	6/27/1996	1024779	SFD	R-1 Residential	R-1	U	0.09
7.45	244.29	2-4-3-019:013	515	1	6/27/1996	1024776	SFD	R-1 Residential	R-1	U	0.09
4.97	162.79	2-4-3-019:025	515	1	6/27/1996	1024783	SFD	R-1 Residential	R-1	U	0.10
6.18	202.57	2-4-3-019:007	515	1	6/5/1996	1024775	SFD	R-1 Residential	R-1	U	0.07
4.84	158.66	2-4-3-019:008	515	1	6/5/1996	1024780	SFD	R-1 Residential	R-1	U	0.07
7.14	234.07	2-4-3-019:003	515	1	5/24/1996	1024764	SFD	R-1 Residential	R-1	U	0.07
2.86	93.69	2-4-3-019:004	515	1	5/24/1996	1024768	SFD	R-1 Residential	R-1	U	0.07
28.92	948.20	2-4-3-019:005	515	1	5/24/1996	1024769	SFD	R-1 Residential	R-1	U	0.07
123.27	4,041.48	2-0-0-000:000	515	18	7/9/1974	1036194	SFD	R-1 Residential	R-1	U	3.62
14.93	489.59	2-4-3-009:074	513	1	2/15/2006	1037993	SFD	R-1 Residential	R-1	U	0.17
4.68	153.52	2-4-3-009:073	513	1	10/1/2004	1037026	SFD	R-1 Residential	R-1	U	0.16
9.13	299.40	2-4-3-009:097	513	1	5/7/2004	1036660	SFD	R-1 Residential	R-1	U	0.17
15.54	509.51	2-4-3-009:070	513	1	5/5/2004	1036654	SFD	R-1 Residential	R-1	U	0.14
4.88	160.11	2-4-3-009:065	513	1	11/17/2003	1036424	SFD	R-1 Residential	R-1	U	0.15
5.45	178.52	2-4-3-009:063	513	1	10/24/2003	1036379	SFD	R-1 Residential	R-1	U	0.15
11.87	389.26	2-4-3-009:072	513	1	10/24/2003	1036374	SFD	R-1 Residential	R-1	U	0.16
15.31	501.86	2-4-3-009:082	513	1							

10.25	335.98	2-4-3-009-095	513	1	10/24/2003	1036377	SFD	R-1 Residential	R-1	U	0.16
8.70	285.25	2-4-3-009-057	513	1	8/25/2003	1036281	SFD	R-1 Residential	R-1	U	0.15
4.64	152.19	2-4-3-009-075	513	1	8/13/2003	1036268	SFD	R-1 Residential	R-1	U	0.17
6.18	202.68	2-4-3-009-064	513	1	7/23/2003	1036179	SFD	R-1 Residential	R-1	U	0.15
4.81	157.84	2-4-3-009-062	513	1	6/17/2003	1035858	SFD	R-1 Residential	R-1	U	0.15
0.00	0.00	2-4-3-009-053	513	1	6/4/2003	1035844	SFD	R-1 Residential	R-1	U	0.15
10.13	332.24	2-4-3-009-091	513	1	5/23/2003	1035832	SFD	R-1 Residential	R-1	U	0.14
11.99	393.11	2-4-3-009-080	513	1	5/22/2003	1035831	SFD	R-1 Residential	R-1	U	0.15
10.72	351.53	2-4-3-009-088	513	1	5/14/2003	1035823	SFD	R-1 Residential	R-1	U	0.17
8.84	289.70	2-4-3-009-089	513	1	5/7/2003	1035809	SFD	R-1 Residential	R-1	U	0.17
24.34	798.06	2-4-3-009-085	513	1	4/30/2003	1035803	SFD	R-1 Residential	R-1	U	0.15
13.08	428.91	2-4-3-009-096	513	1	4/28/2003	1035799	SFD	R-1 Residential	R-1	U	0.18
10.05	329.54	2-4-3-009-056	513	1	4/15/2003	1035784	SFD	R-1 Residential	R-1	U	0.15
21.81	714.92	2-4-3-009-083	513	1	3/24/2003	1035755	SFD	R-1 Residential	R-1	U	0.15
14.75	483.63	2-4-3-009-060	513	1	3/20/2003	1035726	SFD	R-1 Residential	R-1	U	0.16
13.40	439.18	2-4-3-009-052	513	1	2/20/2003	1035573	SFD	R-1 Residential	R-1	U	0.15
12.11	397.05	2-4-3-009-087	513	1	2/19/2003	1035571	SFD	R-1 Residential	R-1	U	0.15
7.06	231.56	2-4-3-009-092	513	1	2/3/2003	1035560	SFD	R-1 Residential	R-1	U	0.16
13.47	441.64	2-4-3-009-093	513	1	1/31/2003	1035557	SFD	R-1 Residential	R-1	U	0.18
8.88	291.20	2-4-3-009-090	513	1	1/30/2003	1035556	SFD	R-1 Residential	R-1	U	0.14
19.79	648.69	2-4-3-020-112	511	1	7/26/2002	1035019	SFD	R-1 Residential	R-1	U	0.15
6.63	217.24	2-4-3-021-010	511	1	6/17/1999	1032823	SFD	R-1 Residential	R-1	U	0.20
49.31	1,616.83	2-0-0-000-000	515	1	11/1/1985	1017027	CGOVT	R-2 Residential	R-2	U	0.40
1.04	34.13	2-4-3-003-043	515	1	10/15/2007	1039537	SFD	R-2 Residential	R-2	U	0.27
0.00	0.00	2-4-3-003-043	515	1	10/12/2007	1039536	SFD	R-2 Residential	R-2	U	0.61
27.45	900.14	2-4-3-019-039	515	1	8/15/2006	1038247	SFD	R-2 Residential	R-2	U	0.18
0.00	0.00	2-4-3-003-025	515	1	5/6/2004	1037986	SFD	R-2 Residential	R-2	U	0.65
20.18	661.72	2-4-3-003-025	515	1	5/6/2004	1037985	SFD	R-2 Residential	R-2	U	0.65
24.36	798.72	2-4-3-003-025	515	1	5/6/2004	1037981	SFD	R-2 Residential	R-2	U	0.65
35.40	1,160.55	2-4-3-003-025	515	1	5/6/2004	1037984	SFD	R-2 Residential	R-2	U	0.65
37.74	1,237.51	2-4-3-003-025	515	1	5/6/2004	1037979	SFD	R-2 Residential	R-2	U	0.18
74.65	2,447.49	2-4-3-003-025	515	1	5/6/2004	1037987	SFD	R-2 Residential	R-2	U	0.13
13.60	445.74	2-4-3-003-126	515	1	5/6/2004	1036657	SFD	R-2 Residential	R-2	U	0.21
7.41	243.01	2-4-3-003-128	515	1	5/6/2004	1037980	SFD	R-2 Residential	R-2	U	0.18
29.46	965.96	2-4-3-003-130	515	1	5/6/2004	1037982	SFD	R-2 Residential	R-2	U	0.65
20.18	661.61	2-4-3-003-131	515	1	5/6/2004	1037983	SFD	R-2 Residential	R-2	U	0.65
12.77	418.74	2-4-3-005-056	515	1	1/5/2001	1033770	SFD	R-2 Residential	R-2	U	0.18
5.97	195.85	2-4-3-016-026	515	1	12/22/1998	1017009	SFD	R-2 Residential	R-2	U	0.45
11.68	382.92	2-4-3-016-089	515	1	12/22/1998	1017010	SFD	R-2 Residential	R-2	U	0.45
9.22	302.16	2-4-3-016-002	515	2	6/8/1998	1008442	SFD	R-2 Residential	R-2	U	0.21
17.40	570.55	2-4-3-019-042	515	1	1/15/1998	1005401	SFD	R-2 Residential	R-2	U	0.18
9.70	318.09	2-4-3-005-064	515	2	6/20/1997	1017108	SFD	R-2 Residential	R-2	U	0.17
5.44	178.36	2-4-3-016-081	515	2	11/25/1996	1008436	SFD	R-2 Residential	R-2	U	0.05
7.77	254.75	2-4-3-016-004	515	2	11/20/1996	1008433	SFD	R-2 Residential	R-2	U	0.27
13.79	452.16	2-4-3-016-082	515	2	3/6/1996	1008439	SFD	R-2 Residential	R-2	U	0.05
10.01	328.09	2-4-3-016-066	515	1	1/23/1996	1008451	SFD	R-2 Residential	R-2	U	0.23
4.17	136.80	2-4-3-005-059	515	1	1/11/1996	1014458	SFD	R-2 Residential	R-2	U	0.20
11.62	381.01	2-4-3-016-083	515	2	1/9/1996	1008441	SFD	R-2 Residential	R-2	U	0.25
12.25	401.69	2-4-3-002-083	515	1	9/19/1995	1007568	SFD	R-2 Residential	R-2	U	0.57
16.02	525.38	2-4-3-016-028	515	1	4/27/1995	1008446	SFD	R-2 Residential	R-2	U	0.23
6.55	214.67	2-4-3-016-078	515	2	3/2/1995	1008431	SFD	R-2 Residential	R-2	U	0.27
17.11	560.98	2-4-3-003-045	515	2	12/20/1994	1007651	SFD	R-2 Residential	R-2	U	0.08
18.21	596.91	2-4-3-005-053	515	2	9/29/1994	1014450	SFD	R-2 Residential	R-2	U	0.18
5.19	170.19	2-4-3-016-080	515	1	8/9/1994	1008417	SFD	R-2 Residential	R-2	U	0.24
14.62	479.21	2-4-3-016-008	515	1	8/2/1994	1008453	SFD	R-2 Residential	R-2	U	0.22
7.35	240.98	2-4-3-016-079-0000	515	1	7/6/1994	1020878	SFD	R-2 Residential	R-2	U	0.18
10.17	333.55	2-4-3-005-057	515	1	4/28/1994	1014455	SFD	R-2 Residential	R-2	U	0.22
11.62	380.93	2-4-3-002-037	515	1	1/13/1994	1017155	SFD	R-2 Residential	R-2	U	0.54
20.50	672.16	2-4-3-008-078	515	2	8/27/1993	1019708	SFD	R-2 Residential	R-2	U	0.20
13.56	444.45	2-4-3-005-066	515	1	8/3/1993	1017106	SFD	R-2 Residential	R-2	U	0.17
20.05	657.21	2-4-3-005-058	515	1	5/13/1993	1014456	SFD	R-2 Residential	R-2	U	0.00
18.18	595.98	2-4-3-003-118	515	2	4/6/1993	1017139	SFD	R-2 Residential	R-2	U	0.08
23.52	771.26	2-4-3-003-119	515	2	4/6/1993	1017138	SFD	R-2 Residential	R-2	U	0.08
28.29	927.51	2-4-3-003-045	515	2	12/4/1992	1017137	SFD	R-2 Residential	R-2	U	0.08
2.93	96.07	2-4-3-007-017	515	1	11/10/1992	1026034	SFD	R-2 Residential	R-2	U	0.15
22.01	721.67	2-4-3-016-074	515	1	8/18/1992	1008440	SFD	R-2 Residential	R-2	U	0.16
9.83	322.13	2-4-3-016-075	515	2	8/11/1992	1008437	SFD	R-2 Residential	R-2	U	0.18
16.19	530.96	2-4-3-016-077	515	2	5/2/1992	1008434	SFD	R-2 Residential	R-2	U	0.17
31.51	1,033.03	2-4-3-007-013	515	1	3/19/1992	1026027	SFD	R-2 Residential	R-2	U	0.18
9.19	301.26	2-4-3-005-013	515	1	9/11/1991	1017109	SFD	R-2 Residential	R-2	U	0.18
22.58	740.27	2-4-3-005-060	515	1	4/22/1991	1014453	SFD	R-2 Residential	R-2	U	0.19
13.38	438.61	2-4-3-019-038	515	1	1/31/1991	1005406	SFD	R-2 Residential	R-2	U	0.19
8.85	290.19	2-4-3-005-065	515	2	11/1/1990	1017107	SFD	R-2 Residential	R-2	U	0.17
10.37	340.08	2-4-3-016-003	515	2	7/19/1990	1008435	SFD	R-2 Residential	R-2	U	0.05
9.21	302.08	2-4-3-016-005	515	2	7/18/1990	1008430	SFD	R-2 Residential	R-2	U	0.27
13.63	446.94	2-4-3-016-067	515	1	5/17/1990	1008415	SFD	R-2 Residential	R-2	U	0.24
27.57	903.77	2-4-3-005-012	515	1	3/22/1990	1017114	SFD	R-2 Residential	R-2	U	0.18
3.89	127.65	2-4-3-002-037	515	1	11/1/1989	1017154	SFD	R-2 Residential	R-2	U	0.54
5.45	178.52	2-4-3-007-004	515	1	1/26/1989	1007643	SFD	R-2 Residential	R-2	U	0.17
14.15	463.96	2-4-3-003-039	515	1	12/5/1988	1007638	SFD	R-2 Residential	R-2	U	0.29
6.05	198.28	2-4-3-003-026	515	2	8/24/1987	1017127	SFD	R-2 Residential	R-2	U	0.19
24.07	789.23	2-4-3-016-019	515	1	10/6/1986	1020872	SFD	R-2 Residential	R-2	U	0.17
12.29	402.95	2-4-3-003-082	515	1	8/5/1986	1001682	SFD	R-2 Residential	R-2	U	0.00
4.69	153.83	2-4-3-003-098	515	1	6/7/1986	1007654	SFD	R-2 Residential	R-2	U	0.14
6.46	211.89	2-4-3-003-113	515	1	1/29/1986	1017126	SFD	R-2 Residential	R-2	U	0.14
9.26	303.74	2-4-3-003-112	515	1	12/19/1985	1007629	SFD	R-2 Residential	R-2	U	0.17
5.17	169.43	2-4-3-003-088	515	1	11/26/1985	1017132	SFD	R-2 Residential	R-2	U	0.29
38.87	1,274.29	2-4-3-007-011	515	1	8/13/1985	1007650	SFD	R-2 Residential	R-2	U	0.49
5.19	170.03	2-4-3-003-047	515	1	12/18/1984	1007653	SFD	R-2 Residential	R-2	U	0.00
6.62	217.13	2-4-3-003-081	515	1	7/30/1984	1001683	SFD	R-2 Residential	R-2	U	0.23
5.11	167.60	2-4-3-016-046	515	1	12/27/1983	1008462	SFD	R-2 Residential	R-2	U	0.17
12.62	413.91	2-0-0-000-000	515	2	5/9/1983	1017125	SFD	R-2 Residential	R-2	U	0.08
1.65	54.18	2-4-3-003-099	515	1	12/15/1978	1017140	SFD	R-2 Residential	R-2	U	0.32
77.83	2,551.67	2-4-3-002-081	515	1	11/1/1978	1017151	SFD	R-2 Residential	R-2	U	0.57
12.40	406.50	2-4-3-003-028	515	1	11/1/1978	1007627	SFD	R-2 Residential	R-2	U	0.23
22.70	744.15	2-4-3-003-035	515	1	11/1/1978	1017130	SFD	R-2 Residential	R-2	U	0.20
0.00	0.00	2-4-3-003-043	515	1	11/1/1978	1007648	SFD	R-2 Residential	R-2	U	0.02
2.18	71.45	2-4-3-003-086	515	1	11/1/1978	1007652	SFD	R-2 Residential	R-2	U	0.32
38.72	1,269.34	2-4-3-007-002	515	1	11/1/1978	1007639	SFD	R-2 Residential	R-2	U	0.38
18.63	610.96	2-4-3-007-025	515	1	11/1/1978	1007641	SFD	R-2 Residential	R-2	U	0.38
15.26	500.46	2-4-3-016-014	515	1	11/1/1978	1020873	SFD	R-2 Residential	R-2	U	0.19
8.53	279.51	2-4-3-016-015	515	1	11/1/1978	1020874	SFD	R-2 Residential	R-2	U	0.17
6.23	204.21	2-4-3-002-066	515	1	5/11/1978	1007661	SFD	R-2 Residential	R-2	U	0.34
12.82	420.16	2-4-3-016-010									

2.66	87.05	2-4-3-016-011	515	2	5/3/1977	1008416	SFD	R-2 Residential	R-2	U	0.05
11.65	381.89	2-4-3-016-012	515	2	5/3/1977	1008452	SFD	R-2 Residential	R-2	U	0.05
3.80	124.43	2-4-3-016-018	515	1	12/16/1975	1020877	SFD	R-2 Residential	R-2	U	0.17
12.76	418.33	2-4-3-003-084	515	1	5/31/1974	1017129	SFD	R-2 Residential	R-2	U	0.20
8.88	291.15	2-4-3-016-026	515	1	9/28/1971	1017143	SFD	R-2 Residential	R-2	U	0.45
29.22	957.90	2-4-3-007-016	515	1	9/9/1971	1026033	SFD	R-2 Residential	R-2	U	0.21
18.09	592.98	2-4-3-016-020	515	1	6/28/1971	1020871	SFD	R-2 Residential	R-2	U	0.20
24.94	817.81	2-4-3-007-015	515	1	3/3/1971	1026026	SFD	R-2 Residential	R-2	U	0.21
11.18	366.39	2-4-3-003-036	515	1	10/24/1961	1007634	SFD	R-2 Residential	R-2	U	0.00
18.39	602.84	2-4-3-007-014	515	1	7/26/1960	1026030	SFD	R-2 Residential	R-2	U	0.18
33.60	1,101.78	2-4-3-003-087	515	1	12/4/1959	1017141	SFD	R-2 Residential	R-2	U	0.32
8.59	281.64	2-4-3-008-056	513	1	2/24/2005	1037345	SFD	R-2 Residential	R-2	U	0.19
15.98	524.02	2-4-3-008-038	513	1	4/26/2000	1033315	SFD	R-2 Residential	R-2	U	0.19
15.86	519.84	2-4-3-009-014	513	1	8/9/1995	1017084	SFD	R-2 Residential	R-2	U	0.17
12.76	418.39	2-4-3-009-012	513	2	3/4/1994	1017083	SFD	R-2 Residential	R-2	U	0.17
9.16	300.44	2-4-3-009-023	513	1	1/10/1991	1019713	SFD	R-2 Residential	R-2	U	0.01
19.85	650.77	2-4-3-008-009	513	2	1/8/1991	1019676	SFD	R-2 Residential	R-2	U	0.00
19.17	628.58	2-4-3-009-033	513	1	1/8/1991	1029291	SFD	R-2 Residential	R-2	U	0.23
21.47	703.91	2-4-3-008-011	513	2	9/7/1990	1019679	SFD	R-2 Residential	R-2	U	0.17
24.65	808.06	2-4-3-019-041	513	1	8/24/1990	1017113	SFD	R-2 Residential	R-2	U	0.18
43.62	1,430.05	2-4-3-009-036	513	1	5/7/1990	1000732	SFD	R-2 Residential	R-2	U	0.22
17.74	581.58	2-4-3-009-037	513	1	8/1/1989	1000734	SFD	R-2 Residential	R-2	U	0.22
33.29	1,091.61	2-4-3-019-043	513	2	7/26/1989	1005405	SFD	R-2 Residential	R-2	U	0.18
19.80	649.15	2-4-3-019-040	513	1	5/23/1989	1005408	SFD	R-2 Residential	R-2	U	0.18
14.54	476.61	2-4-3-008-017	513	1	5/18/1989	1019675	SFD	R-2 Residential	R-2	U	0.17
9.14	299.81	2-0-0-000-000	513	1	5/12/1989	1017077	SFD	R-2 Residential	R-2	U	0.21
19.37	634.97	2-4-3-009-035	513	1	1/13/1989	1000730	SFD	R-2 Residential	R-2	U	1.12
20.53	673.09	2-4-3-008-031	513	2	6/13/1988	1019705	SFD	R-2 Residential	R-2	U	0.18
17.70	580.19	2-4-3-009-034	513	1	6/6/1988	1000729	SFD	R-2 Residential	R-2	U	0.19
25.71	842.92	2-4-3-008-026	513	1	6/5/1987	1019698	SFD	R-2 Residential	R-2	U	0.18
2.80	91.83	2-4-3-008-057	513	1	2/11/1987	1029787	SFD	R-2 Residential	R-2	U	0.19
19.03	623.99	2-4-3-008-058	513	1	2/11/1987	1029784	SFD	R-2 Residential	R-2	U	0.19
7.54	247.35	2-4-3-008-048	513	1	12/2/1986	1024375	SFD	R-2 Residential	R-2	U	0.18
28.53	935.49	2-4-3-009-022	513	2	9/17/1986	1019711	SFD	R-2 Residential	R-2	U	0.01
42.24	1,384.92	2-4-3-008-065	513	2	6/18/1986	1005722	SFD	R-2 Residential	R-2	U	0.00
28.98	950.03	2-4-3-009-021	513	2	6/18/1986	1019710	SFD	R-2 Residential	R-2	U	0.20
13.66	447.81	2-4-3-008-051	513	1	12/19/1985	1024376	SFD	R-2 Residential	R-2	U	0.18
13.38	438.77	2-4-3-008-041	513	1	11/19/1985	1000720	SFD	R-2 Residential	R-2	U	0.21
31.86	1,044.67	2-4-3-008-010	513	1	5/2/1985	1019677	SFD	R-2 Residential	R-2	U	0.00
12.97	425.33	2-4-3-008-059	513	1	4/25/1985	1029783	SFD	R-2 Residential	R-2	U	0.20
20.42	669.37	2-4-3-008-050	513	1	2/28/1985	1024371	SFD	R-2 Residential	R-2	U	0.18
17.94	588.31	2-4-3-008-077	513	2	10/10/1984	1001165	SFD	R-2 Residential	R-2	U	0.20
30.56	1,001.86	2-4-3-009-046	513	1	6/14/1984	1022868	SFD	R-2 Residential	R-2	U	0.18
21.22	695.87	2-4-3-009-027	513	1	5/31/1984	1000726	SFD	R-2 Residential	R-2	U	0.21
17.58	576.23	2-4-3-009-029	513	1	5/31/1984	1000728	SFD	R-2 Residential	R-2	U	1.12
18.08	592.76	2-4-3-009-047	513	1	5/18/1984	1022866	SFD	R-2 Residential	R-2	U	0.18
20.17	661.39	2-4-3-009-045	513	1	5/17/1984	1022870	SFD	R-2 Residential	R-2	U	0.18
31.20	1,022.87	2-4-3-008-039	513	1	5/8/1984	1000723	SFD	R-2 Residential	R-2	U	0.00
16.11	528.33	2-4-3-008-037	513	1	4/5/1984	1019683	SFD	R-2 Residential	R-2	U	0.19
0.90	29.64	2-4-3-009-030	513	1	2/1/1984	1029290	SFD	R-2 Residential	R-2	U	0.20
21.48	704.15	2-4-3-009-026	513	1	1/31/1984	1000735	SFD	R-2 Residential	R-2	U	0.21
29.40	963.80	2-4-3-009-028	513	1	1/31/1984	1000727	SFD	R-2 Residential	R-2	U	1.12
24.06	788.72	2-4-3-009-031	513	1	1/31/1984	1029289	SFD	R-2 Residential	R-2	U	0.22
20.11	659.23	2-4-3-008-064	513	1	1/30/1984	1005723	SFD	R-2 Residential	R-2	U	0.00
6.34	207.70	2-4-3-008-070	513	1	1/9/1984	1023598	SFD	R-2 Residential	R-2	U	0.00
10.70	350.77	2-4-3-009-013	513	1	1/4/1984	1019715	SFD	R-2 Residential	R-2	U	0.18
9.09	298.17	2-4-3-009-011	513	2	12/20/1983	1019712	SFD	R-2 Residential	R-2	U	0.18
12.27	402.13	2-4-3-008-049	513	1	11/29/1983	1024373	SFD	R-2 Residential	R-2	U	0.21
11.11	364.26	2-4-3-008-040	513	1	10/31/1983	1000725	SFD	R-2 Residential	R-2	U	0.20
18.93	620.60	2-4-3-009-017	513	1	10/13/1983	1019717	SFD	R-2 Residential	R-2	U	0.17
23.74	778.42	2-4-3-016-007	513	1	10/11/1983	1008459	SFD	R-2 Residential	R-2	U	0.18
18.01	590.41	2-4-3-008-069	513	1	9/21/1983	1019702	SFD	R-2 Residential	R-2	U	0.18
3.62	118.72	2-4-3-008-029	513	1	9/19/1983	1019701	SFD	R-2 Residential	R-2	U	0.18
17.26	566.01	2-4-3-016-013	511	1	2/3/1994	1020880	SFD	R-2 Residential	R-2	U	0.17
6.61	216.67	2-4-3-016-047	511	1	12/17/1986	1008464	SFD	R-2 Residential	R-2	U	0.17
8.20	268.93	2-4-3-016-049	511	1	7/3/1986	1008457	SFD	R-2 Residential	R-2	U	0.17
13.25	434.34	2-4-3-016-048	511	1	10/3/1984	1008456	SFD	R-2 Residential	R-2	U	0.17
100.96	3,310.30	2-4-4-002-039	513	1	4/12/2001	1033966	COM	R-3 Residential	R-3	A	0.00
29.03	951.64	2-4-4-001-016-0000	513	1	2/7/1991	1016979	COM	R-3 Residential	R-3	A	10.33
28.42	931.89	2-4-4-001-016-0000	513	1	10/2/1990	1016987	COM	R-3 Residential	R-3	A	10.33
108.56	3,559.29	2-4-4-002-033	513	1	7/31/1980	1029373	COM	R-3 Residential	R-3	A	0.26
23.82	780.90	2-4-4-001-016-0000	513	8	2/7/1991	1016973	LO-RISE	R-3 Residential	R-3	A	10.33
28.56	936.45	2-4-4-001-016-0000	513	8	2/7/1991	1016971	LO-RISE	R-3 Residential	R-3	A	10.33
28.77	943.22	2-4-4-001-016-0000	513	8	2/7/1991	1016968	LO-RISE	R-3 Residential	R-3	A	10.33
31.70	1,039.43	2-4-4-001-016-0000	513	8	2/7/1991	1016970	LO-RISE	R-3 Residential	R-3	A	10.33
31.92	1,046.69	2-4-4-001-016-0000	513	8	2/7/1991	1016969	LO-RISE	R-3 Residential	R-3	A	10.33
55.85	1,831.09	2-4-4-001-016-0000	513	8	2/7/1991	1016974	LO-RISE	R-3 Residential	R-3	A	10.33
19.18	628.93	2-4-4-001-016-0000	513	8	10/4/1990	1016985	LO-RISE	R-3 Residential	R-3	A	10.33
24.43	801.04	2-4-4-001-016-0000	513	8	10/4/1990	1016962	LO-RISE	R-3 Residential	R-3	A	10.33
21.08	690.98	2-4-4-001-016-0000	513	8	10/3/1990	1016983	LO-RISE	R-3 Residential	R-3	A	10.33
29.78	976.42	2-4-4-001-016-0000	513	8	10/2/1990	1016984	LO-RISE	R-3 Residential	R-3	A	10.33
38.36	1,257.62	2-4-3-051-068	515	1	7/15/1999	1032864	SFD	R-3 Residential	R-3	A	0.24
108.74	3,565.25	2-4-3-019-049	513	1	4/9/2008	1039905	SFD	R-3 Residential	R-3	A	0.29
2.03	66.48	2-0-0-000-000	513	1	3/10/1986	1017036	CGOVT	R-3 Residential	R-3	U	0.24
40.15	1,316.26	2-0-0-000-000	515	1	11/1/1978	1005412	COM	R-3 Residential	R-3	U	0.31
84.38	2,766.53	2-4-3-015-057	513	1	8/11/1993	1008478	COM	R-3 Residential	R-3	U	0.13
5.36	175.68	2-4-4-001-016-0000	513	1	12/17/1990	1016988	COM	R-3 Residential	R-3	U	10.33
488.83	16,027.19	2-4-4-001-016-0000	513	1	9/12/1990	1007676	COM	R-3 Residential	R-3	U	10.33
26.46	867.43	2-4-4-001-016-0000	513	1	8/3/1990	1016986	COM	R-3 Residential	R-3	U	10.33
56.95	1,867.08	2-0-0-000-000	513	1	3/10/1986	1017032	COM	R-3 Residential	R-3	U	0.90
17.12	561.28	2-4-4-001-016-0000	513	8	12/17/1990	1016975	LO-RISE	R-3 Residential	R-3	U	10.33
19.01	623.28	2-4-4-001-016-0000	513	8	12/17/1990	1016963	LO-RISE	R-3 Residential	R-3	U	10.33
21.61	708.50	2-4-4-001-016-0000	513	8	12/17/1990	1016976	LO-RISE	R-3 Residential	R-3	U	10.33
26.52	869.48	2-4-4-001-016-0000	513	8	12/17/1990	1016964	LO-RISE	R-3 Residential	R-3	U	10.33
28.19	924.15	2-4-4-001-016-0000	513	8	12/17/1990	1016967	LO-RISE	R-3 Residential	R-3	U	10.33
30.11	987.10	2-4-4-001-016-0000	513	8	12/17/1990	1016965	LO-RISE	R-3 Residential	R-3	U	10.33
62.73	2,056.58	2-4-4-001-016-0000	513	8	12/17/1990	1016966	LO-RISE	R-3 Residential	R-3	U	10.33
17.24	565.36	2-4-4-001-016-0000	513	8	10/3/1990	1016982	LO-RISE	R-3 Residential	R-3	U	10.33
23.11	757.76	2-4-4-001-016-0000	513	8	8/3/1990	1016977	LO-RISE	R-3 Residential	R-3	U	10.33
27.76	910.22	2-4-4-001-016-0000	513	8	8/3/1990	1016978	LO-RISE	R-3 Residential	R-3	U	10.33
27.83	912.46	2-4-4-001-016-0000	513	8	8/3/1990	1016972	LO-RISE	R-3 Residential	R-3	U	10.33
24.13	791.28										

5.03	164.75	2-4-3-015-032	515	2	5/22/1996	1009697	SFD	R-3 Residential	R-3	U	0.00
37.28	1,222.32	2-4-3-015-041	515	1	9/8/1994	1017037	SFD	R-3 Residential	R-3	U	0.38
56.51	1,852.87	2-4-3-003-091	515	1	12/3/1979	1005417	SFD	R-3 Residential	R-3	U	0.55
64.09	2,101.45	2-4-3-015-012	515	1	7/19/1979	1017119	SFD	R-3 Residential	R-3	U	0.34
106.93	3,505.82	2-4-3-003-092	515	1	11/1/1978	1005415	SFD	R-3 Residential	R-3	U	0.24
16.80	550.96	2-4-3-003-093	515	1	11/1/1978	1005414	SFD	R-3 Residential	R-3	U	0.25
20.66	677.51	2-4-3-003-094	515	1	11/1/1978	1005413	SFD	R-3 Residential	R-3	U	0.55
55.36	1,814.95	2-4-3-003-095	515	1	11/1/1978	1005411	SFD	R-3 Residential	R-3	U	0.30
38.29	1,255.33	2-4-3-003-096	515	1	11/1/1978	1005416	SFD	R-3 Residential	R-3	U	0.29
400.07	13,116.94	2-0-0-000-000	515	8	3/9/1965	1001681	SFD	R-3 Residential	R-3	U	9.43
0.08	2.70	2-4-3-015-040-0000	513	1	12/28/2018	0	SFD	R-3 Residential	R-3	U	0.00
35.13	1,151.80	2-4-3-015-041	513	1	9/24/2004	1037020	SFD	R-3 Residential	R-3	U	0.24
14.32	469.43	2-4-3-015-059	513	1	9/1/2004	1036865	SFD	R-3 Residential	R-3	U	0.38
37.13	1,217.30	2-4-3-015-004	513	1	6/13/2003	1035852	SFD	R-3 Residential	R-3	U	0.13
20.71	679.13	2-4-3-015-010	513	1	10/3/2001	1034374	SFD	R-3 Residential	R-3	U	0.32
58.17	1,907.21	2-4-3-015-011	513	1	10/3/2001	1034375	SFD	R-3 Residential	R-3	U	0.32
10.81	354.48	2-4-3-022-021	513	1	5/7/1999	1017001	SFD	R-3 Residential	R-3	U	0.00
11.49	376.64	2-4-3-006-052	513	1	9/30/1997	1017076	SFD	R-3 Residential	R-3	U	0.41
8.63	282.81	2-4-3-009-006	513	2	2/20/1996	1017082	SFD	R-3 Residential	R-3	U	0.95
25.85	847.43	2-4-3-015-007	513	1	7/9/1992	1008481	SFD	R-3 Residential	R-3	U	0.00
33.83	1,109.10	2-4-3-015-044	513	1	9/19/1990	1008477	SFD	R-3 Residential	R-3	U	0.02
8.53	279.59	2-4-3-006-051	513	2	3/12/1990	1017075	SFD	R-3 Residential	R-3	U	0.41
9.16	300.27	2-4-3-015-027-0000	513	1	1/9/1990	1009700	SFD	R-3 Residential	R-3	U	0.23
34.04	1,115.96	2-4-3-015-025	513	1	3/9/1987	1027463	SFD	R-3 Residential	R-3	U	0.26
34.36	1,126.64	2-4-3-015-029	513	1	1/8/1987	1009691	SFD	R-3 Residential	R-3	U	0.23
19.86	651.17	2-4-3-015-006	513	1	12/30/1986	1008475	SFD	R-3 Residential	R-3	U	0.22
13.17	431.78	2-4-3-015-039	513	2	9/29/1986	1017115	SFD	R-3 Residential	R-3	U	0.24
22.75	745.74	2-4-3-015-013	513	2	8/1/1986	1017118	SFD	R-3 Residential	R-3	U	0.39
40.14	1,315.96	2-4-3-015-031	513	1	8/1/1986	1009695	SFD	R-3 Residential	R-3	U	0.23
11.22	368.01	2-4-3-015-050	513	1	5/30/1986	1017116	SFD	R-3 Residential	R-3	U	0.23
18.64	610.98	2-4-3-015-051	513	1	5/23/1986	1017117	SFD	R-3 Residential	R-3	U	0.24
23.19	760.30	2-4-3-015-038	513	2	9/9/1985	1009698	SFD	R-3 Residential	R-3	U	0.23
20.66	677.30	2-0-0-000-000	513	1	2/6/1984	1027462	SFD	R-3 Residential	R-3	U	0.26
49.45	1,621.20	2-4-3-015-030	513	1	11/5/1981	1009693	SFD	R-3 Residential	R-3	U	0.23
7.87	258.17	2-4-3-015-023	513	1	6/5/1981	1027464	SFD	R-3 Residential	R-3	U	0.26
27.19	891.58	2-4-3-006-043	513	2	11/1/1978	1017071	SFD	R-3 Residential	R-3	U	1.01
4.60	150.79	2-4-3-006-053	513	1	11/1/1978	1007598	SFD	R-3 Residential	R-3	U	0.30
8.14	266.80	2-4-3-006-054	513	1	11/1/1978	1017072	SFD	R-3 Residential	R-3	U	0.30
5.09	166.75	2-4-3-008-083	513	1	11/1/1978	1007599	SFD	R-3 Residential	R-3	U	0.43
25.68	842.10	2-4-3-008-084	513	1	11/1/1978	1007600	SFD	R-3 Residential	R-3	U	0.35
36.55	1,198.31	2-4-3-015-015	513	1	11/1/1978	1007620	SFD	R-3 Residential	R-3	U	0.98
63.30	2,075.46	2-4-3-015-016	513	4	11/1/1978	1007619	SFD	R-3 Residential	R-3	U	0.26
17.29	566.99	2-4-3-015-018	513	1	11/1/1978	1027459	SFD	R-3 Residential	R-3	U	0.26
26.50	868.93	2-4-3-015-026	513	2	11/1/1978	1027461	SFD	R-3 Residential	R-3	U	0.26
10.23	335.27	2-4-3-015-036	513	1	11/1/1978	1007618	SFD	R-3 Residential	R-3	U	2.35
11.91	390.36	2-4-3-015-047	513	1	11/1/1978	1007625	SFD	R-3 Residential	R-3	U	0.32
17.42	571.04	2-4-4-001-024	513	1	11/1/1978	1011592	SFD	R-3 Residential	R-3	U	0.15
19.38	635.55	2-4-4-001-081	513	2	11/1/1978	1011589	SFD	R-3 Residential	R-3	U	0.32
12.98	425.44	2-4-4-001-083	513	2	11/1/1978	1011595	SFD	R-3 Residential	R-3	U	0.17
19.62	643.42	2-4-4-001-083	513	2	11/1/1978	1011594	SFD	R-3 Residential	R-3	U	0.00
26.17	857.92	2-4-4-001-085	513	1	11/1/1978	1011593	SFD	R-3 Residential	R-3	U	0.15
13.11	429.75	2-4-4-001-086	513	1	11/1/1978	1011586	SFD	R-3 Residential	R-3	U	0.15
12.61	413.33	2-4-4-001-092	513	1	11/1/1978	1011591	SFD	R-3 Residential	R-3	U	0.15
118.08	3,871.39	2-4-3-015-008	513	1	7/7/1978	1007622	SFD	R-3 Residential	R-3	U	0.51
8.63	282.98	2-0-0-000-000	513	2	12/2/1977	1007623	SFD	R-3 Residential	R-3	U	0.32
17.07	559.78	2-4-3-015-045	513	1	10/29/1976	1008476	SFD	R-3 Residential	R-3	U	0.00
10.89	357.10	2-4-4-001-088	513	2	9/25/1973	1011597	SFD	R-3 Residential	R-3	U	0.30
12.33	404.18	2-4-3-015-037	513	1	3/9/1966	1007616	SFD	R-3 Residential	R-3	U	0.24
19.99	655.44	2-4-4-001-080	513	2	10/23/1961	1011587	SFD	R-3 Residential	R-3	U	0.30
16.18	530.36	2-0-0-000-000	513	1	7/31/1980	1029374	COM	Road	ROAD	A	0.00
2.51	82.43	2-4-3-010-016	515	1	1/6/2006	1037971	SFD	Road	ROAD	A	1.48
120.19	3,940.74	2-4-3-010-028	515	1	10/2/2002	1035248	SFD	Road	ROAD	A	1.48
20.26	664.29	2-4-3-021-027	515	1	2/11/2002	1034641	SFD	Road	ROAD	A	13.04
47.48	1,556.75	2-4-3-005-091	515	1	10/16/2001	1034397	SFD	Road	ROAD	A	0.51
11.91	390.38	2-4-3-005-070	515	1	8/21/2001	1034264	SFD	Road	ROAD	A	0.51
72.21	2,367.38	2-4-3-010-028	515	1	8/8/2001	1034252	SFD	Road	ROAD	A	1.48
9.93	325.44	2-4-3-010-030	515	1	6/5/1995	1006738	SFD	Road	ROAD	A	1.48
59.03	1,935.46	2-4-3-010-016	515	1	5/18/1995	1001566	SFD	Road	ROAD	A	1.48
3.89	127.60	2-4-3-017-037	515	1	8/14/1986	1008727	SFD	Road	ROAD	A	0.00
22.02	721.97	2-4-3-017-007	515	1	9/27/1985	1002379	SFD	Road	ROAD	A	0.00
43.69	1,432.60	2-4-3-010-022	513	1	7/3/2006	1038205	SFD	Road	ROAD	A	1.48
3.48	114.15	2-4-3-010-021	513	1	6/21/2001	1034113	SFD	Road	ROAD	A	2.01
4.99	163.72	2-4-3-005-036	513	1	5/14/1997	1017111	SFD	Road	ROAD	A	0.14
43.89	1,439.10	2-4-3-010-023	513	1	5/23/1996	1001571	SFD	Road	ROAD	A	1.48
141.28	4,632.10	2-4-3-010-031	513	1	12/29/1994	1006739	SFD	Road	ROAD	A	1.48
18.29	599.59	2-4-3-010-020	513	1	12/16/1994	1001570	SFD	Road	ROAD	A	1.48
0.00	0.00	2-4-5-011-010	511	1	2/9/2006	1037991	SFD	Road	ROAD	A	0.00
2.42	79.34	2-4-3-018-041	515	1	7/12/2000	1033460	CGOVT	Road	ROAD	U	0.00
2.67	87.62	2-4-3-018-041	515	1	7/12/2000	1033459	CGOVT	Road	ROAD	U	0.00
2.23	73.20	2-0-0-000-000	515	1	11/1/1985	1017031	CGOVT	Road	ROAD	U	5.58
11.33	371.39	2-4-3-003-105	515	1	4/10/1991	1017122	COM	Road	ROAD	U	0.00
149.79	4,911.09	2-0-0-000-000	513	1	10/23/1987	1017050	COM	Road	ROAD	U	0.00
36.55	1,198.20	2-0-0-000-000	513	1	2/13/1987	1032551	COM	Road	ROAD	U	0.00
36.47	1,195.87	2-4-3-001-031	513	1	2/13/1987	1032552	COM	Road	ROAD	U	0.00
3.14	102.84	2-4-4-001-060	513	1	6/27/1985	1017042	COM	Road	ROAD	U	0.00
472.67	15,497.43	2-4-3-010-002	513	1	4/28/1982	1017094	COM	Road	ROAD	U	0.00
633.24	20,761.97	2-4-3-010-002	513	1	4/28/1982	1017095	COM	Road	ROAD	U	0.00
595.43	19,522.19	2-4-3-010-002	513	1	4/27/1982	1017092	COM	Road	ROAD	U	0.00
611.75	20,057.38	2-4-3-010-002	513	1	4/27/1982	1017093	COM	Road	ROAD	U	0.00
0.08	2.70	2-0-0-000-000	513	1	11/1/1978	1009690	COM	Road	ROAD	U	0.00
3.08	100.96	2-0-0-000-000	513	1	11/1/1978	1007720	COM	Road	ROAD	U	1.50
81.49	2,671.89	2-0-0-000-000	513	1	9/7/1976	1007573	COM	Road	ROAD	U	0.00
53.91	1,767.54	2-4-3-009-052	513	1	5/11/1994	1026797	CPARK	Road	ROAD	U	0.00
3,610.29	118,370.03	2-4-4-014-004	515	1	8/10/2004	1036812	HOTEL	Road	ROAD	U	11.47
3,155.62	103,462.90	2-4-4-014-003	515	1	2/10/2003	1035562	HOTEL	Road	ROAD	U	14.00
2.68	87.79	2-4-3-002-030	515	1	9/17/1979	1017148	HOTEL	Road	ROAD	U	0.00
382.26	12,533.25	2-4-3-002-030	515	1	5/27/1966	1007659	HOTEL	Road	ROAD	U	0.00
109.88	3,602.57	2-0-0-000-000	515	1731	4/1/1965	1007658	HOTEL	Road	ROAD	U	0.00
2,125.08	69,674.70	2-4-4-001-097	513	1	10/27/1980	1007593	HOTEL	Road	ROAD	U	0.70
1,218.89	39,963.72	2-4-4-001-097-0000	513	1	10/24/1980	1017035	HOTEL	Road	ROAD	U	0.00
15.31	501.83	2-4-3-005-030	513	1	11/6/1985	1017103	IND	Road	ROAD	U	0.00
127.92	4,194.07	2-4-3-002-068	515	16	3/18/1993	1017146	LO-RISE	Road	ROAD	U	0.00
105.66	3,464.18	2-0-0-000-000	515	19	11/1/1978	1008455	LO-RISE	Road	ROAD	U	0.00
410.72	13,466.23	2-0-									

290.51	9,524.81	2-4-3-003-015	515	41	11/1/1978	1009676	LO-RISE	Road	ROAD	U	0.00
218.12	7,151.58	2-0-0-000-000	515	40	5/11/1978	1007565	LO-RISE	Road	ROAD	U	0.00
244.07	8,002.30	2-4-3-002-055-0000	515	15	9/27/1977	1008471	LO-RISE	Road	ROAD	U	0.00
245.50	8,049.21	2-0-0-000-000	515	41	6/14/1977	1008438	LO-RISE	Road	ROAD	U	0.00
90.04	2,952.10	2-4-3-003-020	515	9	2/5/1975	1007632	LO-RISE	Road	ROAD	U	0.14
171.40	5,619.62	2-4-3-002-048-0000	515	36	12/2/1969	1023473	LO-RISE	Road	ROAD	U	0.00
495.17	16,235.19	2-4-3-006-004	513	159	8/9/1995	1017062	LO-RISE	Road	ROAD	U	1.09
0.00	0.00	2-4-3-006-002	513	32	10/1/1990	1017059	LO-RISE	Road	ROAD	U	0.00
32.61	1,069.02	2-4-3-005-014	513	1	2/20/1986	1017104	LO-RISE	Road	ROAD	U	0.00
359.84	11,798.17	2-4-3-010-011	513	106	3/17/1981	1017097	LO-RISE	Road	ROAD	U	0.00
109.27	3,582.54	2-0-0-000-000	513	30	11/1/1978	1017065	LO-RISE	Road	ROAD	U	0.00
131.99	4,327.68	2-0-0-000-000	513	42	11/1/1978	1007607	LO-RISE	Road	ROAD	U	0.00
139.83	4,584.73	2-0-0-000-000	513	1	11/1/1978	1009564	LO-RISE	Road	ROAD	U	0.00
337.24	11,057.19	2-0-0-000-000	513	110	11/1/1978	1007603	LO-RISE	Road	ROAD	U	0.70
801.88	26,291.15	2-4-4-001-051	513	112	11/1/1978	1007576	LO-RISE	Road	ROAD	U	0.00
5.42	177.73	2-4-3-003-044	515	1	11/1/1978	1001680	RELIGION	Road	ROAD	U	0.00
5.34	174.95	2-4-4-001-032-0000	513	1	11/1/1978	1007723	RELIGION	Road	ROAD	U	0.00
1.75	57.43	2-4-3-003-140-0000	515	1	5/5/2008	1039934	SFD	Road	ROAD	U	0.00
5.12	167.76	2-4-3-016-037	515	1	4/3/2008	1039902	SFD	Road	ROAD	U	0.00
5.04	165.27	2-4-3-003-040	515	1	6/14/2006	1038156	SFD	Road	ROAD	U	0.00
24.19	793.22	2-4-3-020-053	515	1	8/3/2005	1037669	SFD	Road	ROAD	U	0.00
15.20	498.42	2-4-3-020-071	515	1	2/16/2005	1037303	SFD	Road	ROAD	U	13.04
14.86	487.27	2-4-3-020-051	515	1	1/3/2005	1037173	SFD	Road	ROAD	U	13.04
17.53	574.81	2-4-3-018-026	515	1	10/25/2004	1037058	SFD	Road	ROAD	U	13.04
18.94	620.93	2-4-3-005-088	515	1	7/20/2004	1036797	SFD	Road	ROAD	U	0.00
0.26	8.55	2-4-3-021-095	515	1	1/9/2004	1036523	SFD	Road	ROAD	U	0.51
11.44	375.16	2-4-3-021-090	515	1	1/6/2004	1036519	SFD	Road	ROAD	U	13.04
0.00	0.00	2-4-3-020-024	515	1	11/17/2003	1036426	SFD	Road	ROAD	U	13.04
16.13	528.80	2-4-3-020-046	515	1	11/6/2003	1036414	SFD	Road	ROAD	U	13.04
12.98	425.57	2-4-3-020-070	515	1	10/22/2003	1036373	SFD	Road	ROAD	U	13.04
10.80	354.10	2-4-3-020-047	515	1	8/7/2003	1036239	SFD	Road	ROAD	U	13.04
22.99	753.69	2-4-3-020-036	515	1	7/3/2003	1036073	SFD	Road	ROAD	U	13.04
22.92	751.39	2-4-3-020-052	515	1	6/12/2003	1035850	SFD	Road	ROAD	U	13.04
9.76	319.89	2-4-3-021-111	515	1	6/6/2003	1035847	SFD	Road	ROAD	U	13.04
9.38	307.40	2-4-3-021-003	515	1	6/3/2003	1035841	SFD	Road	ROAD	U	0.16
13.85	454.10	2-4-3-020-109	515	1	5/2/2003	1035805	SFD	Road	ROAD	U	13.04
159.53	5,230.33	2-4-3-015-054	515	1	4/2/2003	1035770	SFD	Road	ROAD	U	13.04
16.36	536.23	2-4-3-021-113	515	1	3/19/2003	1035702	SFD	Road	ROAD	U	0.00
16.02	525.11	2-4-3-020-023	515	1	3/18/2003	1035689	SFD	Road	ROAD	U	13.04
7.11	233.22	2-4-3-020-090	515	1	1/7/2003	1035435	SFD	Road	ROAD	U	13.04
8.06	264.21	2-4-3-005-087	515	1	9/11/2002	1035219	SFD	Road	ROAD	U	13.04
11.11	364.26	2-4-3-021-068	515	1	9/3/2002	1035202	SFD	Road	ROAD	U	0.51
11.28	369.75	2-4-3-020-118	515	1	8/21/2002	1035192	SFD	Road	ROAD	U	13.04
11.69	383.22	2-4-3-021-029	515	1	8/2/2002	1035171	SFD	Road	ROAD	U	13.04
10.83	355.00	2-4-3-020-108	515	1	7/29/2002	1035037	SFD	Road	ROAD	U	13.04
26.00	852.54	2-4-3-005-083	515	1	7/26/2002	1035012	SFD	Road	ROAD	U	0.51
10.88	356.61	2-4-3-020-048	515	1	7/26/2002	1035017	SFD	Road	ROAD	U	13.04
26.52	869.51	2-4-3-020-065	515	1	7/26/2002	1035018	SFD	Road	ROAD	U	13.04
10.02	328.58	2-4-3-020-026	515	1	6/13/2002	1034898	SFD	Road	ROAD	U	13.04
15.44	506.09	2-4-3-021-066	515	1	3/22/2002	1034697	SFD	Road	ROAD	U	13.04
12.34	404.48	2-4-3-021-070	515	1	3/7/2002	1034684	SFD	Road	ROAD	U	13.04
18.44	604.73	2-4-3-021-033	515	1	2/22/2002	1034658	SFD	Road	ROAD	U	13.04
13.91	456.17	2-4-3-005-085	515	1	2/6/2002	1034631	SFD	Road	ROAD	U	0.51
19.19	629.13	2-4-3-021-106	515	1	1/28/2002	1034614	SFD	Road	ROAD	U	13.04
23.43	768.03	2-4-3-021-112	515	1	1/8/2002	1034581	SFD	Road	ROAD	U	0.16
19.15	627.70	2-4-3-003-020	515	1	1/4/2002	1034575	SFD	Road	ROAD	U	0.00
11.00	360.60	2-4-3-021-069	515	1	11/1/2001	1034465	SFD	Road	ROAD	U	13.04
12.67	415.27	2-4-3-021-116	515	1	10/25/2001	1034448	SFD	Road	ROAD	U	13.04
8.51	279.07	2-4-3-005-084	515	1	10/17/2001	1034411	SFD	Road	ROAD	U	0.51
19.18	628.80	2-4-3-005-089	515	1	10/16/2001	1034396	SFD	Road	ROAD	U	0.51
16.26	533.09	2-4-3-005-098	515	1	10/16/2001	1034405	SFD	Road	ROAD	U	0.51
5.28	173.20	2-4-3-020-032	515	1	10/11/2001	1034390	SFD	Road	ROAD	U	13.04
31.10	1,019.56	2-4-3-005-086	515	1	10/9/2001	1034385	SFD	Road	ROAD	U	0.51
12.18	399.32	2-4-3-020-049	515	1	9/20/2001	1034350	SFD	Road	ROAD	U	13.04
11.90	390.03	2-4-3-020-073	515	1	7/19/2001	1034238	SFD	Road	ROAD	U	13.04
21.90	717.92	2-4-3-020-002	515	1	6/22/2001	1034116	SFD	Road	ROAD	U	13.04
15.08	494.32	2-4-3-020-050	515	1	6/21/2001	1034111	SFD	Road	ROAD	U	13.04
9.86	323.33	2-4-3-021-085	515	1	6/18/2001	1034108	SFD	Road	ROAD	U	13.04
23.69	776.83	2-4-3-020-005	515	1	5/9/2001	1034075	SFD	Road	ROAD	U	13.04
10.95	358.88	2-4-3-020-079	515	1	4/27/2001	1034061	SFD	Road	ROAD	U	0.18
20.09	658.83	2-4-3-021-031	515	1	4/27/2001	1034062	SFD	Road	ROAD	U	13.04
12.34	404.59	2-4-3-020-044	515	1	4/25/2001	1034048	SFD	Road	ROAD	U	13.04
7.20	235.93	2-4-3-021-058	515	1	4/25/2001	1034046	SFD	Road	ROAD	U	13.04
9.21	301.83	2-4-3-020-034	515	1	4/4/2001	1033953	SFD	Road	ROAD	U	13.04
6.58	215.82	2-4-3-020-041	515	1	3/30/2001	1033947	SFD	Road	ROAD	U	13.04
29.07	953.03	2-4-3-020-105	515	1	3/29/2001	1033930	SFD	Road	ROAD	U	13.04
10.79	353.88	2-4-3-021-094	515	1	3/12/2001	1033895	SFD	Road	ROAD	U	13.04
9.82	321.80	2-4-3-020-104	515	1	3/1/2001	1033865	SFD	Road	ROAD	U	13.04
10.36	339.75	2-4-3-020-004	515	1	1/25/2001	1033795	SFD	Road	ROAD	U	13.04
12.28	402.51	2-4-3-020-025	515	1	1/8/2001	1033775	SFD	Road	ROAD	U	13.04
19.49	639.13	2-4-3-021-091	515	1	1/3/2001	1033768	SFD	Road	ROAD	U	13.04
16.47	539.92	2-4-3-020-038	515	1	12/19/2000	1033759	SFD	Road	ROAD	U	13.04
5.00	163.85	2-4-3-021-089	515	1	12/12/2000	1033751	SFD	Road	ROAD	U	13.04
40.07	1,313.91	2-4-3-020-110	515	1	11/3/2000	1033708	SFD	Road	ROAD	U	13.04
5.29	173.50	2-4-3-019-034	515	1	9/22/2000	1033575	SFD	Road	ROAD	U	0.00
17.01	557.73	2-4-3-020-001	515	1	8/9/2000	1033519	SFD	Road	ROAD	U	13.04
7.52	246.50	2-4-3-020-003	515	1	8/9/2000	1033518	SFD	Road	ROAD	U	13.04
5.33	174.86	2-4-3-021-092	515	1	8/9/2000	1033517	SFD	Road	ROAD	U	13.04
23.44	768.61	2-4-3-021-099	515	1	8/4/2000	1033506	SFD	Road	ROAD	U	13.04
16.98	556.72	2-4-3-020-106	515	1	8/3/2000	1033505	SFD	Road	ROAD	U	13.04
16.42	538.31	2-4-3-021-101	515	1	5/9/2000	1033330	SFD	Road	ROAD	U	13.04
12.19	399.70	2-4-3-020-066	515	1	4/26/2000	1033314	SFD	Road	ROAD	U	13.04
35.23	1,155.11	2-4-3-020-007	515	1	3/14/2000	1033227	SFD	Road	ROAD	U	13.04
55.60	1,822.84	2-4-3-015-055	515	1	3/2/2000	1033211	SFD	Road	ROAD	U	0.00
10.49	343.91	2-4-3-021-077	515	1	12/27/1999	1033069	SFD	Road	ROAD	U	13.04
10.61	347.87	2-4-3-021-080	515	1	12/21/1999	1033055	SFD	Road	ROAD	U	0.18
11.31	370.93	2-4-3-021-061	515	1	10/12/1999	1032960	SFD	Road	ROAD	U	13.04
10.61	347.87	2-4-3-021-064	515	1	9/10/1999	1032928	SFD	Road	ROAD	U	13.04
1.85	60.68	2-4-3-021-063	515	1	6/17/1999	1032827	SFD	Road	ROAD	U	0.15
17.75	582.08	2-4-3-020-068	515	1	3/31/1999	1009708	SFD	Road	ROAD	U	13.04
7.63	250.03	2-4-3-021-060	515	1	3/17/1999	1004748	SFD	Road	ROAD	U	13.04
18.38	602.60	2-4-3-021-065	515	1	2/3/1999	1003402	SFD	Road	ROAD	U	13.04
8.24	270.25	2-4-3-020-075	515	1	1/5/1999	1006571	SFD	Road	ROAD	U	13.04
9.51	311.75	2-4-3-021-057	515	1	11/27/1998	1004746	SFD	Road	ROAD	U	13.04
18.50	606.58	2-4-3-021-002</									

11.78	386.09	2-4-3-021-028	515	1	10/20/1998	1009716	SFD	Road	ROAD	U	13.04
11.59	380.14	2-4-3-020-008	515	1	9/30/1998	1009704	SFD	Road	ROAD	U	13.04
2.62	86.04	2-4-3-020-022	515	1	9/11/1998	1009717	SFD	Road	ROAD	U	13.04
17.28	566.50	2-4-3-021-062	515	1	9/10/1998	1004747	SFD	Road	ROAD	U	13.04
11.08	363.39	2-4-3-020-078	515	1	9/4/1998	1009710	SFD	Road	ROAD	U	13.04
25.54	837.43	2-4-3-002-085	515	1	10/15/1997	1017149	SFD	Road	ROAD	U	0.00
20.56	674.02	2-4-3-005-055	515	1	10/3/1997	1014454	SFD	Road	ROAD	U	0.00
22.72	744.75	2-4-3-002-082	515	1	1/2/1997	1017029	SFD	Road	ROAD	U	0.00
2.50	81.91	2-4-3-019-020	515	1	8/27/1996	1024766	SFD	Road	ROAD	U	0.00
5.17	169.48	2-4-3-019-018	515	1	8/8/1996	1024763	SFD	Road	ROAD	U	0.00
3.43	112.32	2-4-3-019-006	515	1	6/5/1996	1024774	SFD	Road	ROAD	U	0.00
8.16	267.40	2-4-3-019-010	515	1	6/5/1996	1024785	SFD	Road	ROAD	U	0.00
8.63	282.95	2-0-0-000-000	515	1	5/24/1996	1024789	SFD	Road	ROAD	U	0.00
4.84	158.69	2-4-3-019-001	515	1	5/24/1996	1024786	SFD	Road	ROAD	U	0.00
4.03	132.27	2-4-3-019-002	515	1	5/24/1996	1024788	SFD	Road	ROAD	U	0.07
14.14	463.69	2-4-3-018-013	515	2	1/24/1996	1027452	SFD	Road	ROAD	U	0.17
11.14	365.16	2-4-3-016-040	515	1	8/21/1995	1008420	SFD	Road	ROAD	U	0.14
10.85	355.77	2-4-3-016-071	515	2	1/12/1995	1008427	SFD	Road	ROAD	U	0.00
14.54	476.72	2-4-3-002-084	515	1	10/6/1994	1017150	SFD	Road	ROAD	U	0.00
38.00	1,245.98	2-4-3-007-005	515	1	5/23/1994	1007644	SFD	Road	ROAD	U	0.00
23.14	758.83	2-4-3-003-054	515	1	3/30/1994	1017133	SFD	Road	ROAD	U	0.00
10.90	357.49	2-4-3-016-057	515	1	9/14/1993	1008461	SFD	Road	ROAD	U	0.11
21.80	714.62	2-4-3-016-028	515	1	7/21/1993	1008445	SFD	Road	ROAD	U	0.00
10.61	347.98	2-4-3-005-063	515	1	7/2/1993	1017110	SFD	Road	ROAD	U	0.07
27.63	905.77	2-4-3-016-033	515	1	3/16/1993	1008425	SFD	Road	ROAD	U	0.11
26.97	884.21	2-4-3-016-070	515	2	3/16/1993	1008426	SFD	Road	ROAD	U	0.11
7.30	239.43	2-4-3-016-072	515	1	3/16/1993	1008428	SFD	Road	ROAD	U	0.00
31.59	1,035.66	2-4-3-005-043	515	1	12/9/1992	1005409	SFD	Road	ROAD	U	0.00
9.18	300.96	2-4-3-018-012	515	1	10/21/1992	1027450	SFD	Road	ROAD	U	0.00
8.73	286.15	2-4-3-018-019	515	1	10/21/1992	1019760	SFD	Road	ROAD	U	0.00
7.10	232.81	2-4-3-018-024	515	1	10/21/1992	1007823	SFD	Road	ROAD	U	0.00
38.19	1,252.16	2-4-3-018-028	515	1	10/21/1992	1027432	SFD	Road	ROAD	U	0.13
10.66	349.51	2-4-3-018-032	515	1	10/21/1992	1027437	SFD	Road	ROAD	U	0.13
15.54	509.45	2-4-3-018-037	515	1	10/21/1992	1019761	SFD	Road	ROAD	U	0.00
16.02	525.08	2-4-3-016-069	515	1	9/10/1992	1008422	SFD	Road	ROAD	U	0.11
4.85	159.10	2-4-3-003-107	515	2	6/30/1992	1017131	SFD	Road	ROAD	U	0.30
18.59	609.51	2-4-3-005-054	515	2	6/29/1992	1014452	SFD	Road	ROAD	U	0.18
30.38	996.09	2-4-3-018-020	515	1	4/24/1992	1019759	SFD	Road	ROAD	U	0.00
22.99	753.88	2-4-3-018-018	515	1	3/18/1992	1019762	SFD	Road	ROAD	U	0.00
19.71	646.17	2-4-3-007-020	515	1	3/10/1992	1026031	SFD	Road	ROAD	U	0.18
10.82	354.78	2-4-3-002-067	515	1	2/7/1992	1017147	SFD	Road	ROAD	U	0.00
25.54	837.51	2-4-3-005-061	515	2	1/27/1992	1014451	SFD	Road	ROAD	U	0.00
5.94	194.75	2-4-3-007-026	515	1	12/9/1991	1017040	SFD	Road	ROAD	U	0.00
20.09	658.66	2-4-3-018-038	515	1	11/15/1991	1027431	SFD	Road	ROAD	U	0.00
22.51	738.14	2-4-3-018-022	515	1	11/14/1991	1007824	SFD	Road	ROAD	U	0.00
10.45	342.57	2-4-3-003-023	515	1	10/15/1991	1017026	SFD	Road	ROAD	U	0.00
6.13	200.87	2-4-3-018-006	515	1	9/20/1991	1027443	SFD	Road	ROAD	U	0.00
24.83	814.07	2-4-3-018-023	515	1	8/6/1991	1007825	SFD	Road	ROAD	U	0.14
5.03	164.78	2-4-3-018-011	515	1	6/4/1991	1027448	SFD	Road	ROAD	U	0.00
8.54	280.03	2-4-3-018-016	515	1	3/18/1991	1027449	SFD	Road	ROAD	U	0.00
5.33	174.75	2-4-3-018-031	515	1	3/14/1991	1027433	SFD	Road	ROAD	U	0.00
4.92	161.28	2-4-3-018-033	515	1	3/14/1991	1027439	SFD	Road	ROAD	U	0.00
8.14	266.99	2-4-3-001-040	515	1	3/11/1991	1019765	SFD	Road	ROAD	U	0.14
4.83	158.39	2-4-3-018-021	515	1	3/11/1991	1007822	SFD	Road	ROAD	U	0.17
18.39	602.84	2-4-3-018-008	515	1	2/25/1991	1027445	SFD	Road	ROAD	U	0.00
24.20	793.50	2-4-3-018-034	515	1	2/25/1991	1027442	SFD	Road	ROAD	U	0.00
23.90	783.74	2-4-3-015-035	515	2	1/1/1991	1009692	SFD	Road	ROAD	U	0.00
16.13	528.74	2-4-3-007-021	515	1	9/4/1990	1026029	SFD	Road	ROAD	U	0.18
8.42	276.12	2-4-3-003-101	515	2	7/19/1990	1007640	SFD	Road	ROAD	U	0.00
0.00	0.00	2-4-3-007-027	515	1	7/11/1990	1017025	SFD	Road	ROAD	U	0.00
28.29	927.43	2-4-3-005-012	515	1	3/5/1990	1005404	SFD	Road	ROAD	U	0.00
23.75	778.74	2-4-3-007-023	515	1	10/18/1989	1026032	SFD	Road	ROAD	U	0.18
54.18	1,776.45	2-4-3-003-040	515	2	9/19/1989	1017134	SFD	Road	ROAD	U	0.00
6.70	219.78	2-4-3-016-039	515	1	5/18/1989	1008432	SFD	Road	ROAD	U	0.00
8.79	288.06	2-0-0-000-000	515	1	11/10/1988	1008460	SFD	Road	ROAD	U	0.00
5.26	172.46	2-4-3-019-032	515	1	8/18/1988	1005403	SFD	Road	ROAD	U	0.00
17.25	565.66	2-4-3-003-089	515	2	8/8/1988	1007637	SFD	Road	ROAD	U	0.29
24.63	807.51	2-4-3-003-019	515	1	11/23/1987	1007631	SFD	Road	ROAD	U	0.00
14.15	463.88	2-4-3-016-061	515	2	8/14/1987	1008467	SFD	Road	ROAD	U	0.11
22.28	730.36	2-4-3-007-018	515	1	7/10/1987	1026035	SFD	Road	ROAD	U	0.18
11.96	392.02	2-4-3-003-037	515	3	12/15/1986	1016746	SFD	Road	ROAD	U	0.00
6.39	209.37	2-4-3-016-022	515	1	10/29/1986	1020876	SFD	Road	ROAD	U	0.00
33.52	1,099.02	2-4-3-015-014	515	1	10/14/1986	1007621	SFD	Road	ROAD	U	0.00
10.33	338.72	2-4-3-017-009	515	1	9/11/1986	1002383	SFD	Road	ROAD	U	0.00
13.14	430.74	2-4-3-017-010	515	1	8/29/1986	1002385	SFD	Road	ROAD	U	0.00
5.08	166.53	2-4-3-016-023	515	1	8/1/1986	1020875	SFD	Road	ROAD	U	0.00
10.22	334.97	2-4-3-017-060	515	1	6/30/1986	1018867	SFD	Road	ROAD	U	0.00
1.59	52.19	2-0-0-000-000	515	174	6/20/1986	1028210	SFD	Road	ROAD	U	0.00
7.65	250.66	2-4-3-016-064	515	2	6/18/1986	1008443	SFD	Road	ROAD	U	0.00
8.31	272.38	2-4-3-016-065	515	1	6/18/1986	1008444	SFD	Road	ROAD	U	0.00
19.89	652.24	2-4-3-017-067	515	1	6/6/1986	1018884	SFD	Road	ROAD	U	0.00
7.65	250.66	2-4-3-017-058	515	1	4/28/1986	1018866	SFD	Road	ROAD	U	0.00
25.57	838.50	2-4-3-016-050	515	1	3/10/1986	1032540	SFD	Road	ROAD	U	0.29
21.56	706.75	2-4-3-017-008	515	1	11/22/1985	1002381	SFD	Road	ROAD	U	0.00
8.29	271.69	2-4-3-017-011	515	1	11/22/1985	1002376	SFD	Road	ROAD	U	0.00
5.14	168.52	2-4-3-017-012	515	1	11/21/1985	1002374	SFD	Road	ROAD	U	0.00
12.13	397.62	2-4-3-017-013	515	1	11/21/1985	1015219	SFD	Road	ROAD	U	0.00
11.85	388.47	2-4-3-017-016	515	1	11/21/1985	1005121	SFD	Road	ROAD	U	0.00
8.56	280.60	2-4-3-017-017	515	1	11/21/1985	1005119	SFD	Road	ROAD	U	0.00
9.82	322.08	2-4-3-017-026	515	1	11/20/1985	1005130	SFD	Road	ROAD	U	0.00
10.94	358.77	2-4-3-017-027	515	1	11/20/1985	1005132	SFD	Road	ROAD	U	0.00
1.75	57.35	2-4-3-017-028	515	1	11/20/1985	1005120	SFD	Road	ROAD	U	0.00
3.27	107.35	2-4-3-017-040	515	1	10/2/1985	1008731	SFD	Road	ROAD	U	0.00
22.24	729.29	2-4-3-017-041	515	1	10/2/1985	1008732	SFD	Road	ROAD	U	0.16
13.68	448.61	2-4-3-017-042	515	1	10/2/1985	1008721	SFD	Road	ROAD	U	0.00
17.97	589.15	2-4-3-017-043	515	1	10/2/1985	1008724	SFD	Road	ROAD	U	0.00
12.28	402.65	2-4-3-017-044	515	1	10/2/1985	1015222	SFD	Road	ROAD	U	0.00
3.70	121.28	2-4-3-017-031	515	1	9/30/1985	1008725	SFD	Road	ROAD	U	0.00
7.45	244.34	2-4-3-017-032	515	1	9/30/1985	1008723	SFD	Road	ROAD	U	0.00
21.56	706.91	2-4-3-017-034	515	1	9/30/1985	1008733	SFD	Road	ROAD	U	0.00
7.45	244.13	2-4-3-017-025	515	1	9/26/1985	1005128	SFD	Road	ROAD	U	0.00
8.23	269.78	2-4-3-017-062	515	1	8/15/1985	1018871	SFD	Road	ROAD	U	0.00
4.02	131.64	2-4-3-017-063	515	1	8/15/1985	1018875	SFD	Road	ROAD	U	0.00
10.32	338.28	2-4-3-017-064	515	1	8/15/1985	1018877	SFD	Road	ROAD	U	0.00
7.20	236.04	2-4-3-017-065	515	1	8/15/1985	1018879	SFD	Road	ROAD	U	0.00

7.71	252.65	2-4-3-017-066	515	1	8/15/1985	1018882 SFD	Road	ROAD	U	0.00
11.83	387.76	2-4-3-017-068	515	1	8/15/1985	1018862 SFD	Road	ROAD	U	0.00
3.60	118.01	2-4-3-017-069	515	1	8/15/1985	1018863 SFD	Road	ROAD	U	0.00
9.85	322.95	2-4-3-017-070	515	1	8/15/1985	1015224 SFD	Road	ROAD	U	0.00
10.77	352.95	2-4-3-017-053	515	1	8/13/1985	1018874 SFD	Road	ROAD	U	0.00
3.92	128.47	2-4-3-017-059	515	1	8/12/1985	1018865 SFD	Road	ROAD	U	0.00
19.99	655.44	2-4-3-017-061	515	1	8/12/1985	1018869 SFD	Road	ROAD	U	0.00
10.88	356.78	2-4-3-016-056	515	2	7/24/1985	1008458 SFD	Road	ROAD	U	0.23
5.35	175.30	2-4-3-016-059	515	2	6/3/1985	1008465 SFD	Road	ROAD	U	0.11
19.26	631.48	2-0-0-000-000	515	1	2/7/1985	1032541 SFD	Road	ROAD	U	0.29
15.87	520.46	2-4-3-016-052	515	2	12/21/1984	1032543 SFD	Road	ROAD	U	0.25
14.30	468.74	2-4-3-016-051	515	2	8/1/1984	1032542 SFD	Road	ROAD	U	0.29
28.56	936.53	2-4-3-016-035	515	2	4/18/1984	1008429 SFD	Road	ROAD	U	0.00
5.19	170.03	2-4-3-016-029	515	1	4/9/1984	1008447 SFD	Road	ROAD	U	0.00
34.17	1,120.27	2-4-3-007-007	515	1	3/30/1984	1007647 SFD	Road	ROAD	U	0.00
7.27	238.22	2-4-3-016-058	515	1	3/1/1983	1008463 SFD	Road	ROAD	U	0.11
24.65	808.14	2-4-3-003-042	515	1	10/16/1981	1007646 SFD	Road	ROAD	U	0.00
22.98	753.28	2-0-0-000-000	515	2	8/27/1980	1008421 SFD	Road	ROAD	U	0.10
11.76	385.55	2-4-3-003-100	515	2	12/5/1979	1007642 SFD	Road	ROAD	U	0.00
10.85	355.71	2-4-3-016-025	515	1	7/13/1979	1007678 SFD	Road	ROAD	U	0.00
28.61	938.01	2-4-3-002-045	515	1	5/10/1979	1023474 SFD	Road	ROAD	U	0.00
22.06	723.39	2-4-3-003-104	515	1	11/8/1978	1017124 SFD	Road	ROAD	U	0.00
44.50	1,458.96	2-0-0-000-000	515	5	11/1/1978	1016745 SFD	Road	ROAD	U	0.00
52.07	1,707.13	2-0-0-000-000	515	5	11/1/1978	1015089 SFD	Road	ROAD	U	0.00
74.67	2,448.22	2-0-0-000-000	515	174	11/1/1978	1006185 SFD	Road	ROAD	U	0.00
95.78	3,140.33	2-0-0-000-000	515	9	11/1/1978	1015225 SFD	Road	ROAD	U	0.00
102.34	3,355.52	2-0-0-000-000	515	9	11/1/1978	1015091 SFD	Road	ROAD	U	0.00
138.04	4,526.04	2-0-0-000-000	515	5	11/1/1978	1015092 SFD	Road	ROAD	U	0.00
147.99	4,851.99	2-0-0-000-000	515	9	11/1/1978	1006188 SFD	Road	ROAD	U	0.00
159.59	5,232.60	2-0-0-000-000	515	7	11/1/1978	1016743 SFD	Road	ROAD	U	0.00
182.84	5,994.75	2-0-0-000-000	515	9	11/1/1978	1023479 SFD	Road	ROAD	U	0.00
204.39	6,701.37	2-0-0-000-000	515	26	11/1/1978	1006192 SFD	Road	ROAD	U	0.00
258.62	8,479.40	2-0-0-000-000	515	10	11/1/1978	1016750 SFD	Road	ROAD	U	0.00
4.13	135.49	2-4-3-002-067	515	1	11/1/1978	1017145 SFD	Road	ROAD	U	0.00
18.49	606.09	2-4-3-003-018	515	3	11/1/1978	1007628 SFD	Road	ROAD	U	0.00
20.65	677.19	2-4-3-003-024	515	1	11/1/1978	1007633 SFD	Road	ROAD	U	0.00
5.55	181.91	2-4-3-003-038	515	2	11/1/1978	1007636 SFD	Road	ROAD	U	0.00
22.38	733.77	2-4-3-003-048	515	1	11/1/1978	1007635 SFD	Road	ROAD	U	0.00
6.70	219.64	2-4-3-007-003	515	1	11/1/1978	1017135 SFD	Road	ROAD	U	0.00
12.06	395.38	2-4-3-016-030	515	1	11/1/1978	1008448 SFD	Road	ROAD	U	0.11
7.21	236.37	2-4-3-016-037	515	2	11/1/1978	1001684 SFD	Road	ROAD	U	0.00
13.13	430.44	2-4-3-016-042	515	1	11/1/1978	1008419 SFD	Road	ROAD	U	0.14
8.12	266.12	2-4-3-016-043	515	1	11/1/1978	1008449 SFD	Road	ROAD	U	0.14
46.57	1,526.89	2-4-3-007-009	515	1	3/20/1978	1007649 SFD	Road	ROAD	U	0.00
256.75	8,418.17	2-0-0-000-000	515	13	4/19/1977	1006186 SFD	Road	ROAD	U	0.00
15.36	503.55	2-4-3-002-086	515	1	6/8/1976	1007660 SFD	Road	ROAD	U	0.00
2.02	66.17	2-4-3-016-041	515	1	11/26/1974	1000884 SFD	Road	ROAD	U	0.14
179.39	5,881.69	2-0-0-000-000	515	9	8/26/1974	1016749 SFD	Road	ROAD	U	0.00
111.71	3,662.57	2-0-0-000-000	515	4	7/19/1974	1015090 SFD	Road	ROAD	U	0.00
139.67	4,579.34	2-0-0-000-000	515	7	7/19/1974	1016747 SFD	Road	ROAD	U	0.00
188.79	6,189.86	2-0-0-000-000	515	7	7/19/1974	1016748 SFD	Road	ROAD	U	0.00
75.68	2,481.42	2-0-0-000-000	515	7	7/9/1974	1006193 SFD	Road	ROAD	U	0.00
281.64	9,234.04	2-0-0-000-000	515	9	7/9/1974	1006184 SFD	Road	ROAD	U	0.00
246.00	8,065.49	2-0-0-000-000	515	6	7/8/1974	1023477 SFD	Road	ROAD	U	0.00
89.60	2,937.73	2-0-0-000-000	515	174	3/5/1974	1006183 SFD	Road	ROAD	U	0.00
38.58	1,264.78	2-4-3-003-097	515	4	11/27/1973	1007645 SFD	Road	ROAD	U	0.00
7.01	229.73	2-4-3-007-024	515	1	10/18/1973	1026028 SFD	Road	ROAD	U	0.18
26.21	859.18	2-4-3-002-078	515	1	10/12/1972	1017153 SFD	Road	ROAD	U	0.00
17.39	570.11	2-4-3-002-056	515	1	10/4/1972	1008412 SFD	Road	ROAD	U	0.00
6.13	200.98	2-4-3-002-079	515	1	8/10/1971	1017152 SFD	Road	ROAD	U	0.00
6.98	228.80	2-4-3-016-024	515	1	6/8/1966	1008424 SFD	Road	ROAD	U	0.00
6.52	213.77	2-4-3-016-045	515	1	7/21/1965	1020881 SFD	Road	ROAD	U	0.00
10.70	350.85	2-4-3-003-056	515	1	11/13/1964	1007612 SFD	Road	ROAD	U	0.00
16.93	554.92	2-4-3-002-077	515	1	10/12/1964	1023469 SFD	Road	ROAD	U	0.00
578.61	18,970.66	2-4-3-003-017	515	35	9/16/1964	1002207 SFD	Road	ROAD	U	0.00
56.29	1,845.55	2-4-3-002-045	515	1	4/2/1959	1023471 SFD	Road	ROAD	U	0.00
2.47	80.93	2-4-3-002-057	515	1	3/30/1959	1008413 SFD	Road	ROAD	U	0.00
14.39	471.78	2-4-3-020-054	513	1	5/30/2012	1040483 SFD	Road	ROAD	U	0.17
17.27	566.07	2-4-3-008-025	513	1	12/23/2004	1037169 SFD	Road	ROAD	U	0.00
70.26	2,303.58	2-4-3-015-058	513	1	10/13/2004	1037048 SFD	Road	ROAD	U	0.00
13.35	437.84	2-4-3-009-066	513	1	7/13/2004	1036772 SFD	Road	ROAD	U	0.00
3.87	126.91	2-4-3-009-058	513	1	4/23/2004	1036644 SFD	Road	ROAD	U	0.00
25.57	838.22	2-4-3-006-056	513	1	3/19/2004	1036625 SFD	Road	ROAD	U	0.00
18.80	616.48	2-4-3-009-076	513	1	2/17/2004	1036547 SFD	Road	ROAD	U	0.00
18.57	608.91	2-4-3-009-055	513	1	12/30/2003	1036510 SFD	Road	ROAD	U	0.17
8.34	273.33	2-4-3-009-067	513	1	11/13/2003	1036421 SFD	Road	ROAD	U	0.16
9.58	314.15	2-4-3-009-068	513	1	6/17/2003	1035857 SFD	Road	ROAD	U	0.00
12.02	394.13	2-4-3-009-061	513	1	4/25/2003	1035792 SFD	Road	ROAD	U	0.00
21.36	700.16	2-4-3-009-079	513	1	4/25/2003	1035793 SFD	Road	ROAD	U	0.00
10.75	352.60	2-4-3-009-054	513	1	3/14/2003	1035667 SFD	Road	ROAD	U	0.17
17.75	581.97	2-4-3-009-081	513	1	3/11/2003	1035604 SFD	Road	ROAD	U	0.00
17.42	571.07	2-4-3-009-084	513	1	3/11/2003	1035621 SFD	Road	ROAD	U	0.00
17.48	573.03	2-4-3-009-052	513	1	3/10/2003	1035598 SFD	Road	ROAD	U	0.00
16.98	556.80	2-4-3-009-069	513	1	2/27/2003	1035580 SFD	Road	ROAD	U	0.00
29.48	966.39	2-4-3-009-059	513	1	2/4/2003	1035561 SFD	Road	ROAD	U	0.00
32.72	1,072.87	2-4-3-009-032	513	1	7/17/2000	1033468 SFD	Road	ROAD	U	1.12
28.01	918.31	2-4-3-009-040	513	1	9/3/1999	1032913 SFD	Road	ROAD	U	1.12
4.17	136.67	2-4-3-022-003	513	1	4/8/1999	1017002 SFD	Road	ROAD	U	0.59
6.63	217.24	2-4-3-022-004	513	1	4/8/1999	1017003 SFD	Road	ROAD	U	0.59
0.00	0.00	2-4-3-022-005	513	1	4/8/1999	1017004 SFD	Road	ROAD	U	0.59
8.32	289.18	2-4-3-022-006	513	1	4/8/1999	1017005 SFD	Road	ROAD	U	0.59
8.15	267.16	2-4-3-022-007	513	1	3/12/1999	1017006 SFD	Road	ROAD	U	0.59
8.59	281.58	2-4-3-022-015	513	1	2/17/1999	1016995 SFD	Road	ROAD	U	0.59
8.06	264.15	2-4-3-022-016	513	1	2/17/1999	1016996 SFD	Road	ROAD	U	0.09
0.00	0.00	2-4-3-006-085	513	1	12/19/1997	1005093 SFD	Road	ROAD	U	0.12
6.72	220.36	2-4-3-006-087	513	1	12/15/1997	1005110 SFD	Road	ROAD	U	0.09
8.62	282.57	2-4-3-006-088	513	1	12/15/1997	1005107 SFD	Road	ROAD	U	0.00
6.96	228.28	2-4-3-006-095	513	1	12/15/1997	1005094 SFD	Road	ROAD	U	0.00
15.36	503.44	2-4-3-006-096	513	1	12/15/1997	1005092 SFD	Road	ROAD	U	0.10
4.27	140.00	2-4-3-006-097	513	1	12/15/1997	1005118 SFD	Road	ROAD	U	0.00
9.90	324.73	2-4-3-006-089	513	1	12/12/1997	1005106 SFD	Road	ROAD	U	0.00
3.81	124.92	2-4-3-006-090	513	1	12/12/1997	1005104 SFD	Road	ROAD	U	0.09
11.56	378.85	2-4-3-006-086	513	1	12/5/1997	1005112 SFD	Road	ROAD	U	0.08
11.10	363.88	2-4-3-006-091	513	1	12/5/1997	1005102 SFD	Road	ROAD	U	0.00
60.39	1,980.14	2-4-3-008-067	513	1	11/3/1997	1005724 SFD	Road	ROAD	U	0.18

2.36	77.24	2-4-3-008:066	513	1	11/8/1995	1005721 SFD	Road	ROAD	U	0.00
13.02	426.97	2-4-3-003:106	513	2	7/20/1995	1017123 SFD	Road	ROAD	U	0.25
62.85	2,060.52	2-4-3-009:025	513	1	3/14/1995	1019718 SFD	Road	ROAD	U	0.21
9.95	326.31	2-4-3-008:075	513	2	9/21/1994	1019707 SFD	Road	ROAD	U	0.00
20.79	681.48	2-4-3-019:046	513	1	7/19/1994	1017112 SFD	Road	ROAD	U	0.00
35.52	1,164.54	2-4-3-015:034	513	1	4/15/1994	1009694 SFD	Road	ROAD	U	0.00
4.87	159.81	2-4-4-001:087	513	1	5/17/1993	1011596 SFD	Road	ROAD	U	0.00
9.52	312.02	2-4-3-015:042	513	1	9/10/1992	1008480 SFD	Road	ROAD	U	0.00
29.31	960.93	2-4-3-008:073	513	2	4/23/1992	1023597 SFD	Road	ROAD	U	0.00
13.47	441.53	2-4-3-008:076	513	1	1/23/1992	1007604 SFD	Road	ROAD	U	0.00
5.86	192.21	2-4-3-008:023	513	1	5/23/1990	1019694 SFD	Road	ROAD	U	0.00
11.78	386.26	2-4-3-008:063	513	1	10/20/1989	1019697 SFD	Road	ROAD	U	0.00
6.50	213.17	2-4-3-005:012	513	1	9/22/1989	1005407 SFD	Road	ROAD	U	0.00
18.87	618.83	2-4-3-003:114	513	1	8/2/1989	1007630 SFD	Road	ROAD	U	0.00
45.61	1,495.36	2-4-3-015:052	513	1	8/1/1989	1017121 SFD	Road	ROAD	U	0.00
6.11	200.19	2-4-3-008:024	513	2	7/26/1989	1019695 SFD	Road	ROAD	U	0.00
9.63	315.63	2-4-3-019:035	513	2	5/12/1989	1005402 SFD	Road	ROAD	U	0.00
29.39	963.58	2-4-3-008:034	513	2	5/4/1989	1019706 SFD	Road	ROAD	U	0.00
12.18	399.43	2-4-3-008:027	513	2	4/12/1989	1019699 SFD	Road	ROAD	U	0.00
11.40	373.66	2-4-3-008:061	513	1	1/19/1989	1029786 SFD	Road	ROAD	U	0.00
35.92	1,177.68	2-4-3-008:074	513	1	1/5/1989	1023599 SFD	Road	ROAD	U	0.00
11.29	370.27	2-4-3-008:060	513	2	10/28/1988	1029785 SFD	Road	ROAD	U	0.00
125.51	4,115.00	2-4-3-015:043	513	1	10/1/1988	1008479 SFD	Road	ROAD	U	0.00
17.41	570.77	2-4-3-008:028	513	2	9/8/1988	1019700 SFD	Road	ROAD	U	0.17
37.43	1,227.19	2-4-4-001:020	513	1	7/26/1988	1007721 SFD	Road	ROAD	U	0.41
32.95	1,080.25	2-4-3-009:015	513	2	4/29/1988	1007605 SFD	Road	ROAD	U	0.17
49.52	1,623.44	2-4-3-008:030	513	2	3/29/1988	1019703 SFD	Road	ROAD	U	0.00
10.63	348.61	2-4-3-008:035	513	2	3/29/1988	1019678 SFD	Road	ROAD	U	0.00
17.00	557.43	2-4-3-008:018	513	2	2/5/1988	1019688 SFD	Road	ROAD	U	0.00
21.92	718.55	2-4-3-003:115	513	2	1/20/1988	1017128 SFD	Road	ROAD	U	0.00
18.98	622.30	2-4-3-008:012	513	1	12/22/1987	1019680 SFD	Road	ROAD	U	0.00
32.37	1,061.45	2-4-3-009:009	513	2	11/19/1987	1001166 SFD	Road	ROAD	U	0.00
34.56	1,132.95	2-4-3-015:019	513	2	7/1/1987	1027466 SFD	Road	ROAD	U	0.00
14.28	468.33	2-4-3-008:045	513	1	6/5/1987	1000724 SFD	Road	ROAD	U	0.00
8.89	291.37	2-4-3-008:052	513	1	3/5/1987	1024377 SFD	Road	ROAD	U	0.00
8.07	264.43	2-4-3-008:015	513	2	2/11/1987	1019685 SFD	Road	ROAD	U	0.19
6.15	201.67	2-4-3-015:003	513	1	1/29/1987	1007624 SFD	Road	ROAD	U	0.00
21.74	712.62	2-4-3-009:041	513	1	1/14/1987	1022867 SFD	Road	ROAD	U	0.21
25.26	828.03	2-4-3-009:042	513	1	12/1/1986	1022869 SFD	Road	ROAD	U	1.12
15.56	510.27	2-4-3-015:002	513	1	11/25/1986	1017120 SFD	Road	ROAD	U	0.00
14.36	470.93	2-4-3-008:072	513	2	10/8/1986	1023595 SFD	Road	ROAD	U	0.00
19.39	635.74	2-4-3-008:053	513	2	8/19/1986	1024372 SFD	Road	ROAD	U	0.19
21.78	713.93	2-4-3-008:014	513	2	7/15/1986	1019684 SFD	Road	ROAD	U	0.00
42.62	1,397.46	2-4-3-008:054	513	2	7/10/1986	1024374 SFD	Road	ROAD	U	0.00
0.25	8.11	2-4-3-009:020	513	1	4/24/1986	1019714 SFD	Road	ROAD	U	0.00
18.51	607.02	2-4-3-008:020	513	1	4/1/1986	1019690 SFD	Road	ROAD	U	0.00
8.54	280.05	2-4-3-009:016	513	1	4/1/1986	1017085 SFD	Road	ROAD	U	0.00
16.65	545.77	2-4-3-008:022	513	1	2/7/1986	1019693 SFD	Road	ROAD	U	0.00
31.18	1,022.24	2-4-3-008:032	513	1	7/22/1985	1019704 SFD	Road	ROAD	U	0.00
39.64	1,299.56	2-4-3-008:055	513	1	5/17/1985	1019691 SFD	Road	ROAD	U	0.00
8.72	285.74	2-4-3-008:033	513	2	4/30/1985	1001384 SFD	Road	ROAD	U	0.00
29.78	976.50	2-4-3-008:016	513	1	4/3/1985	1019686 SFD	Road	ROAD	U	0.00
11.38	373.03	2-4-3-009:038	513	1	4/1/1985	1000733 SFD	Road	ROAD	U	1.12
7.72	253.25	2-4-3-009:018	513	2	2/25/1985	1019719 SFD	Road	ROAD	U	0.20
12.85	421.37	2-4-3-008:043	513	1	12/6/1984	1000721 SFD	Road	ROAD	U	0.00
11.66	382.35	2-4-3-008:068	513	1	10/30/1984	1005725 SFD	Road	ROAD	U	0.00
6.54	214.34	2-4-3-008:036	513	2	10/16/1984	1019682 SFD	Road	ROAD	U	0.00
27.48	901.01	2-4-3-008:042	513	1	10/2/1984	1000719 SFD	Road	ROAD	U	0.21
13.82	453.03	2-4-3-015:033	513	1	6/14/1984	1009696 SFD	Road	ROAD	U	0.00
24.07	789.10	2-4-3-009:043	513	1	5/17/1984	1022871 SFD	Road	ROAD	U	1.12
41.38	1,356.83	2-4-3-009:044	513	1	5/17/1984	1022872 SFD	Road	ROAD	U	0.25
13.18	432.10	2-4-3-015:017	513	2	4/9/1984	1027468 SFD	Road	ROAD	U	0.00
50.26	1,647.73	2-4-3-008:021	513	1	4/5/1984	1019692 SFD	Road	ROAD	U	0.00
26.27	861.17	2-4-3-008:047	513	1	3/15/1984	1024370 SFD	Road	ROAD	U	0.00
18.63	610.85	2-4-3-008:013	513	1	3/6/1984	1019681 SFD	Road	ROAD	U	0.00
18.26	598.69	2-4-3-008:046	513	1	1/9/1984	1019687 SFD	Road	ROAD	U	0.00
17.40	570.33	2-4-3-008:071	513	2	12/8/1983	1023596 SFD	Road	ROAD	U	0.00
16.59	543.88	2-4-3-008:019	513	2	11/9/1983	1019689 SFD	Road	ROAD	U	0.00
11.64	381.69	2-4-3-009:010	513	1	11/9/1983	1019709 SFD	Road	ROAD	U	0.00
25.09	822.54	2-4-3-009:039	513	1	10/31/1983	1000731 SFD	Road	ROAD	U	1.12
25.10	822.92	2-4-3-009:019	513	1	10/11/1983	1019720 SFD	Road	ROAD	U	0.21
9.23	302.51	2-4-3-008:044	513	1	10/3/1983	1000722 SFD	Road	ROAD	U	0.00
24.50	803.28	2-0-0-000:000	513	1	9/30/1983	1000736 SFD	Road	ROAD	U	1.12
16.43	538.58	2-4-3-009:024	513	1	9/29/1983	1019716 SFD	Road	ROAD	U	0.00
7.18	235.44	2-4-3-008:062	513	2	9/21/1983	1019696 SFD	Road	ROAD	U	0.00
27.01	885.44	2-4-3-015:001	513	1	11/1/1979	1007626 SFD	Road	ROAD	U	0.00
15.28	501.07	2-4-3-015:020	513	2	11/1/1978	1027465 SFD	Road	ROAD	U	0.00
1.07	34.92	2-4-4-001:025	513	1	11/1/1978	1011599 SFD	Road	ROAD	U	0.00
6.21	203.55	2-4-4-001:078	513	1	11/1/1978	1011598 SFD	Road	ROAD	U	0.38
13.15	431.28	2-4-3-015:028	513	1	10/10/1978	1009699 SFD	Road	ROAD	U	0.00
9.40	308.09	2-4-4-001:096	513	2	11/28/1977	1011588 SFD	Road	ROAD	U	0.00
71.13	2,331.97	2-0-0-000:000	513	1	11/4/1977	1007615 SFD	Road	ROAD	U	0.00
35.99	1,179.95	2-4-3-015:036	513	4	9/23/1974	1007617 SFD	Road	ROAD	U	0.00
24.91	816.69	2-4-3-005:019	513	1	5/25/1973	1007613 SFD	Road	ROAD	U	0.00
10.97	359.67	2-4-3-015:021	513	2	10/2/1972	1027460 SFD	Road	ROAD	U	0.00
12.13	397.79	2-4-3-015:022	513	2	6/15/1971	1027467 SFD	Road	ROAD	U	0.00
17.81	583.77	2-4-3-008:085	513	1	4/22/1958	1007601 SFD	Road	ROAD	U	0.20
18.56	608.39	2-4-3-020:084	511	1	5/17/2000	1033354 SFD	Road	ROAD	U	0.17
14.37	471.17	2-4-3-021:067	511	1	10/9/1998	1003403 SFD	Road	ROAD	U	13.04
18.17	595.66	2-4-3-016:060	511	2	3/12/1985	1008466 SFD	Road	ROAD	U	0.11
17.15	562.21	2-4-3-021:059	515	1	6/30/2003	1035890 SFD	Road	ROAD	U	0.00
7.40	242.73	2-4-3-021:096	515	1	9/4/2003	1036315 SFD				0.00
16.92	554.75	2-4-3-020:069	515	1	12/22/1998	1009270 SFD				0.00
2,983,592.85										0.00

Ka Pa‘akai Analysis for the Existing Maui County Wells in the Honolua Aquifer System, Lahaina Aquifer Sector

Ahupua‘as of Honokahua, Nāpili 2, Nāpili 3, Nāpili 4,
and Nāpili 5, Kā‘anapali Moku, Island of Maui

AUGUST 2023

PREPARED FOR
**County of Maui, Department of Water
Supply**

PREPARED BY
SWCA Environmental Consultants

KA PA'AKAI ANALYSIS FOR EXISTING MAUI COUNTY WELLS IN HONOLUA AQUIFER SYSTEM, LAHAINA AQUIFER SECTOR

**AHUPUA'AS OF HONOKAHUA, NĀPILI 2, NĀPILI 3, NĀPILI 4, AND NĀPILI 5,
KĀ'ANAPALI MOKU, ISLAND OF MAUI**

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SWCA Cultural Resources Report

August 2023

EXECUTIVE SUMMARY

On behalf of the County of Maui Department of Water Supply (MDWS), SWCA Environmental Consultants (SWCA) conducted a Ka Pa'akai Analysis in support of the water use permit application for the existing wells of Honokahua B, Nāpili A, B, and C, in the *ahupua'as* (traditional land divisions) of Honokahua, Nāpili 2, 3, 4, and 5, located within the Honolua Aquifer System, in the larger Lahaina Aquifer Sector.

In 2022, the State of Hawai'i, Department of Land and Natural Resources (DLNR), Commission on Water Resources Management (CWRM) designated the Lahaina Aquifer Sector as a Surface and Ground Water Management Area. This decision was made in accordance with Hawai'i Revised Statutes (HRS) Chapter 174C, the State Water Code, and Hawai'i Administrative Rules (HAR) Title 13, Water Resources, Chapter 171, Designation and Regulation of Water Management Areas. As a result of this designation, the MDWS is required to submit water use permit applications to the CWRM for all of its existing and proposed water sources within the Lahaina Aquifer Sector.

As water use within the Lahaina Aquifer Sector has the potential to affect traditional and customary Native Hawaiian rights and practices, a required part of the CWRM water use permit application for each water use is the preparation of a Ka Pa'akai Analysis. These analyses follow the guidelines established by the 2000 Hawai'i Supreme Court decision in *Ka Pa'akai O Ka 'Aina v. Land Use Commission*.

Using a combination of archival research, existing oral history interviews, and public testimony from the Instream Flow Standard Assessment Report (IFSAR) meetings, the following Ka Pa'akai Analysis report identifies and discusses the traditional and customary practices undertaken within the Lahaina Aquifer Sector, and more specifically within the Honolua Aquifer System, that are related to water use and could potentially be impacted by water use related to the existing County wells. These traditional and customary practices include the cultivation of wetland *kalo* (taro, *Colocasia esculenta*), near-shore fishing, *he'e* (octopus) hunting, and the gathering of *limu* (algae) and *honu* (turtles).

The MDWS has four existing wells within the Honolua Aquifer System that are addressed in this analysis. These are the Honokahua B and the Nāpili A, B, and C wells located within the *ahupua'as* of Honokahua, Nāpili 2, 3, 4, and 5. These wells were observed to have less of an impact on freshwater availability in the Honolua Aquifer System than the current large-scale diversion of streamwater from the Honokōhau Ditch to supply residential and tourist developments in Kā'anapali. Groundwater withdrawal to support communities in Kā'anapali does, however, contribute to the overall reduced availability of freshwater within the Honolua Aquifer System.

Archival research indicates that traditional and customary practices such as the gathering of *lā'ua lapa'au* (medicinal plants), *lo'i kalo* cultivation, and collecting riparian species such as 'o'opu (goby fish), 'ōpae (endemic shrimp), the shellfish *hīhīwai* (*Neritina granosa*), *limu*, and *hapawai* (*Theodoxus vespertinus*) have all declined dramatically in the area due to decades of commercial pineapple cultivation. In existing oral history interviews, several narrators also noted a decline in key, culturally important natural resources such as 'o'opu, 'ōpae, *hīhīwai*, *hapawai*, *limu*, and nearshore fish since the 1970s when the MDWS installed its wells. The surfacewater diversions from the Honolua and Honokōhau Streams, mixed with the ecological disturbances from legacy sugarcane and pineapple fields, led to cascading effects on the natural environment. These cascading effects included a decline in water to irrigate *lo'i kalo* (taro terraces); silt, pesticide, and fertilizer runoff damaging the reefs; a lack of *mauka* (inland) to *makai* (coastal) stream water connectivity to support the life cycle of 'o'opu and 'ōpae; and an influx of invasive plant and animal species in the *mauka* areas leading to increased fire risk, which in turn reduced aquifer replenishment. In spite of these changes, cultural practitioners continue to fish and gather in the areas *makai* of the wells.

This Ka Pa'akai Analysis found that although the existing Maui County wells are not the primary burden upon freshwater in the Honolua Aquifer System, the wells do contribute to an overall shortage of freshwater that impacts the vitality of ongoing traditional and customary practices. The Maui County Department of Water Supply has therefore agreed to undertake a number of feasible actions to maintain and potentially increase supplies of freshwater for traditional and customary practices. This Ka Pa'akai Analysis identified a number of feasible actions to help mitigate the potential impacts of continued groundwater withdrawal from the Honokahua B and the Nāpili A, B, and C wells. These include soliciting ongoing feedback from community members; employing a mauka to makai approach to water conservation; supporting community-based efforts to restore watersheds; repairing, replacing, and maintaining existing infrastructure; maintaining and monitoring water quality; and developing alternative water source strategies.

Many words in the Hawaiian language, 'Ōlelo Hawai'i, are used throughout this report. In addition to being defined the first time that they are introduced in the report, all Hawaiian-language words are defined in the glossary (see Section 8 Glossary of Hawaiian Words Used in the Text).

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1 INTRODUCTION

On behalf of the County of Maui, Department of Water Supply (MDWS), SWCA Environmental Consultants (SWCA) has conducted this Ka Pa'akai Analysis in support of the water use permit application for the existing Honokahua B and the Nāpili A, B, and C wells located within the Honolua Aquifer System in the Lahaina Aquifer Sector.

1.1 Lahaina Water Management Area

In 2022, the State of Hawai'i, Department of Land and Natural Resources (DLNR), Commission on Water Resources Management (CWRM) designated the Lahaina Aquifer Sector as a Surface and Ground Water Management Area. This decision was made in accordance with Hawai'i Revised Statutes (HRS) Chapter 174C, the State Water Code, and Hawai'i Administrative Rules (HAR) Title 13, Water Resources, Chapter 171, Designation and Regulation of Water Management Areas. As a result of this designation, the MDWS is required to submit water use permit applications to the CWRM for all of its existing and proposed water sources within the Lahaina Aquifer Sector.

The Lahaina Aquifer Sector includes the *moku* (districts) of Lahaina and Kā'anapali, both within West Maui. The Lahaina Aquifer Management Area includes the Honokōhau, Honolua, Honokahua, Kahana, Honokōwai, Wahikuli, Kahoma, Kaua'ula, Launiupoko, Olowalu, and Ukumehame Surface Water Hydrologic Units and the Honokōhau, Honolua, Honokōwai, Launiupoko, Olowalu, and Ukumehame Groundwater Hydrologic Units. The Honolua, Honokōhau, Kahana, Honokōwai, and Wahikuli Hydrologic Units are in the Kā'anapali Aquifer System, whereas the Launiupoko, Ukumehame, Olowalu, and Kaua'ula Hydrologic Units are within the Lahaina Aquifer System (Figure 1). The present report focuses on the Honolua Aquifer System. The Honolua Aquifer System, on the northern flank of Pu'u Kukui, encompasses the watersheds of Honolua, Nāpili 2-3, Nāpili 4-5, and Honokahua in the Kā'anapali Moku. The *ahupua'a* (traditional land division) of Nāpili 2-3, Nāpili 4-5, Honolua, Kahana, and Honokahua are within the Honolua Aquifer system (DLNR CWRM 2019b).

In coming to its decision, the CWRM noted several concerns regarding the surface and ground water resources in the Lahaina Aquifer Sector.

- These resources could be threatened by existing or proposed withdrawals or diversions of water
- There is the potential for harm to ground water quantity and quality by saltwater intrusion
- There are serious historic and ongoing disputes over current and planned uses of water
- There is climate uncertainty and potential drought and decline in rainfall and recharge
- There is surface and groundwater interaction and connection that should be managed in an integrated manner.

The MDWS currently operates two surface water treatment plants and eight well pumps within the Lahaina Aquifer Sector. These existing sources withdraw groundwater from the Honolua aquifer system and the Launiupoko aquifer system, and surface water from Honokōhau and Kanahā Streams. The MDWS is preparing water use permit applications for all of these existing water sources. In addition, the MDWS plans to prepare water use permit applications for new water sources under development.

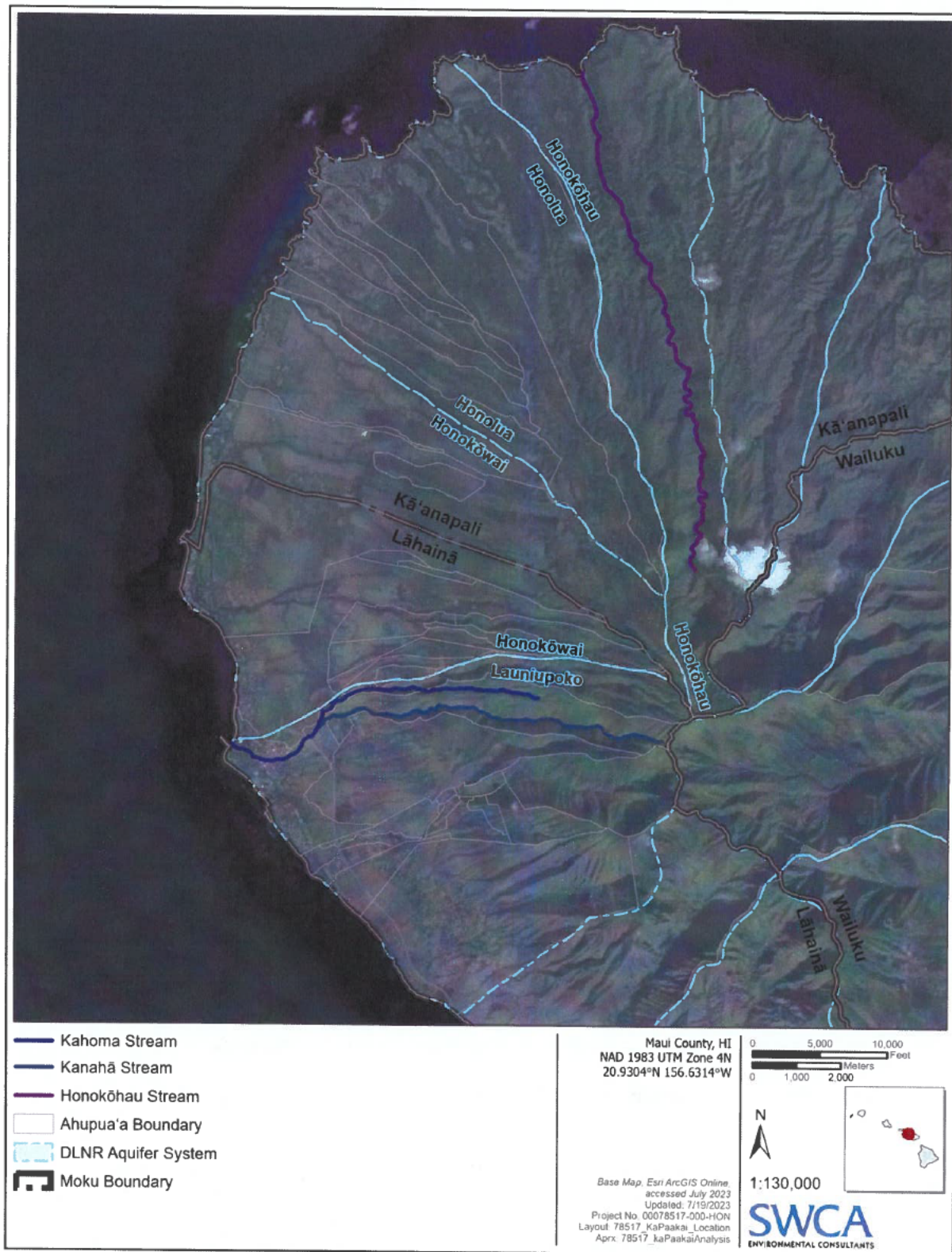


Figure 1. Map of aquifer systems within the Lahaina Aquifer Sector.

1.2 Honolua Aquifer System

The Honolua Aquifer System encompasses the ahupua'a of Honolua, Nāpili 2-3, Nāpili 4-5, Honokahua, and Kahana, as well as several other ahupua'a. County water sources within the Honolua aquifer system include the existing wells of Nāpili A, B, and C, and Honokahua B (Figure 2 and Figure 3). These sources provide water to the residential and resort communities in the Kā'anapali area. The Honolua and Honokahua streams and Papua Gulch are the surfacewater features within the Honolua Hydrologic Unit. The existing MDWS wells of Nāpili A, B, and C, and Honokahua B are located in the ahupua'as of Nāpili 2-3, Nāpili 4-5, and Honokahua (Figure 3).

1.3 Water Issues

The Maui Water Use and Development Plan (2019) acknowledges that West Maui's water resources are constrained by climate change issues such as rising temperatures, increasingly erratic and decreasing rainfall, and other changes in weather patterns. In addition, anthropogenic factors such as increasing population, urban growth, complicated legal processes, lack of capital to improve aging infrastructure, and tensions between the needs of various water users must all be considered by the County when determining water allocations. Existing plantation irrigation systems from Maui Land and Pineapple and Pioneer Mill Irrigation Systems in West Maui, for example, continue to deteriorate since the state transitioned away from pineapple and sugar cane, even though *kalo* (taro, *Colocasia esculenta*) farmers continue to rely on these systems (Maui Department of Water Supply 2019:73). Many of these environmental and anthropogenic factors impact the health and vitality of traditional and customary practices taking place within the Lahaina Aquifer Sector.

1.4 Ka Pa'akai Framework

As water use within the Lahaina Aquifer Sector has the potential to affect traditional and customary Native Hawaiian rights and practices, a required part of the CWRM water use permit application for each water use is the preparation of a Ka Pa'akai Analysis. These analyses will follow the guidelines established by the 2000 Hawai'i Supreme Court decision in *Ka Pa'akai O Ka 'Aina v. Land Use Commission*. The Ka Pa'akai Analysis and consultation process is designed to identify Native Hawaiian cultural, historical, and natural resources and propose feasible actions to protect against potential impacts to Native Hawaiian customary and traditional rights.

The Hawai'i State Constitution was amended in 1978 to specifically recognize traditional and customary Hawaiian practices. Article XII Section 7 of the Constitution states that, "The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of Native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights."

Cultural practices are broadly defined as traditions, beliefs, practices, life ways, and the societal history of a community and its traditions, arts, crafts, music, medicine, religion and related institutions. Hawai'i State agencies have the responsibility to assess the potential impacts of proposed actions on environmental resources in the public trust in order to preserve and protect customary and traditional Native Hawaiian rights to the extent feasible.

The Hawai'i Supreme Court in *Ka Pa'akai O Ka 'Aina v. Land Use Commission* (2000) reaffirmed that "the State and its agencies are obligated to protect the reasonable exercise of customarily and traditionally exercised rights of Hawaiians to the extent feasible." The Court provided an analytical framework "to effectuate the State's obligation to protect Native Hawaiian customary and traditional practices while

reasonably accommodating competing private [property] interests.” Under this framework, state and county agencies must independently assess the following when considering proposed actions, such as reviewing land use applications or, as in this case, water use permit applications:

- The identity and scope of “valued cultural and historical or natural resources” in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;
- The extent to which those resources—including traditional and customary Native Hawaiian rights—will be affected or impaired by the proposed action; and
- The feasible action, if any, to be taken by the LUC [Land Use Commission, or any state agency] to reasonably protect native Hawaiian rights if they are found to exist (*Ka Pa'akai O Ka 'Aina v. Land Use Commission* 94 Haw 31, Haw. 2000:25-26).

The Ka Pa'akai analysis and consultation process is intended to address each of these three elements.

1.4.1 Ka Pa'akai Analysis

As part of the MDWS's water use permit application for its existing and proposed water uses within the Lahaina Aquifer Management Area, a Ka Pa'akai Analysis is required for each application. This analysis is designed to identify the cultural, historical, natural resources and traditional and customary Native Hawaiian practices that may be affected by the permit action and to develop mitigation measures to protect these resources and rights.

The Ka Pa'akai Analysis for the existing Maui County wells located within the Honolua Aquifer System follows the guidelines established by the 2000 Hawai'i Supreme Court decision and involves:

- The identification of cultural, historical, and natural resources of value to Native Hawaiians located within the water use permit area, and the extent to which traditional and customary Native Hawaiian rights are exercised in the area;
- The determination of the extent to which those resources, including traditional and customary Native Hawaiian rights, will be affected or impaired by actions associated with the existing water use; and
- If impacts are found to exist, the identification of actions that could be taken, as needed, to reasonably protect traditional and customary Hawaiian rights and practices within the permit areas.

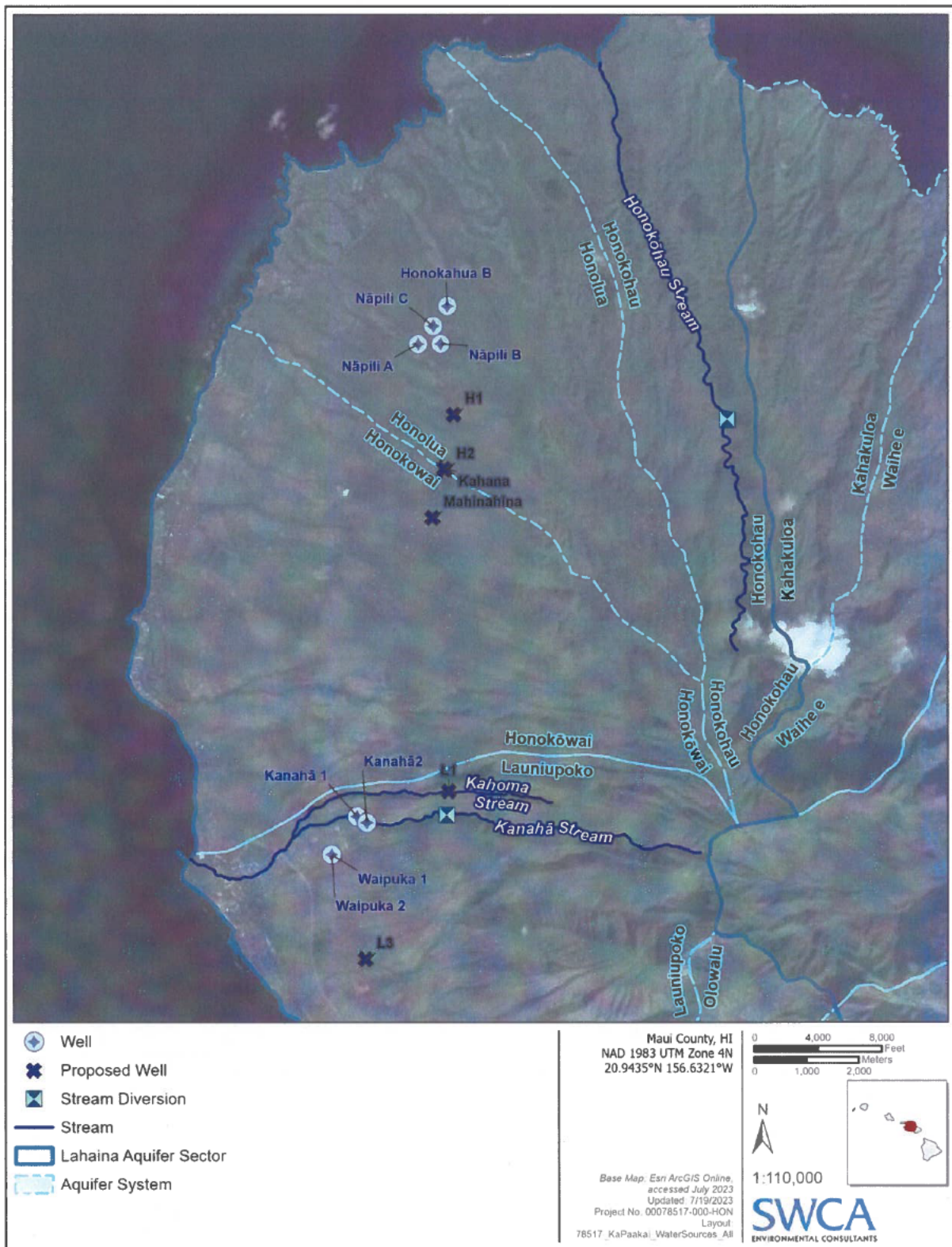


Figure 2. Map of all the existing and planned Maui County features in the Lahaina Aquifer Sector

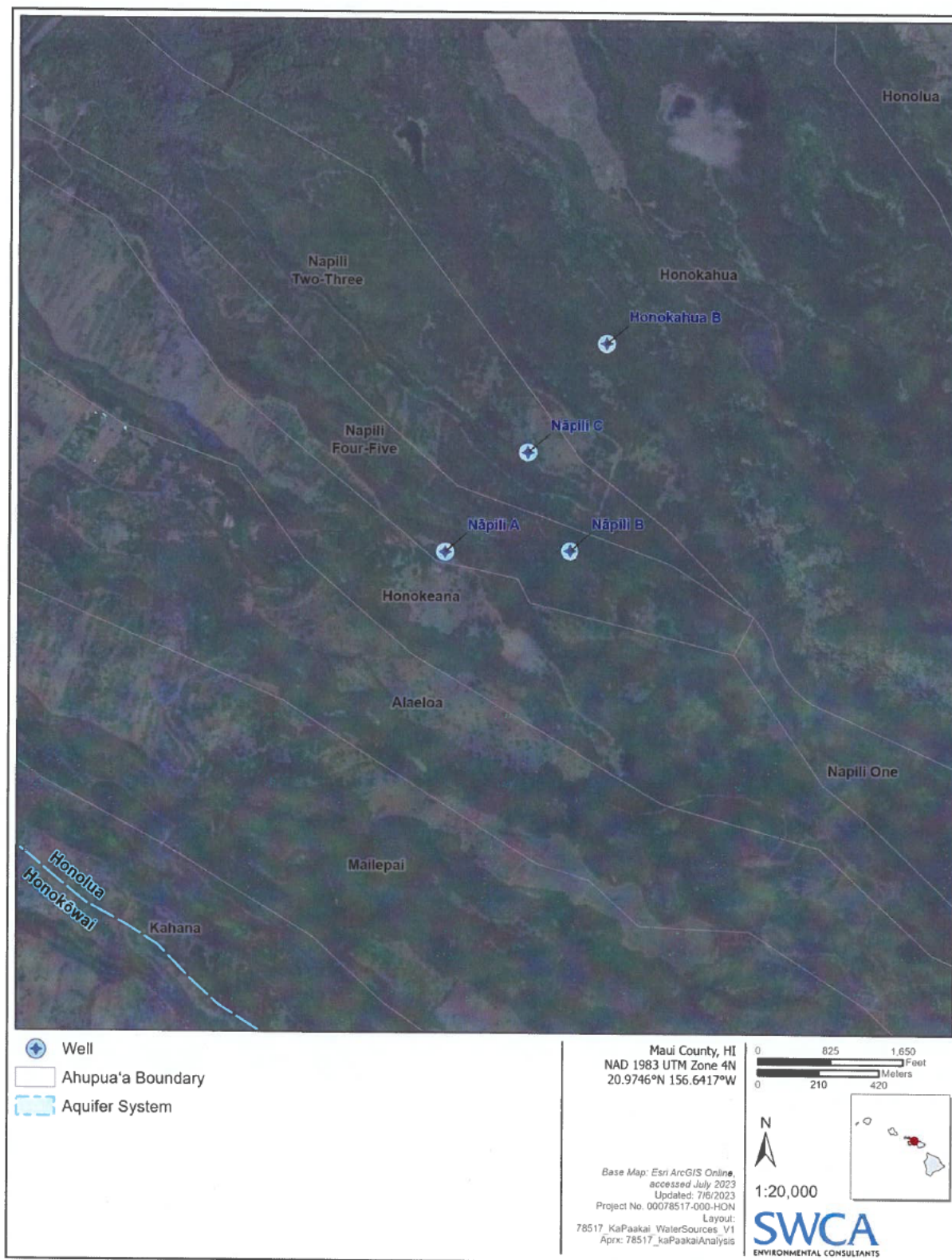


Figure 3. Location of the existing wells Nāpili A, B, and C, and Honkahua B

2 CULTURAL AND HISTORIC BACKGROUND

This section presents the past and present historical and cultural significance of the permit area with a focus on water sources. This cultural and historic background also provides context to some of the historic and ongoing disputes over water use in the Lahaina Aquifer Sector Area. These disputes were among the concerns raised by the CWRM when designating the area as a Surface and Ground Water Management Area. The following research is intended to help identify cultural, historical, and natural resources of value to Native Hawaiians located within the water use permit area and to be sufficient to the extent appropriate to assess potential impacts to traditional and customary Hawaiian rights and practices pertaining to water in the permit area.

2.1 A Brief Historic Context for Traditional Hawaiian Cultural Knowledge

In any sensitive discussion of Native Hawaiian culture, one must understand the role of colonization in eroding traditional cultural knowledge systems. Native Hawaiian culture —past and present— exists in close partnership with its natural environment. Changes in the traditional land tenure system and the adoption of western concepts of land ownership in the nineteenth century had significant direct and indirect impacts on traditional and customary Hawaiian rights and practices tied to ‘āina (land). The privatization of land resulted in the loss and destruction of many significant cultural resources and denied Native Hawaiian cultural practitioners access to lands previously used for traditional cultural purposes.

The loss of traditional Hawaiian cultural knowledge during the nineteenth and early twentieth centuries was further compounded by the devastating decline in the native population resulting from the introduction of foreign diseases to which the Hawaiian people had no developed immunity. Changes in traditional life ways resulting from the migration of younger people from the country districts to growing economic centers such as the port of Honolulu, as well as the shift from subsistence agriculture to the commercial cultivation of crops such as pineapple and sugar, contributed to a loss of cultural memory. With the passing of the last custodians of specialized cultural knowledge, that knowledge was lost forever.

Informants interviewed for this study have identified the effects of pineapple and sugar cane plantations, as well as the growth of tourism and luxury housing developments as primary factors that have profoundly changed the environment of West Maui. The cumulative impacts of these industries on the environment have posed significant challenges for Native Hawaiians, hindering their ability to maintain certain traditional and customary practices reliant upon the health of the ‘āina.

Not until 1978 was the Hawai‘i constitution amended to protect and preserve the traditional customary rights of Native Hawaiians, and not until 1995 did the Hawai‘i Supreme Court confirm Native Hawaiian rights to access undeveloped and under-developed private lands (State of Hawaii Environmental Council 1997:1). These actions came much too late to prevent irretrievable loss of traditional cultural knowledge. With this in mind, it is important to note that an absence of evidence is not evidence of absence. The authors of this Ka Pa‘akai Analysis recognize that the loss of Hawaiian traditional cultural knowledge likely applies to the current study area. It is probable that there are place names whose meaning has been lost or which themselves have been forgotten, and traditions no longer passed on. We also recognize that, while we have made a good faith effort to identify traditional and customary Hawaiian rights and practices associated with the permit area, it is possible that there may be place names missed, traditional history misinterpreted, or *kūpuna* (elder) voices not heard.

As this Ka Pa'akai Analysis shows, however, despite the enduring legacies of colonialism, there are many individuals who possess cultural knowledge, and efforts to revitalize traditional and customary Hawaiian rights and practices are growing. For these cultural revitalization efforts to succeed, it is crucial to support the health of the environments that sustain Native Hawaiian cultural traditions and customs. At the core of ensuring the possibility of these cultural revitalization efforts lies the availability of clean water, which forms the foundation of healthy environments.

2.1.1 The Significance of Water in Hawaiian Culture

In *Native Planters in Old Hawaii*, E. S. Craighill Handy, Elizabeth Green Handy, and Mary Kawena Pukui explain that the significance of water in Hawaiian culture is reflected in the Hawaiian words for wealth and law.

Water, which gave life to food plants as well as to all vegetation, symbolized bounty for the Hawaiian gardener for it irrigated his staff of life—taro. Therefore, the word for water reduplicated meant wealth in general, for a land or a people that had abundant water was wealthy.

The word waiwai means wealth, prosperity, ownership, possession. Literally it is “water-water.” A Hawaiian farmer who had all the water he needed for growing taro was indeed a prosperous man...

The word kânāwai, or law, also tied back to water. Ka-na-wai is literally “belonging-to-the-waters.” With farms along the water system upon which all depended, a farmer took as much as he required and then closed the inlet so that the next farmer could get his share of water—and so it went until all had the water they needed. This became a fixed thing, the taking of one's share and looking after his neighbor's rights as well, without greed or selfishness.

So a person's right to enjoy his privileges, and conceding the same right to his fellow man, gave the Hawaiians their word for law, kânāwai, or the equal sharing of water (Handy et al. 1972:57–58).

They further explained how alien the Western conception of water as a commodity seemed to native Hawaiians.

Inalienable title to water rights in relation to land use is a conception that had no place in the Hawaiian way of thinking... Water, whether for irrigation, for drinking, or other domestic purposes, was something that “belonged” to Kane-i-ka-wai-ola (Procreator-in-the-water-of-life), and came through the meteorological agency of Lono-makua the Rain-provider... The paramount chief, born on the soil and hence born of the *maka'ainana* of a *moku* (island or district), was a medium in whom was vested divine power and authority... But this investment... was instrumental in providing only a channeling of power and authority, not a vested right... But this was not equivalent to our European concept of “divine right.” The *ali'i nui*, in old Hawaiian thinking and practice, did not exercise personal dominion, but channeled dominion. In other words, he was a trustee. The instances in which an *ali'i nui* was rejected and even killed because of abuse of his role are sufficient proof that it was not personal authority by trusteeship that established right (*pono*) (Handy et al. 1972:65, cited in Scheuer and Isaki 2021:78-79).

Emma Nakuina, writing in the late 1800s, described how 'auwai were traditionally managed so that there was always sufficient freshwater flow to *all* individuals living downstream.

No auwai was permitted to take more water than continued to flow in the stream below the dam. It was generally less, for there were those who were living makai or below the same stream, and drawing water from it, whose rights had to be regarded. Any dams made regardless of this well-recognized rule were leveled to bedrock by the water rights holder below, and at any rebuilding, delegates from each dam below were required to be present to see that a due proportion of water was left in the stream (Nakuina 1893, cited in Scheuer and Isaki 2021:82).

2.1.2 Shoreline Traditional Hawaiian Practices in West Maui

Native Hawaiians were keen observers of native ecosystems. The ahupua'a system was premised upon the interconnections between *mauka* (inland) and *makai* (coastal) ecosystems, and between *wai* (freshwater) and *kai* (ocean water or saltwater). Native Hawaiians understood that the health of important marine resources required freshwater discharge from mauka areas (Winter et al. 2018). Many prized species of fish rely upon *limu* (algae) for their food; many species of nearshore limu thrive best in areas with both freshwater and ocean mixing (Abbott 1992). These ancient realizations about the parallels between healthy freshwater and ocean ecosystems were also clearly articulated by kūpuna during ethnographic interviews, community testimony, and existing oral history interviews cited in this report.

West Maui was known for its abundant marine resources. Inhabitants of West Maui relied heavily on fishing in the pre-Contact and early post-Contact periods. According to E. S. Craighill Handy:

On the south side of western Maui the flat coastal plain all the way from Kihei and Maalaea to Honokahua, in old Hawaiian times, must have supported many fishing settlements and isolated fisherman's houses, where sweet potatoes were grown in the sandy soil or red *lepo* near the shore. For fishing, this coast is the most favorable on Maui, and, although a considerable amount of taro was grown, I think it is reasonable to suppose that the large fishing population which presumably inhabited this leeward coast ate more sweet potatoes than taro with their fish (Handy 1940:159-160)...

A.D. Kahaulelio discussed fishing lore in the area around the turn of the last century, including 'ō'io (ladyfish/bonefish, *Albula vulpes*) fishing.

The other division is the division called Mamali oio and is done just beyond the reef and places close to shore, from the steamer landing of Maalaea to the cape of Kunounou at Honokapohau, district of Lahaina. These are the places in which fishing is done by those of Olowalu, Lahaina, Kaanapali, Honolua, and Honokohau (Kahaulelio 1902e, cited in Sterling 1998:17).

Kahaulelio noted that the ocean around Kā'anapali had 'ōpelu (Mackerel scad; *Decapterus pinnulatus* and *D. maruadsī*), *omalemale* (young uhu, or parrotfishes, including *Scarus perspicillatus*), *pānuhunuhu* (stareye parrot fish, *Calotomus sandvicensis*), *māi'i'i* (surgeonfish; *Acanthurus nigrofuscus*), and other fish species (Kahaulelio 1902d).

Kahaulelio also mentioned that the area makai of Honolua Ranch was known for *akule* (big-eyed or goggle-eyed scad fish, *Trachurus crumenophthalmus*).

Akule Fishing.— It is for this kind of fishing that the saying came to be used, "The akule fish seek the deep." Sometimes though, they come close inshore. This fish is a globetrotter and stop whenever they find a place that they like, they stay there. When you see them from the shore, you will see the redness of the water. Only when caught that those who were not skilled in fishing lore know that they are present. They remain several days or weeks at a place. The places in which they are caught are Unahi and

Olowalu in Lahaina, Pahee at Launiupoko, Keawaiki at Lahaina, Kapua at Kaanapali and at Honolua Ranch (Kahaulelio 1902c, cited in Maly and Maly 2003a:141).

2.2 Ka'anapali Moku

2.2.1 I Ka Wa Kahiko: Pre-Contact Kā'anapali Moku

Kā'anapali Moku was a district known for its marine resources and valleys suitable for cultivating important food crops, especially kalo and 'uala (sweet potato; *Ipomoea batatas*). The large plateau overlooking the Honolua Bay was known as Kulaoka'e'a, meaning "dusty plain." Honolua Bay is one of six bays in Kā'anapali Moku, known collectively as "Hono-a-Pi'ilani," meaning "the bays of Pi'ilani." Pi'ilani was a renowned 16th century Maui chief (Kamakau 1961:22). Honolua itself means "two bays," which refers to its bifurcated shape. These bays were all important to Native Hawaiians for fishing and gathering of marine resources (Planning Consultants Hawai'i, LLC 2018).

Important cultural sites in Honolua include *heiau* (temples) such as Honua'ula Heiau in Honolua and Maiu Heiau in Honokōhau Valley (Ashdown 1978; Thrum 1909, Walker 1931). Kā'anapali District was also known for an *ala loa* (long trail) constructed in the 1500s during the reigns of Pi'ilani and Kiha-a-Pi'ilani (Walker 1931). The strategic importance of Kā'anapali Moku led to battles between Hawai'i Island ali'i nui (high chief) Alapa'i and Pele-io-holani a ruling chief of Kaua'i, which occurred at Nāpili and Honokahua (Kamakau 1961:74). The ahupua'a of Honolua and Honokahua were later granted to King Kamehameha II by his father, King Kamehameha I (Ashdown 1978, cited in Planning Consultants Hawai'i, LLC 2018).

D.T. Flemming offers a description of Kā'anapali which indicates the abundance and prosperity of the valleys under kalo cultivation.

In all three valleys which you mention—Honokowai, Honokahua and Honolua, as well as Kahana, there was considerable taro raised in olden times; as a matter of fact, a great deal was raised in Honokowai, where there must have been 30 or 40 acres under cultivation at one time (Handy 1940: 106).

Hand, Handy, and Pukui also mentioned extensive lo'i kalo in Honokōwai, Kahana, Honokahua, and Honolua.

The first four [Honokawai, Kahana, Honokahua, Honolua] all had extensive lo'i lands in their valley bottoms, where terraces rose tier on tier in symmetrical stone-faced lo'i. On this part of the coast there is no sloping *kula* [plain or open country] land seaward of the valleys as there is back of Lahaina and southeastward (1972: 492).

Handy offers additional details about 'uala cultivation in these areas.

I am told that in ancient times there were numerous settlements on western Maui, between Honokohau and Kahakuloa, and also several between Kahakuloa and Waihee. Settlements in these localities imply planting of sweet potatoes on the lower *kula*...From [Olowalu] along the leeward coast, through Kaanapali, the *kula* lands now used for sugar cane and pineapple would have been ideal for sweet potato culture. Some accounts indicate, however, that potato planting was practiced only as an adjunct to the taro culture in and below the great valleys (1940: 160).

2.2.2 Nāpili ahupua'a

The origin of the place name Nāpili is undetermined. There is no specific tradition that has been handed down about the origins of this name. Literal translations can provide some insight into its potential meaning when there is no documented interpretive tradition associated with the name. Pata provides the following potential meanings for the name Nāpili, “perhaps: nāpili—*napili* variety of ‘o‘opu fish (*Sicydium stimsonii*); or, nā pili—the relatives, the pili varieties of grasses (*Heteropogon contortus*), or, the wagers (2022:191).” Pukui et al. (1974) offers the following literal translation for the place name, “the joinings or pili grass (163).” These potential meanings for the place name could indicate the presence and significance of the nāpili variety of ‘o‘opu fish, or of pili grass in the area. No kuleana are listed in the Indices of Awards or shown on tax maps for this ahupua'a (Pata 2022:191).

2.2.3 Honolua

2.2.3.1 'ŌLELO NOEAU PERTAINING TO HONOLUA

The area of Honolua was known for its importance for fishing and nearshore gathering. The importance of these resources for subsistence is captured by the following 'ōlelo noeau, or descriptive proverb, recorded by Mary Kawena Pukui for the area.

Honolua kōhi lae.

Honolua of the weighted brow.

Said of the fisherman of Honolua, Maui, who never raised their heads lest they be expected to share their catch of fish (Pukui 1983: 243).

2.2.3.2 LO'I KALO

E.S.C. Handy's (1892-1980) ethnographic observations provide invaluable insight into Native Hawaiian agricultural techniques in Honokōhau the early 1900s. He described Honokōhau as the having the most lo'i kalo on Maui except Kahakuloa. They also indicate that many people were transitioning away from wetland kalo cultivation due to issues with root rot as early as the 1930s.

This valley—watered by a large rivulet the flow of which never ceases, even today when much of its water is piped off in the upper valley—was, and still is, an area of intensive cultivation of wet taro in flooded terraces. In 1931 a larger proportion of the patches were under taro cultivation in Honokōhau than anywhere else on Maui with the exception of Kahakuloa. In 1934 I observed that one or two considerable areas had been abandoned and that a number of patches had been planted to rice instead of taro, because of root rot affecting the taro. Only one old Hawaiian *kamaaina*, David Kapaku, still cultivates his own wet taro. The rest of the planting is done commercially by several small proprietors, Hawaiian and Chinese, and by laborers employed by D. T. Fleming, to whose enterprise largely is due the continued utilization of so many old terraces (Handy 1940:106).

2.2.3.3 BURIALS AT WAIULI

Kamakau (1961) described a deep pit known as Waiuli in Honokōhau ahupua'a, where the bodies of the maka'āinana (farmers/commoners) from Lahaina to Kahakuloa were interred. He describes Waiuli as directly mauka of Honokōhau, Honolua, and Honokahua. Waiuli is described as “possibly miles deep, with freshwater at the bottom.” He goes on to describe how, at the time of interment, a *kahuna* (priest/specialist) would make an appeal for the deceased individual to be welcomed by their ancestors and 'aumākua (deified ancestors/familial protective deities) (Loc. 1194). This unique burial practice may

indicate the possibility of fewer burials around historic house plots than might be encountered in other parts of the islands.

2.2.3.4 ALTARS TO PEHU AND MOANALIHA, MAN-EATING SHARK SPIRITS OF MAUI AND HAWAI'I

Kamakau (1961) also describes altars to the “itchy-mouthed ‘*uhinipili*” (deified spirits) of two man-eating sharks, Pehu and Moanaliha, at Honokōhau and Lahaina. These sharks were so fearsome that they would even devour humans in the presence of Kamehameha. The presence of these altars are indicative of the prevalence of sharks in the areas and their importance in traditional Hawaiian culture (Loc. 2091).

2.2.4 Fishponds

Kim Hee Wong and Tanya Lee Greig noted the presence of several fishponds in the Kā'anapali area.

At Kahana, the records of the Mahele contains a reference to the fishpond of Apolo, while Inez Ashdown (in Orr 2005:46) records the presence of a fishpond at the mouth of Honokowai Valley near the boundary of Mahinahina. Integral to maintaining the health and productivity of the fishpond was the supply of nutrients that would be brought in with the stream flow (Wong and Lee-Greig 2021:68).

2.2.5 The Contemporary Environment of the Honolua Hydrologic Unit

The Honolua hydrologic unit is situated on the northern flank of the Pu'u Kukui Mountain. The Honolua hydrologic unit includes the Honolua Stream and Pāpua Gulch (DLNR CWRM 2019b).

2.2.5.1 HONOLUA STREAM

The U.S. Army Corps of Engineers estimate that 40% of streams in West Maui score highly in sedimentation, due to erosion from former agricultural fields and the presence of invasive species (2021:45). Axis deer, pigs, dirt bike riding, and invasive species growing in abandoned agricultural lands disturb soil and cause sedimentation in streams (Group 70 2016: ES-2). The ecosystems impacts mentioned above were exacerbated by the conversion of lo'i kalo in the middle and lower watersheds to different lands uses during the plantation era (U.S. Army Corps of Engineers 2021: 45).

The Honolua Stream is affected by the factors mentioned above. The Honolua stream ceases to flow during times with little rainfall. Although the area is not considered vulnerable to drought, there is a small risk of wildfire (DLNR CWRM 2019b). Before the plantation era, the Honolua Stream supported mauka to makai flow between 80 to 95% of the time. Between 1903-2004, Maui Land and Pine operated an intake structure in the Honolua Stream which diverted approximately 3 million gallons of water a day into the Honokōhau Ditch. As of 2004, Maui Land and Pine closed this intake (Scheuer and Isaki 2021:115).

The cumulative impacts of the threats described above along with diverting 300 million gallons a day for close to a century harmed stream species within Honolua Stream. The 1990 Hawai'i Stream Assessment (HAS) found none of the native stream species such as 'o'opu and 'ōpae within Honolua Stream, in spite of their abundance in pre-contact times. Because of this, the HSA determined that Honolua Stream did not deserve to be a candidate stream for protection based on its riparian, aquatic, cultural and recreational resources. The HSA also found that invasive plant and animal species like pigs degraded the stream environment. Today, the mauka section of the

stream is fenced and managed by the Pu'u Kukui Watershed Preserve (DLNR CWRM 2019b: 50).

According to community testimony for the Honolua and Honokōhau Aquifer Systems IFSAR, the Honolua Stream native stream species such as 'o'opu and 'ōpae have returned to Honolua Stream, although they continue to be endangered by the threats discussed above (DLNR CWRM 2019a). Hawai'i's native stream 'o'opu are amphidromous, meaning that they live in both streams and ocean environments at different points in their life stages. These species hatch in freshwater then develop at sea for their larval period of time before returning to freshwater to spawn. Because of their unique life stages, major threats to their populations include loss of mauka to makai migratory corridors, invasive species, and habitat degradation (Walter et al. 2012).

2.2.5.2 TERRESTRIAL RESOURCES IN THE HONOLUA HYDROLOGIC UNIT

The lower sections of the Honolua Aquifer System are composed of a mixture of alien forest, grassland, and shrubland, whereas the upper slopes contain some native drycliff vegetation, shrubland, and 'ōhia lehua forests (*Metrosideros* sp.). The lower areas closer the urban and industrial developments are dominated by alien grasses and crop species (DLNR CWRM 2019b).

The areas mauka of the existing Maui County wells are home to a number of important native plants species. Tetra Tech and LeGrande Biological Surveys Inc. identified 18 native plant species in the Kahana area. These include: 'akoko (*Euphorbia celastroides* var. *lorifoli*), 'ākia (*Wikstroemia oahuensis* var. *oahuensis*), 'ēkaha (*Asplenium nidus*), alahe'e (*Psydrax odorata*), 'a'ali'i (*Dodonaea viscosa*), huehue (*Cocculus orbiculatus*) 'iliahialo'e (*Santalum ellipticum*), kilau (*Pteridium aquilinum* ssp. *Decompositum*), kā'ape'ape (*Cyrtomium caryotideum*) kolokolo (*Adenophorus tenellus*), 'ōhi'a lehua (*Metrosideros polymorpha* var. *glaberrima*), koali 'awahia and koali 'awa (*Ipomoea indica*), moa (*Psilotum nudum*), pala'ā (*Sphenomeris chinensis*), palapalai (*Microlepia strigosa* var. *strigosa*), pūkiawe (*Leptecophylla tameiameia*), 'uhaloa (*Waltheria indica*), and 'ūlei (*Osteomeles anthyllidifolia*) (Tetra Tech 2021, cited in Wong and Lee-Greig 2021:67).

Maui Land and Pineapple Company, Inc., engages in revegetation efforts in Honolua Wao Kele for the purpose of watershed protection and Native Hawaiian cultural education. Maui Land and Pineapple, Inc., designated a 9,881-acre section of native forest in Honolua Wao Kele as the Pu'u Kukui Watershed Management Area in 1994. Prior to being designated as a Watershed Management Area, Maui Land and Pineapple Company used this area for pineapple cultivation. Honolua Gulch is south of the Pu'u Kukui Watershed Management Area. Within this preserve are 40 rare plant species and 6 endemic land snails (PBR Hawai'i and Associates 2007: 5-6).

2.2.5.3 OCEAN RESOURCES MAKAI OF THE HONOLUA HYDROLOGIC UNIT

The areas makai of the existing Maui County wells are home to important reefs and fisheries. The waters near the Honolua-Mokulē'ia Marine Life Conservation District (MLCD) are important fishing and gathering locations for Native Hawaiians in the area (Division of Aquatic Resources 2020). The 2021 Draft West Maui Watershed Management Plan state that the Honolua area is endangered by a number of threats, including the expanding tourism industry, increasing sedimentation, invasive species, vulnerability to wildfire, and other ongoing environmental disturbances from the pineapple industry (U.S. Army Corps of Engineers 2021:43). The report also notes that the nearshore environments are largely protected through the Humpback Whale Nation Marine Sanctuary, as well as two state-designated reef conservation areas, the Honolua-Mokulē'ia Marine Life Conservation District in the Honolua Watershed, and the Kahekili Herbivore Fisheries Management area in the Honokōwai watershed (U.S. Army Corps of Engineers 2021:47).

The abundant marine life of the Honolua Bay requires sufficient freshwater discharge. The Honolua-Mokulē'ia Marine Life Conservation District (MLCD) normally receives continuous freshwater discharge from Honolua Stream and from Papua Gulch. Although fishing is prohibited from within the Honolua-Mokulē'ia MLCD, the bays in the area protect culturally important species that are gathered or fished outside of the MLCD, such as at Līpoa Point (Division of Aquatic Resources 2020). Līpoa Point, for example, receives its name from the limu līpoa which was traditionally gathered from the area (Planning Consultants Hawai'i, LLC 2018).

Nearshore and marine environments makai of the wells are also home to many culturally important species that are still fished and gathered by kua'āina (people of the land/from local area). Kim Hee Wong and Tanya Lee Greig interviewed kūpuna for the Kahana Solar Project, in the Kahana and Māhinahina 1-2 Ahupua'a's. The kūpuna that they worked with identified fishing, limu harvesting, and turtle harvesting as important near and offshore practices conducted in the area off of Kahana and Māhinahina. They also identified testimony from the Māhele 'Āina and Land Commission Awards which identified the coastal regions of Kahana and Mahinahina as 'āina pa'akai, or salt lands, used for gathering salt. They also noted the presence of other culturally important marine fauna such as *he'e* (*Octopus cyanea*, *O. ornatus*), *moi* (*Polydactylus sexfilis*), *nehu* (*Encrasicholina purpurea*), *ōpae* (*Halocaridina rubra*), and *o'opu* (*Awaous guamensis*) (Wong and Lee Greig 2021:68).

2.2.6 A Brief Plantation History in Kā'anapali

The missionary Dr. Dwight Baldwin moved to Maui in 1836. Lands in Māhinahina and Kahana ahupua'a were granted to him. His son, Henry Perrine Baldwin, founded Honolua Ranch in 1890, which eventually grew to 24,000 acres in 1902 and then to over 9,000 acres by the 1930s. The Ranch eventually encompassed the ahupua'a of Honolua and up to Honokōhau Bay. The Honolua Ranch eventually began to grow pineapple. It also eventually underwent a name change from Honolua Ranch to Baldwin Packers, Ltd. (Clark 1989, cited in Planning Consultants Hawai'i, LLC 2018). By 1963, Baldwin Packers merged with Maui Pineapple Company, which was a subsidiary of Maui Land and Pineapple Company (Munekiyo and Hiraga, Inc., 2008: 19). The plantation settlements of Honokahua and Nāpili emerged as the pineapple industry grew (Dagher and Dega 2020).

In the 1840s, sugar cane production came to the Kā'anapali area, and by 1852, the first contract laborers from China arrived to work on the sugarcane plantations. Pioneer Mill Company was established in 1865 and continued to expand and buy up adjacent properties. Eventually Pioneer Mill's fields spread from Launiupoko all the way to Kā'anapali (Munekiyo and Hiraga, Inc., 2008: 19).

Pioneer Mill closed in 1999, in part because of the rise of tourism in West Maui. Kā'anapali in particular heavily relies on the tourism industry today, with several major resorts and hotels on the shoreline. Now that the plantations are no longer a major economic driver, memories of life during the plantation days evoke strong nostalgia amongst some West Maui residents. Plantation camps now live on in the collective imagination through plantation museums, memorials, reunions, and celebrations. Still others recall companies like Pioneer Mill from the lens of settler-colonial Native Hawaiian erasure and exploitative labor practices (Isaki 2016).

2.2.7 MWDS 1979 Environmental Impact Statement for the Nāpili and Honokōhau Wells

The Maui Department of Water Supply's 1979 original Environmental Impact Statement concluded that the construction impacts from the Nāpili A, B, and C and Honokōhau B wells would be negligible, "because the work is located in or adjacent to pineapple fields, away from residential areas and endemic biota (12)." They further argued that the even though the project would withdraw double the amount of

water from the basal water lens in Alaeloa, the lens was a renewable resource and therefore the effects would not be significant. At that time, invasive plants species such as guava, haole koa, Christmas berry, and eucalyptus dominated the areas adjacent to the pineapple fields. Other species found included "ricebirds, cardinals, white-eyes, linnets, barred doves, lace-necked doves, and the native birds the migratory plover and turnstone" (MDWS 1979: 4)" The report did not discuss any significant, ongoing cultural practices within the project area.

3 COMMUNITY CONSULTATION

3.1 Community Consultation Methodology

SWCA identified and consulted with individuals familiar with past and present cultural activities conducted in the permit area, particularly those related to water. To initiate this process, SWCA compiled a list of cultural consultation contacts that included government agencies, Native Hawaiian Organizations (NHOs), community groups, and individuals identified as having a potential interest in water use activities in the Lahaina Aquifer Sector.

In compiling this list SWCA included all NHOs listed on the U.S. Department of Interior's *Native Hawaiian Organization Notification List* whose geographical purview is Maui Island and whose stated mission relates to environment and/or culture. The list also included select NHOs with a statewide purview whose stated mission relates to environment and/or culture. SWCA prepared a request for consultation letter, a copy of which was sent out to each of the contacts on the cultural consultation contact list. The request for consultation letter delineated the area of the Lahaina Aquifer Sector, described the Ka Pa'akai Analysis component of the water use permit application, and requested assistance in:

- Identifying *kama'āina* (long term residents), *kūpuna*, and other individuals who might be willing to share their cultural knowledge of the permit area and their cultural resources.
- Information on present and past water use in the permit area.
- Information on place names and cultural traditions associated with the permit area.
- Information on cultural resources that may be impacted by water use activities by the MDWS.
- Knowledge of traditional gathering practices within the permit area, both past and ongoing.
- Information on any current cultural practices being carried out within the permit area.
- Any other concerns the community might have related to cultural practices within or in the vicinity of the permit area.

The text of the request for consultation letter is provided in Appendix A of this report.

To supplement the current community consultation efforts undertaken as part of this Ka Pa'akai Analysis, SWCA researched previous, publicly available studies that involved consultation with members of the Lahaina community regarding water issues. Information provided by community members and cultural practitioners as part of these studies that have direct relevance to the issues addressed in this analysis has been included in the following sections. The results of individual interviews, both previous and current, are presented under the names of the individuals interviewed.

3.1.1 Existing Oral History Interviews

3.1.1.1 EXISTING ORAL HISTORY INTERVIEW WITH WES NOHARA

Aside from the cultivation of kalo, we found evidence that extensive commercial cultivation of pineapple and sugarcane displaced terrestrial traditional and customary practices like gathering and hunting for many decades. A 2008 interview with Wes Nohara by Kyle Ginoza, provides insight into the areas directly around Nāpili Well A. Wes Nohara was born at the Pioneer Mill Hospital in Lahaina. His family had worked with Maui Land and Pineapple Company (ML&P) since the 1920s. A long-time resident of West Maui, he was raised in Honolua Village until it was condemned due to inadequate sewer infrastructure. He worked for Maui Land and Pineapple Company for 38 years. At the time of the interview, he was the General Manager of Kapalua Farms, a subsidiary of ML&P. He was also on the board of the West Maui Soil and Water Conservation District and the Tri-Isle Resource Conservation Development Council. Pineapple cultivation increased in the area during about the 1950s. The fields around the Nāpili well was no longer under pineapple cultivation at the time of the interview. Instead, the land was used by Kapalua Farms for organic farming. (Munekiyō & Hiraga, Inc. 2008: 1)

Most notably for the current report, Mr. Nohara was not aware of any cultural practices that occurred on or near the Nāpili “A” site, since the area had been under pineapple cultivation for decades. He said no water flowed in the gulch nearest to the project site, although he said that two valleys over there was evidence of lo‘i kalo terraces. He felt that the Nāpili Well “A” storage tank would have a positive impact on water access in the area, since the only other major source of water came from the Honolua Ditch, which supplied surface water to the area. (Munekiyō & Hiraga, Inc. 2008: 2)

3.1.1.2 EXISTING ORAL HISTORY INTERVIEW WITH UNNAMED MĀHINAHINA AND KAHANA IKI COMMUNITY MEMBERS

Interviews conducted by Maria Orr in 2017 provide evidence of ongoing traditional and customary practices in the areas makai of the existing wells. Orr conducted interviews to assess the cultural impacts of the proposed Pulelehua Community. Two unnamed community members discussed with Orr how fishing and gathering of other marine resources would be directly affected by the proposed project in the Māhinahina and Kahana Iki areas. These unnamed community members expressed concern about depleted and threatened fisheries. They were also concerned about impacts to the aquifer and marine resources from runoff of silt, pesticides, and fertilizer. (Orr 2017: 8) According to the narrators interviewed by Orr, the areas around the Māhinahina and Kahana drainages experience heavy rainfall that brings silt into the ocean, adversely affecting marine resources. Fish populations also faced threats from uncontrolled use of pesticides and fertilizers from yards in large developments like Pulelehua. (Orr 2017: 8)

3.1.1.3 EXISTING ORAL HISTORY INTERVIEW WITH ELIA KU‘UALOHA KĀWIKĀ KAPAHULEHUA

Kepā and Onaona Maly interviewed a number of kūpuna about their knowledge and practices pertaining to fishing in the early 2000s. In 2002, Kepā and Isaac Harp interview Elia Ku‘ualoha Kāwika Kapahulehua (Uncle Kāwika). Born in 1930, he was raised for most of his life on Ni‘ihau. He learned about navigation and fishing from his parents and kūpuna on Ni‘ihau. He repeated the phrase: “*Inā mālama ‘oe i ke kai, mālama no ke kai oā ‘oe. Inā mālama ‘oe i ka ‘āina, mālama no ka ‘āina iā oe.*” (If you care for the ocean, the ocean will care for you. If you care for the land, the land will care for you.)

His interview pointed to the importance of Honolua Bay for navigation. He recounted the story of how La'a-mai Kahiki set sail from Honolua Bay. He was guided from Honolua Bay to the navigational route known as the Ke Ala i-Kahiki by bonfires lit on Moloka'i. The route known as Ke Ala i-Kahiki, which begins on the western shores of Kaho'olawe, was used by Hawaiians for centuries to navigate to Kahiki (Tahiti).

So this is the story of La'a-mai-Kahiki. He went back to Kaho'olawe, picked up his family and the rest of his gear to continue on to Tahiti. He made it past South Point before the wind shifted north east. And everybody wanted to know why didn't anybody else know this story of Ke Ala i Kahiki... Then they wanted to know how did I know that the shadow of Mauna Kea and Mauna Loa and Haleakalā would cast over six hundred miles out. I said you try to stand by on the side of a building and say where the wind is going to blow. Around the building, not through the building. So they cannot go over the mountain. The canoe will not make it over the mountain, neither will the wind. And once they get up they stay up. Nobody going to say, "What about us down here? We need you too..." But there's so many people that ask that story, "*Ke Ala i Kahiki, no ke'aha, a'ole lākou hele i Kahiki?*" Then somebody tried to tell the story, "On Moloka'i there's a big *kukui* grove, *nui k_ia kukui ke ulu nei*. They start a bonfire and down on the water they start another bonfire. The canoes waiting from Honolua Bay, Maui, they sail out line up with the two fire one on the top one on the bottom. And kept sailing straight out. The two light the two lights will guide them pass Ke Ala i Kahiki on the west end of Kaho'olawe. But nobody knows what happened after that. Where they going to go? So they tried to ask me, "Where do the sailors go from there?" I said, "Well, figuring over six hundred miles maybe some little islands over there. If you go over there you find a bunch of the canoes, boats, people, canoes paddles all over there. On the side of the rocks 'cause the current is going to take them all the way there. They cannot go past..." I think Mo'ikeha and all the other people that traveled to Tahiti they used that part. They used to have close to a hundred people on the boat. One big sail the rest paddling. That's a lot of work...I forgot to tell you one thing. All of this learning process, training, sailing on a canoe, on a catamaran, it has been taught by my ancestors, or our ancestors, the Polynesian ancestors. How to do it, what to do and so on. The history will go on that the Polynesians are still the best sailors of the Pacific. They can pinpoint and find a small little island in the middle of the ocean 2,400 miles away, and turn around, come back and find the other one still in the middle of the ocean. They found New Zealand, Aotearoa. They found Raiatea, they found Hawai'i. They haven't lost it. (Kpahulehua 2002, cited in Maly and Maly 2003b:1154)

3.1.1.4 HONOKŌWAI IN THE EARLY 20TH CENTURY AS RECOUNTED BY KAMA'ĀINA EDDIE KAHA'I

Ka Leo Hawai'i was a Hawaiian language radio program broadcast from 1972 through 1988 hosted by Larry Kimura. The broadcasts featured interviews with *kupuna* (elders) conversing with Larry Kimura in the Hawaiian language. Though the broadcast program was principally intended to serve as a Hawaiian language learning resource, the interviews also contain valuable ethnographic information as the *kupuna* interviewed often would describe cultural practices and historic landscapes.

The October 9 1977 Ka Leo Hawai'i broadcast featured Honokōwai native Eddie Kaha'i. Kaha'i was born in 1903 and lived at Honokōwai until age 16 before moving to Honolulu. Kaha'i describes Honokōwai as a dry (*malo'o*) place with excellent fishing. Kaha'i explained that during his childhood many Hawaiian families lived by the ocean and these families typically dug springs in their backyards. In

the following excerpt, Kaha'i describes how his family and others living in Honokōwai at the time acquired their drinking water.

LK Ke 'ano nō paha o kēlā wahi o
Honokōwai, he 'ano kua'āina paha?

EK Kua'āina. Pololei. Kua'āina.

LK Pehea ka mea, 'a'ohe nō paha lo'a
paipu wai ia manawa. Lo'a nō?

EK 'A'ole, ai ā—komo mai ka paipu
wai, komo mai ka paipu wai i ka
makahiki 'umi kūmāiwa 'umi
kūmāwalu. Ma mua o kēlā manawa,
'a'ole lo'a paipu wai. Kā mākou wai
inu mai ua mai a he mea nō ho'i, . . .

LK Pahu wai?

EK Pahu wai. Ho'opihā nō ho'i i kēlā. A
ne 'a'ale lawa, a hele nō mākou i ka
kula, ma ka kula, ka kula, lo'a paipu
wai; ka kula aupuni a mākou.

LK Ka hale kula?

EK Yeah. He wai nō ma laila. Hele nō
mākou ki'i i wai ma laila.

LK 'Ē, 'ē, 'ē, halihali.

EK 'Ā. Ho'okomo nō ho'i i loko o ka
mea, pahu li'ili'i. Ho'ihō'i ma
kauhale. Hāpai.

LK 'Ē.

EK Kahi manawa nō ho'i, a he lio nō
ho'i, hoki nō ho'i, ho'okau ma luna,
ho'ihō'i.

LK 'Ahe lo'a pūnāwai?

EK Lo'a pūnāwai, pa'akai.

LK Hapa kai?

EK 'Ā, hapa kai.

LK I mea aha nō ho'i kēlā wai? I wai inu
nō ho'i, 'a'ole?

EK 'A'ole mākou i—yeah, ne 'oe
mamake inu, ne mea nō ho'i, a inu
nō 'oe. 'Ano mea nō—

LK 'Awa'awa ē?

LK That's kind of how it was like there
in Honokōwai like, kind of
country-like, right?

EK Country. That's right. Country.

LK How was it like, was there no tap
water at that time. Or was there?

EK No, until—piped water, piped
water came in nineteen eighteen.
Before that time, there wasn't tap
water. Our drinking water was
rainwater and, you know, . . .

LK Water tank?

EK Water tank. You would fill that up.
And if it wasn't enough, then we'd
go to the school, at the school, the
school, there was tap water, our
public school.

The schoolhouse?

Yeah. There was water there. We'd
go and get water there.

LK Yeah, yeah, yeah, haul it.

EK Yeah. Put it into the thing, small
container. Take it home. Carry it.

LK Yeah.

EK Sometimes there was a horse, a
mule, load it on, take it home.

LK Weren't there springs?

EK There were springs, salty.

LK Brackish?

EK Yeah, brackish.

LK What was that water for? Was it
drinking water? no?

EK Not didn't—yeah, if you wanted to
drink, if it was, you know, then
you'd drink it. It was kind of—

LK Bitter?

- | | | | |
|----|--|----|---|
| EK | 'Awa'awa, yeah, pa'akai. But inu nō kekahi po'e. | EK | Bitter, yeah, salty. But some people would drink it. |
| LK | 'Ē, 'ē, 'ē. Ai kēlā i kahakai? | LK | Yeah, yeah, yeah. Was that by the ocean? |
| EK | 'A'ale. | EK | No. |
| LK | Kēia pūnāwai? | LK | This spring? |
| EK | 'Ō, 'ā. | EK | Oh, ah. |
| LK | Pili i ka hale paha? | LK | Close to the house? |
| EK | No, yeah, pili i ka hale. Nā hale a pau, lo'a pūnāwai. | EK | No, yeah. Close to the house. All the houses had springs. |
| LK | Na ka po'e nō i 'ali? | LK | The people dug them? |
| EK | Yeah, na lākou i 'ali a na lākou ka pūnāwai. | EK | Yeah, they dug them, and the springs were theirs. |

(Kaha'i 1977 21:43; Translation by Keao NeSmith)

3.2 Public Comments for the Instream Flow Standards Assessment Reports

In 2017 and 2019 the State of Hawai'i, DLNR, CWRM held consultation meetings to gather public comments for the Instream Flow Standard Assessment Reports (IFSAR) for the Lahaina Aquifer Sector. The public comments given during the meeting for Honolua and Honokōhau are applicable to the current Ka Pa'akai Analysis and are presented here to enhance and supplement the community consultation effort for this Ka Pa'akai Analysis. Note that the existing County wells did not emerge as a major point of concern during public testimony.

3.2.1 Public Comments for the Honolua and Honokōhau Instream Flow Standard Assessment Report

The Maui Water Use Draft Plan references a meeting conducted on March 8, 2017, during which community members submitted testimony that the DLNR should "...refrain from issuing any more water permits before Native Hawaiian water rights are restored to practice traditional and cultural uses." (Maui Water Use Draft Plan 2019:20) These concerns were evident during two separate consultation meetings while developing the IFSAR for the Lahaina Aquifer Sector. The CWRM held a consultation meeting for the Hydrologic Unit of Honolua and Honokōhau on September 9, 2019. As part of this study, the comments from the community were reviewed to determine what sorts of traditional and customary practices were carried out in the area, and what sorts of potential mitigation measures were recommended by these community members. A total of 17 people testified in person during the meeting for Honolua and Honokōhau. The following section discusses the most relevant comments for the purpose of this report.

The public comments for Honolua and Honokōhau revealed community concerns pertaining to sufficient water to irrigate existing and future lo'i, the need for land stewards to maintain the ditches to ensure continuous water flow, enforcement of existing water allocations, and the need to protect and monitor

populations of native stream species. The most relevant comments for this analysis have been organized by theme.

3.2.1.1 AGING AND BROKEN INFRASTRUCTURE

Tamara Paltin of the Community Plan Advisory Committee wants to see the Honokōhau stream diversion removed like the Honolua diversion was. She also wanted to see repairs made to existing infrastructure and greater reliance on R1 water:

...[W]e need to have a big framework for growth for more lo'i in Honokōhau... For Honolua, when we were talking about the diversion there, they're saying that all this water goes into a diversion and it comes out a small little pipe and they're claiming that the entire amount of the water gets back into the stream and so I would say just remove the diversions. Remove the diversions that are broken, remove the diversions that are just taking the water and supposedly putting 100-percent back, because what's really the point of that if we're talking about a framework of growth and groundwater aquifer recharge is really important...If we're going to pump out more and more water, we need to recharge the aquifers and sounds like that's a good way to do it. I'm for more restoration of all the streams and more reuse of the R1 water. And if folks are going to be major diverters of water, then like the previous guy said, they need to also put back in. They cannot just take, take, take. They gotta maintain the systems, you know, not just leave it, oh, this is broken, oh, this is not working. If you want to take it, you gotta take care of it (DLNR CWRM 2019a: 6).

3.2.1.2 INSUFFICIENT MONITORING AND ENFORCEMENT OF CURRENT WATER SUPPLIES

Jon Kindred of the Plantation Estates Lot Owners Association testified in relation to the Honokōhau Ditch. He wanted to see regular monitoring of stream flows and necessary infrastructure improvements.

We're aware that water in the ditch comes from diversions on the Honokōhau Stream as well as other sources [I.e. Honolua Stream]...[The application of new interim stream flow standards] should be incremental, beginning with immediate return of some waters to the Honokōhau Stream, while providing some level of assurance to existing, legal offstream users as reliable data is monitored regularly and necessary infrastructure improvements are made (DLNR CWRM 2019a: 2)...

Wili Wood expressed grief over the multiple patches of kalo lost to irregular water flow. He stated that many *kānaka maoli* (Native Hawaiians) would return to lo'i kalo farming if there was sufficient water.

We've been restoring and planting lo'i since 2005, with the help of volunteer groups, schools such as Pūnana Leo, Ke Kula Kaiapuni, and Kahana Canoe Club, for example...[T]here's been many occasions where we've lost entire patches, entire lo'is, due to insufficient and inconsistent water flow... And as we're pulling out these big kalo, you can stick your finger right through it. And that's the stuff we've been dealing with for years. After Tropical Storm Olivia, there was no one running the ditch system... There's a lot of people that would love get back on their land, but the water is just not there. And when it is there, sometimes it's too high. And then it's too low the next day. So, we really need you guys to get together and help us, especially with the irrigator. The irrigator is a big concern of the taro farmers in the valley. And so, please, that's what we're asking you guys to decide on, the most water possible to the stream. Hundred percent if can (DLNR CWRM 2019a: 9)...

Kekai Keahi, in addition to recommending R1 water, argued that West Maui Land, Maui Land & Pine, and Ka'anapali Land need to be held accountable for water usage.

... I know a person that works for West Maui Land Company. He's been telling me that Dave Minami, and Peter, and all of them, been telling them to put water back in the stream at night and in early morning reopen the water. Charlie caught the guy at the siphon, where supposed to have 700,000 at the siphon, he caught the guy turning the water back on at the siphon, saw the meter, and it was at 300,000 gallons. They've been taking this water, so no more enforcement. In my opinion, I don't think a private company should be in charge of our assets. I get one problem with Maui Land & Pine, even Ka'anapali Land, handling our assets. Already, Aqua Engineers, they supposed to be managing, but they saying, oh no, Maui Land & Pine never pay us, so until we get the money we ain't going manage the system. That is screwed up, 'cause get people in the valley that stay hurtin'... They thinking, even with Ka'anapali Land, when the guy came up here, they looking at all this water going be taken away, and then they starting to feel the pressure. They starting to feel maybe what we've been feeling forever. Yeah? It happened when we testified with Kaua'ula, where I got one letter from one of the persons at Launiupoko saying that Peter Martin telling everybody that, of, the Hawaiians going take all your water, you not going get nothing, turning us into the bad guy. And so we went to the meeting, there's people from Launiupoko, saying eh, you guys gotta able for share, 'cause we worked so hard, we've been doing this, been doing that. ... You never did share with us. One hundred years that water been gone. We was lucky, from our family, we grew up inside Kahoma and Kanahā, we got to raise taro when we was small kids. And so we got to see what was like and how it was before. And what was good was when we stopped doing that, the yearning for go back neve did go away. Was painful that we couldn't go back and farm our lands again. And so, we started going in different places. We go help Wili out, we go Charlie's place. Everywhere we can go, we went try open up taro again, like we did when we was young, but then we run into these companies, who really no give a shit about us, basically. And so I no really give a shit about what they think if they going lose water too. ... By the way, when I was looking at the Hawaiian Homes map, Ka'anapali Land, their coffee, part of 'em stay on top Hawaiian Homes, yeah? What the hell they doing? You gotta get the thing off. Charge 'em or something... He caught the guy right there turning on the valve with the meter open and saw how much gallons was coming out of the siphon... Also, that R1 water that Hawaiian Homes was talking about, as far as Lahaina goes and the use of that R1 water, I think that's one win-win situation as far as using that water for farm on Hawaiian Homes ag lands. That's a win-win situation 'cause that's water that we no don't gotta take out of any stream or any well... Maybe we can some water for dilute that water, but it's almost four million gallons a day that we could use for farming, which is awesome. I don't think Ka'anapali Land and Maui Land & Pine are really looking at R1 'cause they may be ag companies now, so-called, but I pretty sure they like change the zoning and turn 'em rural so they can make the big money (DLNR CWRM 2019a: 14-15)...

3.2.1.3 NEED TO MANAGE WATER USING AN AHUPUA'A-BASED APPROACH

Frank Caprioni wants to see more monitoring of water samples in the mountains, since what happens to water mauka affects the makai resources:

... I think...[t]he CMMA, the Community Management Makai Area that I think Ekolu Lindsey guys created down in Lahaina with using community members who are there every day...[are] taking water samples. I think we need to do the same thing up in the mountains too. And as we know now, I know it's kind of cliché sometimes to say, but mauka to makai. What happens up

top effects down below, you know what I mean. So I think, everything that going on the reefs has to do with up in the mountains. Marine biologists, people, will all... they'll tell you this stuff too, you know (DLNR CWRM 2019a: 7-8).

3.2.1.3.1 Stream restoration as a means of supporting lo'i kalo farming

Kaniloa Kamaunu of Waihe'e Valley expressed that cultivation of kalo was the foundation of traditional and customary practice under k^ānāwai.

I always live by the k^ānāwai... It's our birthright. It was given to us. It's for every kanaka. When I see the kanakas come up here and beg for use for taro... taro was the law... You know, your Article 12, Section 7, talks about traditional customary practice. The 'Aha Moku that was established, 212 talks about customary generational, customary practices, traditional. Traditional is kalo is law. You no get land without kalo. You were rich if you had kalo. The more kalo you had, that means you were prosperous, so they give you more land, more kuleana. You get more water. Because that was the law. Kalo is relatives. It's not a thing where you just eat. It's not your food, but it is our relative. 'Āina, same thing (DLNR CWRM 2019a: 11).

3.2.1.3.2 Need for monitoring culturally important stream species

Kaneolani Steward, an assistant marine coordinator with the Nature Conservancy on Maui in cooperation with the Division of Aquatic Resources, mentioned that Honolua is home to a variety of 'o'opu (refers to species of fish in the families Eleotridae, Gobiidae, and Blennidae) and 'ōpae (endemic shrimp.) He specifically mentions that Honolua stream is home to 'o'opu nākea (*Awaous guamensis*), 'opu 'alamo'o (*Lentipes concolor*), 'ōpae kuahiwi/kala'ole (*Atyoida bisulcate*) and 'o'opu nōpili (*Sicyopterus stimpsoni*). He also argued for regular stream surveys for both Honolua and Honokōwai to monitor populations of riparian species. Kaneolani also recommends that educators should train community members and children how to do stream surveys. The need for more R1 water was also mentioned:

...So for the Honokōhau report, under the point-quadrat survey area, you guys indicate nākea, 'alamo'o, and nōpili, but you guys fail to mention that 'ōpae kuahiwi was also sighted, but 'ōpae kuahiwi was however noted in the table...But in the table, you guys left out 'o'opu nōpili...And then for the Honolua report, there's absolutely no recent data from surveys done from the past year, or even mention that anything was done. You guys only talk about the surveys that were done in 1961, which definitely doesn't reflect the fish population today. And the same goes for Honokōwai, granted, because there's not enough water in the stream system, but just something to put up there... [W]e partnered with Pu'u Kukui Watershed. I like this kumu k^āko'o [assistant teacher] for this papa ho'okele wa'a [classes for data collection?]. So we go up into Honolua Stream to incorporate that in our program, and so if training the community and other people, and giving them... empowering them to be able to collect this data, and to hand it over to you guys, because you guys definitely don't have the capacity to monitor all year round. And so, definitely finding not just people from the community, but even the educational programs helps get the teachers involved to teach it to the kids, 'cause we do go up there to Honolua to do surveys and everything, and so we also have knowledge of what types of fish are in the stream. But definitely to try to be more creative in accounting for all of our native stream organisms, because it is definitely protect as one of the instream uses (DLNR CWRM 2019a: 12-13).

4 CULTURAL, HISTORICAL, AND NATURAL RESOURCES

The following is a short overview of cultural, historical, and natural resources of value to Native Hawaiians within the vicinity of the permit area. This overview is the results of archival research and existing oral history interviews with individuals knowledgeable about contemporary traditional and customary Native Hawaiian rights and practices undertaken within the permit area or associated with freshwater resources. These cultural resources are needed for Native Hawaiians to have the ability to conduct cultural practices and perpetuate Indigenous Knowledge.

4.1 Culturally Significant Natural Resources

Native Hawaiian culture focused heavily upon natural resources. The moku system allowed Native Hawaiians to manage biocultural resources in a sustainable fashion, which provided food to inhabitants from mauka to makai (Winter et al. 2018). Excluding insects and other invertebrates, there are nine native species found in Hawai'i's streams. These consist of five types of fish, two types of crustaceans, and two types of mollusks. All of these species exhibit amphidromous behavior, which means they migrate between freshwater habitats and the ocean. Eight of these species are endemic to Hawai'i. Native Hawaiians called the fish 'o'opu, the crustaceans 'ōpae, and the mollusks hīhīwai (or wī) and hapawai. While there are several more Hawaiian names to describe regional variations and physical differences of these creatures, these are the most common names by which they are known. Several 'ōlelo no 'eau (traditional Hawaiian proverbs and poetical sayings) and mo 'olelo (oral histories, myths, and/or legends) demonstrate that Native Hawaiians were observant of these creatures and understood their life cycles, behaviors, and habitats well. These native freshwater fish, crustaceans, and mollusks were an important food source to Native Hawaiians (Miike 2004:14–18).

4.1.1 Limu

Native Hawaiians use freshwater and marine limu as a relish or condiment to season food. While the marine varieties of limu are known for their more pronounced taste, the freshwater limu found on rocks in streams is also collected and enjoyed as part of the diet (Krauss 1993:16). Many species of nearshore limu thrive best in areas with both freshwater and ocean mixing (Abbott 1992).

4.1.2 Freshwater Stream Species

Public testimony from K. Steward reveals that culturally important freshwater stream species such as 'o'opu 'akupa (*Eleotris sandwicensis*), 'opu 'alamo'o, 'o'opu nākea, 'opu naniha (*Stenogobius hawaiiensis*), 'o'opu nōpili, 'ōpae kuahiwi/kala'ole, 'ōpae 'oeha (*Macrobrachium grandimamus*), hapawai, and hīhīwai/wī used to be abundant in the Honolua stream. He mentioned that many of these species are returning to Honolua Stream.

4.1.3 Lo'i Kalo Farming

The cultural importance of kalo cultivation arose in nearly every interview and segment of public testimony presented in this report. Kalo farming emerged as perhaps the most important traditional and customary cultural practice taking place in the vicinity of Honokōhau Stream in particular and, to a lesser degree, Honolua Stream.

4.1.4 Native Plant Resources and Lā'au Lapa'au

Although this report uncovered few contemporary accounts of gathering for lā'au lapa'au, the mauka areas of the Honolua Aquifer System are home to numerous native plant species, including 'akoko (*Euphorbia celastroides* var. *lorifoli*), 'ākia (*Wikstroemia oahuensis* var. *oahuensis*), 'ēkaha (*Asplenium nidus*), alahe'e (*Psydrax odorata*), .a'ali'i (*Dodonaea viscosa*), huehue (*Cocculus orbiculatus*) 'iliahialo'e (*Santalum ellipticum*) kīlau (*Pteridium aquilinum* ssp. *Decompositum*), kā'ape'ape (*Cyrtomium caryotideum*) kolokolo (*Adenophorus tenellus*), 'ōhi'a lehua (*Metrosideros polymorpha* var. *glaberrima*), koali 'awahia and koali 'awa (*Ipomoea indica*), moa (*Psilotum nudum*), pala'ā (*Sphenomeris chinensis*), palapalai (*Microlepia strigosa* var. *strigosa*), pūkiawe (*Leptecophylla tameiameia*), 'uhaloa (*Waltheria indica*), and 'ūlei (*Osteomeles anthyllidifolia*) (Tetra Tech 2021, cited in Wong and Lee-Greig 2021:67).

Maui Land and Pineapple Company, Inc., engages in revegetation efforts in Honolua Wao Kele in the Pu'u Kukui Watershed Management Area for the purpose of watershed protection and Native Hawaiian cultural education. Within this preserve 9,881-acre section of native forest are 40 rare plant species and 6 endemic land snails. (PBR Hawai'i and Associates 2007: 5-6)

Continuing protection of native forest ecosystems could allow for more individuals to return to traditional and customary gathering practices within the Honolua Aquifer System. Additionally, considering the vast geographic scope of the area surveyed by this Ka Pa'akai Analysis, it is important to note that it is possible that cultural practitioners *do* gather within the areas impacted by the existing wells, though it was not captured here.

4.2 Coastal Fishing and Gathering

The nearshore marine environment of Kā'anapali has supplied the people of the area for centuries. Kahaulelio's (1902a-d) accounts revealed the area to be rich in marine resources, including nehu and several species of sharks. The importance of ongoing fishing and marine gathering emerged from multiple existing oral history interviews as well. Narrators specifically mentioned gathering limu, honu, octopus, as well as fishing for nearshore and deepsea fish species.

5 ASSESSMENT OF POTENTIAL IMPACTS

A primary purpose of this Ka Pa'akai Analysis is to identify “the extent to which those resources—including traditional and customary native Hawaiian rights—will be affected or impaired by the proposed action” (Ka Pa'akai O Ka 'Aina 2000). This section presents the assessment of potential impacts to traditional and customary Native Hawaiian rights and practices as a result of the proposed continued use of the existing MDWS Nāpili A, B, C, and Honokahua B Wells within the Honolua Aquifer System.

5.1 Types of Traditional and Customary Rights Referenced Under the State Water Code

The following provision on Native Hawaiian water rights outlined in the State Water Code, HRS §174C-101, defines the types of traditional and customary water rights of Native Hawaiians:

(c) Traditional and customary rights of ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778 shall not be abridged or denied by this chapter. Such traditional and customary rights shall include, but not be limited to, the cultivation or propagation of taro on one's own kuleana and the gathering of hīhīwai, 'ōpae, 'o'opu, limu, thatch, ti leaf, aho cord, and medicinal plants for subsistence, cultural, and religious purposes (2019: 15).

It is notable that kalo, hīhīwai, 'ōpae, 'o'opu, limu, and medicinal plants are specifically identified here.

5.2 Approach to Assessing Impacts

Using the information gathered through archival research, exiting oral history interviews, and reports containing cultural consultation testimony, SWCA identified cultural resources, including traditional and customary Native Hawaiian practices, within the permit area of the existing Nāpili A, B, C, and Honokahua BWells. This study also determined the extent to which these resources and practices will be affected or impaired by the proposed continued use of the existing wells in the Honolua Aquifer System by the MDWS.

The potential impacts to traditional and customary practices extend beyond the immediate vicinity of the existing Nāpili A, B, C, and Honokahua B Wells. Activities such as lo'i kalo farming; subsistence gathering of stream and nearshore ocean species, and the gathering of lā'au lapa'au from areas below the existing wells could all be impacted by changes in freshwater availability due to the wells.

Given the geographic extent of the Honolua aquifer system, this report cannot definitively identify and address the full breadth of potential impacts to all cultural resources and traditional and customary practices in the areas near the the existing Nāpili A, B, C, and Honokahua B Wells. Nevertheless, our research reveals that existing pressure on freshwater resources already endangers the traditional and customary practices described above. Community members expressed fears that diminished streamflow could further threaten the survival of these cultural practices.

5.3 Community Concerns

Based upon information from our archival research, existing oral history interviews, and region-specific public testimony from the IFSAR meetings, we identified the following community concerns pertaining

to freshwater quality and access and subsequent impacts to cultural practices in the existing Nāpili A, B, C, and Honokahua B Well permit areas:

5.3.1 Ahupua'a-Based Approach

The community expressed that water needs to be managed holistically and should employ an ahupua'a-wide approach.

5.3.1.1 CONCERNS REGARDING FOREST AND WATERSHED HEALTH

- The protection of watersheds from mauka to makai emerged as a common concern of community members.
- The most common concern voiced by community members was the need to restore and protect streamflow to irrigate lo'i kalo.
- According to several individuals, adequate freshwater is needed to ensure the growth and regeneration of native species.
- Several community members personally observed changes in the presence and abundance of culturally important freshwater species under different stream conditions. They would like to see MDWS monitor and protect populations of culturally important native species found in streams. These include the five types of 'o'opu fish, the two types of crustaceans or 'ōpae, and the two types of mollusks hīhīwai (or wī) and hapawai.
- Several existing oral history interviews called out the need to ensure ecosystem resilience against fire hazards and climate change by protecting native forests and water resources.
- Several community members suggested bringing back the kānāwai system of water management for lo'i kalo farming.

5.3.1.2 CONCERNS REGARDING NEARSHORE AND OCEAN RESOURCES

A few community members personally observed changes in the presence and abundance of culturally important saltwater species under different stream conditions. They would like to see MDWS monitor and protect populations of culturally important limu species such as *limu 'ele'ele* (*Enteromorpha prolifera*), *limu kohu* (*Asparagopsis taxiformis*), *limu līpe'e* (*Laurencia* sp.), *limu līpoa* (*Dictyopteris pagiogramm* and *D. australis*), *manauea* (*Gracilaria coronopifolia*), *limu wāwae'iole* (*Codium edule*). Other culturally important marine vertebrate species in the area include: *kole* (surgeonfish, *Ctenochaetus strigosus*), *owama/oama* (young weke or goatfish), *manini* (a common reef surgeonfish; *Acanthurus triostegus*), *halalu* (young akule, *Trachurops crumenophthalmus*), *kūmū* (goatfish; *Parupeneus porphyreus*), *weke*, and *manō* (sharks), in addition to invertebrate species such as *kūpe'e* (an edible marine snail; *Nerita polita*), 'opihi (limpets; *Cellana talcosa*, *C. sandwicensis*, *C. exarata*, and *C. melanostoma*), *hā'uke'uke* (a type of edible sea urchin; *Colobocentrotus atratus*), *wana* (long-spined sea urchins; possibly *Diadema paucispinum* or *Echinothrix diadema*), and *he'e* (octopus).

5.3.2 *Abundance and Quality of Freshwater Flow*

5.3.2.1 INSUFFICIENT MONITORING AND ENFORCEMENT OF CURRENT WATER SUPPLIES

- Several individuals claim that their observations of the streamflow do not align with established instream flow standards and that they would like to see CWRM monitor actual instream flow.
- A common sentiment within the IFSAR testimony is that kalo farmers would like to see all streams restored to 100% flow. Community members called out the fact that decreasing freshwater flow resulted in increasing water temperatures, causing kalo crops to rot.
- Another frequent concern was the lack of enforcement of existing water allocations, particularly for large landowners who are perceived to receive preferential water access over kalo farmers.

5.3.2.2 AGING AND BROKEN INFRASTRUCTURE

- Aging and broken infrastructure, such as dams, gages, stream diversions, etc., came up as a major cause for concern in the community. Kalo farmers want to see responsible parties repair and maintain existing ditch infrastructure to ensure consistent streamflow.
- Several individuals also expressed frustration that the burden for clearing debris from the ditches and 'auwais all too often falls onto individual kalo farmers.

5.3.2.3 LACK OF VIABLE ALTERNATIVE WATER SUPPLIES

- Numerous community members expressed an interest in greater use of R1 water for non-potable uses.

5.3.3 *Reduced Water Quality*

- Informants noted that silt, fertilizers, and pesticides from upstream are being deposited into the reefs, endangering nearshore and reef species. These conditions are particularly dangerous for culturally important species of limu.

5.3.4 *Need for Additional Community Input for Current and Future Projects*

- Potential undocumented kuleana uses may exist within the permit area that did not emerge during this research. These undocumented kuleana uses could be identified through additional community input.
- Community members may also wish to maintain access to lands for gathering, hunting, fishing, and other Native Hawaiian traditional and customary practices.

6 PROPOSED ACTIONS TO PROTECT TRADITIONAL AND CUSTOMARY NATIVE HAWAIIAN RIGHTS

Following the assessment of potential impacts associated with the proposed permit activity, SWCA and the MDWS identified a series of feasible actions that could be taken to mitigate these impacts and serve to reasonably protect and revitalize Native Hawaiian rights, traditions, and customs associated with the permit area. The feasible actions suggested here are intended to address community concerns expressed in existing oral history interviews, and community consultation and testimony from the IFSAR meetings.

6.1 Apply an Ahupua'a-Based Approach to All Water Use Decisions

Upon analyzing the findings of the community consultation, public testimony from the IFSAR meetings, and oral history interviews, it is clear that a mauka to makai approach is essential for revitalizing Native Hawaiian traditional and customary practices. The health of the upland forests directly impacts streams and aquifers, which in turn affects the near shore environment.

- In making decisions regarding water use within the Honolua aquifer system, the MDWS will employ an ahupua'a-based approach. This involves not only taking into account the potential impacts to the lands in the immediate vicinity of the permit activity but considering the effect of the project on the entire watershed, from the uplands to the near shore waters, as well as the cultural practices currently being carried out within the ahupua'a.
- As part of its community outreach efforts, the MDWS will seek to raise public awareness of ahupua'a management practices and foster partnerships for use and management of water sources with existing community and school-based ahupua'a restoration efforts.
- As part of this ahupua'a-based approach to water planning and management, the MDWS will work with the local community and cultural practitioners to monitor and protect both the upland watershed and the coastal marine resources.

6.1.1 *Mauka: Reforestation and Invasive Species Control to Improve Watershed Health*

Archival research and oral history interviews indicate that a lack of groundwater directly impacts native vegetation in the mountains, rendering these areas vulnerable to repeat wildfires. A decline in vegetation in the mountains then impacts cloud coverage and rainfall. Invasive species often outcompete native species and also potentially use up more water than native species. Invasive grasses are particularly vulnerable to wildfires.

- Maui County will continue financial support for watershed management partnerships designed to improve groundwater recharge, reduce fire hazards, and prevent erosion through native species reforestation, invasive species control, fencing, and weed eradication efforts.
- The MDWS will support watershed partnerships' outreach to West Maui schools to develop service-learning experiences that allow students to assist with invasive species control and the planting of native species.

6.1.2 Makai: Monitoring Culturally Important Aquatic Species

A number of community members observed local declines in culturally important stream, near shore, and marine species since the plantation era, when the Honolua Stream was diverted into the Honokōhau Ditch.

- CWRM and the University of Hawai'i Water Resources Research Center should consider developing, coordinating, and funding a region-wide system for inventorying and monitoring culturally important native aquatic species such as fish, limu, mollusks, and shrimp that may be affected by and are indicators of changing water supply. They should partner with community organizations like Kamehameha Schools, 'Aha Moku o Maui, Inc., cultural practitioners, and other relevant Native Hawaiian Organizations in these endeavors.
- The MDWS will support and fund inventorying and monitoring of culturally important native species conducted by watershed partnerships in watersheds directly impacted by the MDWS's existing water sources.

6.2 Protect and Recharge Groundwater and Surface Water Flow

6.2.1 Maintaining and Monitoring Current Water Supplies

The availability of freshwater to irrigate lo'i kalo emerged as the most common concern among community members when discussing surface water issues. To ensure sufficient streamflow to irrigate kalo and feed fishponds, the MDWS will:

- Work with the State CWRM to ensure that existing instream flow standards are being met. In those cases where existing instream flow standards are not feasible due to the limitations of existing wells, the MDWS will work with CWRM to develop alternate strategies to ensure adequate water supplies.
- Monitor and enforce current water use restrictions by all existing users in a water shortage.
- Utilize U.S. Geological Survey water studies to determine the most sustainable ways for the Count to manage and develop groundwater withdrawals.

6.2.2 Alternative Water Source Strategies

Many community members expressed interest in alternative water strategies such as recycling greywater (R1) to be used for sewage, landscaping, and other uses. To this end, the MDWS will:

- Support capital improvement program funding for recycled water projects and needed infrastructure expansion in the Honolua Aquifer System and the broader Kā'anapali region to offset potable water to the maximum extent feasible.
- Support exploration and permitting of greywater systems to offset potable water use.
- Explore desalination of seawater and brackish water as an alternative water supply for West Maui demand.

6.3 Support Water Quality

Several community members noticed that a decline in water quality impacts limu populations. They observed also that silt, pesticides, and fertilizers running off into the reefs contributed to the loss of key limu species prized by gatherers. In the Lahaina area, narrators identified additional impacts from leech fields and cesspools. To combat water quality issues, MDWS will:

- Encourage the State Department of Health and Maui County to focus cesspool upgrades to areas impacting the nearshore marine environment and prioritize expanding sewer lines into residential areas that are currently unsewered so as to reduce the amount of wastewater entering the aquifer and nearshore environment.

6.4 Repair, Replace, and Maintain Existing Infrastructure

Community members indicated that the plantation-era ditches contain aging infrastructure. Since Pioneer Mill Company shut down, no one regularly maintains blockages upstream that could be the cause of reduced stream flow. Community members sometimes personally remove debris build-up in the ditches and 'auwais, but they feel that they should not be personally responsible for maintaining these systems. They also feel that the County and the State should be responsible for ensuring that these systems will continue to function in the event of "100-year storms." The MDWS will do its part to ensure proper infrastructure functioning by:

- Continuing to repair and maintain existing gages, pumps, 'auwais, dams and other infrastructure that is controlled by the MDWS to ensure efficient water supply and avoid wastage.
- Partner with Maui Land & Pineapple Company and the Hawaii Water Service Company to proactively repair, maintain and improve the dam and broken gate in Honokōhau, and leaky sections of the Honokohau ditch, as needed.

6.5 Solicit Ongoing Community Input for Current and Future Projects

Members of 'Aha Moku stated that many community members have a stake in water use decisions and recommend regular venues for them to share their *mana 'o* (thoughts). Therefore, the MDWS should:

- Hold annual meetings with community groups, cultural practitioners, lineal and cultural descendants of the area, and other interested community members to encourage ongoing cooperation and consultation regarding MDWS projects.
- Consult with 'Aha Moku for water development projects in the subject moku for information on impacts to Native Hawaiian traditional and customary uses and advice on proper actions.
- Promote existing MDWS grant programs by proactively advertising in venues such as social media, in OHA's *Ka Wai Ola* magazine, and in local newspapers.

7 SUMMARY

The Native Hawaiian worldview recognizes that managing water resources requires a comprehensive and unified approach. It emphasizes the idea that we cannot address water issues separately, but instead need to consider them as interconnected and interdependent. Additionally, it is not enough to ensure the *survival* of traditional and customary practices in the existing permit area; instead, all feasible efforts should be made to allow these practices to *thrive*. The natural and cultural resources at the basis of these traditional and customary practices must be sufficiently healthy to allow cultural practitioners to perpetuate these practices by passing them on to future generations.

A number of important traditional and cultural practices were identified in the vicinity of the existing Maui County Wells Nāpili A, B, and C, and Honokōhau B. These include lo'i kalo farming, subsistence fishing, gathering of marine resources, and gathering of limu, and turtles. These traditional and customary practices are dependent upon the quality, abundance, and availability of freshwater. Community members and cultural practitioners expressed the need to monitor populations of these and other culturally important species, such as 'o'opu, 'ōpae, hīhīwai, hapawai, and marine species such as edible invertebrates and nearshore fish species dependent upon limu for food. Community members expressed particular concern for populations of 'o'opu and 'ōpae, as these creatures require mauka to makai connectivity during their lifespan since they spawn in the rivers and grow to maturity in the ocean.

Using a combination of ethnohistoric research, existing oral history interviews and public testimony from the Instream Flow Standard Assessment Report (IFSAR) meetings, this Ka Pa'akai Analysis report has identified and discussed the traditional and customary practices undertaken within the Lahaina Aquifer Sector, and more specifically within the Honolua Aquifer System that are related to water use and could potentially be impacted by water use associated with the existing County wells. These traditional and customary practices include the cultivation of wetland kalo, near-shore fishing, the gathering of limu, and the gathering of medicinal and other plants.

The existing MDWS wells in the ahupua'as of Honokahua, Nāpili 2, 3, 4, and 5 addressed in this analysis were observed to have less of an impact on freshwater availability than the large-scale diversion of streamwater from the Honokōhau Ditch to supply the residential and tourist developments in Kā'anapali. Groundwater withdrawal to support communities in Kā'anapali, however, contributes to the overall reduced availability of freshwater. Traditional and customary practices such as gathering lā'ua lapa'au, lo'i kalo cultivation, and gathering riparian species such as 'o'opu, 'ōpae, the shellfish hīhīwai and hapawai have all declined dramatically in the area due to decades of commercial pineapple cultivation. In existing oral history interviews, several narrators also noted a decline in key, culturally important natural resources such as 'o'opu, 'ōpae, hīhīwai, hapawai, limu, and nearshore fish since the 1970s when the MDWS installed its wells. The surfacewater diversions from the Honolua and Honokōhau Streams, mixed with the ecological disturbances from legacy sugarcane and pineapple fields, led to cascading effects on the natural environment. These cascading effects included a decline in water to irrigate lo'i kalo (taro terraces); silt, pesticide, and fertilizer runoff damaging the reefs; a lack of mauka (inland) to makai (coastal) stream water connectivity to support the life cycle of 'o'opu and 'ōpae; and an influx of invasive plant and animal species in the mauka areas leading to increased fire risk, which in turn reduced aquafer replenishment. In spite of these changes, cultural practitioners continue to fish and gather in the areas makai of the wells.

In the course of this Ka Pa'akai Analysis, no one explicitly identified the existing Maui County Wells Nāpili A, B, and C, and Honokōhau B as the primary source of the problems described above. Nevertheless, DWS staff recognize that water withdrawal via the existing wells will reduce the water flow

or discharge along the coast, which may in turn have an impact on groundwater dependent ecosystems, and ongoing traditional and customary practices referenced in the applicant's analysis.

This Ka Pa'akai Analysis identified a number of feasible actions to help mitigate the potential impacts of continued groundwater withdrawal from the Honokahua B and the Nāpili A, B, and C wells. These include soliciting ongoing feedback from community members; employing a mauka to makai approach to water conservation; supporting community-based efforts to restore watersheds; repairing, replacing, and maintaining existing infrastructure; maintaining and monitoring water quality; and developing alternative water source strategies.

8 GLOSSARY OF HAWAIIAN WORDS USED IN THE TEXT

'a'ali'i	a common, small dryland and mesic forest tree, <i>Dodonaea viscosa</i>
ahupua'a	traditional land division usually extending from the mountains to the sea and encompassing a range of environmental zones that were known and used by the land's early Hawaiian residents. It was "so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua'a), or because a pig or other tribute was laid on the altar as tax to the chief" (Pukui and Elbert 1971:8).
'āina	land
'ākia	an important sub shrub to small tree, <i>Wikstroemia oahuensis</i> var. <i>oahuensis</i> , sometimes used to stun fish
'akoko	a term for native herbs, sub-shrubs, or shrubs in the genus <i>Euphorbia</i> ; in this case, <i>Euphorbia celastroides</i> var. <i>lorifoli</i>
akule	big-eyed or goggle-eyed scad fish, <i>Trachurops crumenophthalmus</i>
alahe'e	a native forest tree known for its sweet-smelling flowers, <i>Psydrax odorata</i>
ala loa	main road or trail
ali'i	chief, individual of chiefly blood
'auwai	ditch, canal
'ēkaha	a native forest fern, <i>Asplenium nidus</i>
halalu	young akule, <i>Trachurops crumenophthalmus</i>
hapawai	a shellfish, <i>Theodoxus vespertinus</i>
hā'uke'uke	a type of edible sea urchin; <i>Colobocentrotus atratus</i>
he'e	octopus
heiau	traditional temple or shrine
hīhīwai	an endemic, edible, freshwater and brackish grainy snail, <i>Neritina granosa</i> ; also known as wī if in freshwater; there is a shellfish of the same name
huehue	a native vine, <i>Cocculus orbiculatus</i> , used for twine and funnel-mouthed fish traps
he'e	octopus
honu	turtle
'iliahialo'e	coastal sandalwood, <i>Santalum ellipticum</i>
kā'ape'ape	a native holly fern, <i>Cyrtomium caryotideum</i>

<i>kahuna</i>	priest, expert in any profession
<i>kalo</i>	taro, <i>Colocasia esculenta</i>
<i>kīlau</i>	a native bracken fern, <i>Pteridium aquilinum</i> ssp. <i>Decompositum</i>
<i>koali</i>	'awahia and 'awa beach morning glory, <i>Ipomoea indica</i> , used for medicine and cordage
<i>kole</i>	surgeonfish, <i>Ctenochaetus strigosus</i>
<i>kolokolo</i>	a small, tongue-like native fern, <i>Adenophorus tenellus</i>
<i>kuahiwi</i>	mountain
<i>kula</i>	plain or open country
<i>kūmū</i>	goatfish; <i>Parupeneus porphyreus</i>
<i>kūpe'e</i>	an edible marine snail; <i>Nerita polita</i>
<i>limu</i>	marine and freshwater algae
<i>limu 'ele'ele</i>	<i>Enteromorpha prolifera</i>
<i>limu kohu</i>	<i>Asparagopsis taxiformis</i>
<i>limu līpe'e</i>	<i>Laurencia</i> sp.
<i>limu līpoa</i>	<i>Dictyopteris pagiogramm</i> and <i>D. australis</i>
<i>limu manaua</i>	<i>Gracilaria coronopifolia</i>
<i>limu wāwae'iole</i>	<i>Codium edule</i>
<i>lalakea</i>	whitetip shark; <i>Pterolamiops longimanus</i>
<i>māi'i'i</i>	surgeonfish; <i>Acanthurus nigrofusus</i>
<i>makai</i>	toward the sea
<i>malo'o</i>	dry
<i>manini</i>	a common reef surgeonfish; <i>Acanthurus triostegus</i>
<i>manō</i>	shark
<i>mauka</i>	inland
<i>moa</i>	whisk fern, not a true fern; a seedless non-vascular native plant, <i>Psilotum nudum</i>
<i>moku</i>	district, land section, or island
<i>mo'olelo</i>	story, tradition, legend, history
<i>nehu</i>	anchovies, <i>Encrasicholina purpureus</i>

ogo	a limu; <i>Gracilaria parvisipora</i> , sometimes also called manaua
'ōhi'a 'ai	mountain apple tree, <i>Eugenia malaccensis</i>
'ōhi'a lehua	<i>Metrosideros</i> sp., often <i>polymorpha</i> ; an iconic Native Forest tree with beautiful red flowers
'ōlelo no 'eau	traditional Hawaiian proverbs and poetical sayings
omalemale	young uhu, or parrotfishes, including <i>Scarus perspicillatus</i>
'opihi	limpets; <i>Cellana talcosa</i> , <i>C. sandwicensis</i> , <i>C. exarata</i> , and <i>C. melanostoma</i>
'o 'opu	refers to species of fish in the families Eleotridae, Gobiidae, and Blennidae
'o 'opu 'akupa	<i>Eleotris sandwicensis</i>
'opu 'alamo 'o	<i>Lentipes concolor</i>
'o 'opu nākea	<i>Awaous guamensis</i>
'opu naniha	<i>Stenogobius hawaiiensis</i>
'o 'opu nōpili	<i>Sicyopterus stimpsoni</i>
'ōpae	endemic shrimp
'ōpae kuahiwi/kala 'ole	<i>Atyoida bisulcata</i>
'ōpae 'oeha	<i>Macrobrachium grandimamus</i>
'ōpelu	Mackerel scad, <i>Decapterus macarellus</i> , <i>pinnulatus</i> and/or <i>D. maruads</i>
'ōpelu kala	a kala fish staying with 'ōpula schools; <i>Naso hexacanthus</i>
owama/oama	young weke or goatfish
pa 'akai	sea salt
pala 'ā lei	a beautiful, culturally important fern, <i>Sphenomeris chinensis</i> ; used as offerings, medicine,
palapalai plant in hula	a beautiful, culturally important fern, <i>Microlepia strigosa</i> var. <i>strigose</i> ; an important
pānuhunuhu	stareye parrot fish, <i>Calotomus sandwicensis</i>
po 'e	people, population; plural marker
pūkiawe	a native medicinal shrub whose wood was used for tattooing, <i>Leptecophylla tameiameia</i>
'uala	sweet potato; <i>Ipomoea batatas</i>
'uhaloa	a medicinal plant; <i>Waltheria indica</i>

'ūlei a native spreading shrub, *Osteomeles anthyllidifolia*, used for digging sticks, musical instruments, and fishing spears

'ulua carangids; the adult stage of certain species of fish such as Giant Trevally, crevalle, jack, or pompano, in the family of Carangidae

wahi inoa place names

wana long-spined sea urchins; possibly *Diadema paucispinum* or *Echinothrix diadema*

weke certain species of the Mullidae, surmullets or goatfish. All weke have large scales and are usually found in reefs, sometimes in deep water

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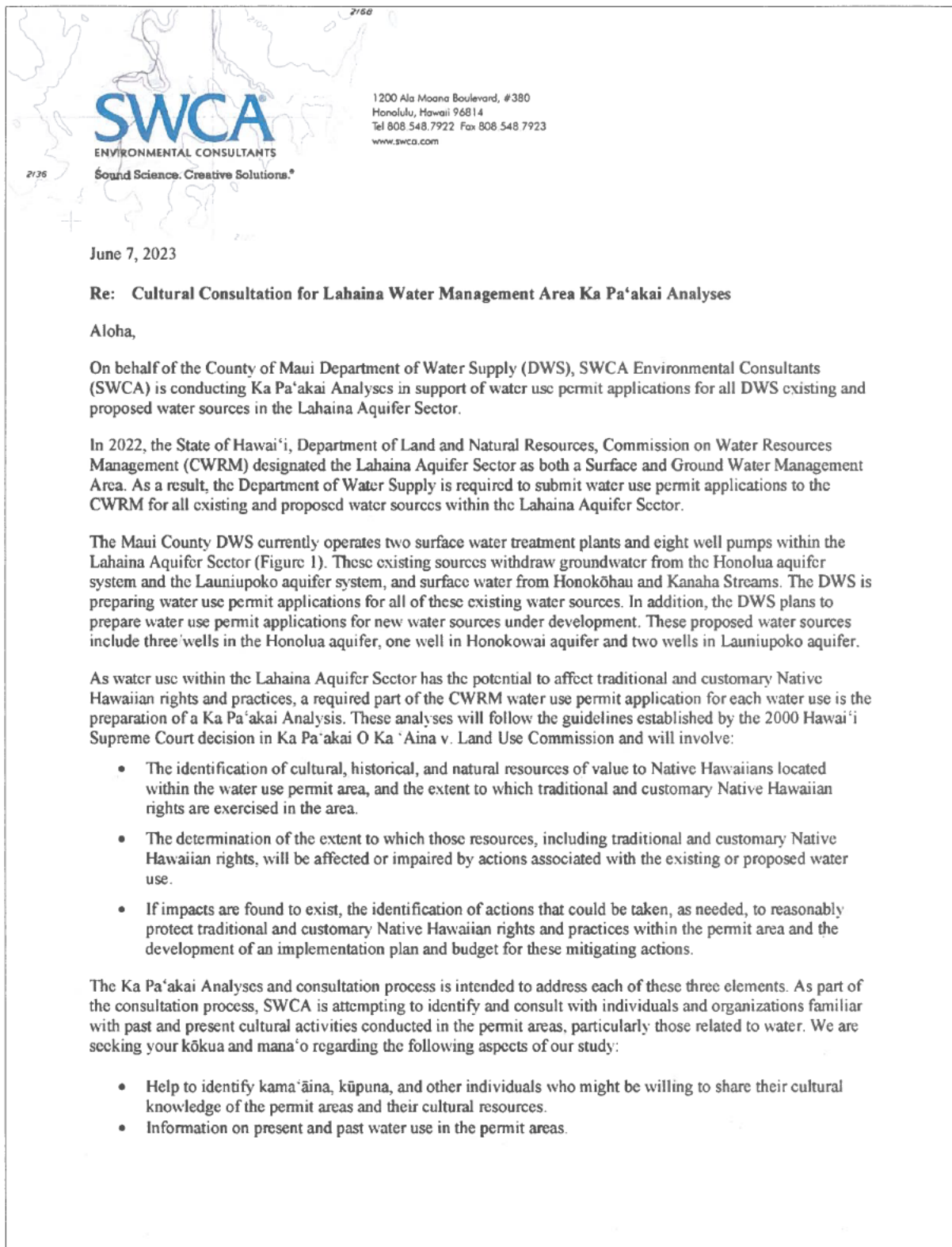
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Appendix A

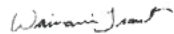
Request for Consultation Letter



- Information on place names and cultural traditions associated with the permit areas.
- Information on cultural resources that may be impacted by water use activities by the DWS.
- Knowledge of traditional gathering practices within the permit area, both past and ongoing.
- Information on any current cultural practices being carried out within the permit areas.
- Any other concerns the community might have related to cultural practices within or in the vicinity of the permit areas.

We appreciate any information you would be willing to share regarding the permit areas and those individuals knowledgeable about its past and present cultural uses. Please contact us at Wainani.Traub@swca.com or by phone at (808) 646-6309. We look forward to hearing from you.

Mahalo no kou kōkua 'ana mai.



Wainani Traub

Assistant Project Anthropologist



Figure 1. Lahaina Aquifer Sector

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APPENDIX D: DEPARTMENT OF HAWAIIAN HOMELANDS DOCUMENTS REFERENCED

Leialī'i – Honokōwai Regional Plan (December 2009)
Maui Island Plan (September 2014)
Water Policy Plan (July 2014)
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“By Water All Things Find Life”

APPENDIX E

OTHER PERTINENT INFORMATION

18. EFFICIENCY

MOWS CONSERVATION PLAN

The DWS is currently in contract with a consultant to improve and make recommendations to our current DWS water conservation approach, which currently includes a number of supply-side and demand-side conservation strategies. These strategies are attached and provides savings calculations from various program that are currently underway at the DWS, including programs that may work in the future. These conservation programs are considered based on the special water use contexts and behaviors of Maui residents and businesses, and includes a public outreach component which educates and provides public events to give away free high-efficiency fixtures, toilets, rain barrels and irrigation system components to help home owners save water and money.

DWS Conservation Planning

The County of Maui Department of Water Supply (DWS) conducts a robust water conservation plan, which includes ongoing and planned projects that are categorized as follows:

1. Conservation Programs (CP)

- a. Toilet Replacement Program (dual-flush, ultra-high efficiency, .8/1.28 gpf) - 100% free
- b. Rain Barrel Program (lvy 50 gal) - 100% free
- c. High efficiency fixture giveaway-100% free
- d. Outdoor irrigation B-Hyve "smart" hose timer giveaway- 100% free

These programs and giveaways are tracked for estimated water savings and have been developed with qualifying rules and guidelines for both our customers and county citizens.

e. Watershed Protection Grants Program

This grants program has been funding highly specialized organizations who help protect and preserve the County of Maui watersheds from invasive plant and animal species that damages and endangers native Hawaiian ecosystems that critical for recharging water sources and maintaining high water quality.

f. Public outreach

Every year, the DWS runs water conservation advertisements in various media outlets, at the airport, on public transit, and participates at various public events with a booth to promote our programs, provide informational materials, free program giveaways, and speak directly to the public and answer questions about the DWS water distribution system that people are curious about. We provide information and support for both young and old to learn and participate in water conservation and to help protect our water sources.

The DWS has just concluded its 12th Annual Water Conservation Poster Contest and its 6th Annual Source Water Protection Video Contest. Over the years, these very successful contests have attracted thousands of grade school and high school participants, and allowed representatives from many different organizations to judge their creative entries. Winners and their schools have received various prizes, which aim to encourage on-going participation and curiosity about what and why water conservation is so important to their future.

Information about the DWS water conservation efforts can also be found here:

<http://waterresources.mauicounty.gov/153/Water-Conservation>

2. Conservation Capital Improvement Projects (CCIP)

As water consumption rises due to urban growth and development, water reuse is on the rise. The DWS is at the forefront of finding ways to apply this practice with maturing technology in

the public space, to help pave the way its expanded use in Maui's commercial and residential space.

a. Greywater reuse systems

The State of Hawaii's first mechanical greywater reuse system installed at Launiupoko Beach Park in Lahaina, Maui. Provides up to 3K-12K per day of reusable water for landscape irrigation, depending on patronage. 3K at 1.1MG savings per year with automatic variable production, and scalable to recycled (R-1) quality if permitted by DOH.

Another ongoing greywater project is at the Kana ha Beach Park in Kahului, Maui. This system provides up to 4-6 times the amount of savings estimated at the recently installed Launiupoko Beach Park Greywater Reuse System. It is currently in Phase 1, Design and Permitting, with Phase 2, Procurement and Construction, scheduled to begin in 2024.

b. Xeriscape outdoor landscaping demonstration project

Xeriscaping promotes native Hawaiian plant species instead of high water-intensity ornamental plants to save water, especially in drier, drought-stricken, areas of Maui. The DWS is preparing to coordinate with the Maui Nui Botanical Gardens in Kahului, Maui, to build a xeriscape demonstration project, which provides the public an opportunity to see and learn about xeriscaping in the different microclimates of Maui.

3. Conservation Strategies (CS)

The DWS continues to investigate other feasible options to save water. These potential options include physical improvements and policy changes that are being explored:

- A Bill for a Water Conservation Ordinance (working draft)
- Xeriscape Improvements (physical incentives via rebate)
- Ordinances New Build (with indoor & outdoor LEED)
- More Efficient Agricultural Irrigation Management
- Actionable Drought & Climate Change Incentives
- Public Outreach to HOAs on Xeriscaping (technical support)
- LEED Water Efficiency Incentive Program (Materials for Residential and Commercial/Resorts)
- Grey Water Residential Program
- SMART Irrigation Controller (zoned irrigation with sprinklers)
- Neighborhood Greywater System Pilot (Centralized Reuse Treatment System)
- Department of Parks and Recreation Irrigation Efficiency Program (30% reduction)
- Commercial Greywater Reuse Pilot (Hotels and Businesses Irrigation)
- Condominium Complex Greywater System Pilot (Bathrooms/Shower/Laundry)
- Large Catchment System for Upcountry and Hana Residents (irrigation and garden)

- Hot Water Recirculators Program
- Residential Laundry to Landscape
- New Build Reuse Systems
- Pool Cover Program
- Hotel Efficient HVAC Program (Laundry to cooling towers)
- New Home Buyer Dual Piping (greywater)
- Agriculture Water Reuse Pilot
- Commercial Laundromat Water Reuse
- Agritecture: Urban and peri-urban horticulture, micro-gardens, hydroponics
- Water audit on all County facilities
- County Properties High Efficiency Fixtures Retrofitting (i.e. Schools and Office)

4. Supply-Side Intervention Strategies (SSIS)

There are several ways that the DWS continues to find ways to conserve water and make its operations more efficient:

a. Water auditing

Under Act 169, SLH 2016, the DWS has completed all mandatory yearly utility water audits that were validated by the Commission of Water Resources Management (CWRM).

b. Leak Detection Program

The DWS has an evolving leak detection program that aims to reduce non-revenue water loss and to help target priority water distribution infrastructure maintenance improvements.

c. Meter Replacement Program

For the past several years, aging service meters have been replaced throughout the DWS service subsystems. This program is also helping DWS and its customers better track usage to reduce water losses faster and more efficiently.

d. Re-using Production Water

The DWS is improving its ability to reuse production water by sending it back to its headworks.

e. Hydraulic Model

In 2023, the DWS will be contracting with a consultant to develop its hydraulic model to assist in estimating and modeling water levels, pressures, flows and velocities in its water distribution system.

f. PRV replacement and pressure monitoring

The DWS continues to improve its awareness to properly adjust PRVs and how to better monitor them to find optimal pressures to reduce water loss.

g. District submetering and master metering

The DWs is exploring ways to better track and analyze water consumption throughout its water distribution systems through district and master metering options.

APPENDIX F



Hawaii Water Audit Validation Effort (WAVE)

FY2022 Validation Document

This document describes a third-party level-one water audit validation for one hydraulically discrete water system.

Call Information

System

Utility Name: Maui DWS
System Name: Lahaina
Approximate PWS ID: 214
Reporting Period: FY 2022
Count of Service Connections: 3,446 [3,439]
Miles of Mains: 61.4
Average Operating Pressure: 58 PSI
Customer Retail Unit Cost: \$5.16/1,000 gallons
Variable Production Cost: \$1,102.80
[\$747.30]/MG

Participants

Validator/Support Caller: Neal Fujii / Nicholas Ing
Validator Qualifications: Equivalent to AWWA CA-NV Validator Certificate
Utility Participants: Robert De Robles, Edna Manzano
Call Date: 7/10/2023

Key Performance Indicators

Indicator	Maui DWS Median*	FY2022 Result (FY2021 Result)	Notes
Cost of Apparent Losses per Connection:			General Comments: Comparing FY2021 with FY2022, Water Supplied increased 148 MG, Authorized Consumption increased 201 MG, Water Loss decreased 52 MG. This water audit produced an unrealistic performance indicator ILI (<1).
Apparent Loss per Conn. per Day:		96 (94) gal/conn/yr	Note that the FY2020 water audit showed negative real losses and the FY2021 water audit showed a low level of real loss leakage.
Cost of Real Losses per Mile of Main:			Due to the inconsistent water audit results from year to year, the validator recommends that MDWS conduct a deeper review of the Water Supplied and the Authorized Consumption volumes used for the Lahaina water audit. This could be accomplished through a Level 2 Water Audit Validation (<i>Validated water audits have been corroborated with investigations of raw data and archived reports of instrument accuracy. The best sources of data to inform the water audit have been identified.</i>)
Real Loss per Connection per Day:		4 (48) gal/conn/day	
Real Losses per Mile of Main per Day:		N/A gal/mile/day	MDWS staff reported that in FY2022, 2,605 of 3,446 customer meters were replaced for Lahaina (2" or smaller). No leak detection survey performed in Lahaina in FY2022.
Infrastructure Leakage Index:		0.26 (3.33)	

*Audits presenting unrealistic results have been excluded from summary median calculations.

System Specific Data Validity Notes

Grade	FY2022 Result	Notes
Volume from Own Sources (VfOS):	5	The Lahaina system is fed by nine wells and two surface water treatment facilities. Well start-up flushing is recorded and deducted from production. Surface water treatment facility operators have noted a difference between raw water intake meter readings and potable effluent meter readings from their facilities in this area due to production needs. The Lahaina system is disconnected from rest of the island so it requires its own independent sources. In this audit period, 48% of Volume from Own Sources is metered because production from wells are based on pump run time, while WTP production is based on flow meters. MDWS should review the VfOS data to understand the accuracy of the methods of measurement and the potential for data handling errors. Note that the Lahaina system has a North and a South service area within the distribution system which is interconnected by a 16" transmission line which <i>may</i> be metered. MDWS staff believes that there is little water interdependency between the North and South sections.
VfOS Master Meter and Supply Error Adj:	3	System operational practices do not differ from county operational practices.
Water Imported (WI):	n/a	-
WI Master Meter and Supply Error Adj:	n/a	-
Water Exported (WE):	n/a	-
WE Master Meter and Supply Error Adj:	n/a	-
Billed Metered Authorized Consumption:	7	Most of the customers in the Lahaina system are residential with very few agricultural users. There are hotels and commercial properties that use large volumes of water. Customer meters in Lahaina were installed between 1997 – 2003. Meter replacement project (using AMR meters) is ongoing in Lahaina. In FY2021 MDWS replaced 228 meters. In 2022 MDWS replaced 2,605 small meters (2" or smaller). DVG is limited by reactive customer meter testing.
Billed Unmetered Authorized Consumption:	n/a	There are no billed unmetered customers. System operational practices do not differ from county operational practices.
Unbilled Metered Authorized Consumption:	n/a	This field left blank since this volume is not known for this audit period. System operational practices do not differ from county operational practices.
Unbilled Unmetered Authorized Consumption:	5	There may be some exceptional operational uses in the Lahaina system that have not been included in the volume entered in the water audit.
Unauthorized Consumption:	5	System operational practices do not differ from county operational practices.
Customer Metering Inaccuracies:	5	System operational practices do not differ from county operational practices.
Systematic Data Handling Errors:	5	System operational practices do not differ from county operational practices.
Length of Mains:	5	System operational practices do not differ from county operational practices.
Number of Service Connections:	5	System operational practices do not differ from county operational practices. This number decreased by 4 compared with previous audit period.
Average Length of Customer Service Line:	10	-

Average Operating Pressure:	3	System operational practices do not differ from county operational practices. The system is gravity fed from high elevation sources (Mahinahina WTF is at a high elevation), using PRVs to step-down pressure.
Annual Operating Cost:	10	System operational practices do not differ from county operational practices.
Customer Retail Unit Cost:	9	System operational practices do not differ from county operational practices.
Variable Production Cost:	5	System operational practices do not differ from county operational practices.
Overall Score:	57	A score in the range of 50-75 indicates a priority for data management refinement, business process analysis, and consideration of loss control intervention.

*Additional detail can be found in the county-wide operational practices follow up document.

Past Year's Activity: System

Data Management

- Meter replacement project (using AMR meters) is ongoing in Lahaina. In FY2022, 2,605 of 3,446 customer meters were replaced for Lahaina (2" or smaller).

Loss Recovery

- See island-wide summary document.

Opportunities: System

Data Management

- Meter replacement project is ongoing in Lahaina.

Loss Recovery

- See island-wide summary document – there are no specific opportunities to note for this system.



Validator Signature: _____

Name: Neal Fujii

Utility Executive Signature: _____

Name: _____

AWWA Free Water Audit Software v5.0

American Water Works Association Copyright © 2014, All Rights Reserved.

This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targeting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:	Robert De Robles / Edna Manzano	
Email Address:	robert.derobles@co.mauhi.hi.us / edna.manzano@co.mauhi.hi.us	
Telephone Ext.:	8084633110	3113 / 3108
Name of City / Utility:	LAHAINA	
City/Town/Municipality:	Maui County DWS	
State / Province:	Hawaii (HI)	
Country:	USA	
Year:	2022	Financial Year
Start Date:	07/2021	Enter MM/YYYY numeric format
End Date:	06/2022	Enter MM/YYYY numeric format
Audit Preparation Date:	3/15/2021	
Volume Reporting Units:	Million gallons (US)	
PWSID / Other ID:	214	

The following guidance will help you complete the Audit

All audit data are entered on the Reporting Worksheet
Value can be entered by user
Value calculated based on input data
These cells contain recommended default values

Use of Option (Radio) Buttons:	Pont:	Value:
<input checked="" type="radio"/> 0.25%	<input type="radio"/>	

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

Instructions

The current sheet. Enter contact information and basic audit details (year, units etc)

Reporting Worksheet

Enter the required data on this worksheet to calculate the water balance and data grading

Comments

Enter comments to explain how values were calculated or to document data sources

Performance Indicators

Review the performance indicators to evaluate the results of the audit

Water Balance

The values entered in the Reporting Worksheet are used to populate the Water Balance

Dashboard

A graphical summary of the water balance and Non-Revenue Water components

Grading Matrix

Presents the possible grading options for each input component of the audit

Service Connection Diagram

Diagrams depicting possible customer service connection line configurations

Definitions

Use this sheet to understand the terms used in the audit process

Loss Control Planning

Use this sheet to interpret the results of the audit validity score and performance indicators

Example Audits

Reporting Worksheet and Performance Indicators examples are shown for two validated audits

Acknowledgements

Acknowledgements for the AWWA Free Water Audit Software v5.0

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

American Water Works Association
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Click to access definition
Click to add a comment

Water Audit Report for: LAHAINA (214)

Reporting Year: 2022 7/2021 - 6/2022

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

Enter grading in column 'E' and 'J'

Volume from own sources: 5 2,033.970 MG/Yr
Water imported: n/a MG/Yr
Water exported: n/a MG/Yr

Pcnt: 3 Value: MG/Yr
MG/Yr
MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 2,033.970 MG/Yr**AUTHORIZED CONSUMPTION**

Billed metered: 7 1,903.598 MG/Yr
Billed unmetered: n/a MG/Yr
Unbilled metered: n/a MG/Yr
Unbilled unmetered: 5 5.085 MG/Yr

Click here: for help using option buttons below

Pcnt: 1.25% Value: 5.085 MG/Yr

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 1,908.683 MG/Yr**WATER LOSSES (Water Supplied - Authorized Consumption)**

125.287 MG/Yr

Apparent Losses

Unauthorized consumption: 5.085 MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies: 3 110.791 MG/Yr
Systematic data handling errors: 4.759 MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 120.635 MG/Yr

Pcnt: 0.25% Value: MG/Yr

5.50% 0.25% MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 4.652 MG/Yr

WATER LOSSES: 125.287 MG/Yr**NON-REVENUE WATER****NON-REVENUE WATER:** 130.372 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains: 9 61.4 miles
Number of active AND inactive service connections: 5 3,446
Service connection density: 56 conn./mile main

Are customer meters typically located at the curbside or property line? Yes

Average length of customer service line: 7 ft (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 3 58.0 psi

COST DATA

Total annual cost of operating water system: 10 \$6,848,110 \$/Year
Customer retail unit cost (applied to Apparent Losses): 9 \$5.16 \$/1000 gallons (US)
Variable production cost (applied to Real Losses): 5 \$1,102.88 \$/Million gallons ☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 59 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Customer metering inaccuracies

3: Variable production cost (applied to Real Losses)



AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0
American Water Works Association.
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Water Audit Report for: LAHAINA (214)
Reporting Year: 2022 7/2021 - 6/2022

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 59 out of 100 ***

System Attributes:

Apparent Losses:	120.635	MG/Yr	
+	Real Losses:	4.652	MG/Yr
=	Water Losses:	125.287	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	17.97	MG/Yr
	Annual cost of Apparent Losses:	\$622,478	
	Annual cost of Real Losses:	\$5,130	Val

Valued at Variable Production Cost

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:

Non-revenue water as percent by volume of Water Supplied:

6.4%

Non-revenue water as percent by cost of operating system:

9.2%

Real Losses valued at Variable Production Cost

Operational Efficiency:

Apparent Losses per service connection per day:

95.91 gallons/connection/day

Real Losses per service connection per day:

3.70 gallons/connection/day

Real Losses per length of main per day*:

N/A

Real Losses per service connection per day per psi pressure:

0.06 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL):

4.65 million gallons/year

Infrastructure Leakage Index (ILI) [CARL/UARL]:

0.26

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline



AWWA Free Water Audit Software: Water Balance

WAS v5.0
American Water Works Association.
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Water Audit Report for: LAHAINA (214)		7/2021 - 6/2022	
Reporting Year: 2022			
Data Validity Score: 59			

Own Sources (Adjusted for known errors)	Water Exported 0.000	Authorized Consumption 1,908.683	Billed Authorized Consumption 1,903.598	Billed Water Exported		Revenue Water 0.000
				Billed Metered Consumption (water exported is removed)	Revenue Water	
2,033.970	System Input 2,033.970	Water Supplied 2,033.970	Water Losses 125.287	Billed Unmetered Consumption	1,903.598	1,903.598
				Unbilled Metered Consumption	0.000	
				Unbilled Unmetered Consumption	5.085	
				Unauthorized Consumption	5.085	
				Customer Metering Inaccuracies	110.791	
Water Imported 0.000				Systematic Data Handling Errors	4.759	
				Leakage on Transmission and/or Distribution Mains		
				Leakage and Overflows at Utility's Storage Tanks		
				Leakage on Service Connections	Not broken down	
				Leakage on Service Connections	Not broken down	
				Non-Revenue Water (NRW)		130.372



AWWA Free Water Audit Software: Dashboard

WAS v5.0
American Water Works Association.
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The graphic below is a visual representation of the Water Balance with bar heights proportional to the volume of the audit components

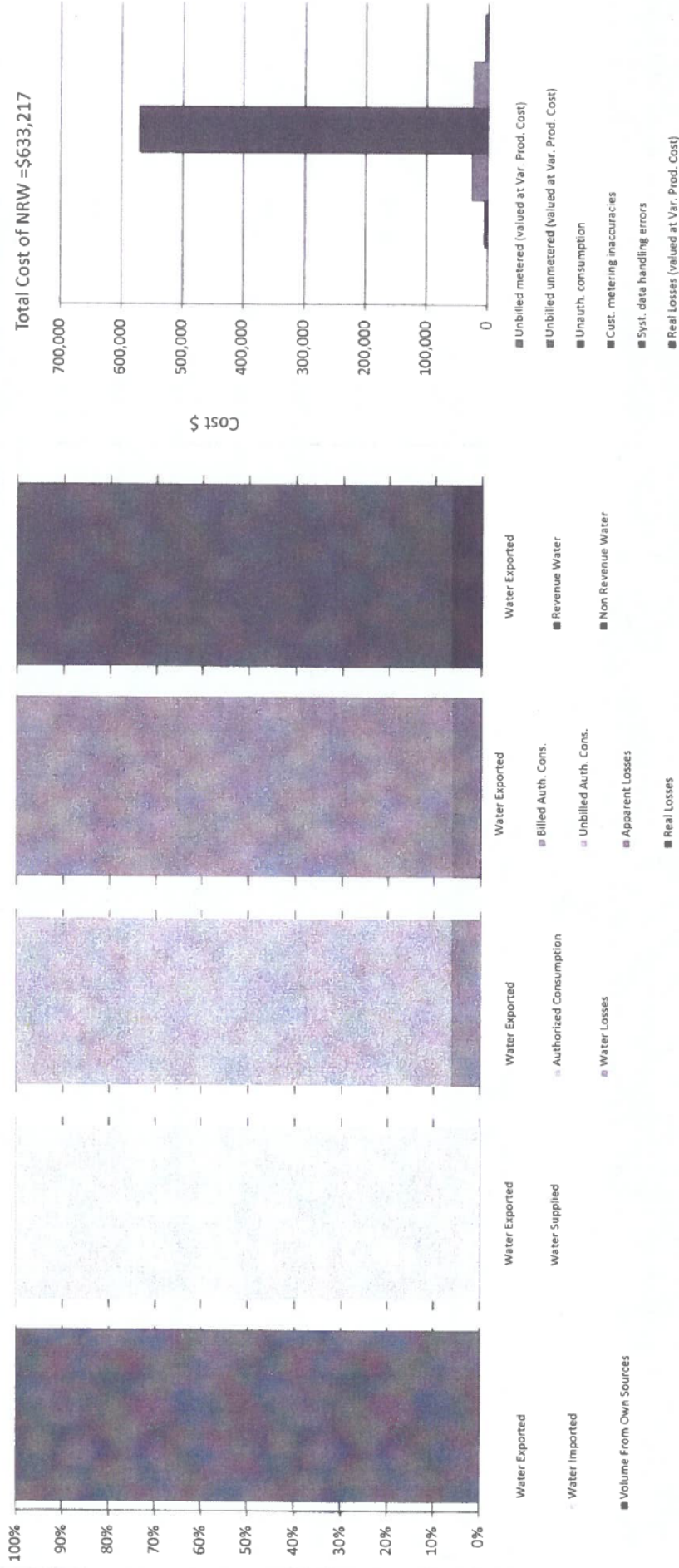
Water Audit Report for: LAHAINA (214)

Reporting Year: 2022

7/2021 - 6/2022

Data Validity Score: 59

☐ Show me the VOLUME of Non-Revenue Water
☒ Show me the COST of Non-Revenue Water



APPENDIX G

21. TABLE 4: 12-MONTH AVERAGE CALCULATION AS OF THE DATE OF DESIGNATION

County of Maui
Department of Water Supply
Monthly Source Report (Lahaina and Honokahau)
1000gal

WELL NAME	Aquifer System	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	LAST 12 MONTHS
Lahaina														
Kanaha 575	Launipoko	7,867	5,256	2,863	3,773	2,060	1,343	4,892	9,277	5,233	5,511	7,210	2,261	57,546
Kanaha 576	Launipoko	8,467	3,062	3,485	3,631	1,235	754	1,979	6,866	1,616	4,443	922	711	37,171
Waipuka 559	Launipoko	10,303	9,549	9,192	7,866	3,511	2,790	3,943	6,448	7,571	6,672	3,958	552	72,355
Waipuka 560	Launipoko	10,126	8,434	6,495	5,463	1,101	625	5,406	11,427	7,151	7,675	7,528	2,178	73,609
Napili A 569	Honolua	542	265	392	1,071	144	83	309	20,766	2,319	2,103	174	594	28,762
Napili B 570	Honolua	14,367	25,523	24,046	21,917	18,217	19,448	21,897	25,536	13,624	15,077	18,024	11,264	228,940
Napili C 571	Honolua	43,711	9,073	5,169	11,339	8,677	6,739	2,449	5,105	17,925	21,761	34,096	37,638	203,682
Honokahua A 572	Honolua	0	0	0	0	0	0	0	0	0	0	0	0	0
Honokahua B 573	Honolua	29,716	28,960	28,904	22,613	19,368	20,724	23,691	26,905	9,016	10,997	3,483	12,734	237,111
DAILY AVERAGE		4,035	3,004	2,598	2,589	1,752	1,694	2,306	3,624	2,149	2,395	2,513	2,191	30,850
HONOLUA WELL FIELD MONTHLY		88,336	63,821	58,511	56,940	46,406	46,994	48,346	78,312	42,884	49,938	55,777	62,230	698,495
HONOLUA WELL FIELD (1000 GPD)		2,850	2,127	1,887	1,898	1,497	1,516	1,727	2,526	1,429	1,611	1,859	2,007	1,911.26

#21. TABLE 4: 12-MONTH AVERAGE CALCULATION AS OF THE DATE OF DESIGNATION FOR HONOLUA

WELL FIELD	MM/YY	AVERAGE DAILY (GPD)	Metered	Estimated	Active but unknown	Inactive
	8/21	2,849,548 x				
	9/21	2,127,367 x				
	10/21	1,887,452 x				
	11/21	1,898,000 x				
	12/21	1,496,968 x				
	1/22	1,515,935 x				
	2/22	1,726,632 x				
	3/22	2,526,195 x				
	4/22	1,429,467 x				
	5/22	1,610,903 x				
	6/22	1,859,233 x				
	7/22	2,007,419				
12 MONTH AVERAGE		1,911,260				

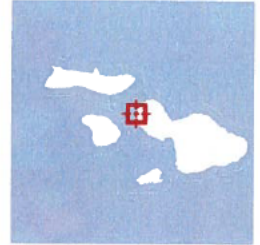
APPENDIX H (1 OF 4)



Honokahau B 573 Well Parcel - TMK 4-2-001:040



Overview



Legend

☐ Parcels

Parcel ID	420010400000	Situs/Physical Address	KAPALUA	Assd Land Value	\$16,100	Last 2 Sales			
Acreage	0.1046	Mailing Address	BOARD OF WATER SUPPLY	Assd Building Value	\$0	Date	Price	Reason	Qual
Class	AGRICULTURAL		00000	Total Assd Value	\$16,100	4/23/1998	0	n/a	U
				Exempt Value	\$16,100	12/3/1994	0	n/a	U
				Taxable Value	\$0				

Brief Tax Description n/a

(Note: Not to be used on legal documents)

Date created: 7/11/2023

Last Data Uploaded: 7/11/2023 7:36:51 AM

Developed by Schneider
GEOSPATIAL

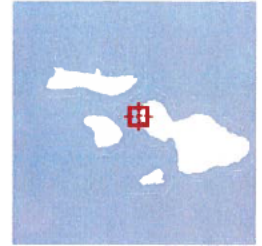
**APPENDIX H
(2 OF 4)**



Napili A 569 Well Tank_Parcel - TMK 4-3-001:088



Overview



Legend

Parcels

Parcel ID	430010880000	Situs/Physical Address	HONOLUA	Assd Land Value	\$53,400	Last 2 Sales			
Acreage	0.375	Mailing Address	MAUI LAND & PINEAPPLE CO	Assd Building Value	\$0	Date	Price	Reason	Qual
Class	AGRICULTURAL		200 VILLAGE RD LAHAINA HI 96761	Total Assd Value	\$53,400	1/1/2014	0	n/a	U
				Exempt Value	\$0	n/a	0	n/a	n/a
				Taxable Value	\$53,400				

Brief Tax Description n/a

(Note: Not to be used on legal documents)

Date created: 7/11/2023

Last Data Uploaded: 7/11/2023 7:36:51 AM

Developed by **Schneider**
GEOSPATIAL

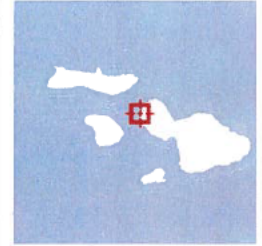
**APPENDIX H
(3 OF 4)**



Napili B 570 Well Parcel - TMK 4-2-001:094



Overview



Legend

☐ Parcels

Parcel ID	430010940000	Situs/Physical Address	HUI RD F	Assd Land Value	\$1,300	Last 2 Sales			
Acreage	2.554	Mailing Address	STATE OF HAWAII	Assd Building Value	\$0	Date	Price	Reason	Qual
Class	AGRICULTURAL			Total Assd Value	\$1,300	5/25/2004	0	n/a	U
				Exempt Value	\$1,300	n/a	0	n/a	n/a
				Taxable Value	\$0				

Brief
Tax Description n/a

(Note: Not to be used on legal documents)

Date created: 7/11/2023
Last Data Uploaded: 7/11/2023 7:36:51 AM

Developed by **Schneider**
GEOSPATIAL

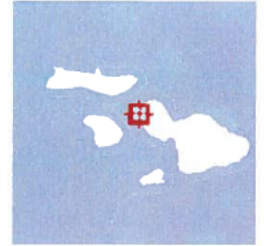
**APPENDIX H
(4 OF 4)**



Napili C 571 Well Parcel - TMK 4-2-001:038



Overview



Legend

☐ Parcels

Parcel ID	420010380000	Situs/Physical Address	KAPALUA	Assd Land Value	\$52,700	Last 2 Sales			
Acreage	0.3422	Mailing Address	BOARD OF WATER SUPPLY	Assd Building Value	\$0	Date	Price	Reason	Qual
Class	AGRICULTURAL		00000	Total Assd Value	\$52,700	4/23/1998	0	n/a	U
				Exempt Value	\$52,700	12/3/1994	0	n/a	U
				Taxable Value	\$0				

Brief Tax Description n/a

(Note: Not to be used on legal documents)

Date created: 7/11/2023

Last Data Uploaded: 7/11/2023 7:36:51 AM

Developed by Schneider
GEOSPATIAL

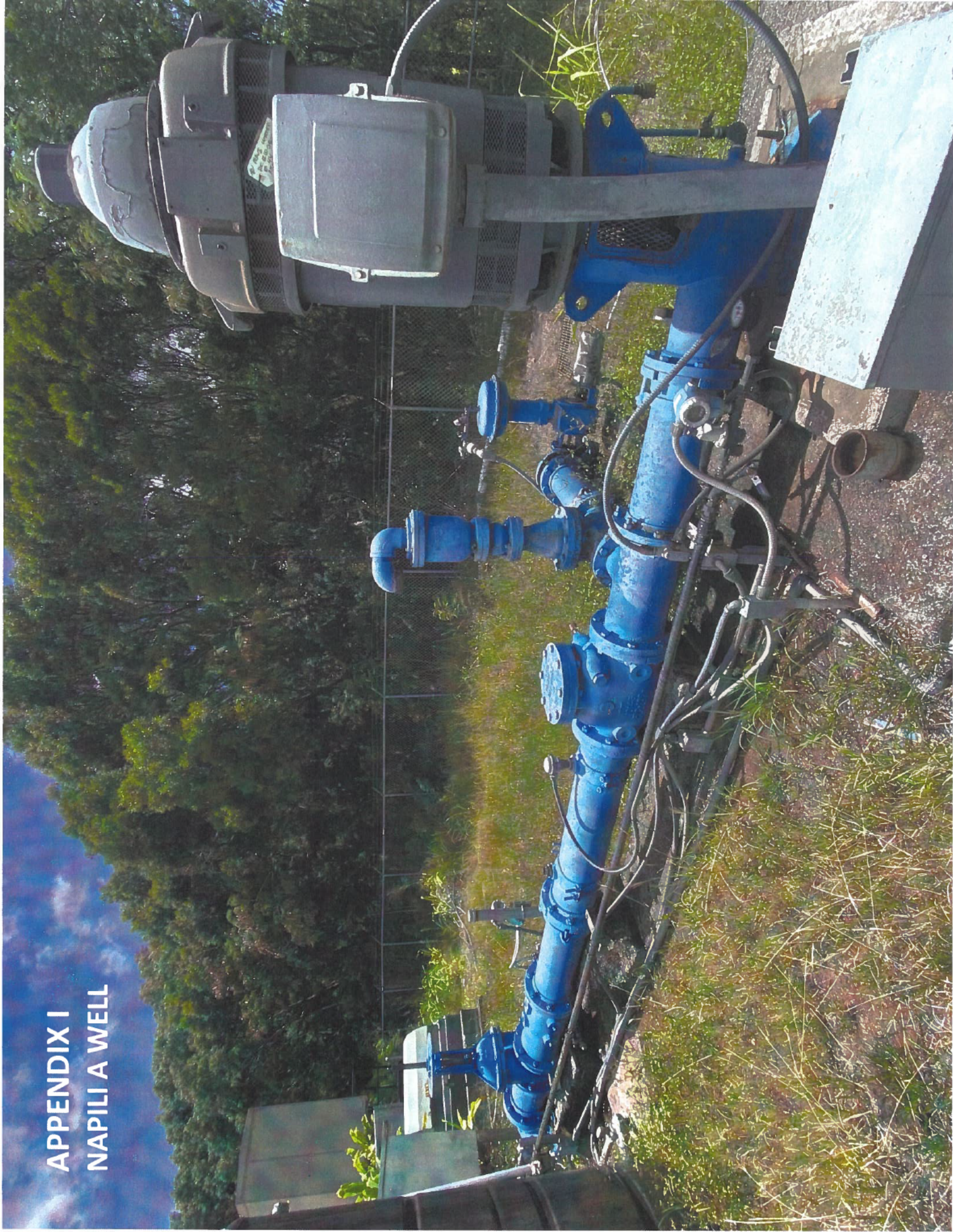
APPENDIX I
HONOKAHUA B WELL



APPENDIX I
HONOKAHUA B FLOW METER



APPENDIX I NAPILI A WELL



APPENDIX I

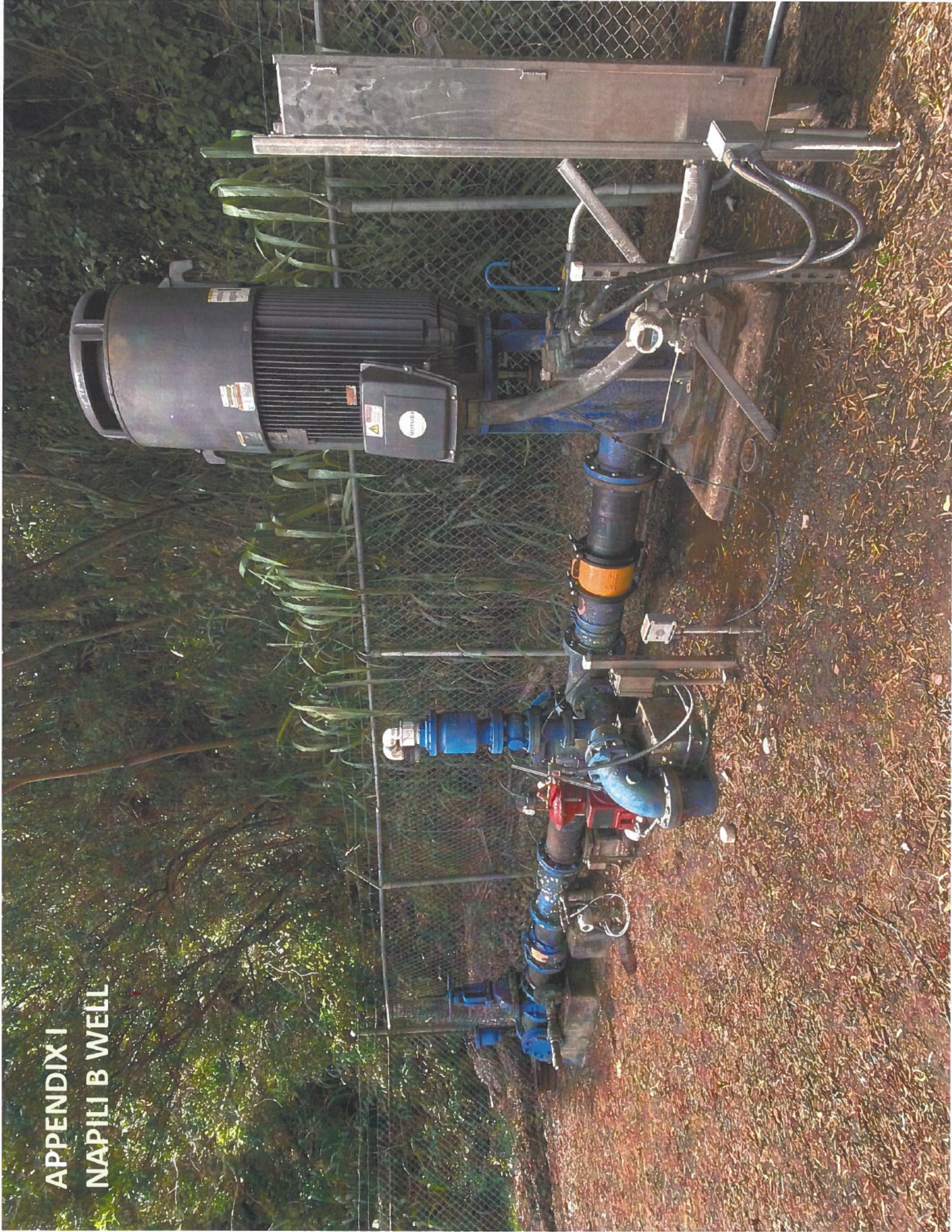
NAPILI A FLOW METER



APPENDIX I
NARILI C FLOW METER



APPENDIX I
NAPILI B WELL



APPENDIX I
NAPILI B FLOW METER



APPENDIX I
NAPILI C WELL



APPENDIX J

October 29, 1979

MEMORANDUM

TO: Mr. Donald A. Bremaer, Chairman
Environmental Quality Commission

SUBJECT: Pumps and Controls for Napili Well "C" and Honokahua Well "A", Maui

Based upon the recommendation of the Office of Environmental Quality Control, I am pleased to accept the subject document as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes. This environmental impact statement will be a useful tool in the process of deciding whether or not the action described therein should or should not be allowed to proceed. My acceptance of the statement is an affirmation of the adequacy of that statement under the applicable laws, and does not constitute an endorsement of the proposed action.

When the decision is made regarding the proposed action itself, I expect the proposing agency to weigh carefully whether the societal benefits justify the environmental impacts which will likely occur. These impacts are adequately described in the statement, and, together with the comments made by reviewers, provide a useful analysis of alternatives to the proposed action.


George R. Ariyoshi

cc: Mr. Eric Soto, Director
Department of Water Supply,
County of Maui

cc: Mr. Richard L. O'Connell

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855



OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

June 9, 1983

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Gentlemen:

Re: Revised Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui

This is to inform you that I have accepted the Revised EIS for the Honokahua Well "B" Project. Attached for your files is a copy of the subject Revised EIS.

Very truly yours,

A handwritten signature in cursive script that reads "Hannibal Tavares".

HANNIBAL TAVARES
Mayor, County of Maui

Enc.

cc: Dept. of Water Supply
M & E Pacific, Inc.