APPENDIX D

WATER AND SOIL RESOURCES

APPENDIX D-1

COOLING SYSTEM INFORMATION

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **JOHN SEIDLER**
Project Info: **CPV Sentinel-Wet Spread (Permit & High Ambients)**

Engine: **LMS100 PA**
Deck Info: **G0179C - 87o.scp**
Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/29/2007**
Time: **10:03:11 AM**
Version: **3.5.11**

Case #	**1001**	**1002**	**1003**	**1004**	**1005**	**1006**	**1007**	**1008**
Ambient Conditions								
Dry Bulb, °F	17.0	72.0	83.0	90.0	100.0	107.0	110.0	120.0
Wet Bulb, °F	15.8	57.1	63.1	67.0	69.7	72.2	72.9	75.6
RH, %	80.0	40.0	33.0	30.2	21.7	18.4	16.8	12.7
Altitude, ft	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0
Ambient Pressure, psia	14.132	14.131	14.131	14.131	14.131	14.131	14.131	14.131
Engine Inlet								
Comp Inlet Temp, °F	17.0	59.3	66.0	70.4	74.2	77.4	78.5	82.3
RH, %	80.0	87.8	85.3	84.1	80.2	78.3	77.3	74.2
Conditioning	NONE	EVAP	EVAP	EVAP	EVAP	EVAP	EVAP	EVAP
Tons or kBtu/hr	0	0	0	0	0	0	0	0
Pressure Losses								
Inlet Loss, inH20	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Exhaust Loss, inH20	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
kW, Gen Terms	**102559**	**101180**	**98920**	**97178**	**95794**	**94586**	**94184**	**92802**
Est. Btu/kW-hr, LHV	**7692**	**7825**	**7859**	**7895**	**7924**	**7951**	**7960**	**7991**
Fuel Flow								
MMBtu/hr, LHV	788.9	791.7	777.5	767.2	759.1	752.0	749.7	741.6
lb/hr	38298	38434	37741	37244	36850	36507	36392	35999
NOx Control	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**
Water Injection								
lb/hr	34336	31712	29964	29391	28943	28549	28420	27969
Temperature, °F	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Intercooler	**Water-Air**	**Water-Air**	**Water-Air**	**Water-Air**	**Water-Air**	**Water-Air**	**Water-Air**	**Water-Air**
Humidification	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
IC Heat Extraction, btu/s	20327	25204	25547	26377	26949	27528	27705	28353
KOD Water Extraction, lb/s	0.0	0.0	0.1	0.8	1.2	1.7	1.9	2.4
Control Parameters								
HP Speed, RPM	9245	9353	9357	9357	9357	9357	9357	9358
LP Speed, RPM	5062	5318	5282	5278	5275	5273	5272	5270
PT Speed, RPM	3600	3600	3600	3600	3600	3600	3600	3600
PS3 - CDP, psia	567.0	554.3	545.0	537.9	532.3	527.5	525.9	520.3
T23 - Intcrl Inlet Temp, °F	284.7	335.9	341.5	344.9	348.0	350.5	351.3	354.3
P23 - Intcrl Inlet Pressure, psia	57.2	54.1	53.2	52.6	52.1	51.6	51.5	50.9
W23 - Intcrl Inlet Flow, lb/s	455.9	438.6	431.5	426.6	422.7	419.3	418.2	414.3
T25 - HPC Inlet Temp, °F	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
T3CRF - CDT, °F	713	724	722	722	721	721	721	721
T48IN, °R	1984	2031	2031	2031	2031	2031	2031	2031
T48IN, °F	1525	1571	1572	1572	1572	1572	1572	1572
Exhaust Parameters								
Temperature, °F	742.9	785.2	790.1	793.6	796.5	799.0	799.9	802.8
lb/sec	473.5	455.7	447.8	442.0	437.4	433.4	432.0	427.4
lb/hr	1704740	1640417	1612121	1591227	1574639	1560185	1555359	1538790
Energy, Btu/s- Ref 0 °R	146380	147201	145404	143954	142805	141804	141469	140320
Cp, Btu/lb-R	0.2729	0.2766	0.2771	0.2772	0.2774	0.2775	0.2775	0.2776
Emissions (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
NOx ppmvd Ref 15% O2	25	25	25	25	25	25	25	25
NOx as NO2, lb/hr	79	80	78	77	76	76	75	75
CO ppmvd Ref 15% O2	153	125	118	117	117	116	116	115
CO, lb/hr	295.90	241.98	225.12	220.32	216.59	213.31	212.23	208.49
CO2, lb/hr	102679.70	103098.50	101260.30	99930.51	98875.54	97956.72	97649.27	96595.50
HC ppmvd Ref 15% O2	8	6	5	5	5	5	5	5
HC, lb/hr	8.35	6.03	5.38	5.23	5.12	5.01	4.98	4.87
SOX as SO2, lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **JOHN SEIDLER**
Project Info: **CPV Sentinel-Wet Spread (Permit & High Ambients)**

Engine: **LMS100 PA**
Deck Info: **G0179C - 87o.scp**
Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/29/2007**
Time: **10:03:11 AM**
Version: **3.5.11**

Case #	**1001**	**1002**	**1003**	**1004**	**1005**	**1006**	**1007**	**1008**
Exh Wght % Wet (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	1.2311	1.2210	1.2195	1.2194	1.2194	1.2193	1.2193	1.2193
N2	72.2031	71.6118	71.5235	71.5202	71.5173	71.5149	71.5139	71.5110
O2	13.5613	13.0102	12.9897	12.9904	12.9909	12.9913	12.9915	12.9920
CO2	6.0232	6.2849	6.2812	6.2801	6.2793	6.2785	6.2782	6.2774
H20	6.9603	7.8537	7.9686	7.9724	7.9757	7.9787	7.9797	7.9832
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0174	0.0148	0.0140	0.0138	0.0138	0.0137	0.0136	0.0135
HC	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
NOX	0.0032	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033
Exh Mole % Dry (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	0.9722	0.9743	0.9744	0.9744	0.9743	0.9743	0.9743	0.9743
N2	81.3150	81.4906	81.4926	81.4921	81.4918	81.4914	81.4913	81.4909
O2	13.3711	12.9616	12.9575	12.9587	12.9597	12.9605	12.9608	12.9618
CO2	4.3179	4.5526	4.5556	4.5550	4.5545	4.5542	4.5540	4.5535
H20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0196	0.0168	0.0159	0.0158	0.0157	0.0156	0.0156	0.0154
HC	0.0010	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0006
NOX	0.0032	0.0034	0.0034	0.0034	0.0034	0.0034	0.0034	0.0034
Exh Mole % Wet (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	0.8666	0.8554	0.8538	0.8538	0.8537	0.8537	0.8536	0.8536
N2	72.4800	71.5473	71.4105	71.4054	71.4011	71.3973	71.3959	71.3914
O2	11.9183	11.3801	11.3544	11.3548	11.3550	11.3551	11.3552	11.3554
CO2	3.8488	3.9971	3.9920	3.9912	3.9906	3.9900	3.9898	3.9892
H20	10.8651	12.2018	12.3718	12.3775	12.3824	12.3867	12.3883	12.3934
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0174	0.0147	0.0139	0.0138	0.0137	0.0137	0.0136	0.0135
HC	0.0009	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
NOX	0.0028	0.0030	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029

Aero Energy Fuel Number	**900-773 (SCG-Blythe)**	
	Volume %	**Weight %**
Hydrogen	0.0000	0.0000
Methane	95.9992	91.2962
Ethane	1.7359	3.0943
Ethylene	0.0000	0.0000
Propane	0.3325	0.8692
Propylene	0.0000	0.0000
Butane	0.1224	0.4217
Butylene	0.0000	0.0000
Butadiene	0.0000	0.0000
Pentane	0.0343	0.1467
Cyclopentane	0.0000	0.0000
Hexane	0.0258	0.1318
Heptane	0.0000	0.0000
Carbon Monoxide	0.0000	0.0000
Carbon Dioxide	1.1961	3.1207
Nitrogen	0.5537	0.9195
Water Vapor	0.0000	0.0000
Oxygen	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000
Ammonia	0.0000	0.0000

Btu/lb, LHV	20600
Btu/scf, LHV	918
Btu/scf, HHV	1018
Btu/lb, HHV	22838
Fuel Temp, °F	77.0
NOx Scalar	0.983
Specific Gravity	0.58

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **JOHN SEIDLER**
Project Info: **CPV Sentinel-Wet Spread (Permit & High Ambients)**

Engine: **LMS100 PA**
Deck Info: **G0179C - 87o.scp**
Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/29/2007**
Time: **10:03:11 AM**
Version: **3.5.11**

Case #	**1001**	**1002**	**1003**	**1004**	**1005**	**1006**	**1007**	**1008**
Engine Exhaust								
Exhaust Avg. Mol. Wt., Wet Basis	28.1	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Inlet Flow Wet, pps	456.1	438.8	431.7	426.9	422.9	419.5	418.4	414.5
Inlet Flow Dry, pps	455.4	434.5	426.5	420.9	416.5	412.6	411.3	406.9
Shaft HP	139434	137571	134519	132167	130298	128668	128125	126260
Generator Information								
Capacity kW	201459	170534	161551	155302	145668	138446	135236	124063
Efficiency	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Inlet Temp, °F	17.0	72.0	83.0	90.0	100.0	107.0	110.0	120.0
Gear Box Loss	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8th Stage Bleed								
Flow, pps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pressure, psia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Temperature, °R	0	0	0	0	0	0	0	0
CDP Bleed								
Flow, pps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pressure, psia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CardPack	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**
Intercooler CardPack	**87m**	**87m**	**87m**	**87m**	**87m**	**87m**	**87m**	**87m**
NSI	**332**	**334**	**334**	**334**	**334**	**334**	**334**	**334**
NSI	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
NSI	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

XNENG

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **JOHN SEIDLER**
Project Info: **CPV Sentinel-Dry Spread (Permit & High Ambients)**

Engine: **LMS100 PA**
Deck Info: **G0179C - 87o.scp**
Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/29/2007**
Time: **11:29:33 AM**
Version: **3.5.11**

Case #	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Ambient Conditions								
Dry Bulb, °F	17.0	72.0	83.0	90.0	100.0	107.0	110.0	120.0
Wet Bulb, °F	15.8	57.1	63.1	67.0	69.7	72.2	72.9	75.6
RH, %	80.0	40.0	33.0	30.2	21.7	18.4	16.8	12.7
Altitude, ft	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0
Ambient Pressure, psia	14.132	14.131	14.131	14.131	14.131	14.131	14.131	14.131
Engine Inlet								
Comp Inlet Temp, °F	17.0	59.3	66.0	70.4	74.2	77.4	78.5	82.3
RH, %	80.0	87.8	85.3	84.1	80.2	78.3	77.3	74.2
Conditioning	NONE	EVAP	EVAP	EVAP	EVAP	EVAP	EVAP	EVAP
Tons or kBtu/hr	0	0	0	0	0	0	0	0
Pressure Losses								
Inlet Loss, inH20	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Exhaust Loss, inH20	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
kW, Gen Terms	**102559**	**101180**	**98920**	**95205**	**89624**	**83872**	**81651**	**71573**
Est. Btu/kW-hr, LHV	**7692**	**7825**	**7859**	**7904**	**7980**	**8072**	**8112**	**8348**
Fuel Flow								
MMBtu/hr, LHV	788.9	791.7	777.5	752.6	715.2	677.1	662.4	597.5
lb/hr	38298	38434	37741	36532	34721	32867	32154	29007
NOx Control	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**
Water Injection								
lb/hr	34336	31712	29964	28373	26660	24605	23877	20656
Temperature, °F	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Intercooler	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**
Humidification	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
IC Heat Extraction, btu/s	20327	25204	25547	24359	22565	21023	20406	17380
KOD Water Extraction, lb/s	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Control Parameters								
HP Speed, RPM	9245	9353	9357	9384	9410	9410	9410	9410
LP Speed, RPM	5062	5318	5282	5218	5135	5069	5049	4969
PT Speed, RPM	3600	3600	3600	3600	3600	3600	3600	3600
PS3 - CDP, psia	567.0	554.3	545.0	529.5	507.1	484.3	475.5	434.5
T23 - Intcrl Inlet Temp, °F	284.7	335.9	341.5	344.6	346.1	346.5	346.6	340.5
P23 - Intcrl Inlet Pressure, psia	57.2	54.1	53.2	52.6	51.7	50.7	50.3	47.8
W23 - Intcrl Inlet Flow, lb/s	455.9	438.6	431.5	419.3	402.2	385.5	378.9	355.9
T25 - HPC Inlet Temp, °F	100.0	100.0	100.0	107.0	117.0	124.0	127.0	137.0
T3CRF - CDT, °F	713	724	722	728	736	738	739	743
T48IN, °R	1984	2031	2031	2032	2029	2020	2018	2008
T48IN, °F	1525	1571	1572	1572	1569	1561	1558	1548
Exhaust Parameters								
Temperature, °F	742.9	785.2	790.1	798.6	808.3	815.3	818.4	836.8
lb/sec	473.5	455.7	447.8	435.0	417.0	399.3	392.4	359.7
lb/hr	1704740	1640417	1612121	1565973	1501290	1437517	1412577	1294998
Energy, Btu/s- Ref 0 °R	146380	147201	145404	142421	137700	132639	130670	121614
Cp, Btu/lb-R	0.2729	0.2766	0.2771	0.2777	0.2782	0.2784	0.2785	0.2791
Emissions (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
NOx ppmvd Ref 15% O2	25	25	25	25	25	25	25	25
NOx as NO2, lb/hr	79	80	78	76	72	68	67	60
CO ppmvd Ref 15% O2	153	125	118	115	118	124	128	139
CO, lb/hr	295.90	241.98	225.12	211.48	206.31	206.23	207.37	203.15
CO2, lb/hr	102679.70	103098.50	101260.30	98027.79	93164.22	88178.60	86258.18	77798.05
HC ppmvd Ref 15% O2	8	6	5	5	5	5	6	7
HC, lb/hr	8.35	6.03	5.38	4.93	4.92	5.12	5.25	5.43
SOX as SO2, lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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GE Energy

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Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/29/2007**
Time: **11:29:33 AM**
Version: **3.5.11**

Case #	2001	2002	2003	2004	2005	2006	2007	2008
Exh Wght % Wet (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	1.2311	1.2210	1.2195	1.2177	1.2169	1.2165	1.2164	1.2163
N2	72.2031	71.6118	71.5235	71.4187	71.3753	71.3506	71.3459	71.3390
O2	13.5613	13.0102	12.9897	12.9887	13.0524	13.1459	13.1834	13.3208
CO2	6.0232	6.2849	6.2812	6.2599	6.2056	6.1341	6.1064	6.0076
H20	6.9603	7.8537	7.9686	8.0979	8.1324	8.1349	8.1295	8.0970
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0174	0.0148	0.0140	0.0135	0.0137	0.0143	0.0147	0.0157
HC	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004
NOX	0.0032	0.0033	0.0033	0.0033	0.0033	0.0033	0.0032	0.0032
Exh Mole % Dry (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	0.9722	0.9743	0.9744	0.9743	0.9739	0.9735	0.9733	0.9726
N2	81.3150	81.4906	81.4926	81.4856	81.4569	81.4176	81.4022	81.3466
O2	13.3711	12.9616	12.9575	12.9744	13.0414	13.1330	13.1688	13.2982
CO2	4.3179	4.5526	4.5556	4.5464	4.5081	4.4556	4.4350	4.3606
H20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0196	0.0168	0.0159	0.0154	0.0157	0.0164	0.0168	0.0179
HC	0.0010	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	0.0008
NOX	0.0032	0.0034	0.0034	0.0034	0.0033	0.0033	0.0033	0.0032
Exh Mole % Wet (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	0.8666	0.8554	0.8538	0.8519	0.8511	0.8507	0.8506	0.8505
N2	72.4800	71.5473	71.4105	71.2489	71.1834	71.1475	71.1411	71.1336
O2	11.9183	11.3801	11.3544	11.3445	11.3966	11.4764	11.5088	11.6287
CO2	3.8488	3.9971	3.9920	3.9752	3.9396	3.8936	3.8759	3.8131
H20	10.8651	12.2018	12.3718	12.5626	12.6122	12.6141	12.6054	12.5549
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0174	0.0147	0.0139	0.0135	0.0137	0.0143	0.0146	0.0156
HC	0.0009	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0007
NOX	0.0028	0.0030	0.0029	0.0029	0.0029	0.0029	0.0029	0.0028

Aero Energy Fuel Number	**900-773 (SCG-Blythe)**	
	Volume %	**Weight %**
Hydrogen	0.0000	0.0000
Methane	95.9992	91.2962
Ethane	1.7359	3.0943
Ethylene	0.0000	0.0000
Propane	0.3325	0.8692
Propylene	0.0000	0.0000
Butane	0.1224	0.4217
Butylene	0.0000	0.0000
Butadiene	0.0000	0.0000
Pentane	0.0343	0.1467
Cyclopentane	0.0000	0.0000
Hexane	0.0258	0.1318
Heptane	0.0000	0.0000
Carbon Monoxide	0.0000	0.0000
Carbon Dioxide	1.1961	3.1207
Nitrogen	0.5537	0.9195
Water Vapor	0.0000	0.0000
Oxygen	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000
Ammonia	0.0000	0.0000

Btu/lb, LHV	20600
Btu/scf, LHV	918
Btu/scf, HHV	1018
Btu/lb, HHV	22838
Fuel Temp, °F	77.0
NOx Scalar	0.983
Specific Gravity	0.58

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **JOHN SEIDLER**
Project Info: **CPV Sentinel-Dry Spread (Permit & High Ambients)**

Engine: **LMS100 PA**
Deck Info: **G0179C - 87o.scp**
Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/29/2007**
Time: **11:29:33 AM**
Version: **3.5.11**

Case #	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Engine Exhaust								
Exhaust Avg. Mol. Wt., Wet Basis	28.1	28.0	28.0	27.9	27.9	27.9	27.9	27.9
Inlet Flow Wet, pps	456.1	438.8	431.7	419.5	402.4	385.7	379.1	356.1
Inlet Flow Dry, pps	455.4	434.5	426.5	413.6	396.3	379.3	372.7	349.6
Shaft HP	139434	137571	134519	129503	121970	114209	111213	97625
Generator Information								
Capacity kW	201459	170534	161551	155302	145668	138446	135236	124063
Efficiency	0.986	0.986	0.986	0.986	0.985	0.985	0.985	0.983
Inlet Temp, °F	17.0	72.0	83.0	90.0	100.0	107.0	110.0	120.0
Gear Box Loss	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8th Stage Bleed								
Flow, pps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pressure, psia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Temperature, °R	0	0	0	0	0	0	0	0
CDP Bleed								
Flow, pps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pressure, psia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CardPack	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**
Intercooler CardPack	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**
NSI	**332**	**334**	**334**	**334**	**301**	**301**	**301**	**301**
NSI	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
NSI	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
XNENG	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **JOHN SEIDLER**
Project Info: **CPV Sentinel-Part Load Dry Cooled Runs (approx for output matching)**

Engine: **LMS100 PA**
Deck Info: **G0179C - 87o.scp**
Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/31/2007**
Time: **7:15:49 AM**
Version: **3.5.11**

Case #	**3001**	**3002**	**3003**	**3004**	**3005**	**3006**	**3007**	**3008**
Ambient Conditions								
Dry Bulb, °F	17.0	72.0	83.0	90.0	100.0	107.0	110.0	120.0
Wet Bulb, °F	15.8	57.1	63.1	67.0	69.7	72.2	72.9	75.6
RH, %	80.0	40.0	33.0	30.2	21.7	18.4	16.8	12.7
Altitude, ft	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0	1080.0
Ambient Pressure, psia	14.132	14.131	14.131	14.131	14.131	14.131	14.131	14.131
Engine Inlet								
Comp Inlet Temp, °F	17.0	59.3	66.0	70.4	74.2	77.4	78.5	82.3
RH, %	80.0	87.8	85.3	84.1	80.2	78.3	77.3	74.2
Conditioning	NONE	EVAP	EVAP	EVAP	EVAP	EVAP	EVAP	EVAP
Tons or kBtu/hr	0	0	0	0	0	0	0	0
Pressure Losses								
Inlet Loss, inH20	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Exhaust Loss, inH20	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
kW, Gen Terms	**92017**	**90791**	**88782**	**87339**	**86356**	**76951**	**76752**	**69318**
Est. Btu/kW-hr, LHV	**7821**	**7934**	**7976**	**8004**	**8026**	**8191**	**8201**	**8411**
Fuel Flow								
MMBtu/hr, LHV	719.7	720.3	708.1	699.1	693.1	630.3	629.5	583.0
lb/hr	34936	34967	34374	33934	33645	30597	30556	28303
NOx Control	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**
Water Injection								
lb/hr	30177	27378	25887	25313	25395	21958	22030	19904
Temperature, °F	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Intercooler	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**	**Dry Secondary**
Humidification	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
IC Heat Extraction, btu/s	18079	22859	23161	22636	21868	19587	19359	16765
KOD Water Extraction, lb/s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Parameters								
HP Speed, RPM	9183	9277	9281	9324	9383	9349	9369	9396
LP Speed, RPM	4885	5092	5101	5095	5090	4996	4998	4951
PT Speed, RPM	3600	3600	3600	3600	3600	3600	3600	3600
PS3 - CDP, psia	527.5	517.0	508.5	501.2	495.2	458.6	457.2	425.6
T23 - Intcrl Inlet Temp, °F	274.7	326.4	332.7	337.9	343.4	340.9	342.3	337.0
P23 - Intcrl Inlet Pressure, psia	54.8	52.2	51.4	51.2	51.1	49.4	49.3	47.2
W23 - Intcrl Inlet Flow, lb/s	432.7	414.8	408.0	401.0	394.5	368.4	367.2	352.4
T25 - HPC Inlet Temp, °F	100.0	100.0	100.0	107.0	117.0	124.0	127.0	137.0
T3CRF - CDT, °F	702	709	708	717	731	728	732	741
T48IN, °R	1958	1994	1994	2003	2016	1996	2001	2003
T48IN, °F	1499	1534	1535	1543	1557	1536	1541	1543
Exhaust Parameters								
Temperature, °F	740.4	775.4	780.6	791.7	805.8	811.3	816.4	838.8
lb/sec	444.3	429.8	422.5	415.3	408.7	381.0	379.2	352.9
lb/hr	1599537	1547248	1520892	1495049	1471442	1371647	1365132	1270451
Energy, Btu/s- Ref 0 °R	136760	137310	135746	134911	134566	125907	125914	119450
Cp, Btu/lb-R	0.2721	0.2754	0.2760	0.2768	0.2778	0.2777	0.2781	0.2791
Emissions (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
NOx ppmvd Ref 15% O2	25	25	25	25	25	25	25	25
NOx as NO2, lb/hr	72	72	71	70	70	63	63	59
CO ppmvd Ref 15% O2	156	124	117	110	111	104	112	133
CO, lb/hr	274.04	218.06	203.38	188.77	187.52	159.90	172.08	189.86
CO2, lb/hr	93680.51	93828.64	92253.31	91090.77	90306.37	82159.49	82026.20	75927.67
HC ppmvd Ref 15% O2	8	5	5	4	4	4	5	6
HC, lb/hr	7.80	5.39	4.83	4.25	4.23	3.39	3.92	4.94
SOX as SO2, lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **JOHN SEIDLER**
Project Info: **CPV Sentinel-Part Load Dry Cooled Runs (approx for output matching)**

Engine: **LMS100 PA**
Deck Info: **G0179C - 87o.scp**
Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/31/2007**
Time: **7:15:49 AM**
Version: **3.5.11**

Case #	3001	3002	3003	3004	3005	3006	3007	3008
Exh Wght % Wet (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	1.2335	1.2241	1.2222	1.2200	1.2179	1.2186	1.2179	1.2168
N2	72.3458	71.7955	71.6821	71.5536	71.4317	71.4738	71.4305	71.3690
O2	13.8432	13.3829	13.3470	13.2701	13.1690	13.3942	13.3525	13.3757
CO2	5.8567	6.0642	6.0657	6.0928	6.1373	5.9898	6.0087	5.9764
H20	6.7001	7.5156	7.6661	7.8474	8.0279	7.9084	7.9743	8.0435
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0171	0.0141	0.0134	0.0126	0.0127	0.0117	0.0126	0.0149
HC	0.0005	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003	0.0004
NOX	0.0031	0.0032	0.0032	0.0032	0.0033	0.0032	0.0032	0.0032
Exh Mole % Dry (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	0.9711	0.9727	0.9728	0.9731	0.9734	0.9724	0.9726	0.9724
N2	81.2151	81.3563	81.3623	81.3836	81.4148	81.3287	81.3417	81.3272
O2	13.6054	13.2768	13.2632	13.2139	13.1407	13.3434	13.3120	13.3443
CO2	4.1852	4.3742	4.3826	4.4112	4.4527	4.3386	4.3555	4.3351
H20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0192	0.0160	0.0152	0.0144	0.0145	0.0133	0.0144	0.0170
HC	0.0010	0.0007	0.0006	0.0006	0.0006	0.0005	0.0006	0.0008
NOX	0.0031	0.0032	0.0032	0.0033	0.0033	0.0032	0.0032	0.0032
Exh Mole % Wet (NOT FOR USE IN ENVIRONMENTAL PERMITS)								
AR	0.8694	0.8590	0.8569	0.8545	0.8522	0.8530	0.8522	0.8511
N2	72.7107	71.8420	71.6653	71.4647	71.2738	71.3449	71.2768	71.1815
O2	12.1807	11.7242	11.6825	11.6035	11.5039	11.7054	11.6648	11.6796
CO2	3.7469	3.8627	3.8603	3.8736	3.8981	3.8060	3.8166	3.7943
H20	10.4715	11.6946	11.9183	12.1878	12.4560	12.2758	12.3737	12.4751
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0172	0.0141	0.0134	0.0126	0.0127	0.0116	0.0126	0.0149
HC	0.0009	0.0006	0.0006	0.0005	0.0005	0.0004	0.0005	0.0007
NOX	0.0028	0.0029	0.0029	0.0029	0.0029	0.0028	0.0028	0.0028

Aero Energy Fuel Number	**900-773 (SCG-Blythe)**	
	Volume %	**Weight %**
Hydrogen	0.0000	0.0000
Methane	95.9992	91.2962
Ethane	1.7359	3.0943
Ethylene	0.0000	0.0000
Propane	0.3325	0.8692
Propylene	0.0000	0.0000
Butane	0.1224	0.4217
Butylene	0.0000	0.0000
Butadiene	0.0000	0.0000
Pentane	0.0343	0.1467
Cyclopentane	0.0000	0.0000
Hexane	0.0258	0.1318
Heptane	0.0000	0.0000
Carbon Monoxide	0.0000	0.0000
Carbon Dioxide	1.1961	3.1207
Nitrogen	0.5537	0.9195
Water Vapor	0.0000	0.0000
Oxygen	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000
Ammonia	0.0000	0.0000

Btu/lb, LHV	20600
Btu/scf, LHV	918
Btu/scf, HHV	1018
Btu/lb, HHV	22838
Fuel Temp, °F	77.0
NOx Scalar	0.983
Specific Gravity	0.58

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **JOHN SEIDLER**
Project Info: **CPV Sentinel-Part Load Dry Cooled Runs (approx for output matching)**

Engine: **LMS100 PA**
Deck Info: **G0179C - 87o.scp**
Generator: **BDAX 82-445ER 60Hz, 13.8kV, 0.9PF (35404)**
Fuel: **Site Gas Fuel#900-773T, 20600 Btu/lb,LHV**

Date: **10/31/2007**
Time: **7:15:49 AM**
Version: **3.5.11**

Case #	**3001**	**3002**	**3003**	**3004**	**3005**	**3006**	**3007**	**3008**
Engine Exhaust								
Exhaust Avg. Mol. Wt., Wet Basis	28.2	28.0	28.0	28.0	28.0	28.0	28.0	27.9
Inlet Flow Wet, pps	433.0	415.0	408.2	401.2	394.7	368.6	367.4	352.6
Inlet Flow Dry, pps	432.3	410.9	403.2	395.6	388.7	362.6	361.2	346.1
Shaft HP	125200	123545	120834	118887	117561	104875	104606	94586
Generator Information								
Capacity kW	201459	170534	161551	155302	145668	138446	135236	124063
Efficiency	0.986	0.985	0.985	0.985	0.985	0.984	0.984	0.983
Inlet Temp, °F	17.0	72.0	83.0	90.0	100.0	107.0	110.0	120.0
Gear Box Loss	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8th Stage Bleed								
Flow, pps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pressure, psia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Temperature, °R	0	0	0	0	0	0	0	0
CDP Bleed								
Flow, pps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pressure, psia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CardPack	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**	**87o**
Intercooler CardPack	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**	**87m_dry**
NSI	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
NSI	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
NSI	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

XNENG

APPENDIX D-2

DESERT WATER AGENCY ENGINEER'S REPORT

DESERT WATER AGENCY
POST OFFICE BOX 1710
PALM SPRINGS, CALIFORNIA 92263
(760) 323-4971

ENGINEER'S REPORT

GROUND WATER REPLENISHMENT AND ASSESSMENT PROGRAM FOR THE MISSION CREEK SUBBASIN

DESERT WATER AGENCY 2007/2008

APRIL 2007

Prepared by

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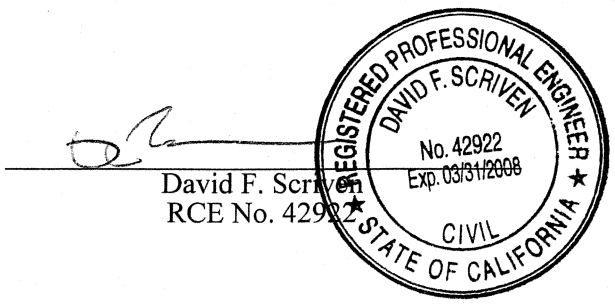

David F. Scriven
RCE No. 42922

101-57.5
(DFS/blt)
(REPORTS/101-57/57P5RPT)

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CHAPTER I
EXECUTIVE SUMMARY

CHAPTER I
EXECUTIVE SUMMARY

If ground water replenishment with imported water (artificial recharge) is excluded, annual ground water overdraft (ground water extractions or water production in excess of natural ground water replenishment or recharge) within the Mission Creek Subbasin of the Coachella Valley Ground Water Basin (see Plate 1) is currently estimated to range between 9,000 and 10,000 acre feet per year (AF/Yr), depending upon actual non-consumptive return flows. Supplementing natural ground water replenishment resulting from rainfall runoff with artificial recharge is therefore necessary to reduce annual and cumulative overdraft.

Increases in cumulative overdraft, without artificial recharge, will result in declining ground water levels and increasing pump lifts, thereby increasing energy consumption for ground water extraction. Extreme cumulative overdraft has the potential of causing ground surface settlement, and could also have an adverse impact upon ground water quality and storage volume. Artificial recharge offsets annual ground water overdraft and the concerns associated therewith and arrests or reduces the effects of cumulative ground water overdraft.

The Area of Benefit for the ground water replenishment program is that portion of the Mission Creek Subbasin and upstream tributaries, either subbasins or streams, which lie within the boundaries of Desert Water Agency (Plate 2). The costs involved in carrying out the ground water replenishment program are essentially recovered through water replenishment assessments applied to all ground water and surface water production within the Area of Benefit, aside from specifically exempted production. Production is defined as either extraction of ground water from the Mission Creek Subbasin and upstream tributaries, or diversion of surface water that would otherwise naturally replenish the Mission Creek Subbasin and upstream tributaries, all within the Area of Benefit.

The following are specifically exempted from assessment: producers extracting ground water from either the Mission Creek Subbasin and upstream tributaries at rates less than 10 AF/Yr; and producers diverting surface water that does not diminish stream flow and ground water recharge of the Mission Creek Subbasin and upstream tributaries by more than 10 AF/Yr.

Artificial recharge in the Mission Creek Subbasin commenced in 2002. Because ground water production continues to exceed ground water replenishment and ground water overdraft continues to occur within the Mission Creek Subbasin, continued artificial recharge with Colorado River water

exchanged for available State Water Project contract water is necessary to either eliminate or reduce the effects of annual and cumulative overdraft, and reduce the resultant threat to the ground water supply.

Desert Water Agency has requested its maximum 2007 Table A water allocation (formerly known as "entitlement") of 50,000 AF pursuant to its State Water Project Contract, which was increased in quantity from 38,100 AF in 2004 to 50,000 AF in 2005, and use said water for ground water replenishment. Coachella Valley Water District plans to do the same with its maximum 2007 Table A water allocation, which was increased in quantity from 23,100 in 2003 to 33,000 AF in 2004 and to 121,100 AF in 2005. In addition, for 2007, the two agencies jointly agreed to each request up to 16,380 AF of State Water Project surplus water under the Turn-Back Water Pool Program, as available. It appears that approximately 800 AF of Turn-Back Water Pool Program water will be available to the Coachella Valley agencies during 2007.

By virtue of the 2003 Exchange Agreement, Metropolitan Water District assigned 11,900 AF of its annual Table A allocation to Desert Water Agency and 88,100 AF of its annual Table A allocation to Coachella Valley Water District; however, Metropolitan Water District retained the option to call-back or recall the assigned annual Table A water allocations, in accordance with specific conditions, in any year. In implementing the 2003 Exchange Agreement, Metropolitan Water District advised Coachella Valley Water District and Desert Water Agency that it would probably recall the 100,000 AF assigned to the two Coachella Valley agencies from 2005 through 2009. In fact, it did recall 100,000 AF in 2005, but did not recall any water in 2006. According to preliminary communications with Metropolitan Water District staff, it is unlikely that Metropolitan Water District will recall any water in 2007.

According to current (as of April 25, 2007) projections for 2007, California Department of Water Resources (CDWR) may be able to deliver 60% of Table A water allocation requests, which would result in deliveries of approximately 102,660 AF of Table A water to the Coachella Valley agencies, 30,000 AF for Desert Water Agency and 72,660 AF for Coachella Valley Water District. As mentioned previously, approximately 800 AF of Turn-Back Water Pool water (Pool A) will be available to the Coachella Valley agencies for the 2007 calendar year. The total quantity of water available for artificial recharge in the Upper Coachella Valley during 2007 will approximate 103,460 AF.

The maximum replenishment assessment rate permitted by Desert Water Agency Law for the 2007/2008 fiscal year is $132.76/AF. The $132.76 rate is based on estimated Applicable State Water Project

Charges of $8,480,913 (see Table 3 for Desert Water Agency applicable charges for 2007 and 2008) and estimated combined assessable production of 63,880 AF for the Whitewater River and Mission Creek Subbasins (51,270 AF within the Whitewater River Subbasin and 12,610 AF within the Mission Creek Subbasin).

Pursuant to the terms of the Water Management Agreement between Coachella Valley Water District and Desert Water Agency, Desert Water Agency's Allocated State Water Project Charges amount to $6,169,190, which with estimated assessable production of 63,880 AF results in an effective replenishment assessment rate component for Table A water of $97.00/AF for the 2007/2008 fiscal year (see Table 4).

Desert Water Agency completed construction of the Mission Creek Recharge Basin facilities in June 2002, at a construction cost of $3,978,850, with Desert Water Agency's allocated share being $2,731,807. Beginning in 2004/2005, Desert Water Agency began to recover said costs through a replenishment assessment rate component of $12.00/AF, applicable to users within the Mission Creek Subbasin. Desert Water Agency's allocated share of the facilities construction cost is shown as a deficit (see Table 5).

Nevertheless, Desert Water Agency has elected to set the replenishment assessment rate at $63.00 for the 2007/2008 fiscal year. At that rate, Mission Springs Water District's replenishment assessment for the Mission Creek Subbasin will be about $701,820; for other producers in the Mission Creek Subbasin, it will be about $92,610. Based on the aforementioned replenishment assessment rate and estimated assessable production of 12,610 AF for the Mission Creek Subbasin, Desert Water Agency will bill approximately $794,430 through the replenishment assessment. As a result, the cumulative deficit will be increased from $4,267,025 to $4,690,452 (see Table 5).

In summary, the Mission Creek Subbasin is in a condition of overdraft even though ground water levels have generally stabilized (cumulative overdraft offset by artificial recharge is estimated to be 113,000 AF); thus, there is a continuing need for ground water replenishment. Even though Desert Water Agency has requested of the California Department of Water Resources its full State Water Project Table A allocation, the California Department of Water Resources expects to deliver only 60% thereof, essentially 30,000 AF (22,860 AF State Water Project water, 7,140 AF Metropolitan Water District transfer water), and Desert Water Agency has elected to set the ground water replenishment assessment rate for 2007/2008 at $63.00/AF.

CHAPTER II
INTRODUCTION

CHAPTER II
INTRODUCTION

Desert Water Agency's Ground Water Replenishment and Assessment Program was established to augment ground water supplies and arrest or retard declining water table conditions within the Upper Coachella Valley, specifically within the Mission Creek Subbasin of the Upper Coachella Valley Ground Water Basin (see Plate 1).

The Program was implemented pursuant to a joint Water Management Agreement (executed April 8, 2003) between the Coachella Valley Water District (CVWD) and the Desert Water Agency (DWA). Previously, a similar program had been implemented within the Whitewater River Subbasin pursuant to a similar Water Management Agreement.

CVWD and DWA entered into a Settlement Agreement with the Mission Springs Water District (MSWD) in December, 2004, which affirmed the water allocation procedure that had been established earlier by CVWD and DWA, and which established a Management Committee, consisting of the General Managers of CVWD, DWA, and MSWD, to review production and recharge activities. An Addendum to the Settlement Agreement states that the water available for recharge each year shall be divided among the management areas proportionate to the previous year's production from within each management area (see Appendix B).

The Water Management Agreements call for maximum importation of State Water Project Contract Table A water allocations (formerly entitlements) by CVWD and DWA for replenishment of ground water basins or subbasins within defined Water Management Areas. The Agreements also require collection of data necessary for sound management of all water resources within these same Water Management Areas.

The Water Management Agreements were developed following numerous investigations regarding the ground water supply within the Coachella Valley; said investigations are addressed in previous reports (Engineer's Reports on Ground Water Replenishment and Assessment Program for the Whitewater River Subbasin for Desert Water Agency, 1978/1979 through 1983/1984). These investigations all concluded that ground water overdraft (ground water extractions or water production in excess of natural ground water replenishment or recharge) existed within the Upper Coachella Valley Ground Water Basin.

Since 1973, CVWD and DWA have been using Colorado River water to replenish ground water in the Water Management Area for the Whitewater River Subbasin of the Upper Coachella Valley Ground Water Basin. The two agencies are permitted by law to replenish ground water basins and to levy and collect water replenishment assessments from any ground water extractor or surface water diverter (aside from exempt producers) within their jurisdictions who benefits from replenishment of ground water.

For the Whitewater River Subbasin, DWA began its ground water assessment program in fiscal year 1978/1979 and CVWD began its ground water assessment program in fiscal year 1980/1981. For the Mission Creek Subbasin, the two agencies initiated their ground water assessment programs simultaneously in fiscal year 2004/2005. The two agencies are not required to implement the assessment procedure jointly or identically; however, they have each continuously levied an annual assessment on water produced within their respective jurisdictions since inception of their ground water assessment programs.

Due to continuing overdraft conditions in the Mission Creek Subbasin, located northerly of the Whitewater River Subbasin, DWA began constructing facilities to replenish the Mission Creek Subbasin in October 2001. Facilities were essentially completed in June 2002, at a construction cost of $3,975,850. Recharge activities commenced in November 2002. During 2002, approximately 4,733 AF were recharged using the Mission Creek Recharge Facilities. During 2004, 2005, and 2006, approximately 5,564 AF, 24,723 AF, and 19,901 AF, respectively, were recharged using the same Mission Creek Recharge Facilities.

Desert Water Agency Law requires the filing of an Engineer's Report regarding the Replenishment Program before DWA can levy and collect ground water replenishment assessments. The report must address the condition of ground water supplies, the need for ground water replenishment, the Area of Benefit, water production within said Area, and replenishment assessments to be levied upon said water production. It must also contain recommendations regarding the Replenishment Program.

For the Mission Creek Subbasin, the Area of Benefit consists of the northwesterly portion of the Mission Creek Subbasin, and tributaries thereto, situated within DWA's boundaries (see Plate 2). There are no known active stream diversions on tributaries to Mission Creek Subbasin.

While the replenishment assessments outlined on the following pages are based on and limited to water production within DWA's Area of Benefit, available water supply, estimated water requirements, and ground water replenishment are referenced herein to the entire Mission Creek Subbasin. The Mission Creek Subbasin is utilized jointly by CVWD and DWA for water supply purposes, and the two agencies jointly manage said Subbasin's water supplies.

CHAPTER III
WATER SUPPLY

CHAPTER III
WATER SUPPLY

Pursuant to the Water Management Agreement between CVWD and DWA, the Water Management Area encompasses the entire Mission Creek Subbasin (Plate 1). The Area of Benefit for DWA's replenishment program consists of the northwesterly portion of the Mission Creek Subbasin situated within DWA's boundaries (Plate 2). The Area of Benefit for CVWD's replenishment program consists of the southeasterly portion of the Mission Creek Subbasin situated within CVWD's boundaries. Mission Springs Water District (MSWD), which extracts ground water to serve its customers, is situated within DWA's Area of Benefit.

Annual water production (ground water extractions with CVWD and MSWD) within the Mission Creek Subbasin increased from an average of approximately 500 AF/yr in the late 1950s and 1960s to approximately 2,300 AF/yr in 1978. It has increased relatively steadily since then to approximately 17,400 AF/yr in 2006. Such increasing annual production has resulted in cumulative long-term ground water overdraft, as evidenced by the steady decline of the water table within the Mission Creek Subbasin.

During the past five calendar years (2002 through 2006), average annual water production within the Mission Creek Subbasin has been about 15,000 AF/yr; approximately 27% within CVWD and approximately 73% within DWA. Records of historic pumpage by private pumpers are not available; therefore, current pumpage by private pumpers is estimated at approximately 3,800 AF/yr, with about 1,500 AF/yr within DWA's Area of Benefit (see Table 6).

Consumptive use in the Upper Coachella Valley is estimated to be about 65% of total water production (per USGS Water Resources Investigation No. 91-4142). Annual production in the Mission Creek Subbasin has averaged 15,000 AF/yr for the past five years, resulting in average consumptive use of about 10,000 AF/yr and average non-consumptive return of about 5,000 AF/yr during the same period.

Non-consumptive return is water returned to the aquifer after use (for example, irrigation water percolating into the ground and treated wastewater discharged to percolation ponds). Although non-consumptive return in the Upper Coachella Valley has been estimated at approximately 35% (per USGS Water Resources Investigation No. 91-4142), there is some evidence that non-consumptive return is now significantly higher than 35%, perhaps 40%, 45%, or even 50%.

The non-consumptive return proportion of developed water is now being re-evaluated in light of current ground water basin conditions and operations. If non-consumptive return were 40%, 45%, or even 50%, as it may well be, current non-consumptive return would be significantly greater, another 700 AF/Yr or so for each 5% increase.

Average annual reduction in stored ground water was 4,700 AF/Yr from 1955 through 2006, and 7,500 AF/Yr from 1998 through 2006 (see Exhibit 5). Annual metered production and non-consumptive return are plotted on Plate 3, which provides an indication of consumptive use and cumulative overdraft.

From 1973 through 2006, CVWD and DWA have replenished the Upper Coachella Valley Ground Water Basins, specifically the Whitewater River and Mission Creek Subbasins, with approximately 1,824,154 AF (1,769,233 AF to Whitewater River Subbasin and 54,921 AF to Mission Creek Subbasin) of exchange deliveries (Colorado River water exchanged for State Water Project water, including advance deliveries converted to exchange deliveries, but excluding advance deliveries not yet converted to exchange deliveries). Including advance deliveries not yet converted to exchange deliveries, artificial recharge with Colorado River water (exchange and advance deliveries) has approximated 2,038,197 AF, (approximately 1,983,276 AF delivered to the Whitewater River Subbasin and approximately 54,921 AF delivered to the Mission Creek Subbasin). See Exhibits 3, 4, and 7 in the Appendix.

The Mission Creek Subbasin consists of water-bearing strata underlying the Mission Creek upland, generally in the vicinity of the communities of North Palm Springs and Desert Hot Springs. The subbasin is bounded on the south by the Banning Fault, on the north and east by the Mission Creek Fault, and on the west by nonwater-bearing rocks of the San Bernardino Mountains. To the southeast, the subbasin merges with the Indio Hills. The Mission Creek Subbasin Water Management Area is illustrated in Plate 1.

The Mission Creek and Banning Faults, as well as the boundaries of the consolidated and semi-consolidated strata of the San Bernardino Mountains and Indio Hills, are indicated on the *Geologic Map of California, Santa Ana Sheet* (1966). The southerly boundary of the Mission Creek Subbasin, the Banning Fault, is a branch of the San Andreas Fault; it forms a significant restriction to ground water flow from the Mission Creek Subbasin into the adjacent Garnet Hill Subbasin.

Natural inflow to the Mission Creek Subbasin is primarily from infiltration and percolation of natural runoff from Mission Creek, Big Morongo Creek, and Little Morongo Creek. The exact quantity of inflow and recharge from these sources is uncertain; the USGS (1974) estimates 3,500 AF/yr, MTU (1998) estimates 5,360 AF/yr, and CDWR (1964) estimates 6,000 AF/yr. Inflow and recharge therefore range between 3,500 and 6,000 AF/yr. DWA (1980) estimates long-term average recharge of between 640 and 1,300 AF/yr from Mission Creek alone.

According to *Final Hydrogeologic Evaluation, Well Siting, and Recharge Potential Feasibility Study Mission Creek Groundwater Subbasin, Riverside County, California* prepared by Richard C. Slade & Associates LLC, May 2000 (Slade), "...the hydrographs for wells in the Mission Creek Groundwater Subbasin generally do not show any response to rainfall in the region... This lack of response to rainfall in the Mission Creek Groundwater Subbasin appears to indicate that rainfall does not have a significant influence on recharge in the basin and/or that current pumping volumes exceed the recharge."

Natural outflow from the Mission Creek Subbasin is essentially underflow across the Banning Fault. The exact quantity of outflow from the Subbasin is uncertain; the USGS (1974) and MTU (1998) both estimate about 5,500AF/yr underflow across the Banning Fault and MTU (1998) further estimates phreatophytic evapotranspiration of about 1,400 AF/yr. Natural outflow equals or exceeds natural inflow leaving natural water supply for this basin at essentially zero.

Regardless of the specific quantities estimated in the various studies, water levels in the Mission Creek Subbasin have been in decline through 2004, with outflow exceeding inflow. Again, according to Slade (2000), "all of the wells in the Subbasin exhibit a steady decline in their recorded water-level measurements", and "...water levels in the groundwater subbasin have steadily declined between 1955 and 1997 on the order of approximately 63 feet; of this amount, approximately 30 feet occurred between 1978 and 1998", and "...for the next 20 years...water levels will decline at a rate of approximately 3 feet per year", and for the following 30 years "...water levels should decline at an increased rate of approximately 6 feet per year", and "...it appears that the groundwater reservoir will need to be augmented by recharge from imported water". Data collected by Krieger & Stewart indicate water levels within the Mission Creek Subbasin for the period 1992 through 2003 have declined at least 10 feet and as much as 26 feet as the result of pumpage. However, due to ground water replenishment efforts, ground water levels within the Mission Creek Subbasin have, on the average, been relatively stable during 2005 and 2006.

According to Slade (2000), hydrographic data of MSWD wells indicate that the quantity of ground water stored in the northwesterly three-quarters of the Mission Creek Subbasin in 1997 was approximately 1,333,800 AF. Based on data in GTC's report (1979), Slade estimates that there were approximately 1,440,600 AF of stored ground water within the same area in 1978, and 1,511,800 AF in 1955. Based on GTC's estimated change of 2,400 AF/yr in stored ground water between 1955 and 1970, there were approximately 1,475,800 AF of stored ground water in 1970.

Based on water levels provided by MSWD and GTC's factor of 3,560 AF of storage loss per foot of water level decline (later used by Slade), an additional 67,640 AF of storage was lost between 1998 and 2006, about 7,500 AF/yr average. The area's loss of storage from 1955 through 2006 was approximately 245,640 AF, roughly 16% of the storage in 1955 (see Exhibit 5). Between 2004 and the end of 2005, the decline in groundwater has decreased to a negligible quantity, when averaged over the MSWD service area.

Extrapolating from the northwesterly three-quarters of the Subbasin to the entire Subbasin (assuming uniform aquifer characteristics), the ground water stored within the entire Subbasin would have been as follows: 2,015,733 AF in 1955, 1,967,733 AF in 1970, 1,920,800 AF in 1978, 1,778,400 AF in 1997, and 1,689,000 in 2006, a change of about 45,000 AF or about 11,000 AF/yr over the latter five years.

The aforementioned changes in storage range between 7,500 AF/yr for the northwesterly three-quarters of the Subbasin and 11,000 AF/yr for the entire Subbasin. The extrapolated change in storage may be somewhat higher than actual since aquifer characteristics are not uniform throughout the Subbasin, the southeast quarter of the Subbasin consists of much less permeable material than the northwest three-quarters; however, it sets a reasonable upper limit.

Based on a polynomial curve fit to the above ground water storage data, the annual reduction in stored ground water within the Subbasin projected to 2006 is approximately 11,600 AF, compared with consumptive use in 2006 of approximately 11,300 AF. Therefore, overdraft can reasonably be estimated by consumptive use; for all practical purposes, they are equivalent.

Taking consumptive use as an estimate of overdraft, estimated cumulative overdraft since 1978 approximates 168,000 AF as of 2006. By comparison, based on declining water levels and GTC's storage

loss factor, the loss of storage within the northwest three-quarters of the Subbasin between 1978 and 2006 was approximately 174,000 AF. Cumulative net overdraft since 1978, accounting for artificial replenishment, was about 113,000 AF in 2006 using consumptive use figures, or (at minimum) 174,000 AF using water levels and GTC's storage loss factor.

As observed by Slade (2000), increases in cumulative overdraft without artificial recharge will result in declining ground water levels and increasing pump lifts, necessitating the lowering of pump bowls in existing wells, thereby increasing energy consumption for ground water extraction, with extreme cumulative overdraft having the potential of causing ground surface settlement, and adversely impacting ground water quality. Supplementing natural ground water replenishment resulting from rainfall runoff with artificial recharge is therefore necessary to reduce the impacts of annual and cumulative overdraft.

DWA and CVWD completed construction of the Mission Creek Recharge Facilities in June 2002, and recharge activities commenced in November 2002; with about 4,700 AF of water introduced into the recharge basins in 2002, 5,600 AF 2004, 25,000 AF in 2005, and 20,000 AF in 2006 (see Exhibit 8). Since commencement of the recharge program, ground water has risen approximately 180 feet in the vicinity of the recharge basins, specifically within the Recharge Basin Monitoring Well (see Exhibit 6). During the time of the recharge effort from late 2002 to December 2005, water levels in a downstream production well, MSWD Well 30, declined about 10 feet but then rose over 15 feet (see Exhibit 6).

Projected water supply demands upon the Mission Creek Subbasin shown in Plate 3 are based on statistical analysis of historic metered production data (1978 through 2006) extrapolated through 2030, and indicate an anticipated increase in net demand (consumptive use) of about 463 AF/yr. The projected consumptive use values set forth in Plate 3 represent expected minimum future ground water demands in the basin. Due to the lack of adequate natural recharge, and a suspected natural deficit, the entire quantity of the consumptive use portion of the projected water requirements should be considered as overdraft.

To further alleviate continuing overdraft conditions, CVWD obtained an additional 9,900 AF/Yr of Table A water allocation from Tulare Lake Basin Water Storage District, another State Water Project contractor, thus increasing its annual Table A water allocation to 33,000 AF/Yr, effective January 1, 2004.

In addition, CVWD and DWA recently obtained a further 100,000 AF/Yr (88,100 AF/Yr for CVWD and 11,900 AF/Yr for DWA) of Table A water allocation through a new exchange agreement (the 2003 Exchange Agreement) among CVWD, DWA, and MWD, all State Water Project contractors. The new exchange contract, which became effective January 1, 2005, permits MWD to call-back or recall the assigned annual Table A water allocation of 100,000 AF/Yr in 50,000 AF/Yr increments during periods of constrained, limited, or low water supply conditions; however, it gives CVWD and DWA opportunity to secure increased quantities of surplus water in addition to increased quantities of Table A water during normal or high water supply conditions.

In implementing the 2003 Exchange Agreement, Metropolitan Water District advised Coachella Valley Water District and Desert Water Agency that it would probably recall the 100,000 AF/Yr assigned to the two Coachella Valley agencies from 2005 through 2009. It did, in fact, recall the full 100,000 AF/Yr in 2005, but it did not recall any water in 2006. MWD must notify CVWD and DWA of its intentions regarding call-back or recall of the 100,000 AF or 50,000 AF increment thereof.

CVWD and DWA recently negotiated transfer of an additional 16,000 AF/Yr (12,000 AF/Yr for CVWD and 4,000 AF/Yr for DWA) of Table A water allocation from Kern County Water Agency and an additional 7,000 AF/Yr (5,250 AF/Yr for CVWD and 1,750 AF/Yr for DWA) from Tulare Lake Basin Water Storage District, both State Water Project contractors, with deliveries expected to commence in 2010. If consummated, CVWD's and DWA's Table A water allocations will be increased to 138,350 AF/Yr and 55,750 AF/Yr, respectively, for a combined total of 194,100 AF/Yr (71% CVWD and 29% DWA). With full deliveries of these Table A water allocations (with no MWD call-back or recall, and with no CDWR reduced Table A deliveries), plus natural supply and non-consumptive return flow, annual water supply will be significantly greater than annual water requirements. With reduced deliveries of Table A water allocations (with MWD call-back or recall), annual water supply will be insufficient to meet annual water requirements without ground water from storage.

Continuous availability of maximum Table A allocations will require complete development of the State Water Project, which currently has only about half of the water supply capacity needed to meet maximum Table A allocation obligations during droughts; available water supplies are being further threatened by new and increasing constraints on the development of new water supply facilities and on the operation of existing facilities. Without the construction of additional Sacramento-San Joaquin Delta facilities and of certain water storage reservoirs, the water supply capability of the State Water Project will remain

limited and contractors will have to share the reduced available supplies, especially during droughts. Currently, the State Water Project is expected to deliver long term between 77% and 82% of maximum Table A allocations.

With implementation of the CALFED Bay Delta Program, the state and federal effort to restore the Bay Delta Ecosystem, improve Bay Delta water management, and increase associated conveyance and storage facilities, State Water Project water supplies will be more reliable. They will not continue to decline and deteriorate with time; they may even increase, particularly with conveyance and storage improvements. The CALFED Bay Delta program is a monumental undertaking, currently estimated at about $10 billion dollars, about two thirds of the current present-worth-value of the State Water Project, which, of economic necessity, will take years to implement. Eventually, it will improve State Water Project water supply reliability and quality and may even increase quantity.

The Mission Creek Subbasin is in an overdraft condition and will remain so, even with the importation and exchange of available State Water Project water, until the increased maximum State Water Project Table A allocations can be accomplished. Recharge of the maximum Table A allocation in the Whitewater River and Mission Creek Subbasins would arrest the effects of annual overdraft in both basins by 2010, although the effects of overdraft in future years are less certain due to the difficulty of projecting long-term growth.

In the meantime, the effects of continued annual ground water overdraft, although recently offset by artificial ground water replenishment, will increase pump lifts (depths to recoverable ground water) and the energy required to extract ground water, and, although unlikely with increased ground water replenishment, may also cause ground surface settlement and ground water storage volume reduction (due to aquifer subsidence). Water quality could be adversely affected if basin conditions (ground water gradients and ground water flowlines) are altered by continued, significant ground water overdraft. Continued ground water replenishment is needed to arrest or reduce declining water levels and to avoid the detrimental conditions that could result therefrom.

CHAPTER IV
REPLENISHMENT ASSESSMENT

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REPLENISHMENT ASSESSMENT

Desert Water Agency Law, in addition to empowering DWA to replenish ground water basins and to levy and collect water replenishment assessments within its area of jurisdiction, amongst others, defines production and producers for ground water replenishment purposes as follows:

> Production: The extraction of ground water by pumping or any other method within the Agency, or the diversion within the Agency of surface supplies which naturally replenish the ground water supplies within the Agency and are used therein.
>
> Producer: Any individual, partnership, association, group, lessee, firm, private corporation, public corporation, or public agency including, but not limited to, the Desert Water Agency, that extracts or diverts water as defined above.

Producers that extract or divert 10 AF of water or less in any one year are considered minimal producers and their production is exempt from assessment.

Desert Water Agency Law also states that assessments may be levied upon all water production within an Area of Benefit, provided assessment rates are uniform throughout. The amount of any replenishment assessment cannot exceed the sum of certain State Water Project charges, specifically the Delta Water Charge, the Variable Component of the Transportation Charge, and the Off-Aqueduct Power Component of the Transportation Charge, pursuant to the Contract between DWA and the State of California. The aforesaid charges are set forth in each year's CDWR Bulletin on the State Water Project (CDWR Series 132, Appendix B, Tables B-16B, B-18, and B-21).

Prior to 2002, ground water replenishment with Colorado River Water (exchanged for State Water Project water) had been limited to recharge of the Whitewater River Subbasin. In 2002, DWA and CVWD commenced recharge activities in the Mission Creek Subbasin, in addition to continuing their ongoing activities in the Whitewater River Subbasin. The Area of Benefit for Ground Water Replenishment and Assessment herein is defined as that portion of the Mission Creek Subbasin and tributaries thereto lying within DWA's boundaries (Plate 2).

The ground water replenishment assessment and the replenishment assessment rate for Table A water for 2007/2008 are based on the following:

1. All ground water production, with certain exceptions, within DWA is metered. All ground water production by MSWD is metered. There is no surface water production within the Mission Creek watershed within DWA.

2. The State Water Project Delta Water Charge (Delta Water Charge), the Variable Component of the State Water Project Transportation Charge (Variable Transportation Charge), and the Off-Aqueduct Power Component of the State Water Project Transportation Charge (Off-Aqueduct Power Charge), as set forth in Appendix B of California Department of Water Resources Bulletin 132-06 (dated July 2006) and hereafter referred to as Applicable State Water Project Charges.

3. The proportionate share of the Applicable State Water Project Charges allocable to CVWD and DWA in accordance with the Water Management Agreement (executed April 8, 2003) between CVWD and DWA, hereafter referred to as Allocated State Water Project Charges. The applicable charges are essentially apportioned between CVWD and DWA in accordance with relative water production within those portions of each entity lying within the Water Management Area.

4. Certain charges or costs other than those derived pursuant to items 1, 2, and 3 above. Currently, for the Mission Creek Area of Benefit, a separate charge is being levied for reimbursement for DWA's share of the cost of construction of the Mission Creek Recharge Basins.

The replenishment assessment rate comprises two components: (1) the Allocated State Water Project charges attributable to the current annual Table A allocation, and (2) certain other charges or costs related to ground water recharge, such as reimbursement for past surplus water charges for which assessments had not been levied or construction and operation of facilities necessary for ground water recharge.

The replenishment assessment rate, when applied to estimated assessable production (all production, excluding that which is exempt, within the Area of Benefit), results in the replenishment assessment which must not exceed the maximum permitted by Desert Water Agency Law (the Applicable State

Water Project Charges). Due to the interdependent nature of the imported water supply for the Whitewater River and Mission Creek Subbasins, the Allocated State Water Project charges component of the replenishment assessment rate is uniform throughout the Whitewater River and Mission Creek Areas of Benefit; however, due to the independent and separate nature of various other aspects of the ground water replenishment program within the Whitewater River and Mission Creek Subbasins, the other charges and costs component need not be uniform; they are specific to each subbasin.

A. ESTIMATED ASSESSABLE WATER PRODUCTION

Estimated assessable production within DWA's Mission Creek Subbasin Area of Benefit consists of ground water extractions. Estimated assessable ground water production is based on the prior calendar year's water production, either metered or estimated. MSWD production is metered and recorded by MSWD staff. During the last half of 2003, meters were installed at the production facilities of Hidden Springs Country Club, Mission Lakes Country Club, and Sands RV Resort; DWA staff read and record metered water production quantities registered by these meters. Estimated assessable water production is set forth in Table 6.

In 2006, production within DWA's Area of Benefit within the Mission Creek Subbasin is about 2.6 times that within CVWD's Area of Benefit, 12,608 AF versus 4,758 AF, whereas production within CVWD's Area of Benefit within the Whitewater River Subbasin is about three times that within DWA's Area of Benefit, 160,281 AF versus 54,434 AF. Of the total production within the Whitewater River and Mission Creek Subbasins, 230,081 AF, 28.3% has occurred within DWA.

B. WATER REPLENISHMENT ASSESSMENT RATE

The water replenishment assessment rate consists of two components, one being attributable to State Water Project annual Table A water allocations and the other being attributable to other charges or costs necessary for ground water replenishment. Each component is discussed below.

1. Component Attributable to State Water Project Table A Water Allocation Charges

In accordance with the current Water Management Agreements, CVWD and DWA combine their State Water Project Table A allocations, exchange them for Colorado

River water, and replenish the Mission Creek and Whitewater River Subbasins with exchanged Colorado River water. CVWD and DWA each assume the full burden for portions of their respective Fixed State Water Project Charges (Capital Cost Component and Minimum Operating Component of Transportation Charge); however, the two agencies share their Applicable State Water Project Charges (Delta Water, Variable Transportation, and Off-Aqueduct Power Charges) on the basis of relative production.

Although DWA could base its replenishment assessment rate on its Applicable State Water Project Charges, it only needs to recover its share (based on relative production) of the combined Applicable State Water Project Charges for both CVWD and DWA (i.e. its Allocated State Water Project Charges). CVWD makes up the difference in accordance with the Water Management Agreement.

The Applicable State Water Project Charges for CVWD and DWA for Table A water are set forth in Tables 1 and 2, respectively. Unit Charges for Delta Water, Variable Transportation, and Off-Aqueduct Power Charges are based on estimates presented in Appendix B of CDWR Bulletin 132-06.

Since MWD can call-back or recall the 100,000 AF of Table A allocation it transferred to CVWD and DWA and since CDWR has been unable to deliver maximum Table A allocations for four of the past five years, the amounts of the Applicable State Water Project Charges for 2007/2008 are being computed based on long-term reliability factors; effectively 85% of maximum State Water Project allocations with the MWD transfer portion being further reduced to 38.824% to account for possible future recalls pursuant to the 2003 Exchange Agreement.

The computation of the Applicable State Water Project charges is show in Tables 1 and 2. The "Maximum Table A Water Allocation" shown in Tables 1 and 2 is the currently existing Table A Water Allocation per CDWR Bulletin 132-06, Appendix B, Table B-4 (contractual quantities based on requests for same by CVWD and DWA) with no reliability factors being applied. The "Probable Table A Water Allocation" is the currently existing Table A Water Allocation with the MWD transfer portion reduced to 38.824% to reflect the long-term average with probable recalls by MWD, pursuant to the

2003 Exchange Agreement and its implementation. The "Probable Table A Water Delivery" is based on 85% reliability of the Probable Table A Water Allocation including MWD transfer reduced to 38.824% for long-term average pursuant to the 2003 Exchange Agreement and its implementation.

Applicable State Water Project Charges proportioned in accordance with the Water Management Agreements, more particularly in accordance with relative production within CVWD and DWA, yield Allocated State Water Project Charges. Over the past five years, 2002 through 2006, DWA has been responsible for approximately 73% of the water produced from the Mission Creek Subbasin.

In the past, Allocated State Water Project Charges have been apportioned to DWA and CVWD based on production from the Whitewater River Subbasin Management Area. Since 2002/2003, Allocated State Water Project Charges have been apportioned to DWA and CVWD based on production from the combined Mission Creek Subbasin and Whitewater River Subbasin Management Areas. In 2006, DWA was responsible for approximately 28.3% of the combined water production from the Whitewater River and Mission Creek Subbasins. On the assumption that DWA's relative production for 2007 and thereafter will be about the same as for 2006, DWA's share of the combined Applicable State Water Project Charges (i.e. Allocated Charges) will be as set forth in Table 3.

Table 3 shows that DWA's estimated Allocated Charges (its share of combined Applicable Charges for Table A water) are anticipated to increase about 9% between 2007 and 2008, decrease by about 10% between 2008 and 2009, and increase by about 28% between 2009 and 2010. DWA's estimated Allocated Charges will change as estimates presented in future annual editions of California Department of Water Resources Bulletin 132 change.

Table 3 also shows that DWA's estimated 2007 Allocated Charges are about 73% of DWA's estimated Applicable Charges. Since water replenishment assessments must be used for ground water replenishment purposes only, implementation of the maximum permissible replenishment assessment rate based on DWA's Applicable Charges would

result in the collection of excess funds that would have to be applied to replenishment charges during subsequent years.

Rather than collect excess funds one year and apply the excess funds to replenishment charges in subsequent years, DWA attempts to establish from year to year the replenishment assessment rate that will result in collection of essentially the funds necessary to meet its annual ground water replenishment charges. DWA therefore bases the Table A portion of its replenishment assessment on estimated Allocated Charges, rather than estimated Applicable Charges.

Pursuant to current Desert Water Agency Law, the maximum permissible replenishment assessment rate that can be established for fiscal year 2007/2008 is $132.76/AF, based on DWA's estimated Applicable Charges (Delta Water Charge, Variable Transportation Charge, and Off-Aqueduct Power Charge) of $8,480,913 (average of estimated 2007 and 2008 Applicable Charges) and estimated 2007/2008 combined assessable production of 63,880 AF within the Whitewater River and Mission Creek Subbasins.

According to the terms of the Water Management Agreement between DWA and CVWD, the effective replenishment assessment rate component for Table A water for the 2007/2008 fiscal year, is $97.00/AF, based on DWA's estimated 2007/2008 Allocated Charges of $6,169,190 and estimated 2007/2008 assessable production of 63,880 AF within the Whitewater River and Mission Creek Subbasins (see Table 4).

Assuming that assessable water production will continue to increase by 1,177 AF/yr during the next five years,, projected effective replenishment assessment rates pursuant to the Water Management Agreement are expected to increase from $97.00 in 2007/2008 to$100.00/AF in 2010/2011, then drop to $91.00 in 2011/2012, and continue to gradually decrease thereafter, as shown in Table 4.

2. Component Attributable to Other Charges and Costs Necessary for Ground Water Replenishment

Charges and costs necessary for ground water replenishment could include the costs for construction, operation, maintenance, and repair of ground water recharge facilities, reimbursement for past State Water Project Table A water allocations and surplus water allocations for which insufficient assessments had been levied, acquisition or purchases of water from sources other than the State Water Project, the cost of importing and recharging water from sources other than the State Water Project, and the cost of treatment and distribution of reclaimed water.

Currently, Other Charges and Costs for the Mission Creek Subbasin are limited to past costs for the construction of the Mission Creek Recharge Basins. DWA and CVWD began constructing the Mission Creek Recharge Basin facilities in October 2001. Facilities were essentially completed in June 2002, at a construction cost of over $3,975,850. DWA's allocated share of the cost for constructing the facilities is $2,731,807. Beginning in 2004/2005, DWA began recovering said costs through a component of the replenishment assessment rate (see Table 5) applicable to users within the Mission Creek Subbasin (see Table 5).

The proposed rate for the component attributable to Other Charges and Costs, specifically for recovery of DWA's proportionate share of costs to construct the Mission Creek Recharge Basins, is $12.00/AF.

3. Proposed 2007/2008 Replenishment Assessment Rate

As shown in Table 5, the replenishment assessment rate proposed for 2007/2008 is $63.00/AF. Anticipated replenishment assessment rates for 2007/2008 through 2015/2016 are also shown. Note that the proportion of replenishment water delivered to the Mission Creek Subbasin in 2002-2006 has been higher, with respect to Subbasin production, than that delivered to the Whitewater River Subbasin by more than twice, as shown in Exhibit 7.

C. ESTIMATED WATER REPLENISHMENT ASSESSMENT FOR 2007/2008

Estimated water replenishment assessments for 2007/2008, based on a replenishment assessment rate of $63/AF and estimated assessable water production of 12,610 AF within the Mission Creek Subbasin, will amount to approximately $794,430 (see Tables 5 and 6). The adjusted assessment is expected to increase the replenishment assessment account deficit from $4,267,075 to $4,690,452.

MSWD will be the major producer within the Mission Springs Area of Benefit, with assessable production of approximately 11,136 AF; three other producers will be responsible for the remaining 1,472 AF of estimated assessable production. MSWD will also be the major assessee with an estimated replenishment assessment of $701,820. The three other producers will be responsible for the remaining $92,610.

MSWD will be responsible for approximately 88% of both the estimated assessable water production and the estimated replenishment assessment in the Mission Springs Area of Benefit; the other four producers will be responsible for the remaining 12%.

CHAPTER V
STATE WATER PROJECT
TABLE A WATER ALLOCATIONS AND SURPLUS WATER PURCHASES

CHAPTER V
STATE WATER PROJECT
TABLE A WATER ALLOCATIONS AND SURPLUS WATER DELIVERIES

Table A water allocations are based primarily on hydrologic conditions and vary considerably from year to year. 2006 Table A water deliveries were 100% of maximum Table A allocations. As of April 25, 2007 Table A water deliveries are projected to be 60% of maximum Table A allocations. Long-term average Table A allocations are predicted to be approximately 85% of maximum Table A allocations.

Even though CVWD and DWA have requested and will continue to request their maximum annual Table A allocations, the "Probable Table A Water Allocations" and "Probable Table A Water Deliveries" have been adjusted herein for long-term-reliability for estimating purposes. The Probable Table A Water Allocations are herein assumed to be equal to the Maximum Table A Water Allocations with the MWD transfer portion reduced to 38.824% to represent a long-term average transfer quantity pursuant to the 2003 Exchange Agreement, and "Probable Table A Water Deliveries" are herein assumed to be 85% of Probable Table A Water Allocations to represent long-term average delivery reliability. Thus, the replenishment assessment rate herein for 2007/2008 is based on CVWD and DWA receiving 93,485 AF (57,123 AF and 36,312 AF, respectively).

In addition to Table A water, CVWD and DWA have agreed to jointly request 16,380 AF each of State Water Project surplus water from CDWR (Turn-Back Water Pool Program and Contract Article 21 Provisions) to supplement artificial recharge of the Whitewater River and Mission Creek Subbasins.

Turn-Back Water Pool water is surplus water that was originally Table A water scheduled for delivery to other State Water Contractors, but those Contractors subsequently determined the water to be surplus to their needs. Surplus water in the Turn-Back Water Pool Program is allocated between two pools based on time of purchase: Pool A water must be purchased by March 1 of each year and Pool B water must be purchased between March 1 and April 1 of each year. Pool A water is more expensive than Pool B water.

Since fiscal year 1999/2000, offers for Turn-Back Water Pool water have exceeded water available. In 2003, CVWD and DWA were able to purchase 457 AF of Pool A water and 58 AF of Pool B water. In 2004, CVWD and DWA were unable to obtain any Pool A water, but they did obtain 191 AF of Pool B water. In 2005, due to heavy rainfall, CVWD and DWA were able to obtain 585 AF of Pool A water

and 3,253 AF of Pool B water. Since CVWD and DWA did not request any pool water last year, they did not receive any in 2006. In 2007, CVWD and DWA expect to receive approximately 800 AF of Pool A water and no Pool B water. The total quantity of water available for artificial recharge in the Upper Coachella Valley during 2007, including the delivery of 60% of the Maximum Table A Allocation and approximately 800 AF of Pool A water, will approximate 103,460 AF.

Any surplus water secured by CVWD and DWA is exchanged for a like quantity of Colorado River water. Charges for surplus water are allocated between the two agencies in accordance with the terms of the Water Management Agreement. DWA secures funds for its allocated charges for surplus water payments from its Unscheduled State Water Project Deliveries Reserve Account. Although no replenishment assessment component has been levied for reimbursement of the reserve account in the past and is not proposed for the current year, one may be levied in the future, if applicable.

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BIBLIOGRAPHY

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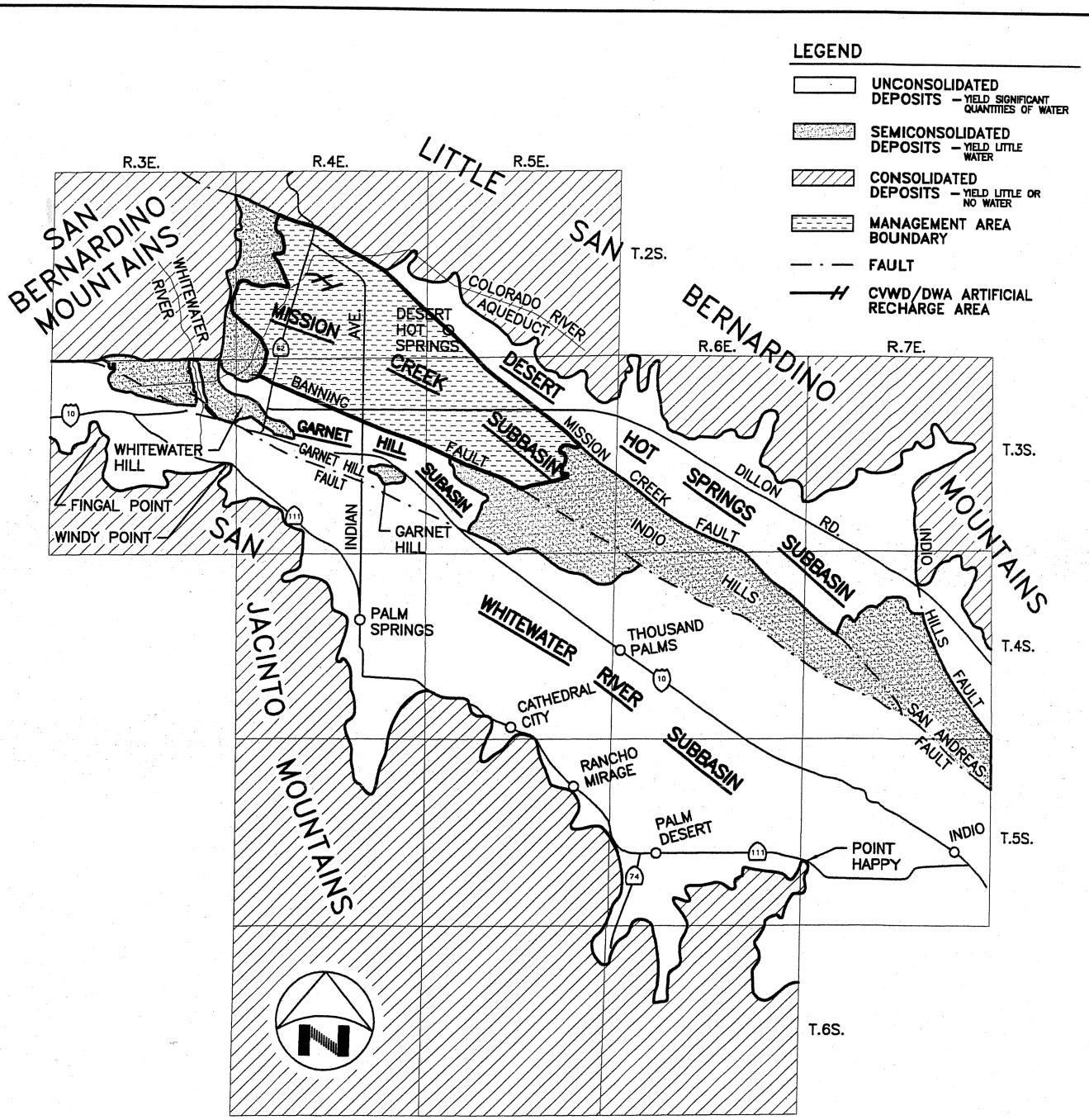
PLATES



NOTES:

1. THE BASE MAP WAS PREPARED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY, WATER RESOURCES DIVISION IN 1971, TO SHOW THE UPPER COACHELLA VALLEY GROUNDWATER BASIN AND ITS SUBBASINS. ADDITIONAL GEOLOGICAL INFORMATION FROM THE GEOLOGIC MAP OF CALIFORNIA SANTA ANA SHEET, CALIFORNIA DEPARTMENT OF CONSERVATION, DIVISION OF MINES AND GEOLOGY 1966, HAS BEEN ADDED.

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DESERT WATER AGENCY

MISSION CREEK SUBBASIN WATER MANAGEMENT AGREEMENT WATER MANAGEMENT AREA

PLATE 1

SCALE: 1"=5mi.± DATE: 02/24/05 DRAWN BY: TMW CHECKED BY: DFS W.O.: 101-57.3

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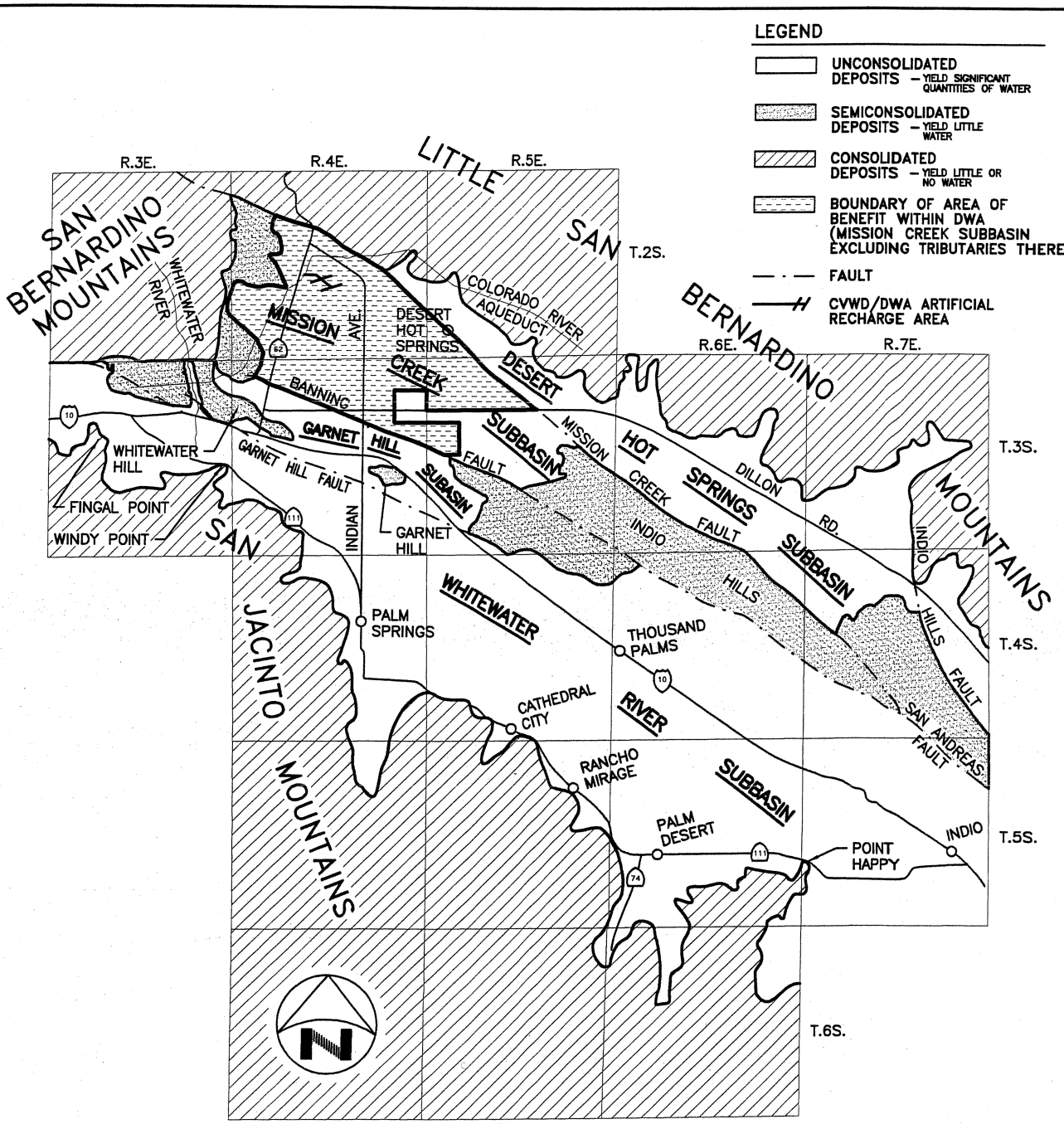

NOTES:

1. THE BASE MAP WAS PREPARED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY, WATER RESOURCES DIVISION IN 1971, TO SHOW THE UPPER COACHELLA VALLEY GROUNDWATER BASIN AND ITS SUBBASINS. ADDITIONAL GEOLOGICAL INFORMATION FROM THE GEOLOGIC MAP OF CALIFORNIA SANTA ANA SHEET, CALIFORNIA DEPARTMENT OF CONSERVATION, DIVISION OF MINES AND GEOLOGY 1966, HAS BEEN ADDED.

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DESERT WATER AGENCY

MISSION CREEK SUBBASIN GROUNDWATER REPLENISHMENT PROGRAM AREA OF BENEFIT

PLATE 2

SCALE: 1"=5mi.± DATE: 02/24/05 DRAWN BY: TMW CHECKED BY: DFS W.O.: 101-57.3

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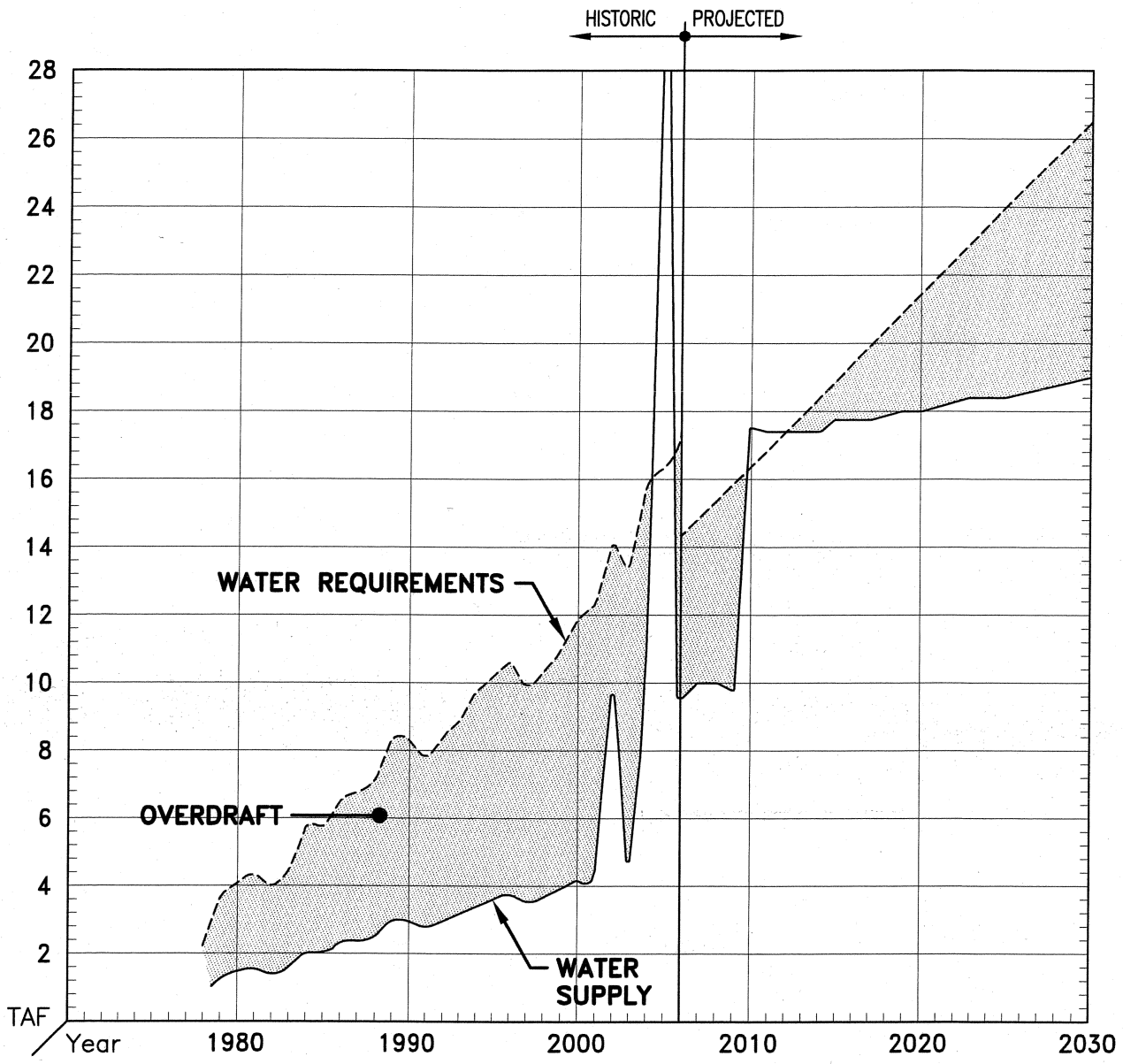

YEARS	1980	1990	2000	2010	2020	2030
NET INFLOW (ACRE FEET)	1,400	2,900	4,100	17,300	18,100	19,100
NONCONSUMPTIVE RETURN	1,400	2,900	4,100	5,900	7,500	9,100
ARTIFICIAL RECHARGE	0	0	0	11,400	10,600	10,000
NATURAL INFLOW	5,500	5,500	5,500	5,500	5,500	5,500
NATURAL OUTFLOW	(5,500)	(5,500)	(5,500)	(5,500)	(5,500)	(5,500)

NOTES:

1. ROJECTED WATER REQUIREMENTS ARE BASED ON OVERALL TREND (LINEAR REGRESSION).
2. NONCONSUMPTIVE RETURN IS BASED ON 65% CONSUMPTIVE USE (35% NONCONSUMPTIVE RETURN).
3. ARTIFICIAL RECHARGE IS BASED ON PROBABLE DELIVERIES FROM STATE WATER PROJECT.

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DESERT WATER AGENCY

HISTORIC AND PROJECTED WATER REQUIREMENTS AND WATER SUPPLIES FOR THE MISSION CREEK SUBBASIN

PLATE 3

SCALE: N/A DATE: 03/27/07 DRAWN BY: SPK CHECKED BY: DFS W.O.: 101-57.5

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TABLES

TABLE 1
COACHELLA VALLEY WATER DISTRICT
APPLICABLE STATE WATER PROJECT CHARGES (1)

Year	Table A Water Allocation		Probable Table A Water Delivery (3)	Delta Water Charge		Variable Transportation Charge		Off-Aqueduct Power Charge		CVWD Applicable Table A Charges	
	Maximum AF	Probable (2) AF	AF	Amount (4) $	Unit $/AF	Amount (5) $	Unit $/AF	Amount (6) $	Unit $/AF	Amount $	Unit (7) $/AF
2007	121,100	67,204	57,123	1,748,648	26.02	8,078,906	141.43	2,954,973	51.73	12,782,527	223.77
2008	121,100	67,204	57,123	1,748,648	26.02	8,795,800	153.98	3,355,976	58.75	13,900,424	243.34
2009	121,100	67,204	57,123	1,748,648	26.02	7,375,722	129.12	3,330,842	58.31	12,455,212	218.04
2010	138,350	84,454	71,786	2,197,493	26.02	10,132,594	141.15	4,208,095	58.62	16,538,182	230.38
2011	138,350	84,454	71,786	2,197,493	26.02	8,194,372	114.15	3,256,931	45.37	13,648,796	190.13
2012	138,350	84,454	71,786	2,197,493	26.02	8,880,646	123.71	3,256,213	45.36	14,334,352	199.68
2013	138,350	84,454	71,786	2,197,493	26.02	10,166,333	141.62	1,941,811	27.05	14,305,638	199.28
2014	138,350	84,454	71,786	2,197,493	26.02	11,086,630	154.44	427,127	5.95	13,711,250	191.00
2015	138,350	84,454	71,786	2,197,493	26.02	11,362,288	158.28	252,687	3.52	13,812,468	192.41
2016	138,350	84,454	71,786	2,197,493	26.02	12,104,555	168.62	216,794	3.02	14,518,842	202.25
2017	138,350	84,454	71,786	2,197,493	26.02	11,396,745	158.76	208,179	2.90	13,802,418	192.27
2018	138,350	84,454	71,786	2,197,493	26.02	12,263,920	170.84	86,861	1.21	14,548,274	202.66
2019	138,350	84,454	71,786	2,197,493	26.02	12,814,519	178.51	86,143	1.20	15,098,155	210.32
2020	138,350	84,454	71,786	2,197,493	26.02	11,886,326	165.58	92,604	1.29	14,176,423	197.48
2021	138,350	84,454	71,786	2,197,493	26.02	11,889,197	165.62	142,854	1.99	14,229,545	198.22
2022	138,350	84,454	71,786	2,197,493	26.02	11,439,099	159.35	135,676	1.89	13,772,268	191.85
2023	138,350	84,454	71,786	2,197,493	26.02	11,650,868	162.30	96,911	1.35	13,945,272	194.26
2024	138,350	84,454	71,786	2,197,493	26.02	12,148,345	169.23	70,350	0.98	14,416,188	200.82
2025	138,350	84,454	71,786	2,197,493	26.02	11,983,237	166.93	5,025	0.07	14,185,755	197.61
2026	138,350	84,454	71,786	2,197,493	26.02	12,212,234	170.12	8,614	0.12	14,418,342	200.85
2027	138,350	84,454	71,786	2,197,493	26.02	12,038,512	167.70	12,921	0.18	14,248,927	198.49
2028	138,350	84,454	71,786	2,197,493	26.02	11,991,133	167.04	10,768	0.15	14,199,394	197.80
2029	138,350	84,454	71,786	2,197,493	26.02	11,869,097	165.34	10,768	0.15	14,077,358	196.10
2030	138,350	84,454	71,786	2,197,493	26.02	11,887,762	165.60	0	0.00	14,085,255	196.21
2031	138,350	84,454	71,786	2,197,493	26.02	11,757,829	163.79	0	0.00	13,955,322	194.40
2032	138,350	84,454	71,786	2,197,493	26.02	11,840,383	164.94	0	0.00	14,037,876	195.55
2033	138,350	84,454	71,786	2,197,493	26.02	13,058,591	181.91	0	0.00	15,256,084	212.52
2034	138,350	84,454	71,786	2,197,493	26.02	12,096,659	168.51	0	0.00	14,294,152	199.12
2035	138,350	84,454	71,786	2,197,493	26.02	13,170,577	183.47	0	0.00	15,368,071	214.08

(1) As set forth in California Department of Water Resources (DWR) Bulletin 132-06, Appendix B (Appendix B)

(2) Probable Table A water allocation is based on currently existing CVWD allocation augmented by TLBWSD and KCWA transfers, with the MWD transfer portion reduced to 38.824% to reflect long-term average pursuant to the 2003 Exchange Agreement and its implementation.

(3) Probable Table A water delivery is based on 85% reliability of the probable CVWD allocation augmented by TLBWSD and KCWA transfers, including 85% reliability of MWD transfer reduced to 38.824% for long-term average, pursuant to the 2003 Exchange Agreement and its implementation.

(4) Amount is based on probable Table A water allocation and Delta Water Charge per Table B-20 A & B) of Appendix B

(5) Amount is based on probable Table A water delivery and applicable Variable Transportation Unit Charge per Table B-17 of Appendix B.

(6) Amount is based on probable Table A water delivery and Off-Aqueduct Power Unit Charge derived by dividing data in Table B-16B by data in Table B-5B of Appendix B.

(7) Amount of applicable Table A charges divided by probable Table A water delivery.

TABLE 2
DESERT WATER AGENCY
APPLICABLE STATE WATER PROJECT CHARGES (1)

Year	Table A Water Allocation Maximum AF	Table A Water Allocation Probable (2) AF	Probable Table A Water Delivery (3) AF	Delta Water Charge Amount (4) $	Delta Water Charge Unit $/AF	Variable Transportation Charge Amount (5) $	Variable Transportation Charge Unit $/AF	Off-Aqueduct Power Charge Amount (6) $	Off-Aqueduct Power Charge Unit $/AF	DWA Applicable Table A Charges Amount $	DWA Applicable Table A Charges Unit (7) $/AF
2007	50,000	42,720	36,312	1,111,574	26.02	5,135,606	141.43	1,878,420	51.73	8,125,600	223.77
2008	50,000	42,720	36,312	1,111,574	26.02	5,591,322	153.98	2,133,330	58.75	8,836,226	243.34
2009	50,000	42,720	36,312	1,111,574	26.02	4,688,605	129.12	2,117,353	58.31	7,917,533	218.04
2010	55,750	48,470	41,200	1,261,189	26.02	5,815,380	141.15	2,415,144	58.62	9,491,713	230.38
2011	55,750	48,470	41,200	1,261,189	26.02	4,702,980	114.15	1,869,244	45.37	7,833,413	190.13
2012	55,750	48,470	41,200	1,261,189	26.02	5,096,852	123.71	1,868,832	45.36	8,226,873	199.68
2013	55,750	48,470	41,200	1,261,189	26.02	5,834,744	141.62	1,114,460	27.05	8,210,393	199.28
2014	55,750	48,470	41,200	1,261,189	26.02	6,362,928	154.44	245,140	5.95	7,869,257	191.00
2015	55,750	48,470	41,200	1,261,189	26.02	6,521,136	158.28	145,024	3.52	7,927,349	192.41
2016	55,750	48,470	41,200	1,261,189	26.02	6,947,144	168.62	124,424	3.02	8,332,757	202.25
2017	55,750	48,470	41,200	1,261,189	26.02	6,540,912	158.76	119,480	2.90	7,921,581	192.27
2018	55,750	48,470	41,200	1,261,189	26.02	7,038,608	170.84	49,852	1.21	8,349,649	202.66
2019	55,750	48,470	41,200	1,261,189	26.02	7,354,612	178.51	49,440	1.20	8,665,241	210.32
2020	55,750	48,470	41,200	1,261,189	26.02	6,821,896	165.58	53,148	1.29	8,136,233	197.48
2021	55,750	48,470	41,200	1,261,189	26.02	6,823,544	165.62	81,988	1.99	8,166,721	198.22
2022	55,750	48,470	41,200	1,261,189	26.02	6,565,220	159.35	77,868	1.89	7,904,277	191.85
2023	55,750	48,470	41,200	1,261,189	26.02	6,686,760	162.30	55,620	1.35	8,003,569	194.26
2024	55,750	48,470	41,200	1,261,189	26.02	6,972,276	169.23	40,376	0.98	8,273,841	200.82
2025	55,750	48,470	41,200	1,261,189	26.02	6,877,516	166.93	2,884	0.07	8,141,589	197.61
2026	55,750	48,470	41,200	1,261,189	26.02	7,008,944	170.12	4,944	0.12	8,275,077	200.85
2027	55,750	48,470	41,200	1,261,189	26.02	6,909,240	167.70	7,416	0.18	8,177,845	198.49
2028	55,750	48,470	41,200	1,261,189	26.02	6,882,048	167.04	6,180	0.15	8,149,417	197.80
2029	55,750	48,470	41,200	1,261,189	26.02	6,812,008	165.34	6,180	0.15	8,079,377	196.10
2030	55,750	48,470	41,200	1,261,189	26.02	6,822,720	165.60	0	0.00	8,083,909	196.21
2031	55,750	48,470	41,200	1,261,189	26.02	6,748,148	163.79	0	0.00	8,009,337	194.40
2032	55,750	48,470	41,200	1,261,189	26.02	6,795,528	164.94	0	0.00	8,056,717	195.55
2033	55,750	48,470	41,200	1,261,189	26.02	7,494,692	181.91	0	0.00	8,755,881	212.52
2034	55,750	48,470	41,200	1,261,189	26.02	6,942,612	168.51	0	0.00	8,203,801	199.12
2035	55,750	48,470	41,200	1,261,189	26.02	7,558,964	183.47	0	0.00	8,820,153	214.08

(1) As set forth in California Department of Water Resources (DWR) Bulletin 132-06, Appendix B (Appendix B)

(2) Probable Table A water allocation is based on currently existing DWA allocation augmented by TLBWSD and KCWA transfers, with the MWD transfer portion reduced to 38.824% to reflect long-term average pursuant to the 2003 Exchange Agreement and its implementation.

(3) Probable Table A water delivery is based on 85% reliability of the probable DWA allocation augmented by TLBWSD and KCWA transfers, including 85% reliability of MWD transfer reduced to 38.824% for long-term average, pursuant to the 2003 Exchange Agreement and its implementation.

(4) Amount is based on probable Table A water allocation and Delta Water Charge per Table B-20 A & B) of Appendix B

(5) Amount is based on probable Table A water delivery and applicable Variable Transportation Unit Charge per Table B-17 of Appendix B.

(6) Amount is based on probable Table A water delivery and Off-Aqueduct Power Unit Charge derived by dividing data in Table B-16B by data in Table B-5B of Appendix B.

(7) Amount of applicable Table A charges divided by probable Table A water delivery.

TABLE 3
DESERT WATER AGENCY
ESTIMATED ALLOCATED STATE WATER PROJECT CHARGES FOR TABLE A WATER
(PROPORTIONED APPLICABLE CHARGES) (1)

Year	CVWD Applicable Table A Charges $	DWA Applicable Table A Charges $	Combined Applicable Table A Charges $	CVWD Allocated Table A Charges $	DWA Allocated Table A Charges $	DWA Incremental Increase (Decrease) $	DWA Incremental Increase (Decrease) %
2007	12,782,527	8,125,600	20,908,127	14,997,400	5,910,728		
2008	13,900,424	8,836,226	22,736,650	16,308,999	6,427,651	516,923	9
2009	12,455,212	7,917,533	20,372,745	14,613,370	5,759,375	(668,276)	(10)
2010	16,538,182	9,491,713	26,029,896	18,671,244	7,358,652	1,599,277	28
2011	13,648,796	7,833,413	21,482,209	15,409,189	6,073,021	(1,285,631)	(17)
2012	14,334,352	8,226,873	22,561,226	16,183,167	6,378,058	305,037	5
2013	14,305,638	8,210,393	22,516,031	16,150,749	6,365,282	(12,776)	0
2014	13,711,250	7,869,257	21,580,507	15,479,698	6,100,809	(264,473)	(4)
2015	13,812,468	7,927,349	21,739,817	15,593,971	6,145,846	45,037	1
2016	14,518,842	8,332,757	22,851,600	16,391,452	6,460,147	314,301	5
2017	13,802,418	7,921,581	21,723,999	15,582,625	6,141,375	(318,772)	(5)
2018	14,548,274	8,349,649	22,897,924	16,424,681	6,473,243	331,868	5
2019	15,098,155	8,665,241	23,763,397	17,045,484	6,717,912	244,669	4
2020	14,176,423	8,136,233	22,312,656	16,004,868	6,307,788	(410,124)	(6)
2021	14,229,545	8,166,721	22,396,266	16,064,842	6,331,424	23,636	0
2022	13,772,268	7,904,277	21,676,545	15,548,586	6,127,959	(203,465)	(3)
2023	13,945,272	8,003,569	21,948,841	15,743,904	6,204,937	76,978	1
2024	14,416,188	8,273,841	22,690,030	16,275,558	6,414,471	209,534	3
2025	14,185,755	8,141,589	22,327,344	16,015,404	6,311,940	(102,531)	(2)
2026	14,418,342	8,275,077	22,693,419	16,277,990	6,415,430	103,490	2
2027	14,248,927	8,177,845	22,426,772	16,086,724	6,340,048	(75,382)	(1)
2028	14,199,394	8,149,417	22,348,812	16,030,803	6,318,009	(22,039)	0
2029	14,077,358	8,079,377	22,156,736	15,893,026	6,263,709	(54,300)	(1)
2030	14,085,255	8,083,909	22,169,164	15,901,941	6,267,223	3,514	0
2031	13,955,322	8,009,337	21,964,659	15,755,250	6,209,409	(57,814)	(1)
2032	14,037,876	8,056,717	22,094,593	15,848,452	6,246,142	36,733	1
2033	15,256,084	8,755,881	24,011,966	17,223,783	6,788,183	542,041	9
2034	14,294,152	8,203,801	22,497,953	16,137,782	6,360,171	(428,012)	(7)
2035	15,368,071	8,820,153	24,188,224	17,350,213	6,838,011	477,840	7

(1) Proportioned in accordance with 2005 Water Management Area production percentages; CVWD is responsible for 71.73% and DWA is responsible for 28.27% of combined production within the Whitewater River and Mission Creek Subbasins (see Exhibit 1 in the Appendix).

TABLE 4
DESERT WATER AGENCY
PROJECTED REPLENISHMENT ASSESSMENT RATES
PURSUANT TO WATER MANAGEMENT AGREEMENT
BETWEEN
COACHELLA VALLEY WATER DISTRICT AND DESERT WATER AGENCY

Year	DWA Allocated Table A Charges $	Estimated Assessable Production (1) AF	Estimated Effective Table A Assessment Rate (2) Fiscal Year $/AF	Rounded Table A Assessment Rate $/AF
2007/2008	6,169,190	63,880	96.60	97.00
2008/2009	6,093,513	65,058	93.70	94.00
2009/2010	6,559,014	66,235	99.00	99.00
2010/2011	6,715,837	67,413	99.60	100.00
2011/2012	6,225,540	68,590	90.80	91.00
2012/2013	6,371,670	69,768	91.30	91.00
2013/2014	6,233,046	70,945	87.90	88.00
2014/2015	6,123,328	72,123	84.90	85.00
2015/2016	6,302,997	73,300	86.00	86.00
2016/2017	6,300,761	74,478	84.60	85.00
2017/2018	6,307,309	75,655	83.40	83.00
2018/2019	6,595,578	76,833	85.80	86.00
2019/2020	6,512,850	78,010	83.50	84.00
2020/2021	6,319,606	79,188	79.80	80.00
2021/2022	6,229,692	80,365	77.50	78.00
2022/2023	6,166,448	81,543	75.60	76.00
2023/2024	6,309,704	82,720	76.30	76.00
2024/2025	6,363,206	83,898	75.80	76.00
2025/2026	6,363,685	85,075	74.80	75.00
2026/2027	6,377,739	86,253	73.90	74.00
2027/2028	6,329,029	87,430	72.40	72.00
2028/2029	6,290,859	88,608	71.00	71.00
2029/2030	6,265,466	89,785	69.80	70.00
2030/2031	6,238,316	90,963	68.60	69.00
2031/2032	6,227,776	92,140	67.60	68.00
2032/2033	6,517,163	93,318	69.80	70.00
2033/2034	6,574,177	94,496	69.60	70.00
2034/2035	6,599,091	95,673	69.00	69.00

(1) Includes growth rate of 1177 AF/year.

(2) Necessary to pay DWA's estimated Allocated Table A Charges.

TABLE 5
DESERT WATER AGENCY
MISSION CREEK SUBBASIN
HISTORIC, PROPOSED, AND PROJECTED REPLENISHMENT ASSESSMENT RATES, COLLECTIONS, PAYMENTS, AND ACCOUNT BALANCE

	Assessment Rate			Assessments				Proportionate Share of State Project Payments Made	Proportionate Share of Recharge Basin			Assessments Collected Less State Project Payments Made	
		Charge for										Surplus (Deficit)	
Fiscal Year	Table A Allocation $/AF	Recharge Basin Cost Reimbursement (1) $/AF	Total $/AF	Estimated (2) $	Levied (3) $	Collected (4) $	Delinquent (5) $	Table A $	Cost $	Cost Reimbursed $	%	Annual $	Cumulative $
03/04	35.00	0.00	35.00	336,000	397,708	397,708	0	828,959	2,731,807	0	0%	(3,163,058)	N/A
04/05	34.00	12.00	46.00	464,140	529,108	529,108	0	752,878	--	151,320	6%	(223,770)	(3,386,828)
05/06	38.00	12.00	50.00	596,000	635,562	635,562	0	1,143,326	--	302,640	11%	(507,765)	(3,894,592)
06/07	51.00	12.00	**63.00**	761,040	653,562	653,562	0	1,026,045	--	453,960	17%	(372,483)	(4,267,075)
07/08	97.00	(34.00)	**63.00** (6)	794,430 (7)	794,430	794,430	0	1,217,807 (8)	--	25,220	1%	(423,377)	(4,690,452)
08/09	94.00	(25.00)	69.00	886,129	886,129	886,129	0	1,202,868	--	-290,030	-11%	(316,739)	(5,007,191)
09/10	99.00	(20.00)	79.00	1,032,916	1,032,916	1,032,916	0	1,294,758	--	-542,230	-20%	(261,842)	(5,269,033)
10/11	100.00	(15.00)	85.00	1,131,123	1,131,123	1,131,123	0	1,325,715	--	-731,380	-27%	(194,592)	(5,463,625)
11/12	91.00	(5.00)	86.00	1,164,421	1,164,421	1,164,421	0	1,228,930	--	-794,430	-29%	(64,509)	(5,528,134)
12/13	91.00	(1.00)	90.00	1,239,500	1,239,500	1,239,500	0	1,257,776	--	-807,040	-30%	(18,277)	(5,546,411)
13/14	88.00	4.00	92.00	1,288,429	1,288,429	1,288,429	0	1,230,412	--	-756,600	-28%	58,017	(5,488,394)
14/15	85.00	8.00	93.00	1,324,051	1,324,051	1,324,051	0	1,208,753	--	-655,720	-24%	115,298	(5,373,096)
15/16	86.00	8.00	94.00	1,360,138	1,360,138	1,360,138	0	1,244,220	--	-554,840	-20%	115,918	(5,257,178)
16/17	85.00	10.00	95.00	1,396,690	1,396,690	1,396,690	0	1,243,779	--	-428,740	-16%	152,911	(5,104,267)
17/18	83.00	12.00	95.00	1,418,772	1,418,772	1,418,772	0	1,245,071	--	-277,420	-10%	173,699	(4,930,568)
18/19	86.00	12.00	98.00	1,486,355	1,486,355	1,486,355	0	1,301,976	--	-126,100	-5%	184,377	(4,746,191)
19/20	84.00	12.00	96.00	1,478,336	1,478,336	1,478,336	0	1,285,646	--	25,220	1%	192,687	(4,553,504)
20/21	80.00	12.00	92.00	1,438,123	1,438,123	1,438,123	0	1,247,499	--	176,540	6%	190,620	(4,362,884)
21/22	78.00	12.00	90.00	1,427,780	1,427,780	1,427,780	0	1,229,750	--	327,860	12%	198,025	(4,164,859)
22/23	76.00	12.00	88.00	1,416,506	1,416,506	1,416,506	0	1,217,265	--	479,180	18%	199,235	(3,965,625)
23/24	76.00	12.00	88.00	1,436,961	1,436,961	1,436,961	0	1,245,544	--	630,500	23%	191,410	(3,774,215)
24/25	76.00	12.00	88.00	1,457,416	1,457,416	1,457,416	0	1,256,106	--	781,820	29%	201,303	(3,572,912)
25/26	75.00	12.00	87.00	1,461,077	1,461,077	1,461,077	0	1,256,200	--	933,140	34%	204,868	(3,368,044)
26/27	74.00	12.00	86.00	1,464,274	1,464,274	1,464,274	0	1,258,974	--	1,084,460	40%	205,289	(3,162,754)
27/28	72.00	12.00	84.00	1,449,746	1,449,746	1,449,746	0	1,249,359	--	1,235,780	45%	200,376	(2,962,378)
28/29	71.00	12.00	83.00	1,451,780	1,451,780	1,451,780	0	1,241,824	--	1,387,100	51%	209,944	(2,752,434)
29/30	70.00	12.00	82.00	1,453,349	1,453,349	1,453,349	0	1,236,812	--	1,538,420	56%	216,524	(2,535,910)
30/31	69.00	12.00	81.00	1,454,453	1,454,453	1,454,453	0	1,231,452	--	1,689,740	62%	222,987	(2,312,923)
31/32	68.00	12.00	80.00	1,455,093	1,455,093	1,455,093	0	1,229,371	--	1,841,060	67%	225,706	(2,087,217)
32/33	70.00	12.00	82.00	1,510,530	1,510,530	1,510,530	0	1,286,497	--	1,992,380	73%	224,017	(1,863,199)
33/34	70.00	12.00	82.00	1,529,591	1,529,591	1,529,591	0	1,297,752	--	2,143,700	78%	231,822	(1,631,377)
34/35	69.00	12.00	81.00	1,529,765	1,529,765	1,529,765	0	1,302,670	--	2,295,020	84%	227,078	(1,404,300)

(1) Charge for DWA's proporrtionate share of recharge basin cost amortized at zero interest over 20 years.
(2) Assessments Estimated are based on applicable assessment rate and estimated assessable production from annual report for that year.
(3) Assessments Levied are based on applicable assessment rate and actual assessable production, except for the previous year, current year, and subsequent years where amounts remain estimated.
(4) Assessments Collected are based on payments made for Assessments Levied, except for the previous year, current year, and subsequent years where amounts remain estimated.
(5) Assessments Delinquent are based on Assessments Levied less payments made.
(6) Proposed assessment rate based on two components: 1) State Water Project Table A water, and 2) Charge for Recharge Basin Cost Reimbursement.
(7) For 2007/2008, Assessments Estimated are based on Proposed Assessment Rate and Estimated Assessable Production for Mission Creek Subbasin.
(8) For 2007/2008 and beyond, Payments Made are estimated based on estimated allocated Table A charges, proportioned to Estimated Assessable Production for Mission Creek Subbasin.

TABLE 6
DESERT WATER AGENCY
GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM
ESTIMATED MISSION CREEK SUBBASIN MANAGEMENT AREA WATER PRODUCTION
AND
ESTIMATED WATER REPLENISHMENT ASSESSMENTS
2007/2008

ESTIMATED COMBINED MANAGEMENT AREA ASSESSABLE WATER PRODUCTION AND WATER REPLENISHMENT ASSESSMENTS

Management Area	Estimated Assessable Water Production (Acre Feet)	Water Replenishment Assessment Rate ($/AF)	Water Replenishment Assessment ($)	Water Replenishment Assessment (Percent)
Mission Creek Subbasin	12,610	63	794,430	20%
Whitewater River Subbasin	51,270	63	3,230,010	80%
Combined Subbasins	63,880		4,024,440	100%

ESTIMATED MISSION CREEK SUBBASIN MANAGEMENT AREA WATER PRODUCTION AND WATER REPLENISHMENT ASSESSMENTS

Producer	2005 WATER PRODUCTION: Groundwater Extraction (Acre Feet)	2005 WATER PRODUCTION: Surface Water Diversion (Acre Feet)	2005 WATER PRODUCTION: Combined Water Production (Acre Feet)	Estimated 2007/2008 Assessable Water Production (Acre Feet) (1)	Estimated Water Replenishment Assessment @ $63/Acre Foot ($)	Estimated Water Replenishment Assessment @ $63/Acre Foot (Percent)
Mission Creek Subbasin						
Mission Springs Water District	11,136	0	11,136	11,140	701,820	88%
Hidden Springs Country Club	244	0	244	240	15,120	2%
Mission Lakes Country Club	1,186	0	1,186	1,190	74,970	9%
Sands RV Resort	42	0	42	40	2,520	0%
Total	12,608	-	12,608	12,610	794,430	100%

(1) Rounded to nearest 10 Acre Feet.

APPENDIX A

EXHIBIT 1
DESERT WATER AGENCY
HISTORIC WATER PRODUCTION
FOR REPLENISHMENT ASSESSMENT FOR
DESERT WATER AGENCY AND COACHELLA VALLEY WATER DISTRICT
MISSION CREEK SUBBASIN (MCS) AND WHITEWATER RIVER SUBBASIN (WRS) WATER MANAGEMENT AREAS

	CVWD PRODUCTION		DWA PRODUCTION				COMBINED CVWD & DWA PRODUCTION				MCS PRODUCTION PERCENTAGES		COMBINED WRS & MCS PRODUCTION PERCENTAGES	
	GWE		GWE		SWD		GWE		SWD					
	WRS	MCS	WRS	MCS	WRS	COMB	WRS	MCS	WRS	COMB				
YEAR	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	CVWD	DWA	CVWD	DWA
2002	163,278	4,371	46,004	9,597	4,221	59,822	209,282	13,968	4,221	227,471	31.29	68.71	73.70	26.30
2003	153,976	3,450	43,463	10,073	4,627	58,163	197,439	13,523	4,627	215,590	25.51	74.49	73.02	26.98
2004	158,556	3,891	48,093	11,920	4,271	64,284	206,649	15,811	4,271	226,731	24.61	75.39	71.65	28.35
2005	153,548	4,248	46,080	12,080	4,799	62,959	199,628	16,328	4,799	220,754	26.01	73.99	71.48	28.52
2006	160,281	4,758	48,967	12,608	3,467	65,042	209,248	17,366	3,467	230,081	27.40	72.60	71.73	28.27

Abbreviations:

GWE = Groundwater Extractions
SWD = Surface Water Diversions
COMB = Combined

DFS/
101-57P5-TBLS.XLS
04/20/2007

KRIEGER & STEWART INCORPORATED
ENGINEERING CONSULTANTS

EXHIBIT 2
DESERT WATER AGENCY

COMPARISON OF
HISTORIC AND PROPOSED GROUND WATER REPLENISHMENT ASSESSMENT RATES
FOR THE MISSION CREEK SUBBASIN MANAGEMENT AREA
DESERT WATER AGENCY AND COACHELLA VALLEY WATER DISTRICT

YEAR	DWA $/AF	DWA % INCREASE	CVWD $/AF	CVWD % INCREASE	DWA MORE OR (LESS) THAN CVWD
03/04	$35.00	N/A	$59.80	N/A	($24.80)
04/05	$46.00	31%	$59.80	0%	($13.80)
05/06	$50.00	9%	$59.80	0%	($9.80)
06/07	$63.00 *	37%	$65.78 *	10%	($2.78)
07/08	$63.00 *	26%	$72.36 *	21%	($9.36)

* Proposed Replenishment Assessment Rate

DFS/blt
101-57P5-TBLS.XLS
04/20/2007

KRIEGER & STEWART INCORPORATED
ENGINEERING CONSULTANTS

EXHIBIT 3
METROPOLITAN WATER DISTRICT/COACHELLA VALLEY WATER DISTRICT/DESERT WATER AGENCY
WATER EXCHANGE AGREEMENT AND ADVANCE DELIVERY AGREEMENT
SUMMARY OF EXCHANGE AND ADVANCE DELIVERIES, JULY 1973 THROUGH DECEMBER 1999 (1)

A. JULY 1973 THROUGH JUNE 1984

YEAR	COMBINED CVWD/DWA SWP ENTITLEMENT	CVWD/DWA DELIVERIES TO MWD (SWP)	MWD DELIVERIES TO CVWD/DWA (SPREADING GROUNDS)	ANNUAL MWD DELIVERY SURPLUS (DEFICIT)	CUMULATIVE MWD DELIVERY SURPLUS (DEFICIT)
1973 (JUL-DEC)	14,800	14,800	7,475	(7,325)	(7,325)
1974	16,400	16,400	15,396	(1,004)	(8,329)
1975	18,000	18,000	20,126	2,126	(6,203)
1976	19,600	19,600	13,206	(6,394)	(12,597)
1977	21,421	0	0	0	(12,597)
1978	23,242	25,384	0	(25,384)	(37,981)
1979	25,063	25,063	25,192	129	(37,852)
1980	27,884	27,884	26,341	(1,543)	(39,395)
1981	31,105	31,105	35,251	4,146	(35,249)
1982	34,326	34,326	27,020	(7,306)	(42,555)
1983	37,547	37,547	53,732	16,185	(26,370)
1984 (JAN-JUN) (2)	N/A	25,849	50,912	25,063	(1,307)
TOTALS:	269,388	275,958	274,651		

B. JULY 1984 THROUGH DECEMBER 1999

YEAR	COMBINED CVWD/DWA SWP ENTITLEMENT DELIVERY	TOTAL CVWD/DWA DELIVERY TO MWD (SWP)	MWD DELIVERY TO CVWD/DWA (SPREADING GROUNDS)	MWD ADVANCE DELIVERY	MWD ADVANCE DELIVERY CONVERTED TO EXCHANGE DELIVERY
1984 (JUL-DEC) (3)	40,768	14,919	32,796	16,570	---
1985	43,989	43,989	251,994	208,005	---
1986	47,210	47,210	288,201	240,991	---
1987	50,931	50,931	104,334	53,403	---
1988	54,652	54,652	1,096	---	53,556
1989	58,373	58,374	12,478	---	45,896
1990	61,200	61,200	31,721	---	29,479
1991	61,200	19,125	14	---	19,111
1992	61,200	27,540	40,870	13,330	---
1993	61,200	61,200	60,153	---	1,047
1994	61,200	37,359	36,763	---	596
1995	61,200	61,200	61,318	118	---
1996 (4)	61,200	164,841	138,266	---	26,575
1997 (5)	61,200	138,330	113,677	---	24,653
1998 (6)	61,200	156,356	132,455	---	23,901
1999 (7)	61,200	108,580	90,601	---	17,979
TOTALS:	907,923	1,105,806	1,396,737	532,417	242,793

(1) AS REPORTED BY METROPOLITAN WATER DISTRICT IN ITS MONTHLY "EXCHANGE WATER DELIVERY IN ACRE-FEET" REPORTS.

(2) ADVANCE DELIVERY AGREEMENT BETWEEN MWD AND CVWD/DWA BECAME EFFECTIVE 7/1/84; DISCREPANCIES IN EXCHANGE DELIVERIES BETWEEN MWD AND CVWD/DWA AFTER 7/1/84 ADJUSTED PER SAID AGREEMENT

(3) EFFECTIVE DATE OF ADVANCE DELIVERY AGREEMENT BETWEEN MWD AND CVWD/DWA WAS 7/1/84; 16,570 AF ADVANCE DELIVERY FIGURE REFLECTS 7/84 - 12/84 DELIVERIES TO MWD OF 14,919 AF AND 7/84 - 12/84 DELIVERIES TO CVWD/DWA OF 32,796 AF, LESS CUMULATIVE MWD DELIVERY DEFICIENCY OF 1,307 AF AS OF 7/1/84.

(4) 1996 COMBINED CVWD/DWA ENTITLEMENT AND EXCHANGE DELIVERIES INCREASED BY PURCHASE OF 103,641 AF THROUGH DWR'S 1996 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B WATER).

(5) 1997 COMBINED CVWD/DWA ENTITLEMENT AND EXCHANGE DELIVERIES INCREASED BY PURCHASE OF 50,000 AF THROUGH DWR's 1997 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B WATER) AND BY PURCHASE OF 27,130 AF OF KAWEAH RIVER AND TULE RIVER FLOOD FLOW WATER.

(6) 1998 COMBINED CVWD/DWA ENTITLEMENT AND EXCHANGE DELIVERIES INCREASED BY PURCHASE OF 75,000 AF THROUGH DWR's 1998 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B WATER) AND BY PURCHASE OF 20,156 AF OF KAWEAH, TULE, AND KINGS RIVERS RIVER FLOOD FLOW WATER.

(7) 1999 COMBINED CVWD/DWA ENTITLEMENT AND EXCHANGE DELIVERIES INCREASED BY PURCHASE OF 47,380 AF THROUGH DWR's 1999 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B WATER).

NOTE: ALL FIGURES ARE IN ACRE FEET

EXHIBIT 4
METROPOLITAN WATER DISTRICT/COACHELLA VALLEY WATER DISTRICT/DESERT WATER AGENCY
WATER EXCHANGE AGREEMENT AND ADVANCE DELIVERY AGREEMENT
SUMMARY OF EXCHANGE AND ADVANCE DELIVERIES, JANUARY 2000 THROUGH DECEMBER 2006 (1)

YEAR	TOTAL CVWD/DWA EXCHANGE DELIVERY TO MWD (SWP) AF	MWD EXCHANGE DELIVERY TO CVWD/DWA RECHARGE BASINS AF	MWD ADVANCE DELIVERY TO CVWD/DWA RECHARGE BASINS AF	MWD ADVANCE DELIVERY CONVERTED TO EXCHANGE DELIVERY TO CVWD/DWA AF
2000 (2)	100,557	45,477	---	55,080
2001 (3)	24,110	707	---	23,403
2002 (4)	44,395	38,168	---	6,227
2003 (5)	38,260	961	---	37,299
2004 (6)	18,788	18,788	---	0
2005 (7)	190,277	91,608	98,669	0
2006 (8)	118,859	171,100	---	52,241
TOTALS:	535,246	366,809	98,669	174,250

CUMULATIVE MWD ADVANCE DELIVERIES, 7/84 THROUGH 12/06:	631,086
CUMULATIVE MWD ADVANCE DELIVERIES CONVERTED TO EXCHANGE DELIVERIES, 7/84 THROUGH 12/06:	417,043
BALANCE OF MWD ADVANCE DELIVERIES AVAILABLE TO BE CONVERTED TO EXCHANGE DELIVERIES:	214,043
ARTIFICIAL RECHARGE THROUGH EXCHANGE DELIVERIES AND ADVANCE DELIVERIES SINCE 1973:	2,038,197
ARTIFICIAL RECHARGE THROUGH EXCHANGE DELIVERIES SINCE 1973:	1,824,154

(1) AS REPORTED BY METROPOLITAN WATER DISTRICT IN ITS MONTHLY "EXCHANGE DELIVERY SUMMARY IN ACRE-FEET" REPORTS AND ANNUAL SCHEDULES OF WATER DELIVERED TO DWA AND CVWD.

(2) 2000 CVWD/DWA EXCHANGE DELIVERY TO MWD CONSISTS OF 55,080 AF OF TABLE A WATER (90% ALLOCATION), 9,837 AF OF DWR's 2000 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B) WATER AND 35,640 AF OF INTERRUPTIBLE (ARTICLE 21) WATER.

(3) 2001 CVWD/DWA EXCHANGE DELIVERY TO MWD CONSISTS OF 23,868 AF OF TABLE A WATER (39% ALLOCATION), AND 242 AF OF DWR's 2001 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B) WATER.

(4) 2002 CVWD/DWA EXCHANGE DELIVERY TO MWD CONSISTS OF 42,840 AF OF TABLE A WATER (70% ALLOCATION), 1,255 AF OF DWR's 2002 TURN-BACKWATER POOL PROGRAM (436 AF OF POOL A AND 819 AF OF POOL B) WATER, AND 300 AF OF ARTICLE 21 WATER.

(5) 2003 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 37,213 AF OF TABLE A WATER (90% ALLOCATION = 55,080 AF. LESS 17,867 NOT DELIVERED BY MWD AND CREDITED TO DWA AND CVWD IN 2004), 515 AF OF DWR's 2003 TURN-BACK WATER POOL PROGRAM (457 AF OF POOL A AND 58 AF OF POOL B) WATER, AND 532 AF OF ARTICLE 21 WATER.

(6) 2004 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 18,597 AF OF TABLE A WATER (30% ALLOCATION), 191 AF OF DWR's 2004 TURN-BACK WATER POOL PROGRAM (ALL FROM POOL B) WATER. 17,867 AF CREDITED TO DWA/CVWD FOR QUANTITY NOT DELIVERED BY MWD IN 2003.

(7) 2005 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 87,770 AF OF TABLE A WATER (50% ALLOCATION), AND 3,883 AF OF DWR's 2005 TURN-BACK WATER POOL PROGRAM (585 AF OF POOL A AND 3,253 AF OF POOL B) WATER.

(8) 2006 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 171,100 AF OF TABLE A WATER (100% ALLOCATION).

EXHIBIT 5
DESERT WATER AGENCY
MISSION CREEK SUBBASIN (1)
HISTORIC VOLUME OF GROUND WATER IN STORAGE (2)

Time Period	pre 1955	1955 - 1978	1979 - 1997	1998 - 2006	**1955 - 2006**
Number of Years		24	19	9	**52**
Water Level Decline, Ft. (3)		20	30	19	**69**
Period Reduction in Storage, AF		71,200	106,800	67,640	**245,640**
Annual Reduction in Storage, AF/Yr		3,000	5,600	7,500	**4,700**
Change in Storage		0.047	0.074	0.051	**0.162**
Remaining Storage, AF	1,511,800	1,440,600	1,333,800	1,266,160	**1,266,160**

(1) Northwest three-quarters of Subbasin: GTC (1979) & Slade (2000)

(2) Storage loss of 3,560 AF/ft of water level decline: GTC (1979) & Slade (2000)

(3) Mission Springs Water District data

EXHIBIT 6

DESERT WATER AGENCY

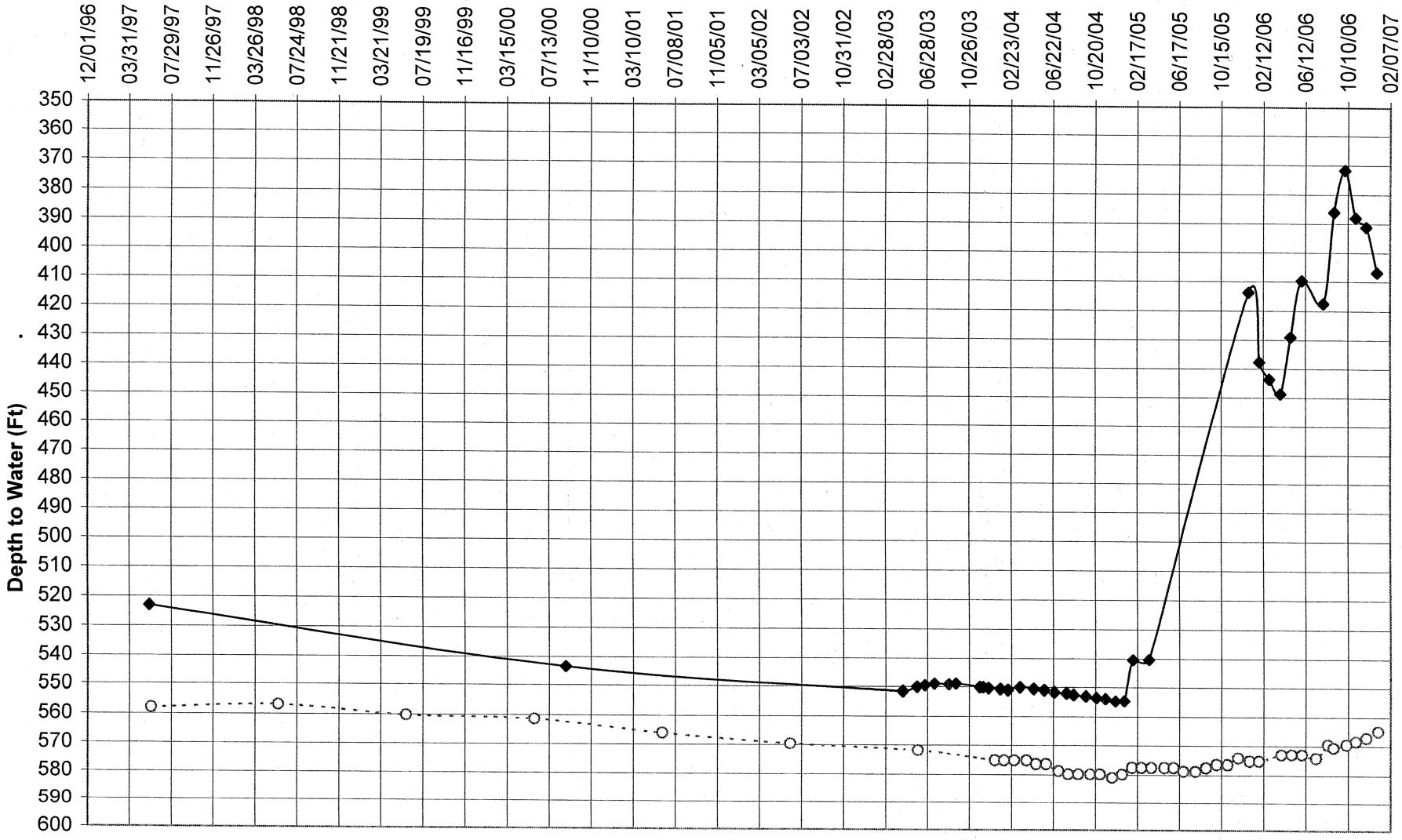
MISSION CREEK SUBBASIN

WATER WELL HYDROGRAPH

DESERT WATER AGENCY RECHARGE BASIN MONITORING WELL

AND

MISSION SPRINGS WATER DISTRICT PRODUCTION WELL #30



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04/20/2007

KRIEGER & STEWART INCORPORATED
ENGINEERING CONSULTANTS

EXHIBIT 7
DESERT WATER AGENCY
COMPARISON OF
WATER PRODUCTION AND GROUND WATER REPLENISHMENT
WHITEWATER RIVER SUBBASIN (WRS) AND MISSION CREEK SUBBASINS (MCS)

PRODUCTION (1)

YEAR	WRS AF Annual	WRS AF Cumulative	MCS AF Annual	MCS AF Cumulative	TOTAL AF Annual	TOTAL AF Cumulative	RATIO: MCS/WRS Annual	RATIO: MCS/WRS Cumulative
2002	213,503	213,503	13,968	13,968	227,471	227,471	6.5%	6.5%
2003	202,066	415,569	13,523	27,491	215,590	443,060	6.7%	6.6%
2004	210,920	626,489	15,811	43,302	226,731	669,792	7.5%	6.9%
2005	204,427	830,916	16,328	59,630	220,754	890,546	8.0%	7.2%
2006	212,715	1,043,631	17,366	76,996	230,081	1,120,627	8.2%	7.4%

RECHARGE

YEAR	WRS AF Annual	WRS AF Cumulative	MCS AF Annual	MCS AF Cumulative	TOTAL AF Annual	TOTAL AF Cumulative	RATIO: MCS/WRS Annual	RATIO: MCS/WRS Cumulative
2002	33,435	33,435	4,733	4,733	38,168	38,168	14.2%	14.2%
2003	961	34,396	0	4,733	961	39,129	0.0%	13.8%
2004	13,224	47,620	5,564	10,297	18,788	57,917	42.1%	21.6%
2005	66,885	114,505	24,723	35,020	91,608	149,525	37.0%	30.6%
2006	98,959	213,464	19,901	54,921	118,860	268,385	20.1%	25.7%

RATIO OF
RECHARGE TO PRODUCTION

YEAR	WRS Annual	WRS Cumulative	MCS Annual	MCS Cumulative
2002	2.2%	2.2%	33.9%	33.9%
2003	0.0%	1.1%	0.0%	17.2%
2004	2.6%	1.6%	35.2%	23.8%
2005	12.1%	4.2%	151.4%	58.7%
2006	9.4%	5.3%	114.6%	71.3%

MCS RECHARGE
PROPORTIONATE DELIVERIES VS. ACTUAL DELIVERIES

YEAR	PROPORTIONATE AF Annual	PROPORTIONATE AF Cumulative	ACTUAL AF Annual	ACTUAL AF Cumulative	ACTUAL LESS PROPORTIONATE AF Annual	ACTUAL LESS PROPORTIONATE AF Cumulative	RATIO: ACTUAL/PROPORTIONATE Annual	RATIO: ACTUAL/PROPORTIONATE Cumulative
2002	1,985	1,985	4,733	4,733	2,748	2,748	238.5%	238.5%
2003	1,858	3,843	0	4,733	-1,858	890	0.0%	123.2%
2004	1,012	4,855	5,564	10,297	4,552	5,442	549.8%	212.1%
2005	10,853	15,708	24,723	35,020	13,870	19,312	227.8%	222.9%
2006	6,633	22,341	19,901	54,921	13,268	32,580	300.0%	245.8%

(1) Production in both DWA and CVWD service areas

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04/20/2007

KRIEGER & STEWART INCORPORATED
ENGINEERING CONSULTANTS

EXHIBIT 8
DESERT WATER AGENCY
SUMMARY OF DELIVERIES
TO METROPOLITAN WATER DISTRICT AND
TO GROUND WATER RECHARGE BASINS (AF)

	DELIVERY TO MWD								DELIVERY TO RECHARGE BASINS		
	Table A	Surplus Water						Total			
YEAR	Allocation	Pool A	Pool B	Article 21	Flood	Other	Total		WRS (1)	MCS (2)	TOTAL
1973	14,800							14,800	7,475		7,475
1974	16,400							16,400	15,396		15,396
1975	18,000							18,000	20,126		20,126
1976	19,600							19,600	13,206		13,206
1977	0							0	0		0
1978	25,384							25,384	0		0
1979	25,063							25,063	25,192		25,192
1980	27,884							27,884	26,341		26,341
1981	31,105							31,105	35,251		35,251
1982	34,326							34,326	27,020		27,020
1983	37,547							37,547	53,732		53,732
1984	40,768							40,768	83,708		83,708
1985	43,989							43,989	251,994		251,994
1986	47,210							47,210	288,201		288,201
1987	50,931							50,931	104,334		104,334
1988	54,652							54,652	1,096		1,096
1989	58,374							58,374	12,478		12,478
1990	61,200							61,200	31,721		31,721
1991	19,125							19,125	14		14
1992	27,540							27,540	40,870		40,870
1993	61,200							61,200	60,153		60,153
1994	37,359							37,359	36,763		36,763
1995	61,200							61,200	61,318		61,318
1996	61,200		103641				103641	164,841	138,266		138,266
1997	61,200		50000		27130		77130	138,330	113,677		113,677
1998	61,200		75000		20156		95156	156,356	132,455		132,455
1999	61,200		47380				47380	108,580	90,601		90,601
2000	55,080		9837	35640			45477	100,557	45,477		45,477
2001	23,868		242				242	24,110	707		707
2002	42,840	436	819	300			1555	44,395	33,435	4,733	38,168
2003	37,213	457	58	532			1047	38,260	961	0	961
2004	18,597		191				191	18,788	13,224	5,564	18,788
2005	186,439	585	3253				3838	190,277	66,885	24,723	91,608
2006	118,859	0	0				0	118,859	151,199	19,901	171,100
TOTAL (3)	1,541,353	1,478	290,421	36,472	47,286	0	375,657	1,917,010	1,983,276	54,921	2,038,197

NOTES
(1) Whitewater River Subbasin
(2) Mission Creek Subbasin
(3) Since 1973

APPENDIX B

ADDENDUM TO SETTLEMENT AGREEMENT
MANAGEMENT AREA DELIVERIES

The Settlement Agreement between Coachella Valley Water District (CVWD), Desert Water Agency (DWA) and Mission Springs Water District (MSWD) dated December 7, 2004 shall be supplemented by the following Addendum, and thus shall be deemed a part thereof:

The Mission Creek Groundwater Replenishment Agreement provides for the delivery to the Mission Creek Subbasin, for groundwater replenishment, of a proportionate share of the imported water delivered to CVWD and DWA for replenishment of the Upper Coachella Valley Groundwater Basin. To ensure that the Mission Creek Subbasin receives its proportionate share of that water, as set forth in the Mission Creek Replenishment Agreement, and to provide for the monitoring thereof, the following procedures shall be applied:

Each year CVWD and DWA shall calculate the combined total quantity of water produced during the previous year from the Whitewater River Management Area and the Mission Creek Management Area, and from sources tributary to those Management Areas, and shall determine from that the percentages of the total production from those Management Areas and their sources.

Water supplies available to CVWD and DWA each year, through their respective State Water Project Contracts, for the replenishment of those Management Areas will be allocated and delivered to the Management Areas for groundwater replenishment in the same percentages, subject to delivery capability and operational constraints in any particular year.

In the event that additional subbasins benefit from recharge programs within CVWD and DWA boundaries, the respective production and recharge delivery percentages from those management areas in those subbasins shall be included in the above described calculations, allocations, and deliveries.

Production and recharge quantities shall be reviewed by the parties to the Management Committee (MSWD, CVWD and DWA) through the Management Committee process. CVWD and DWA will endeavor to accomplish annual proportionate management area deliveries; however, when constrained by operating limitations, they may over deliver or under deliver water to the management areas from year to year as necessary to obtain as much imported water as may be available. Cumulative water deliveries between or among management areas shall be balanced as and when determined by the Management Committee, but no later than 20 years from the date of the settlement agreement and each 20 years thereafter.

The provisions of this Addendum may be enforced by any party hereto.

IN WITNESS WHEREOF, The Parties have caused this Addendum to be executed by their duly authorized representatives on the date first above written.

MSWD:

Mission Springs Water District,
a California county water district

By _____

Its: President

By _____

Its: Vice President

DWA:

Desert Water Agency,
a public agency of the State of California

By _____

Its: President

By _____

Its: Vice President

CVWD:

Coachella Valley Water District,
a California county water district

By _____

Its: President

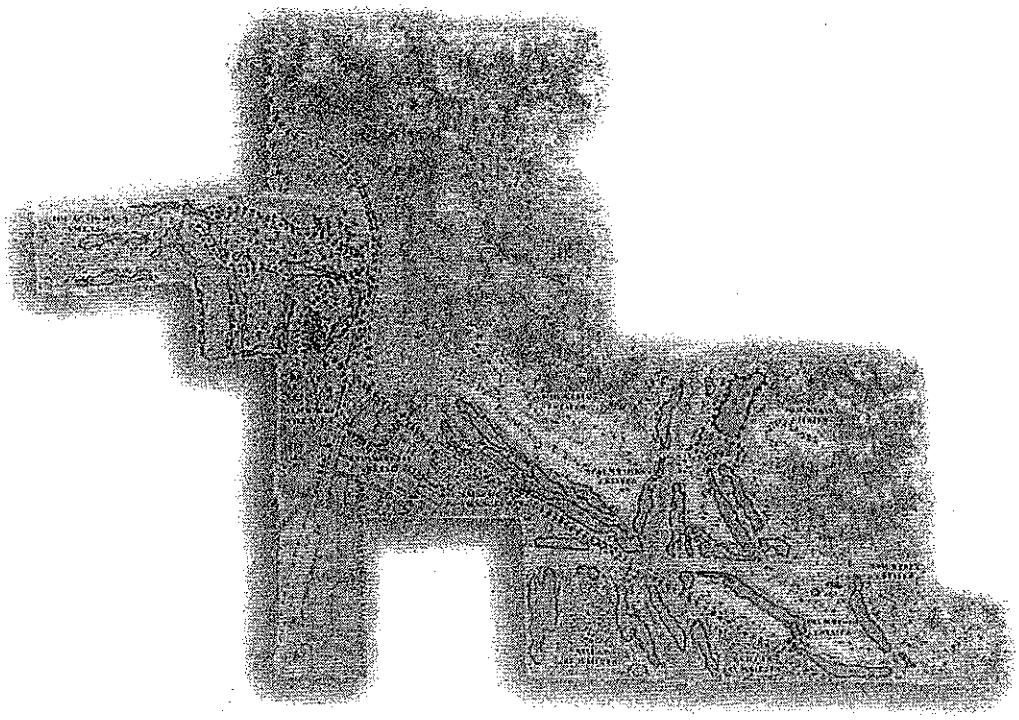
By _____

Its: Vice President

APPENDIX D-3

PALMWOOD PROJECT
WATER SUPPLY AND VERIFICATION REPORT

PSOMAS



Palmwood Project
Water Supply Assessment & Verification

MSWD
Mission Springs Water District

Mission Springs Water District

Final - April 2006

WATER SUPPLY ASSESSMENT AND VERIFICATION
PALMWOOD PROJECT – DESERT HOT SPRINGS, CA

APRIL 2006

Prepared for:
MISSION SPRINGS WATER DISTRICT
66575 Second Street
DESERT HOT SPRINGS, CA

Prepared by:
P S O M A S
3187 Red Hill Avenue
Suite 250
Costa Mesa, CA 92626
Project No. 2MIS040300

TABLE OF CONTENTS

TABLES

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LIST OF ABBREVIATIONS

ADD	Average Daily Demand
AF	Acre Feet
AFY	Acre Feet per Year
CRA	Colorado River Aqueduct
CVWD	Coachella Valley Water District
DHS	Department of Health Services
DRIPP	Desalination Research and Innovation Partnership Program
DWA	Desert Water Agency
DWR	Department of Water Resources
GPM	Gallons Per Minute
MAF	Million Acre Feet
Max	Maximum
MCL	Maximum Contaminant Level
MDD	Maximum Daily Demand
MFR	Multi-Family Residential
MG	Million Gallons
MGD	Million Gallons per Day
Min	Minimum
MSWD	Mission Springs Water District
MWD	Metropolitan Water District of Southern California
SB	Senate Bill
SFR	Single Family Residential
SGPWA	San Gorgonio Pass Water Agency
SWP	State Water Project
TDS	Total Dissolved Solids
URS	URS Corporation
UWMP	Urban Water Management Plan

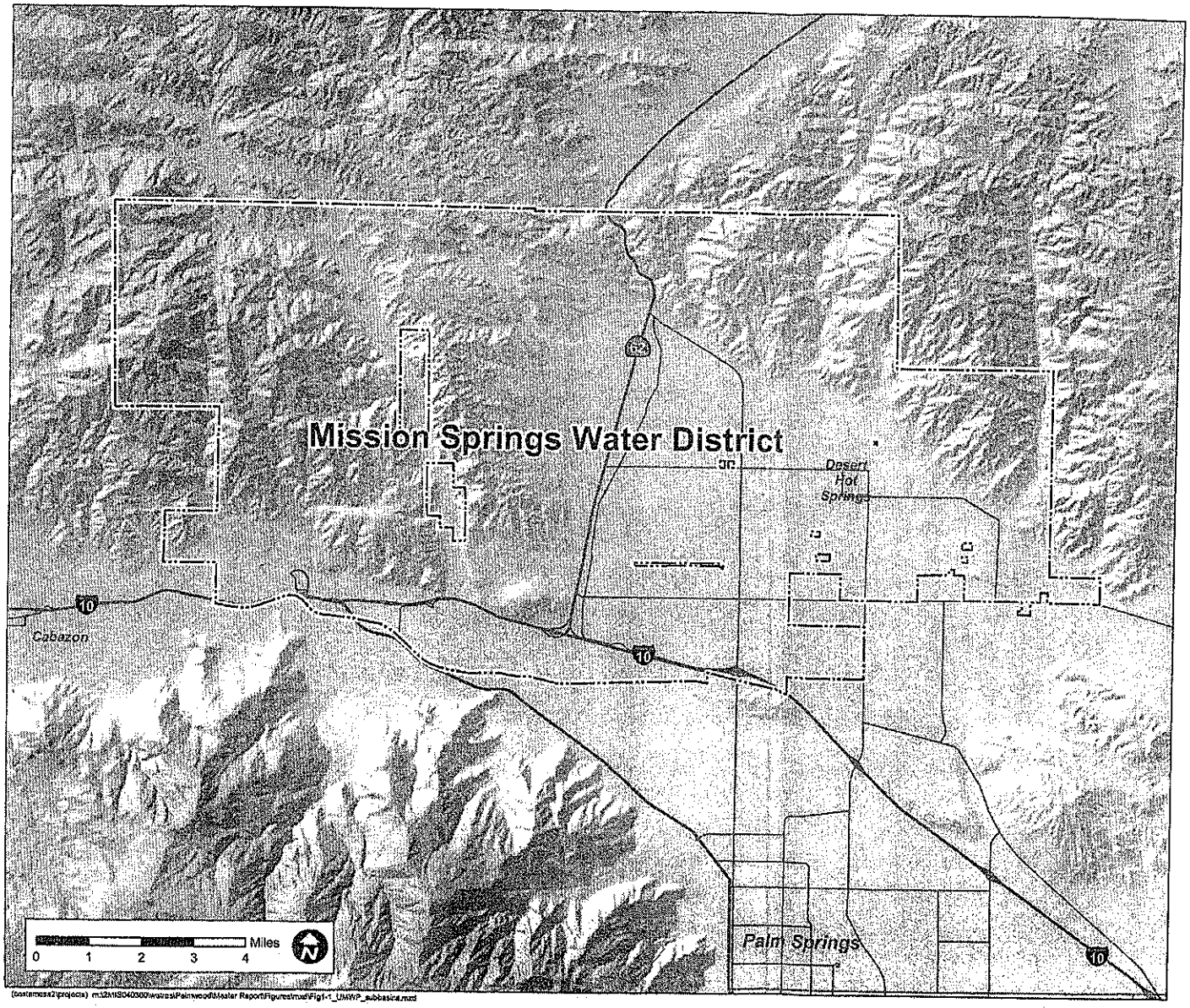
1.0 INTRODUCTION

1.1 Mission Springs Water District

The District was established in 1953 and was formerly known as Desert Hot Springs County Water District. The District's service area consists of 135 square miles including the City of Desert Hot Springs, 10 smaller communities in Riverside County, and communities in the City of Palm Springs. The District's water source is 100 percent groundwater, drawn from nine active production wells, providing water service to approximately 23,000 people as well as sewer service to approximately 8,000 people in Desert Hot Springs, Desert Crest Country Club and Dillon Mobile Home Park.

The existing MSWD distribution system consists of three independent water distribution systems: 1) Desert Hot Springs and surrounding area system – encompasses the City of Desert Hot Springs and surrounding unincorporated areas of Riverside County, 2) Palm Springs Crest System, and 3) West Palm Springs Village System.

MSWD offices are located in Desert Hot Springs, California. MSWD's largest water supply and distribution system serves the community of Desert Hot Springs and surrounding communities of West Garnet, located south of Interstate 10 (I-10) and West of Indian Avenue, and North Palm Springs. The two smaller systems, Palm Springs Crest System and West Palm Springs Village System, are located approximately five miles west of Desert Hot Springs. These two communities are located on the north side of I-10 abutting the Morongo Indian Reservation. Figure 1-1 shows the MSWD Service Area location.



Water Supply Assessment and Verification
Palmwood Project

Legend

MSWD Service Area Boundary

MSWD Service Area

MSWD PSOMAS

Figure 1-1

1.2 Legislation SB610/221 Requirement

This Water Supply Assessment and Verification Report (Report) has been prepared for the proposed Palmwood Project (Project) in consultation with the Mission Springs Water District, which is the water purveyor responsible for the Project's water supply (Refer to Section 2 for the Project Description). This Report has been prepared pursuant to Public Resources Code Section 21151.9 and California Water Code Sections 10631, 10657, 10910, 10911, 10912, and 10915 referred to as SB 610 and Business and Professions Code Section 11010 and Government Code Sections 65867.5, 66455.3, and 66473.7 referred to as SB 221.

SB 610 and SB 221 amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain proposed projects. SB 221 requires affirmative written verification from the water purveyor of the public water system that sufficient water supplies are available for certain residential subdivisions of property prior to approval of a tentative map.

This Report identifies existing water supply for the proposed Project and a description of the quantities of water received in prior years by the District. Furthermore, this Report evaluates water supplies that are or will be available during normal, single-dry year, and multiple dry water years during a 20-year projection to meet existing demands, expected demands of the Project, and reasonably foreseeable planned future water demands served by the District.

1.3 Urban Water Management Plan

In accordance with the California Urban Water Management Planning Act (Water Code Sections 10610-10656), MSWD (District) adopted an Urban Water Management Plan (UWMP) in February 2006 and it was subsequently submitted to the California Department of Water Resources (DWR). As required by law, the District's UWMP includes projected water supplies required to meet future demands through 2030. In accordance with Water Code Section 10910 (c)(2) and Government Code Section 66473.7 (c)(3), information from the District's adopted 2005 UWMP has been utilized to prepare this Water Supply Assessment and Verification Report per the requirements set forth in SB 610/221. The proposed Palmwood Project's water demands are included in the District's 2005 UWMP projections. A copy of the UWMP is available upon request through MSWD.

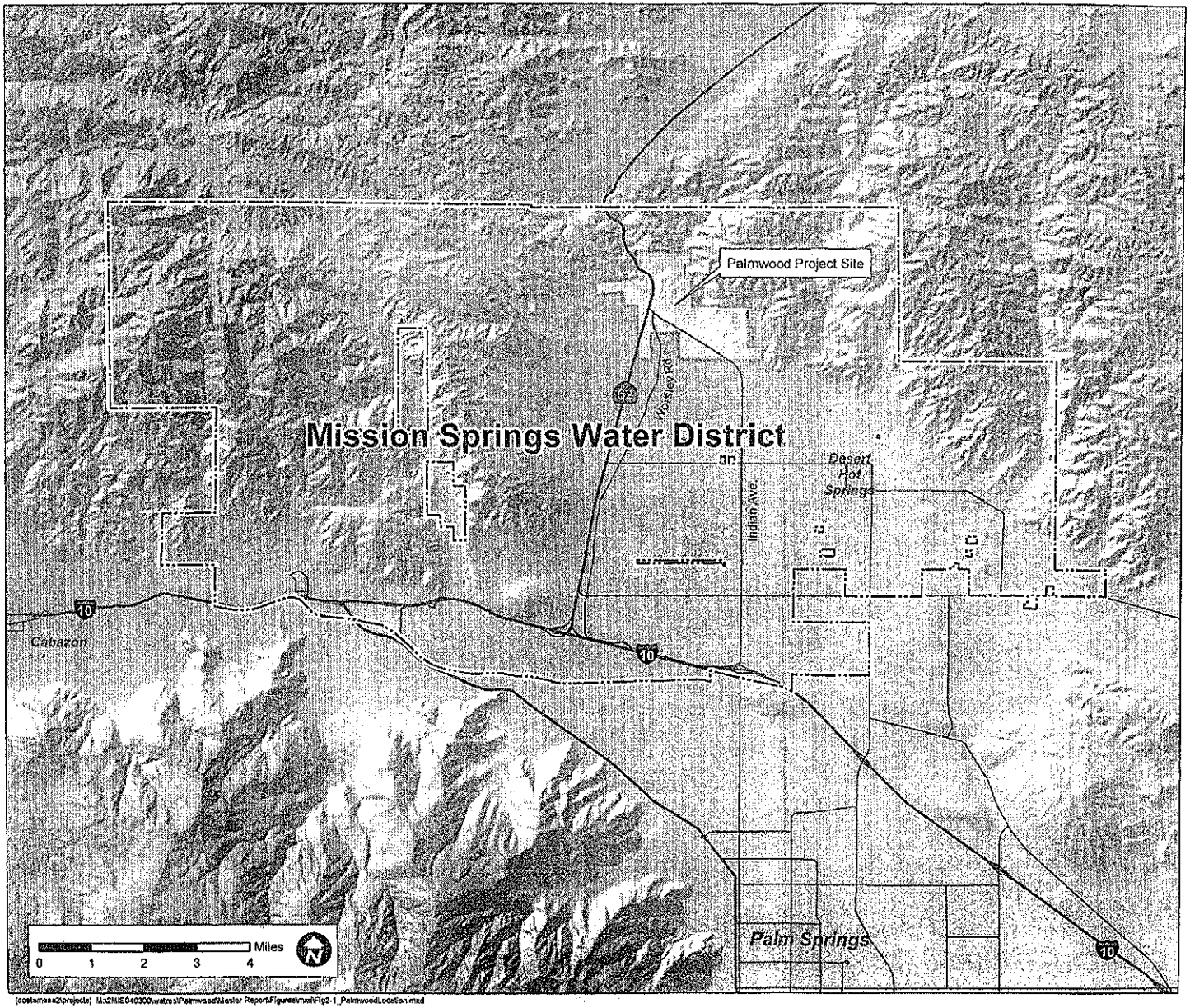
2.0 PALMWOOD PROJECT

2.1 Project Description

Landmark Properties U.S. Inc. is developing 1,766 acres of land within the northern portion of the Mission Springs Water District's service area (near the intersection of State Route 62 (SR-62) and Indian Avenue approximately eight miles north of Interstate 10(I-10) and north of the incorporated city limits of the City of Desert Hot Springs. The development project known as Palmwood comprises three tentative tract maps (TTM), as follows: TTM 34184 located on the north side of Indian Avenue east of Highway 62; TTM 34183 located on the south side of Indian Avenue east of Highway 62, and TTM 34182 located on the west side of Highway 62 and the westerly extension of Indian Avenue.

The Palmwood Project is comprised of 781 acres of mountain reserve open space, 500 acres of golf/open space, 140 acres of General Commercial/Mixed use; 32 acres of Community Commercial to include a proposed 400 unit hotel with amenities; and up to 2,255 residential dwelling units.

Figure 2-1 shows the Project Location and Figure 2-2 shows the Land Use Plan. Project demand calculations are detailed in the Technical Memorandum included in Appendix A. Project construction is scheduled to begin in 2007 and will be completed in 2016. It is anticipated that Project demands will result in approximately 3,088 AFY at build-out of which 58% is irrigation demands on the golf courses and open space and could be served from non-potable or recycled water. New wells will be added for potable demands, providing up to 2,000 gpm for the Project. District will negotiate with the developer an agreement for ownership of wells. The District's projected demands, as included in the 2005 UWMP, accounted for the Project demands. The Project demands broken down by land use category, by phase, and by year, are shown in Table 2-1.



Water Supply Assessment and Verification
Palmwood Project

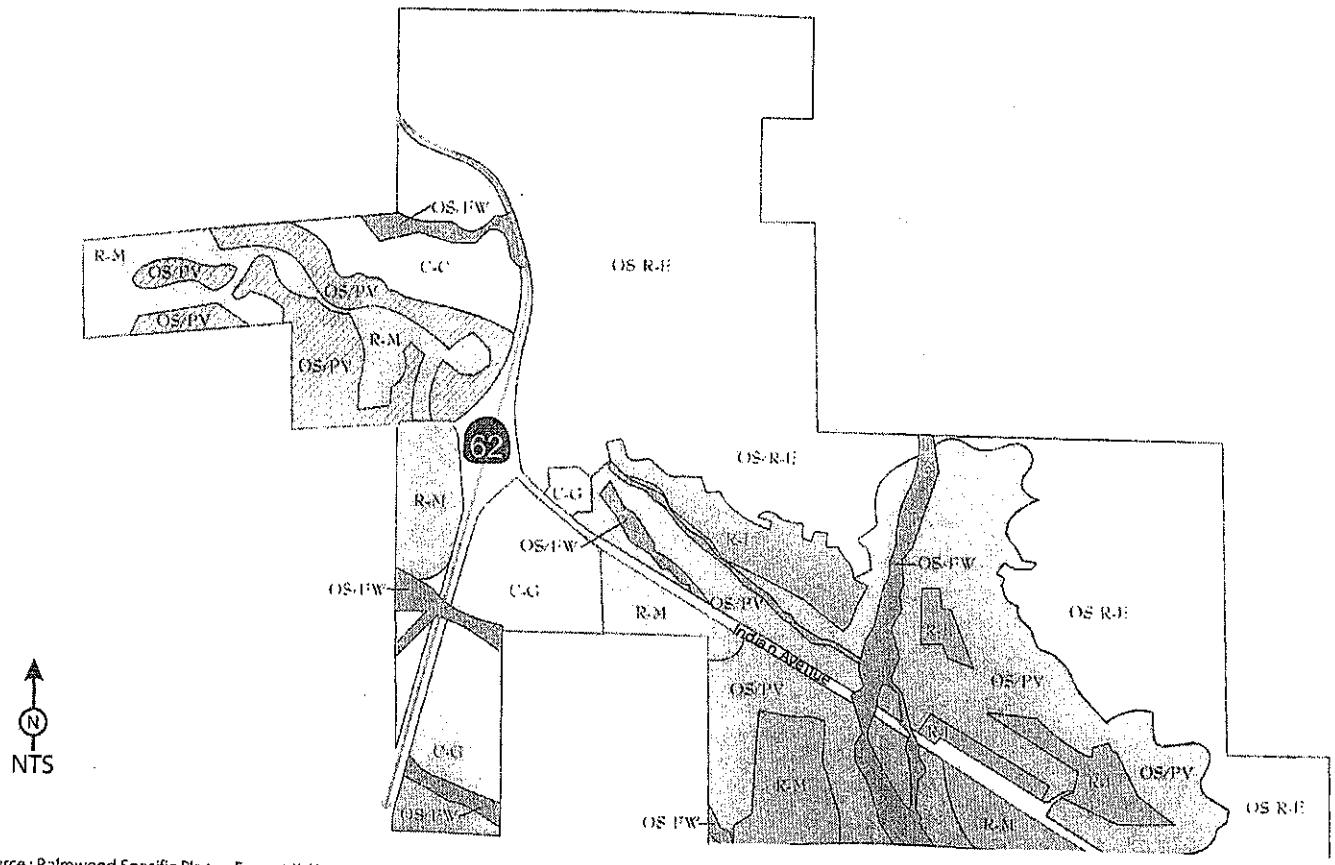
Legend

- MSWD Service Area Boundary
- Palmwood Project Site (Approximate)

Palmwood Project Location

MSWD PSOMAS

Figure 2-1



Source : Palmwood Specific Plan , Forrest K. Haag , A SLA Inc . (October 22, 2005)

- OpenSpace: OS-PV Private OpenSpace (27 Hole Golf Course)
- OpenSpace: OS-PV Private OpenSpace (Short GameCourse)
- Residential Estates/OperSpace (0-1 DU/Acre)
- OpenSpace: OS-FW Floodway
- Regional Commercial/ MixedUse Residential (C-G)
- Visitor ServingCommercial:C-C
- Residential LowDensity (R-L); 0-5 DU/Acre
- Residential MediumDensity (R-M) 0-8 DU/Acre

(coastarea2\projects) M:\2\MS04030\watres\Palmwood\Master Report\Figures\mxd\Fig2-2_LandUse.mxd

Palmwood Project
Land Use Plan

MSMD PSOMAS

Figure 2-2

Table 2-1 shows the projected water demand per phase of the Project in five year increments. The analysis of the Project is over a 25-year period meeting the required minimum 20-year planning period, and maintaining consistency with the District's 2005 UWMP demand projections. Phasing is consistent with a logical progression of infrastructure from surrounding developed and developing adjacent areas, allowing for water demands to be met from existing sources. Water demands for the Project are theoretically calculated in 5-year increments; however, build-out of the Project is dependent on market demand, which may fluctuate over the planning period.

Table 2-1
Palmwood Water Demand Phasing
(GPD)

Land Use	Units/ Square Feet	2010	2015	2020	2025	2030
Phase 1						
18 Hole Mickelson Golf Course (SF)	5,796,450	683,202	683,202	683,202	683,202	683,202
Palmwood Estates (units)	170	56,160	88,400	88,400	88,400	88,400
Mountain Estates (units)	137	44,980	71,240	71,240	71,240	71,240
Phase 2						
Dave Pelz Golf Course (SF)	5,293,043	624,578	624,578	624,578	624,578	624,578
Academy Village (units)	374	75,920	194,480	194,480	194,480	194,480
Hotel (rooms)[1]	400	66,833	74,500	74,500	74,500	74,500
Phase 3						
Commercial/ Residential						
Residential Units[2]	700	21,608	138,783	150,500	150,500	150,500
Phase A Commercial (SF)	350,000	105,000	105,000	105,000	105,000	105,000
Phase B Commercial (SF)	300,000	37,500	90,000	90,000	90,000	90,000
Phase C Commercial (SF)	240,000		72,000	72,000	72,000	72,000
Phase D Commercial (SF)	220,000		66,000	66,000	66,000	66,000
Phase 4						
9 Hole Mickelson Golf Course (SF)	2,500,550	292,221	292,221	292,221	292,221	292,221
Villas at Majestic (units)	126	217	65,520	65,520	65,520	65,520
Majestic Village (units)	108		56,160	56,160	56,160	56,160
Palmwood Village (units)	238		34,840	123,760	123,760	123,760
Total (GPD)		**2,208,218**	**2,656,923**	**2,757,560**	**2,757,560**	**2,757,560**
Total (AFY)		**2,249**	**2,976**	**3,088**	**3,088**	**3,088**

Notes:
1) An additional outside waer demand in and around the hotel site over and above the amount included in the commercial demand figured on the acreage was estimated by assuming that an additional 5 acres of landscape/pool/water feature would generate a demand of 5,7900 gallons per acre per day on the 5 acres, or 28,500 gallons per day.
2) Commercial Residential to be constructed with each Phase as follows: Phase A -200 units, Phase B- 200 units, Phase C- 150 units, and Phase D- 150 units.

3.0 MISSION SPRINGS WATER DISTRICT WATER DEMAND AND SUPPLY

The District is organized into three separate water supply and distribution systems, which are defined by the California Department of Health Services (DHS) as:

- Desert Hot Springs System: the largest water system, which includes the City of Desert Hot Springs and several surrounding smaller communities including Painted Hills.
- Palm Springs Crest System: the eastern most of the two small systems.
- West Palm Springs Village System: the western most of the two small systems.

The existing Desert Hot Springs System is a combination of water distribution systems, some of which are interconnected and others that are completely independent. The Palm Springs Crest and West Palm Springs Village systems are located about 5 miles from the Desert Hot Springs System and there are no interconnects between the systems. Because of the distance and topographical constraints, there are currently no plans to integrate these three systems (URS, 2005).

MSWD's water source is 100 percent groundwater, drawn from seven wells that supply the Desert Hot Springs System, with two additional wells being installed in 2005, and two wells each for the Palm Springs Crest System and the West Palm Springs Village System. Additional production from the Mission Creek Sub-Basin comes from the Coachella Valley Water District that has six production wells located in an area overlying the south central portion of the sub-basin, and from approximately 200 private wells for domestic use. The Project will utilize the groundwater as its primary source of water supply until recycled water is made available in the future.

Population

The MSWD is experiencing rapid population growth. Growth in population and housing has been significant across the entire Coachella Valley over the past 15 years. Growth in the more established City of Palm Springs has been slower, as build out in that community is near. Growth was most rapid in the eastern valley cities of Cathedral City, Palm Desert, La Quinta and Indio, while growth was slower in the smaller and more expensive communities of Indian Wells and Rancho Mirage. Growth in the valley was slowest in the furthest east city of Coachella and the furthest west and north city of Desert Hot Springs. Experts and community members expect that as the fast-growing communities approach build-out and experience higher land prices, significant growth will spillover into Coachella and Desert Hot Springs over the next 15 years.[1]

[1] MSWD Comprehensive Water System Master Plan., Section 2.2.

The MSWD Comprehensive Water System Master Plan includes two population scenarios to forecast both service connections and water usage: a baseline growth scenario that assumes all projected single family residential (SFR) developments will occur by 2020, and a second, high growth scenario that assumes the same level of SFR development will occur by 2015. However, uncertainty about SFR growth increases further out in time. The Comprehensive Water System Master Plan assumes that SFR connections will drop to 25 percent of the initial rate of growth in the baseline scenario and to 50 percent of the initial rate of growth in the high growth scenario.

Table 3-1 presents projected population growth for both the baseline and high growth scenarios in District service area. In order to be conservative, the high growth scenario is used to project water demands for this WSA. The projections included in Table 3-1 are consistent with the District's 2005 Urban Water Management Plan, and take into account the Project's contribution to population based on proposed residential development.

Table 3-1
Mission Springs Water District Population Projections (MGD)

Population Scenario	2005	2010	2015	2020	2025	2030
Baseline	23,000	31,000	39,000	48,000	50,000	52,000
High Growth	23,000	35,000	48,000	54,000	61,000	67,000

Source: MSWD Comprehensive Water System Master Plan, Section 2.2.

3.1 Water Demands

3.1.1 Water Use by Sector

Residential is the largest customer class (sector) in the District's service area and is the primary water user. The residential group consists of single-family residences. The commercial class includes multi-family residences and retail businesses. Table 3-2 quantifies the water use per classification (sector) for the District and also shows unaccounted-for water, or losses.

The projected water use by sector presented in the row entitled "Subtotal" reflects the total water demand projections, which do not include unaccounted-for water. The total water use presented in Table 3-2 takes unaccounted-for losses into consideration.

The proposed Project is included in the District's 2005 UWMP projected water demands. The high growth scenario assumes growth which includes the Project's proposed land uses and new water connections in Table 3-2 below.

Table 3-2
Mission Springs Water District
Past, Current and Projected Water Use by Sector (AF)[1]

	2000	2005	2010	2015	2020	2025	2030
Single Family Residential	4,035	5,300	8,900	12,500	14,300	16,100	17,900
Multi Family Residential	1,591	1,500	1,500	1,600	1,600	1,600	1,600
Commercial	719	800	1,400	2,000	2,300	2,600	2,900
Other	1,094	1,600	2,600	3,700	4,300	4,900	5,500
Subtotal	**7,439**	**9,200**	**14,400**	**19,800**	**22,500**	**25,200**	**27,900**
Unaccounted-for System Losses *	571	1,000	1,300	1,700	2,000	2,200	2,400
Total Water Use	**8,010**	**10,200**	**15,700**	**21,400**	**24,500**	**27,400**	**30,300**

* Estimated on average at 8.0%; actual amounts are based on the MSWD Comprehensive Water System Master Plan, October 17, 2005 Draft.
1. MSWD water use per sector projections include water use for Palmwood Project.

Unaccounted-for system losses is the difference between water production and water consumption and represents "lost" water. Unaccounted-for water occurs for a number of reasons:

- Fire department hydrant testing to monitor fire protection levels throughout the City of Desert Hot Springs and other communities. Hydrant flushing to eliminate settled sediment and ensure better water quality. Hydrant testing and flushing are not metered. However, this quantity of water is estimated and taken into consideration when calculating unaccounted-for water.
- Water used by the fire department to fight fires. This water is also not metered.
- Customer meter inaccuracies. Meters have an inherent accuracy for a specified flow range. However, flow above or below this range is usually registered at a lower rate. Meters also become less accurate with time due to wear.
- Water potentially lost from system leaks, main breaks, flushing, well starts/stops, i.e. from pipes, valves, pumps, and other water system appurtenances.

The Project's water use projections are shown in Table 4-2. In addition, the Technical Memorandum included in Appendix A outlines the projected water demand per land use for the Project.

Table 3-3 shows the past and projected number of water service customers by customer class through 2030. The number of service connections is anticipated to increase by about 290 percent through 2030 commensurate with a similar projected 290 percent increase in population. The District's overall projections shown below include the Project's proposed water service connections.

Table 3-3
Mission Springs Water District
Number of Water Service Connections by Sector (AF)[1]

	2000	2005	2010	2015	2020	2025	2030
Single Family Residential	6,464	8,883	13,500	18,500	21,000	23,500	26,000
Multi Family Residential	605	627	1,000	1,300	1,500	1,700	1,800
Commercial	308	284	400	600	700	750	800
Other	168	262	400	550	600	700	750
Total Connections	**7,545**	**10,056**	**15,300**	**20,950**	**23,800**	**26,650**	**29,350**

Source: 2000 and 2005 data is MSWD Comprehensive Water System Master Plan, October 2005 Draft, Table 2-1. Other years are projections based on normal year demand data presented in Table 4-2.

1. MSWD number of water service connections by sector projections include service connections for the Palmwood Project

3.1.2 Historical

Table 3-4 summarizes the amount of groundwater pumped by the District for the last five years by sub-basin. Table 3-5 projects the amount of water that will be pumped from each groundwater sub-basin in the future.

Table 3-4
Historic Groundwater Production
(AFY)

Well No.	2000	2001	2002	2003	2004
Mission Creek Sub-Basin					
MW-22	1632.8	1684.09	1715.10	1776.16	1962.99
MW-24	718.62	985.94	610.90	875.77	1315.15
MW-27	378.88	449.41	498.23	483.78	501.45
MW-28	1210.21	1260.23	1368.26	1323.79	1506.90
MW-29	1575.24	1255.92	1664.05	1823.74	1950.23
MW-30	409.12	396.02	416.25	468.48	761.06
MW-31	1929.28	1810.98	1829.19	1815.28	2041.14
3405	321.3	119.8	436.1	470.4	731.3
3408	736.9	68.6	734.7	791.6	701.7
3409	867.1	1309.8	715.1	1012.8	956.6
3410	1251.1	925.9	1509.6	1175.5	1138.3
San Gorgonio River Sub-Basin Cabazon Unit					
MW-25	55.63	59.71	57.91	24.14	11.86
MW-25A	0	0	0	30.85	45.60
MW-26	103.48	76.81	107.03	113.78	99.24
MW-26A	0	2.03	0	0	0

The District's 2005 UWMP, includes a water reliability comparison where an average year estimated total supply is provided. Therefore, Table 3-5, below, includes the average water year supply data and compares it to the current and projected water demands.

Table 3-5
Current and Projected Groundwater Production
(High Growth Scenario)
(AFY)

Basin	2005	2010	2015	2020	2025	2030(*)
Mission Creek Sub-Basin	9,950	14,160	17,380	16,780	18,720	20,720
SGPGWB – Cabazon Unit	150	240	320	370	410	460
Total	10,100	14,400	17,700	17,150	19,130	21,180

Source: URS, 2005 (Table 4-6), reduced by recycled water projections from Table 4-2 of this report. 2005 usage includes unaccounted-for water and projections do not.

The Project will predominantly rely on the current supply of groundwater, as included in the projected groundwater production for the District's service area. Two wells will be included on the Project site to provide an additional supply, pumping from the existing sources of groundwater.

3.2 Demand and Supply Comparison

The primary source of water supply for each of the three water systems is groundwater obtained through production wells. The MSWD service area currently includes seven wells that supply the Desert Hot Springs System, with two additional wells being installed in 2005, and two wells each for the Palm Springs Crest System and the West Palm Springs Village System. An emergency source of water for MSWD is the CVWD. MSWD currently has two inter-connections with the CVWD that can be used to provide emergency water to the Main System on a temporary and very limited basis.

A third source of water is obtained through an agreement between the DWA and MWD to exchange Colorado River water for SWP water. DWA obtains this water through a turnout from the Colorado River Aqueduct and manages a recharge facility near the turnout that enables the water (when it is available) to replenish the aquifer used by MSWD and CVWD. Table 3-6 provides a comparison of the existing water supply capacity with projected average daily demand (ADD) and maximum daily demand (MDD) in the MSWD service zone.

Table 3-6
Comparison of Existing Water Supply Capacity vs. Projected MDD

Well Supply Zone	Study Year	Projected ADD (mgd)	Projected MDD[a] (mgd)	Available Supply 24-hr Continuous Pumping[b] (mgd)	Available Supply Off Peak Pumping Only[c] (mgd)	Available Supply 24-hr Pumping w/o Largest Well[d] (mgd)	Most Critical Surplus or Shortfall[e] (mgd)	Number of Additional Wells Needed[f]	Comments
All MSWD Zones	2010	13.79	27.58	23.29	17.47	n/a	n/a	8	capacity varies
	2015	18.81	37.62	23.29	17.47	n/a	n/a	4	capacity varies
	2020	21.54	43.08	23.29	17.47	n/a	n/a	2	capacity varies
	2025	24.08	48.16	23.29	17.47	n/a	n/a	2	capacity varies
							Total Wells Needed	16	
West Palm Springs Village System									
Wells 26 & 26A	2010	0.14	0.29	0.53	0.42	0.20	-0.09	1	275 gpm well
	2015	0.19	0.38	0.53	0.42	0.20	-0.18	0	
	2020	0.21	0.43	0.53	0.42	0.20	-0.23	0	
	2025	0.24	0.48	0.53	0.42	0.20	-0.28	0	
							Total Wells Needed	1	
Palm Springs Crest System									
Wells 25 & 25A	2010	0.07	0.14	1.06	0.84	0.27	0.13	0	
	2015	0.10	0.20	1.06	0.84	0.27	0.07	0	
	2020	0.11	0.21	1.06	0.84	0.27	0.06	0	
	2025	0.13	0.25	1.06	0.84	0.27	0.02	0	
							Total Wells Needed	0	

Source: URS, 2005

[a] MDD computed using the ADD and a multiplier of 2.0.

[b] 24-Hour Pumping Available Supply computed by converting the measured pumping capacity from gpm to MGD.

[c] Off-Peak Pumping is MSWD's normal operating mode in which its wells are only operated during the electrical off-peak hours (18 hours between 5:30 PM and 11:30 AM) as a cost-saving measure. Off-Peak Hour Pumping supply computed by multiplying the 24 hour pumping capacity by the ratio of 18/24. .

[d] 24-Hour Pumping w/o Largest Well. Supply computed by subtracting the largest well capacity from the 24-hour continuous pumping supply.

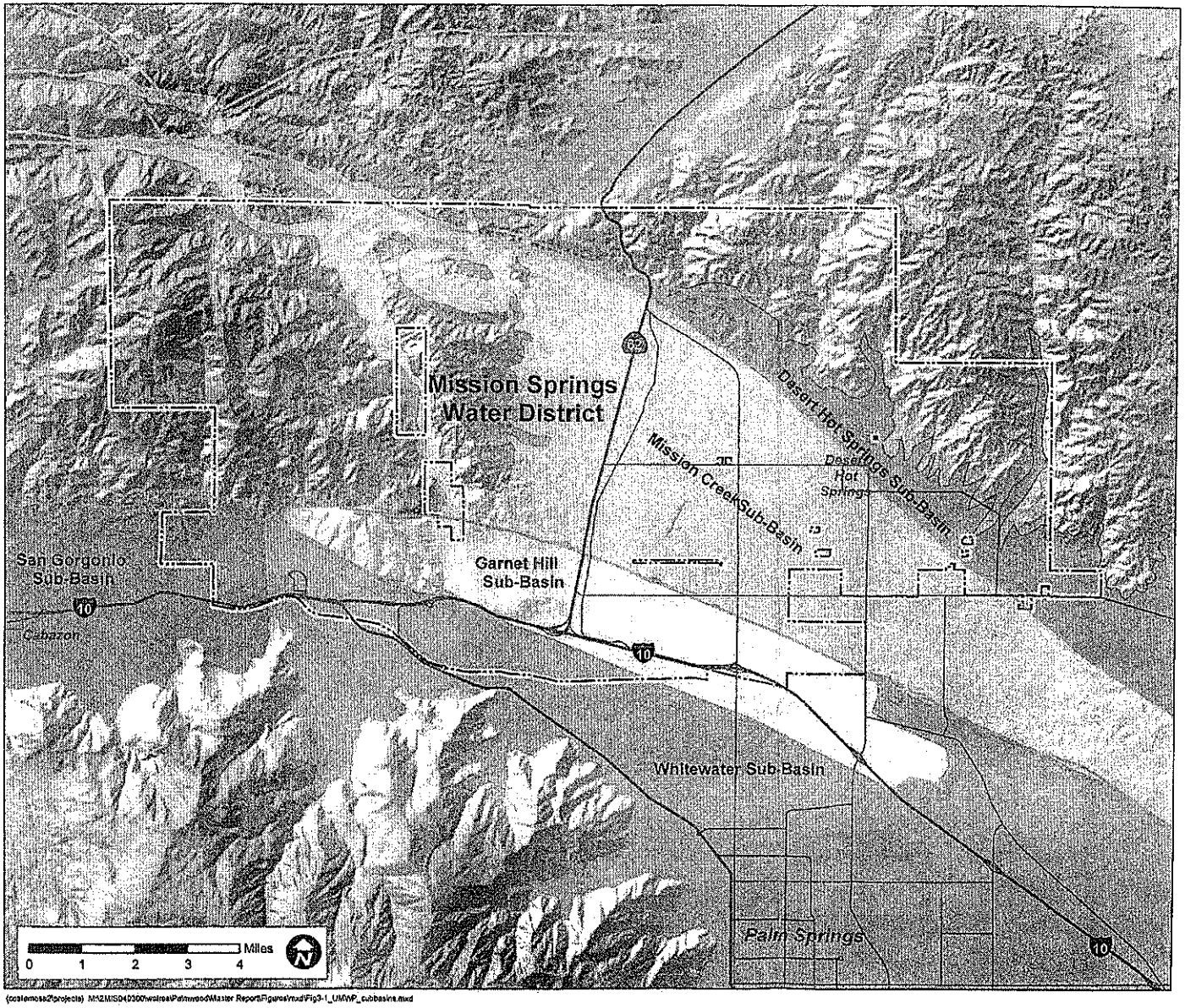
[e] The Most Critical Surplus (Available Supply exceeds Demand) or Shortfall (MDD exceeds Available Supply) is computed by first subtracting the MDD from each of the three pumping scenarios and accounting for whether they are pumping 18 hours or 24 hours. The largest surplus or shortfall that is computed using these three calculations is shown.

[f] The number of required wells (if any) is computed by dividing the Most Critical Shortfall by the minimum assumed capacity of each well (typically up to a maximum of 1500 gpm or 1.62 MGD) for an 18-hour pumping period per day for any one well.

3.3 Description of Water Sources

MSWD is located in the northwestern portion of the Upper Coachella Valley, in eastern Riverside County. Its service area contains a portion of the Upper Coachella Groundwater Basin and includes Mission Creek Sub-Basin, Garnet Hill Sub-Basin, Whitewater Sub-Basin, San Gorgonio Pass Sub-Basin, and the Desert Hot Springs Sub-Basin, as presented in Figure 3-1. These sub-basins were formed by the large and active faults that make up the San Andreas Fault system. All of the sub-basins, except for Desert Hot Springs are "cold-water" basins that can provide potable water. The Desert Hot Springs Sub-Basin is a "hot-water" basin that is highly mineralized with water temperatures exceeding 100 degrees Fahrenheit and is not used to supply potable water. However, this hot, highly mineralized water is important to the economy as it supports numerous spa resorts and hotels within the city of Desert Hot Springs.

Although the MSWD service area boundary overlies several sub-basins, Figure 3-2 indicates that currently all of the producing water supply wells for the main MSWD System are located within the Mission Creek Sub-Basin. The Palm Springs Crest System and the West Palm Springs Village System are both supplied by wells that draw from the Cabazon Storage Unit of the San Gorgonio Pass Sub-Basin. The project will rely predominantly on groundwater until recycled water is made available by MSWD.



Water Supply Assessment and Verification
Palmwood Project

Legend

- MSWD Service Area Boundary
- Known Fault Lines

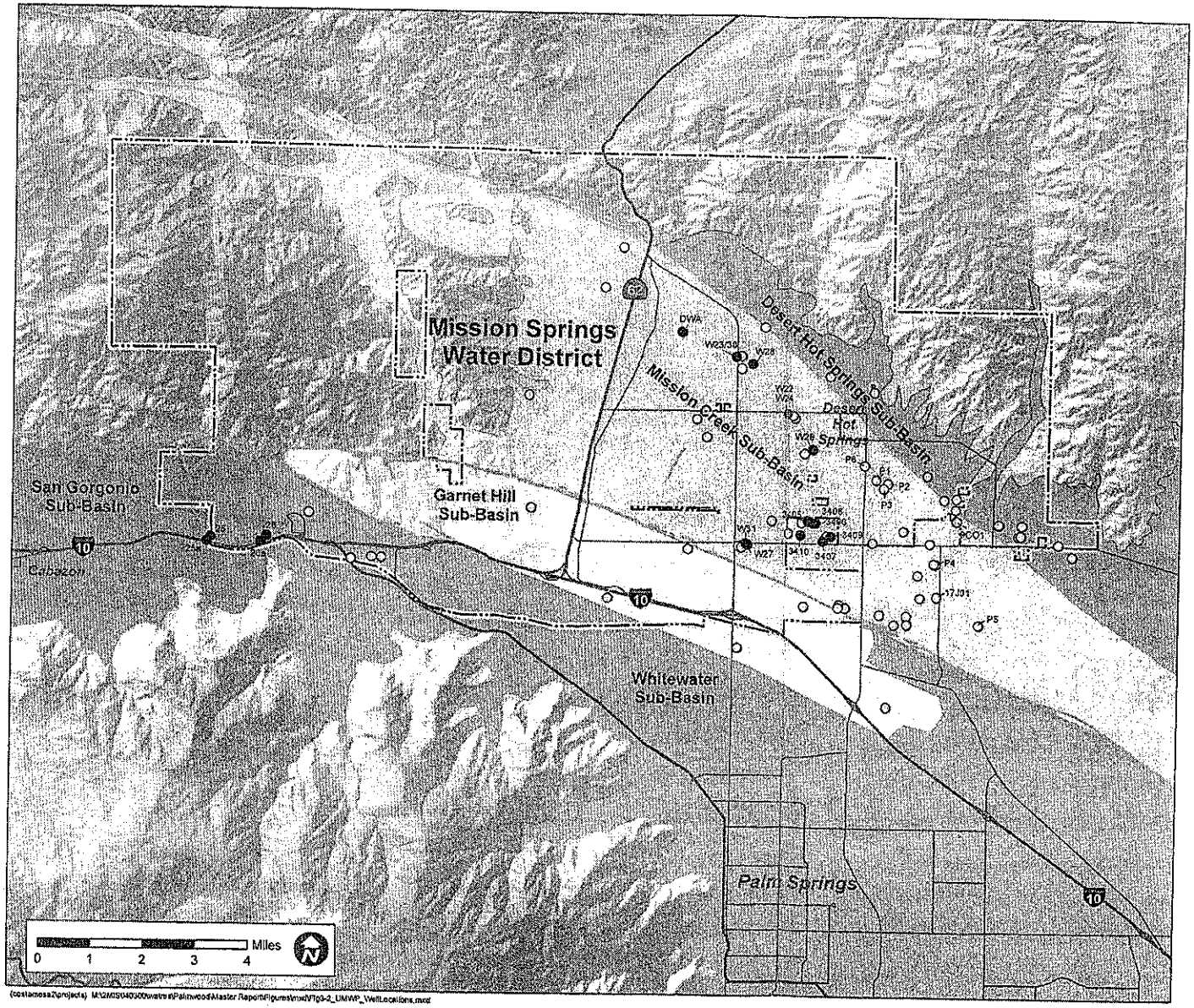
UWMP Sub-Basins

- Desert Hot Springs Sub-Basin
- Mission Creek Sub-Basin
- Garnet Hill Sub-Basin
- Whitewater Sub-Basin
- San Gorgonio Sub-Basin

MSWD Groundwater Sub-Basins

MSWD PSOMAS

Figure 3-1



Water Supply Assessment and Verification
Palmwood Project

Legend

- MSWD Service Area Boundary
- Known Fault Lines
- PrivateWells
- PublicWells

UWMP Sub-Basins

- Desert Hot Springs Sub-Basin
- Mission Creek Sub-Basin
- Garnet Hill Sub-Basin
- Whitewater Sub-Basin
- San Gorgonio Sub-Basin

MSWD Well Locations

MSWD PSOMAS

Figure 3-2

3.3.1 Groundwater

MSWD draws 100 percent of its water supply from groundwater. Table 3-7 lists the active wells including age, depth and capacity.

Table 3-7
Active Wells

Well No.	Age (years)	Depth (feet)	Capacity (gpm)
Mission Creek Sub-Basin			
MW-22	35	800	1,750
MW-24	32	800	1,200
MW-27	25	400	1,100
MW-28	16	900	1,900
MW-29	13	1,070	1,700
MW-30	13	1,100	825
MW-31	12	1,000	1,900
MW-32	1	1,000	2,000
San Gorgonio Pass Sub-Basin, Cabazon Unit			
MW-25	48	465	400
MW-25A	3	600	175
MW-26	74	575	350
MW-26A	4	285	170

New wells will be added for potable demands, providing up to 2,000 gpm for the Project. District will negotiate with the developer an agreement for ownership of wells.

The following discussion includes descriptions of each of the Sub-basins from which MSWD pumps groundwater.

Mission Creek Sub-Basin

The Mission Creek Sub-Basin is located in the Upper Coachella Valley in the north central portion of Riverside County, California. The Mission Creek Fault and the Banning Fault bound the northern and southern edges of the sub-basin, respectively, and are the major groundwater controls. Both act to limit groundwater movement as these faults have folded sedimentary deposits, displaced water-bearing deposits, and caused

once permeable sediments to become impermeable (California Department of Water Resources [DWR], 1964).

Major surface water features in the area are the Whitewater River, Mission Creek, San Gorgonio River, Little and Big Morongo Washes, and Long Canyon. The MSWD service area and groundwater sub-basins are presented on Figure 3-1.
The main water bearing units of the Mission Creek Sub-Basin are relatively undisturbed and unconsolidated Holocene and late Pleistocene alluvial deposits. These deposits form as detritus, eroding from the surrounding San Bernardino and Little San Bernardino Mountains, first filled topographic depressions and then are deposited on the piedmont alluvial fans. The individual beds are lenticular in shape and not extensive, but coalesce with other beds to form larger water bearing areas. Units included in these water-bearing deposits are: Ocotillo conglomerate, Cabazon fanglomerate and Holocene alluvial and sand dune deposits.

The Pre-Tertiary Crystalline rocks that underlie and constitute the northwestern and southeastern borders of the sub-basin are a complex assemblage of gneisses and schists, Precambrian in age, and have been intruded by younger granitic rocks associated with the Southern California batholith of Cretaceous age (DWR, 2003). DWR classified these rocks as "non-water-bearing." However, DWR (2003) also acknowledges that in the surrounding mountains, the crystalline rocks may be the only source of water and that groundwater wells extract water from along faults and fractures within the system. With the amount of faulting in the area due to the San Andreas Fault Complex, it is possible that this igneous-metamorphic complex is highly fractured and may transmit groundwater more readily than previously assumed.

Groundwater Levels and Storage: Regional water levels have been declining since the early 1950's due to scarce annual precipitation and groundwater extractions (DWR 2003). Groundwater level data indicate that since 1952, water levels have declined at a rate of 0.5 to 1.5 feet per year (CVWD 2000). Current water levels vary in domestic wells from 140 to 721 feet below ground surface with an average depth to water being 372 feet (MSWD 2000). The recently constructed replenishment program is expected to stabilize or reverse the water level decline.

Total groundwater storage capacity for the Mission Creek Sub-Basin is estimated to be 2.6 million acre-feet (MAF) (DWR 2003). This is the amount of groundwater the sub-basin can theoretically contain using a maximum depth below surface of 1,000 feet. Based on more recent analysis, actual groundwater in storage in the Mission Creek Sub-Basin is estimated at 1.4 MAF (MSWD 2000).

Garnet Hill Sub-Basin

The Garnet Hill Sub-Basin which lies immediately south of the Mission Creek Sub-Basin, underlies approximately 20 square miles and is subordinate to the Indio Sub-Basin (DWR, 2003). The basin is bounded on the north by the Banning fault, on the south by the Garnet Hill fault, and on the east and west by non-water to semi-water bearing rocks.

The area between the Garnet Hill fault and the Banning fault, named the Garnet Hill subarea by DWR (2003), was considered a distinct sub-basin by the USGS because of the effectiveness of the Banning and Garnet Hill faults as barriers to groundwater movement. This is illustrated by a difference of 170 feet in groundwater level elevation in a horizontal distance of 3,200 feet across the Garnet Hill fault, as measured in Spring 1961. Some recharge to this sub-basin is believed to originate from the Mission Creek Sub-Basin from subsurface flow across the fault as well as surface recharge from local streams that pass through during periods of high flood flows. Total groundwater storage capacity for the Garnet Hill Sub-Basin is estimated to be 1.0 MAF (DWR 2003). However, DWR (1964) reported that the basin contained 1.52 MAF in storage. No municipal groundwater production is reported to occur in the sub-basin (CVWD, 2005).

Desert Hot Springs Sub-Basin

The Desert Hot Springs Sub-Basin is bounded to the north by the Little San Bernardino Mountains and to the southeast by the Mission Creek and San Andreas Faults. The San Andreas Fault separates the Desert Hot Springs Sub-Basin from the Whitewater River Sub-Basin and serves as an effective barrier to groundwater flow. The Desert Hot Springs Sub-Basin is not extensively developed except in the area of Desert Hot Springs. Relatively poor groundwater quality has limited the use of this sub-basin for potable supply.

Total groundwater storage capacity for the Desert Hot Springs Sub-Basin is estimated to be 4.1 MAF (DWR 2003). According to DWR (1964), total groundwater in storage for the entire sub-basin in 1961 was 0.172 MAF. No municipal groundwater production is reported to occur in the sub-basin (CVWD, 2005).

Whitewater River Sub-Basin

The Whitewater River Sub-Basin, part of what was once referred to as the Indio Sub-Basin, comprises the major portion of the floor of the Coachella Valley and encompasses approximately 400 square miles. Beginning approximately one mile west of the junction of State Highway 111 and Interstate 10, the Whitewater River Sub-Basin extends southeast approximately 70 miles to the Salton Sea. The sub-basin is bordered on the southwest by the Santa Rosa and San Jacinto Mountains, and is separated from the Garnet Hill, Mission Creek and Desert Hot Springs Sub-Basins to the north and east by the Garnet Hill and San Andreas Faults.

The limit of the Whitewater River Sub-Basin along the base of the San Jacinto Mountains and the northeast portion of the Santa Rosa Mountains coincides with the Coachella Valley groundwater basin boundary. The Garnet Hill Fault, which extends southeastward from the north side of San Gorgonio Pass to the Indio Hills, is a relatively effective barrier to groundwater movement in the Garnet Hill Sub-Basin. The San Andreas Fault, extending southeastward from the junction of the Mission Creek and Banning faults in

the Indio Hills and continuing out of the basin on the east flank of the Salton Sea, is also an effective barrier to groundwater movement.

The historic fluctuations of water levels within the Whitewater River Sub-Basin indicate a steady decline in the levels throughout the sub-basin prior to 1949. DWR (1964) reported that the estimated storage capacity of the basin (reported as Indio) was 29.8 MAF. Total groundwater in storage was estimated by Tyley (1974) at 10.2 MAF.

Cabazon Storage Unit of the San Gorgonio Pass Sub-Basin

A portion of the MSWD western service area is underlain by the San Gorgonio Pass Sub-Basin. The portion of the Coachella Valley Groundwater Basin that lies entirely within the San Gorgonio Pass is described as the San Gorgonio Pass Sub-Basin (DWR 1964). This sub-basin is bounded on the north by the San Bernardino Mountains and by semi-permeable rocks, and on the south by the San Jacinto Mountains. A surface drainage divide between the Colorado River and South Coastal Hydrologic Study Areas bounds the sub-basin on the west. The eastern boundary is formed by a bedrock constriction that creates a groundwater cascade into the Indio Sub-Basin (DWR 1964).

The main water bearing deposits in the sub-basin are Holocene and Pleistocene age alluvium and Pliocene to Pleistocene age San Timoteo Formation. Holocene alluvium is mostly gravel and sand and, where saturated, would yield water readily to wells. Within the sub-basin, these deposits lie largely above the water table and contribute little water to wells. Holocene alluvium is found in the tributaries of the sub-basin and allows runoff to infiltrate and recharge the sub-basin (DWR, 1987). Older, Pleistocene-age alluvium contains sand and gravel, but also large amounts of clay and silt. These deposits yield moderate amounts of water to wells (DWR 1987).

Groundwater Level Trends. Groundwater levels throughout the sub-basin declined significantly from 1933 through 1939 during the construction of the San Jacinto Tunnel as large quantities of groundwater were pumped and diverted into the Indio Sub-Basin (SGPWA 2001). Groundwater levels in the eastern part of the sub-basin rose or stayed the same between 1967 and 1987 (DWR, 1987).

Groundwater Storage Capacity. Total storage capacity of the sub-basin was estimated to be about 2.7 MAF by DWR (1964). A re-evaluation by DWR (1987) estimates total storage capacity to be about 2.2 million acre-feet (MAF). Groundwater in storage was estimated at 1.4 MAF (DWR 1987).

Groundwater Quality. Groundwater in the sub-basin is characterized as predominantly calcium-sodium bicarbonate type (DWR, 1987). Total dissolved solids (TDS) content for selected samples from municipal wells ranged from 106 to 205 mg/L (DWR, 1987).

The San Gorgonio Pass Sub-Basin is subdivided into a series of storage units that include: the Banning Bench, Banning, Beaumont, and Cabazon storage units (Boyd,

1969). The Cabazon storage unit within the San Gorgonio Basin is recharged naturally with runoff from the adjacent San Jacinto and San Bernardino Mountains.

Cabazon Storage Unit. The Cabazon storage unit encompasses approximately 11 square miles. The Cabazon storage unit is located near the western boundary of the MSWD boundary. MSWD operates four wells in the Cabazon storage unit. Other groundwater users in the Cabazon storage unit include Desert Hills Premium Outlets and Cabazon Water District and collectively have produced approximately 1,200 acre-ft/yr of groundwater over the last five years.

3.3.2 Recycled Water

Recycled water is defined by the California Water Code as "water, which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource." The availability of recycled water is limited to water generated as part of the wastewater treatment associated with sewage colleted from sewered residential, commercial, and industrial properties.

MSWD currently operates two wastewater treatment plants serving a total of approximately 6,000 developed parcels. The plants are the Horton Treatment Plant and the Desert Crest Treatment Plant with capacities of 2,500,000 gal/day (2,800 AFY) and 180,000 gal/day (202 AFY), respectively. The disposal of effluent from both the Horton and Desert Crest treatment plants is accomplished by utilizing percolation ponds located within the plants on the southwest (cold water) side of the Mission Creek Fault. In addition, effluent is used for irrigation and wash down at the plants. The District's wastewater treatment plants currently treat wastewater using a secondary treatment process.

As stated in the 2005 UWMP projections, the District plans to incorporate recycled water into its supply mix in the future. Therefore, the Project also plans to incorporate recycled water into its supply, once made available by the District. However, should the recycled water not be available for the Project in a timely manner, a dedicated non-potable well could be used initially to supply the golf course lakes. From these lakes the developer's pumps would supply water to the golf course and open space irrigation system to serve peak demands. Thus, a recycled water source could easily be connected to the non-potable supply system serving the lakes at any time in the future.

The Project is estimated to generate a wastewater flow of approximately 670,000 gallons per day at buildout. This wastewater will be conveyed to either the existing Horton Treatment Plant or the proposed Regional Wastewater Treatment Plant where it will generate a source of recycled water once it is treated to tertiary levels. Alternatively, the District could conduct a satellite wastewater reclamation plant closer to the Project and this could be used to provide recycled water directly to the Project.

4.0 RELIABILITY OF WATER SUPPLIES

Water supply and demand projections presented are based on information provided by District studies as well as pertinent data extracted from the Coachella Valley Water District 2005 UWMP, and are consistent with those set forth by the MSWD 2005 UWMP. Nearly 100 percent of the District's current supply is pumped from the Mission Creek Sub-Basin. This pattern will change somewhat with the development of a proposed recycled water system within the next decade. That system will supply a number of landscape and irrigation users that are currently dependent on potable water, thus reducing the demand on groundwater pumping.

Table 4-1 shows a projected water balance for the Mission Creek Sub-Basin, which is the primary source of water supply to MSWD with the exception of future recycled water. The projections in five-year increments for years 2010 through 2030 assume Normal Year conditions whereas the 2005 year is recognized as a wet-year condition as reflected by the 27,000 AF of imported water recharge in the first column. If the Net Balance values for years 2010 through 2030 are averaged and multiplied by the total 25 years of the UWMP projection period, the result would be a cumulative withdrawal of 46,000 AF from the Mission Creek Sub-Basin. When the single-year surplus of 16,000 AF for 2005 (starting condition) is taken into account, the net cumulative withdrawal would be reduced to 30,000 AF. It should be noted that this conservative assumption assumes no wet-year condition such as 2005 will occur over the next 25-year period and that all years are normal water years (extremely conservative).

The estimate of total available storage within the Mission Creek Sub-Basin is approximately 1.4 MAF[2]. This cumulative withdrawal, based on the projections and assumptions described above and included in Table 4-1, would therefore equate to a loss of available storage of 2.2 percent over the next 25 years. Although relatively small compared to the basin capacity, it is nevertheless MSWD's intent to continue to work with Desert Water Agency and Coachella Valley Water District to develop a strategic groundwater management program that will protect the Mission Creek Sub-Basin for generations to come.

[2] 1.4 MAF as noted in Section 2.1 of this 2005 UWMP.

Table 4-1
Mission Springs Water District
(AF – all numbers rounded to nearest 100 AF)

Year	Mission Creek Sub-Basin Recharge[a]	CVWD Sub-Basin Production[b]	Surplus GW Recharge[c]	Total MSWD Demand[d]	Recharge from 35% Return Flow[e]	Net Recharge Available[f]	Total MSWD GW Demand[g]	Net Balance[h]
2005	27,000	5,000	22,000	9,200	3,200	25,200	9,200	16,000
2010	11,200	4,000	7,200	14,400	5,000	12,200	14,400	(2,200)
2015	14,100	5,500	8,600	19,800	6,900	15,500	17,800	(2,300)
2020	16,100	7,100	9,000	22,500	7,900	16,900	17,200	(300)
2025	17,800	8,900	8,900	25,200	8,800	17,700	19,100	(1,400)
2030	19,100	10,700	8,400	27,900	9,800	18,200	21,200	(3,000)

[a] From Table 2-13 in CVWD 2005 UWMP for Mission Creek Spreading Facility; 2005 value from Nov. 9, 2005 email from Dave Luker (General Manager of DWA) to Arden Wallum (General Manager of MSWD)
[b] From Table 3-3 in CVWD 2005 UWMP for Mission Creek Sub-Basin
[c] Difference between Mission Creek Sub-basin Recharge and CVWD Production
[d] Total Projected MSWD demand including recycled water demand (refer to subsequent tables in this section)
[e] Naturally occurring recharge from return flow (35% of Total MSWD Demand)
[f] Net Recharge Available = Surplus GW Recharge + Recharge from Return Flow
[g] Total MSWD GW Demand (excludes recycled water demand)
[h] Net Balance = Total MSWD GW Demand – Net Recharge Available

4.1 Dry Year Supply and Demand

Tables 4-2 through 4-8 present the normal year, single dry year and multiple dry year supply and demand projections for MSWD through 2030. Demands for the Palmwood Development are also included in the tables and are broken down into residential, commercial and golf course land use categories. The supply and demand projections assume:

- No imported water is available to MSWD. Although some State Project Water can be exchanged for CRA water through the auspices of DWA and CVWD, that water is ultimately used for groundwater recharge and is thus pumped from the aquifer by MSWD. Because this water is not directly supplied to the MSWD distribution system, it is not accounted for as imported water.
- Recycled water use will begin in approximately 2015 and will begin to reduce the demand on pumped groundwater at that time.
- Given the large capacity of the Mission Creek Sub-Basin, it is not reasonable to assume the entire 1.4 MAF will be available to MSWD in any given year (primarily because of limitations on the District's well depths and pumping capacity). A reasonably conservative assumption of 40,000 AFY, which is less

than 3 percent of the estimate of total storage within the sub-basin, has therefore been assumed as the supply capability.

- Groundwater recharge will continue to occur as noted above.
- All projections are based on an assumed high growth water demand pattern.
- Groundwater demands are estimated to increase approximately 1% over normal year demands during all single and multiple dry years. This projection is based on actual demand increases typically experienced in many Southern California locales (generally in the 3% to 7% range). Most of the increased water usage during dry periods in other Southern California locales is used outside the home, primarily for irrigation. That being the case, these percentage factors have been adjusted downward to take into account the limited lawn and landscape irrigation in MSWD (a review of aerial photographs in the MSWD service area suggest that approximately 20% of single family homes have lawns as compared to approximately 95% of homes in the metropolitan Los Angeles region).
- Recycled water will be used primarily for turf irrigation. As previously noted, potable groundwater demands during dry years are estimated to increase only one percent, primarily due to the limited amount of single family residential turf irrigation. However, because recycled demands will be primarily used for turf irrigation, those demands are more likely to reflect the same pattern as recycled demands experienced during dry years in other areas of Southern California, i.e., they will be about 5 percent higher than normal during single dry years and during the first year of a three year dry cycle, about 3 percent higher during the second year and about 5 percent higher during the third year of the three year dry cycle.

Given these assumptions, the water reliability analysis suggests that MSWD will be able to meet all of its demands during all normal, single dry year and multiple dry year periods. The analysis also suggests that MSWD will have significant surpluses ranging between 40 and 177 percent during normal years, 39 and 175 percent during single dry years, and 39 and 290 percent during multiple dry years. It should be noted that these surplus percentages are significantly greater than surplus water supplies typically available to water purveyors that are primarily dependent on imported supplies.

The proposed Project is included in the District's 2005 UWMP projected water demands. The high growth scenario developed in the District's Water Master Plan and utilized in the UWMP assumes growth that includes the Project's proposed land uses and new water connections. As stated in the 2005 UWMP projections, the District plans to incorporate recycled water into its supply mix in the future. Therefore, the Project also plans to incorporate recycled water into its supply, once made available by the District. However, should the recycled water not be available for the Project in a timely manner, supply from a separate non-potable well proposed to be constructed by the developer would prove adequate. Once recycled water is made available to the Project, this well could potentially be converted to a domestic water well and integrated into the District's overall water supply system.

Table 4–2
Mission Springs Water District
Including Palmwood Development
Projected Water Supply and Demand
Normal Water Year

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2010	2015	2020	2025	2030
Supply	Normal Water Years				
Imported[a]	0	0	0	0	0
Recycled[b]	0	2,000	5,350	6,070	6,720
Local (Groundwater)[c]	40,000	40,000	40,000	40,000	4,000
Total Supply	**40,000**	**42,000**	**45,350**	**46,070**	**46,720**
% of Normal Year	100.0	100.0	100.0	100.0	100.0
Demand					
Palmwood Demand					
Residential Demand	220	730	840	840	840
Commercial Demand	240	460	460	460	460
Golf Course Demand	1,790	1,790	1,790	1,790	1,790
Total Palmwood Demand	2,250	2,980	3,090	3,090	3,090
Other MSWD Demands					
Imported[a]	0	0	0	0	0
Recycled[b]	0	210	3,560	4,280	4,930
Local (Groundwater)[d]	12,150	16,610	15,760	17,830	19,880
Total Demand	**14,400**	**19,800**	**22,500**	**25,200**	**27,900**
% of Year 2005 Demand (9,194 AF)[e]	156.6	215.4	244.7	274.1	303.5
Supply/ Demand Difference	**25,600**	**22,200**	**22,850**	**20,870**	**18,820**
Difference as % of Supply	**64.0**	**52.9**	**50.4**	**45.3**	**40.3**
Difference as % of Demand	**177.8**	**112.1**	**101.6**	**82.8**	**67.5**

(a) MSWD does not have direct access to imported water. Although State Project Water can be exchanged for Colorado River water, which can then be used for recharging the groundwater aquifer (via water transfers arranged through DWA and CVWD), that import water is not supplied directly to the MSWD distribution system and is therefore not counted as "imported" supply or demand.

(b) There are currently no recycled water supplies available; however, plans call for implementation of a recycled water system beginning in approximately 2015 with a minimal production capacity of 2,000 AFY ramping up to 6,720 AF in 2030. Recycled water supply and demand are assumed to be equal. Recycled water supply numbers were calculated assuming that 90% of the wastewater generated can be converted to recycled water (with the 10% balance lost in the treatment process).

(c) The current available supply in the local groundwater aquifer is estimated at 1.4 MAF. This analysis conservatively assumes that less than 3% of this supply (or 40,000 AF) will be available in any given year as groundwater supply. The analysis also assumes the water extracted by pumping will be replaced by (1) DWA's proposed groundwater recharge of imported water at its Mission Creek Spreading Facility) and by (2) a 35% return flow for all water used in MSWD.

(d) Groundwater demands obtained from Projected High Growth Water Demand data included in draft 2005 MSWD Comprehensive Water System Master Plan prepared by URS.

(e) 9,194 AF was the actual water usage in MSWD during the FY 05.

Table 4–3
Mission Springs Water District
Including Palmwood Development
Projected Water Supply and Demand
Single Dry Water Year

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2010	2015	2020	2025	2030
Supply	Single Dry Years				
Imported[a]	0	0	0	0	0
Recycled[b]	0	2,000	5,350	6,070	6,720
Local (Groundwater)[c]	40,000	40,000	40,000	40,000	40,000
Total Supply	**40,000**	**42,000**	**45,350**	**46,070**	**46,720**
Normal Year Supply[d]	40,000	42,000	45,350	46,070	46,720
% of Normal Year	100.0	100.0	100.0	100.0	100.0
Demand					
Palmwood Demand[e]					
Residential Demand[e]	220	740	850	850	850
Commercial Demand[e]	240	460	460	460	460
Golf Course Demand[e]	1,880	1,880	1,880	1,880	1,880
Total Palmwood Demand	2,340	3,080	3,190	3,190	3,190
Other MSWD Demands					
Imported[a]	0	0	0	0	0
Recycled[f]	0	220	3,740	4,450	5,180
Local (Groundwater)[g]	12,200	16,780	16,010	18,050	20,080
Total Demand	**14,540**	**20,080**	**22,940**	**25,690**	**28,450**
Normal Year Demand[d]	14,400	19,800	22,500	25,200	27,900
% of Normal Year demand	101.0	101.4	102.0	101.9	102.0
% of Year 2005 Demand (9,194 AF)[h]	158.1	218.4	249.5	279.4	309.4
Supply/ Demand Difference	**25,460**	**21,920**	**22,410**	**20,380**	**18,270**
Difference as % of Supply	**63.7**	**52.2**	**49.4**	**44.2**	**39.1**
Difference as % of Demand	**175.1**	**109.1**	**97.7**	**79.3**	**64.2**

(a) MSWD does not have direct access to imported water. Although State Project Water can be exchanged for Colorado River water, which can then be used for recharging the groundwater aquifer (via water transfers arranged through DWA and CVWD), that import water is not supplied directly to the MSWD distribution system and is therefore not counted as "imported" supply or demand.

(b) There are currently no recycled water supplies available; however, plans call for implementation of a recycled water system beginning in approximately 2015 with a minimal production capacity of 2,000 AFY ramping up to 6,720 AF in 2030. Recycled water supply numbers were calculated assuming that 90% of the wastewater generated can be converted to recycled water (with the 10% balance lost in the treatment process).

(c) Groundwater supplies during single dry years are assumed to equal supplies during normal years (refer to table 4.2-2).

(d) Normal Year supplies and demands obtained from Table 4.2-2.

(e) Demands for the Palmwood development during a single dry year are assumed to be consistent with similar demands elsewhere in MSWD, i.e., groundwater demands required to meet potable residential and commercial needs will increase by 1% (refer to footnote (g) and recycled demands needed to serve golf courses will increase by 5% (refer to footnote (f); All golf course demands are assumed to be met from recycled supplies beginning in 2015; golf course demands prior to that time will be met from groundwater supplies.

(f) Recycled water will be used primarily for turf irrigation and can therefore be expected to reflect similar usage patterns consistent with dry year demands experienced in other areas of Southern California where 5% increases (over normal years) in single dry year demands are typical.

(g) Groundwater demands are estimated to increase approximately 1% over normal year demands during single dry years. This projection is based on actual demand increases typical of many Southern California locales (generally in the 3% to 7% range) adjusted downward to take into account the limited lawn and landscape irrigation in MSWD (a review of aerial photographs in MSWD suggests that approximately 20% of single family homes have lawns as compared to approximately 95% of homes in the metropolitan Los Angeles region).

(h) 9,194 AF was the actual water usage in MSWD during the FY05.

Table 4–4
Mission Springs Water District
Including Palmwood Development
Projected Water Supply and Demand
Multiple Dry Water Years 2006-2010

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2006	2007	2008	2009	2010
Supply	Normal Years		Dry Years		
Imported[a]	0	0	0	0	0
Recycled[b]	0	0	0	0	0
Local (Groundwater)[c]	40,000	40,000	40,000	40,000	40,000
Total Supply	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**
Normal Year Supply[d]	40,000	40,000	40,000	40,000	40,000
% of Normal Year	100.0	100.0	100.0	100.0	100.0
Demand					
Palmwood Demand[e]					
Residential Demand[e]	0	0	30	110	220
Commercial Demand[e]	0	0	0	60	240
Golf Course Demand[e]	0	1,050	1,540	1,790	1,890
Total Palmwood Demand	0	1,050	1,570	1,960	2,350
Other MSWD Demands					
Imported[a]	0	0	0	0	0
Recycled[b]	0	0	0	0	0
Local (Groundwater)[f]	10,240	10,230	10,870	11,530	12,190
Total Demand	**10,240**	**11,280**	**12,440**	**13,490**	**14,540**
Normal Year Demand[d]	10,240	11,280	12,320	13,360	14,400
% of Normal Year	100.0	100.0	101.0	101.0	101.0
% of Year 2005 Demand (9,194 AF)[g]	111.5	122.7	135.3	146.7	158.1
Supply/ Demand Difference	**29,760**	**28,720**	**27,560**	**26,510**	**25,460**
Difference as % of Supply	**74.4**	**71.8**	**68.9**	**66.3**	**63.7**
Difference as % of Demand	**290.6**	**254.6**	**221.5**	**196.5**	**175.1**

(a) MSWD does not have direct access to imported water. Although State Project Water can be exchanged for Colorado River water, which can then be used for recharging the groundwater aquifer (via water transfers arranged through DWA and CVWD), that import water is not supplied directly to the MSWD distribution system and is therefore not counted as "imported" supply or demand.

(b) There are currently no recycled water supplies available; however, plans call for implementation of a recycled water system beginning in approximately 2015 with a minimal production capacity of 2,000 AFY ramping up to 6,720 AF in 2030. Thus, recycled water supplies and demands for the years 2006-2010 are shown as zero.

(c) Groundwater supplies during multiple dry years are assumed to equal supplies during normal years (refer to table 4.2-2).

(d) Normal Year Supplies and Demands obtained from Table 4.2-2; normal year demands are interpolated between actual 2005 demand and 2010 demand obtained from Table 4.2-2.

(e) Demands for the Palmwood development during a multiple dry years are assumed to be consistent with similar demands elsewhere in MSWD, i.e., groundwater demands required to meet potable residential and commercial needs will increase by 1% (refer to footnote (f) and golf course demands will increase by 5%, 3% and 5% (over a normal year demand) in years 1, 2 and 3 of a three year dry period, respectively, which is consistent with multiple dry year demands experienced in other areas of Southern California. Golf course demands prior to 2015 will be met from groundwater supplies.

(f) Groundwater demands are estimated to increase approximately 1% over normal year demands during all multiple dry years. This projection is based on actual demand increases typical of many Southern California locales (generally in the 3% to 7% range) adjusted downward to take into account the limited lawn and landscape irrigation in MSWD (a review of aerial photographs in MSWD suggests that approximately 20% of single family homes have lawns as compared to approximately 95% of homes in the metropolitan Los Angeles region).

(g) 9,194 AF was the actual water usage in MSWD during the FY05.

Table 4–5
Mission Springs Water District
Including Palmwood Development
Projected Water Supply Demand
Multiple Dry Water Years 2011-2015

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2011	2012	2013	2014	2015
Supply	Normal Years		Dry Years		
Imported[a]	0	0	0	0	0
Recycled[b]	0	0	0	0	2,000
Local (Groundwater)[c]	40,000	40,000	40,000	40,000	40,000
Total Supply	**40,000**	**40,000**	**40,000**	**40,000**	**42,000**
Normal Year Supply[d]	40,000	40,000	40,000	40,000	42,000
% of Normal Year	100.0	100.0	100.0	100.0	100.0
Demand					
Palmwood Demand[e]					
Residential Demand[e]	380	540	630	670	740
Commercial Demand[e]	330	390	460	460	460
Golf Course Demand[e]	1,790	1,790	1,880	1,850	1,880
Total Palmwood Demand	2,500	2,720	2,970	2,980	3,080
Other MSWD Demands					
Imported[a]	0	0	0	0	0
Recycled[f]	0	0	0	0	220
Local (Groundwater)[g]	12,980	13,840	14,850	15,930	16,780
Total Demand	**15,480**	**16,560**	**17,820**	**18,910**	**20,080**
Normal Year Demand[d]	15,480	16,560	17,640	18,720	19,800
% of Normal Year	100.0	100.0	101.0	101.0	101.4
% of Year 2005 Demand (9,194 AF)[h]	168.4	180.1	193.8	205.7	218.4
Supply/ Demand Difference	**24,520**	**23,440**	**22,180**	**21,090**	**21,920**
Difference as % of Supply	**61.3**	**58.6**	**55.5**	**52.7**	**52.2**
Difference as % of Demand	**158.4**	**141.5**	**124.5**	**111.5**	**91.6**

(a) MSWD does not have direct access to imported water. Although State Project Water can be exchanged for Colorado River water, which can then be used for recharging the groundwater aquifer (via water transfers arranged through DWA and CVWD), that import water is not supplied directly to the MSWD distribution system and is therefore not counted as "imported" supply or demand.

(b) There are currently no recycled water supplies available; however, plans call for implementation of a recycled water system beginning in approximately 2015 with a minimal production capacity of 2,000 AFY ramping up to 6,720 AF in 2030. Recycled water supplies and demands for 2006-2009 are shown as zero. Recycled water demand in 2010 is anticipated to exceed recycled water supply by 1%. Recycled water supply numbers for subsequent years were calculated assuming that 90% of the wastewater generated can be converted to recycled water (with the 10% balance lost in the treatment process).

(c) Groundwater supplies during multiple dry years are assumed to equal supplies during normal years (refer to table 4.2-2).

(d) Normal year supplies and demands are interpolated from data in Table 4.2-2.

(e) Demands for the Palmwood development during a multiple dry years are assumed to be consistent with similar demands elsewhere in MSWD, i.e., groundwater demands required to meet potable residential and commercial needs will increase by 1% (refer to footnote (g) and golf course demands will increase by 5%, 3% and 5% in years 1, 2 and 3 of a three year dry period, respectively (refer to footnote (f)); all golf course demands will be met from recycled supplies beginning in 2015. Golf course demands prior to 2015 will be met from groundwater supplies.

(f) Recycled water will be used primarily for turf irrigation and can therefore be expected to reflect similar usage patterns consistent with multiple dry year demands experienced in other areas of Southern California where 5%, 3% and 5% increases (over normal years) in years 1, 2, and 3, respectively, of a multiple dry year period are typical.

(g) Groundwater demands are estimated to increase approximately 1% over normal year demands during all multiple dry years (refer to footnote 5 above).

(h) 9,194 AF was the actual water usage in MSWD during the FY05.

Table 4–6
Mission Springs Water District
Including Palmwood Development
Projected Water Supply and Demand
Multiple Dry Water Years 2016-2010

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2016	2017	2018	2019	2020
Supply	Normal Years		Dry Years		
Imported[a]	0	0	0	0	0
Recycled[b]	2,670	3,340	4,010	4,680	5,350
Local (Groundwater)[c]	40,000	40,000	40,000	40,000	40,000
Total Supply	**42,670**	**43,340**	**44,010**	**44,680**	**45,350**
Normal Year Supply[d]	**42,670**	**43,340**	**44,010**	**44,680**	**45,350**
% of Normal Year	100.0	100.0	100.0	100.0	100.0
Demand					
Palmwood Demand[e]					
Residential Demand[e]	810	840	850	850	850
Commercial Demand[e]	460	460	460	460	460
Golf Course Demand[e]	1,790	1,790	1,880	1,850	1,880
Total Palmwood Demand	3,060	3,090	3,190	3,160	3,190
Other MSWD Demands					
Imported[a]	0	0	0	0	0
Recycled[f]	830	1,550	2,330	2,970	3,740
Local (Groundwater)[g]	16,450	16,240	16,270	16,140	16,010
Total Demand	**20,340**	**20,880**	**21,790**	**22,270**	**22,940**
Normal Year Demand[d]	20,340	20,880	21,420	21,960	22,500
% of Normal Year	100.0	100.0	101.7	101.4	102.0
% of Year 2005 Demand (9,194 AF)[h]	221.2	227.1	237.0	242.2	249.5
Supply/ Demand Difference	**22,330**	**22,460**	**22,220**	**22,410**	**22,410**
Difference as % of Supply	**52.3**	**51.8**	**50.5**	**50.2**	**49.4**
Difference as % of Demand	**109.8**	**107.6**	**102.0**	**100.6**	**97.7**

(a) MSWD does not have direct access to imported water. Although State Project Water can be exchanged for Colorado River water, which can then be used for recharging the groundwater aquifer (via water transfers arranged through DWA and CVWD), that import water is not supplied directly to the MSWD distribution system and is therefore not counted as "imported" supply or demand.

(b) There are currently no recycled water supplies available; however, plans call for implementation of a recycled water system beginning in approximately 2015 with a minimal production capacity of 2,000 AFY ramping up to 6,720 AF in 2030. Recycled water supply numbers were calculated assuming that 90% of the wastewater generated can be converted to recycled water (with the 10% balance lost in the treatment process).

(c) Groundwater supplies during multiple dry years are assumed to equal supplies during normal years (refer to table 4.2-2).

(d) Normal year supplies and demands are interpolated from data in Table 4.2-2

(e) Demands for the Palmwood development during a multiple dry years are assumed to be consistent with similar demands elsewhere in MSWD, i.e., groundwater demands required to meet potable residential and commercial needs will increase by 1% (refer to footnote (g) and golf course demands will increase by 5%, 3% and 5% in years 1, 2 and 3 of a three year dry period, respectively (refer to footnote (f)); all golf course demands will be met from recycled supplies beginning in 2015. Golf course demands prior to 2015 will be met from groundwater supplies.

(f) Recycled water will be used primarily for turf irrigation and can therefore be expected to reflect similar patterns consistent with multiple dry year demands experienced in other areas of Southern California where 5%, 3% and 5% increases (over normal years) in years 1, 2, and 3, respectively, of a multiple dry year period are typical.

(g) Groundwater demands are estimated to increase approximately 1% over normal year demands during all multiple dry years (refer to footnote 5 above).

(h) 9,194 AF was the actual water usage in MSWD during the FY05.

Table 4–7
Mission Springs Water District
Including Palmwood Development
Projected Water Supply and Demand
Multiple Dry Water Years 2021-2025

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2021	2022	2023	2024	2025
Supply	Normal Years		Dry Years		
Imported[a]	0	0	0	0	0
Recycled[b]	5,490	5,640	5,780	5,930	6,070
Local (Groundwater)[c]	40,000	40,000	40,000	40,000	40,000
Total Supply	**45,490**	**45,640**	**45,780**	**45,930**	**46,070**
Normal Year Supply[d]	45,490	45,640	45,780	45,930	46,070
% of Normal Year	100.0	100.0	100.0	100.0	100.0
Demand					
Palmwood Demand[e]					
Residential Demand[e]	840	840	850	850	850
Commercial Demand[e]	460	460	460	460	460
Golf Course Demand[e]	1,790	1,790	1,880	1,850	1,880
Total Palmwood Demand	3,090	3,090	3,190	3,160	3,190
Other MSWD Demands					
Imported[a]	0	0	0	0	0
Recycled[f]	3,700	3,850	4,190	4,250	4,490
Local (Groundwater)[g]	16,250	16,640	17,210	17,610	18,010
Total Demand	**23,040**	**23,580**	**24,590**	**25,020**	**25,690**
Normal Year Demand[d]	23,040	23,580	24,120	24,660	25,200
% of Normal Year	100.0	100.0	101.9	103.7	101.9
% of Year 2005 Demand (9,194 AF)[h]	250.6	256.5	267.5	272.1	279.4
Supply/ Demand Difference	**22,450**	**22,060**	**21,190**	**20,910**	**20,380**
Difference as % of Supply	**49.4**	**48.3**	**46.3**	**45.5**	**44.2**
Difference as % of Demand	**97.4**	**93.6**	**86.2**	**83.6**	**79.3**

(a) MSWD does not have direct access to imported water. Although State Project Water can be exchanged for Colorado River water, which can then be used for recharging the groundwater aquifer (via water transfers arranged through DWA and CVWD), that import water is not supplied directly to the MSWD distribution system and is therefore not counted as "imported" supply or demand.

(b) There are currently no recycled water supplies available; however, plans call for implementation of a recycled water system beginning in approximately 2015 with a minimal production capacity of 2,000 AFY ramping up to 6,720 AF in 2030. Recycled water supply numbers were calculated assuming that 90% of the wastewater generated can be converted to recycled water (with the 10% balance lost in the treatment process).

(c) Groundwater supplies during multiple dry years are assumed to equal supplies during normal years (refer to table 4.2-2).

(d) Normal year supplies and demands are interpolated from data in Table 4.2-2

(e) Demands for the Palmwood development during a multiple dry years are assumed to be consistent with similar demands elsewhere in MSWD, i.e., groundwater demands required to meet potable residential and commercial needs will increase by 1% (refer to footnote (g) and golf course demands will increase by 5%, 3% and 5% in years 1, 2 and 3 of a three year dry period, respectively (refer to footnote (f)); all golf course demands will be met from recycled supplies beginning in 2015. Golf course demands prior to 2015 will be met from groundwater supplies.

(f) Recycled water will be used primarily for turf irrigation and can therefore be expected to reflect similar patterns consistent with multiple dry year demands experienced in other areas of Southern California where 5%, 3% and 5% increases (over normal years) in years 1, 2, and 3, respectively, of a multiple dry year period are typical.

(g) Groundwater demands are estimated to increase approximately 1% over normal year demands during all multiple dry years (refer to footnote 5 above).

(h) 9,194 AF was the actual water usage in MSWD during the FY05.

Table 4–8
Mission Springs Water District
Including Palmwood Development
Projected Water Supply and Demand
Multiple Dry Water Years 2026-2030

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2026	2027	2028	2029	2030
Supply	**Normal Years**		**Dry Years**		
Imported[a]	0	0	0	0	0
Recycled[b]	6,200	6,330	6,460	6,590	6,720
Local (Groundwater)[c]	40,000	40,000	40,000	40,000	40,000
Total Supply	**46,200**	**46,330**	**46,460**	**46,590**	**46,720**
Normal Year Supply[d]	46,200	46,330	46,460	46,590	46,720
% of Normal Year	100.0	100.0	100.0	100.0	100.0
Demand					
Palmwood Demand[e]					
Residential Demand[e]	840	840	850	850	850
Commercial Demand[e]	460	460	460	460	460
Golf Course Demand[e]	1,790	1,790	1,880	1,850	1,880
Total Palmwood Demand	3,090	3,090	3,190	3,160	3,190
Other MSWD Demands					
Imported[a]	0	0	0	0	0
Recycled[f]	4,410	4,540	4,900	4,940	5,180
Local (Groundwater)[g]	18,240	18,650	19,250	19,670	20,080
Total Demand	**25,740**	**26,280**	**27,340**	**27,770**	**28,450**
Normal Year Demand[d]	25,740	26,280	26,820	27,360	27,900
% of Normal Year	100.0	100.0	109.3	101.5	102.0
% of Year 2005 Demand (9,194 AF)[h]	280.0	285.8	297.4	302.0	309.4
Supply/ Demand Difference	**20,460**	**20,050**	**19,120**	**18,820**	**18,270**
Difference as % of Supply	**44.3**	**43.3**	**41.2**	**40.4**	**39.1**
Difference as % of Demand	**79.5**	**76.3**	**69.9**	**67.8**	**64.2**

(a) MSWD does not have direct access to imported water. Although State Project Water can be exchanged for Colorado River water, which can then be used for recharging the groundwater aquifer (via water transfers arranged through DWA and CVWD), that import water is not supplied directly to the MSWD distribution system and is therefore not counted as "imported" supply or demand.

(b) There are currently no recycled water supplies available; however, plans call for implementation of a recycled water system beginning in approximately 2015 with a minimal production capacity of 2,000 AFY ramping up to 6,720 AF in 2030. Recycled water supply numbers were calculated assuming that 90% of the wastewater generated can be converted to recycled water (with the 10% balance lost in the treatment process).

(c) Groundwater supplies during multiple dry years are assumed to equal supplies during normal years (refer to table 4.2-2).

(d) Normal year supplies and demands are interpolated from data in Table 4.2-2.

(e) Demands for the Palmwood development during a multiple dry years are assumed to be consistent with similar demands elsewhere in MSWD, i.e., groundwater demands required to meet potable residential and commercial needs will increase by 1% (refer to footnote (g) and golf course demands will increase by 5%, 3% and 5% in years 1, 2 and 3 of a three year dry period, respectively (refer to footnote (f)); all golf course demands will be met from recycled supplies beginning in 2015. Golf course demands prior to 2015 will be met from groundwater supplies.

(f) Recycled water will be used primarily for turf irrigation and can therefore be expected to reflect similar patterns consistent with multiple dry year demands experienced in other areas of Southern California where 5%, 3% and 5% increases (over normal years) in years 1, 2, and 3, respectively, of a multiple dry year period are typical.

(g) Groundwater demands are estimated to increase approximately 1% over normal year demands during all multiple dry years (refer to footnote 5 above).

(h) 9,194 AF was the actual water usage in MSWD during the FY05.

(g) 9,194 AF was the actual water usage in MSWD during the FY05.

4.2 Groundwater Reliability

Some portions of the District's groundwater sources of supply contain minerals and salt (reflected by moderately high TDS values) which exceed the MCL for potable water. Specifically, such areas include the Desert Hot Springs basin that underlies the City north of Mission Creek Fault. Additionally, the District will examine the increases in TDS east of Palm Drive, presumably due to the influence of recharge from the Long Canyon Wash. To determine the feasibility of reclaiming highly mineralized groundwater for future beneficial uses, the District proposes to conduct a pilot study of highly mineralized water within the service area. Funding opportunities for partial or full federal grant funding for such a study would be explored. Finally, the District would contact MWD to ascertain if any aspect of its current Desalination Research and Innovation Partnership Program (DRIPP) might apply to the District's study.

The water balance discussed in Section 4.1 indicates that the Mission Creek Sub-Basin could continue to decline on the order of 30,000 AF over the next 25 years. This assumes no net natural recharge, which is believed to be quite conservative. It also assumes that all new demands are extracted from the Mission Creek Sub-Basin. If slightly over 1,000 AFY (average over the 25 year projection period) is developed from other sources such as the Garnett Hill Sub-Basin (which the District is currently considering), or if a few wet years such as 2005 provide for opportunities to recharge surplus imported water into the Mission Creek Sub-Basin, this minor decline in available storage in the Basin would be completely eliminated.

The District's careful management of its groundwater supply will ensure that supply is available for the Project, as well as anticipated population growth. The Project will initially rely entirely upon groundwater for supply, until recycled water is made available.

All foreseeable agricultural and industrial demands on the District's water system have been included in the 2005 UWMP and are therefore included in this Assessment/ Verification report. No other demands on the groundwater sub-basin are anticipated.

4.3 Recycled Water Reliability

MSWD is currently evaluating the potential for establishing a new regional wastewater treatment plant as well as expanding and upgrading the existing Horton Wastewater Treatment Plant to provide recycled water for beneficial uses including landscape irrigation for golf courses and parks. MSWD has prepared an Appraisal Report evaluating the potential to develop a recycled water system within the District through the Bureau of Reclamation's Title XVI of Public Law 102-575 process. The District has recently contracted the next phase of this process, which is the preparation of a Feasibility Report along with environmental analysis. To date, financing for this program has been through federal grants and matching District funds. Once this planning process is complete, it is envisioned that the District will move forward to recycle most, if not all, of its wastewater to help provide additional water supplies to its customers.

It is planned that MSWD will aggressively pursue wastewater reclamation and recycled water use. It is further assumed that the plan will be initially operable by 2015 and by 2020 will reclaim and reuse all of the wastewater generated within the service area for irrigation of golf courses and other suitable landscaping purposes. The total wastewater flow projections are reduced by 10% to account for treatment system losses and the remainder is projected as a source of water supply.

The District is currently preparing a recycled water feasibility study and environmental evaluation funded jointly by the District and the United States Bureau of Reclamation. Once complete and assuming a favorable result regarding its feasibility, the District plans to proceed with the design and construction of the first phase of a recycled water system including the addition of tertiary treatment facilities at the Horton Wastewater Treatment Plant site along with pumping and distribution pipelines to supply the initial customers. These improvements will be funded by connection fees from new developments as well as other funding sources that will be pursued by the District such as grants and low-interest loans for water reclamation projects.

Once available, the Project will utilize recycled water supplies to support irrigation of landscape, golf courses, and other open space areas. The recycled water supply will offset the Project's 100 percent reliance on groundwater.

4.4 Import Connections

An emergency source of water for MSWD is the CVWD. MSWD currently has two inter-connections with the CVWD that can be used to provide emergency water to the Main System on a temporary and very limited basis.

DWA is the MSWD's wholesale supplier for the SWP. As a State Water Contractor, DWA is entitled to SWP water. A conveyance system to provide SWP water directly to the Coachella Valley currently does not exist. However, the Colorado River Aqueduct (CRA) does go through the valley. DWA has entered into an agreement with MWD to exchange SWP water for CRA water.

In 1997, MWD tapped into the CRA for DWA and installed a 48-inch turnout just south of Indian Avenue and west of Worsley Road. DWA acquired approximately 190 acres of land in the vicinity of the turnout in order to construct spreading ponds to hold the Colorado River water as it percolates downward into the Mission Creek Sub-Basin. A test well was also installed by DWA to monitor the flow of water underground. DWA completed construction of 60 acres of recharge basins as the Mission Creek Recharge Facilities in June 2002. Recharge commenced in November 2002 with 4,733 AF of water introduced into the basins in the remainder of 2002. A lack of available water resulted in no recharge in 2003. An additional 5,564 AF of water was recharged in October, November, and December of 2004. Because of the very wet conditions in 2005, recharge between January and May of that year totaled 6,500 AF (URS, 2005). Based on

information obtained from DWA, the total recharged in calendar 2005 should approach 27,000 AF.

URS (2005) reported that the number of recharge basins in operation depends upon the availability of water. In 2005, only about two-thirds (40 acres) of the 60 acres of basins were being used at one time. Based on the current excellent rate of about 4 feet per day, and accounting for some downtime for maintenance, the 60 acres of basins could recharge as much as 60,000 acre-feet per year (AFY), which far exceeds the currently available supply. Even if recharge rates decreased over time to as little as 1 foot per day, the capacity would still be at least 15,000 AFY.

The possibility of continued recharge depends largely on the availability of future water from the MWD's Colorado River Aqueduct and on MWD's exchange agreements with DWA. This source of water does provide a significant amount of inflow to the northwesterly portion of the Mission Creek Sub-Basin and reduces the amount of overdrafting of the aquifer. In addition, assuming that sufficient water is available, this recharge facility provides for conjunctive use possibilities, such as water banking of Colorado River water. Because of the excess capacity and the lack of available water, DWA does not have any plans for expanding the facility any time soon. Even if water was available, most of the remaining 130 acres not currently used for recharge are located in Mission Creek, and any facilities constructed in the creek would be subject to damage from flood events. Any expansion of the recharge facilities would most likely require the purchase of additional land.

Due to the adequate water supply available to the Project, it is not anticipated that the status of the import connections will affect the Project's water supply. However, in emergency cases, the Project may require the use of the emergency import connections upon the determination of the District.

4.5 Reservoir/Tanks

The MSWD water supply system does not contain any open reservoirs but does consist of assorted water tanks distributed throughout the MSWD service area to supply general water requirements on an as-needed basis. Table 4-9 provides a summary of the available water storage capabilities within the MSWD service area.

Table 4-9
Summary of Available Water Storage Capacity in MSWD Service Area

Area	No. of Tanks	Total Storage Capacity (million gallons)
Mission Creek Sub-Basin		
900 Zone	1	2.0
1070 Zone	3	1.76
1240 Zone	4	7.14
1400 Zone	4	4.42
1530 Zone	4	3.57
1630 Zone	2	0.36
	Sub-Total	19.25
Cabazon Storage Unit		
1840	1	0.12
	Sub-Total	0.12
	TOTAL	19.37

Source: URS (2005)

The storage capacities of the existing tanks above, plus those proposed in the Water Master Plan ensures reliability of supply for the Project and the remainder of the District's service area.

5.0 CONCLUSION

5.1 Availability of Supplies

The Mission Springs Water District optimizes its water supply through careful resource management. The District's water supplies are currently from groundwater, and will include recycled water in the future. This water supply assessment identifies water supply and reliability to the District, now and into the future, including a sufficient water supply for the Palmwood Project area. Phasing of the Project Area will generally occur over time intended to minimize impacts to local areas. This development phasing plan allows for water demands to be met entirely from sources that are currently being planned, including recycled water and conservation programs.

The District's current average demand is approximately 9,200 AFY. The build-out of the Palmwood Project Area accounts for approximately 3,088 AFY of the District's projected water demands. Build-out of the Palmwood Project is estimated to occur in year 2017 when the District's total water demand is projected to be approximately 20,880 AFY. Analyses of water demand and supply projections for the District, including the Project, demonstrate that projected supplies exceed demand through the water year 2030. These projections consider land use, water development programs and projects, and water conservation measures. Analysis shows that as groundwater use is maximized, recycled water will offset demands. Recycled water will be used in the future to supply some irrigation areas currently supplied with potable water and many projected new irrigation demands.

Overall, the District's water supply strategy to meet its demands through 2030 provides adequate water supply for the Palmwood Project. The reliability of the groundwater supply, future recycled water supply, imported water connections and reservoirs ensures availability of supplies for the Project and the rest of the District's service area.

6.0 REFERENCES

The following documents were used in conjunction with discussion with Mission Springs Water District staff in preparing this water supply assessment:

ASL Consulting Engineers, 2000. *Mission Springs Water District Water Master Plan,* May 2000.

Albert A. Webb Associates, 2001. *Mission Springs Water District Master Sewer Plan,* March 2001.

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Boyd , R. M. Jr.,1999. *Underground Storage of Imported Water in the San Gorgonio Pass Area,* California. U.S. Geological Survey Water Resources Division. Water Supply Paper 1999 D 80 p.

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Tom Dodson & Associates, 2004. *Draft Environmental Impact Report for the Mission Springs Water District 900 Zone Project (Volume 1),* February 2004.

R. W. Beck, 2004. *Mission Springs Water District Water and Sewer Rate and Connection Fee Study Final Report,* April 2004.

Richard C. Slade & Associates LLC, 2000. *Final Hydrogeologic Evaluation, Well Siting, and Recharge Potential Feasibility Study, Mission Creek Groundwater Subbasin, Riverside County, California.* Prepared for ASL Consulting Engineers and Mission Springs Water District, May 2000.

URS Corp. (under contract to U.S. Army Corps of Engineers), 2005. Comprehensive *Water System Master Plan for Mission Springs Water District - Draft,* Received by Board of Directors October 17, 2005

APPENDIX A
Technical Memorandum

TECHNICAL MEMORANDUM

PALMWOOD PROJECT
Landmark Properties U.S. Inc.
MISSION SPRINGS WATER DISTRICT
Statement of Methodology for Determining Project Area Water Demands

April 5, 2006
Mike Swan, Senior Project Engineer
Joey Soto, Water Resource Analyst

Purpose

To provide an analysis of water demand requirements for the proposed Palmwood Project.

Project Water Demands

The Palmwood project consists of the following land uses as described in more detail in the body of this Water Supply Assessment: single family residential, general/retail commercial, mixed-use residential and a resort hotel within this commercial area, and 45 holes of golf course. Water demand factors for each of these land uses were developed from various appropriate sources as discussed below.

Other than the 27-hole championship golf course and 18-hole short course, the majority of the development consists of 1,155 single family residential dwelling units. A water demand of 520 gallons per dwelling unit per day was used for this residential land use based on the Draft MSWD Comprehensive Water System Master Plan prepared by URS and dated October 2005. Since detailed building square footage of the commercial area was provided by the developer, a factor of 300 gallons per thousand square feet per day was utilized. This factor was based on a detailed study of various land uses using measured water usage and land use statistics documented in Irvine Ranch Water District's Water Resources Master Plan dated March 2002 and supplemented January 2004. Using the planned 1.1 million square feet of building space on the 172 acres of commercial land use, this would equate to about 1,920 gallons per acre per day, which also tracks well with more general water demand factors used by IRWD and other agencies for general/retail commercial development.

In addition, the Palmwood development proposes to locate 700 residential units within the 172-acre commercial area (mixed use development). Since the outside water demand for this area is accounted for in the commercial demand factor, the only additional demand for these mixed-use dwelling units will be the inside water demand. This inside water demand is estimated at 215 gallons per dwelling unit per day or 80 gallons per capita and 2.7 people per dwelling unit, which factors are consistent with factors used in

MSWD's 2005 Urban Water Management Plan prepared by Psomas and dated February 2006.

A 400-room resort hotel is also proposed within the 172-acre commercial area. Therefore, additional demand from the hotel would be primarily the inside water demand from the 400 rooms, which are estimated at 115 gallons per room per day or approximately 75 gallons per person times an average occupancy of 1.5 persons per room. An additional outside water demand in and around the hotel site over and above the amount included in the commercial demand figured on the acreage as described above was estimated by assuming that an additional 5 acres of landscape/pool/water feature would generate a demand of 5,700 gallons per acre per day on the 5 acres, or 28,500 gallons per day. The work-up of the water demands by project land use is detailed on Table 1 and the phasing of these demands, based on the Proposed Development Timeline provided by the developer and included in this appendix, is shown on Table 2.

The irrigation water demands were projected based on a detailed analysis of the acreages of the golf courses and open space areas throughout the community (primarily adjacent to the courses). The design concept for the courses is desert-type target golf with many natural areas within the golf course envelope. Acreages for these areas were provided by the Palmwood golf course architect and demand factors provided by the irrigation consultant, based on experience with local area conditions. These area breakdowns and demand factors for the golf course properties and work-up of the golf course demands is detailed on Table 3.

Based on the above discussion, the total Palmwood project water demands are detailed on Table 1 and total 2.76 million gallons per day or 3,090 acre-feet per year. Of this total, 1,792 acre-feet per year or 58% is related to the irrigation demands of the golf course and open space that could be served by a non-potable source such as recycled water. MSWD is currently evaluating the feasibility of developing a recycled water system within the District in conjunction with the Bureau of Reclamation. Although recycled water will likely not be available to serve the project irrigation demands initially, when there is enough tertiary treated wastewater generated within the District to serve other golf courses and this development, recycled water could be pumped to the project at some time in the future from the existing Horton Wastewater Treatment Plant or the proposed Regional Plant or a potential satellite treatment plant located in closer proximity to the project. The project is currently proposing to construct separate non-domestic wells to provide water to the lakes within the golf courses from where the water will be pumped out into the golf course irrigation systems. When recycled water is available, it could be pumped into these same lakes and the wells could be converted to domestic water wells to provide additional reliability and redundancy to the project and other areas within the District. In order to facilitate this conversion, interties or cross connections between the potable (domestic) and non-potable (golf course irrigation) systems should be avoided. Additionally, the golf course developer should construct a weather station on the property designed to CIMIS standards that could be used by the local landscape irrigation controllers as well as other areas of the District.

Project phasing was also provided by the developer for the various land uses and a phased water demand was developed by year based on the portion of each year that the new developments were proposed to occur and the water demand factors discussed above and utilized in Table 1. The golf course irrigation demands were projected to commence seven months prior to the proposed course opening dates based on information provided by the irrigation consultant assuming that the courses are entirely seeded as opposed to utilizing sod. The projected phased water uses are shown on Table 2 and commence in 2007, reaching their maximum in the first full year after project build-out or in 2017.

Table 1
Palmwood Project
Water Demands

Land Use	Acres	Sq. Ft.	DU's	DU / Acre	Duty Factor (gpd)	Demand (gpd)	Demand (AFY)
Open Space/Mountain Reserve	781						
Residential							
Estate	78		170	0-5	520/du	88,400	99
Low Density	52		137	0-5	520/du	71,240	80
Medium Density	183		848	0-8	520/du	440,960	494
General Commercial/Mixed Use Residential	140	1,110,000	700		300/ksf +215/du +115/room	558,000	625
Commercial/Retail (du's = hotel rooms)	32		400				
Private Open Space/Golf Use	494		n/a		varies	1,600,000	1,792
Maintenance Facilities	2		n/a				
Well Sites	4		n/a				
Total	**1,766**		**2,255**			**2,758,600**	**3,090**

Notes:
Commercial demand at 300 gpd per thousand square feet is approximately equal to 2,000 gpd per acre on the 172 acres of commercial.
Mixed-use dwelling unit demands are calculated at wastewater demand only (80 gpd/capita times 2.7 people/du) since outside demand is included in commercial component, similarly for hotel rooms (75 gpd/capita times 1.5 people/room plus 5 acres of outside demand for landscape irrigation, pool and water feature use at 5,700 gpacpd)

Table 2
Palmwood Project
Cumulative Phased Demands (gpd)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
						Phase 1						
18 Hole Mickelson Course		569,335	683,202	683,202	683,202	683,202	683,202	683,202	683,202	683,202	683,202	683,202
Palmwood Estates[1]		130	12,480	34,320	56,160	77,740	88,400	88,400	88,400	88,400	88,400	88,400
Mountain Estates[1]		130	10,400	27,820	44,980	62,400	71,240	71,240	71,240	71,240	71,240	71,240
						Phase 2						
Dave Pelz Golf Course		364,337	624,578	624,578	624,578	624,578	624,578	624,578	624,578	624,578	624,578	624,578
Academy Village[1]			2,080	28,080	75,920	123,760	171,600	194,480	194,480	194,480	194,480	194,480
Hotel					66,833	74,500	74,500	74,500	74,500	74,500	74,500	74,500
						Phase 3						
Commercial/Residential:[2]												
Residential Units				4,121	21,608	45,043	68,478	91,913	115,348	138,783	150,500	150,500
Phase A Commercial (SF)				52,500	105,000	105,000	105,000	105,000	105,000	105,000	105,000	105,000
Phase B Commercial (SF)					37,500	90,000	90,000	90,000	90,000	90,000	90,000	90,000
Phase C Commercial (SF)						24,000	72,000	72,000	72,000	72,000	72,000	72,000
Phase D Commercial (SF)							11,000	66,000	66,000	66,000	66,000	66,000
						Phase 4						
9 Hole Mickelson Golf				243,517	292,221	292,221	292,221	292,221	292,221	292,221	292,221	292,221
Villas At Majestic[1]					217	18,460	49,920	65,520	65,520	65,520	65,520	65,520
Majestic Village[1]						8,190	28,080	49,140	56,160	56,160	56,160	56,160
Palmwood Village[1]									433	34,840	94,120	123,760
Yearly Total (gpd)	0	933,932	1,332,739	1,698,137	2,008,218	2,229,093	2,430,218	2,568,193	2,599,081	2,656,923	2,727,920	2,757,560
Yearly Total (AFY)	0	1,046	1,493	1,902	2,249	2,497	2,722	2,876	2,911	2,976	3,055	3,088

Notes:

1. Residential demand = Number of units built per year x 520 gpdupd, prorated by the number of months each unit is first occupied.
2. Commercial demand = thousand square feet x 300 gpksfpd; residential demand within commercial area is interior demand or dwelling units x 215 gpd.

Palmwood Development Timeline

Project	Timeline
Phase 1	
18 Hole Mickelson Course	6/06 Begin Construction – 9/07 End Construction
Palmwood Estates Lots	3/07 Begin Construction – 12/07 End Construction – 137 lots
Mountain Estates Lots	3/07 Begin Construction – 12/07 End Construction – 170 lots
Private Clubhouse	6/07 Begin Construction – 12/08 End Construction
Course Opens 10/07	
Phase 2	
Dave Pelz Golf Course	9/06 Begin Construction – 12/07 End Construction
Academy Villas Lots	12/07 Begin Construction – 9/08 End Construction – 374 lots
Course Opens 1/08	
Hotel	6/08 Begin Construction – 2/10 End Construction
Phase 3	
Commercial (1.1 million S.F. total)	
Phase A (350,000 SF)	6/08 Begin Construction – 7/09 End Construction
Phase B (300,000 SF)	7/09 Begin Construction – 8/10 End Construction
Phase C (240,000 SF)	8/10 Begin Construction – 9/11 End Construction
Phase D (220,000 SF)	10/11 Begin Construction – 11/12 End Construction
Commercial Residential to be constructed w/ each Phase	
Phase A (200 Units)	6/08 Begin Construction – 7/09 End Construction
Phase B (200 Units)	7/09 Begin Construction – 8/10 End Construction
Phase C (150 Units)	8/10 Begin Construction – 9/11 End Construction
Phase D (150 Units)	10/11 Begin Construction – 11/12 End Construction

Phase 4

9 Holes Mickelson Golf	12/09 Begin Construction – 11/10 End Construction
Course Opens 12/10	
Villas at Majestic	6/09 Begin Construction – 6/10 End Construction – 126 lots
Majestic Village	6/10 Begin Construction – 6/11 End Construction - 108 lots

Phase 5

Palmwood Village	12/13 Begin Construction – 12/15 End Construction

Projected Buildout/Occupancy of Units

Palmwood Estates	12/07-12/11	170 units
Mountain Estates	12/07-12/11	137 units
Academy Village	12/08-12/12	374 units
Commercial Res.	8/09-12/15	700 units
Villas At Majestic	12/10-12/12	126 units
Majestic Village	6/11 – 6/13	108 units
Palmwood Village	12/14-12/16	238 units
Total	**12/07-12/16**	**2253 units**

Table 3
Palmwood Irrigation Demand for Golf Courses

Estimated Annual Applied Water Use by Hydrozone

Golf Course	Eto		PF		Landscape Area (sq. ft.)	Landscape Area (acres)		Conversion Factors		IE		Demand (ccf)	Demand AFY
Recreational Turfgrass & Bunkers	93.90	x	0.70	x	8,955,500	205.6	x	0.62	/ 748	/ 0.85	=	574,017	1,318
Trees and Shrub Massing (Low)	93.90	x	0.20	x	1,500,000	34.4	x	0.62	/ 748	/ 0.90	=	25,944	60
Trees and Shrub Massing (Medium)	93.90	x	0.50	x	1,500,000	34.4	x	0.62	/ 748	/ 0.90	=	64,860	149
Perennial Beds (High)	93.90	x	0.80	x	1,375,000	31.6	x	0.62	/ 748	/ 0.85	=	100,723	231
Lakes and Streams	93.90	x	1.10	x	174,240	4.0	x	0.62	/ 748	/ 1.00		14,918	34
Sub-Total					**13,504,740**	**310.0**						**780,461**	**1,792**

Notes:
Eto is local evapotranspiration rate in inches per year
PF = Plant Factor
IE = Irrigation Efficiency
ccf = hundred cubic feet
AFY = acre-feet per year

APPENDIX D-4

JANUARY 23, 2007
PRE-FILING MEETING PRESENTATION

CPV Ocotillo, LLC
Pre-filing Meeting with the CEC

Sacramento, CA
Tuesday January 23, 2007

Competitive
Power Ventures, Inc.

Agenda

- Introductions
- Project Overview
- Air
- Water
- Land Use

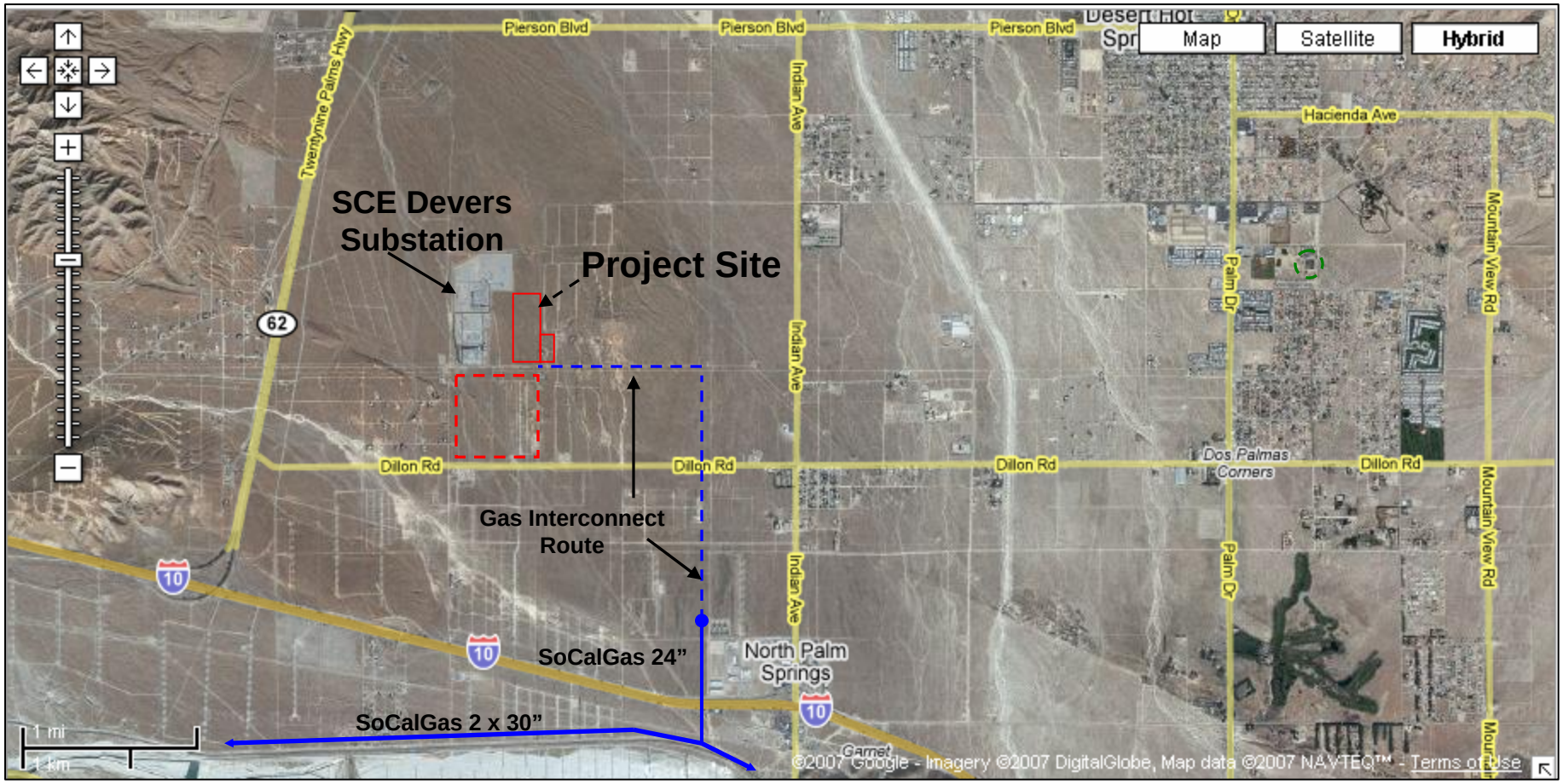
Facility Description

- Nominal 850 MW natural gas-fired, simple cycle facility
  - High efficiency – over 10% more efficient than LM6K
  - Equipped with water injection and SCRs for NOx control
  - Eight (8) General Electric LMS100 combustion turbines
  - Oxidation catalysts will control CO & VOC emissions
- Design optimizes output and efficiency given the hot, arid site conditions
  - Mechanical-draft wet evaporative cooling towers
  - Foggers to enhance performance.
- Water supply/discharge
  - Plan to use reclaimed water for process supply
  - Crystalizer/zero-liquid discharge system
- Electric Interconnect
  - 230 kV Devers substation
  - Facilities Study complete w/ change to LMS100 technology approved by CAISO
- Gas Interconnect
  - SoCalGas 24” lateral approximately 2 miles southeast of site
  - Interconnection Study complete
  - CPV Ocotillo & SoCalGas coordinating on easement for interconnect

CPV Ocotillo Site

- 37 Acre Site, located within the LA Basin local resource area, 8 miles northwest of Palm Springs in Riverside County.
- Zoned for Public Facilities in the General Plan which allows for electric generation stations and corridors.
- Location adjacent to the Devers substation is characterized by industrial use with wind farms and power lines surrounding site
- SoCalGas linear ~ 2 miles from the site.

CPV Ocotillo Site Map



Air Quality – Proposed BACT Levels

- NOx: 2.5 ppm
- CO: 6.0 ppm
- ROG: 2.0 ppm
- SOX: PUC Quality Natural Gas
- PM10: PUC Quality Natural Gas

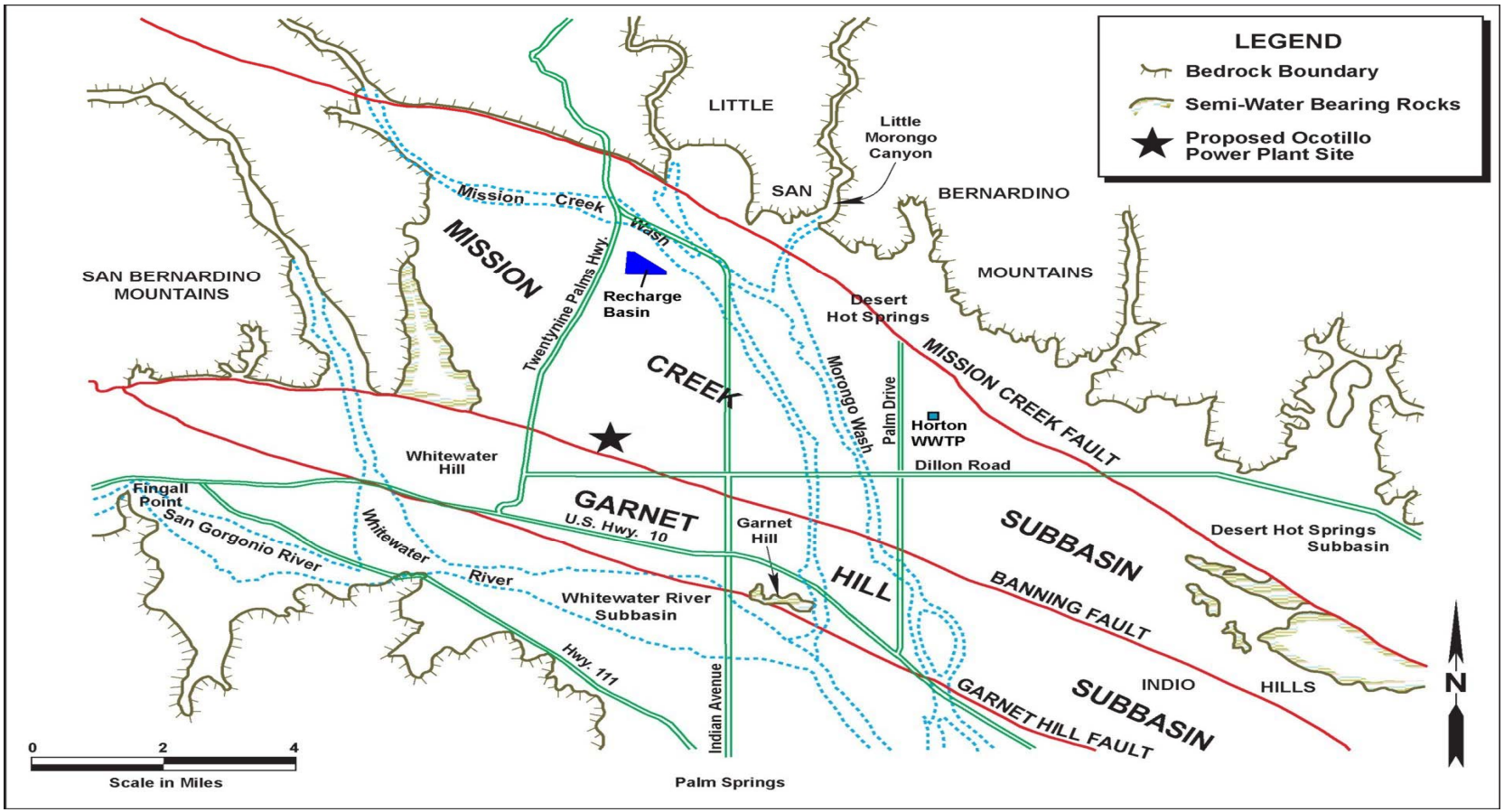
Air Quality – Proposed Offset Strategy

- NOx: RECLAIM Trading Credits
- CO: Not required
- ROG: Emission Reduction Credits from Open Market
- SOX: Priority Reserve Offsets
- PM10: Priority Reserve Offsets

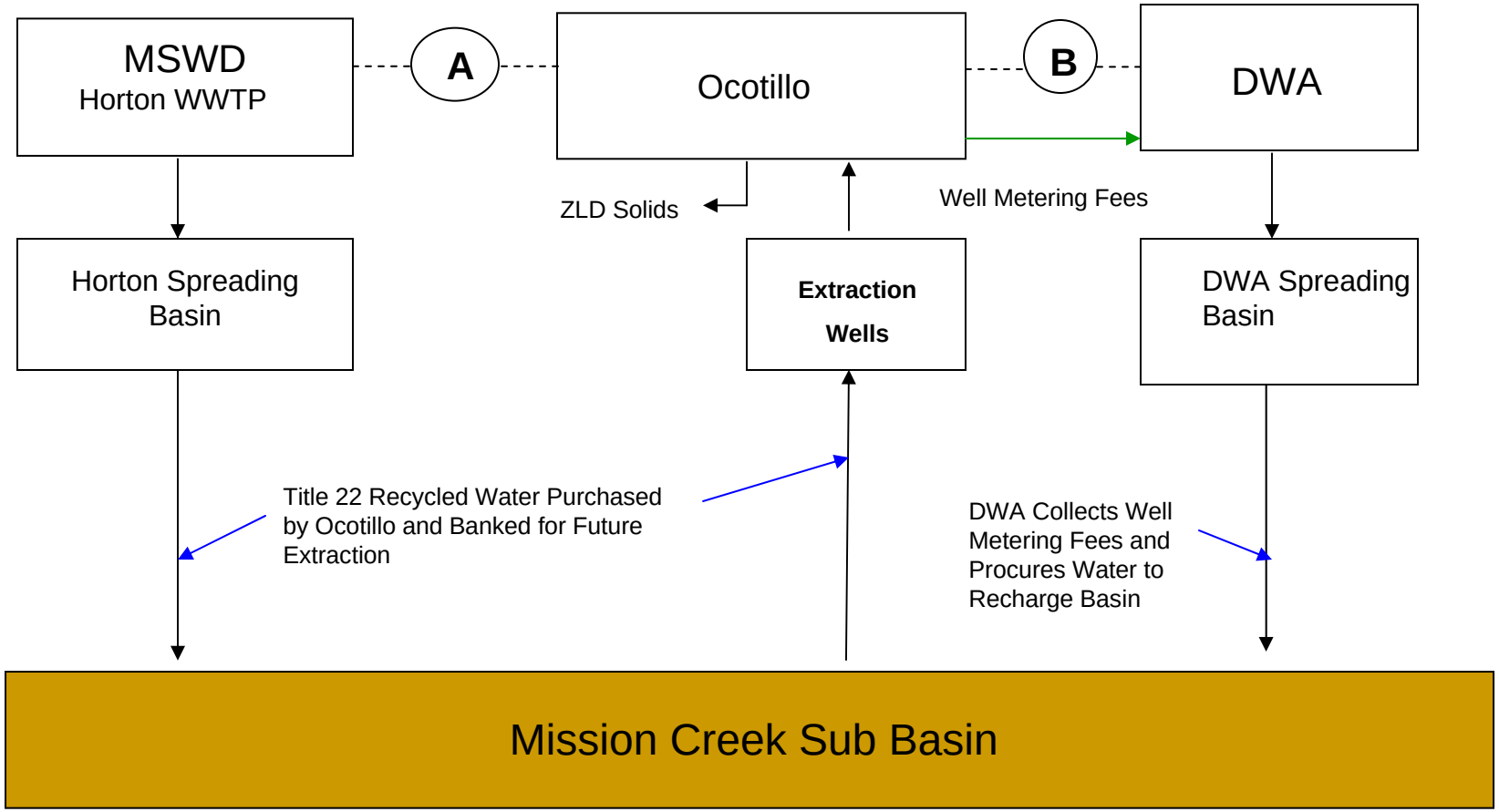
Water Supply

- Requirements
  - Average of 1.0 mgd/1,100 AF/yr
  - Storage capacity to match peaking dispatch
- Water Source
  - Reclaimed water from MSWD Horton WWTP (negotiations in progress)
  - Horton current capacity: 1.3 mgd/1,580 AF/yr
  - Above ground storage impractical (~41 million gallons)
  - Sub-Basin used for storage capacity of reclaimed water owned by Ocotillo
  - Recovery of Ocotillo-stored water via on-site wells
- Recharge of Sub-Basin
  - DWA collects fees to recharge sub-basin (thus, Ocotillo pays to recharge even when recovering water for which it holds title)

SUBASIN MAP


LEGEND
Bedrock Boundary
Semi-Water Bearing Rocks
Proposed Ocotillo Power Plant Site
LITTLE
SAN
BERNARDINO
MOUNTAINS
Little Morongo Canyon
Mission Creek Wash
MISSION
CREEK
Twentynine Palms Hwy.
Recharge Basin
SAN BERNARDINO MOUNTAINS
Desert Hot Springs
MISSION CREEK FAULT
Morongo Wash
Palm Drive
Horton WWTP
Dillon Road
Whitewater Hill
Fingall Point
San Gorgonio River
Whitewater River
GARNET
U.S. Hwy. 10
Garnet Hill
HILL
SUBBASIN
Desert Hot Springs Subbasin
BANNING FAULT
Whitewater River Subbasin
Hwy. 111
Indian Avenue
INDIO
HILLS
SUBBASIN
GARNET HILL FAULT
N
0
2
4
Scale in Miles
Palm Springs

Ocotillo Water Plan



A = MSWD/Ocotillo Reclaimed Water Agreement (In Negotiation)

B = DWA/Ocotillo Well Metering Agreement (Existing)

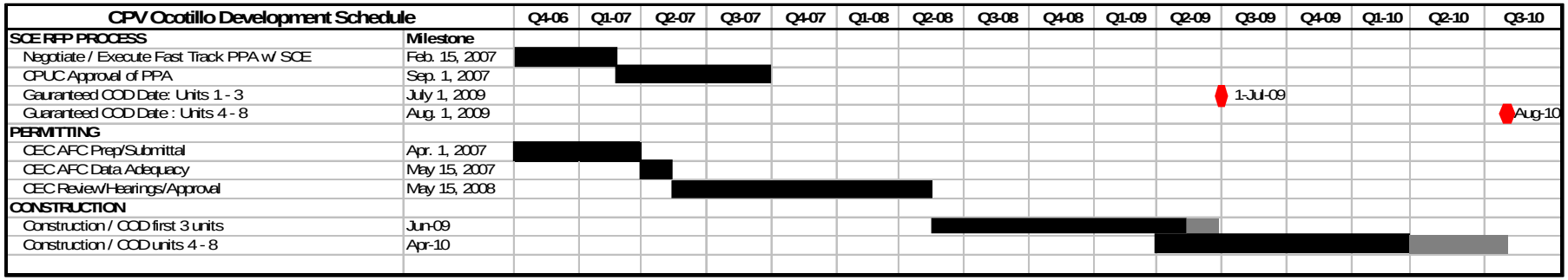
Land Use

- General Plan Designation
  - Site designated as Public Facilities
  - Electric Generating Stations are a specifically allowed use
- Zoning Designation
  - Pending designation of Community Development Foundation Public Facilities
  - Electric Generating Stations are a specifically allowed use
  - Amendment passed by Planning Commission on October 18, 2006
  - Amendment scheduled to come before Board of Supervisors on March 27, 2007

SCE RFO Process

- **CPV Ocotillo short-listed in SCE NewGen RFO process for up to 8 LMS100 units**
- **CPV Ocotillo one of a handful of projects capable of meeting SCE's Fast Track criteria**
  - Completed Facilities Study
  - On line date prior to August 2010
  - SCE has preference for projects with earlier on-line dates
- **Project is designed for needs identified in LA Basin by SCE and CAISO**
  - Quick Start Capability – Start within 10 minutes
  - Black Start Service – plant equipped w/ one black start generator
  - Regulation Service – each unit equipped with AGC
- **Advanced negotiations with SCE underway for Tolling Agreement under Fast Track**
  - Negotiations complete by January 31, 2007
  - Execution of contracts by February 15, 2007
- **Guaranteed Delivery Dates in Contract**
  - Units 1 -3: July 1, 2009
  - Units 4-8: August 1, 2010

Project Schedule



Tolling Agreement Executed	February 15, 2007
AFC Submittal to CEC	April 1, 2007
AFC Data Adequacy	May 15, 2007
AFC Certification/ Other Permits Completion	June 2008
Construction NTP Issued	June 2008
Commercial Operations Date (first 3 units)	June 2009
Guaranteed Commercial Operations Date (first 3 units)	July 1, 2009