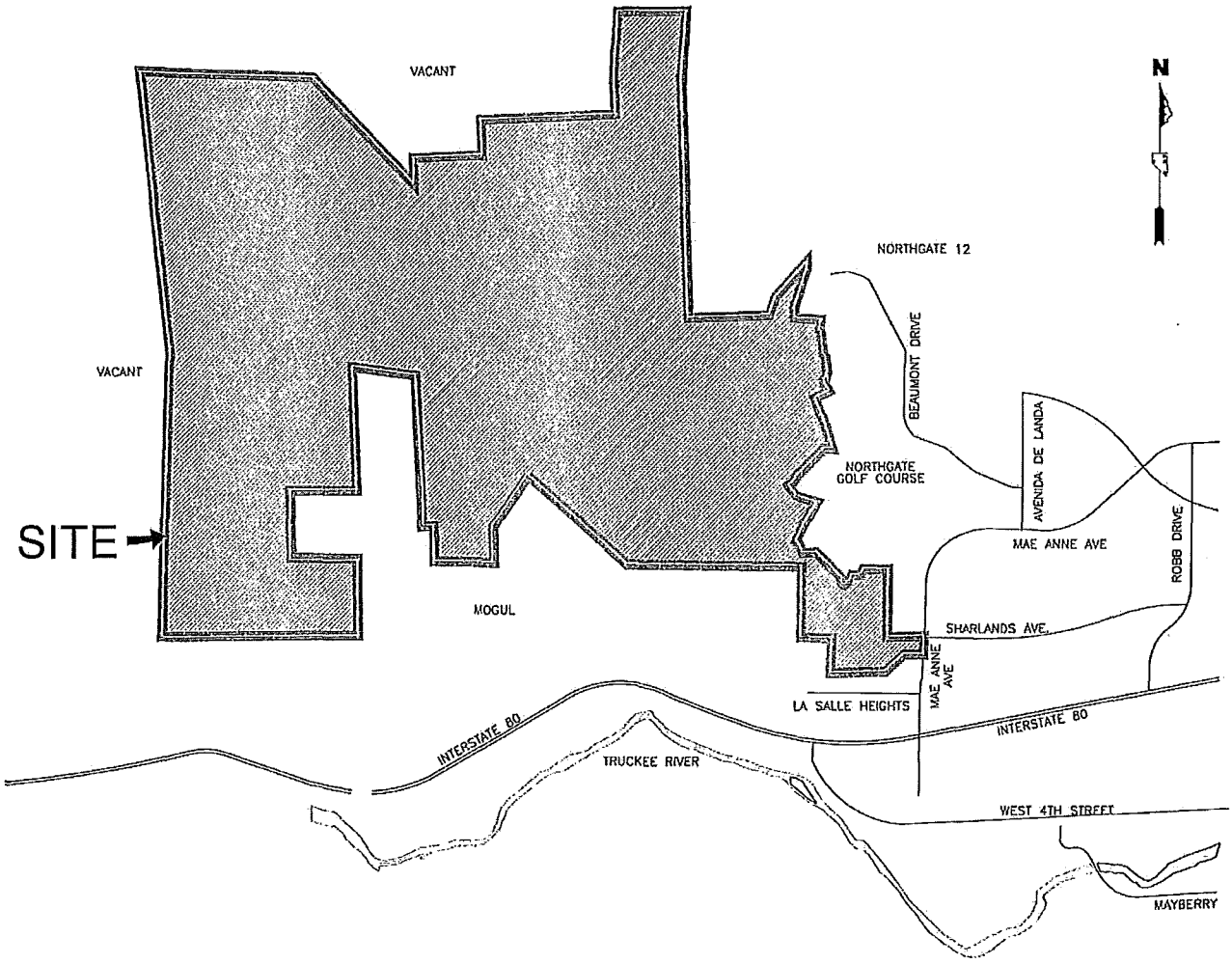
APPENDIX



VICINITY MAP FOR SOMERSETT

SCALE
N.T.S.

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SUMMIT ENGINEERING CORPORATION
5405 MAE ANNE AVE. RENO, NV. 89523

SHEET 1 OF 1

(Table 1) Somersett Sanitary Sewer Discharge Analysis

Designation	Unit Count	ERU	Eastern	Western	Mae Anne	Q_{peak}-Main (gpd)	Q_{peak}-Trunk (gpd)
Area 1							
Ridgeway	21	21			X	22,050	15,750
Cityside	22	22	X			23,100	16,500
Riverside Ph.1	7	7	X			7,350	5,250
Dakota Ridge	40	40	X			42,000	30,000
Autumn Ridge	79	79	X			82,950	59,250
Town Center Residential	218	218	X			228,900	163,500
Entry Pad (townhomes)	25	17	X			17,588	12,563
Town Center (townhomes)	33	22	X			23,216	16,583
1A (townhomes)	96	64	X			67,536	48,240
Total	541	490	469	0	21	514,689	367,635
Area 2							
Morgan Pointe	41	41	X			43,050	30,750
Willow Ranch	98	98	X			102,900	73,500
2A	22	22	X			23,100	16,500
2B	23	23	X			24,150	17,250
2C	49	49	X			51,450	36,750
2D	20	20	X			21,000	15,000
2E (east)	9	9	X			9,450	6,750
2E (west)	53	53		X		55,650	39,750
2F	68	68	X			71,400	51,000
2G	27	27	X			28,350	20,250
2H	23	23		X		24,150	17,250
2I	64	64	X			67,200	48,000
Total	497	497	421	76	0	521,850	372,750
Area 3							
3A	27	27	X			28,350	20,250
3B	29	29	X			30,450	21,750
3C	35	35	X			36,750	26,250
3D	24	24	X			25,200	18,000
3E	15	15	X			15,750	11,250
3F	6	6	X			6,300	4,500
3G	7	7	X			7,350	5,250
3H	6	6	X			6,300	4,500
3I	14	14	X			14,700	10,500
3J	11	11	X			11,550	8,250
3K	4	4	X			4,200	3,000
Total	178	178	178	0	0	186,900	133,500
Area 4							
4A	96	96		X		100,800	72,000
4B	17	17	X			17,850	12,750
4C	17	17	X			17,850	12,750
4D	19	19		X		19,950	14,250
4E	19	19		X		19,950	14,250
4F	60	60		X		63,000	45,000
4G	4	4	X			4,200	3,000
Total	232	232	38	194	0	243,600	174,000

Designation	Unit Count	ERU	Eastern	Western	Mae Anne	Q_{peak}-Main (gpd)	Q_{peak}-Trunk (gpd)
Area 5							
5A	7	7		X		7,350	5,250
5B	153	153		X		160,650	114,750
5C	56	56		X		58,800	42,000
5D (townhomes)	270	180		X		189,000	135,000
5E	25	25		X		26,250	18,750
Del Webb Village 1	57	57		X		59,850	42,750
Del Webb Village 2	45	45		X		47,250	33,750
Del Webb Village 3	87	87		X		91,350	65,250
Del Webb Village 4	82	82		X		86,100	61,500
Del Webb Village 5	147	147		X		154,350	110,250
Del Webb Village 6	91	91		X		95,550	68,250
Del Webb Village 7	81	81		X		85,050	60,750
Del Webb Village 8	65	65		X		68,250	48,750
Del Webb Village 9	96	96		X		100,800	72,000
Del Webb Village 10	101	101		X		106,050	75,750
5N	12	12		X		12,600	9,000
Lower Durke	375	375		X		393,750	281,250
Total	1750	1660	0	1,660	0	1,743,000	1,245,000
Area 6	200	200		X		210,000	150,000
Total	200	200	0	200	0	210,000	150,000
Wintercreek							
Unit 1	34	34		X		35,700	25,500
Unit 2	85	85		X		89,250	63,750
Unit 3	23	23		X		24,150	17,250
Total	142	142	0	142	0	149,100	106,500
SBE							
Section A	88	88		X		92,400	66,000
Section B	51	51		X		53,550	38,250
Section C	23	23		X		24,150	17,250
Total	162	162	0	162	0	170,100	121,500
Miscellaneous							
Del Webb Rec. Center*		25		X		26,250	18,750
Fire Station*		4		X		4,200	3,000
Golf Course Clubhouse*		17	X			17,850	12,750
Maintenance Facility*		1	X			1,050	750
Town Center Rec. Center*		16	X			16,800	12,000
North Gate 12	224	224	X			235,200	168,000
Mogul Meadows	70	70	X			73,500	52,500
Total		357	328	29	0	374,850	267,750

Designation		AREA	Eastern	Western	Mae Anne	Q_{peak}-Main	Q_{peak}-Trunk
		(Acre)				(gpd)	(gpd)
Commercial Site #1*		16		X		163,410	163,410
Commercial Site #2*		6		X		57,930	57,930
Commercial Site #3*		10		X		96,140	96,140
Town Center Commercial*		1	X			8,300	8,300
Total		33	0.830	31.748	0	1,075,480	861,280

*Based on City of Reno Public Works Design Manual values for gallons per acre per day

Designation			Eastern	Western	Mae Anne	Q_{peak} (mgd)
Total (ERU)			1,434	2,463	21	
Total Q_{peak} (mgd) - Main			1.514	2.904	0.022	4.440
Total Q_{peak} (mgd) - Trunk			1.084	2.165	0.016	3.264

Eastern Sewer - Unit Comparison Table

(Does not include offsite contributions)

	A - PUD		B - PROPOSED DENSITY		PROPOSED vs. PUD	
Village 1	Use	Unit Count	Proposed Use	Proposed Unit Count	Change	
Cityside	Executive	22	Patio/Cluster	22	-	
Riverside - Ph 1	Estate	31	Estate	7	(24)	
Dakota Ridge	Estate	41	Estate	40	(1)	
Autumn Ridge	Village	79	Village	79	-	
Town Center Residential	Cluster	240	Patio/Cluster	218	(22)	
Entry Pad	Cluster	NA	Townhome	25	25	
Town Center Commercial Pads	TC Comercial	NA	Townhome	33	33	
1A	Village	11	Townhome	96	85	
		424		520	96	22.6%
Village 2						
2A	Executive	24	Executive	22	(2)	
Morgan Pointe	Patio	41	Patio/Cluster	41	-	
Willow Ranch	Executive	98	Executive	98	-	
2B	Executive	33	Executive	23	(10)	
2C	Estate	29	Estate	49	20	
2D	Executive	44	Executive	20	(24)	
2E	Executive	4	Executive	9	5	
2F	Executive	56	Executive	68	12	
2G	Executive	24	Executive	27	3	
2I	Patio	86	Patio/Cluster	64	(22)	
		439		421	(18)	-4.1%
Village 3						
3A	Executive	27	Village	27	-	
3B	Patio	29	Patio/Cluster	29	-	
3C	Patio	46	Executive	35	(11)	
3D	Estate	16	Estate	24	8	
3E	Estate	13	Estate	15	2	
3F	Estate	6	Estate	6	-	
3G	Estate	6	Estate	7	1	
3H	Estate	7	Estate	6	(1)	
3I	Estate	4	Estate	14	10	
3J	Estate	8	Estate	11	3	
3K	Estate		Estate	1	1	
3K	Estate	17	Estate	3	(14)	
		179		178	(1)	-0.6%
Village 4						
4B	Estate	17	Estate	17	-	
4C	Estate	17	Estate	17	-	
4G	Patio	36	Estate	4	(32)	
		70		38	(32)	-45.7%
Totals		1,112		1,157	45	4.0%

MASTER SANITARY SEWER REPORT

FOR

SOMERSETT EASTERN OFFSITE SEWER

(Updated 2/27/2003)

prepared for

Somersett Development Co., LLC
100 W. Liberty St.; Suite 990
Reno, NV 89501

prepared by

SUMMIT ENGINEERING CORPORATION
5405 Mae Anne Avenue
Reno, NV 89523

February 2003

INTRODUCTION

The following represents the sanitary sewer analysis for the Somersett Eastern Offsite Sanitary Sewer (ESS). ESS starts in a canyon within Somersett, runs through Mogul and ties into a stub provided with the Lawton-Verdi Interceptor. (Ref. Figure 1 – Vicinity Map and Figure 2 – Site Plan)

ESS will convey sewage from the Somersett PUD, the Canyon Pines and Northgate 12. The following sewage source summary lists the projected contributions based solely on PUD lot and acreage counts.

DESIGN STANDARDS

Current design standards as outlined in the *City of Reno Public Works Design Manual* were used in analyzing ESS.

Specifically, the following parameters were used:

Occupancy

Single family residential	3 capita/dwelling unit
Condominium/Apartment (multi-family)	2 capita/dwelling unit

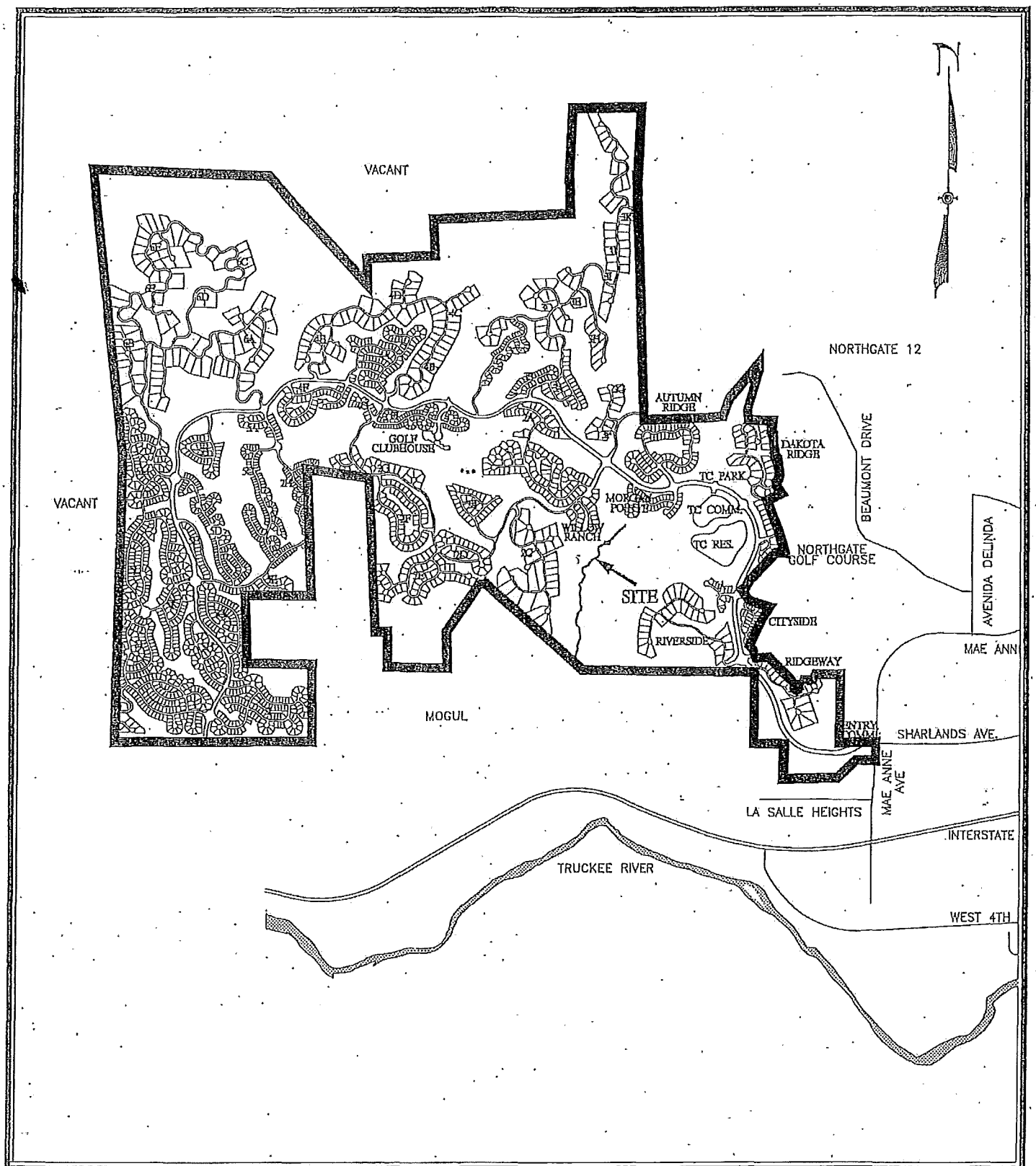
Sewage per Capita Contributions

Mains (All lines with laterals are to be considered mains)	350 gallons/capita/day

Note: Because of the necessity to provide service to some of the residents of Mogul the entire off-site sewer must be considered a main.

Sewage per Acre Contributions

Public Facility (recreation)	3,200 gallons/acre/day
Commercial	10,000 gallons/acre/day



EASTERN OFFSITE SEWER VICINITY MAP FIGURE 1

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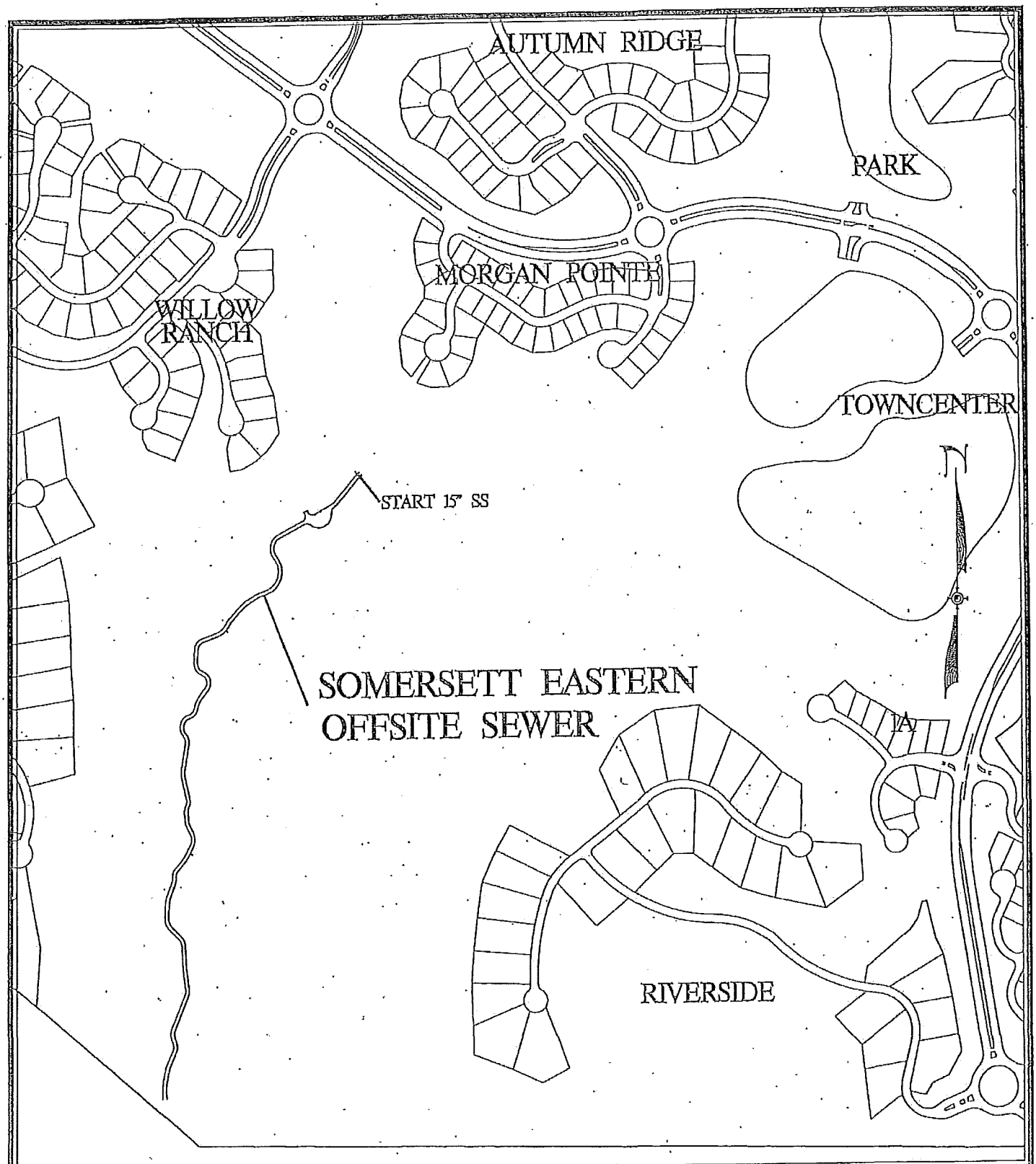
SHEET 1 OF 1



EASTERN OFFSITE SEWER
SITE PLAN
FIGURE 2

SUMMIT ENGINEERING CORPORATION
5405 MAE ANNE AVE. RENO, NV. 89523

SHEET 1 OF 1

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SOURCE	UNIT LOTS OR ACREAGE	PEAK FLOWS FOR MAINS GALLONS/DAY
NG12	224	235,200
Canyon Pines	303	318,150
Autumn Ridge	79	82,950
Morgan Pointe	41	43,050
Dakota Ridge	41	43,050
Riverside	31	32,550
Cityside	22	23,100
Willow Ranch	98	102,900
2A	24	25,200
2B	33	34,650
2C	29	30,450
2D	44	46,200
2E	57	59,850
2F	56	58,800
2G	24	25,200
2H	51	53,550
2I	86	90,300
3A	27	28,350
3B	29	30,450
3C	46	48,300
3D	21	22,050
3E	13	13,650
3F	6	6,300
3G	7	7,350
3H	7	7,350
3I	13	13,650
3J	6	6,300
3K	6	6,300
Kelly	3	3,150
4A	94	98,700
4B	17	17,850
4C	16	16,800
4F	30	31,500
4G	36	37,800
Town Center		
- Commercial	50,000 sf	11,478
- Recreation	22,000 sf	1,616
- Multi Family	245 mf	171,500
Mogul Meadows	70	73,500
Total		1,959,095 gal/day
		3.031 cfs

SEWER ANALYSIS

Existing topography and anticipated grading dictate what areas will gravity sewer to ESS, as listed in the Sewage Source Summary. These areas will be conveyed to ESS via main sewers through Somersett and connect to ESS in three locations:

1) Willow Ranch 2) Morgan Pointe 3) Town Center (ref. Figure 3 – Proposed Eastern Offsite Sanitary Sewer in map pocket)

The proposed ESS begins in the canyon as a 15" sewer main and continues down the canyon until it enters Cliff View Drive in Mogul. The minimum constructed slope for this portion is 0.021 ft/ft. At this slope the 50% full capacity is 2,811,479 gallons per day, which exceeds the anticipated 1,955,179 gallons per day.

From where ESS enters Cliff View Drive to the tie in point at the Lawton-Verdi interceptor, ESS remains a 15" sewer main. The minimum constructed slope for this 15" sewer main portion is 0.0125 ft/ft. At this slope the 50% full capacity is 2,165,612 gallons per day, which exceeds the anticipated 1,955,179 gallons per day.

CONCLUSION

ESS will provide gravity sanitary sewer service to NG12, the Canyon Pines and portions of the Somersett PUD, and Mogul Meadows.

UPDATED

SANITARY SEWER REPORT

FOR

SOMERSETT WESTERN SEWER

prepared for

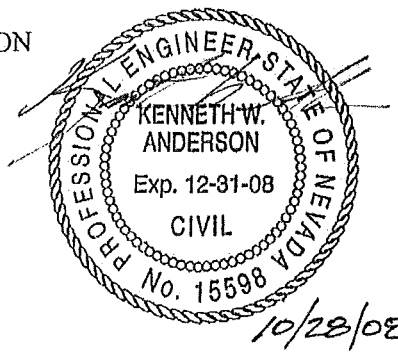
SOMERSETT
It's Great To Be Home.

Somersett Development Company LTD., LLC
7655 Town Square Way, Suite 220
Reno, NV 89523

prepared by

SUMMIT ENGINEERING CORPORATION™

SUMMIT ENGINEERING CORPORATION
5405 Mae Anne Avenue
Reno, NV 89523



October 2003
Updated July 2008
Revised October 2008

INTRODUCTION

The following report represents the updated sanitary sewer analysis for the Somersett Western Sanitary Sewer System (WSS). WSS will ultimately consist of 2,254 single family residential units, 270 townhomes, a recreational center, and a City of Reno Fire Station, totaling 2,463 Equivalent Residential Units (ERU); with an additional 3 commercial sites totaling 31.7+/- acres (Ref. Sanitary Sewer Display and Vicinity Map).

The majority of the WSS has been constructed and is currently in use. Information on the existing mains (ie: pipe size and pipe slope) was obtained from various improvement plans and for the purposes of this report is considered to be accurate. This revision is to establish that the mains in place are adequate for the anticipated flows.

DESIGN STANDARDS

Current design standards were used in analyzing the effects of connecting the proposed flows to the existing facilities. These standards include a mannings (n) value of 0.014 and the pipe not to exceed one-half full. Sewage contributions were calculated based on peak flows and occupancy rates from the City of Reno Public Works Design Manual. Below is a breakdown of the sewage contributions for the various areas:

Single family residential (sewer main)	350 gallons/capita/day
Single family residential (sewer trunk)	250 gallons/capita/day
Commercial	10,000 gallons/acre/day
Public Facility	3,200 gallons/acre/day
Office	3,200 gallons/acre/day

The occupancy rate is assumed to be three (3) for single-family residential and two (2) for condominium/apartment/townhome (multi-family).

SEWER ANALYSIS

Twelve analysis points (AP) within WSS were analyzed using proposed pipe and slope information obtained from the various subdivision improvement plans prepared for the projects to determine whether the system has adequate capacity in its current state for the proposed density changes (Ref. Sanitary Sewer

Display Map). This report analyzed the pipes with the flattest design slopes within the selected areas. The analysis points exceeding 60% full at the peak discharge were surveyed to determine the actual constructed pipe slope. The *Somersett Sanitary Sewer Discharge Analysis* (Table 1) shows the sewer contributions of the individual subdivisions for the Somersett development and the *Western Sewer – Peak Discharge Report* (Table 2) shows the critical sections with the flattest slope that was analyzed for the project.

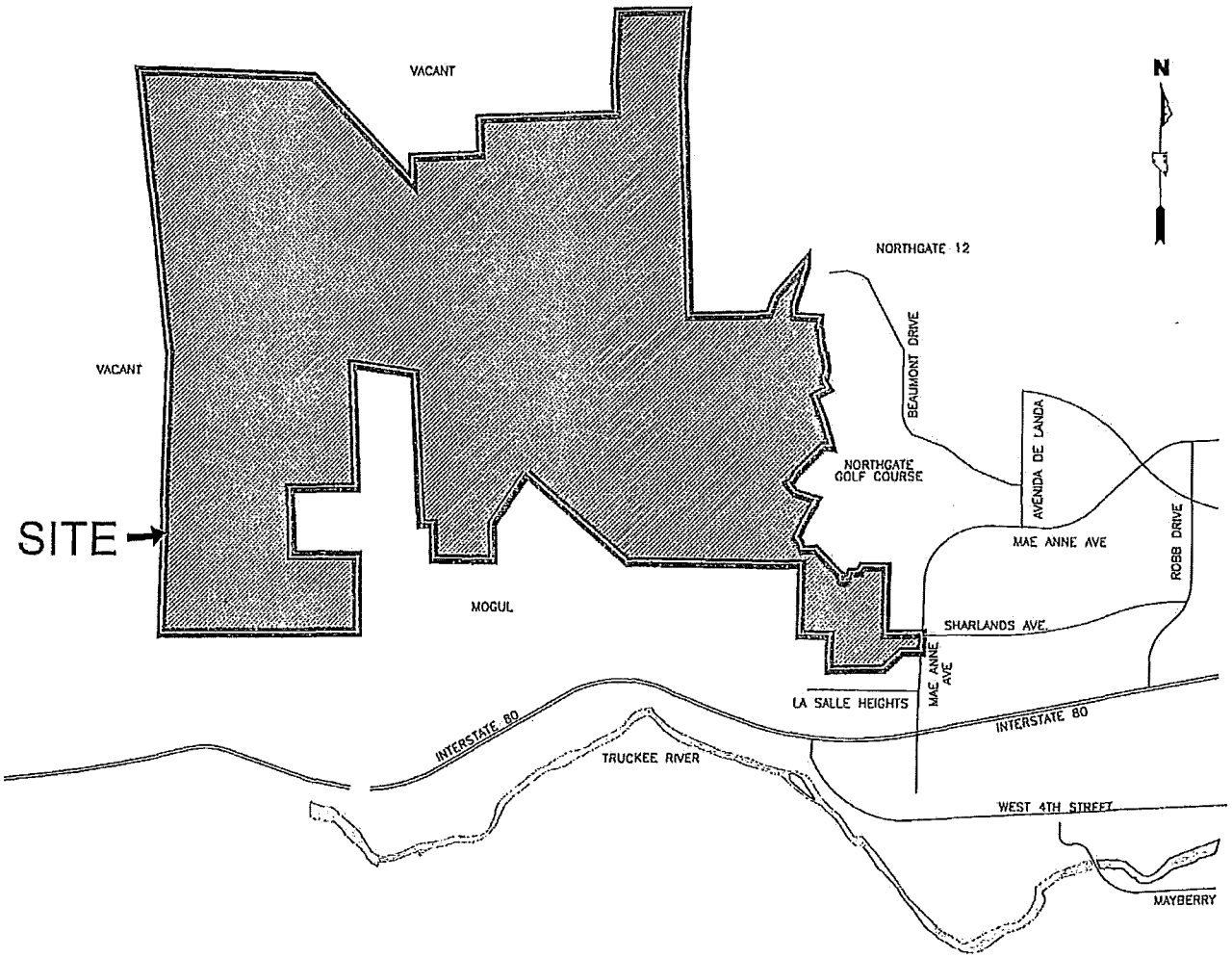
- AP#1 (Analysis Point #1) consists of one (1) 8" pipe section with a design slope of 0.00230 ft/ft and is 66.2% full. The pipe information for AP#1 was obtained from the *Somersett Village 5B* plans prepared by Wood Rogers. The actual constructed slope of AP#1 was determined to be 0.0200 ft/ft. Based on actual constructed slope, the pipe is 35.0% full at a peak discharge of 0.270 mgd.
- AP#2 consists of two (2) 8" pipe sections with design slopes of 0.0064 ft/ft (67.1% full) and 0.0070 ft/ft (65.0% full). The pipe information for AP#2 was obtained from the *5C @ Somersett* plans prepared by Odyssey Engineering, Inc. The actual constructed slopes of AP#2 were determined to be 0.0057 ft/ft and 0.0080 ft/ft. Based on actual constructed slopes, the pipes are 70.1% full and 62.1% full at a peak discharge of 0.459 mgd.
- AP#3 consists of one (1) 8" pipe section with a design slope of 0.0550 ft/ft and is 37.9% full at a peak discharge of 0.518 mgd. The pipe information for AP#3 was obtained from the *Somersett Western Water and Sewer Interties* plans prepared by Stantec Consulting, Inc and Manhard Consulting, Ltd.
- AP#4 consists of one (1) 8" pipe section with a design slope of 0.0170 ft/ft and is 41.4% full at a peak discharge of 0.340 mgd. The pipe information for AP#4 was obtained from the *Somersett Western Water and Sewer Interties* plans prepared by Stantec Consulting, Inc and Manhard Consulting, Ltd.
- AP#5 consists of one (1) 8" pipe with a design slope of 0.0437 ft/ft and is 53.8% full at a peak discharge of 0.858 mgd. The pipe information for AP#5 was obtained from the *Somersett Western Water and Sewer Interties* plans prepared by Stantec Consulting, Inc and Manhard Consulting, Ltd.
- AP#6 consists of one (1) 8" pipe section with a design slope of 0.0040 ft/ft and is 49.9% full at a peak discharge of 0.229 mgd. The pipe information for AP#6 was obtained from the *Somersett 2E* plans prepared by Manhard Consulting, Ltd.

- AP#7 consists of one (1) 15" pipe section with design a slope of 0.0030 ft/ft and is 50.7% full at a peak discharge of 1.087 mgd. The pipe information for AP#7 was obtained from the *Somersett Western Water and Sewer Interties* plans prepared by Stantec Consulting, Inc and Manhard Consulting, Ltd.
- AP#8 consists of one (1) 8" pipe section with a design slope of 0.0300 ft/ft and is 43.0% full at a peak discharge of 0.482 mgd. The pipe information for AP#8 was obtained from the *Somersett Village 5F-I Sierra Canyon by Del Webb Sewer Improvements* plans prepared by MacKay & Somps Civil Engineers.
- AP#9 consists of one (1) 10" pipe section with a design slope of 0.0150 ft/ft and is 49.5% full at a peak discharge of 0.793 mgd. The pipe information for AP#9 was obtained from the *Somersett Village 5F-I Sierra Canyon by Del Webb Sewer Improvements* plans prepared by MacKay & Somps Civil Engineers.
- AP#10 consists of one (1) 15" pipe section with a design slope of 0.0100 ft/ft and is 44.2% full at a peak discharge of 1.566 mgd. The pipe information for AP#10 was obtained from the *Somersett Village 5F-I Sierra Canyon by Del Webb Sewer Improvements* plans prepared by MacKay & Somps Civil Engineers.
- AP#11 consists of four (4) 15" pipe sections with design slopes ranging from 0.0070 ft/ft to 0.0076 ft/ft. Based on these design slopes, the pipes range from 54.1% full to 52.7% full at a peak discharge of 1.847 mgd. The pipe information for AP#11 was obtained from the *Western Offsite Sanitary Sewer @ Somersett* plans prepared by Summit Engineering Corporation.
- AP#12 consists of one (1) 15" pipe section with a design slope of 0.0443 ft/ft and is 35.2% full at a peak discharge of 2.165 mgd. The pipe information for AP#12 was obtained from the *Western Offsite Sanitary Sewer @ Somersett* plans prepared by Summit Engineering Corporation.

CONCLUSION

Four of the twelve locations (8 pipe sections) analyzed in this report exceed the half-full capacity of the sewer pipes with a maximum (AP#2) of 70.1% full. It is not anticipated that any future developments upstream will utilized the WSS system other than what is proposed in the Planned Unit Development (PUD) Handbook. In the event of future developments not identified in this report will utilize the existing system, the downstream sanitary sewer system should be re-analyzed.

APPENDIX



VICINITY MAP FOR SOMERSETT

SCALE
N.T.S.

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SHEET 1 OF 1

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4C	17	17	X			17,850	12,750
4D	19	19		X		19,950	14,250
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5B	153	153		X		160,650	114,750
5C	56	56		X		58,800	42,000
5D (townhomes)	270	180		X		189,000	135,000
5E	25	25		X		26,250	18,750
Del Webb Village 1	57	57		X		59,850	42,750
Del Webb Village 2	45	45		X		47,250	33,750
Del Webb Village 3	87	87		X		91,350	65,250
Del Webb Village 4	82	82		X		86,100	61,500
Del Webb Village 5	147	147		X		154,350	110,250
Del Webb Village 6	91	91		X		95,550	68,250
Del Webb Village 7	81	81		X		85,050	60,750
Del Webb Village 8	65	65		X		68,250	48,750
Del Webb Village 9	96	96		X		100,800	72,000
Del Webb Village 10	101	101		X		106,050	75,750
5N	12	12		X		12,600	9,000
Lower Durke	375	375		X		393,750	281,250
Total	1750	1660	0	1,660	0	1,743,000	1,245,000
Area 6	200	200		X		210,000	150,000
Total	200	200	0	200	0	210,000	150,000
Wintercreek							
Unit 1	34	34		X		35,700	25,500
Unit 2	85	85		X		89,250	63,750
Unit 3	23	23		X		24,150	17,250
Total	142	142	0	142	0	149,100	106,500
SBE							
Section A	88	88		X		92,400	66,000
Section B	51	51		X		53,550	38,250
Section C	23	23		X		24,150	17,250
Total	162	162	0	162	0	170,100	121,500
Miscellaneous							
Del Webb Rec. Center*		25		X		26,250	18,750
Fire Station*		4		X		4,200	3,000
Golf Course Clubhouse*		17	X			17,850	12,750
Maintenance Facility*		1	X			1,050	750
Town Center Rec. Center*		16	X			16,800	12,000
North Gate 12	224	224	X			235,200	168,000
Mogul Meadows	70	70	X			73,500	52,500
Total		357	328	29	0	374,850	267,750

Designation		AREA	Eastern	Western	Mae Anne	Q_{peak}-Main	Q_{peak}-Trunk
		(Acre)				(gpd)	(gpd)
Commercial Site #1*		16		X		163,410	163,410
Commercial Site #2*		6		X		57,930	57,930
Commercial Site #3*		10		X		96,140	96,140
Town Center Commercial*		1	X			8,300	8,300
Total		33	0.830	31.748	0	1,075,480	861,280

*Based on City of Reno Public Works Design Manual values for gallons per acre per day

Designation			Eastern	Western	Mae Anne	Q_{peak} (mgd)
Total (ERU)			1,434	2,463	21	
Total Q_{peak} (mgd) - Main			1.514	2.904	0.022	4.440
Total Q_{peak} (mgd) - Trunk			1.084	2.165	0.016	3.264

(Table 2) Western Sewer - Peak Discharge Report

Label	Roughness Coefficient	Channel Slope (ft/ft)	Diameter (in)	Percent Full (%)	Discharge (mgd)
Analysis Point #01	0.014	0.00230	8.00	66.2	0.270
Analysis Point #01 (surveyed)	0.014	0.02000	8.00	35.0	0.270
Analysis Point #02	0.014	0.00640	8.00	67.1	0.459
Analysis Point #02 (surveyed)	0.014	0.00570	8.00	70.1	0.459
Analysis Point #03	0.014	0.05500	8.00	37.9	0.518
Analysis Point #04	0.014	0.01700	8.00	41.4	0.340
Analysis Point #05	0.014	0.04370	8.00	53.8	0.858
Analysis Point #06	0.014	0.00400	8.00	49.9	0.229
Analysis Point #07	0.014	0.00300	15.00	50.7	1.087
Analysis Point #08	0.014	0.03000	8.00	43.0	0.482
Analysis Point #09	0.014	0.01500	10.00	49.5	0.793
Analysis Point #10	0.014	0.01000	15.00	44.2	1.566
Analysis Point #11	0.014	0.00700	15.00	54.1	1.847
Analysis Point #12	0.014	0.04430	15.00	35.2	2.165

SOMERSETT DEVELOPMENT STORM DRAINAGE MASTER PLAN
EXECUTIVE SUMMARY

Introduction and Purpose

The Somersett Subdivision is located on the south slope of Peavine Mountain and the west boundary of the City of Reno in the vicinity of the Northgate Golf Course and Mogul Meadows (Figure 1). the project is a planned unit development (PUD) comprised of residential neighborhoods and commercial centers. Access to the project will be through roads and streets connecting to Mae Anne Avenue. The general topography of the site can be described as a combination of islands of gradually sloping terraces separated by very steep ravines. the 1700 acre PUD lies within a nine square mile watershed that contribute to two concentration points at Interstate 80 at Mogul Meadows. This watershed begins at the top of Peavine Mountain and drains a large portion of the south facing slope. The flow from this watershed enters the existing developed area in Mogul where channels have been constructed to direct the flow to two culverts under Interstate 80 (I-80). This storm drainage enters the Truckee River a short distance downstream of I-80.

Based upon field investigation and the results of previous studies, the culverts and channel improvements in the Mogul area do not have adequate capacity to convey the 100-year discharge. Therefore, the Somersett Development will make every effort to incorporate stormwater detention in the design of the project to reduce downstream discharges entering the Mogul area. The Somersett Storm Drainage Master Plan, prepared by Nimbus Engineers for Summit Engineering presents the hydrologic and hydraulic analyses for existing and proposed conditions and describes the detention facilities that are proposed for the project. This executive summary presents the basic findings, conclusions and recommendations of the updated *Somersett Storm Drainage Master Plan*, (Nimbus, July 2002). For additional information, the reader is referred to the *Somersett Storm Drainage Master Plan.*

Existing Drainage Facilities

The project area is being developed. The existing drainage facilities immediately downstream within the Mogul Area consist of earthen channels and box culverts at the roadways. The culverts have less capacity in comparison to the channel. Therefore, the existing culverts at I-80 and are the constraint in hydraulic capacity of the downstream system.

Existing Studies

The most significant existing drainage related studies that apply to the project are:

- Federal Emergency Management Agency (FEMA) *Flood Insurance Study* (1994) – The *Flood Insurance Study* was originally completed in 1979 and published in 1984. Since that time, the study has been updated to reflect changer or to add additional floodplain areas. the original study considered the eastern drainage in the Mogul area and an approximate 100-year floodplain was delineated for this watercourse (Figure 2) but the other watercourses in the project area were not deemed significant enough for inclusion

in the *Flood Insurance Study*. Since the preparation of the original *Flood Insurance Study* the maps have not been revised for the Mogul area or the project site. The entire site is a Zone X which is defined as areas of minimal or undefined flood hazards.

- *Washoe County Concept Level Flood Control Master plan* (Kennedy/Jenks/Chilton, 1991) – This study was prepared as the first step in the master planning process for flood control in the region. The Concept Level Flood Control Master Plans was intended to identify the most significant flood control deficiencies in the region. Volume 2 of this plan provides information regarding the size and capacity of the existing drainage improvements in the Mogul area. A set of flood control facilities were also identified to reduce the hazards for the purpose of determining the order-of-magnitude costs associated with the flood control program within Washoe County, Reno and Sparks. The plan states that the facilities identified were preliminary and were identified for the purpose of determining overall costs and the facilities would need to revised during the next step in the planning process when the facility plan can be prepared based on more in-depth analysis of costs and benefits, environmental impacts and other factors. The second phase of the project was never completed due to funding limitations. With respect to the Somersett area, the plan showed two regional detention basins to address the deficiencies in the Mogul area. The next phase of the planning process may determine that conveyance improvements may be more cost effective. No effort has been made to secure land for these facilities or to prepare feasibility studies for the improvements.

- City of Reno *Major Drainageways Plan* – The City of Reno has identified "major drainageways" based on the size of the contributing watershed. Figure 3 shows the location of the drainageways identified by the City of Reno as Major Drainageways. This plan provides goals for minimizing disturbance of major drainageways consistent with flood control and environmental considerations.

Major Drainageways

The goal of the project is to minimize disturbance of the major drainageways with the design and construction of this project. Therefore, the analyses associated with the *Somersett Storm Drainage Master Plan* determine that these natural channels are unaltered except where shown on the conceptual grading plans prepared by Jeff Codega Planning/Design.

Stormwater Detention

In order to mitigate the impact of the project on downstream peak discharges, the project includes several detention basins. Since the goal of the project is to minimize disturbance of the natural watercourses, the stormwater detention basins will be incorporated into the roadway embankments. At the locations where elevated roadway embankments provide significant potential storage volume, a drainage structure will be designed with a low level outlet and a riser with an emergency overflow to meter the flow rate behind the embankment to provide detention of the offsite flows.

Hydrology

The evaluation of the pre- and post-hydrology was performed with the U.S. Army Corps of Engineer's Flood Hydrograph Package HEC-1. The methods of analysis used in the HEC-1 model are consistent with the Draft Washoe County Hydrologic Criteria and Drainage Design

Manual (WRC, 1996) and are described in more detail in the Somersett Drainage Master Plan. These analyses were performed for the 5 and 100-year recurrence intervals consistent with City of Reno standards. Two sets of analyses performed to evaluate the Somersett projects:

- Pre-Project Condition Analysis -- An HEC-1 model was prepared to represent the existing condition. the watershed boundaries and major concentration points are shown on Figure 4 for the existing condition without any of the subdivision or roadway improvements associated with the Somersett project.
- Post-Project Condition With Detention -- As described above, the project will include several detention basins to detain stormwater in the major watercourse behind the proposed roadway embankments. This third model is identical to the Post-Project condition model with exception to the addition of the detention basics. The locations of the proposed detention basins are noted on Figure 5.

Results

The results of the hydrologic analyses are summarized in Table 1 for the 5- and 100-year events. The results of the hydrologic analysis reveal the following significant results and conclusions:

- The drainage structures in the Mogul area have capacity for approximately the 5-year recurrence interval. Flow rates in excess of the 5-year may result in some localized overtopping of roadways at some of the channel crossings and at the I-80 frontage road and underpass. In a 100-year event flows with exceed channel and culvert capacities in the Mogul area and cause flooding of private properties in the vicinity of the channel and in areas inundated by backwater from roadway embankments.

- The results of this study show significant reductions in the 100-year flow rates compared to existing conditions, and the 100-year flow rates are lower than in WRC's 1998 model with detention. The 5-year flow rates in this study are all lower than in existing conditions except for control point CP1.

Recommendations

Use of the roadway embankments for the purpose of providing stormwater detention minimizes the disturbance of the major drainageways and should be continued. However, the stormwater detention/flood control needs of the project will need to supercede the goals of the Major Drainageways Plan with respect to the goal of the utilizing large span structures at the channel location. Performing detention at other locations would likely result in greater disturbance of the watercourse and adjoining areas.

At the time of final design, the design of the roadway embankment and associated drainage facilities will need to consider the following:

- Sediment storage volume will need to be provided at the inlet of the culvert to prevent obstruction of the culvert opening.

- Debris control and trash racks will be needed on the inlets of the drainage structure to prevent clogging that will reduce hydraulic capacity.

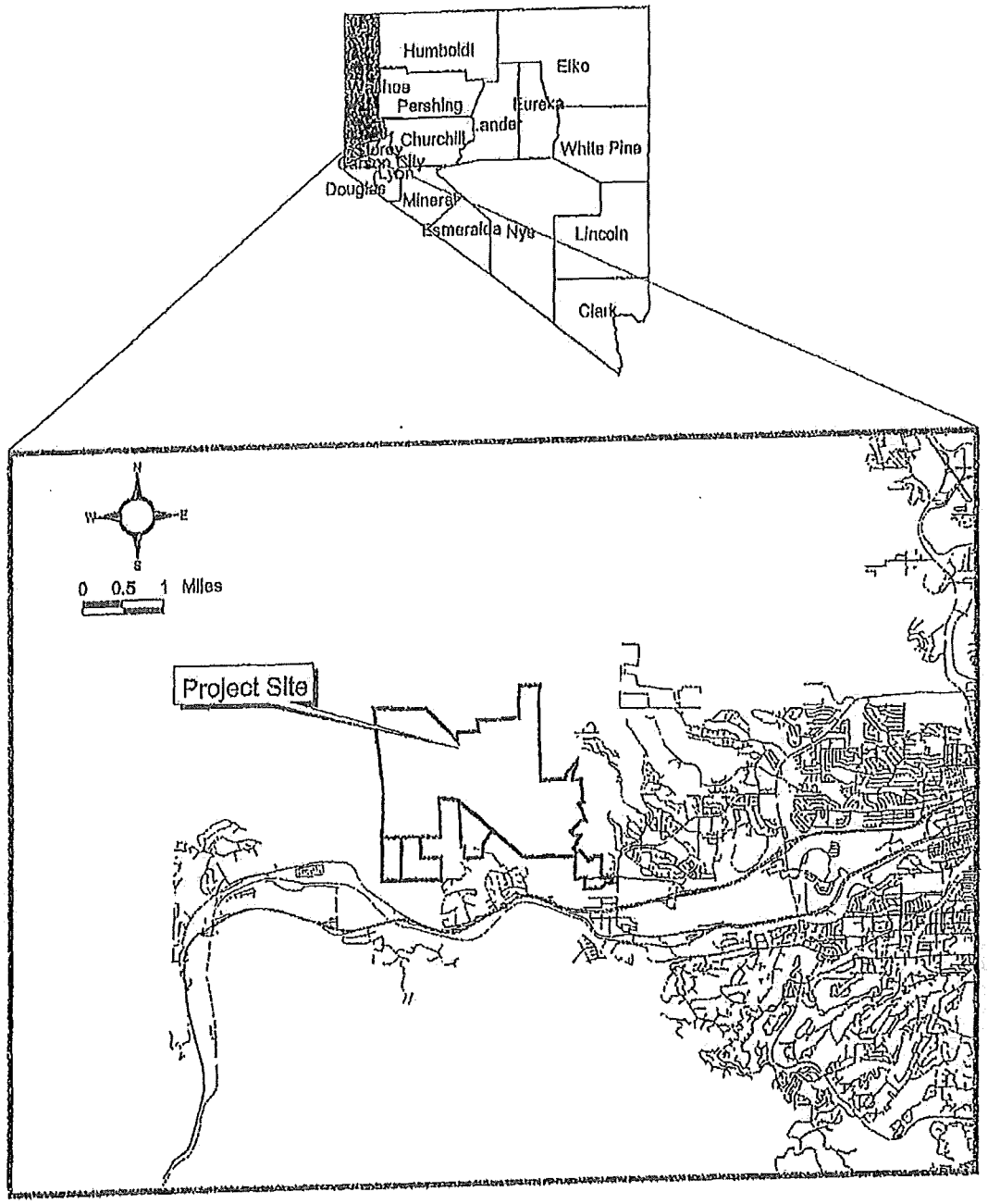
- The drainage structures will need to include emergency overflow risers to prevent overtopping of the roadway embankment should the primary outlet become obstructed.
- The embankment will need to be designed to provide maintenance access to the inlet of the structure storage area(s).
- The culvert outlet will need to include erosion control and/or energy dissipation structures to be determined during final design.
- The culvert will need to be designed with headwalls and potentially cutoff walls to prevent piping around the culvert under "high head" conditions.
- The Geotechnical engineer will need to provide recommendations regarding the placement and specifications for the roadway fill which considers the impoundment depths and durations anticipated.

Limitations

The Somersett Storm Drainage Master Plan was prepared for the limited purpose of evaluating the preliminary design of the Somersett Development and development of concept level stormwater detention basins needed to mitigate project impacts. The anlaysis was based on preliminary grading plans provided by Jeff Codega Planning Design (December 1997). At the time of final design the hydrologic and hydraulic analyses must be updated and more detailed hydraulic design will be necessary. Should changes be made to the locations of roadway improvements, site grading, location of detention basins or other significant site changes, revisions to the hydrologic analyses will be necessary. The results of this analysis should not be used for any other purpose other than those explicitly stated above without written verification from WRC.

Note: For additional information, please refer to the Storm Drainage Master Plan (January 9, 1998) and Survey of Wetlands, Stream Environment Zones and Water of the U.S. (May, 1998) on file with the City of Reno Development Department.

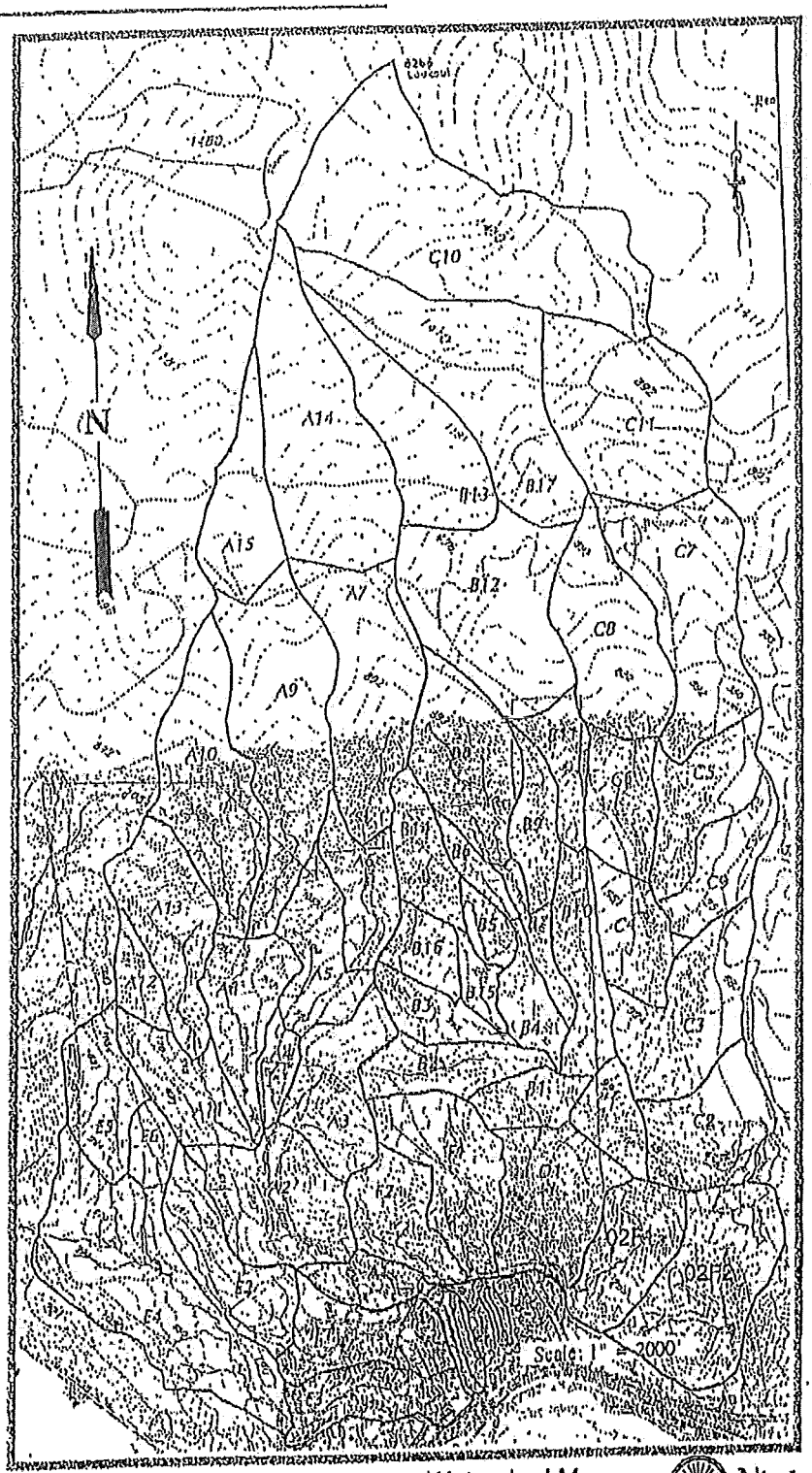
Table 1 Estimate of 5- and 100-year Peak Discharges						
Concentration Point	Existing 5-year Discharge (cfs)	WRC 1998 w/Detention 5-year Discharge (cfs)	This study With Detention 5-year Discharge (cfs)	Existing 100-year Discharge (cfs)	WRC 1998 w/Detention 100-year Discharge (cfs)	This study With Detention 100-year Discharge (cfs)
CP1	43	44	53	232	219	185
CP2	600	371	490	3448	2094	1386
CP10	451	429	382	2660	1944	1238
CP16	59	92	94	388	400	381
CP12	375	294	299	2031	1359	940
CP3	591	362	479	3367	2052	1315



June 2002
Nimbus Job No. 0227

Somersett Storm Drainage
Master Plan
Vicinity Map

Nimbus Engineers

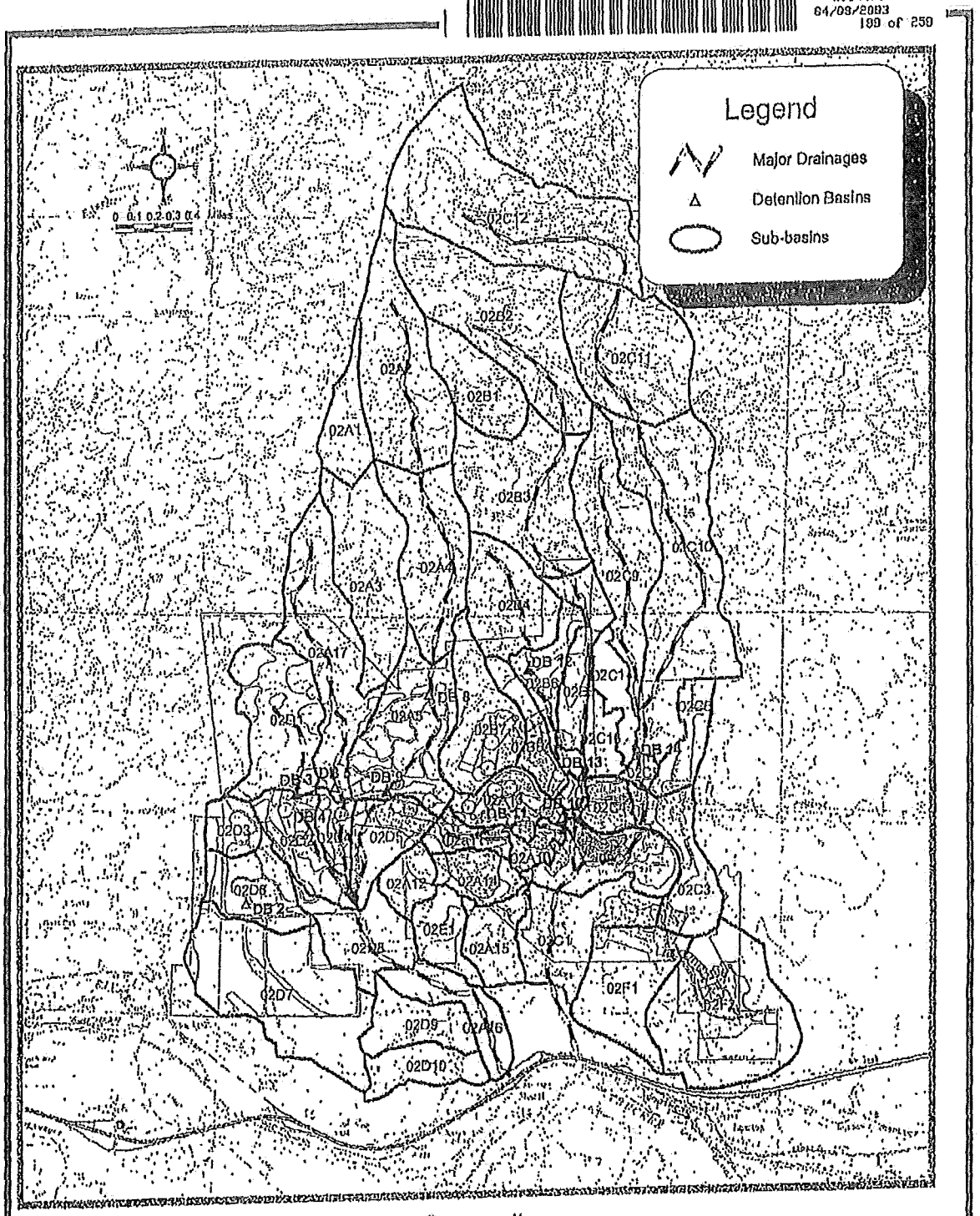


Existing Conditions Watershed Map

June 2002
Nimbus Job No. 0227

Modified from WRC Nevada, Inc. (1998)

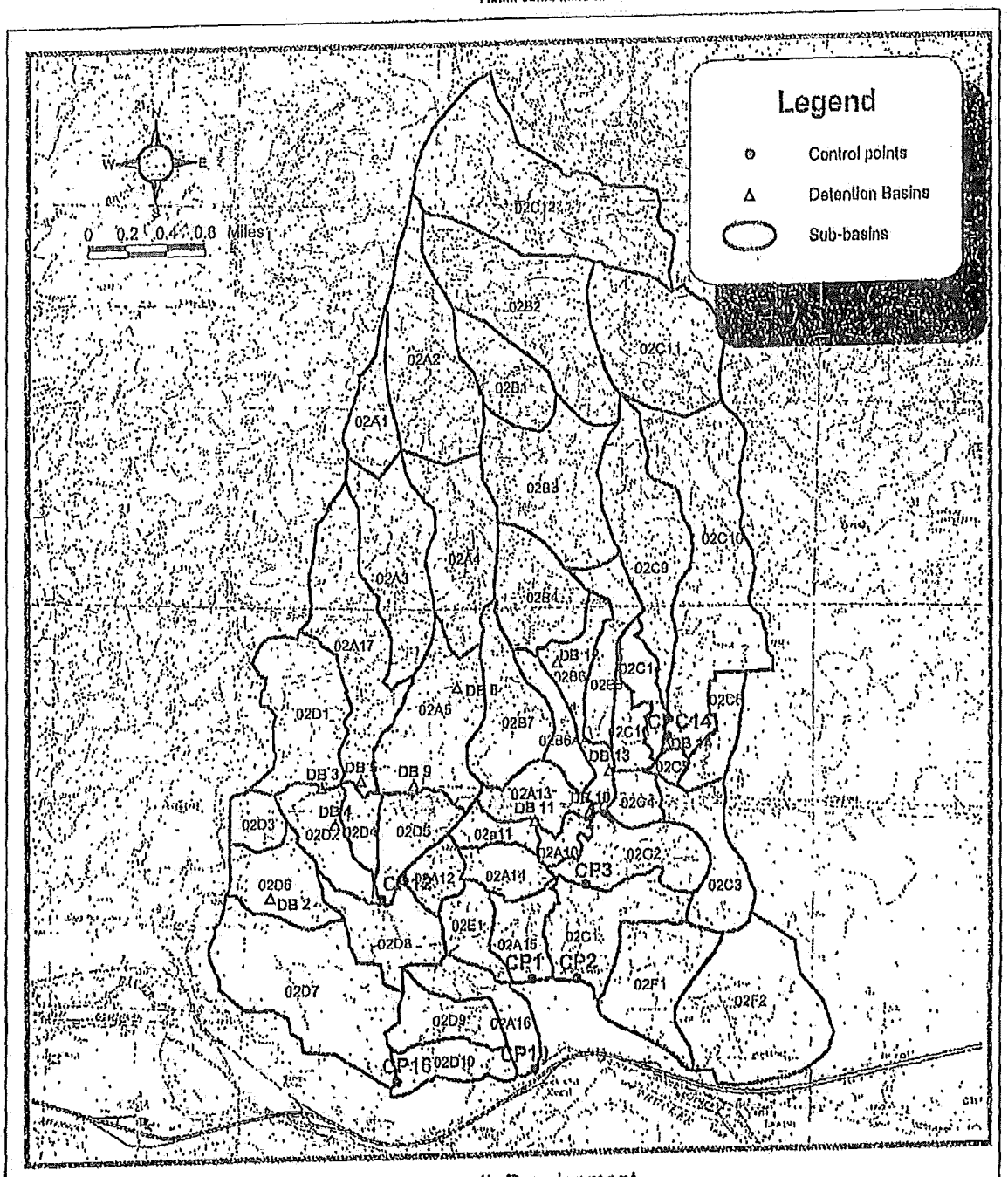
Nimbus Engineers



Somersett
Proposed Development Conditions Map

June 2002
Nimbus Job No. 0227

Nimbus Engineers



Somersett Development
Sub-basins, Control Points, Detention Basins

June 2002
Nimbus Job No. 0227

Nimbus Engineers

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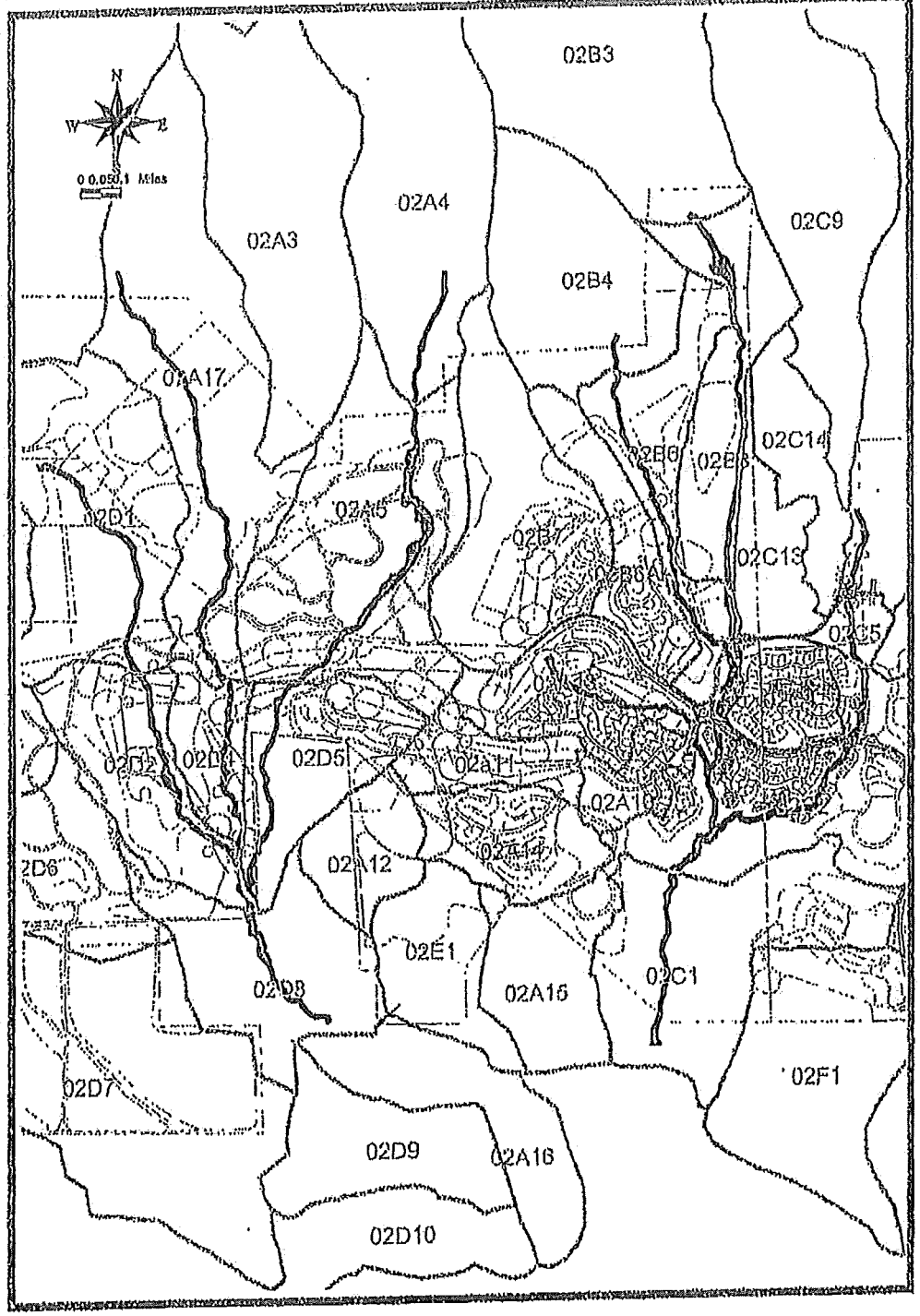


Somersett Development
Flood Plains on Major Drainages

Nimbus Engineers
Job No. 0227
June 2002

Nimbus Engineers

2834470
84/09/2003
201 of 259

UPDATED MASTER HYDROLOGY STUDY

Somersett Strom Drainage Master Plan prepared by Manhard Consulting, Ltd. dated November 29, 2004.

SOLAEGUI
ENGINEERS

June 28, 2002

Mr. Keith Lockard, P.E.
City of Reno
P.O. Box 1900
Reno, NV 89505

RE: Somersett

Dear Keith:

This letter includes updated traffic engineering information for the Somersett development located in Reno, Nevada. The most recent site plan indicates that Somersett will consist of 2,568 residential dwelling units, 50,000 square feet of local commercial/office uses, a 20,000 square feet recreation center, a school, a park and a golf course. The residential development will include the construction of 2,368 single family homes and 200 apartment units. The total number of residential dwelling units remains consistent with the approved P.U.D. The amount of commercial, office and recreation center building area has been significantly reduced.

The information contained in this letter includes trip generation calculations, trip distribution and assignment of project trips and a review of on-site roadway requirements. These issues are discussed below.

Trip Generation

Trip generation rates were based upon information taken from the Sixth Edition of *ITE Trip Generation* (1997) for Land Uses 210: Single Family Detached Housing, 220: Apartment, 411: City Park, 430: Golf Course, 495: Recreational Community Center, 520: Elementary School, 710: General Office Building and 814: Specialty Retail Center. The specialty retail center does not contain trip generation rates for the AM peak hour of adjacent street traffic. An AM peak hour factor of 2.5% and a 60% in/40% out directional split were assumed which are similar to other retail uses. Trips generated by the project were calculated for the peak hours between 7:00 and 9:00 AM and 4:00 and 6:00 PM which correspond to the peak hours of adjacent street traffic. Table 1 shows a summary of the average daily traffic volumes and peak hour volumes generated by the development.

The project will generate 23,401 average daily trips with 2,087 trips occurring during the AM peak hour and 2,158 trips occurring during the PM peak hour. It is expected that a portion of the traffic generated by the project will be internal trips due to the mixture of residential and non-residential land uses. These internal trips are made between project land uses and will not use streets external to the site. An internal capture rate of 10% was used in the analysis.

Solaegui Engineers Ltd. • 715 H Street • Sparks, Nevada 89431 • 775/358-1004 • FAX 775/358-1098
Civil & Traffic Engineers
e-mail: psolaegui@aol.com

TABLE 1
TRIP GENERATION

LAND USE	VARIABLE	ADT	AM PEAK HOUR IN	AM PEAK HOUR OUT	AM PEAK HOUR TOTAL	PM PEAK HOUR IN	PM PEAK HOUR OUT	PM PEAK HOUR TOTAL
Single Family	2,368 D.U.	19,062	426	1,255	1,681	1,184	663	1,847
Apartments	200 D.U.	1,326	16	86	102	84	40	124
City Park	5.2 Acres	8	0	0	0	0	0	0
Golf Course	18 Holes	643	32	8	40	22	28	50
Recreation Center	20,000 S.F.	458	17	9	26	12	23	35
Elementary School	600 Students	612	102	72	174	0	0	0
General Office	25,000 S.F.	275	34	5	39	6	31	37
Specialty Retail	25,000 S.F.	1,017	15	10	25	28	37	65
TOTAL		23,401	642	1,445	2,087	1,336	822	2,158

Trip Distribution and Assignment – Projected Traffic Volumes

The distribution of the external traffic to the on-site roadways and intersections was based upon the locations of attractions and productions of project trips. It is estimated that 92% of the off-site project traffic will use Somersett Parkway to the east and 8% will use the secondary access roads to the north. These secondary access roads will provide connections to Beaumont Parkway through the Northgate 12 subdivision. The external trips were assigned to the street network based on these percentages. The internal trips were assigned to the on-site street network based on the location of the various residential and non-residential uses. The attached Figure 1 shows the average daily traffic volumes on the on-site street network at project buildout.

The development of adjacent properties which will take access through Somersett were also reviewed. Three adjacent properties were identified. The Scott property located south of Somersett is estimated to include 55 single family homes. The Wade property located to the north of Somersett will also generate traffic. Road H will provide access to the Wade property. It is estimated that the Wade property will include 360 single family homes. Northgate Unit 12 is located just east of the Wade property and north of Somersett and will include 224 single family homes. Roads H and C will provide access to Northgate Unit 12. It is assumed that the majority of traffic generated by the Wade property and Northgate Unit 12 will ultimately travel through Somersett. Traffic generated by these three adjacent properties are included in the buildout traffic volumes shown in Figure 1.

Roadway Capacity Analysis

Somersett Parkway was reviewed for capacity based on daily level of service thresholds obtained from the Regional Transportation Commission. Table 2 shows the daily level of service thresholds for high, moderate, high and low access control arterial roadways.

TABLE 2
LEVEL OF SERVICE CRITERIA FOR ROADWAY SEGMENTS

FACILITY/LANES		AVERAGE DAILY TRAFFIC VOLUME LOS A-C	LOS D	LOS E	LOS F
High Access Control	4	≤36,500	36,501-39,000	39,001-41,400	>41,400
	6	≤56,000	56,001-58,900	58,901-62,200	>62,200
	8	≤74,600	74,601-78,600	78,601-82,900	>82,900
Moderate Access Control	4	≤28,700	28,701-33,500	33,501-36,100	>36,100
	6	≤44,400	44,401-51,400	51,401-54,600	>54,600
	8	≤59,200	59,201-68,600	68,601-72,700	>72,700
Low Access Control	2	≤8,800	8,801-13,200	13,201-14,800	>14,800
	4	≤18,600	18,601-27,300	27,301-30,100	>30,100

Table 2 does not contain level of service thresholds for a two-lane moderate access control arterials. It was therefore assumed that a two-lane moderate access control arterial would serve half the capacity of the four-lane arterial. A summary of the "Level of Service" (L.O.S.) operation for the on-site roadway segments is shown in Table 3.

TABLE 3
ROADWAY SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

ROADWAY	LOCATION	BUILDOUT
Somersett Parkway	South of Road A	23,750
4 Lane Moderate (Constructed by high access control criteria)		C
Somersett Parkway *	South of Road B	23,370
4 Lane Moderate (Constructed by high access control criteria)		C

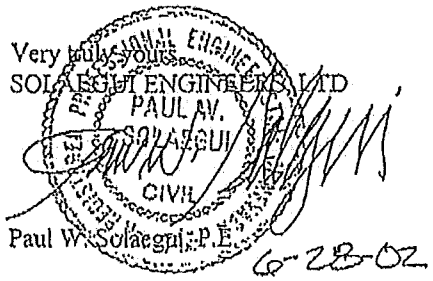
TABLE 3 (Continued)
ROADWAY SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

ROADWAY	LOCATION	BUILDOUT
Somersett Parkway 4 Lane Moderate	South of Road C	23,240 C
Somersett Parkway 4 Lane Moderate	South of Road D	22,570 C
Somersett Parkway 4 Lane Moderate	East of Road E	21,000 C
Somersett Parkway 4 Lane Moderate	East of Road F	21,030 C
Somersett Parkway 4 Lane Moderate	East of Road G	20,320 C
Somersett Parkway 4 Lane Moderate	East of Road H	20,250 C
Somersett Parkway 4 Lane Moderate	East of Road I	15,370 C
Somersett Parkway 2 Lane Moderate	East of Road J	13,550 C
Somersett Parkway 2 Lane Moderate	East of Road K	13,210 C
Somersett Parkway 2 Lane Moderate	East of Road L	11,920 C
Somersett Parkway 2 Lane Moderate	East of Road M	10,480 C
Somersett Parkway 2 Lane Moderate	West of Road M	9,790 C

The attached Figure 1 shows the street classification and lane requirements for Somersett Parkway based on the capacity analysis presented above.

We trust that this information will meet your requirements. Please call if you have any questions or comments.

Very truly yours,
SOLAEGUI ENGINEERS, LTD

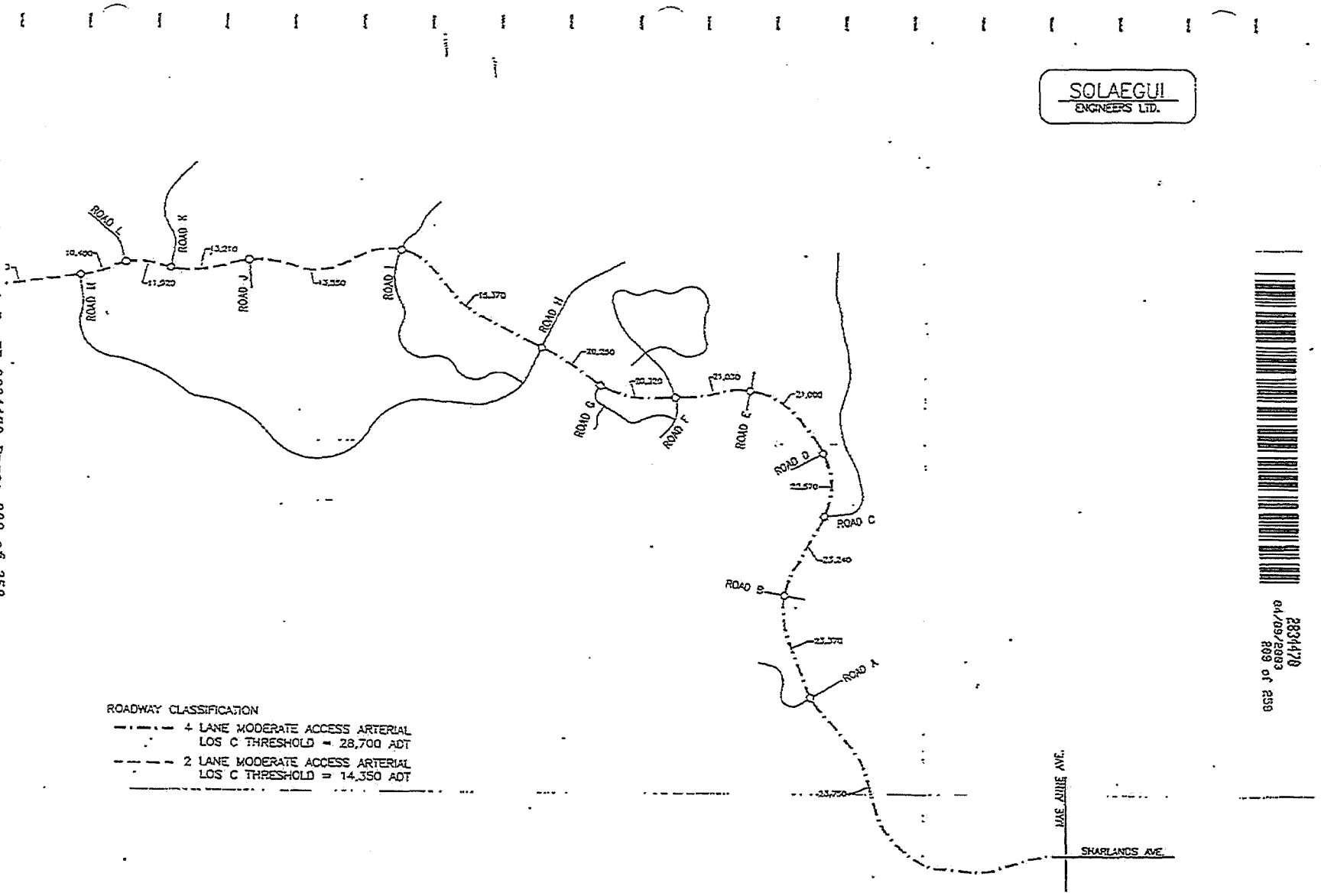


Paul W. Solaegui, P.E.

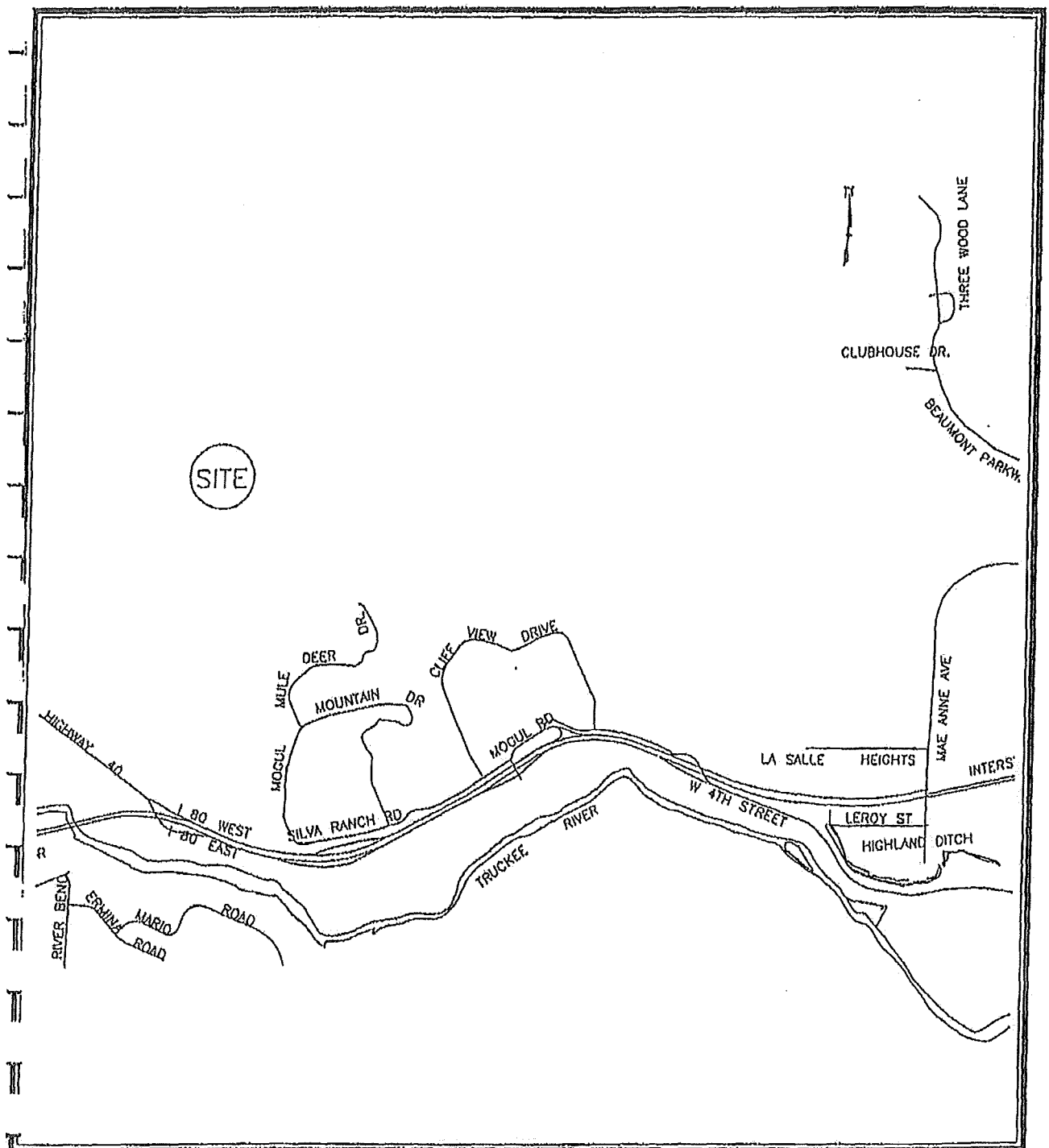
6-28-02

CC Eric Lattin

Enclosures
LETTERS\Somerset 6-02



SOMERSETT
SOMERSETT PARKWAY ADT VOLUMES
AND ROADWAY CLASSIFICATION
FIGURE 1



VICINITY MAP EXPANSION AREA SOMERSETT RENO, NEVADA	JOB NO: 25421 APPR: JKG BY: TH 8:31 AM × 26-JAN-2002	SHEET 1 OF 2

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SUMMIT ENGINEERING CORPORATION
5405 MAE ANNE AVE. RENO, NV. 89523

SITE MAP
EXPANSION AREA SOMERSETT
RENO, NEVADA

SHEET 2 OF 2

SOLAEGUI
ENGINEERS

October 29, 2008

Mr. William Gall
City of Reno
Community Development Department
P.O. Box 1900
Reno, NV 89505

RE: Somersett PUD Amendment

Dear Bill:

At the request of our client we are submitting this traffic study addendum for the above mentioned project. The Somersett development is currently approved for a total of 2,648 dwelling units with approximately 1,600 of these dwelling units currently occupied. The original traffic study for the Somersett PUD Amendment dated August, 2008 was based on a total of 3,120 dwelling units which amounted to an increase of 472 dwelling units. The project is now proposing to include a total of 3,023 dwelling units which amounts to an increase of 375 dwelling units. This updated analysis supplements the August, 2008 traffic study and centers on the following topics.

Trip Generation

Trips generated by the additional dwelling units were calculated based on information taken from the Seventh Edition of *ITE Trip Generation* (2003). The additional dwelling units are anticipated to be residential townhomes. However, in order remain compatible with RTC modeling the trip generation for the additional dwelling units was calculated based on *ITE Trip Generation* Land Use 210: Single Family Detached Housing. This will ensure conservative results due to higher trips rates for single family homes as compared to townhomes. Table 1 shows a comparison of the average daily traffic (ADT) volumes and peak hour traffic volumes generated by the current proposed additional dwelling units and additional dwelling units as proposed in the August, 2008 traffic study. The trip generation worksheets are attached.

TABLE 1
TRIP GENERATION

		AM PEAK HOUR			PM PEAK HOUR		
LAND USE	ADT	IN	OUT	TOTAL	IN	OUT	TOTAL
Current, 375 D.U.	3,589	71	210	281	240	139	379
August, 2008 Study, 472 D.U.	4,517	90	264	354	302	175	477
Change	-928	-19	-54	-73	-62	-36	-98

As shown in Table 1, the currently proposed number of additional dwelling units are anticipated to generate 928 less average daily trips, 73 less AM peak hour trips, and 98 less PM peak hour trips as compared to number of additional dwelling units proposed in the August, 2008 traffic study.

Intersection and Roadway Capacity Analysis

The intersection and roadway capacity analysis presented in the August, 2008 traffic study indicated that the key intersections are anticipated to operate at LOS C or better for the existing plus project traffic volumes and LOS D or better for the 2018, 2030 and 2040 traffic volumes and the key roadways are anticipated to operate at LOS C or better for the 2018, 2030 and 2040 traffic volumes. With the reduction in the number of additional dwelling units and resulting lower traffic generation, the key intersections and roadways will operate at the same or slightly better level of service as presented in the August, 2008 traffic study. The 2018, 2030, and 2040 base and base plus project traffic volumes presented in the original traffic study were obtained from the Regional Transportation Commission's traffic forecasting model and were prepared based on the original Somersett PUD Amendment for 3,120 dwelling units. The project is now proposing to include a total of 3,023 dwelling units which is 97 dwelling units less than previously proposed and modeled and therefore it is our opinion that the traffic volume projections from the August, 2008 traffic study remain valid.

Site Plan Review

The land use intensification is primarily occurring in Villages 1, 5, and 6. Village 1 will increase by 96 dwelling units, Village 5 will increase by 221 dwelling units, and Village 6 will increase by 103 dwelling units. Village 2 will decrease by 46 dwelling units, Village 3 will decrease by 1 dwelling unit, and Village 4 will increase by 2 dwelling units.

The increased dwelling units for Village 1 are anticipated to take access from a proposed access roadway aligning with Whisper Rock Way to the north of the first roundabout, from the second roundabout at the Somersett Town Center, and from a proposed access roadway intersecting Somersett Parkway at the project's east boundary. With the additional Village 1 dwelling units the proposed access roadway aligning with Whisper Rock Way will serve a total of 85 dwelling units resulting in 813 ADT and the proposed roadway intersecting Somersett Parkway at the project's east boundary will serve 25 dwelling units resulting in 240 ADT. The access and circulation plan for Somersett does not identify the classification of these proposed roadways but City of Reno local streets can carry a maximum of 1,000 ADT which will serve the additional Village 1 dwelling units. The existing Somersett Town Center roadway at the second roundabout is a wide roadway with a raised center median and is anticipated to serve traffic generated by the additional 33 dwelling units.

Approximately 36 of the 221 additional dwelling units within Village 5 are located within the Del Webb community. The increased density will result in a total of 852 dwelling units within the Del Webb community. These dwelling units will take access from various local roadways intersecting Somersett Parkway and Del Webb Parkway. These local roadways can carry a maximum of 1,000 ADT which will serve the additional Del Webb dwelling units. The remainder of the additional dwelling units for Village 5 (185 D.U.) are located within Villages 5B, 5D, and 5N which will result in a total of 523 dwelling units. Primary access to these dwelling units will be provided from Back Nine Trail via Somersett Parkway and Del Webb Parkway and from Heavenly View Trail via Somersett Parkway and Back Nine Trail. The circulation plan for Somersett indicates that Back Nine Trail is designated as a residential collector street that can serve a maximum of 8,000 ADT and therefore Back Nine Trail will easily serve the additional Village 5 dwelling units. Heavenly View Trail is anticipated to provide access to dwelling units which will generate traffic that will exceed the 1,000 ADT threshold for local streets. As indicated in the August, 2008 traffic study, it is recommended that Heavenly View Trail be classified as a City of Reno collector street in order to serve the increased density for Village 5.

The dwelling units for Village 6 are anticipated to take access from the northerly extension of Back Nine Trail at the last Somersett Parkway roundabout and at Hawk Meadow Trail to the west of the last roundabout. The increased density in Village 6 will result in a total of 200 dwelling units generating 1,914 ADT. The circulation plan for Somersett indicates that Back Nine Trail and Hawk Meadow Trail are each designated as local streets that can each serve a maximum of 1,000 ADT. It appears that the Village 6 lots are equally distributed on Back Nine Trail and Hawk Meadow Trail with each roadway anticipated serving just under 1,000 ADT. Back Nine Trail and Hawk Meadow Trail will therefore accommodate the additional Village 6 dwelling units.

In summary, the currently proposed number of additional dwelling units are less than previously analyzed in the August, 2008 traffic study and as a result the anticipated traffic generation will be less. The previous recommendations made in the August, 2008 traffic study are not impacted by the updated number of dwelling units.

We trust that this information will meet your requirements. Please call if you have any questions or comments.

Very truly yours,
SOLAEGUI ENGINEERS, LTD.

PAUL W. SOLAEGUI
No. 7163
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEVADA

Paul W. Solaegui, P.E.
CIVIL

10-29-08
EXP 6-30-10

cc Seth Padovan
Eng5/Letters/Reno/Somersett PUD Amendment

Summary of Average Vehicle Trip Generation
For 375 Dwelling Units of Single Family Detached Housing
October 27, 2008

	24 Hour Two-Way Volume	7-9 AM Pk Hour		4-6 PM Pk Hour	
		Enter	Exit	Enter	Exit
Average Weekday	3589	71	210	240	139

	24 hour Two-Way Volume	Peak Hour	
		Enter	Exit
Saturday	3788	191	161
Sunday	3292	173	150

Note: A zero indicates no data available.
Source: Institute of Transportation Engineers
Trip Generation, 7th Edition, 2003.

TRIP GENERATION BY MICROTRANS

Summary of Average Vehicle Trip Generation
For 472 Dwelling Units of Single Family Detached Housing
October 27, 2008

	24 Hour Two-Way Volume	7-9 AM Pk Hour		4-6 PM Pk Hour	
		Enter	Exit	Enter	Exit
Average Weekday	4517	90	264	302	175

	24 hour Two-Way Volume	Peak Hour	
		Enter	Exit
Saturday	4767	241	203
Sunday	4144	217	189

Note: A zero indicates no data available.
Source: Institute of Transportation Engineers
Trip Generation, 7th Edition, 2003.

TRIP GENERATION BY MICROTRANS

SUMMIT ENGINEERING CORPORATION™

June 26, 2002

Job No. 25421

Mr. Blake Smith
Somersett, L.L.C.
100 West Liberty Street, Suite 990
Reno, Nevada 89501

RE: Expansion Area - Somersett Development Feasibility Study

Summit Engineering Corporation conducted a feasibility study for the expansion area of the Somersett Development. This study is based on a review of publications and knowledge of numerous Geotechnical investigations conducted in the general area.

We wish to thank you for the opportunity of providing our services. We are readily available to answer any questions.

Sincerely,

SUMMIT ENGINEERING CORPORATION

JOHN K. GUYNN III — REGISTERED PROFESSIONAL ENGINEER — STATE OF NEVADA — CIVIL

Jack Glynn Hall, P.E.
Geotechnical Manager

6-26-02

JKG:njl

J:\wpdata\feasibility\expareasom.doc

5405 Mae Anne Avenue • Reno, Nevada 89523 • (775) 747-8550 FAX (775) 747-8559
1421 E. Sunset Road, Suite 17 • Las Vegas, Nevada 89119 • (702) 252-3236 FAX (702) 252-3247
607 South Fifth Street • Elko, Nevada 89801 • (775) 738-8058 FAX (775) 738-8267

SOIL AND GEOLOGIC FEASIBILITY STUDY
FOR THE EXPANSION AREA OF THE SOMERSETT DEVELOPMENT
RENO, NEVADA

INTRODUCTION

This report presents the results of our study to evaluate the feasibility of developing the expansion area of the Somersett Development, with consideration to soil and geologic conditions. This study consists primarily of a review of existing publications and documents, and draws from our knowledge based on numerous geotechnical investigations conducted on adjacent properties. Exploration and laboratory testing was not performed for this feasibility level investigation. The property lies in the west half of Section 11, the south half of Section 10, and the east half of Section 9, Township 19 North, Range 18 East (M.D.B.&M.). Plate 1 presents a vicinity map, and Plate 2 presents a site map for the subject property. Proposed development is to consist of one to two story single family residences. Residences are anticipated to be of wood frame construction, supported by conventional spread footings with raised floors. Structural loads are anticipated to be light.

Access to the site is obtained from Somersett Parkway off Mae Anne Avenue, and numerous dirt roads from the Mogul area. The property is located to the south and west of the currently existing Somersett Development.

LITERATURE REVIEW

The primary references reviewed for this report included the Nevada Bureau of Mines and Geology/USGS Verdi Folio Geologic Map by John W. Bell and Larry J. Garside (1987), and the Quaternary Fault Map Of Nevada by John W. Bell (1984). These maps provided information about the general geology, soils, and earthquake hazards for the subject property and surrounding area.

DISCUSSION OF GEOTECHNICAL PROPERTIES

Site Conditions

The site is currently undeveloped and covered with native grasses and sage brush. Surface soils on the eastern parcel consist of decomposed granite on the northern portion, based on test pit exploration. The southern portion of this parcel, as well as the western parcel consists mainly of a brown argillic (clay rich) horizon, based on geologic maps of the area. This area is characterized by shallow depths of soft Tertiary bedrock. This bedrock consists of diatomaceous siltstone (diatomite), siltstone, mudstone, claystone, and, sandstone. Analysis of this material in nearby project sites have shown that there can be a considerable expansive potential. In many areas of the Somersett development, the Tertiary bedrock is overlain by a veneer, or even a great thickness, of one of several distinct Quaternary pediment gravels derived from episodes of major erosion of the nearby Carson Range and Sierra Nevada. Lesser areas are covered by younger alluvium consisting of clayey sand derived from local erosion.

Soils and Geology

According to the Verdi Quadrangle Geologic Map, the eastern parcel is underlain by the Sandstone of Hunter Creek (T_h and T_b), Granodiorite (K_{gd}), Andesite (T_a), and Pediment deposits of the Verdi Basin (Q_{pp}). The Sandstone of Hunter Creek is described as a "Miocene to Pliocene age sedimentary sequence deposited within the Verdi Basin. T_h: dominantly light-gray, bluish-gray, light-brown to brown, and yellowish-brown medium to coarse tuffaceous sandstone, sandy siltstone, and claystone; subordinate sandy conglomerate, and white to light-gray diatomaceous shale and siltstone. T_b: olivine basalt." The Granodiorite deposit is described as "gray medium-grained hornblende-biotite and biotite-hornblende granodiorite. Not normally deeply weathered, except for biotite-rich portions." The Andesite deposit is described as "gray pyroxene andesite flows, dark-brown weathering; contains lesser amounts of undifferentiated hornblende-pyroxene andesite flows and lahars north of Verdi and hornblende-andesite flows near the lower contact of the unit on the south flank of Peavine Peak." The pediment deposits are described as "a sequence of thin pediment gravels graded to corresponding outwash and terrace deposits. Q_{pp}: pre-Donner Lake-age deposits, undifferentiated."

The western parcel is underlain by the Sandstone of Hunter Creek, Pediment deposits of the Verdi Basin, and Outwash and terrace deposits of the Truckee River (Q_{ts}). The outwash deposits are described as "a sequence of fluvial terraces in ascending order above the present river level: Q_{tl}, lowest; Q_{ts}, highest. Each deposit consists of a similar pale-brown to light-brownish-gray to brown sandy cobble to boulder gravel and gravelly sand."

Groundwater and Surface Hydrology

Based upon site location on the flanks of Peavine Peak, the depth to the regional ground water is anticipated to be deep, greater than 200 feet below the ground surface; however, springs are located nearby. The site has been mapped by F.E.M.A. (Federal Emergency Management Agency) as being in Zone X. Zone X is described as "Areas outside the 500-year flood plain."

Faults and Seismic Hazards

The subject property lies within the Uniform Building Code Seismic Zone 3 (Plate 3) which indicates that the site has a high probability for experiencing a moderate seismic event. The effect of seismic shaking, therefore, is an important consideration.

The Verdi Quadrangle Geologic Map shows several faults to be located on the eastern parcel and one probable concealed fault to the west of the western parcel. The faults on the eastern parcel are shown to be dated as pre-Quaternary, and are not considered to be active, however, the concealed fault to the west of the western parcel is shown to be Quaternary in age. Therefore, this fault may be potentially active. Engineering practice normally assigns seismic risk and activity to Quaternary faults, with the most recent being Holocene (less than 12,000 years old) and deemed active. The seismic hazard at this site is not any greater than other sites located at comparable distances to known active faults.

Based on the depth to groundwater and dense soils and bedrock, liquefaction is not considered as a possible hazard to the proposed site development. Liquefaction is a phenomenon where saturated, loose, granular soils lose their bearing strength during seismic shaking.

CONCLUSIONS

We recommend that a detailed geotechnical investigation be conducted to provide site specific soil data and other geologic information. The detailed investigation should provide specific soil design criteria for subgrade support, earthwork, concrete curb gutter and sidewalk construction, and pavements with regards to potential site conditions. It is anticipated that the site is blanketed by medium to high plastic surface clays. The surface clays will not be suitable for direct support of the proposed improvements. The native granular soils may provide adequate support for roadways, both in cut and fill, provided that the soils used are non-expansive and meet City of Reno R-value requirements.

LIMITATIONS

The conclusions contained in this report were prepared in accordance with normally accepted procedures and were based primarily on research of literature available at the time of this report. The purpose of this report is not to discuss or evaluate the adequacy of previous reports prepared for this area, but only to report on their findings. It is possible that future investigations in this area may reveal information not currently available. If new data is brought to light, it may be necessary to re-evaluate the conclusions contained in this report.

We trust this report provides you with a better understanding of the general soil and geologic conditions in this area. Should you have any questions, or desire additional information, please contact our office at your convenience.

APPENDIX

LANDSCAPE PLANTING PALETTES

The following lists provide opportunity for creative landscape design within the parameters of the overall project design theme. See Figure 3-1 Plant Palette Location Map, for appropriate locations of each palette.

DEVELOPED AREA PLANT PALETTE

The Developed plant palette will be used in common open space within residential neighborhoods, in the Town Center, and along streets that are bordered by residential or commercial development.

LARGE SHADE TREES

Acer platanoides .....Norway Maple
Acer pseudoplatanoides .....Sycamore Maple
Carpinus betuloides .....European Hornbeam
Fraxinus spp. .....Autumn Purple, Urbanite, or Blue Ash
Plantanus acerifolia .....London Plane Tree *(Not Suitable For Street Tree Planting)*
Quercus robor .....English Oak
Quercus rubra .....Red Oak
Quercus macrocarpa .....Bur Oak
Zelcova serrata .....Zelcova

EVERGREEN TREES

Calocedrus deccurrens .....Incense Cedar
Picea abies .....Norway Spruce
Picea pungens glauca .....Colorado Blue Spruce
Pinus spp. .....Pine
Pseudotsuga menziesii glauca .....Rocky Mtn. Douglas Fir

MEDIUM-SMALL DECIDUOUS TREES

Acer tartaricum .....Tartarian Maple
Cercis canadensis .....Eastern Redbud
Cornus mas .....Cornelian Cherry
Crataegus sp. .....Hawthorn
Koelreuteria panniculata .....Golden Rain Tree
Prunus sp. .....Cherry
Pyrus calleryana Bradford et al. ....Ornamental Pear
Sorbus aucuparia Blackhawk et al. ..European Mt. Ash
Syringa reticulata .....Japanese Tree Lilac
Tilia cordata .....Little-leaf Linden

EVERGREEN SHRUBS

Thuja spp. ..... Arborvitae
Cotoneaster sp. ..... Cotoneaster
Juniperus sp. ..... Juniper
Mahonia sp. ..... Oregon Grape
Picea abies 'Nidiformis' ..... Nest Spruce

DECIDUOUS SHRUBS

Berberis ..... Barberry
Euonymus alatus ..... Winged Eunoymus
Hibiscus syriacus ..... Rose of Sharon
Philadelphus lewisii ..... Mock Orange
Potentilla sp. ..... Cinquefoil
Ribes aureum ..... Golden Currant
Spiraea sp. ..... Spiraea
Viburnum sp. ..... Viburnum

GROUNDCOVERS/VINES

Ajuga reptans ..... Ajuga
Antennaria dioica ..... Pussytoes
Campsis radicans ..... Trumpet Vine
Clematis jackmanii ..... Jackman Clematis
Cotoneaster dammeri ..... Bearberry
Euonymus fortunei ..... Winter Creeper
Hypericum calycinum ..... St. Johns Wort
Juniperus sp. ..... Juniper
Lonicera japonica ..... Honeysuckle
Parthenocissus quinquefolia ..... Virginia Creeper
Polygonum aubertii ..... Silver Lace Vine
Sedum sp. ..... Sedum
Vinca major ..... Periwinkle
Vinca minor ..... Dwarf Periwinkle

PERENNIALS

Any perennials that are hardy to Sunset Zone 3 are approved for use in the Developed palette.

TURF GRASS

Festuca arundinacae ..... Tall Fescue
Poa pratensis ..... Kentucky Bluegrass

TRANSITIONAL PLANTING PALETTE

The Transitional Planting Palette will be used at the interface between developed areas and undisturbed areas, along parkway and collector streets fronted by open space, and at trail heads.

The Transitional Palette consists of species that complement the form, color, and size of the existing sagebrush community. Plantings in this zone require limited irrigation to survive. Landscape beds in the Transitional Zone consist of primarily an aggregate or wood mulch ground plane with dispersed ground covers, shrubs, and possibly trees.

The plants recommended for use in this zone are as follows:

LARGE SHADE TREES

Celtis occidentialis .....Hackberry
Gleditsia triacanthos inermis .....Thornless Honeylocust
Robinia pseudoacacia 'Purple Robe' .Purple Robe Locust

EVERGREEN TREES

Cercocarpus betuloides .....Western Mt. Mahogany
Cercocarpus ledifolius .....Curl-leaf Mtn. Mahogany
Juniperus scopulorum .....Rocky Mountain Juniper
Juniperus v. "Skyrocket" .....Skyrocket Juniper
Pinus edulis .....Pinyon Pine
Pinus jeffreyi .....Jeffrey Pine
Pinus ponderosa .....Ponderosa Pine
Pinus sylvestris .....Scotch Pine

MEDIUM-SMALL DECIDUOUS TREES

Acer ginnala .....Amur Maple
Eleagnus angustifolia .....Russian Olive
Eleagnus umbellatum .....Buffalo Berry
Koelreuteria paniculata .....Golden Rain Tree
Robinia idahoensis .....Idaho Locust
Tamarix .....Tamarisk

EVERGREEN SHRUBS

Arctostaphylos patula .....Greenleaf Manzanita
Artemisia tridentata .....Big Sage
Chrysothamnus nauseosus .....Rabbit Brush
Cytissus sp. .....Broom
Juniperus sp. .....Junipers
Yucca sp. .....Yucca

DECIDUOUS SHRUBS

Artemisia schmidtiana .....Silver Mound
Berberis mentorensis .....Mentor Barberry
Berberis thunbergii .....Barberry
Caragana spp. .....Siberian Peashrub
Caryopteris incana .....Blue Mist
Cotinus coggygria .....Green Smoketree
Cotoneaster sp. .....Cotoneaster
Forestiera neomexicana .....New Mexico Privet
Genista lydia .....Dwarf Broom
Holodiscus discolor .....Ocean Spray
Perovskia atriplicifolia .....Russian Sage
Potentilla fruticosa .....Bush Cinquefoil
Prunus besseyi .....Sand Cherry
Purshia tridentata .....Bitterbrush
Rhus spp. .....Sumac

GROUNDCOVER/VINES

Arctostaphylos uva ursi .....Kinnikinnick
Juniperus sp. .....Juniper (many)
Parthenocissus quinquefolia .....Virginia Creeper
Phlox subulata .....Creeping Phlox
Santolina chamaecyparissus .....Lavender Cotton
Santolina virens .....Green Lavendar Cotton

PERENNIALS

Any perennials hardy to Sunset Zone 1 which can survive with limited supplemental irrigation are approve for use in this palette.

MEADOW GRASSES

Elymus glaucous .....Blue Wild Rye
Festuca ovina 'Glauca' .....Blue Fescue
Helictotrichon sempervirens .....Blue Oat Grass
Miscanthus sinensis 'Gracillimus' ...Maiden Grass
Pennisetum setaceum .....Fountain Grass
Stipa gigantea .....Giant Feather Grass

TURF GRASSES

Buchloe dactyloides .....Buffalo Grass
Festuca ovina duriuscula
Durar/covar .....Hard Fescue

NATURAL HIGH DESERT PLANT PALETTE

The Natural High Desert plant palette will be used to revegetate disturbed areas within portions of the open space that are to remain in native vegetation. These species are native to the site or the Great Basin. Plants within this zone can survive with no supplemental irrigation once established.

Plants which are recommended for use in this zone include:

EVERGREEN SHRUBS

Artemisia tridentata . . . . . .Big Sagebrush
Atriplex canescens . . . . . .Four Wing Saltbush
Arctostaphylos nevadensis . . . . . .Pine-mat manzanita
Cercocarpus . . . . . .Mountain mahogany
Ephedra viridis . . . . . .Mormon Tea

DECIDUOUS SHRUBS

Chamaebatiaria millefolium . . . . . .Fern Bush
Chrysothamnus nauseosus . . . . . .Rabbitbrush
Cowania mexicana . . . . . .Cliffrose
Fallugia paradoxa . . . . . .Apache Plume
Prunus andersonii . . . . . .Desert Peach
Purshia tridentata . . . . . .Bitterbrush

PERENNIALS/ANNUALS

Any Great Basin native perennials that are hardy to Sunset Zone 1 are approved for use in this zone.

GRASSES

Elymus conereus . . . . . .Basin Wildrye
Oryzopsis hymenoides . . . . . .Indian Ricegrass
Poa nevadensis

Plants which are recommended for use in revegetation of riparian sites are as follows:

SHRUBS

Rosa woodsii . . . . . .Woods Rose
Salix exigua . . . . . .Willow

FORBES

Epilobium exaltatus
Lepidium latifolium

GRASSES

Carex nebrascensis
Juncus balticus
Muhlenbergia asperifolia
Poa sp.
Polypogon nomospliensis
Typha latifolium

WILDLIFE SEED MIX

The wildlife enhancement/open space area seed mix will be used in portions of the open space that are to be enhanced as wildlife forage areas. These areas are not intended to be used by humans.

Plants in this zone can survive on natural precipitation once established.

SPECIES	PLS LBS/ACRE
Festuca 'covar'/Covar Fescue	.3
Lupinus sericeus/Silky Lupine	.3
Linum lewisii/Lewis Flax	.2
Chrysanthemum leucathemum/Oxeye Daisy	.2
Lupinus perennis/Perennial Lupine	.2
Coreopsis tinctoria/Plains Coreopsis	.2
Artemesia tridentata/Big Sagebrush	.3
Penstemon rydbergii/Sierra Penstemon	.1
Eschscholzia C. lifornica/California Poppy	.2
Castilleja sp./Indian Paintbrush	.1
Fallugia paradoxa/Apache Plume	.3
Purshia tridentata/Lassen Antelope Bitterbrush	.3
Chrysothamnus nauseosus/Rubber Rabbitbrush	.3
Total LBS Pure Live Seed per acre	.30

All seeding or planting will be performed using Best Management Practices as developed by the Nevada Division of Environmental Protection and the Nevada Division of Conservation Districts. On slopes 3:1 or less, a range drill or equivalent means will be used to apply seed

blend to soil. Drill seeding provides the best seed to soil contact and correspondingly the highest success rate.

Broadcast seed may be used on steep slopes inaccessible to a drill seeder. Broadcast seeding will require twice the amount of seed (60 lbs./acre) as required when a drill seeder is used due to wind drift, wildlife consumption and lack of good soil to seed contact.

Hydroseeding may be used in lieu of broadcast seeding.

All seeded areas will be temporarily irrigated for a minimum of two (2) growing seasons to ensure plant establishment.

VEGETATIVE

BMP 3-1
SEEDING PRACTICES

DEFINITION

Seeding practices include a variety of techniques which result in the sowing or planting of seeds. Common practices include broadcast seeding (hand or mechanical), drill seeding, aerial seeding and hydroseeding.

PURPOSE

The primary purpose of seeding a site is for soil stabilization through the establishment of a vegetative cover. Related objectives include: to reduce raindrop impacts and surface water flow, to reduce erosion from wind and water and to enhance aesthetics and the natural environment.

APPLICABILITY

Seeding practices are applicable to any surface disturbance site requiring revegetation or reclamation. Slopes must be mechanically stabilized prior to seeding as vegetation alone will not stabilize a slope. Drilling seeding is typically limited to slopes of 3:1 or flatter, but it is the most successful practice. Hydroseeding is most effective in steep slope situations which have little or no access (e.g. road cut or fill slopes, mine waste dumps, etc). Broadcast seeding is less expensive but requires approximately twice the amount of seed over drill seeding. Aerial seedings are typically applied on large areas with no access, such as forest or rangeland fires.

PLANNING CRITERIA

The establishment of vegetation is the most efficient and cost effective form of erosion control and soil stabilization. Once established vegetation absorbs raindrop impact and prevents the mobilization of soil particles. Vegetation prevents erosion while other treatments such as filter fabric, sediment basins or filter strips only treat the sediment mobilization process.

Seeding practices should be selected based upon the specifics of the site and the expertise of a qualified professional should be consulted. Typically economics, site topography and/or access are controlling factors in the selection process. Seeding practices should also be tailored to the plant material seed being applied (i.e. grasses, forbs, shrubs). Tree species are typically planted from container stock after establishment of a grass/forb/shrub cover. Seeding practices are usually incorporated within a combined structural and vegetative approach to soil stabilization. Vegetation alone will not stabilize a slope. Other nonvegetative techniques are also utilized to enhance the success of a seeding such as mulches, netting,

matting and chemical tacifiers.

Irrigation will assist in achieving a good seed/soil contact and is critical to plant establishment on dry sites. Over watering will cause washing and runoff, thus potentially transporting seed down gradient.

METHODS AND MATERIALS

Vegetation or reclamation specialists should be consulted regarding mulch application rates, plant species selection, seeding rates, etc. to ensure a successful project.

Broadcast seeding (hand or mechanical): Broadcast seeding can be accomplished by hand held seeders or a mechanically driven seeder typically mounted on a tractor or ATV vehicle. The seed mix is placed in a hopper, adjustments are made for the size of the seed and rate of application, and the seeder is operated by a hand crank or motor while walking or driving over the areas to be seeded. Broadcast seeding typically requires twice the amount of seed to cover the same given area as a drill seeder due to wind drift, wildlife consumption and lack of good soil to seed contact.

Drill seeding: Drill seeding requires the use of a Range drill or equivalent depending on the condition of the site. Drill seeders are pulled behind a tractor or bulldozer and actually place the seed to a pre-determined depth. The seed is then covered by the drill mechanism or a chain drag is utilized to cover the seed behind the drill. Drill seeding provides the best seed to soil contact and correspondingly the highest success rate.

Aerial seeding: Aerial seeding is conducted by helicopter or fixed wing aircraft and can cover large areas of inaccessible terrain. It is the most efficient method for large disturbance areas such as forest or rangeland fires. Germination success is usually low given wind drift, soil conditions, and poor seed to soil contact, but application timing can greatly improve success. If seeding can occur shortly after a wildland fire and before a soil crust is formed, success is greatly improved.

Hydroseeding: The wood fiber and water mixture are well agitated in a large tank and then blown through a hose and nossel by compressed air. The apparatus is typically truck or trailer mounted and has sufficient capacity to complete several acres at a time. Mulch application rates and/or seeding rates depend upon the site specifics of the project area and the project goals. Typically irrigation is necessary to successfully establish a vegetative cover with hydroseeding.

MAINTENANCE

Seeded areas require regular inspection and potentially reapplication if necessary. The treatment areas should be protected from foot or vehicle traffic until vegetation is well established. This may require fencing, barriers and signing.

EFFECTIVENESS

Selection of the appropriate seeding practice for a specific site coupled with proper plant material selection, application rates, application timing and maintenance will result in the most effective method of soil stabilization. Coupled with other revegetation techniques seeding and the resulting vegetation will provide long term soil stability.

PUD HANDBOOK - ARCHITECTURAL VOCABULARY

Adobe Brick - Large, roughly molded, sun-dried clay brick of varying sizes.

Alcove - A small recessed space, opening directly into a larger room.

Apex - In architecture or construction, the highest point, peak, or tip of any structure.

Arch - A curved construction which spans an opening; usually consists of wedge-shaped blocks called voussoirs, or a curved or pointed structural member which is supported at the sides or ends. Arches vary in shape from the horizontal flat arch through semicircular and semielliptical arches to bluntly or acutely pointed arches.

Archway - A passage through or under an arch, esp. when long, as under a barrell vault.

Art Deco - A decorative style stimulated by the Paris Exposition Internationale des Arts Decoratifs et Industrieles Modernes of 1925, widely used in the architecture of the 1930s, including skyscraper designs such as the Chrysler Building in New York; characterized by sharp angular or zigzag surface forms and ornaments. Also referred to as Style Moderne.

Arts and Crafts - English movement in applied art and indirctly in architecture during the second half of the 19th cent., emphasizing the importance of craftsmanship and high standards of design for everyday objects.

Balcony - 1. A projecting platform on a building, sometimes supported from below, sometimes cantilevered; enclosed with a railing or balustrade. 2. A projecting gallery in an auditorium; a seating area over the main floor. 3. An elevated platform used in a permanent stage setting in a theatre.

Base - 1. The lowest (and often widest) visible part of a building, often distinctively treated. A base is distinguished from a foundation or footing in being visible rather than buried. 2. A low, thickened section of a wall; a wall base. Also see socle. 3. Lower part of a column or pier, wider than the shaft, and resting on a plinth, pedestal, podium, or stylobate. Also see Asiatic base, Attic base.

Basket Weave - A checkerboard pattern of bricks, flat or on edge.

Bay Window - 1. The window of a protruded bay. 2. Commonly, the windowed bay itself, rising from the ground for one or more stories.

Bond - An arrangement of masonry units to provide strength, stability, and in some cases beauty through a setting pattern by lapping units over one another or by connecting with metal ties; some units may extend into adjacent courses, between withes, or through the wall, and vertical joints are not continuous.

Box Cornice, Boxed Cornice, Closed Cornice - A hollow cornice, built up of boards, moldings, shingles, etc.

Bracket - 1. Any overhanging member projecting from a wall or other body to support a weight (such as a cornice) acting outside the wall. 2. A decorative detail attached to the spring of a stair under the overhanging edge of the treads.

Brick - A solid or hollow masonry unit of clay or shale, molded into a rectangular shape while plastic, and then burnt in a kiln. Also see later.

Cantilever - 1. A projecting bracket used for carrying the cornice or extended eaves of a building. 2. A beam, girder, truss, or other structural member which projects beyond its supporting wall or column.

Cap - 1. Usually, the topmost member of any vertical architectural element, often projecting, with a drip as protection from the weather, e.g., the coping of a wall, top of a pedestal or buttress, the lintel of a door, etc. 2. The upper member of a column, pilaster, door cornice, molding, or the like.

Cape Cod House - A rectangular frame (1-1/2 - story) house having a pitched roof and usually no dormers; the roof and all sides were covered by long shingles, gray in appearance when weathered. A style which originated in colonial Cape Cod, Mass.; built in one of three types: half house, three-quarter house, and full Cape house.

Capital - The topmost member, usually decorated, of a column, pilaster, anta, etc. It may carry an architrave or an arcade or be surmounted by an impost block (dosseret).

Casement Window - A window having at least one casement, 1; may be used in any combination with fixed lights.

Casement - 1. A window sash which swings open along its entire length; usually on hinges fixed to the sides of the opening into which it is fitted; see casement window. 2. A deep hollow molding, used chiefly in cornices.

Ceiling - The overhead surface of a room, usually a covering or decorative treatment used to conceal the floor above or the roof.

Closed Eaves - Eaves in which projecting roof members are not visible, being closed from view by boarding.

Colonial Revival - The reuse of Georgian and Colonial design in the U.S.A. toward the end of the 19th and into the 20th cent., typically in bank buildings, churches, and suburban homes.

Column - 1. In structures, a relatively long, slender structural compression member such as a post, pillar, or strut; usually vertical, supporting a load which acts in (or near) the direction of its longitudinal asix. 2. In classical architecture, a cylindrical support consisting of a base (except in Greek Doric), shaft, and capital; either monolithic or built up of drums the full diameter of the shaft. 3. A pillar standing alone as a monument.

Common Band/American Bond - A bond in which every fifth or sixth course consists of headers, the other courses being stretchers. Widely used because such brickwork can be laid quickly.

Coping - A protective cap, top, or cover of wall, parapet, pilaster, or chimney; often of stone, terra-cotta, concrete, metal, or woood. May be flat, but commonly sloping, double-beveled, or curved to shed water so as to protect masonry below from penetration of water from above. Most effective if extended beyond wall face and cut with a drip.

Cornice - 1. Any molded projection which crowns or finishes the part to which it is affixed. 2. The third or uppermost division of an entablature, resting on the frieze. 3. An ornamental molding, usually of wood or plaster, running round the walls of a room bust below the ceiling; a crown moding; the molding forming the top member of a door or window frame. 4. The exterior trim of a structure at the meeting of the roof and wall; usually consists of bed molding, soffit, fascia, and crown molding.

Courtyard - An open area partially or fully enclosed by buildings or other walls, adjacent to or within a castle, house, or other building.

Dormer - 1. A structure projecting from a sloping roof usually housing a window or ventilating louver. 2. A dormer window.

Eaves - The lower edge of a sloping roof; that part of a roof of a building which projects beyond the wall.

Elevation - A drawing showing the verticqal elements of a building, either exterior or interior, as a direct projection to a vertical plane.

Facade - The exterior face of a building which is the architectural front, sometimes distinguished from the other faces by elaboration of architectural or ornamental details.

Fascia, Facia - 1. Any flat horizontal member or molding with little projection, as the bands into which the architraves of Ionic and Corinthian entablatures are divided. 2. Any relatively narrow vertical surface (but broader than a fillet) which is projected or cantilevered or supported on columns or element other than a wall below. Also

see platband.

Federal Style - In the U.S.A., the Classic Revival style, from ca. 1790 to 1830.

Flemish Bond - In brickwork, a bond in which each course consists of headers and stretchers laid alternately; each header is centered with respect to the stretcher above and the stretcher below it.

Flute - A groove or channel, esp. one of many such parallel grooves, usually semicircular or semielliptical in section; used decoratively, as along the shaft of a column.

Frieze - The middle horizontal member of a classical entablature, above the architrave and below the cornice. 2. A similar decorative band in a stringcourse, or near the top of an interior wall below the cornice.

Gable - 1. The vertical triangular portion of the end of a building having a double-sloping roof, from the level of the cornice or eaves to the ridge of the roof. 2. A similar end when not triangular in shape, as of a gambrel roof or the like.

Gable Roof - A roof having a gable at one or both ends.

Gambrel roof, Gambrel - 1. (U.S.A.) A roof which has two pitches on each side; in Great Britain called a mansard roof. 2. (Brit.) A roof which has a small gable near the ridge on one end; the part of the roof below the gable is inclined.

Granny Flat - An auxiliary dwelling unit consisting of a kitchen, bath and bedroom, typically located above the garage with a separate entrance.

Header - 1. A masonry unit, laid so that its ends are exposed, overlapping two or more adjacent withes of masonry and tying them together; a bondstone; a bonder. 2.

Hip Roof, Hipped Roof - A roof which slopes upward from all four sides of a building, requiring a hip rafter at each corner.

Hip - 1. The external angle at the junction of two sloping roofs or sides of a roof. 2. The rafter at the angle where two sloping roofs or sides of roofs meet.

Italinate Style - The eclectic form of country-house design, fashionable in England and the U.S. in the 1840s and 1850s, characterized by low-pitched, heavily bracketed roofs, asymmetrical informal plan, square towers, and often round-arched windows.

Lattice - 1. A network, often diagonal, of strips, rods, bars, laths, or straps of metal or wood, used as screening or for airy, ornamental constructions. 2. a regular member triangularly braced.

Mansard Roof - 1. (U.S.A. and Brit.) A roof having a double slope on all four sides, the lower slope being much steeper.

Mullion - A vertical member separating (and often supporting) window, doors, or panels set in series.

Muntin - 1. A secondary framing member to hold panes within a window, window wall, or glazed door. 2. An intermediate vertical member that divides the panels of a door.

Parapet Wall - That part of a wall which is entirely above the roof.

Parapet - 1. A low guarding wall at any point of sudden drop, as at the edge of a terrace, roof, battlement, balcony, etc. 2. A defense wall. 3. In an exterior wall, the part entirely above the roof.

Patina, Patination - 1. A greenish brown crust which forms on bronze. 2. any thin oxide film which forms on

a metal; often multi-colored. 3. A film, similar in color, which forms on a material other than metal. 4. Such effects artifically induced, or imitated.

Patio - An outdoor area adjoining or enclosed by the walls or arcades of a house; often paved and shaded. Also see terrace.

Pediment - 1. In classical architecture, the triangular gable end of the roof above the horizontal cornice, often filled with sculpture. Also called a fronton when used to crown a subordinate feature, as a window. 2. In later work, a surface used ornamentally over dors or windows; usually triangular but may be curved.

Pent Roof, Shed Roof - A small, sloping roof, the upper end of which butts against a wall of a house, usually above the first-floor windows; if carried completely around the house, it is called a skirt-roof.

Pergola - 1. A garden structure with an open wooden-framed roof, often latticed, supported by regularly spaced posts or columns. The structure, often covered by climbing plants such as vines or roses, shades a walk or passageway. 2. A collonade which has such a structure. 3. Any building added to the side of a house or building, beyond the original ground plan, as a lean-to.

Pilaster - 1. An engaged pier or pillar, often with capital and base. 2. Decorative features that imitate engaged piers but are not supporting structures, as a rectangular or semicircular member used as a simulated pillar in entrances and other door openings and fireplace mantels; often contains a base, shaft, and capital; may be constructed as a projection of the wall itself.

Porch - 1. A structure attached to a building to shelter an entrance or to serve as a semi-enclosed space; usually roofed and generally opensided. 2. A portico.

Porte Cochère - 1. A carriage porch. 2. A doorway large enough to let a vehicle pass from street to parking area.

Portico - 1. A porch or covered walk consisting of a roof supported by columns; a colonnaded (continuous row of columns) porch. 2. A freestanding roofed colonnade; a stoa.

Quadrangle, Quad - 1. A rectangular courtyard or grassy area enclosed by buildings or a building. Most often used in connection with academic or civic building groupings. 2. Buildings forming a quadarangle.

Queen Anne Style - Eclectic style of domestic architecture of the 1870s and 1880s in England and the U.S.A.; misnamed after Queene Anne, but actually based on country-house and cottage Elizabethan architecture. It is characterized by a blending of Tudor Tothic, English Renaissance and, in the U.S.A., Colonial elements.

Roof - The covering of a building, including the roofing and all other material and construction (such as supporting members) necessary to carry and maintain it on the walls or uprights.

Shaft - The portion of a column, colonette, or pilaster between the base and the capital.

Siding, Weatherboarding - The finish covering of an exterior wall of a frame building.

Soffit- The exposed undersurface of any overhead component of a building, such as an arch, balcony, beam, cornice, lintel, or vault.

Spandrel, Spandril - 1. An area roughly triangular in shape, included between the extra-doses of two adjoining arches and a line approximately connecting their crowns (or a space approximately connecting their crowns (or a space approximately equal to half this in the case of a single arch); in medieval architecture, often ornamented with tracery, etc. 2. In a multistory building, a wall panel filling the space between the top of the window in one story and the sill of the window in the story above. 3. A surface, roughly triangular in shape, as below a stair string.

Stretcher - A masonry unit laid horizontally with its length in the direction of the face of the wall.

Stucco - 1. An exterior finish, usually textured; composed of portland cement, lime, and sand, which are mixed with water. 2. A fine plaster used for decorative work or moldings.

Window - An opening in an external wall of a building to admit light and (usually) air; usually glazed.

Note, for additional architectural terms, please consult "Illustrated Dictionary of Historic Architecture" edited by Cyril M. Harris, Dover Publications, Inc., New York, 1977.

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MASTER WATER SUPPLY PLAN

The Somersett project has been annexed into the Truckee Meadow Water Authority's (TMWA) water service territory and improvements to the existing water system are being completed to service the project. The water system improvements include off-site and on-site facilities to enhance the system to service the significant terrain within the project. Attached is a planning level water plan showing the current tank, pump station, and pressure zones associated with the Somersett project.

The project site is primarily served through the Somersett Pump Station No. 1 which has been constructed to pump from the Northgate No. 2-water storage tank. The pump station will pump through 20 inch and 18 inch feeder mains to the future water storage tanks required to service the development. The pump station will initially provide 3000 gpm of fire flow and peak day demand of up to 1000 gpm.

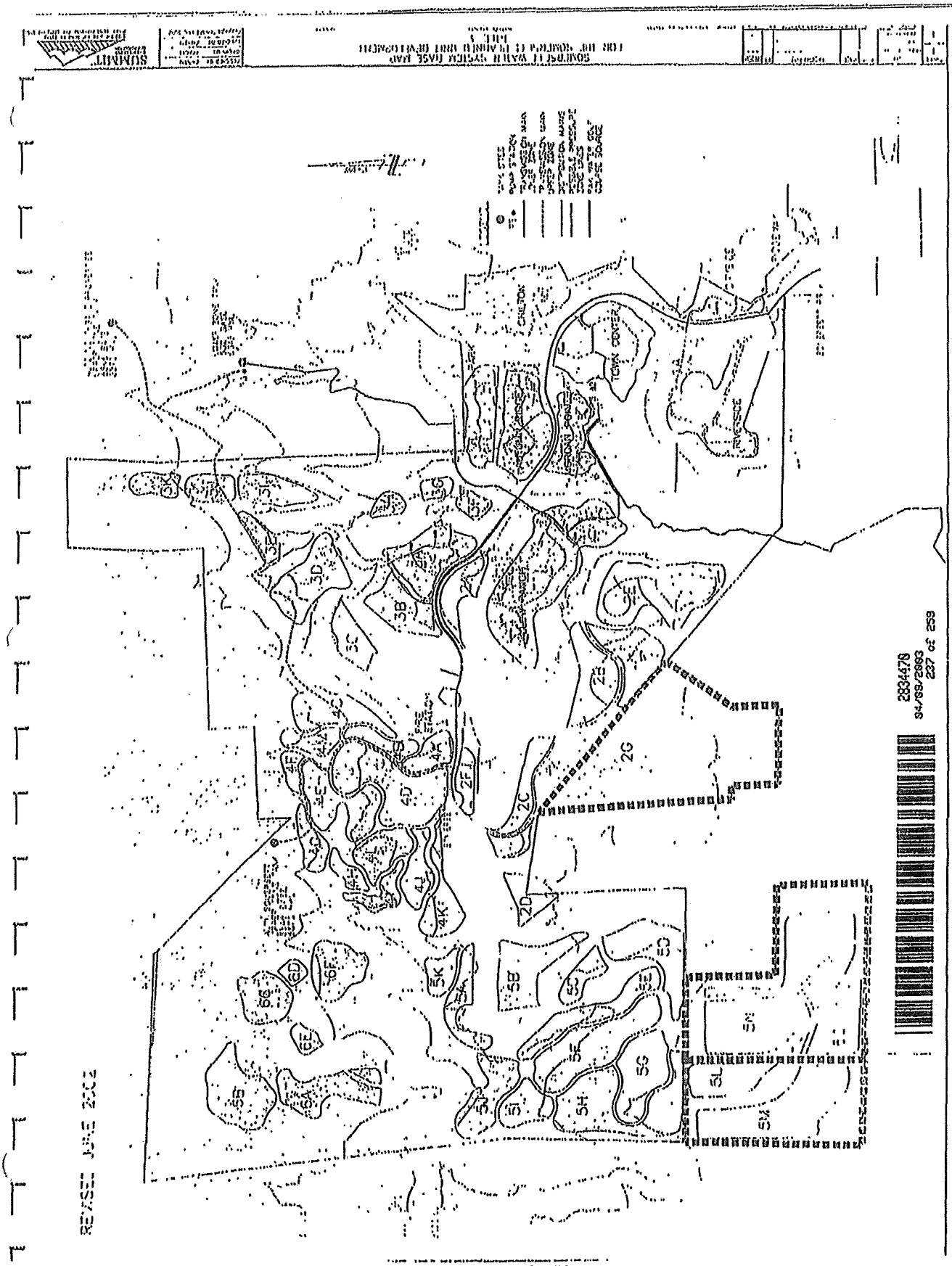
As the project progresses two water storage tanks will be constructed to service the development. The lower zone tank will be constructed at an approximate elevation of 5321 with a high water elevation of 5345 and will service the majority of the development. The tank is tentatively sized at 1.7 million gallons. This lower zone tank will service the project areas generally below the elevation of 5230. The Morgan Pointe, Willow Ranch, and Town Center areas will service through pressure regulating stations from this tank zone.

As the development progresses into higher elevations, a second pump station will be constructed to pump to the second water storage tank required for the project. This tank is tentatively planned to be constructed at an elevation of 5546 with a high water elevation of 5570. This tank would generally service areas below the approximate elevation of 5450. The upper zone development areas are intended to be designed with interconnecting transmission mains to eliminate the need for additional pump stations in these upper zones. However, as the project develops, the need for additional pump stations to service isolated upper pressure zones may be required.

Off-site improvements to enhance the existing TMWA system supplying the Northgate area will be required to service the Somersett development. These improvements include construction of parallel water mains within Mayberry Drive, West 4th Street, and Mesa Park Road as well as three pump station upgrades within West 4th Street and Mae Anne Drive. These improvements are currently scheduled to be completed in early 2003.

The Somersett golf courses will be served by non-potable water via a series of pump stations, pipes and water storage within the golf course ponds. The water map generally shows the location of the transmission mains; pump stations, and golf course ponds utilized for storage.

As the Somersett project progresses, the design and grading of the various phases will require upgrades to the current water planning. The attached water map is being upgraded at quarterly intervals or as phasing dictates. Somersett, TMWA, and the Washoe County Health Department to assure adequate water planning to the various phases of the project are utilizing this information. The attached plan provides a good overview of the system requirements and as the project develops, will provide a safe and adequate water supply for the successful development of Somersett.



WATER MASTER PLAN

The Somersett project is within the Truckee Meadow Water Authority's (TMWA) water service territory. The majority of the on-site water improvements have been completed and the required off-site improvements have been completed. Attached is the water master plan showing the various pressure zones, pump stations, tanks, etc.

The Somersett water system is part of the TMWA's Northwest pump system. The Somersett water system consists of the Somersett #1 and Somersett #2 pump stations, and the Somersett #1 and #2 tanks. The Somersett water system is supplied primarily by TMWA's U.S. 40 Pump Train, consisting of the U.S. 40, Mae Anne #1, and Mae Anne #2 pump stations, and associated transmission piping.

Facility planning for the Somersett Development was originally finalized in 2001. This planning identified several major off-site improvements which were required to serve Somersett including the pump station rebuilds/replacements at US40, Mae Anne #1 and Mae Anne #2; and parallel mains on Mayberry and Mesa Park. Since that time these improvements have been completed. In 2004 TMWA completed a 2025 Water Facility Plan (WFP), which included facilities to furnish a wholesale water supply to planned development in the Verdi area.

The base facility required to deliver the wholesale supply of to the Verdi area is the U.S. 40 pump station. As a result of annexations and proposed Verdi wholesale deliveries, the aforementioned Somersett off-site main improvements on Mayberry and Mesa Park were upsized to 24 inch and 20 inch diameter pipes, respectively. TMWA specifically included and reserved 6 inches of over sizing for future Verdi demands in the 24" Mayberry and the 20" Mesa park mains. In addition to upsizing the parallel mains, the concept developed in the WFP to deliver the increased Northwest-Somersett-Verdi supply included a capacity increase at the U.S. 40 pump station and construction of a Truckee River Highlands (TRH) pump system. By utilizing the new TRH pumping system to directly serve a portion of the lower Mae Anne regulated zone, the same amount of excess capacity is created in the U.S. 40 Pump Train.

The Somersett golf courses are served by non-potable water from the Truckee River and from existing on-site wells. This water is delivered via a series of pump stations and pipe networks.

As the remaining portions of the Somersett project progresses, the design and grading of the various phases will require upgrades to the current water planning. An update to the Master Somersett Water Plan for the proposed density increases was completed by TMWA and depending on final designs may require additional water system infrastructure such as additional pump stations and water tanks. Somersett will continue to upgrade the water master plan as needed and individual discoveries will be completed for the proposed subdivisions to evaluate the specific TMWA requirements. Somersett, TMWA and the Washoe County Health Department will utilize this information during the preliminary and final design process to ensure adequate water planning occurs.

Master Water Plan	
Somersett Development	
Reno, Nv	

MANHARD CONSULTING ltd.
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jbr
environmental consultants, inc.
4741 Caughlin Parkway, Suite 2 • Reno, Nevada 89509 • (775) 747-5777 • Fax (775) 747-2177

June 26, 2002

Mr. Eric Lattin
Summit Engineering Corporation
5405 Mae Anne Avenue
Reno, Nevada 89523

SOMERSETT DEVELOPMENT EXPANSION, LISTED SPECIES EFFECTS
WASHOE COUNTY, NEVADA

Dear Mr. Lattin,

JBR Environmental Consultants, Inc. (JBR) has reviewed the proposed expansion of the Somersett Development for potential effects on listed species. The proposed expansion consists of two additional areas adjoining the southwest corner of the project. JBR reviewed the listed species with potential to be found in the Somersett project that were identified by the U.S. Fish and Wildlife Service (USFWS) in their letter of December 10, 2001. The species identified were the cui-ui (*Chasmistes cujus*), bald eagle (*Haliaeetus leucocephalus*), and Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*). JBR contacted the USFWS informally on June 26, 2002 and confirmed that no new listed species have been added since their letter was written.

The cui-ui and Lahontan cutthroat trout are not found in the Somersett project area because it has no permanent streams. The bald eagle is a potential migrant through the project area but no suitable nesting or foraging habitat has been identified. JBR has reviewed aerial photos of the proposed expansion areas and has concluded that they also offer no suitable habitat for these listed species.

Sincerely,

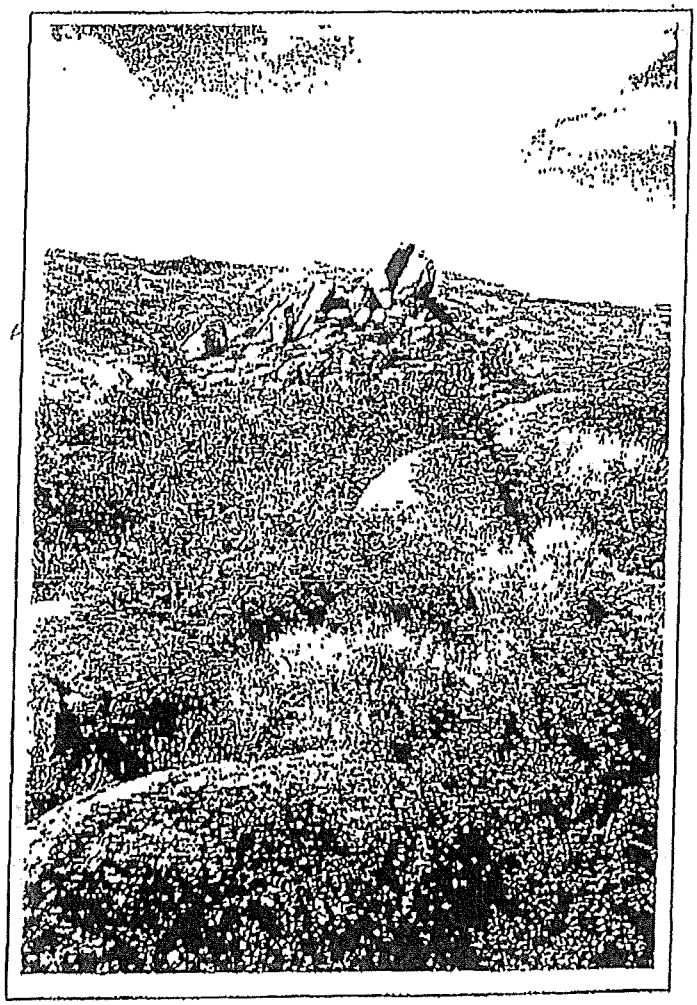
JBR ENVIRONMENTAL CONSULTANTS, INC.

Nancy Speaker Nething, RG
Senior Scientist

SENSITIVE PLANT SPECIES SURVEY

Somersett Master Plan
Reno, Nevada

Prepared for:
Jeff Codega Planning/Design Inc.
433 West Plumb Lane
Reno, Nevada 89509



July 1998

Western Botanical Services, Inc.
5859 Mt. Rose Highway / Reno, NV 89511

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Sensitive Plant Species Survey
Somersett Master Plan

INTRODUCTION

Western Botanical Services, Inc., (WBS) conducted a sensitive plant survey in accordance with the U.S. Fish and Wildlife Service (federal jurisdiction) and the State Department of Wildlife (State of Nevada) regulations for the Somersett Master Plan project site in Mogul, Nevada on June 22-24th, 1998. The survey was completed on an approximately 1728-acre parcel north of Highway I-80. The purpose of the survey was to identify suitable habitat and the presence/absence of three sensitive plant species that may potentially occur within the project boundaries.

ENVIRONMENTAL SETTING

The topography of the area is characterized by alluvial fans with a southern aspect dissected by frequent steep-sided channels. The project site is located within the Big Sagebrush Series Vegetation Type (Keeler & Wolf 1996). The upland vegetation was a Great Basin Sagebrush/Scrub community dominated by Mountain sagebrush (*Artemisia tridentata* ssp. *vaseyana*), low sage (*Artemisia arbuscula*), squirreltail (*Elymus elymoides*), bitterbrush (*Purshia tridentata*), Mormon tea (*Ephedra viridis*), and horsebrush (*Tetradymia glabrata*) in the upland communities. Riparian areas occur in confined channels. They generally support narrow and discontinuous stands of wetland and riparian vegetation including Baltic rush (*Juncus ballicus*), creeping wildrye (*Leymus triticoides*), coyote willow (*Salix exigua*), and Lemmon's willow (*Salix lemmonii*).

SPECIAL STATUS PLANT SPECIES

A search of the Nevada Natural Heritage Program Data Base (NNHP) identified three special status plant species with potential to occur within the project area. The three species included altered andesite buckwheat (*Enogonum robustum*), Sierra Valley ivesia (*Ivesia aperta* var.*aperta*), and Webber's ivesia, (*Ivesia webberi*). Table 1 provides a list of special status plant species known to occur or with potential to occur in the vicinity of the project area.

TABLE 1: Special Status Plant Species with Potential to Occur on Project Area

SCIENTIFIC NAME	COMMON NAME	STATUS FED/STATE/NNHP*	HABITAT	BLOOMIMG PERIOD	COMMENTS
Eriogonum robustum	altered andesite buckwheat	Sensitive/Watch List	Altered andesite, Jeffrey pine stands	June-July	habitat not located within project boundaries
Ivesia aperta var aperta	Sierra Valley ivesia	Sensitive/Threatened	Mesic meadow, Low sagebrush meadow	June-July	habitat not located within project boundaries
Ivesia webberii	Webber's ivesia	Sensitive/Watch List	Volcanic rock outcrop	June-July	habitat not located within project boundaries

* Federal Status (Federal Register 50 of Federal Regulations Part 17.11 and 17.12)
T&E = Information exists to support listing as threatened or endangered

NNNP Status
PE: Possibly extinct
W: Watch
D: Deleted
E: Endangered
T: Threatened

Sensitive Plant Species Survey
Somersett Master Plan

METHODOLOGY

The technical survey was conducted in accordance with accepted protocol for species of concern. The field surveys were performed during the last week of June, an optimum time for plant species identification in 1998. The site was surveyed by two qualified botanists, concentrating in areas of potential and unusual habitat, i.e. rocky outcrops, mesic meadows, and unusual soil types. Plants were identified to the lowest taxonomic level possible using Intermountain Flora as the reference taxonomy (Cronquist et. al. 1977).

RESULTS

No special status species were located during the surveys and habitat was unsuitable for their occurrence. A species list for the survey is included in Table 2.

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Soil Survey of Washoe County, Nevada, South Part, 1983. U.S.D.A. Soil Conservation Service

Sensitive Plant Species Survey
Somersett Master Plan

TABLE 2: Project Area Species List

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT TYPE
ASCLEPIADACEAE	*Asclepias cryotoceras v. davisii*	Davis milkweed	white clay
	Asclepias sp.	milkweed	riparian
APIACEAE	*Conium maculatum*	poison hemlock	riparian
	Lomatium austiniae	bisquitroot	mtn sagebrush
	Lomatium nevasdense	Nevada bisquitroot	mtn sagebrush
	Perideridia sp.	yampah	mtn sagebrush
ASTERACEAE	*Agoseris retrorsa*	mountain dandelion	mtn sagebrush
	Achillea millefolium	yarrow	riparian
	Antennaria dimorpha	pussytoes	low sagbrush
	Arnica sp	arnica	mtn sagebrush
	Artemisia arbuscula	low sagebrush	low sagebrush
	Artemisia dracunculus	wormwood	riparian
	Artemisia ludoviciana	white sagebrush	riparian
	Artemisia tridentata ssp.vaseyana	mtn sagebrush	mtn sagebrush
	Balsamorhiza sagittata	balsam-root	mtn sagebrush
	Blepharipappus scaber	blepharipappus	mtn sagebrush
	Brickellia microphylla	brickellia	granitic outcrop
	Chaenactis douglasii	Douglas pincushion	mtn sagebrush
	Chrysothamnus nauseousus	rubber rabbitbrush	mtn sagebrush
	Chrysothamnus viscidiflorus	green rabbitbrush	mtn sagebrush
	Cirsium pastoris	thistle	mtn sagebrush
	Cirsium vulgare	bull thistle	riparian
	Conyza candensis	horseweed	riparian
	Crepis acuminata	hawksbeard	mtn sagebrush
	Erigeron aphanactis	lava aster	white clay
	Erigeron spp.	fleabane	mtn sagebrush
	Eriophyllum lanatum	wooly sunflower	all
	Gnaphalium spp	cudweed	riparian
	Guilerrezia sarothrae	snakeweed	mtn sagebrush
	Iva axillans	poverty weed	riparian/disturbed
	Lactuca serriola	prickly lettuce	riparian
	Layia glandulosa	white layia	mtn sagebrush
	Lygodesmia exigua	skeleton-weed	mtn sagebrush
	Lygodesmia spinosa	skeleton-weed	mtn sagebrush
	Macaeranthera canescens	hoary tansy aster	mtn sagebrush
	Madia spp.	tarweed	low sagebrush
	Rigiopappus leiocladus	rigiopappus	low sagebrush
	Taraxacum officinale	dandelion	riparian
	Tetradymia canescens	gray horsebrush	mtn sagebrush
	Tetradymia glabrata	little-leaf horsebrush	mtn sagebrush
	Tragopogon dubius	oyster plant	all
	Wyethia mollis	mule's ears	mtn sagebrush
	Xanthium strumarium	cocklebur	all

(Table 2 continued next page)

Sensitive Plant Species Survey
Somersett Master Plan

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT TYPE
BORAGINACEAE	*Cryptantha circumscissa*	cushion cryptantha	low sagebrush/ mtn sagebrush
	Cryptantha humilis	cryptantha	mtn sagebrush
	Cryptantha intermedia v. grandiflora	grand cryptantha	white clay/ mtn sagebrush
	Cryptantha watsonii	Watson cryptantha	low sagebrush/ white clay' mtn sagebrush
	Amsinckia tesselata	fiddleneck	all
BRASSICACEAE	*Arabis holboellii*	Holboell rockcress	mtn sagebrush
	Arabis sparsiflora	sicklepod rockcress	mtn sagebrush
	Brassica spp.	mustard	riparian
	Descurainia pinnata ssp. helicortum	tansey mustard	all
	Descurainia richardsonii ssp. incisa		low sagebrush
	Draba verna		low sagerbrush
	Lepidium latifolium	whitetop	riparian
	Rorippa nasturtium-aqualicum	water cress	riparian
	Streptanthus cordatus	heartleaf twistflower	white clay
	Sysimbrium altissimum	tumble mustard	all
CHENOPODIACEAE	*Grayia spinosa*	spiny hopsage	low sagebrush/ mtn sagebrush
	Salsola tragus	Russian thistle	disturbed
CUPRESSACEAE	*Juniperus utahsensis*	Utah juniper	mtn sagebrush
CYPERACEAE	*Carex douglasii*	Douglas sedge	riparian/ low sagebrush
	Carex nebrascensis	Nebraska sedge	riparian
	Carex spp.	sedges	riparian
	Eleocharis bella ssp acicularis.	spikerush	riparian
	Eleochans palustris	spikerush	riparian
EPHEDRACEAE	*Ephedra viridis*	Mormon tea	mtn sagebrush/ white clay
EQUISETACEAE	*Equiseteum arvense*	horsetail	riparian
FABACEAE	*Astragalus lentiginosus*	freckled milkvetch	all
	Astragalus andersonii	Anderson milkvetch	mtn sagebrush
	Astragalus malacus	shaggy milkvetch	mtn sagebrush
	Astragalus purshii	Pursh's milkvetch	low sagebrush
	Astragalus spp	milkvetch	mtn sagebrush
	Lathyrus lanswertii var. lanswertii	Nevada sweet pea	riparian
	Lupinus argenteus var. heteranthus	silver lupine	mtn sagebrush
	Lupinus argenteus var montigenus	mountain lupine	mtn sagebrush
	Lupinus spp.	lupine	low sagebrush
	Melilotus officionalis	sweet blossom clover	riparian
GERANIACEAE	*Erodium cicutanum*	storksbill	all
GROSSULARIACEAE	*Ribes aureum*	golden currant	mtn sagebrush
	Ribes velutinum	desert gooseberry	mtn sagebrush
HYDROPHYLLACEAE	*Phacelia hastata*	silver leaf phacelia	mtn sagebrush

(Table 2 continued next page)

Sensitive Plant Species Survey
Somersett Master Plan

	Phacelia hydrophilloides	water leaf phacelia	granitic outcrops
	Phacelia lutea	glandbearing phacelia	mtn sagebrush
JUNCACEAE	*Juncus balticus*	Baltic rush	riparian
	Juncus ensifolius	daggerleaf rush	riparian
	Juncus spp.		riparian
LAMIACEAE	*Salvia dorii*	purple sage	mtn sagebrush/ low sagebrush
	Marrubium vulgare	horehound	white clay/disturbed
LILIACEAE	*Allium anceps*	wild onion	low sagebrush
	Allium acuminatum	Hooker onion	white clay/ mtn sagebrush
	Calochortus leichtlinii.	Mariposa lily	mtn sagebrush
	Zigadenus paniculatus	camas	low sagebrush
LOASACEAE	*Mentzelia albicaulis*	whitestem blazingstar	all
	Mentzelia laevicaulis	blazingstar	mtn sagebrush
ONAGRACEAE	*Epilobium spp.*	willow herb	riparian
	Gayophytum diffusum	diffuse groundsmoke	all
	Gayophytum ramosissimum	groundsmoke	mtn sagebrush
	Oenothera cespitosa		white clay
OROBANCHACEAE	*Orobanche sp.*		low sagebrush
PAEONIACEAE	*Paeonia brownii*		mtn sagebrush
PAPAVERACEAE	*Argemone munita*	prickly poppy	white clay
PINACEAE	*Pinus jeffreyi*	Jeffrey pine	mtn sagebrush
PLANTAGINACEAE	*Plantago major*	plantain	riparian
POACEAE	*Achnatherum hymenoides*	Indian ricegrass	mtn sagebrush
	Achnatherum speciosa	desert needlegrass	mtn sagebrush
	Achnatherum thurberiana	Thurber's needlegrass	mtn sagebrush
	Agropyron desertorum	crested wheatgrass	disturbed
	Bromus carinatus	mountain brome	mtn sagebrush
	Bromus tectorum	cheatgrass	all
	Elymus caput-medusae	medusa head	disturbed
	Elymus elymoides	squirreltail grass	mtn sagebrush/ low sagebrush/ white clay
	Distichlis spicata	saltgrass	riparian
	Festuca idahoensis	Idaho fescue	low sagebrush
	Festuca ovina	sheep fescue	low sagebrush
	Glyceria spp	mannagrass	riparian
	Hordeum jubatum	foxtail barley	riparian
	Leymus cinereus	Great Basin wildrye	mtn sagebrush
	Leymus triticoides	creeping wildrye	riparian
	Melica stricta	rock melic	granitic outcrop
	Muhlenbergia sp	muhly	riparian
	Poa ampla	big bluegrass	riparian

(Table 2 continued next page)

Sensitive Plant Species Survey
Somersett Master Plan

	Poa pratensis	Kentucky bluegrass	riparian
	Poa secunda	Sandberg bluegrass	all
	Poa sp.	bluegrass	riparian
	Polypogon monspeliensis	rabbit's foot grass	riparian
POLEMONIACEAE	*Gilia inconspicua var. inconspicua*	shy gilia	mtn sagebrush
	Cammissonia spp.	sun cup	low sagebrush
	Phlox gracilis	false phlox	all
	Phlox longifolia	longleaf phlox	mtn sagebrush
POLYGONACEAE	*Eriogonum douglasii*	Douglas buckwheat	low sagebrush
	Eriogonum elatum	tall buckwheat	low sagebrush/ granitic outcrop
	Eriogonum microthecum	Great Basin buckwheat	mtn sagebrush/ low sagebrush
	Eriogonum ochrocephalum	ocher flower buckwheat	white clay
	Eriogonum vimineum	wicker buckwheat	white clay
	Eriogonum spp.	buckwheat	white clay
	Polygonum amphibium var emersum	water smartweed	riparian
	Rumex crispus	curly dock	riparian
ROSACEAE	*Rosa woodsii*	Woods rose	riparian
	Potentilla gandulosa.	cinquefoil	riparian
	Potentilla anserina	silverleaf cinquefoil	OBL
	Prunus andersonii	desert peach	mtn sagebrush/ white clay
	Prunus virginiana	chokecherry	riparian
	Purshia tridentata	bitterbrush	mtn sagebrush/ white clay
	Sanguisorba minor	burnet	riparian
RUBIACEAE	*Galium spp.*	bedstraw	riparian
SALICACEAE	*Populus fremontii*	Fremont's cottonwood	riparian
	Populus trichocarpa	black cottonwood	riparian
	Salix exigua	coyote willow	riparian
	Salix lemmonii	Lemmon's willow	riparian
SCROPHULARIACEAE	*Castilleja chromosa*	Indian paintbrush	mtn sagebrush/ low sagebrush
	Collinsia parviflora	blue-eyed Mary	mtn sagebrush
	Mimulus guttatus	common monkeyflower	riparian
	Mimulus nanus	dwarf purple monkey flower	white clay
	Penstemon laetus var. roezlii	beardtongue	mtn sagebrush/ white clay/ low sagebrush
	Penstemon palmeri	Palmer penstemon	low sagebrush

(Table 2 continued next page)

Sensitive Plant Species Survey
Somersett Master Plan

	Penstemon speciosus	royal beardtongue	white clay
	Scrophularia desertorum	mountain figwort	granitic outcrop
	Verbascum thapsus	mullein	all
	Veronica americana	American brooklime	riparian
TAMARICACEAE	*Tamarisk sp.*	tamarisk	riparian
TYPHACEAE	*Typha latifolia*	cattail	riparian
URTICACEAE	*Urtica dioica*	stinging nettle	riparian
VALERIANCACEAE	*Plectritis macrocera*	white corn salad	low sagebrush
VIOLACEAE	*Viola nuttallii*	Nuttal's violet	mtn sagebrush

SURVEY OF WETLANDS, STREAMS, ENVIRONMENTAL ZONES & WATER IN US

SURVEY OF WETLANDS,
STREAM ENVIRONMENT ZONES
AND WATERS OF THE U.S.
(MAY, 1998)

(FOR REVIEW, A COPY OF THE SURVEY OF WETLANDS,
STREAM ENVIRONMENT ZONES AND WATERS OF THE U.S.
IS ON FILE WITH THE CITYOF RENO
COMMUNITY DEVELOPMENT DEPARTMENT)

BOB MILLER
Governor

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WILDLIFE
1100 Valley Road
P.O. Box 10678
Reno, Nevada 89520-0022
(702) 688-1500 • Fax (702) 688-1595

PETER G. MORROS
Director
Department of Conservation
and Natural Resources

TERRY R. CRAWFORTH
Administrator

November 18, 1998

Nevada Division of Wildlife
Region 1 Ph 423-3171
380 West B Street
Fallon, Nevada 89406

Vern Kloos
Associate Planner
City Of Reno
Community Development Department
P.O. Box 1900
Reno, NV. 89505

RE: Sommerset

Dear Mr. Kloos

The Nevada Division of Wildlife has reviewed the Sommerset development proposal with regard to the Wildlife Habitat Buffer. After careful review of the provisions outlined in the Planned Unit Development Handbook, the Division recommends approval, subject to the following conditions:

1. As construction begins within the project, the developer will work concurrently with the Nevada Division of Wildlife to ensure that the Wildlife Habitat buffers are developed.

2. The developer will utilize the "Wildlife Seed Mix" for plantings within Wildlife Habitat Buffers, as detailed in the Planned Unit Development handbook, page 6.

If you have questions or concerns regarding our agency involvement with Sommerset, please call me.

Sincerely,

TERRY R. CRAWFORTH, ADMINISTRATOR

Richard T. Heap Jr.
Regional Manager
Region I

RTH:rth

cc. Blake Smith, FDC Group, LLC
Jeff Codega, Jeff Codega Planning/Design, Inc.
Chief, Habitat Bureau

Since November 2000, Somersett has been subject to a fresh review that has resulted in the following plan refinements.

Addition of a planned Active Adult Community, with a golf course that is woven into the fabric of Somersett. The area planned for the Active Adult Community may be used for "traditional" (ie.not age restricted) housing as well.

The previous Town Center location is essentially now occupied by the planned "hub" of the active adult community, the Active Adult Community Center (which if developed as non age restricted housing will be replaced with an elementary school site and a second neighborhood park) and the Golf Clubhouse.

The Town Center has a new position closer to the front door of the community where it will better fulfill the community and convenience needs of Somersett's and nearby residents.

The focus of the Town Center is expanded to provide for a greater potential of creating a vibrant employment base within Somersett. The addition of office/business park use serves to provide a degree of jobs/housing balance in the community and could add a unique economic diversification opportunity.

Residential densities are shifted toward the new Town Center location, reflecting the move of the focus of intensity/density toward the front door of the community. This effectively transfers the community focus to the area that has always had a "Suburban" designation in the Truckee Meadows Regional Plan.

The addition of the 18 hole golf course and the 9 hole short course, clearly adds a new aspect of recreation and open space to the community. This also serves to refine the land use pattern. Some of the major drainageways which were previously landscaped and sculpted are now planned for more exact treatments associated with the golf course.

The major power lines that traverse the site are now planned for undergrounding,have been placed underground. This provides obvious aesthetic benefits and also frees up a significant amount of property for alternate landuses. On an interim basis, Somersett will work with Sierra Pacific to adjust specific facilities to avoid safety hazards while allowing land uses.
construction to proceed. The power lines shall be placed underground by the 1,400th building permit.

The plan for the 18 hole golf course includes a practice range that falls on an adjacent property. These improvements will be reviewed through the special use permit process (for grading and active recreation) in Washoe County. Other portions of these adjacent parcels may in the future also include other uses that will be subject range.
to their own approval process (es) at a later date(s).

LA new raw water supply is being explored for the project to provide for some or all of the golf course and landscape irrigation. Untreated/non potable water from wells and/or springs is planned as the primary source. Delivery would be via a system of pipelines, pumps, storage and other facilities designed to move water from the sources indicated to the golf course and landscape areas. This system will be separate from Sierra Pacific's Truckee Meadows Water Authority (TMWA) potable water supply system. Depending on the availability of untreated/non potable water and the distance to the various golf course and landscape areas, supplemental irrigation may be provided at various locations, from metered service by Sierra Pacific Power Company,TMWA.

TABLE 1-1—SOMERSETT COMPARISON TABLE

General Land Use	Existing	Proposed with Golf/Active Adult	Proposed with Golf/Without Active Adult
Land Use Residential	[illegible] acres	71[illegible] acres	7[illegible] acres
Land Use Commercial	[illegible] acres	6[illegible] acres	[illegible] acres
Open Space/Park/Public Lands	1,148± acres	1,29[illegible] acres	1,01[illegible] acres
Total General Land Use	2,076± acres	2,076± acres	2,076± acres
Housing Mix	**Existing**	**Proposed with Golf/Active Adult**	**Proposed with Golf/Without Active Adult**
Active Adult Housing Units	N/A	[illegible]	N/A
Patio Home Units	[illegible]	[illegible]	[illegible]
Village Home Units	[illegible]	[illegible]	[illegible]
Executive Home Units	618±	[illegible]	[illegible]
Estate Home Units	[illegible]	[illegible]	[illegible]
Townhome/Apartment Units	175±	[illegible]	[illegible]
Total Housing Mix	2,568 Units	2,568 Units	2,568 Units
Land Use Densities	**Existing**	**Proposed with Golf/Active Adult**	**Proposed with Golf/Without Active Adult**
Windham Village	115± ac/[illegible] d.u.	88± ac/55[illegible] d.u.	88± ac/55[illegible] d.u.
Stonebrook Village	125± ac/[illegible] d.u.	2[illegible] ac/[illegible] d.u.	[illegible] ac/[illegible] d.u.
Somersett Village	2[illegible] ac/[illegible] d.u.	2[illegible] ac/[illegible] d.u.	2[illegible] ac/[illegible] d.u.
Stoneridge Village	115± ac/262± d.u.	N/A	N/A
Crossroad Village	161.4± ac/[illegible] d.u.	4[illegible] ac/[illegible] d.u.	4[illegible] ac/[illegible] d.u.
Somersett East Village	1[illegible] ac/[illegible] d.u.	N/A	N/A
Cluster	[illegible] ac/[illegible] d.u.	N/A	N/A
Open Space	1,148± acres	[illegible] ac	[illegible] ac
Valley	N/A	2[illegible] ac/[illegible] d.u.	2[illegible] ac/[illegible] d.u.
Total Land Use Densities	2,076± ac/2,568 d.u.	2,076± ac/2,568 d.u.	2,076± ac/2,568 d.u.
~~Minimum Total Open Space/Recreation~~	~~1,078± acres~~	~~1,[illegible] acres~~	~~1,[illegible] acres~~
Illustrative Plan Definition (Not for Regulatory Purposes)	**Existing**	**Proposed with Golf/Active Adult**	**Proposed with Golf/Without Active Adult**
Residential/Nonresidential Land Uses	[illegible] acres	[illegible] acres	[illegible] acres
Enhanced/Recreation Open Space	[illegible] acres	[illegible] acres	[illegible] acres
Natural/Naturalistic Open Space	1,078± acres	729± acres	729± acres
Total Illustrative Open Space	1,[illegible] acres	1,30[illegible] acres	1,30[illegible] acres
Non Residential Development (GLA)	170,000± sf	[illegible] sf	[illegible] sf
Estimated Sewer Line Flows	**Existing**	**Proposed with Golf/Active Adult**	**Proposed with Golf/Without Active Adult**
Residential Units	2,568 units = 1.926 MGD	[illegible] units = 1.601 MGD	1.601 MGD
Multi-Family Units	N/A	[illegible] units = .217 MGD	0.217 MGD
Commercial Uses	[illegible] acres = .27 MGD	65 acres = .650 MGD	0.450 MGD
Public Facility	20 acres = .064 MGD	.5 acres = .002 MGD	0.052 MGD
Total Sewer Line Flows	2.26 MGD	2.47 MGD	2.32 MGD
Estimated Water Demand/Rights	**Existing**	**Proposed with Golf/Active Adult**	**Proposed with Golf/Without Active Adult**
Single Family	1,159 AFY	1,176 AFY	1,176 AFY
Multi-Family	109 AFY	123 AFY	121 AFY
Commercial Uses	68 AFY	16[illegible] AFY	114 AFY
Irrigated/Enhanced Open Space	470 AFY	179 AFY	179 AFY
School	15 AFY	N/A	15 AFY
Golf Course	N/A	474 AFY	474 AFY
Total Water Demand/Rights	1,821± AFY	2,316± AFY	2,381± AFY
Average Daily Traffic	29,408 ADT	26,519 ADT	31,162 ADT

~~Original Regional Plan Amendment (Approved 02-13-07)~~
~~TABLE 1-2—REGIONAL PLAN/LAND USE HISTORY~~

AREA	ACREAGE	AVERAGE DENSITY	TOTAL DWELLING UNITS	NON-RESIDENTIAL BUILDING AREA	REGIONAL LAND USE
Western Village	117±	1±	200±	*	Suburban
Summerhawk Village	125±	1±	175±	*	Suburban
Somerset Village	210±	3±	860±	100,000± s.f.*	Urban
Stoneridge Village	115±	3±	300±	*	Suburban
Carrington Village	150±	±1	150±	*	Suburban
Clusters	80±	1±	80±	±±	Rural
Open Space	913±	0	0	±±±	Rural Reserve
Subtotal	1,720±	1.3±	2,250±	150,000± s.f.	±±±
Somerset East	N/A	N/A	N/A	N/A	±±±
Subtotal	N/A	N/A	N/A	N/A	±±±
Grand Total	1,720±	1.3±	2,250±	150,000± s.f.	±±±

* An additional 50,000± s.f. could be located throughout the development areas.

~~Original Somerset P.U.D. (7-22-98) Regional P.C. Conformance Review~~

AREA	ACREAGE	AVERAGE DENSITY	TOTAL DWELLING UNITS	NON-RESIDENTIAL BUILDING AREA	REGIONAL LAND USE
Western Village	117±	1.7±	112±	*	Suburban
Summerhawk Village	112±	2.9±	185±	*	Suburban
Somerset Village	201±	4.4±	898±	100,000± s.f.*	Urban
Stoneridge Village	115±	2.7±	262±	*	Suburban
Carrington Village	160±	2.2±	175±	*	Suburban
Clusters	20±	0.8±	58±	±±±	Rural
Open Space	913±	0	0	±±±	Rural Reserve
Subtotal	1,720±	1.3±	2,250±	150,000± s.f.	±±±
Somerset East	N/A	N/A	N/A	N/A	±±±
Subtotal	N/A	N/A	N/A	N/A	±±±
Grand Total	1,720±	1.3±	2,250±	150,000± s.f.	±±±

* An additional 50,000± s.f. could be located throughout the development areas.

~~Original Somerset P.U.D. + Somerset East~~
~~TABLE 1-2—REGIONAL PLAN/LAND USE HISTORY CONTINUED~~

AREA	ACREAGE	AVERAGE DENSITY	TOTAL DWELLING UNITS	NON-RESIDENTIAL BUILDING AREA	REGIONAL LAND USE
Western Village	117±	1.7±	112±	*	Suburban
Summerhawk Village	112±	2.9±	185±	*	Suburban
Somerset Village	201±	4.4±	898±	100,000± s.f.*	Urban
Stoneridge Village	115±	2.7±	262±	*	Suburban
Carrington Village	160±	2.2±	175±	*	Suburban
Clusters	20±	0.8±	58±	±±±	Rural
Open Space	913±	0	0	±±±	Rural Reserve
Subtotal	1,720±	1.3±	2,250±	150,000± s.f.	±±±
Somerset East	340	0.9±	318	50,000± s.f.	Suburban
Subtotal	340	0.9±	318	50,000± s.f.	±±±
Grand Total	2,076±	1.2±	2,568±	170,000± s.f.	±±±

* An additional 50,000± s.f. could be located throughout the development areas.

~~2000/2001 Somerset P.U.D. Amendment~~

AREA	ACREAGE	AVERAGE DENSITY	TOTAL DWELLING UNITS	NON RESIDENTIAL BUILDING AREA	REGIONAL LAND USE
[illegible]	[illegible]	[illegible]	[illegible]	--	[illegible] Rural Reserve
[illegible]	[illegible]	[illegible]	[illegible]	--	[illegible]
[illegible]	N/A	---	[illegible]	--	---
[illegible]	N/A	---	[illegible]	--	---
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] Rural Reserve
[illegible]	[illegible]		[illegible]	-	[illegible]
Open Space	[illegible]		[illegible]	---	Rural Reserve
Subtotal	1,728±	1,1±	1,881±	80,000± s.f.	---
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Open Space	[illegible]		[illegible]	---	[illegible]
Subtotal	[illegible]	[illegible]	[illegible]	[illegible]	---
Grand Total	2,076±	1.2±	2,568±	435,000± s.f.	---

* Includes [illegible] acres of Open Space [illegible]
** Includes [illegible] acres of Open Space [illegible]
*** Includes [illegible] acres of Open Space [illegible]
**** Includes [illegible] acres of Open Space [illegible]
***** Includes [illegible] acres of Open Space [illegible]
[illegible]
[illegible]
[illegible]

257

WASHOE COUNTY
RECORDER

OFFICE OF THE RECORDER
KATHRYN L. BURKE, RECORDER

1001 E. NINTH STREET
POST OFFICE BOX 11130
RENO, NEVADA 89520-0027
PHONE (775) 328-3661
FAX (775) 325-8010

LEGIBILITY NOTICE

The Washoe County Recorder's Office has determined that the attached document may not be suitable for recording by the method used by the Recorder to preserve the Recorder's records. The customer was advised that copies reproduced from the recorded document would not be legible. However, the customer demanded that the document be recorded without delay as the parties rights may be adversely affected because of a delay in recording. Therefore, pursuant to NRS 247.120 (3), the County Recorder accepted the document conditionally, based on the undersigned's representation (1) that a suitable copy will be submitted at a later date (2) it is impossible or impracticable to submit a more suitable copy.

By my signing below, I acknowledge that I have been advised that once the document has been microfilmed it may not reproduce a legible copy.

Bobbie Merrigan
Signature

April 9, 2003
Date

Bobbie Merrigan
Printed Name

DOC # 2834470
04/08/2003 11:43A Fee:272.00
BK1
Requested By
SOMERSETT DEVELOPMENT COMPANY LTD
Washoe County Recorder
Kathryn L. Burke - Recorder
Pg 259 of 259 RPTT 0.00

Exception No.: 15

DOC # 3058013
08/23/2004 03:44P Fee:15.00
BK1
Requested By
SOMERSETT DEVELOPMENT
Washoe County Recorder
Kathryn L. Burke - Recorder
Pg 1 of 3 RPTT 0.00

#15

After Recordation Return To:
SIERRA PACIFIC POWER COMPANY
Land Operations Department
P.O. Box 10100
Reno, Nevada 89520
A.P.N. 232-020-39
Work Order Number 04-29877

GRANT OF EASEMENT
FOR
UTILITY FACILITIES

THIS GRANT OF EASEMENT, made and entered into this 21st day of June, 2004, by and between SOMERSETT DEVELOPMENT COMPANY LTD., (hereinafter referred to as "Grantor"), and SIERRA PACIFIC POWER COMPANY, a Nevada corporation, (hereinafter referred to as "Grantee").

WITNESSETH:

Grantor, for and in consideration of the sum of Ten Dollars ($10.00), in hand paid by Grantee, and other good and valuable consideration, receipt of which is hereby acknowledged, does hereby grant to Grantee, its successors, assigns and agents, permanent and exclusive easements and rights of way to construct, alter, maintain, inspect, repair, reconstruct, add to and operate one or more underground electric, gas distribution and communication facilities, consisting of one or more circuits, lines or pipes, together with underground foundations, markers, conduits, pull boxes, vaults, surface-mounted transformers, switchgear, pipes, valve boxes, meters, fixtures, and other appurtenances connected therewith, (hereinafter called "Utility Facilities"), across, over, under, and through the following described property situate in the County of Washoe, State of Nevada, to-wit:

PARCEL 5-A of Record of Survey Map 4246, filed in the office of the Washoe County Recorder, State of Nevada on May 16, 2003 File Number 2856344.

With respect to all underground utility facilities as described herein, after installation of said underground utility facilities, the easement(s) and right(s)-of-way as herein granted will be deemed to be a strip of land ten (10) feet in width, being five (5) feet on either side of the centerline of said underground utility facilities as installed on the above-described premises.

With respect to all surface mounted transformers and/or switchboxes as described herein, after installation of the transformers and/or switchboxes, said easement(s) and right(s)-of-way as herein granted will be deemed to encompass an area around said transformers and/or switchboxes of three (3) feet extending in all directions from the perimeter of the transformers and/or switchboxes as installed on the above-described premises.

IT IS FURTHER AGREED:

1. Grantee shall have at all times ingress and egress to the above-described land for the purpose of constructing, altering, maintaining, inspecting, repairing, reconstructing and operating said Utility Facilities.

2. Grantee will at all times save and hold harmless Grantor with respect to any and all loss, damage or liability suffered or sustained by reason of any injury or damage to any person or property, caused by the constructing, altering, maintaining, inspecting, repairing, reconstructing and operating of the Utility Facilities by Grantee.

3. Grantor shall not erect or construct, nor permit to be erected or constructed any buildings, or structures, nor permit any activity which, in the reasonable judgment of Grantee, is inconsistent with Grantee's use of said easement.

4. Grantee shall have the right to remove or clear any and all buildings, fences, structures, combustible materials, trees, brush, debris, or any other obstruction from or adjacent to said easement, which in the reasonable judgment of Grantee may interfere with or endanger the constructing, altering, maintaining, inspecting, repairing, reconstructing and operating of the Utility Facilities.

THIS GRANT OF EASEMENT and the terms contained herein shall be binding upon the successors, agents and assigns of Grantor and Grantee, and all rights herein granted may be assigned.

TO HAVE AND TO HOLD all and singular the said premises, granted together with the appurtenances, unto said Grantee, its successors, agents and assigns forever.

IN WITNESS WHEREOF, Grantor has caused these presents duly to be executed the day and year first above written.

By: G. Blake Smith

Print Name: G. Blake Smith

Its: Managing Member

Dated: June 21, 2004

STATE OF Nevada)

COUNTY OF Washoe)

This instrument was acknowledged before me a Notary Public on June 21, 2004

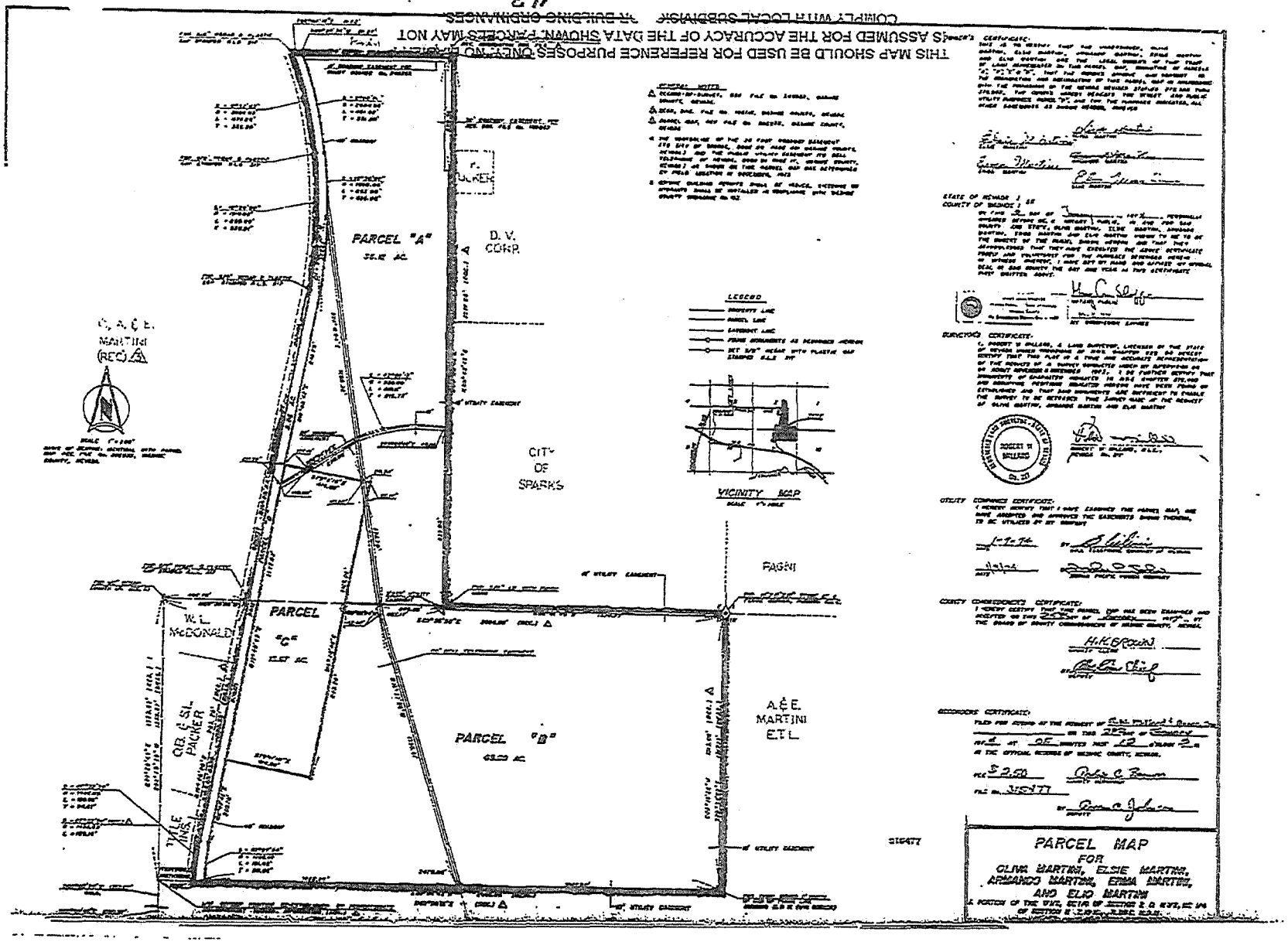
By, G. Blake Smith, President of S&S, Inc., Somersetts Manager of

SOMERSETT DEVELOPMENT COMPANY LTD.

Lucy Nell McGuire

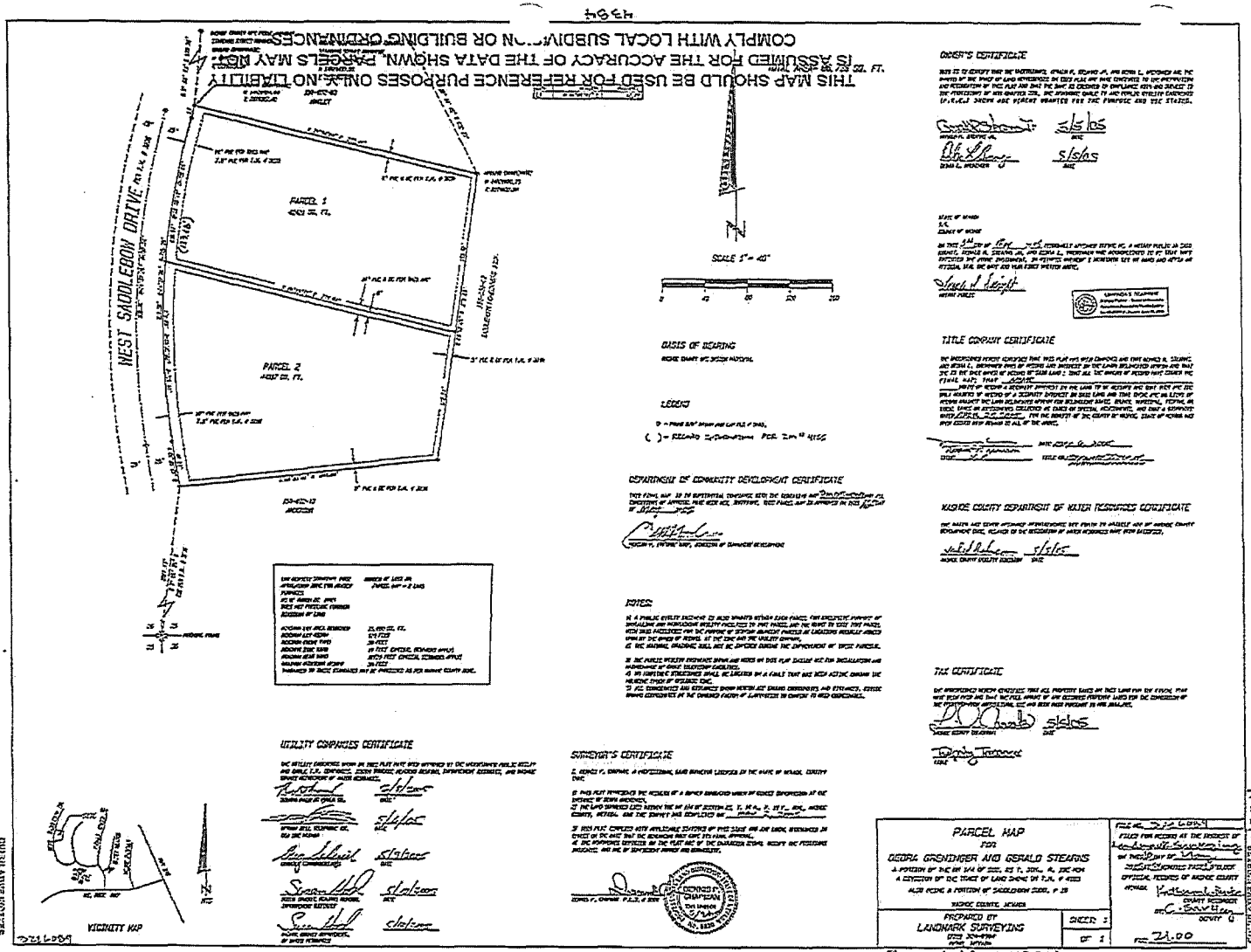
Notary Public

LUCY NELL McGUIRE
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 93-3803-2 - Expires July 1, 2005



Exception No.: 16

Description: Washoe,NV Parcel Map 4384 Page: 1 of 1
Order: new comment:



Parcel Map 4384

4 of 16

Exception No.: 17

9TH PARCEL MAP
FOR
SOMERSETT DEVELOPMENT COMPANY, LTD.

SOMERSETT
It's Great To Be Home.

OWNER'S CERTIFICATE:

SOMERSETT DEVELOPMENT COMPANY, LTD.

DATE: 6/5/2005

NOTARY PUBLIC ACKNOWLEDGMENT

MY COMMISSION EXPIRES July 1, 2005

SECURITY INTEREST HOLDER'S CERTIFICATE:

NEVADA STATE BANK, A NEVADA CORPORATION

Vice President

DATE: 6-8-05

NOTARY PUBLIC ACKNOWLEDGMENT

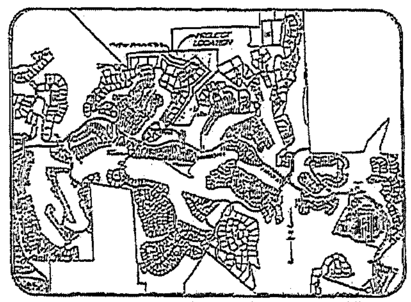
MY COMMISSION EXPIRES May 17, 2008

TITLE COMPANY'S CERTIFICATE:

TICOR TITLE OF NEVADA, INC.

Vice President

DOCUMENT NO: 3275005



VICINITY MAP
NOT TO SCALE

GENERAL NOTES:

UTILITY COMPANIES CERTIFICATE:

DATE: 6/5/2005

DATE: 6/3/2005

DATE: 6/9/2005

DATE: 6/9/2005

SURVEYOR'S CERTIFICATE:

TAX CERTIFICATE:

WASHOE COUNTY TREASURER

9/1/05

PARCEL MAP COMMITTEE CERTIFICATE:

COUNTY RECORDER'S CERTIFICATE:

FILE NO. 3275005 FEE 31.00

FILED FOR RECORD AT THE REQUEST OF Manhard Consulting

SOMERSETT DEVELOPMENT COMPANY, LTD.

A DIVISION OF PARCEL E OF SUBDIVISION TRACT MAP 4234, A PORTION OF THE NORTHWEST 1/4 OF SECTION 2, TOWNSHIP 19 NORTH, RANGE 18 EAST, MOUNT DIABLO MERIDIAN

WASHOE COUNTY NEVADA

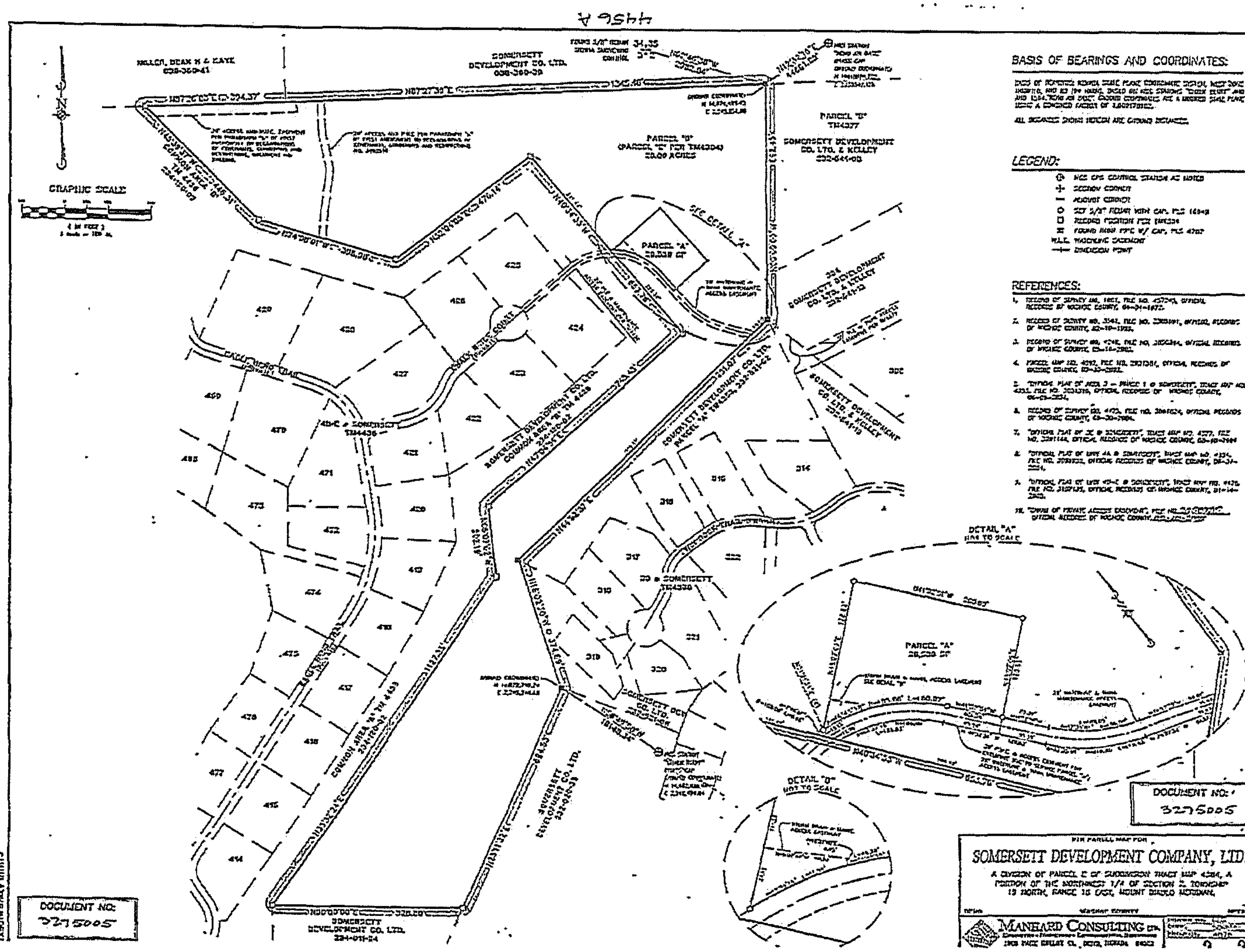
MANHARD CONSULTING LTD.

4456

CUMULATIVE INDEXES SHOULD BE EXAMINED FOR ANY SUBSEQUENT CHANGES TO THIS MAP

4456 1-1-96

#117



CUMULATIVE INDEX SHOULD BE EXAMINED FOR ANY SUBSEQUENT CHANGES TO THIS MAP