

FINAL

SAUSAL CREEK WATERSHED ENHANCEMENT PLAN

APPENDICES



Sausal Creek "Restoration Reach" in 2003

Prepared by Laurel Marcus and Associates, NewFields River Basin Services, Hydrologic Systems Inc.

For

Friends of Sausal Creek

March 2010

Funding provided by the State Water Resources Control Board

Appendix A

Precipitation Data

Program: LOGPER.EXE LOG Pearson Type III Analysis.
HSI Hydrologic Systems, San Rafael, California 94901
(415) 454-6056 water@hydrologic-systems.com
Version 2.6, November 2007

Run Date: Tue Nov 20 2007 03:22 PM

Input File = USLFP1HR.txt

This is the input data:

Title: 1 Hr

1949.00 ;	0.31
1950.00 ;	0.35
1951.00 ;	0.43
1952.00 ;	1.20
1953.00 ;	0.31
1954.00 ;	0.71
1955.00 ;	0.41
1956.00 ;	0.43
1957.00 ;	0.52
1958.00 ;	0.60
1959.00 ;	0.66
1960.00 ;	0.29
1961.00 ;	0.60
1962.00 ;	0.52
1963.00 ;	0.80
1964.00 ;	0.91
1965.00 ;	0.42
1966.00 ;	0.50
1967.00 ;	1.05
1968.00 ;	0.60
1969.00 ;	0.40
1970.00 ;	0.60
1971.00 ;	0.84
1972.00 ;	0.21
1973.00 ;	0.87

1974.00 ;	0.56
1975.00 ;	0.49
1976.00 ;	0.54
1977.00 ;	0.46
1978.00 ;	0.80
1979.00 ;	0.69
1980.00 ;	0.60
1981.00 ;	0.29
1982.00 ;	0.53
1983.00 ;	0.67
1984.00 ;	0.58
1985.00 ;	0.61
1986.00 ;	0.70
1987.00 ;	0.50
1988.00 ;	0.50
1989.00 ;	0.41

End of file encountered.

41 Data points were read.

Statistics of Data:

Mean of Data	=	0.57
Min of Data	=	0.21
Max of Data	=	1.20
Std. Dev. of Data	=	0.21

Statistics of Logged Data:

Mean of LOG Data	=	-0.270
Std. Dev. of LOG Data	=	0.159
Standard Skew of LOG Data	=	-0.229
Generalized Skew Coef. Pub 17B	=	-0.300

Skew Weighting factors:

A	=	-0.312
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B = 0.880
C = 0.613
MSEg = Estimate of Error of Station Skew = 0.141

MESgbar = Estimate of Error of Regional Skew = 0.302

Weighting of Station Skew = 68.2 percent
Weighting of Regional Skew = 31.8 percent

Weighted Generalized Skew Value Used In The Analysis = -0.252

The following points are considered high outliers:

The 10 pct Level of Significance K_n = 2.692

No High Outliers

The following points are considered Low outliers:

No Low Outliers

The Results of The Frequency Analysis:

The 500 YR Frequency Factor K_t = 2.575
The 500 year precipitation = 1.381

The 200 YR Frequency Factor K_t = 2.339
The 200 year precipitation = 1.267

The 100 YR Frequency Factor K_t = 2.140
The 100 year precipitation = 1.177

The 50 YR Frequency Factor K_t = 1.921
The 50 year precipitation = 1.086

The 25 YR Frequency Factor K_t = 1.661
The 25 year precipitation = 0.988

The 10 YR Frequency Factor Kt = 1.251
The 10 year precipitation = 0.850

The 5 YR Frequency Factor Kt = 0.852
The 5 year precipitation = 0.734

The 2 YR Frequency Factor Kt = 0.042
The 2 year precipitation = 0.545

The 1.5-Year Frequency Factor Kt = -0.399
The 1.5-Year precipitation = 0.464

The 1.43-Year return Flow
The 70 pct. Exceedence Factor Kt = -0.492
The 70 pct. Exceedence precipitation = 0.448

The 1.25-Year return Flow
The 80 pct. Exceedence Factor Kt = -0.827
The 80 pct. Exceedence precipitation = 0.396

The 1.11-Year return Flow
The 90 pct. Exceedence Factor Kt = -1.305
The 90 pct. Exceedence precipitation = 0.333

The 1.0-Year return Flow
The 99.99 pct. Exceedence Factor Kt = -4.267
The 1-Year precipitation = 0.112

Program: LOGPER.EXE LOG Pearson Type III Analysis.
HSI Hydrologic Systems, San Rafael, California 94901
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Version 2.6, November 2007

Run Date: Tue Nov 20 2007 03:23 PM

Input File = USLFP2HR.txt

This is the input data:

Title: 2 Hr

1945.00 ;	0.67
1946.00 ;	0.79
1947.00 ;	0.50
1948.00 ;	0.61
1949.00 ;	0.42
1950.00 ;	0.62
1951.00 ;	0.57
1952.00 ;	1.42
1953.00 ;	0.74
1954.00 ;	0.80
1955.00 ;	0.44
1956.00 ;	0.71
1957.00 ;	0.83
1958.00 ;	0.71
1959.00 ;	1.02
1960.00 ;	0.53
1961.00 ;	1.13
1962.00 ;	0.70
1963.00 ;	1.35
1964.00 ;	1.13
1965.00 ;	0.65
1966.00 ;	0.60
1967.00 ;	1.15
1968.00 ;	1.15
1969.00 ;	0.55

1970.00 ;	0.91
1971.00 ;	0.92
1972.00 ;	0.34
1973.00 ;	1.08
1974.00 ;	0.84
1975.00 ;	0.85
1976.00 ;	0.80
1977.00 ;	0.77
1978.00 ;	1.02
1979.00 ;	0.95
1980.00 ;	0.90
1981.00 ;	0.54
1982.00 ;	0.96
1983.00 ;	1.16
1984.00 ;	0.68
1985.00 ;	1.05
1986.00 ;	0.80
1987.00 ;	0.81
1988.00 ;	0.59
1989.00 ;	0.71

End of file encountered.

45 Data points were read.

Statistics of Data:

Mean of Data	=	0.81
Min of Data	=	0.34
Max of Data	=	1.42
Std. Dev. of Data	=	0.25

Statistics of Logged Data:

Mean of LOG Data	=	-0.112
Std. Dev. of LOG Data	=	0.137
Standard Skew of LOG Data	=	-0.337
Generalized Skew Coef. Pub 17B	=	-0.300

Skew Weighting factors:

A = -0.303

B = 0.852

C = 0.653

MSEg = Estimate of Error of Station Skew = 0.138

MESgbar = Estimate of Error of Regional Skew = 0.302

Weighting of Station Skew = 68.6 percent

Weighting of Regional Skew = 31.4 percent

Weighted Generalized Skew Value Used In The Analysis = -0.325

The following points are considered high outliers:

The 10 pct Level of Significance K_n = 2.727

No High Outliers

The following points are considered Low outliers:

No Low Outliers

The Results of The Frequency Analysis:

The 500 YR Frequency Factor K_t = 2.488

The 500 year precipitation = 1.695

The 200 YR Frequency Factor K_t = 2.271

The 200 year precipitation = 1.583

The 100 YR Frequency Factor K_t = 2.085

The 100 year precipitation = 1.493

The 50 YR Frequency Factor K_t = 1.876

The 50 year precipitation	=	1.398
The 25 YR Frequency Factor Kt	=	1.634
The 25 year precipitation	=	1.295
The 10 YR Frequency Factor Kt	=	1.241
The 10 year precipitation	=	1.144
The 5 YR Frequency Factor Kt	=	0.854
The 5 year precipitation	=	1.012
The 2 YR Frequency Factor Kt	=	0.054
The 2 year precipitation	=	0.787
The 1.5-Year Frequency Factor Kt	=	-0.389
The 1.5-Year precipitation	=	0.684
The 1.43-Year return Flow		
The 70 pct. Exceedence Factor Kt	=	-0.483
The 70 pct. Exceedence precipitation	=	0.664
The 1.25-Year return Flow		
The 80 pct. Exceedence Factor Kt	=	-0.822
The 80 pct. Exceedence precipitation	=	0.597
The 1.11-Year return Flow		
The 90 pct. Exceedence Factor Kt	=	-1.311
The 90 pct. Exceedence precipitation	=	0.511
The 1.0-Year return Flow		
The 99.99 pct. Exceedence Factor Kt	=	-4.430
The 1-Year precipitation	=	0.191

Program: LOGPER.EXE LOG Pearson Type III Analysis.
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Version 2.6, November 2007

Run Date: Tue Nov 20 2007 03:23 PM

Input File = USLFP3HR.txt

This is the input data:

Title: 3 Hr

1945.00 ;	0.81
1946.00 ;	0.87
1947.00 ;	0.67
1948.00 ;	0.73
1949.00 ;	0.57
1950.00 ;	0.87
1951.00 ;	0.73
1952.00 ;	1.72
1953.00 ;	0.97
1954.00 ;	0.99
1955.00 ;	0.62
1956.00 ;	0.91
1957.00 ;	1.10
1958.00 ;	0.90
1959.00 ;	1.33
1960.00 ;	0.66
1961.00 ;	1.58
1962.00 ;	0.95
1963.00 ;	1.90
1964.00 ;	1.43
1965.00 ;	0.75
1966.00 ;	0.75
1967.00 ;	1.25
1968.00 ;	1.40
1969.00 ;	0.70

1970.00 ; 1.10
 1971.00 ; 1.10
 1972.00 ; 0.45
 1973.00 ; 1.30
 1974.00 ; 1.10
 1975.00 ; 0.90
 1976.00 ; 0.99
 1977.00 ; 0.97
 1978.00 ; 1.16
 1979.00 ; 1.10
 1980.00 ; 1.10
 1981.00 ; 0.63
 1982.00 ; 1.32
 1983.00 ; 1.45
 1984.00 ; 0.91
 1985.00 ; 1.30
 1986.00 ; 0.88
 1987.00 ; 1.05
 1988.00 ; 0.76
 1989.00 ; 0.91

End of file encountered.

45 Data points were read.

Statistics of Data:

Mean of Data = 1.01
 Min of Data = 0.45
 Max of Data = 1.90
 Std. Dev. of Data = 0.31

Statistics of Logged Data:

Mean of LOG Data = -0.014
 Std. Dev. of LOG Data = 0.133
 Standard Skew of LOG Data = -0.070
 Generalized Skew Coef. Pub 17B = -0.300

Skew Weighting factors:

$$A = -0.324$$

$$B = 0.922$$

$$C = 0.653$$

$$\text{MSEg} = \text{Estimate of Error of Station Skew} = 0.118$$

$$\text{MESgbar} = \text{Estimate of Error of Regional Skew} = 0.302$$

$$\text{Weighting of Station Skew} = 71.8 \text{ percent}$$

$$\text{Weighting of Regional Skew} = 28.2 \text{ percent}$$

$$\text{Weighted Generalized Skew Value Used In The Analysis} = -0.135$$

The following points are considered high outliers:

$$\text{The 10 pct Level of Significance } K_n = 2.727$$

No High Outliers

The following points are considered Low outliers:

No Low Outliers

The Results of The Frequency Analysis:

$$\text{The 500 YR Frequency Factor } K_t = 2.715$$

$$\text{The 500 year precipitation} = 2.225$$

$$\text{The 200 YR Frequency Factor } K_t = 2.449$$

$$\text{The 200 year precipitation} = 2.051$$

$$\text{The 100 YR Frequency Factor } K_t = 2.227$$

$$\text{The 100 year precipitation} = 1.916$$

$$\text{The 50 YR Frequency Factor } K_t = 1.984$$

The 50 year precipitation	=	1.779
The 25 YR Frequency Factor Kt	=	1.703
The 25 year precipitation	=	1.633
The 10 YR Frequency Factor Kt	=	1.266
The 10 year precipitation	=	1.428
The 5 YR Frequency Factor Kt	=	0.847
The 5 year precipitation	=	1.256
The 2 YR Frequency Factor Kt	=	0.023
The 2 year precipitation	=	0.976
The 1.5-Year Frequency Factor Kt	=	-0.416
The 1.5-Year precipitation	=	0.853
The 1.43-Year return Flow		
The 70 pct. Exceedence Factor Kt	=	-0.508
The 70 pct. Exceedence precipitation	=	0.830
The 1.25-Year return Flow		
The 80 pct. Exceedence Factor Kt	=	-0.834
The 80 pct. Exceedence precipitation	=	0.751
The 1.11-Year return Flow		
The 90 pct. Exceedence Factor Kt	=	-1.295
The 90 pct. Exceedence precipitation	=	0.652
The 1.0-Year return Flow		
The 99.99 pct. Exceedence Factor Kt	=	-4.011
The 1-Year precipitation	=	0.284

Program: LOGPER.EXE LOG Pearson Type III Analysis.
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Version 2.6, November 2007

Run Date: Tue Nov 20 2007 03:24 PM

Input File = USLFP6HR.txt

This is the input data:

Title: 6 Hr

1945.00 ;	1.08
1946.00 ;	1.28
1947.00 ;	0.94
1948.00 ;	0.86
1949.00 ;	0.89
1950.00 ;	1.54
1951.00 ;	1.04
1952.00 ;	2.11
1953.00 ;	1.54
1954.00 ;	1.52
1955.00 ;	0.95
1956.00 ;	1.66
1957.00 ;	1.64
1958.00 ;	1.49
1959.00 ;	1.77
1960.00 ;	0.81
1961.00 ;	2.21
1962.00 ;	1.25
1963.00 ;	3.25
1964.00 ;	1.95
1965.00 ;	0.94
1966.00 ;	1.16
1967.00 ;	1.55
1968.00 ;	2.15
1969.00 ;	1.08

1970.00 ; 1.54
 1971.00 ; 1.46
 1972.00 ; 0.65
 1973.00 ; 2.00
 1974.00 ; 1.81
 1975.00 ; 1.11
 1976.00 ; 1.60
 1977.00 ; 1.27
 1978.00 ; 1.46
 1979.00 ; 1.62
 1980.00 ; 1.51
 1981.00 ; 0.89
 1982.00 ; 1.98
 1983.00 ; 2.35
 1984.00 ; 1.55
 1985.00 ; 1.83
 1986.00 ; 1.36
 1987.00 ; 1.59
 1988.00 ; 0.99
 1989.00 ; 1.28

End of file encountered.

45 Data points were read.

Statistics of Data:

Mean of Data = 1.48
 Min of Data = 0.65
 Max of Data = 3.25
 Std. Dev. of Data = 0.49

Statistics of Logged Data:

Mean of LOG Data = 0.147
 Std. Dev. of LOG Data = 0.143
 Standard Skew of LOG Data = -0.054
 Generalized Skew Coef. Pub 17B = -0.300

Skew Weighting factors:

A = -0.326

B = 0.926

C = 0.653

MSEg = Estimate of Error of Station Skew = 0.117

MESgbar = Estimate of Error of Regional Skew = 0.302

Weighting of Station Skew = 72.0 percent

Weighting of Regional Skew = 28.0 percent

Weighted Generalized Skew Value Used In The Analysis = -0.123

The following points are considered high outliers:

The 10 pct Level of Significance K_n = 2.727

No High Outliers

The following points are considered Low outliers:

No Low Outliers

The Results of The Frequency Analysis:

The 500 YR Frequency Factor K_t = 2.730

The 500 year precipitation = 3.436

The 200 YR Frequency Factor K_t = 2.461

The 200 year precipitation = 3.146

The 100 YR Frequency Factor K_t = 2.236

The 100 year precipitation = 2.922

The 50 YR Frequency Factor K_t = 1.990

The 50 year precipitation	=	2.695
The 25 YR Frequency Factor Kt	=	1.708
The 25 year precipitation	=	2.457
The 10 YR Frequency Factor Kt	=	1.267
The 10 year precipitation	=	2.126
The 5 YR Frequency Factor Kt	=	0.847
The 5 year precipitation	=	1.852
The 2 YR Frequency Factor Kt	=	0.021
The 2 year precipitation	=	1.412
The 1.5-Year Frequency Factor Kt	=	-0.417
The 1.5-Year precipitation	=	1.223
The 1.43-Year return Flow		
The 70 pct. Exceedence Factor Kt	=	-0.509
The 70 pct. Exceedence precipitation	=	1.187
The 1.25-Year return Flow		
The 80 pct. Exceedence Factor Kt	=	-0.835
The 80 pct. Exceedence precipitation	=	1.066
The 1.11-Year return Flow		
The 90 pct. Exceedence Factor Kt	=	-1.294
The 90 pct. Exceedence precipitation	=	0.917
The 1.0-Year return Flow		
The 99.99 pct. Exceedence Factor Kt	=	-3.984
The 1-Year precipitation	=	0.379

APPENDIX B
NATIVE AND RARE PLANT SPECIES OF THE SAUSAL CREEK WATERSHED

Sausal Creek Watershed Native Plant Species				Locations						EB-CNPS
Code	Scientific Name	Common Name	Type	Joaquin Miller	Dimond Canyon	Shepherd Canyon	Castle Canyons	Beacons field	Other	Rank
ACAPIN	<i>Acaena pinnatifida</i> var. <i>californica</i>	California sheepburr	P	✓						C
ACENEG	<i>Acer negundo</i> var. <i>californicum</i>	box-elder	T	✓	☑	☑				W
ACTRUB	<i>Actaea rubra</i>	baneberry	P	✓	✓					B
ADEFAS	<i>Adenostoma fasciculatum</i>	chamise	S	✓				☞		W
ALNRUB	<i>Alnus rubra</i>	red alder	T	☑	☑					A1
ANAMAR	<i>Anaphalis margaritacea</i>	pearly everlasting	P	✓						W
ANGTOM	<i>Angelica tomentosa</i>	woolly angelica	P	✓	✓					C
ANTVEX	<i>Antirrhinum vexillo-calyculatum</i> ssp. <i>vexillo-calyculatum</i>	wiry snapdragon	A	✓						B
APOAND	<i>Apocynum androsaemifolium</i>	bitter dogbane	P		✓					B
AQUFOR	<i>Aquilegia formosa</i>	columbine	P	✓						C
ARACAL	<i>Aralia californica</i>	elk-clover	P	✓	☑		✓		Ascot	B
ARBMEN	<i>Arbutus menziesii</i>	Pacific madrone	T	✓	✓	✓		✓		C
ARCPAL	<i>Arctostaphylos pallida</i>	pallid manzanita	S	✓		✓				FS
ARCTOM	<i>Arctostaphylos tomentosa</i> ssp. <i>crustacea</i>	brittleleaf manzanita	S	✓						C
ASACAU	<i>Asarum caudatum</i>	wild ginger	P	✓	✓	☑				B
ASTCHI	<i>Aster chilensis</i>	common aster	P	✓						W
BARORT	<i>Barbarea orthoceras</i>	winter cress	A	✓	☑			☑		W
BERPIN	<i>Berberis pinnata</i> ssp. <i>pinnata</i>	California barberry	S	✓		✓				C
BROELE	<i>Brodiaea elegans</i> ssp. <i>elegans</i>	harvest brodiaea	P	✓						W
CALLUT	<i>Calochortus luteus</i>	yellow mariposa lily	P	✓						C
CALUMB	<i>Calochortus umbellatus</i>	Oakland star-tulip	P	✓						*A2
CAMOVA	<i>Camissonia ovata</i>	suncups	P	✓						C
CARBAR	<i>Carex barbarae</i>	Santa Barbara sedge	P	✓	✓					B
CARDEW	<i>Carex deweyana</i> ssp. <i>leptopoda</i>	short-scale sedge	P	✓						A1
CARGLO	<i>Carex globosa</i>	round-fruit sedge	P	✓						A1
CAROBN	<i>Carex obnupta</i>	slough sedge	P		✓					A1
CARSUB	<i>Carex subbracteata</i>	small-bracted sedge	P	✓	☑			☞		B
CERBET	<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	mountain mahogany	S		✓					C
CHRCHR	<i>Chrysolepis chrysophylla</i> var. <i>minor</i>	golden chinquapin	S	✓						A2
CIROCC	<i>Cirsium occidentale</i> var. <i>venustum</i>	Venus thistle	A	✓						C
CLARUB	<i>Clarkia rubicunda</i>	farewell-to-spring	A	✓	☑					W
CLELAS	<i>Clematis lasiantha</i>	pipestems	V		✓					W
CORSER	<i>Cornus sericea</i> ssp. <i>sericea</i>	western creek dogwood	S	✓	☑		✓		Ascot	C
CYNGRA	<i>Cynoglossum grande</i>	hound's tongue	P	✓						C
DIROCC	<i>Dirca occidentalis</i>	western leatherwood	S	✓						*A2
DISHOO	<i>Disporum hookeri</i>	fairly bells	P	✓	✓	✓				C
ELYMUL	<i>Elymus multisetus</i>	big squirreltail	G	✓						C
ERILUTC	<i>Eriogonum luteolum</i> var. <i>caninum</i>	Tiburon buckwheat	A	✓						*A1
FESCAL	<i>Festuca californica</i>	California fescue	G	✓	☑					W
FRIAFF	<i>Fritillaria affinis</i> var. <i>affinis</i>	checker lily	P	✓						W

Sausal Creek Watershed Native Plant Species				Locations						EB-CNPS
Code	Scientific Name	Common Name	Type	Joaquin Miller	Dimond Canyon	Shepherd Canyon	Castle Canyons	Beacons field	Other	Rank
GALCAL	<i>Galium californicum ssp. californicum</i>	California bedstraw	P	✓						C
GALTRI	<i>Galium triflorum</i>	sweet-scented bedstraw	A	✓						B
GARELL	<i>Garrya elliptica</i>	coast silk-tassle	S	✓	✓		✓			B
GAUSHA	<i>Gaultheria shallon</i>	salal	S	✓						A1
GNABIC	<i>Gnaphalium bicolor</i>	cudweed	P	✓						A2
GNACAN	<i>Gnaphalium canescens ssp. beneolens</i>	cudweed	P	✓						C
GRIHIR	<i>Grindelia hirsutula var. hirsutula</i>	gumplant	P	✓	☑					C
GRISTR	<i>Grindelia stricta var. angustifolia</i>	gumplant	P						Estuary	C
HEUMIC	<i>Heuchera micrantha</i>	alumroot	P	✓	☑	✓				C
IRIDOU	<i>Iris douglasiana</i>	Douglas' iris	P	✓	☑					A2
KOEMAC	<i>Koeleria macrantha</i>	junegrass	G	✓						C
LONINV	<i>Lonicera involucrata var. ledebourii</i>	black twinberry	S	✓	☑	✓		✓		B
LONSUB	<i>Lonicera subspicata var. denudata</i>	wild honeysuckle	V	✓						B
LOTSO	<i>Lotus scoparius var. scoparius</i>	California broom	S	✓		✓				W
LOTSTI	<i>Lotus stipularis var. stipularis</i>	balsam bird's-foot trefoil	P	✓						A1
LUPBIC	<i>Lupinus bicolor</i>	bicolored lupine	A	✓	✓					W
LUPSUC	<i>Lupinus succulentus</i>	arroyo lupine	A	✓		✓				W
MARORE	<i>Marah oreganus</i>	coast man-root	P	✓	☞	☞		☞		B
MELCAL	<i>Melica californica</i>	California melic	G	✓				✓		C
MIMCAR	<i>Mimulus cardinalis</i>	red monkeyflower	P	✓	☑					C
MONVIL	<i>Monardella villosa</i>	coyote mint	P	✓						W
NASLEP	<i>Nassella lepida</i>	foothill needlegrass	G	✓		✓		✓		C
NASPUL	<i>Nassella pulchra</i>	purple needlegrass	G	✓				✓		C
OXAORE	<i>Oxalis oregana</i>	redwood sorrel	P		✓					A1
PERKEL	<i>Perideridia kelloggii</i>	yampah	P	✓						W
PHOAU	<i>Pholistoma auritum var. auritum</i>	fiesta flower	A		✓					B
PHYCAP	<i>Physocarpus capitatus</i>	ninebark	S	✓	☑			✓		C
PIPELE	<i>Piperia elegans</i>	rein orchid	P	✓						B
PLAERE	<i>Plantago erecta</i>	California plantain	A	✓						W
POLSCO	<i>Polypodium scolieri</i>	leather fern	F						Exeter	A1
POPBAL	<i>Populus balsamifera ssp. trichocarpa</i>	black cottonwood	T					✓		B
QUECHR	<i>Quercus chrysolepis</i>	canyon live oak	T	✓						C
QUESHR	<i>Quercus parvula var. shrevei</i>	Shreve oak	T						Exeter	A1
RAFCAL	<i>Rafinesquia californica</i>	California chicory	A	✓						C
RHACRO	<i>Rhamnus crocea</i>	redberry buckthorn	S			✓	✓			C
RIBAMA	<i>Ribes amarum</i>	bitter gooseberry	S	x						A1
RIBDIV	<i>Ribes divaricatum var. pubiflorum</i>	straggly gooseberry	S	✓	✓					B
RIBMEN	<i>Ribes menziesii</i>	canyon gooseberry	S	✓	✓			✓		W
RIBSAN	<i>Ribes sanguineum var. glutinosum</i>	red-flowering currant	S	✓	✓	✓		✓		C
ROSCAL	<i>Rosa californica</i>	California wild rose	S	✓	☑					W

Sausal Creek Watershed Native Plant Species				Locations						EB-CNPS Rank
Code	Scientific Name	Common Name	Type	Joaquin Miller	Dimond Canyon	Shepherd Canyon	Castle Canyons	Beacons field	Other	
ROSSPI	<i>Rosa spithamea</i>	ground rose	S	✓						C
RUPPHY	<i>Rupertia physodes</i>	California tea	P	✓		✓				W
SAMRAC	<i>Sambucus racemosa var. racemosa</i>	red elderberry	S	✓				✓	Haverhill	A1
SANLAC	<i>Sanicula laciniata</i>	coastal blacksnakeroot	P	✓						A2
SEQSEM	<i>Sequoia sempervirens</i>	coast redwood	T	✓	✓	☑		☑		B
SIDMAL	<i>Sidalcea malviflora ssp. laciniata</i>	checker mallow	P	✓						C
SILCAL	<i>Silene californica</i>	Indian pink	P	✓						B
SMIRAC	<i>Smilacina racemosa</i>	large false Solomon's seal	P	✓	✓					W
SOLUMB	<i>Solanum umbelliferum</i>	blue witch	S	✓	✓					W
STRGLA	<i>Streptanthus glandulosus ssp. glandulosus</i>	jewelflower	A	✓						B
TELGRA	<i>Tellima grandiflora</i>	fringe cups	P	✓	☑					B
TRILAT	<i>Trientalis latifolia</i>	star flower	P	✓		✓				C
TRIALB	<i>Trifolium albopurpureum var. albopurpureum</i>	Indian clover	A	✓						C
TRIMAC	<i>Trifolium macraei</i>	double-head clover	A							A2
TRICHL	<i>Trillium chloropetalum</i>	giant trillium	P	✓				✓		C
TRIOVA	<i>Trillium ovatum ssp. ovatum</i>	white trillium	P	✓						A2
VACOVA	<i>Vaccinium ovatum</i>	California huckleberry	S	✓	☑	✓		✓		C
VERAME	<i>Veronica americana</i>	American brooklime	P		✓					C
VICAME	<i>Vicia americana var. americana</i>	American vetch	V							C
VICGIG	<i>Vicia gigantea</i>	giant vetch	P	✓	✓	✓		✓		B
VIOGLA	<i>Viola glabella</i>	stream violet	P	✓						A2
VIOSEM	<i>Viola sempervirens</i>	evergreen violet	P	✓	☑					A1
WOOFIM	<i>Woodwardia fimbriata</i>	giant chain fern	F	✓		✓				C
WYEANG	<i>Wyethia angustifolia</i>	narrowleaf mule-ears	P	✓						W

List maintained by Karen Paulsell, with information from many other native plant lovers. Original list by Martha Lowe, 2000.


Comments to: kpaulsell@pacbell.net


<p>Types: A - Annual B - Biennial F - Fern G - Grass P - Perennial S - Shrub T - Tree V - Vine</p>	<p>Location Symbols: ✓ Found in the area ☑ Planted in the area ☞ Possibly there, look x Presumed extirpated</p>	<p>East Bay CNPS Ranks: *A1: Very rare in CA *A2: Rare in CA A1: Very rare in East Bay A2: Rare in East Bay B: High priority watch list C: Other watch list plants FS: Federal/State listed W: Rare in watershed (added by FOSC)</p>
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APPENDIX C: INVASIVE PLANTS OF THE SAUSAL CREEK WATERSHED



Prepared by Karen Paulsell for FOSC
Edited by Laurel Marcus Associates

Invasive Non-Native Trees of Sausal Creek Watershed



Species	Characteristics	Distribution	Recommendations
<p><i>Acacia melanoxylon</i> Blackwood acacia</p> <p>Photo: ©2001 Joe DiTomaso</p>	<ul style="list-style-type: none"> • Fast-growing, very tall tree that shades out and kills native trees, including alders and oaks • Invades by seed • Re-sprouts densely after cutting requiring repeat visits or use of herbicide to eradicate • Nitrogen fixation by <i>Acacia</i> can encourage non-native understory • Fire hazard 	<ul style="list-style-type: none"> • Joaquin Miller Park: extensive along Sequoia-Bayview Trail below Horse Arena; present in many other areas • Dimond Canyon: scattered stands with large number of trees • Dimond Park: above Scout Hut; near parking lot; near creek below Wellington • Shepherd Canyon: along creek north of meadow; downstream from soccer field • W.D. Wood: in lower area of park • Barry Place: many large trees • Heavily planted along Highway 13 & other CalTrans right-of-ways • Large number of trees on Oakland Unified School District property along Ascot 	<ul style="list-style-type: none"> • Continue to work with Park Department on removal in restoration areas; El Centro/Benevides area is a top priority • Consider treating stumps and root systems with herbicide if revisions to City of Oakland herbicide ordinance will allow • Have plan for re-sprout control when removing any trees • Encourage control by Wildfire District • Educate homeowners, landscapers, and consultants not to plant and to remove from private land • Encourage nurseries not to sell this plant • Discuss invasive plant issues with CalTrans

Species	Characteristics	Distribution	Recommendations
<p><i>Acacia dealbata</i> Silver wattle</p> <p>Photo: ©2002 Dean Wm. Taylor</p>	<ul style="list-style-type: none"> • Fast growing • Invades by seed • Tends towards monoculture • Re-sprouts after cutting, requiring repeat visits or use of herbicide to eradicate • Brittle in high winds, leading to fire danger from large amounts of downed debris • Heavy debris plus dense shade greatly reduces native understory • Nitrogen fixation by <i>Acacia</i> encourages non-native understory • Fire hazard 	<ul style="list-style-type: none"> • Joaquin Miller Park: near Horse Arena parking area and along Castle-Park Trail, westward to Castle Drive; between Sanborn Drive and Joaquin Miller Drive below Funeral Pyre; adjacent to Lookout Point parking area and others • Dimond Canyon: dense patch at Park Boulevard and Leimert Ave. • Dimond Park: near parking lot; near creek below Wellington • Shepherd Canyon: approx. 25 trees along Escher Creek; additional trees downstream from soccer field • Beaconsfield: trees killed in 2007/2008; monitoring for seedlings continues • Barry Place: at least one large tree • Along Highway 13 	<ul style="list-style-type: none"> • Continue to control seedlings and resprouts from the upper and lower nursery hill areas in Joaquin Miller Park • Continue building relationship with Oakland Zoo and providing acacia foliage for feeding to elephants and giraffes • Continue to work with Oakland Parks and Recreation Department on removal in restoration areas; El Centro/Benevides area is a top priority • Consider treating stumps and root systems with herbicide if revisions to City of Oakland herbicide ordinance allow • Have plan for re-sprout control when removing any trees • Encourage control by Wildfire District* • Educate homeowners, landscapers, and consultants not to plant and to remove from private land • Encourage nurseries not to sell this plant • Discuss invasive plant issues with CalTrans




Species	Characteristics	Distribution	Recommendations
<p><i>Acacia sp.</i> (<i>A. mearnsii</i>) Black wattle</p>	<ul style="list-style-type: none"> • Fast growing • Invades by seed • Tends towards monoculture • Re-sprouts after cutting, requiring repeat visits or use of herbicide to eradicate • Brittle in high winds, leading to fire danger from large amounts of downed debris • Heavy debris plus dense shade greatly reduces native understory • Nitrogen fixation by <i>Acacia</i> encourages non-native understory • Fire hazard 	<ul style="list-style-type: none"> • Joaquin Miller Park: near Horse Arena parking area and along Castle-Park Trail; some plants in lower nursery area and Woodminster Theater; possibly present on hill below nursery 	<ul style="list-style-type: none"> • Continue to control seedlings and re-sprouts from the upper and lower nursery hill areas in Joaquin Miller Park • Continue building relationship with Oakland Zoo and providing acacia foliage for feeding to elephants and giraffes • Continue to work with Oakland Parks and Recreation Department on removal in restoration areas; El Centro/Benevides area is a top priority • Consider treating stumps and root systems with herbicide if revisions to City of Oakland herbicide ordinance allow • Have plan for re-sprout control when removing any trees • Encourage control by Wildfire District* • Educate homeowners, landscapers, and consultants not to plant and to remove from private land • Encourage nurseries not to sell this plant • Discuss invasive plant issues with CalTrans

Species	Characteristics	Distribution	Recommendations
<p><i>Eucalyptus globulus</i> Blue gum</p>	<ul style="list-style-type: none"> • Fast growing • Can dewater streams and habitats • Somewhat invasive by seed • Re-sprouts heavily after cutting, requiring many repeat visits or the use of herbicides to eradicate • Shed bark and heavy duff smothers understory; toxins reduce native plants • Stickiness of sap & nectar may gum up beaks of birds feeding on nectar and insects • Extreme fire danger: trees can explode in fires and spread fires via flaming brands; heavy duff is a potential ignition source 	<ul style="list-style-type: none"> • Joaquin Miller Park -- extensive stands between Castle-Park Trail and Cinderella Creek; large stand above Joaquin Miller Rd. below corporation yard; other smaller stands and individuals • Dimond Canyon: mostly near golf course • Shepherd Canyon -- very large stands on both public and private land • Castle Canyon, along Castle Drive and upper creek • Barry Place: at least one large tree 	<ul style="list-style-type: none"> • Continue to support Wildfire District efforts to use herbicide stump treatments in removal efforts • Encourage removal on private lands • Discourage nurseries and landscapers from selling and planting this species • Note: Starting in about 2005, there has been increasing insect damage to new leaf growth on <i>E. globulus</i>; damage can reach up to 50% of yearly new leaves. Seek information about defoliating insect affecting trees 
<p><i>Eucalyptus camaldulensis</i> Red gum, Red river gum</p>	<ul style="list-style-type: none"> • Fast growing • Fire hazard • Re-sprouts after cutting, requires repeated cutting or the use of herbicides to eradicate 	<ul style="list-style-type: none"> • Joaquin Miller Park: Extensive monoculture along Sequoia-Bayview Trail below Horse Arena • Dimond Canyon: isolated specimens 	<ul style="list-style-type: none"> • Seek information about defoliating insect affecting trees • Continue to support Wildfire District efforts to use herbicide stump treatments in removal efforts • Encourage removal on private lands • Discourage nurseries and landscapers from selling and planting this species

Photos: ©2009 Neal Kramer
©1998 Ca. Academy of Sciences, Charles Webber






Species	Characteristics	Distribution	Recommendations
<p><i>Ulmus americana</i> American elm</p>	<ul style="list-style-type: none"> Extremely invasive in riparian areas Spreads rapidly from root sprouts Re-sprouts when cut, requiring repeated visits or use of herbicide Extremely difficult to remove roots and root sprouts 	<ul style="list-style-type: none"> Joaquin Miller Park: several locations near Skyline Dimond Canyon in El Centro restoration area volunteer efforts have failed to control; Bridgeview Trail: 1/3 acre area from trail to creek just downstream from Redwood site, many other extensive infestations Dimond Park: near creek above Wellington Shepherd Canyon: where trail crosses creek near Escher Gate; they have been cut to stumps and continually re-sprout Beaconsfield: along creek 	<ul style="list-style-type: none"> Enlist support in removal from the City of Oakland Parks Department or the Wildfire District Explore costs and feasibility of other means of removal, including heavy equipment, hiring Civic Corps, or herbicide, and seek source of funding for removal of El Centro infestation As a pilot project, plant redwoods along creek in the large Bridgeview infestation to determine whether they will survive to outgrow and shade the elms Encourage removal on private land Consider need for herbicide to control Educate landowners about removing this species on private land Discourage nurseries and landscapers from selling or planting this species

Photos: ©2008 Jason Willand
©2005 Louis-M. Landry



Species	Characteristics	Distribution	Recommendations
<p><i>Pinus radiata</i> Monterey pine</p>	<ul style="list-style-type: none"> • Invades by seed • Displaces native oaks and madrones; large plantings in Joaquin Miller Park shade out much coastal scrub hillside and chaparral area • Duff changes soil composition and structure, favoring invasive weeds • Heavy shade reduces understory diversity • Creates extensive “fog drip”, supporting large stands of Veldt grass (<i>Ehrharta erecta</i>) • High fire danger 	<ul style="list-style-type: none"> • Joaquin Miller Park: original planted trees are dying, many young trees • Dimond Canyon: few; mostly senescent • Shepherd Canyon: on public and private properties; original planted trees are dying back • Beaconsfield: several; many senescent • Common in upper watershed neighborhoods 	<ul style="list-style-type: none"> • Advocate for Wildfire District and Park Department control of seedlings and young trees • Continue FOSC seedling and small tree removal efforts • Work with Park Department to remove trees affecting rare species habitats • Encourage removal of diseased and old trees on private land • As large trees die and seedlings germinate, remove seedlings and plant native shrubs 
<p><i>Cupressus microcarpa</i> Monterey cypress</p>	<ul style="list-style-type: none"> • Mildly invasive from seed • Duff changes soil composition and structure, favoring invasive weeds • Moderate fire danger 	<ul style="list-style-type: none"> • Joaquin Miller Park: heavily planted in coastal scrub areas and on serpentine hillsides • Dimond Canyon • Shepherd Canyon: Dense stands in park along Escher Drive; many stands on private property • Beaconsfield: very dense in part of canyon • Castle Canyon: dense on north-facing slope 	<ul style="list-style-type: none"> • Remove all young plants • Encourage Park Department to remove trees affecting rare species habitats 

Photos: © Andrew J. Storer, ©1995 St. Mary’s College of CA

© USGS


Species	Characteristics	Distribution	Recommendations
<p><i>Ilex aquifolium</i> English holly</p>	<ul style="list-style-type: none"> • Very invasive from seed; seed spread by birds • Plants also spread by root sprouts • Plants re-sprout after cutting, requiring excavation, repeat visits, or use of herbicide to eradicate • Extremely prickly leaves make removal difficult • Used in landscaping in urban/wildland interface 	<ul style="list-style-type: none"> • Joaquin Miller Park: Many fruiting trees along Palo Seco creek, smaller plants throughout • Dimond Canyon: mostly in upper areas of canyon • Beaconsfield Canyon: scattered small individuals 	<ul style="list-style-type: none"> • Encourage removal on private land • Map extent of current infestation and track rate of spread • Seek funding for professional removal of Joaquin Miller Park infestation to remove seed source • Remove from creek areas • Discourage nurseries and landscapers from selling or planting this species
<p><i>Ailanthus altissima</i> Tree of heaven</p>	<ul style="list-style-type: none"> • Fast growing • Produces large amounts of seed • Re-sprouts from trunk and roots after cutting, requiring repeat visits or use of herbicide to eradicate 	<ul style="list-style-type: none"> • Beaconsfield Canyon: 2 known trees; one cut, one possibly on private property • W. D. Wood Park: large tree with seedlings in park 	<ul style="list-style-type: none"> • Cut remaining tree in Beaconsfield; treat re-sprouts 
<p><i>Robinia pseudoacacia</i> Black locust</p>	<ul style="list-style-type: none"> • Spreads from root sprouts • Produces viable seed • Sprouts from roots after cutting, requiring repeat visits or use of herbicide to eradicate • Most known plants in watershed occur in steep creek banks on private property 	<ul style="list-style-type: none"> • W. D. Wood Park: Riparian areas downstream from park 	<ul style="list-style-type: none"> • No current recommendations for work 



Photos: ©2007 Luisa Arana Navaridas; © 2003 Laurel Marcus; ©2009 Thomas Stoughton; ©2009 Neal Kramer; ©2000 Joe DiTomaso

Species	Characteristics	Distribution	Recommendations
<p><i>Prunus cerasifera</i> Plum</p>	<ul style="list-style-type: none"> • Invasive from seed • Seeds distributed by birds and animals • Re-sprouts after cutting, requiring repeat visits or use of herbicide to eradicate 	<ul style="list-style-type: none"> • Scattered throughout watershed in suitable habitat 	<ul style="list-style-type: none"> • Difficult to encourage removal, as it is seen as a “food” plant 

Photos: ©2002 James B. Gratiot; © 2008 Keir Morse

Invasive Non-Native Shrubs of Sausal Creek Watershed


Species	Characteristics	Distribution	Recommendations
<p><i>Genista monspessulana</i> French broom</p>	<ul style="list-style-type: none"> • Invades rapidly by seed; long-lived seed banks; requires long follow-up to completely eliminate • Small seed easily spread along trails by traffic • Re-sprouts when cut, requiring removal of root crown, repeat visits, or use of herbicide to eradicate • Large amount of duff creates fire danger • Tends to rapidly create monoculture in suitable habitat 	 <ul style="list-style-type: none"> • Joaquin Miller Park: large dense stands along Sunset and Chaparral trails, many additional smaller stands; invades where pine trees fall and opening is created • Dimond Canyon: upland areas along Bridgeview & Old Canon Trails; scattered populations throughout park • Dimond Park: above Scout Hut; in Stone Pine area near Fruitvale; many scattered small stands • Shepherd Canyon: extensive stands along Escher Drive, along Bike Trail, and above Public Works yard • Beaconsfield Canyon: scattered remaining plants in restoration area; seedlings • Castle Canyon: high on slope • W.D. Wood Park: sunny slopes densely covered 	<ul style="list-style-type: none"> • Continue removal efforts at Dimond Park above Scout Hut and within the nursery and around nursery fence • Target removal near good habitat or areas with rare plants; maintain visits to pallid manzanita area to control broom seedlings • Encourage effective removal practices by Wildfire District • Encourage Park Department & homeowner groups to control • Develop tracking method for areas cleared of broom to help insure maintenance • Focus removal on new seedlings and remove from edge of large infestations, moving inward • Discourage homeowners, landscapers, and nurseries from planting or selling broom • Encourage homeowners to remove on private land

Species	Characteristics	Distribution	Recommendations
Other species of broom (possibly <i>Cytisus striatus</i> , Portuguese broom)	<ul style="list-style-type: none"> • Invades rapidly by seed; long-lived seed banks; requires long follow-up to completely eliminate • Small seed easily spread along trails by traffic • Re-sprouts when cut, requiring removal of root crown, repeat visits, or use of herbicide to eradicate • Large amount of duff creates fire danger • Tends to rapidly create monoculture in suitable habitat 	<ul style="list-style-type: none"> • Rapidly spreading patch near Chabot Space and Science Center, along Skyline Blvd. 	<ul style="list-style-type: none"> • Encourage Wildfire District to eliminate rather than cut or prune • Possible project for Weed Warriors • Focus removal on new seedlings and remove from edge of large infestations, moving inward • Discourage homeowners, landscapers, and nurseries from planting or selling broom • Encourage homeowners to remove on private land
<i>Ulex europaeus</i> Gorse <small>Photo: © 2008 Gary McDonald</small>	<ul style="list-style-type: none"> • Invades by seed • Re-sprouts when cut, requiring removal of root crown, repeat visits, or use of herbicide to eradicate • Extremely prickly leaves make removal work difficult 	<ul style="list-style-type: none"> • Dimond Canyon: along Bridgeview Trail, along and within golf course fence • Shepherd Canyon: small stand on Snake Road near pedestrian overpass 	<ul style="list-style-type: none"> • Encourage volunteers to remove small individuals and seed pods from others to prevent spread 

Species	Characteristics	Distribution	Recommendations
<p><i>Rubus discolor</i> Himalayan blackberry</p>	<ul style="list-style-type: none"> • Invades by seed, root sprouting, and tip-rooting • Re-sprouts when cut, requiring removal of root crown and large spreading roots, repeat visits, or use of herbicide • Many populations of long duration; root crowns large and root spread extensive, increasing difficulty of removal • Large sharp thorns make removal difficult • Tends to form monoculture in riparian and moist habitats • Poor soil holding capacity allows erosion • Can provide support for Cape ivy, allowing it to invade trees and increasing difficulty of removal of both species 	<ul style="list-style-type: none"> • Throughout all moist areas of the watershed 	<ul style="list-style-type: none"> • Encourage removal on private land • Discourage nurseries and landscapers from selling or planting this species • Determine areas where blackberry stands most threaten creek and slope stability or important native plant habitat or restoration projects • Control spread by working from perimeters of identified patches inward and from upstream to downstream • Near current restoration projects, stop tip-rooting to control expansion of stands • Encourage Wildfire District to remove stands by digging out crowns rather than repeated cutting • Explore possibility of one-time use of goats or using hired crews for first-pass removal in new restoration areas • Work for complete removal in current restoration areas before expanding into new restoration projects



Photo: ©2007 CAS-JE & Bonnie McClellan; © 2008 Darcie Luce; ©2003 Penn Martin II

Species	Characteristics	Distribution	Recommendations
<p><i>Rubus ulmifolius</i> <i>var. inermis</i> Thornless blackberry, Elmleaf blackberry</p>	<ul style="list-style-type: none"> • Invades by seed, root sprouting, and tip-rooting • Re-sprouts when cut, requiring removal of root crown, repeat visits, or use of herbicide • Tends to form monoculture in riparian and moist habitats • Poor soil holding capacity allows erosion • Can provide support for Cape ivy, allowing it to invade trees 	<ul style="list-style-type: none"> • Dimond Canyon riparian area above El Centro 	<ul style="list-style-type: none"> • Encourage removal on private land • Discourage nurseries and landscapers from selling or planting this species • Determine areas where blackberry stands most threaten creek and slope stability or important native plant habitat or restoration projects • Control spread by working from perimeters of identified patches inward and from upstream to downstream • Near current restoration projects, stop tip-rooting to control expansion of stands • Encourage Wildfire District to remove stands by digging out crowns rather than repeated cutting • Explore possibility of one-time use of goats or using hired crews for first-pass removal in new restoration areas • Work for complete removal in current restoration areas before expanding into new restoration projects


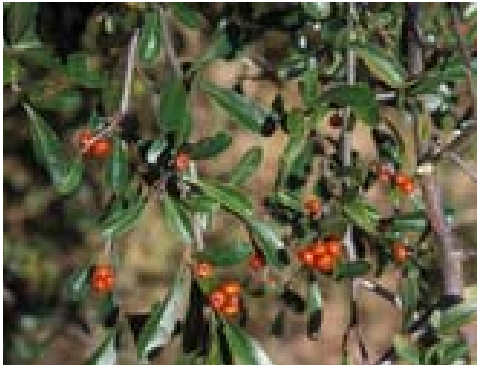


Species	Characteristics	Distribution	Recommendations
<p><i>Cotoneaster</i> sp. and <i>Pyracantha</i> sp.</p>	<ul style="list-style-type: none"> • Invades by seed; seed spread by birds • Re-sprouts when cut, requiring tarping of root crown, repeat visits, or use of herbicides to eradicate  <p><i>Cotoneaster</i> sp.</p>	<ul style="list-style-type: none"> • Mostly cotoneaster, scattered throughout watershed parks and private property; dense stands in W.D. Wood Park, Dimond Park, Horse Arena area in Joaquin Miller Park  <p><i>Pyracantha</i> sp.</p>	<ul style="list-style-type: none"> • Encourage removal by homeowners and replacement with native toyon • Concentrate on removal near restored areas or sensitive habitats • Discourage nurseries from selling these plants
<p><i>Ligustrum lucidum</i> Glossy privet; Giant privet</p>	<ul style="list-style-type: none"> • Invades by seed; mature specimens produce hundreds of fruits • Can reportedly grow to 40 feet • Mainly invades riparian areas 	<ul style="list-style-type: none"> • Joaquin Miller Park, Dimond Canyon, Dimond Park, W.D. Wood Park: isolated specimens 	<ul style="list-style-type: none"> • Not currently a serious problem; monitor known sites to track spread and learn fruiting times • Remove plants in active restoration project areas

Photo: ©2006 Peter Zika; © 2001 Joe DiTomaso

Invasive Non-Native Vines of Sausal Creek Watershed

Species	Characteristics	Distribution	Recommendations
<p><i>Delairea odorata</i> Cape ivy, German ivy</p>	<ul style="list-style-type: none"> Extremely invasive; spreads by seed & stolons; also broken vine fragments can root Very fast growing with combination of soil moisture and sun Tends to form monocultures, obliterating understory, and climbing and killing trees After downing trees, green vines can hide large amounts of dead wood, posing a fire risk Poor soil holding capacity allows erosion Toxic to native insects and mammals  <p>Photo: ©2008 Neal Kramer</p>	<ul style="list-style-type: none"> Moist areas (and some drier areas) throughout watershed Joaquin Miller Park: at least 8 sites Dimond Canyon: riparian areas heavily infested Dimond Park: in riparian areas above Wellington Shepherd Canyon: riparian and moist areas heavily infested; one site cleared by volunteers now in maintenance mode; Fire Department regularly weed-whacks and spreads infestations Beaconsfield Canyon: first pass at removal in park area completed 2007; resprout control continues W. D. Wood Park: in lower moist areas Barry Place: infestations largely removed from trees; resprout control continues Infestations in many riparian and irrigated areas on private property 	<ul style="list-style-type: none"> Control resprouts in all active restoration areas Determine areas where Cape ivy most threatens creek and slope stability or important native plant habitat Seek funding for a major removal effort in Dimond Canyon, plus public education effort for nearby homeowners; remove from upstream to downstream Encourage Wildfire District to stop aiding in dispersal through poor management methods Establish links with IPM insect release efforts Discourage nurseries from selling this plant Educate homeowners to remove this plant 


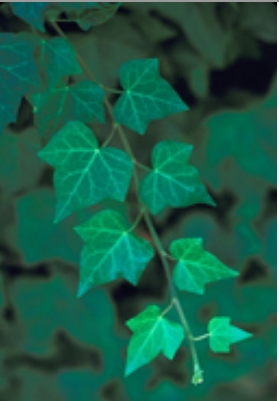
Species	Characteristics	Distribution	Recommendations
<p><i>Hedera helix</i> ssp. <i>canariensis</i> Algerian ivy and <i>Hedera helix</i> ssp. <i>helix</i> English/Boston ivy¹</p>	<p>Very invasive; spreads by seed and by “running and rooting” of vines</p>  <ul style="list-style-type: none"> • Tends to form a monoculture in shade, eliminating nearly all native understory and overstory tree seedlings • Climbs trees, sending roots into the cambium layer and robbing them of nutrients, eventually weakening and toppling them with additional weight • Occurs on many trees on extremely steep slopes, posing a risk to hillside stability if trees fall • Poor soil holding capacity allows erosion 	<ul style="list-style-type: none"> • Joaquin Miller Park: widespread in redwood and mixed hardwood forest understory and riparian areas • Dimond Canyon: widespread in oak and redwood understory and riparian areas • Dimond Park: throughout as understory; very heavy infestations into trees on steep slopes • Shepherd Canyon: Dense areas along bike trail; other scattered infestations • Beaconsfield Canyon: most removed from trees and soil surface • W. D. Wood Park: in shaded areas, including under broom • Barry Place: partially cleared; much remains on steepest slopes; heavily into trees just downstream on Gladman Hospital property • Widely planted by CalTrans on highways in the watershed; many trees have blooming/fruitlet infestations • Joaquin Miller Park: along Siniwik Loop Trail • Dimond Canyon: along Bridgeview Trail 	 <ul style="list-style-type: none"> • Maintain clearing in restoration areas • Continue occasional “overstory maintenance” sweeps to remove vines climbing trees • Encourage adjacent homeowners to join removal efforts • Encourage Wildfire District to use more effective control measures • Explore possibility of one-time use of goats for first-pass control in new restoration projects • Seek funding to develop and execute a “No More Blooming Ivy” campaign; garner participation of parks, CalTrans, and homeowner groups to remove ivy from trees in watershed • Discourage nurseries from selling this plant • Educate homeowners to remove this plant

Photo: ©2009 Barry Rice; ©1985 Joe DiTomaso

¹ There is considerable confusion in the identification of ivy varieties; these may also be known as *Hedera canariensis* and *Hedera helix*. In horticultural use, Algerian ivy is most commonly used outdoors; English/Boston ivy is more commonly a houseplant or used for topiary.

Invasive Non-Native Perennials and Annuals of Sausal Creek Watershed








Species	Characteristics	Distribution	Recommendations
<p><i>Vinca major</i> Blue periwinkle</p>	<ul style="list-style-type: none"> • Spreads from urban gardens and clippings thrown in creek • Produces a chemical that inhibits growth of other understory plants and seedlings of overstory trees • Tends to form monocultures • Thrives in shady riparian areas • Poor root structure allows erosion • Hand removal efforts are labor-intensive and not effective 	<ul style="list-style-type: none"> • Joaquin Miller Park: western end of Palos Colorados Trail • Dimond Canyon: widespread in riparian areas • Dimond Park: in riparian area and above Scout Hut • Shepherd Canyon: several patches in lower, shady areas • Beaconsfield: small patches near backyards 	<ul style="list-style-type: none"> • Discourage the disposal of yard waste in creek by landscapers and residents • Discourage nurseries from selling this plant • Encourage homeowners to remove this plant • Control re-sprouting in active restoration areas 




Photo: ©2007 Neal Kramer

Species	Characteristics	Distribution	Recommendations
<p><i>Tradescantia flumenensis</i> Spiderwort</p>	<ul style="list-style-type: none"> • Invades from urban gardens and clippings thrown in creek • Tends to form monocultures • Thrives in shady riparian areas • Poor root structure allows erosion • Stems break easily when pulled, making removal difficult; fragments easily re-root 	<ul style="list-style-type: none"> • Joaquin Miller Park: widespread along lower Palos Colorados Trail and in part of Big Trees areas; Palo Seco Creek • Dimond Canyon: occurs in many locations; mixed with <i>Oxalis oregana</i> at Monterey site • Dimond Park: riparian areas • Shepherd Canyon 	<ul style="list-style-type: none"> • Discourage the disposal of yard waste in creek by landscapers and residents • Discourage nurseries from selling this plant • Encourage homeowners to remove this plant • Continue control efforts at current restoration project sites
<p><i>Oxalis pes-caprae</i> Bermuda buttercup</p>	<ul style="list-style-type: none"> • Plants form many bulblets and spread by lateral underground shoots • Bulbs are collected by pocket gophers who spread them via tunnels • Other vectors poorly understood • Removal is labor intensive, requiring deep digging and repeated visits to remove 	<ul style="list-style-type: none"> • Joaquin Miller Park: large area near Lookout Point; other scattered areas, including mulch in Native Plant Nursery • Dimond Canyon: scattered patches in restoration area; extensive infestations along Park Boulevard side of canyon • Shepherd Canyon 	<ul style="list-style-type: none"> • Not high priority; generally not occurring in restoration area sites or rare plant sites 




Photos: ©2002 Tony Morosco; ©2009 Barry

Species	Characteristics	Distribution	Recommendations
<p><i>Oxalis incarnata</i> Scarlet woodsorrel</p>	<ul style="list-style-type: none"> • Invades vegetatively and possibly by seed; also forms bulblets at axis of stems • Hand-removal extremely tedious due to large numbers of tiny bulblets • Inexperienced volunteers cannot distinguish from <i>Oxalis oregano</i> (Redwood sorrel) 	<ul style="list-style-type: none"> • Joaquin Miller Park: along lower Palo Seco Creek and Palos Colorados Trail • Dimond Canyon: occurs with native <i>Oxalis oregana</i> (a rare plant in East Bay) at Monterey Rd. redwoods site 	<ul style="list-style-type: none"> • Continue control efforts at Monterey site 
<p><i>Foeniculum vulgare</i> Fennel</p>	<ul style="list-style-type: none"> • Spreads by seed • Re-grows rapidly after cutting or burning • Large clumps are labor intensive to remove • Produces chemicals that suppress the growth of other plants 	<ul style="list-style-type: none"> • Joaquin Miller Park: many scattered infestations • Dimond Canyon: extensive infestation along Bridgeview Trail near PG&E landslide area; in landslide area below Estates along Park Boulevard; along El Centro above trailhead • W.D. Wood Park: scattered stands • Shepherd Canyon: Along Snake Rd. near footbridge and along trail towards village 	<ul style="list-style-type: none"> • Encourage Wildfire District to remove rather than repeatedly cutting tops; encourage them to extend control to edges of grazed areas • Remove plants in active restoration areas • Encourage removal by homeowners 
<p><i>Fumaria capreolata</i> Fumitory</p>	<ul style="list-style-type: none"> • Spreads by seed • Perennial • Single plants can cover many square feet, suppressing native plant populations 	<ul style="list-style-type: none"> • Dimond Canyon: under oaks just above El Centro • Native Plant Nursery: infestation near entry has spread to many irrigated areas 	<ul style="list-style-type: none"> • Adopt zero-tolerance efforts at Native Plant Nursery to avoid possible contamination of nursery stock • Undertake annual control efforts before seed set in Dimond Park






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Species	Characteristics	Distribution	Recommendations
<p><i>Lepidium latifolium</i> Perennial pepperweed, Broadleaved pepperweed</p>	<ul style="list-style-type: none"> Extremely invasive; spreads by seed and rhizomes Even dried root fragments can resprout in winter rains or along creeks Forms dense monocultures of tall plants in moist habitats Poor root structure allows bank failures along creeks 	<ul style="list-style-type: none"> Native Plant Nursery: near shadehouse; apparently arrived in mulch 	<ul style="list-style-type: none"> Continue control/eradication efforts, digging out roots along with above-ground biomass Never allow seed set
<p><i>Conium maculatum</i> Poison hemlock</p>	<ul style="list-style-type: none"> Spreads by seed; copious seed production Tall plants in dense stands can eliminate native understory by shading and crowding Tends to favor riparian and moist areas Poor root structure allows erosion 	<ul style="list-style-type: none"> Joaquin Miller Park: near Horse Arena; along Cinderella Creek; on hill above nursery Dimond Canyon: scattered locations Shepherd Canyon: near creek by soccer field Beaconsfield: on 2nd year of removal near creek; infestations on hill not yet addressed 	<ul style="list-style-type: none"> Continue control efforts in and near restoration areas Encourage removal by homeowners 
<p><i>Euphorbia</i> sp. Spurge</p>	<ul style="list-style-type: none"> Spreads by seed Establishes colonies via rhizomes Forms a monoculture Survives and spreads on hot dry hillsides White sap may cause skin and eye irritation 	<ul style="list-style-type: none"> Joaquin Miller Park: not yet assessed Dimond Canyon: isolated patches Shepherd Canyon: extensive populations on public and private property Beaconsfield Canyon: most large plants removed; many small patches remain 	<ul style="list-style-type: none"> Encourage removal on private property Discourage nurseries and landscapers from selling or planting this species Continue volunteer control efforts in Beaconsfield Canyon Work with Wildfire District to schedule vegetation clearance before seed set Encourage Wildfire District to dig rather than cut and to control along edges of grazed areas to prevent re-infestation Map populations in Shepherd Canyon

Photos: ©2002 Jennifer Forman; ©1999 CAS-Gerald & Buff Corsi; ©2009 Margo Bors; ©2007 Luigi Rignanese


Species	Characteristics	Distribution	Recommendations
<p><i>Allium triquetrum</i> Three-cornered leek</p>	<ul style="list-style-type: none"> • Spreads by seeds and bulb division • Tends to form monocultures • Often occurs along creek banks; poor soil- holding capacity 	<ul style="list-style-type: none"> • Joaquin Miller Park: lower Palos Colorados Trail • Dimond Canyon and Dimond Park: patches in riparian areas • Shepherd Canyon: extensive monoculture along Zinn Trail • Beaconsfield: small patches between trail and creek 	<ul style="list-style-type: none"> • Encourage removal on private property • Discourage nurseries and landscapers from selling or planting this species • Control in active restoration areas
<p><i>Centaurea solstitialis</i> Yellow star thistle</p>	<ul style="list-style-type: none"> • Extremely invasive from seed • Perennial • Forms dense monocultures that displace native plants • Matures late in summer, increasing fire risk • Difficult to remove by hand due to thorny stems and flowers 	<ul style="list-style-type: none"> • Joaquin Miller Park: Most grasslands; somewhat controlled by goat grazing • Shepherd Canyon: meadow above soccer field; somewhat controlled by goat grazing 	<ul style="list-style-type: none"> • Encourage Wildfire District to control along edges of grazed areas to prevent re-infestation • Encourage appropriate timing of Fire District vegetation management • Monitor grazing exclusion areas to check for infestations
<p><i>Tropaeolum majus</i> Garden nasturtium</p>	<ul style="list-style-type: none"> • Forms monocultures, eliminating native species • Creates copious seed bank • Poor soil holding capacity 	<ul style="list-style-type: none"> • Dimond Canyon: 1 or 2 areas above Old Canon Trail • Dimond Park: west side of creek below houses on Vista 	



Photos: ©2008 Gary McDonald; ©2008 Luigi Rignanese; ©1995 St. Mary's College of CA



Species	Characteristics	Distribution	Recommendations
Other thistles: <i>Carduus pycnocephalus</i> Italian thistle <i>Cirsium vulgare</i> Bull thistle <i>Cynara cardunculus</i> Artichoke thistle <i>Silybum marianum</i> Milk thistle	<ul style="list-style-type: none"> Very invasive from seed Tend to colonize bare disturbed areas following goat grazing and harsh vegetation management or landslides  <p>Italian thistle Bull thistle</p>	<ul style="list-style-type: none"> Throughout watershed Italian thistle is especially prevalent in grazed or heavily weed-whacked areas  <p>Artichoke thistle</p>	<ul style="list-style-type: none"> Encourage Wildfire District to control along edges of grazed areas to prevent re-infestation Monitor grazing exclusion areas to check for infestation Encourage removal on private land  <p>Milk thistle</p>
<i>Impatiens balfourii</i> Balfour's touch-me-not	<ul style="list-style-type: none"> Perennial, spreads easily by seed 	<ul style="list-style-type: none"> Dimond Canyon: prevalent at top of Monterey Rd. redwood restoration area in prime <i>Oxalis oregana</i> area 	<ul style="list-style-type: none"> Continue eradication efforts 
<i>Myosotis latifolia</i> Forget-me-not	<ul style="list-style-type: none"> Spreads rapidly by seed Perennial Favors riparian understory areas 	<ul style="list-style-type: none"> Throughout watershed in suitable habitat 	<ul style="list-style-type: none"> Continue eradication and control efforts in active restoration areas




Photos: ©1995 St. Mary's College of CA; ©2008 Keir Morse; ©2008 Neal Kramer; ©2007 CAS-J.E. & Bonnie McClellan; ©2006 James B. Gratiot, ©2006 Jo-Ann Ordano


Table 1: Invasive Non-Native Grasses of Sausal Creek Watershed

Species	Characteristics	Distribution	Recommendations
<p><i>Arundo donax</i> Giant reed</p>	<ul style="list-style-type: none"> • Spreads vegetatively by rhizomes and plant fragments; even dried fragments can root in suitable habitat • Extremely invasive in riparian habitats • Can grow to 30 ft. or more • Poor root structure can lead to bank failure and erosion 	<ul style="list-style-type: none"> • Joaquin Miller Park: one known site • Cobbledick sub-basin: 2 sites between Scout Rd. and creek • Shepherd Canyon: one small stand on private property below Westover near Pelham; large clump near Westover and Shelterwood 	<ul style="list-style-type: none"> • Good project for Weed Warriors • Obtain homeowner cooperation in removal on private property • Discourage nurseries and landowners from selling or planting this species

Species	Characteristics	Distribution	Recommendations
<p><i>Cortaderia jubata</i> <i>Cortaderia selloana</i> Jubata grass, Pampas grass</p>	<ul style="list-style-type: none"> • Spreads by seed; easily establishes in disturbed areas • Over time, large clumps can coalesce to form monocultures • Plumes are highly flammable and spread fires • Plants re-grow quickly if cut to ground • Removal of clumps is labor intensive 	<ul style="list-style-type: none"> • Joaquin Miller Park: scattered populations • Dimond Canyon: largest infestations on PG&E landslide and along Park Blvd. • Shepherd Canyon: along Escher Drive and along Bike Path 	<ul style="list-style-type: none"> • Remove plumes before seed set when possible • Encourage Wildfire District to dig out clumps rather than repeatedly cutting tops • Discourage nurseries and landowners from selling or planting this species
<p><i>Phalaris aquatica</i> Harding grass</p>	<ul style="list-style-type: none"> • Spreads by seeds with heavy seed set • Large tussocks labor intensive to remove • Favors sunny, moist areas but can survive drier uplands • Plants grow to 6 ft. • Extreme fire danger 	<ul style="list-style-type: none"> • Shepherd Canyon: in meadow above soccer field; invading uplands; grazing in past few years has reduced enormously; however, it has spread to ungrazed upland areas 	<ul style="list-style-type: none"> • Encourage Shepherd Canyon Homeowners Association and the Wildfire District to work to eradicate completely • Discourage nurseries and landowners from selling or planting this species • Encourage removal on private land

Species	Characteristics	Distribution	Recommendations
<p><i>Ehrharta erecta</i> Veldt grass</p>	<ul style="list-style-type: none"> • Spreads rapidly by seed; copious, tiny seeds are easily spread by traffic on trails • Deep-rooted perennial clumps require digging to remove • Long culms can spread seed up trail cuts and through shrub understory • Can survive on fog drip in uplands, when shaded • Planting natives after <i>Ehrharta</i> removal fails if copious re-seeding out-competes native plants for light and water 	<ul style="list-style-type: none"> • Joaquin Miller Park: extensive infestation spreading rapidly in oak, redwood, and other understory areas • Dimond Canyon: spreading rapidly in moist understory areas • Dimond Park: many locations • Shepherd Canyon: Near picnic area and along bike path • Beaconsfield: in riparian areas and under pines and cypresses in uplands • W. D. Wood Park: scattered locations 	<ul style="list-style-type: none"> • Eradication impossible; attempt to control spread near priority native plant areas and restoration areas • When revegetating in areas with <i>Ehrharta</i>, use cardboard mulch around seedlings to reduce competition • Discourage nurseries and landowners from selling or planting this species • Remove flowering heads prior to seed set along trails and other traffic zones to reduce spread • Encourage removal on private land
<p><i>Holcus lanatus</i> Velvet grass</p>	<ul style="list-style-type: none"> • Spreads by seeds • Perennial 	<ul style="list-style-type: none"> • Joaquin Miller Park: spreading rapidly along Sequoia-Bayview Trail above Chaparral Trail intersection 	<ul style="list-style-type: none"> • Initiate control program in most desirable native plant areas • Cut flowering heads prior to seed set to limit spread along trails

Species	Characteristics	Distribution	Recommendations
<p><i>Cynodon dactylon</i> Bermuda grass</p>	<ul style="list-style-type: none"> Spreads rapidly by stolons Deep, easily-broken roots make eradication difficult Can survive on low levels of moisture 	<ul style="list-style-type: none"> Native Plant Nursery: extensive throughout mulched areas; reduced by Fall 2008 construction work 	<ul style="list-style-type: none"> Reduce mulching to eliminate nitrogen source Re-arrange busy work areas in nursery periodically to trample largest patches Establish a weed-free buffer zone around the shade house to avoid grass invading pots; if possible, adjust irrigation to reduce overspray onto invasives Initiate aggressive control measures to prevent transferring to riparian areas via seeds in nursery stock
<p><i>Pennisetum clandestinum</i> Kikuyu grass</p>	<ul style="list-style-type: none"> Spreads extremely rapidly via stolons Can survive on extremely low levels of moisture 	<ul style="list-style-type: none"> Joaquin Miller Park: Invades seep area near lower end of Sanborn; in mulch at native plant nursery Dimond Park: near tot lot; invades Native Plant Demonstration Garden; west side of creek above Wellington Native plant nursery: scattered areas in mulch W. D. Wood Park: near irrigated lawn 	<ul style="list-style-type: none"> In Dimond Park, replace Tot Lot lawn with native meadow; minimize perimeter to improve chances for successful, long-term maintenance Continue control efforts in nursery Initiate aggressive control measures to prevent transferring to riparian areas via seeds in nursery stock

Species	Characteristics	Distribution	Recommendations
<p><i>Agrostis</i> sp. Bent grass</p>	<ul style="list-style-type: none"> Spreads by seeds and rhizomes 	<ul style="list-style-type: none"> Native plant nursery: surrounds shade house in areas that receive irrigation spray 	<ul style="list-style-type: none"> Initiate aggressive control measures to prevent transferring to riparian areas via seeds in nursery stock Establish a weed-free buffer zone around the shade house Check irrigation to determine if it is possible to reduce overspray onto invasives
<p>Non-native grasses (see list below)</p>	<ul style="list-style-type: none"> Seed spread by wind Out competes native grasses and wildflowers High fire risk; almost all areas on public land grazed by goats, generally after annual grasses have set seed, but before natives have done so Outplanting natives in areas of heavy annual grass seedbank can fail due to competition for water and sunlight 	<ul style="list-style-type: none"> Dominate all grassland areas in watershed except for thin serpentine soil; also present in woodland understory 	<ul style="list-style-type: none"> Eradication impossible; attempt to control spread near priority native plant areas and restoration areas Use cardboard mulch around seedlings to reduce competition Encourage Wildfire District to graze earlier to reduce seed set

Non-native Grasses

Scientific Name	Common Name	Type
<i>Avena barbata</i>	slender wild oats	Annual
<i>Avena species</i>	wild oats	Annual
<i>Briza maxima</i>	quaking grass	Annual
<i>Bromus diandrus</i>	ripgut brome	Annual
<i>Bromus hordeaceus</i>	soft chess	Annual
<i>Cynosurus echinatus</i>	hedgehog dogtail	Annual
<i>Festuca arundinacea</i>	tall fescue	Perennial
<i>Hordeum murinum ssp. murinum</i>	wall barley; foxtail	Annual
<i>Hordeum species</i>	foxtail; barley	Annual
<i>Lolium multiflorum</i>	Italian ryegrass	Annual
<i>Poa annua</i>	annual bluegrass	Annual
<i>Poa secunda ssp. secunda</i>	one-side blue grass	Perennial
<i>Polypogon monspeliensis</i>	annual beard grass	Annual
<i>Vulpia myuros var. hirsuta</i>	foxtail fescue	Annual

APPENDIX D

GOAT GRAZING FOR WEED CONTROL IN JOAQUIN MILLER PARK

Grazing Schedule 2008-2012

Grazed Yearly

ID	Acres (flat)	Location	Grazing Frequency	2008	2009	2010	2011	2012
1	4.79	Butters Drive	Yearly	yes	yes	yes	yes	yes
2	1.64	Between Tot Lot and Sanborn	Yearly	yes	yes	yes	yes	yes
3	7.48	Around and behind JM Abbey (may be 2 areas, split at Bishop's Walk?)	Yearly	yes	yes	yes	yes	yes
4	2.49	Near Perry Field along JM Road	Yearly	yes	yes	yes	yes	yes
5	7.85	From Funeral Pyre to Cascades, below nursery	Yearly	yes	yes	yes	no	yes
6	0.62	Nursery	Yearly	yes	yes	yes	yes	yes
10	0.97	Between Sanborn and theater; picnic area	Yearly	yes	yes	yes	yes	yes
11	3.15	Between Sanborn and theater driveway; picnic area	Yearly	yes	yes	yes	yes	yes
16	3.44	Theater parking area/ dog park	Yearly	yes	yes	yes	yes	yes
17	4.86	Lower Sunset Grassland	Yearly	yes	yes	yes	yes	yes
18	4.01	Upper Sunset Grassland, west end of Sunset Trail to landslide area	Yearly	yes	yes	yes	yes	yes
19	2.53	Along Castle Park and West Trails	Yearly	yes	yes	yes	yes	yes
20	3.84	Between Castle Park Trail and Skyline	Yearly	yes	yes	yes	yes	yes
21	3.01	Above Skyline to trail	Yearly	yes	yes	yes	yes	yes
22	6.35	Along Skyline, from trail to Moon Gate	Yearly	yes	yes	yes	yes	yes

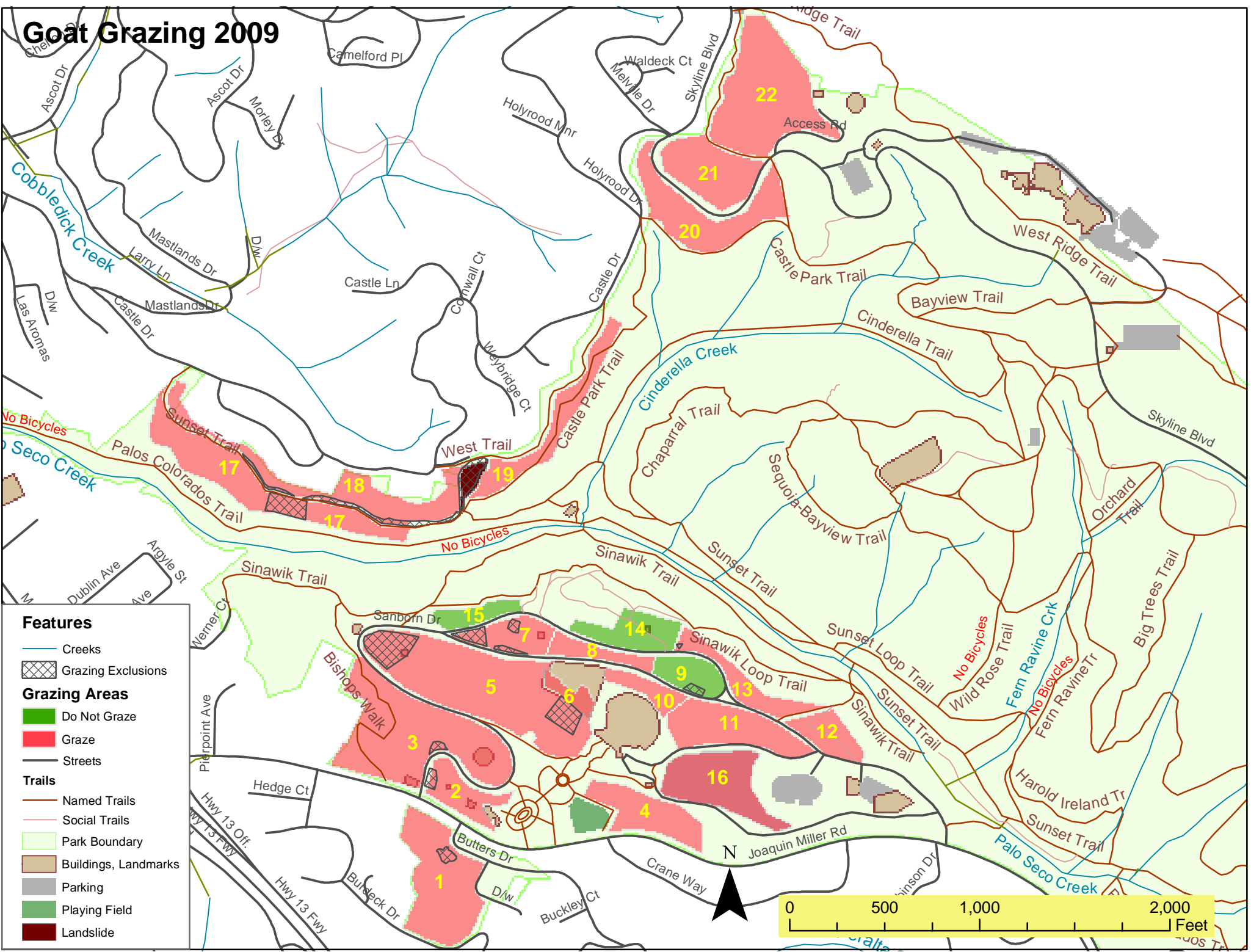
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Grazed Less Frequently

ID	Acres	Location	Grazing Frequency	2008	2009	2010	2011	2012
7	1.15	Interior of Sanborn 1-way loop; west end	2 years	no	yes	no	yes	no
8	1.05	Interior of Sanborn 1-way loop; center	2 years	no	yes	no	yes	no
9	1.46	Interior of Sanborn 1-way loop; east end	3 years	no	no	yes	no	no
12	1.42	North of Sanborn by fire gate, picnic area	2 years	no	yes	no	yes	no
13	1.65	North of Sanborn, past trail	2 years	no	yes	no	yes	no
14	2.02	Browning Monument area	3-4 years	no	no	tbd	tbd	tbd
15	1.02	Between Sanborn & Siniwik Loop Trail; Clarkia meadow	3-4 years	no	no	tbd	tbd	tbd

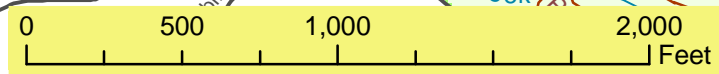
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Goat Grazing 2009

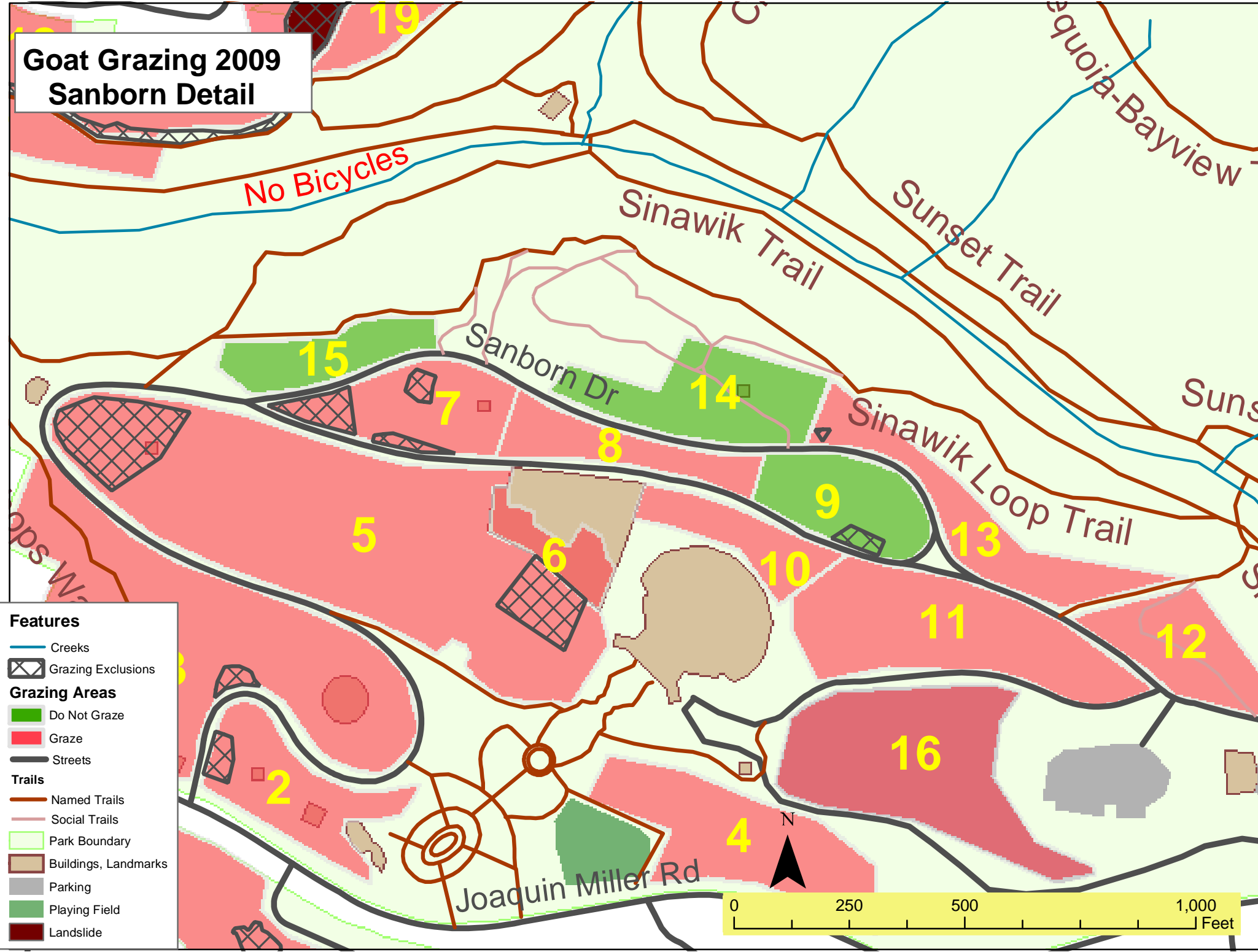


Features










- Creeks
- Grazing Exclusions
- Grazing Areas**
- Do Not Graze
- Graze
- Streets
- Trails**
- Named Trails
- Social Trails
- Park Boundary
- Buildings, Landmarks
- Parking
- Playing Field
- Landslide

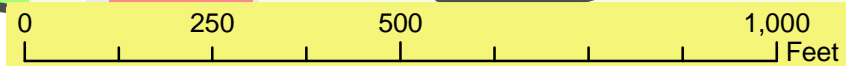


Goat Grazing 2009 Sanborn Detail

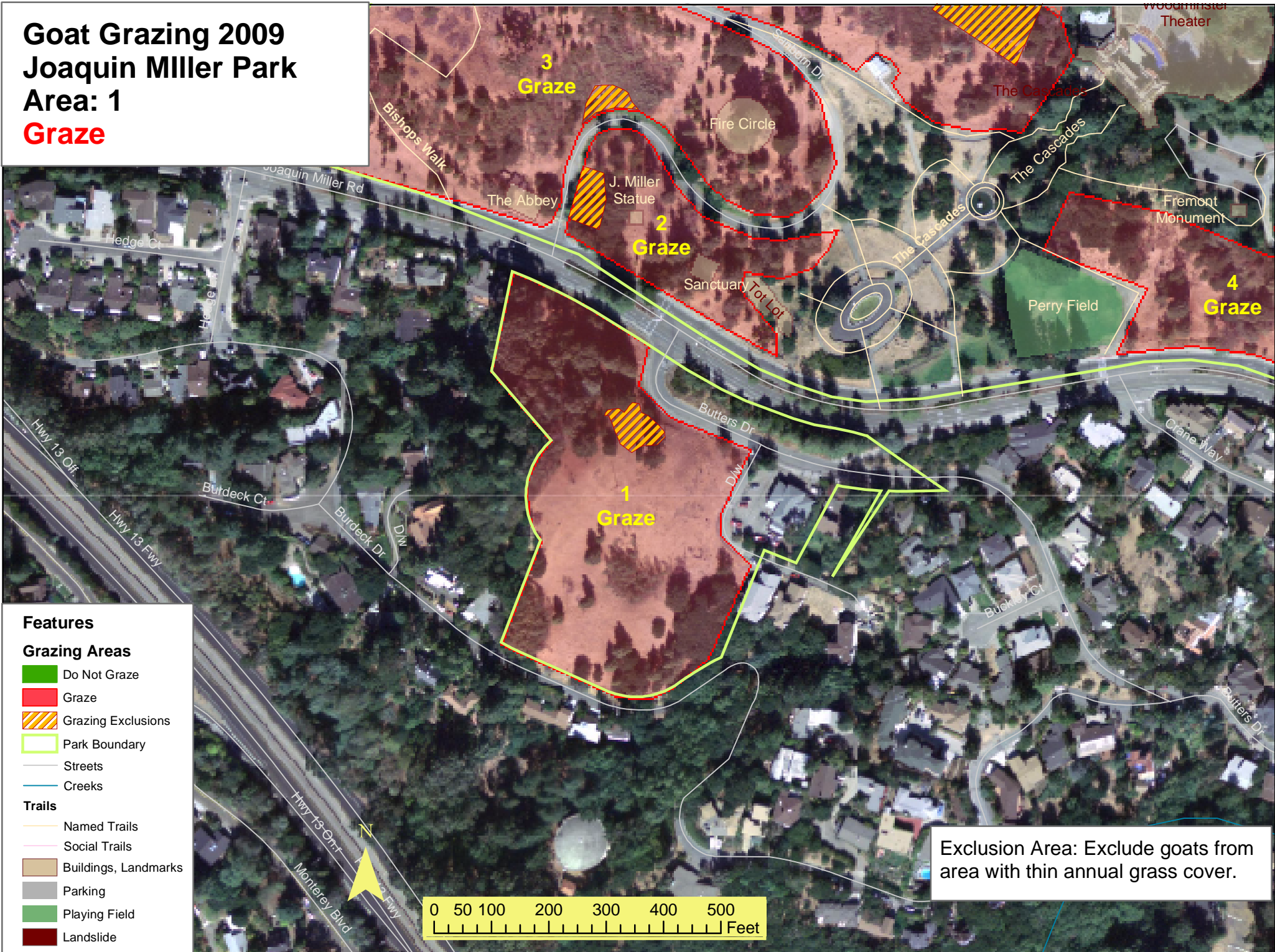


Features

-  Creeks
-  Grazing Exclusions
- Grazing Areas**
-  Do Not Graze
-  Graze
-  Streets
- Trails**
-  Named Trails
-  Social Trails
-  Park Boundary
-  Buildings, Landmarks
-  Parking
-  Playing Field
-  Landslide

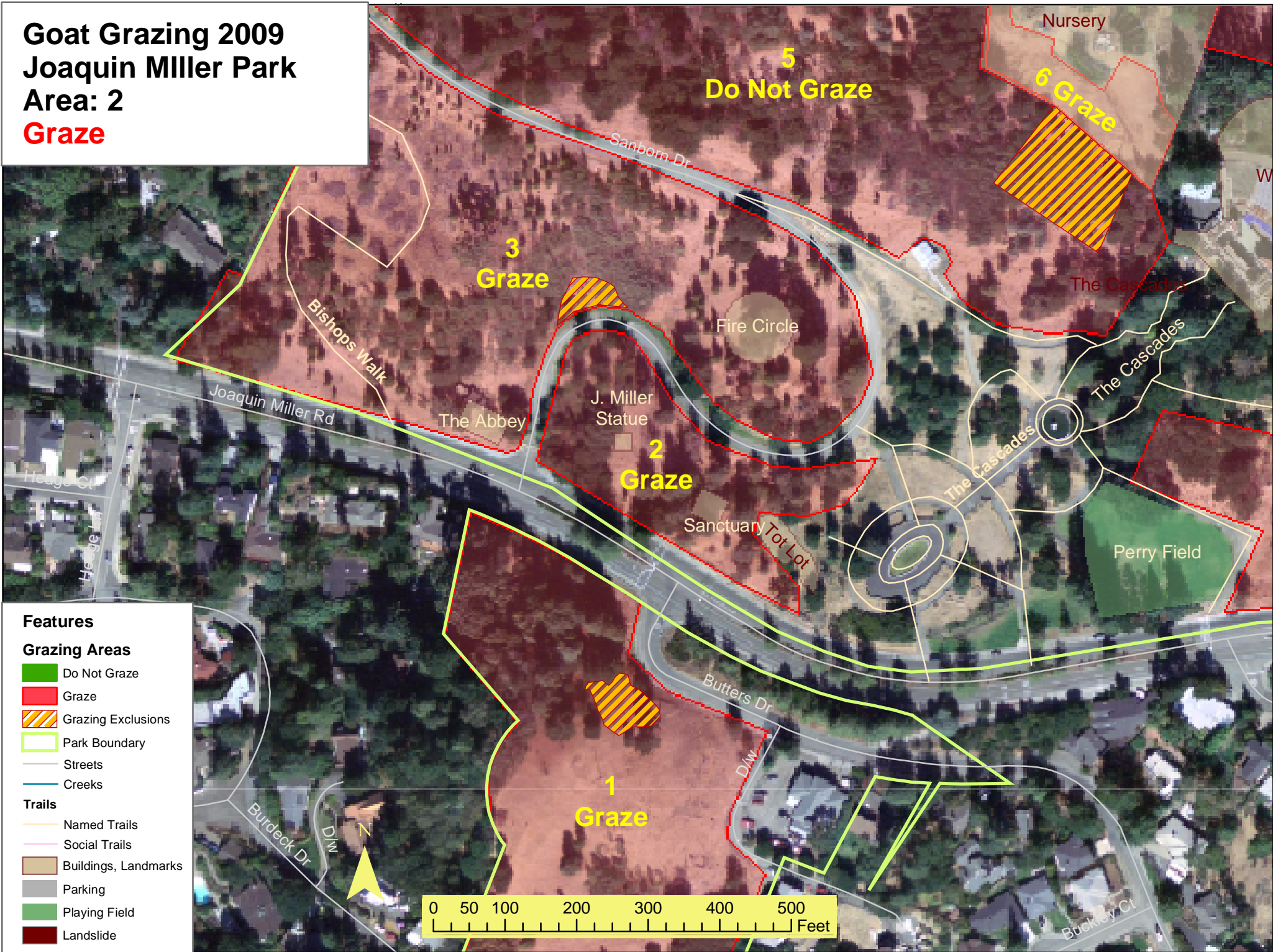


Goat Grazing 2009 Joaquin Miller Park Area: 1 Graze

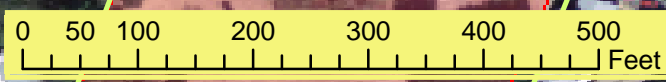


Exclusion Area: Exclude goats from area with thin annual grass cover.

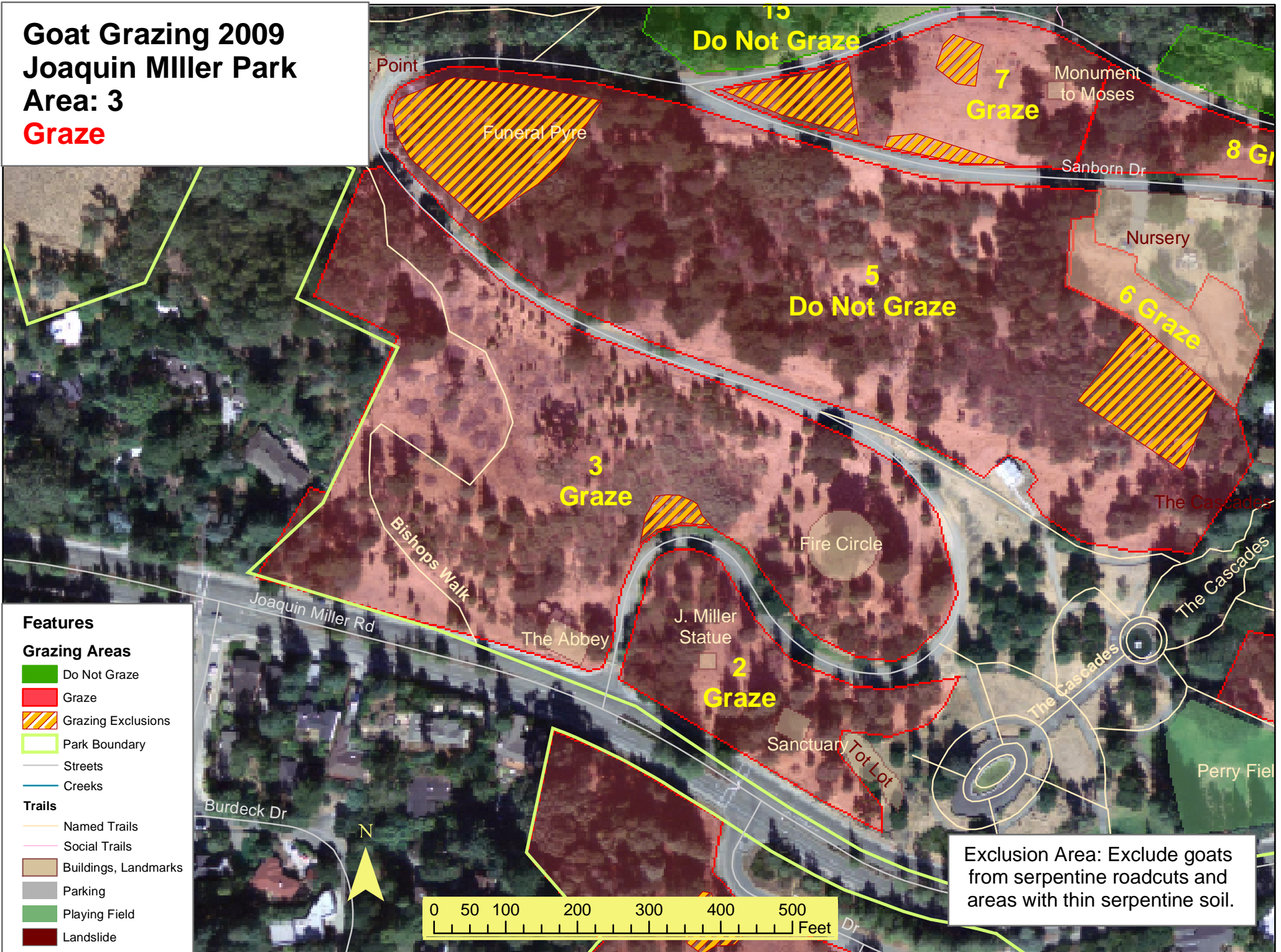
Goat Grazing 2009
Joaquin Miller Park
Area: 2
Graze



- Features**
- Grazing Areas**
- Do Not Graze
 - Graze
 - Grazing Exclusions
 - Park Boundary
 - Streets
 - Creeks
- Trails**
- Named Trails
 - Social Trails
 - Buildings, Landmarks
 - Parking
 - Playing Field
 - Landslide



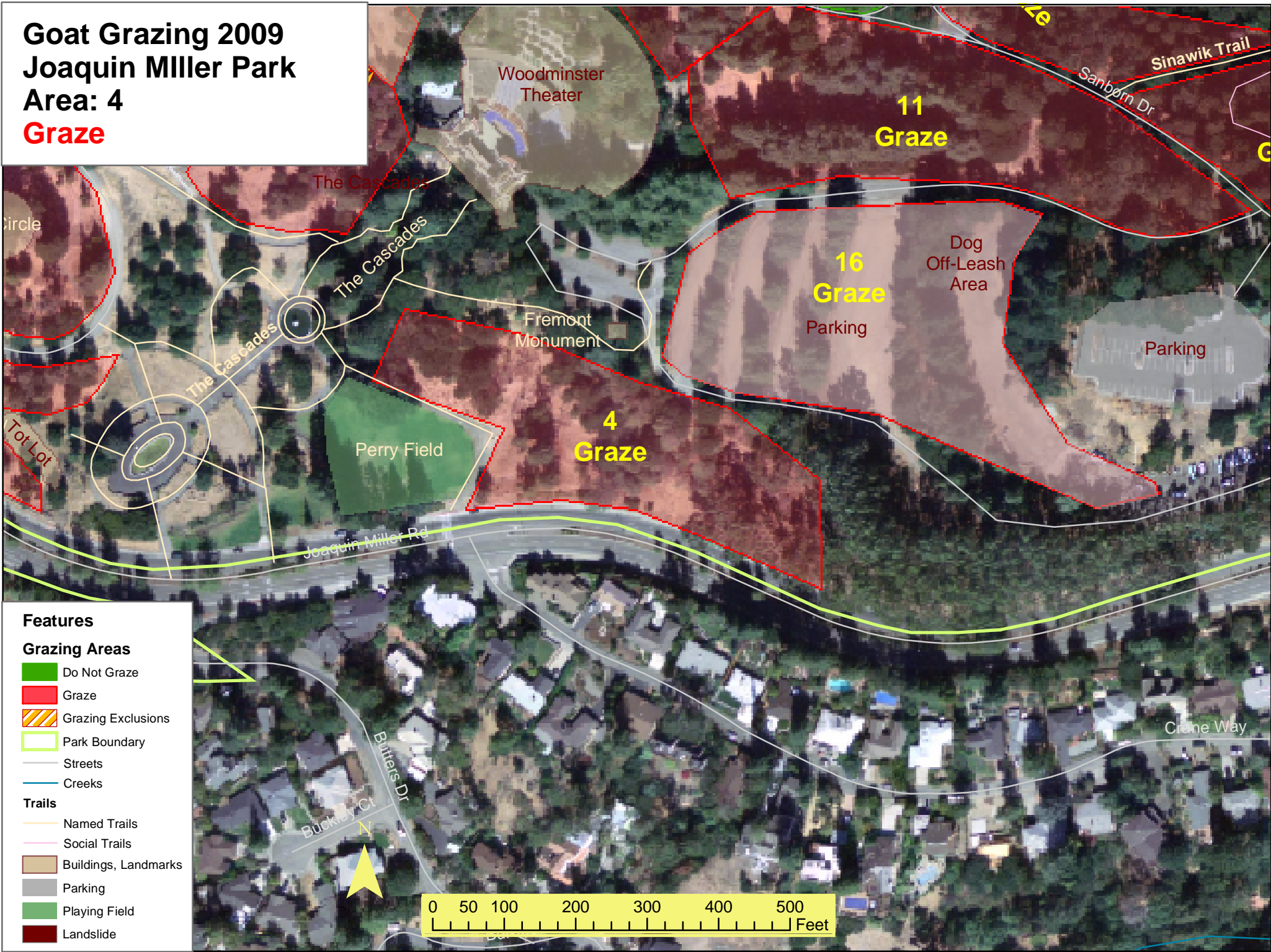
Goat Grazing 2009
Joaquin Miller Park
Area: 3
Graze



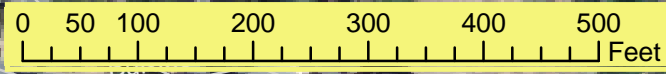
- Features**
- Grazing Areas**
 - Do Not Graze
 - Graze
 - Grazing Exclusions
 - Trails**
 - Park Boundary
 - Streets
 - Creeks
 - Named Trails
 - Social Trails
 - Other Features**
 - Buildings, Landmarks
 - Parking
 - Playing Field
 - Landslide

Exclusion Area: Exclude goats from serpentine roadcuts and areas with thin serpentine soil.

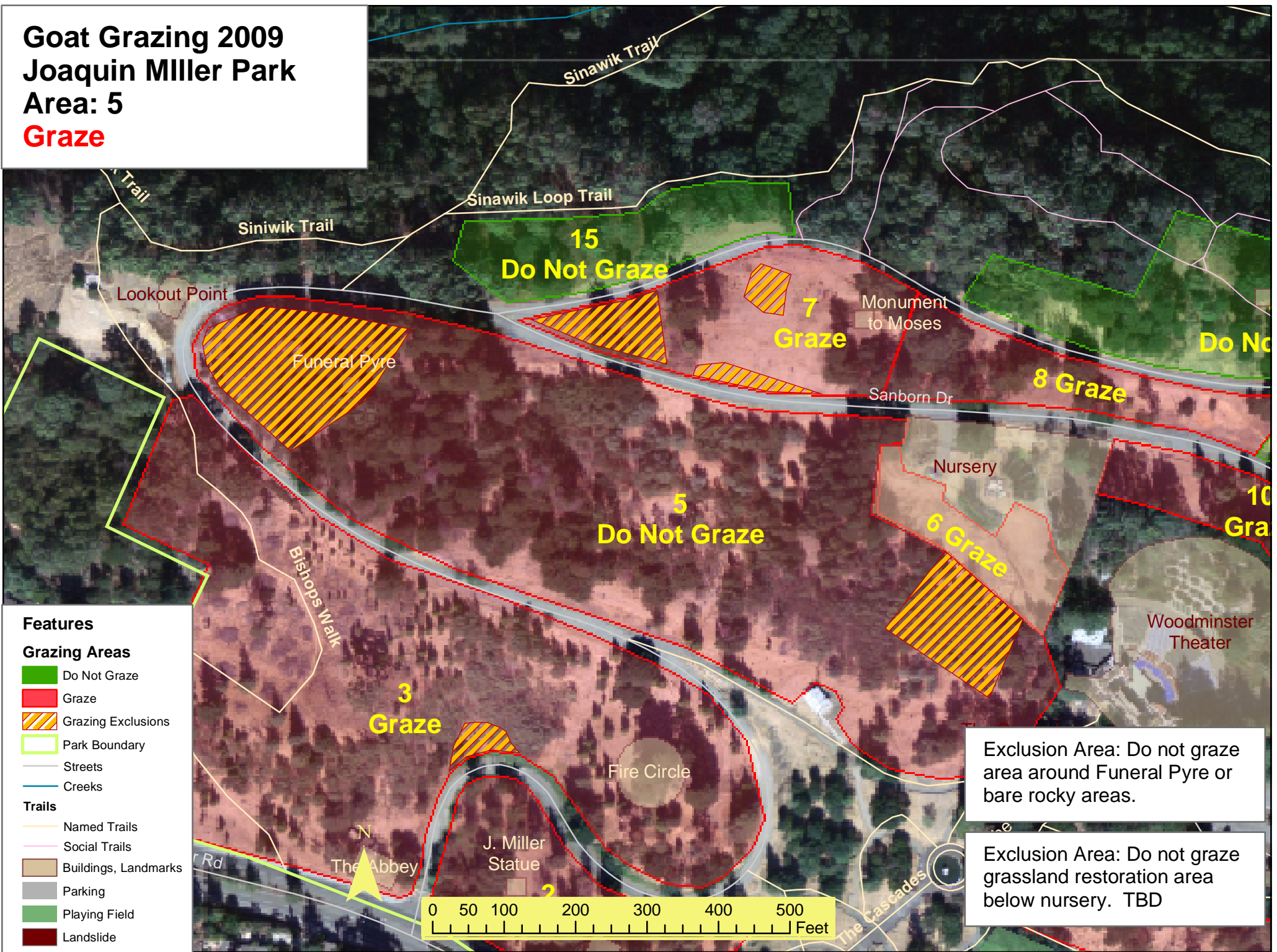
Goat Grazing 2009
Joaquin Miller Park
Area: 4
Graze



- Features**
- Do Not Graze
 - Graze
 - Grazing Exclusions
 - Park Boundary
 - Streets
 - Creeks
- Trails**
- Named Trails
 - Social Trails
- Other Features**
- Buildings, Landmarks
 - Parking
 - Playing Field
 - Landslide



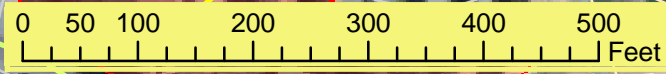
Goat Grazing 2009
Joaquin Miller Park
Area: 5
Graze



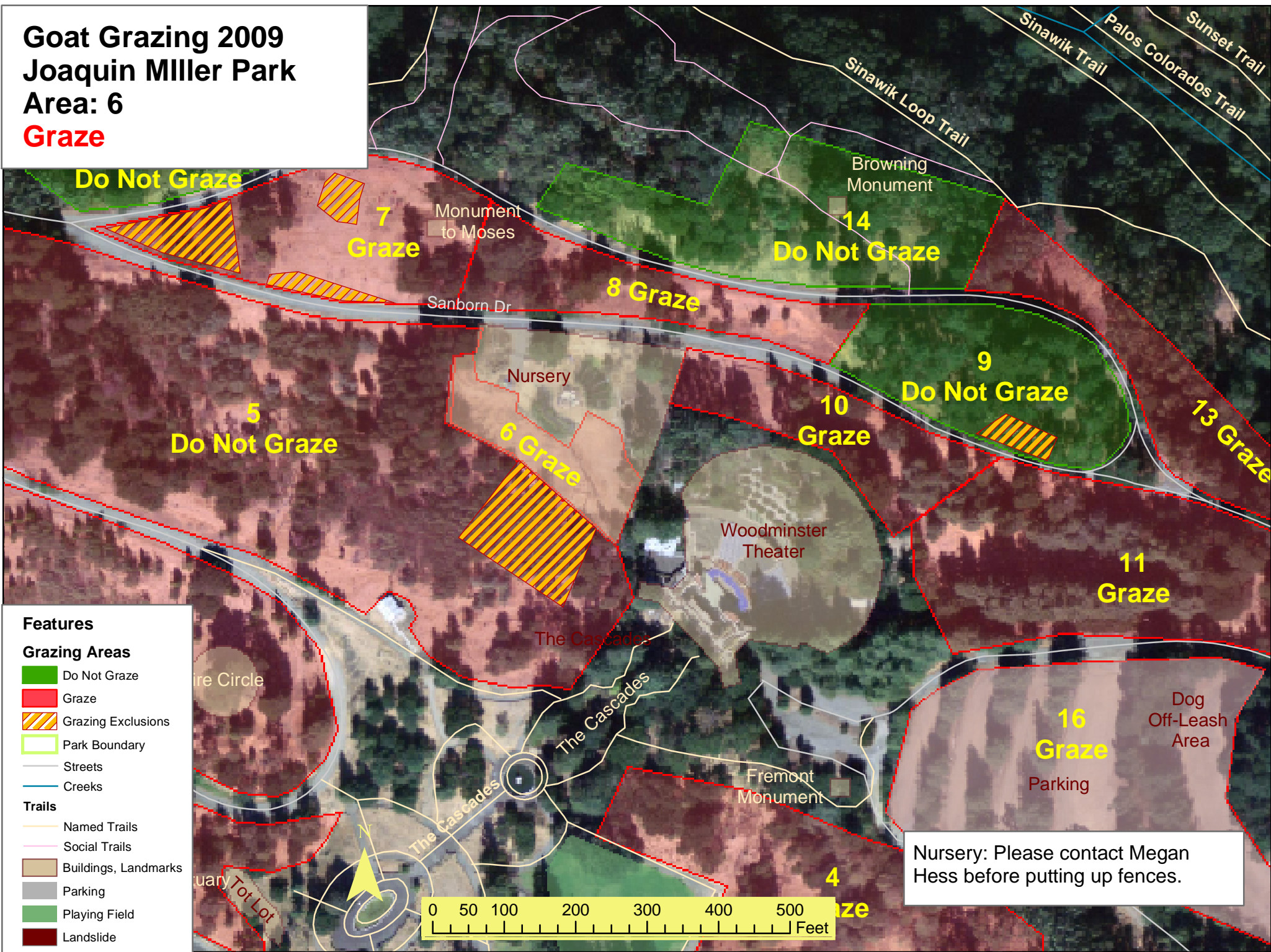
- Features**
- Grazing Areas**
 - Do Not Graze
 - Graze
 - Grazing Exclusions
 - Park Boundary
 - Streets
 - Creeks
 - Trails**
 - Named Trails
 - Social Trails
 - Buildings, Landmarks
 - Parking
 - Playing Field
 - Landslide

Exclusion Area: Do not graze area around Funeral Pyre or bare rocky areas.

Exclusion Area: Do not graze grassland restoration area below nursery. TBD



Goat Grazing 2009
Joaquin Miller Park
Area: 6
Graze



- Features**
- Grazing Areas**
 - Do Not Graze
 - Graze
 - Grazing Exclusions
 - Park Boundary
 - Streets
 - Creeks
 - Trails**
 - Named Trails
 - Social Trails
 - Buildings, Landmarks**
 - Parking**
 - Playing Field**
 - Landslide**

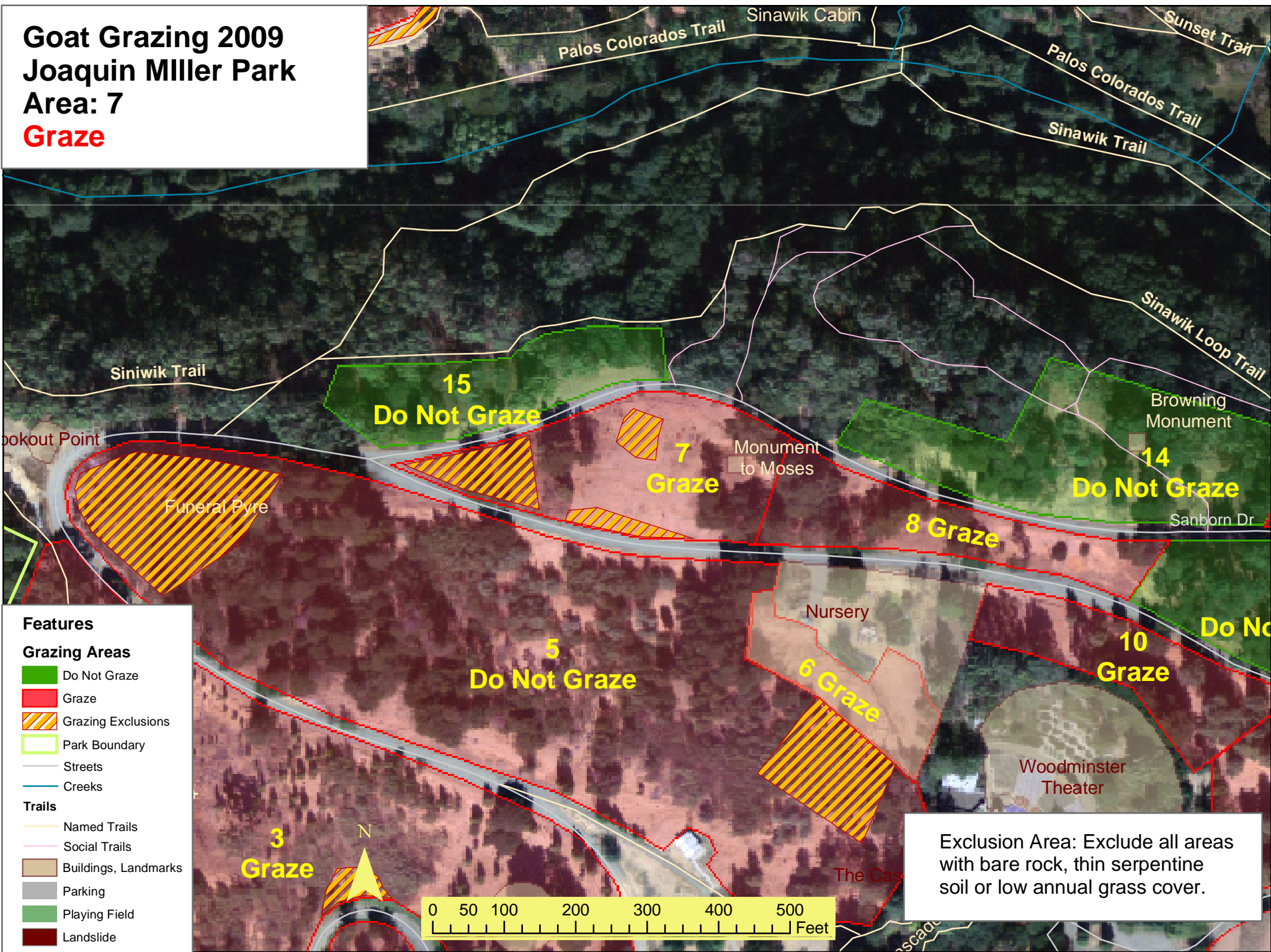
Nursery: Please contact Megan Hess before putting up fences.

Goat Grazing 2009

Joaquin Miller Park

Area: 7

Graze

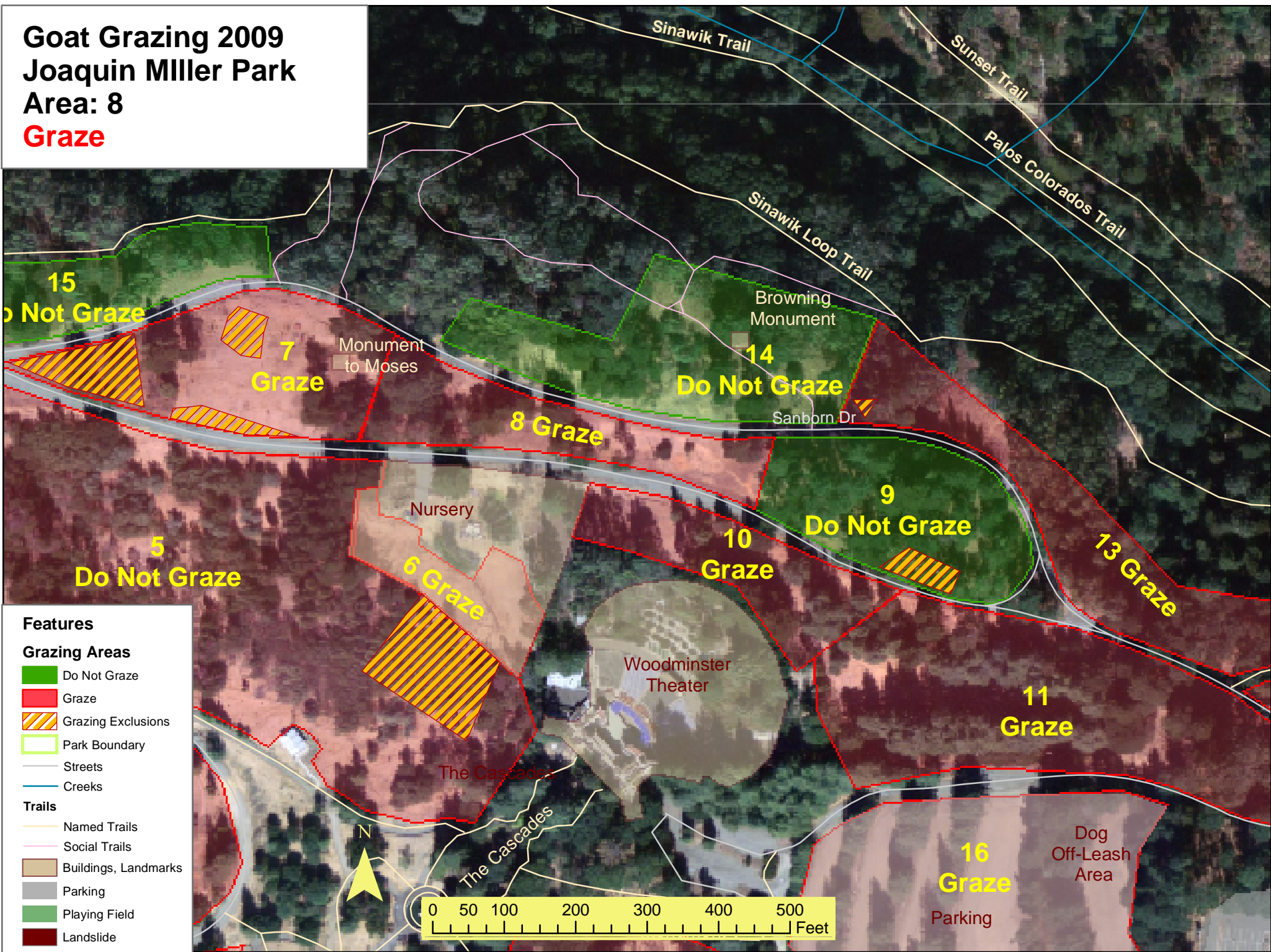


Palos Colorados Trail
Sinawik Cabin
Sunset Trail
Palos Colorados Trail
Sinawik Trail
Sinawik Loop Trail

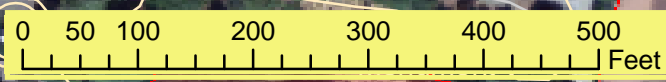
Siniwik Trail
Browning Monument
Funeral Pyre
Monument to Moses
Sanborn Dr.

3 Do Not Graze
5 Do Not Graze
6 Graze
7 Graze
8 Graze
10 Graze
10 Graze
14 Do Not Graze
15 Do Not Graze
Nursery
Woodminster Theater
The Cas
Escalante

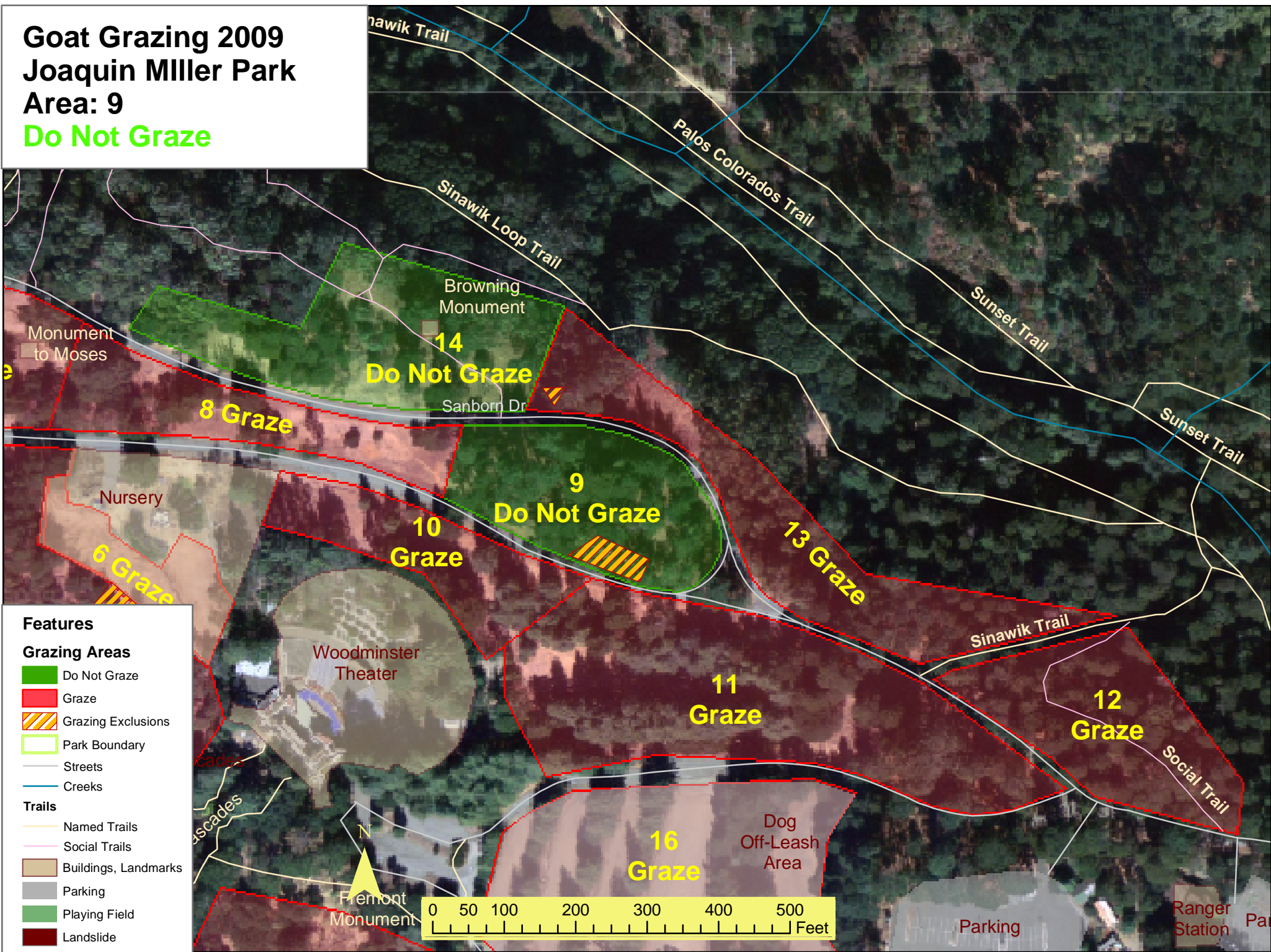
Goat Grazing 2009
Joaquin Miller Park
Area: 8
Graze



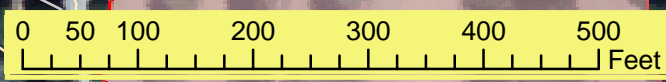
- Features**
- Grazing Areas**
 - Do Not Graze
 - Graze
 - Grazing Exclusions
 - Park Boundary
 - Streets
 - Creeks
 - Trails**
 - Named Trails
 - Social Trails
 - Buildings, Landmarks
 - Parking
 - Playing Field
 - Landslide



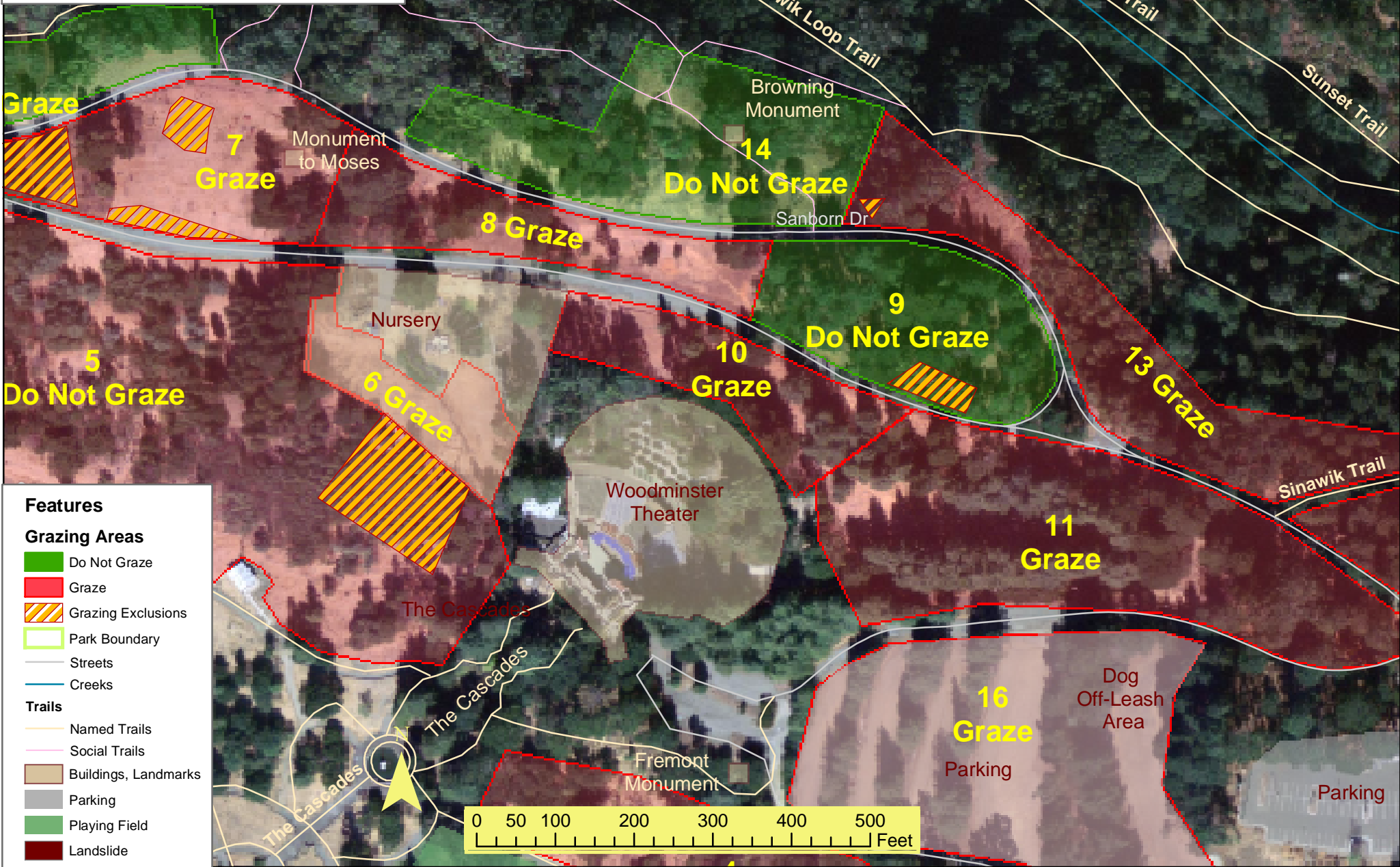
Goat Grazing 2009
Joaquin Miller Park
Area: 9
Do Not Graze



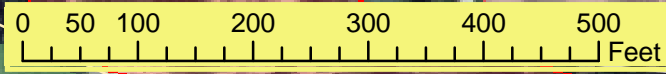
- Features**
- Grazing Areas**
 - Do Not Graze
 - Graze
 - Grazing Exclusions
 - Park Boundary
 - Streets
 - Creeks
 - Trails**
 - Named Trails
 - Social Trails
 - Buildings, Landmarks
 - Parking
 - Playing Field
 - Landslide



Goat Grazing 2009
Joaquin Miller Park
Area: 10
Graze



- Features**
- Grazing Areas**
 - Do Not Graze
 - Graze
 - Grazing Exclusions
 - Park Boundary**
 - Streets**
 - Creeks**
 - Trails**
 - Named Trails
 - Social Trails
 - Buildings, Landmarks**
 - Parking**
 - Playing Field**
 - Landslide**



APPENDIX E

SAUSAL CREEK EPA SWMM 5.0 MODEL OUTPUT

Sausal Creek Existing Conditions Hydrology

RUNOFF QUANTITY

Return Interval	Total Precipitation Volume (acre-feet)	Total Precipitation Depth (in)	Surface Runoff (acre-feet)	Infiltration Loss (acre-feet)	Surface Storage (acre-feet)	Flow Continuity Error (%)	Routing
100 Year	1775.5	7.40	729.0	1033.0	13.5	-8.0	Dynamic Wave
25 Year	1363.1	5.68	534.2	815.9	12.9	-4.2	Dynamic Wave
10 Year	1108.2	4.62	424.3	671.3	12.5	-9.7	Dynamic Wave
5 Year	918.9	3.83	346.0	560.8	12.1	-4.7	Dynamic Wave
2 Year	652.6	2.72	240.8	400.3	11.4	-5.7	Dynamic Wave
1 Year	131.1	0.55	43.2	79.3	8.5	-7.8	Dynamic Wave

PEAK RUNOFF BY SUBBASIN (CFS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	277.92	214.17	176.64	142.91	97.07	17.08
Cobble Dick Creek Below Larry Lane Basin (Node 47)	74.43	57.58	47.19	39.09	27.12	4.90
Outlet of Cobble Dick Creek (Node 30)	138.9	108.4	91.9	76.3	53.9	9.35
Outlet of Shepard Canyon (Node SC-R)	472.3	312.5	254.5	208.7	142.0	26.46
Outlet of Palo Seco Creek (Node 121)	133.2	100.8	80.2	64.9	44.8	6.72
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	610.9	420.7	346.3	284.9	195.7	35.6
Inlet to the Golf Course Culvert (Node 52)	744.0	521.3	426.3	349.8	240.4	42.26
Outlet of Dimond Canyon Park (Node 163)	1106.1	913.1	789.7	538.3	363.2	58.85
Outlet to the Bay (Node 179)	1122.5	881.7	735.2	592.4	408.6	60.12

TOTAL VOLUME (10 ⁶ GAL)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	42.36	30.85	25.19	20.13	14.01	2.76
Cobble Dick Creek Below Larry Lane Basin (Node 47)	12.46	8.94	7.08	5.78	4.04	0.81
Outlet of Cobble Dick Creek (Node 30)	27.40	17.71	15.78	11.50	8.03	1.57
Outlet of Shepard Canyon (Node SC-R)	76.54	46.74	37.91	30.40	21.20	4.40
Outlet of Palo Seco Creek (Node 121)	22.40	14.21	10.99	8.85	6.21	1.12
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	103.95	64.47	56.00	41.93	29.25	5.97
Inlet to the Golf Course Culvert (Node 52)	126.35	78.68	64.69	50.78	35.46	7.09
Outlet of Dimond Canyon Park (Node 163)	190.75	123.51	105.70	80.60	57.11	11.08
Outlet to the Bay (Node 179)	255.69	171.81	144.12	111.86	78.61	14.40

Sausal Creek Proposed Conditions Hydrology

Scenario 1: Subwatershed LID Implementation (rain barrels, parking lot detention basins / biofiltration, other detention basins)

RUNOFF QUANTITY

Return Interval	Total Precipitation Volume (acre-feet)	Total Precipitation Depth (in)	Surface Runoff (acre-feet)	Infiltration Loss (acre-feet)	Surface Storage (acre-feet)	Flow Continuity Error (%)	Routing
100 Year	1775.5	7.39	716.3	1031.5	33.3	-3.1	Dynamic Wave
25 Year	1363.1	5.67	525.5	815.0	26.3	-4.1	Dynamic Wave
10 Year	1108.2	4.61	417.1	670.8	22.8	-4.3	Dynamic Wave
5 Year	918.9	3.83	340.0	560.5	20.4	-4.7	Dynamic Wave
2 Year	652.6	2.72	236.2	400.3	17.1	-5.6	Dynamic Wave
1 Year	131.1	0.55	41.6	79.3	10.0	-4.5	Dynamic Wave

PEAK RUNOFF BY SUBBASIN (CFS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	278.78	219.02	176.85	145.07	99.32	16.55
Cobbledick Creek Below Larry Lane Basin (Node 47)	75.08	58.43	47.77	39.32	28.56	4.64
Outlet of Cobbledick Creek (Node 30)	140.4	110.1	91.6	77.1	56.4	9.16
Outlet of Shepard Canyon (Node SC-R)	403.4	314.8	254.8	209.5	141.9	23.84
Outlet of Palo Seco Creek (Node 121)	112.3	84.0	67.2	54.0	37.2	5.79
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	543.0	424.6	346.2	286.4	198.0	32.79
Inlet to the Golf Course Culvert (Node 52)	655.2	508.3	413.3	340.3	235.1	38.53
Outlet of Dimond Canyon Park (Node 163)	1041.0	899.6	754.7	521.8	358.1	53.78
Outlet to the Bay (Node 179)	1051.1	867.0	708.1	582.3	403.1	55.78

TOTAL VOLUME (10 ⁶ GAL)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	43.14	31.36	25.00	20.32	14.08	2.42
Cobble Dick Creek Below Larry Lane Basin (Node 47)	12.72	9.16	7.22	5.88	4.10	0.73
Outlet of Cobble Dick Creek (Node 30)	24.85	18.06	14.29	11.65	8.11	1.45
Outlet of Shepard Canyon (Node SC-R)	64.26	46.69	37.13	30.19	20.92	3.69
Outlet of Palo Seco Creek (Node 121)	17.02	11.75	9.08	7.36	5.14	0.95
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	89.14	64.77	51.43	41.86	29.04	5.15
Inlet to the Golf Course Culvert (Node 52)	106.16	76.52	60.51	49.22	34.19	6.10
Outlet of Dimond Canyon Park (Node 163)	163.75	121.10	96.34	78.97	55.74	10.12
Outlet to the Bay (Node 179)	227.69	168.66	134.19	109.77	76.93	13.41

SCENARIO 1 CHANGE COMPARED TO EXISTING CONDITIONS

RUNOFF QUANTITY (CHANGE COMPARED TO EXISTING CONDITIONS)

Return Interval	Total Precipitation Volume (acre-feet)	Total Precipitation Depth (in)	Surface Runoff (acre-feet)	Infiltration Loss (acre-feet)	Surface Storage (acre-feet)
100 Year	0.0	0.0	-12.7	-1.5	19.8
25 Year	0.0	0.0	-8.7	-0.9	13.4
10 Year	0.0	0.0	-7.2	-0.6	10.3
5 Year	0.0	0.0	-6.1	-0.3	8.3
2 Year	0.0	0.0	-4.6	0.0	5.7
1 Year	0.0	0.0	-1.6	0.0	1.5

PEAK RUNOFF BY SUBBASIN (CFS CHANGE COMPARED TO EXISTING CONDITIONS)

Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	0.9	4.9	0.2	2.2	2.3	-0.5
Cobble Dick Creek Below Larry Lane Basin (Node 47)	0.6	0.9	0.6	0.2	1.4	-0.3
Outlet of Cobble Dick Creek (Node 30)	1.5	1.7	-0.3	0.7	2.5	-0.2
Outlet of Shepard Canyon (Node SC-R)	-68.9	2.3	0.3	0.8	-0.1	-2.6
Outlet of Palo Seco Creek (Node 121)	-20.9	-16.8	-13.0	-11.0	-7.6	-0.9
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	-67.9	3.9	-0.2	1.5	2.3	-2.8
Inlet to the Golf Course Culvert (Node 52)	-88.8	-13.0	-13.0	-9.4	-5.4	-3.7
Outlet of Dimond Canyon Park (Node 163)	-65.2	-13.5	-35.0	-16.5	-5.1	-5.1

Outlet to the Bay (Node 179)	-71.3	-14.7	-27.1	-10.2	-5.5	-4.3
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TOTAL VOLUME (10 ⁶ GAL CHANGE COMPARED TO EXISTING CONDITIONS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	0.8	0.5	-0.2	0.2	0.1	-0.3
Cobble Dick Creek Below Larry Lane Basin (Node 47)	0.3	0.2	0.1	0.1	0.1	-0.1
Outlet of Cobble Dick Creek (Node 30)	-2.5	0.3	-1.5	0.1	0.1	-0.1
Outlet of Shepard Canyon (Node SC-R)	-12.3	0.0	-0.8	-0.2	-0.3	-0.7
Outlet of Palo Seco Creek (Node 121)	-5.4	-2.5	-1.9	-1.5	-1.1	-0.2
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	-14.8	0.3	-4.6	-0.1	-0.2	-0.8
Inlet to the Golf Course Culvert (Node 52)	-20.2	-2.2	-4.2	-1.6	-1.3	-1.0
Outlet of Dimond Canyon Park (Node 163)	-27.0	-2.4	-9.4	-1.6	-1.4	-1.0
Outlet to the Bay (Node 179)	-28.0	-3.2	-9.9	-2.1	-1.7	-1.0

Sausal Creek Proposed Conditions Hydrology

Scenario 2: Subwatershed LID Implementation + Upper Watershed In-Line Detention Basins (Shepard Park Cistern, Larry Lane Basin)

RUNOFF QUANTITY

Return Interval	Total Precipitation Volume (acre-feet)	Total Precipitation Depth (in)	Surface Runoff (acre-feet)	Infiltration Loss (acre-feet)	Surface Storage (acre-feet)	Flow Continuity Error (%)	Routing
100 Year	1775.5	7.39	716.3	1031.5	33.3	-5.0	Dynamic Wave
25 Year	1363.1	5.67	525.5	815.0	26.3	-6.8	Dynamic Wave
10 Year	1108.2	4.61	417.1	670.8	22.8	-8.0	Dynamic Wave
5 Year	918.9	3.83	340.0	560.5	20.4	-3.2	Dynamic Wave
2 Year	652.6	2.72	236.2	400.3	17.1	-3.8	Dynamic Wave
1 Year	131.1	0.55	41.6	79.3	10.0	-1.7	Dynamic Wave

PEAK RUNOFF BY SUBBASIN (CFS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	257.9	202.7	166.1	136.0	94.1	12.6
Cobble Dick Creek Below Larry Lane Basin (Node 47)	74.1	64.0	56.4	40.4	31.7	2.0
Outlet of Cobble Dick Creek (Node 30)	139.9	113.4	100.6	78.3	59.2	5.0
Outlet of Shepard Canyon (Node SC-R)	399.0	309.7	252.7	206.5	141.0	18.7
Outlet of Palo Seco Creek (Node 121)	112.3	84.0	67.2	53.9	36.6	5.8

PEAK RUNOFF BY SUBBASIN (CFS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	538.6	421.0	353.2	284.7	199.9	23.3
Inlet to the Golf Course Culvert (Node 52)	650.8	504.6	420.3	338.5	236.3	28.2
Outlet of Dimond Canyon Park (Node 163)	1035.9	899.6	764.2	512.4	352.9	45.9
Outlet to the Bay (Node 179)	1046.5	867.0	715.0	576.1	398.8	47.2

TOTAL VOLUME (10 ⁶ GAL)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	43.5	32.1	25.8	20.1	13.9	2.0
Cobble Dick Creek Below Larry Lane Basin (Node 47)	15.9	12.3	10.6	6.7	4.8	0.6
Outlet of Cobble Dick Creek (Node 30)	28.0	18.1	17.7	12.5	8.8	1.3
Outlet of Shepard Canyon (Node SC-R)	64.4	46.7	37.7	29.7	20.5	3.2
Outlet of Palo Seco Creek (Node 121)	17.0	11.7	9.1	7.2	5.0	0.9
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	92.4	64.8	55.4	42.2	29.4	4.5
Inlet to the Golf Course Culvert (Node 52)	109.4	76.5	64.5	49.4	34.3	5.5
Outlet of Dimond Canyon Park (Node 163)	167.4	121.1	100.6	76.6	53.7	9.1
Outlet to the Bay (Node 179)	231.3	168.7	138.4	107.4	74.8	12.3

SCENARIO 2 CHANGE COMPARED TO EXISTING CONDITIONS

RUNOFF QUANTITY (CHANGE COMPARED TO EXISTING CONDITIONS)

Return Interval	Total Precipitation Volume (acre-feet)	Total Precipitation Depth (in)	Surface Runoff (acre-feet)	Infiltration Loss (acre-feet)	Surface Storage (acre-feet)
100 Year	0.0	0.0	-12.7	-1.5	19.8
25 Year	0.0	0.0	-8.7	-0.9	13.4
10 Year	0.0	0.0	-7.2	-0.6	10.3
5 Year	0.0	0.0	-6.1	-0.3	8.3
2 Year	0.0	0.0	-4.6	0.0	5.7
1 Year	0.0	0.0	-1.6	0.0	1.5

PEAK RUNOFF BY SUBBASIN (CFS CHANGE COMPARED TO EXISTING CONDITIONS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	-20.1	-11.5	-10.5	-6.9	-3.0	-4.5
Cobble Dick Creek Below Larry Lane Basin (Node 47)	-0.4	6.4	9.2	1.3	4.6	-2.9

PEAK RUNOFF BY SUBBASIN (CFS CHANGE COMPARED TO EXISTING CONDITIONS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Outlet of Cobble Dick Creek (Node 30)	1.0	5.0	8.7	2.0	5.4	-4.4
Outlet of Shepard Canyon (Node SC-R)	-73.4	-2.8	-1.8	-2.2	-1.0	-7.8
Outlet of Palo Seco Creek (Node 121)	-20.9	-16.8	-13.0	-11.0	-8.1	-1.0
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	-72.4	0.3	6.8	-0.2	4.1	-12.3
Inlet to the Golf Course Culvert (Node 52)	-93.2	-16.6	-6.0	-11.2	-4.1	-14.0
Outlet of Dimond Canyon Park (Node 163)	-70.2	-13.5	-25.5	-25.9	-10.3	-12.9
Outlet to the Bay (Node 179)	-76.0	-14.7	-20.2	-16.3	-9.8	-13.0

TOTAL VOLUME (10 ⁶ GAL CHANGE COMPARED TO EXISTING CONDITIONS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	1.1	1.2	0.6	0.0	-0.1	-0.7
Cobble Dick Creek Below Larry Lane Basin (Node 47)	3.4	3.3	3.5	0.9	0.8	-0.2
Outlet of Cobble Dick Creek (Node 30)	0.6	0.3	1.9	1.0	0.8	-0.3
Outlet of Shepard Canyon (Node SC-R)	-12.1	0.0	-0.2	-0.7	-0.7	-1.2
Outlet of Palo Seco Creek (Node 121)	-5.4	-2.5	-1.9	-1.7	-1.2	-0.2
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	-11.5	0.3	-0.6	0.3	0.1	-1.4
Inlet to the Golf Course Culvert (Node 52)	-16.9	-2.2	-0.2	-1.4	-1.1	-1.6
Outlet of Dimond Canyon Park (Node 163)	-23.3	-2.4	-5.1	-4.0	-3.5	-2.0
Outlet to the Bay (Node 179)	-24.4	-3.2	-5.7	-4.5	-3.8	-2.1

Sausal Creek Proposed Conditions Hydrology

Scenario 3: Subwatershed LID Implementation + Upper Watershed In-Line Detention Basins (Shepard Park Cistern, Larry Lane Basin) + Lower Watershed In-Line Detention Basins (Golf Course, Dimond Park)

RUNOFF QUANTITY

Return Interval	Total Precipitation Volume (acre-feet)	Total Precipitation Depth (in)	Surface Runoff (acre-feet)	Infiltration Loss (acre-feet)	Surface Storage (acre-feet)	Flow Continuity Error (%)	Routing
100 Year	1775.5	7.39	716.3	1031.5	33.3	-6.7	Dynamic Wave
25 Year	1363.1	5.67	525.5	815.0	26.3	-3.9	Dynamic Wave
10 Year	1108.2	4.61	417.1	670.8	22.8	-4.5	Dynamic Wave
5 Year	918.9	3.83	340.0	560.5	20.4	-4.6	Dynamic Wave
2 Year	652.6	2.72	236.2	400.3	17.1	-1.8	Dynamic Wave
1 Year	131.1	0.55	41.6	79.3	10.0	-1.7	Dynamic Wave

PEAK RUNOFF BY SUBBASIN (CFS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	257.8	202.6	165.1	136.0	93.0	12.6
Cobble Dick Creek Below Larry Lane Basin (Node 47)	74.0	64.9	54.9	40.3	30.2	2.0
Outlet of Cobble Dick Creek (Node 30)	139.8	115.0	98.9	78.3	57.3	5.0
Outlet of Shepard Canyon (Node SC-R)	399.1	309.9	251.3	206.4	139.8	18.7
Outlet of Palo Seco Creek (Node 121)	112.4	83.9	66.8	53.9	36.4	5.7
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	538.9	424.7	350.3	284.8	196.6	23.3
Outlet of the Golf Course Basin (GolfCourseOutlet)	641.9	500.7	411.5	335.2	229.0	20.9
Outlet of Dimond Canyon Park (Node 163)	965.4	711.5	583.7	480.0	337.0	24.9
Outlet to the Bay (Node 179)	1020.6	835.4	679.9	556.9	381.7	30.2

TOTAL VOLUME (10 ⁶ GAL)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	43.5	31.1	24.6	20.1	13.4	2.0
Cobble Dick Creek Below Larry Lane Basin (Node 47)	15.8	10.5	8.7	6.7	4.1	0.6
Outlet of Cobble Dick Creek (Node 30)	27.9	19.4	15.8	12.5	8.1	1.3
Outlet of Shepard Canyon (Node SC-R)	64.4	46.1	36.5	29.7	20.0	3.2
Outlet of Palo Seco Creek (Node 121)	17.0	11.6	8.9	7.2	4.9	0.9
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	92.3	65.6	52.3	42.2	28.2	4.5
Outlet of the Golf Course Basin (GolfCourseOutlet)	112.2	77.9	61.9	49.9	32.6	4.6
Outlet of Dimond Canyon Park (Node 163)	170.0	118.8	94.4	76.7	50.7	7.7
Outlet to the Bay (Node 179)	233.9	166.3	132.2	107.5	71.9	10.9

SCENARIO 3 CHANGE COMPARED TO EXISTING CONDITIONS

RUNOFF QUANTITY (CHANGE COMPARED TO EXISTING CONDITIONS)

Return Interval	Total Precipitation Volume (acre-feet)	Total Precipitation Depth (in)	Surface Runoff (acre-feet)	Infiltration Loss (acre-feet)	Surface Storage (acre-feet)
100 Year	0.0	0.0	-12.7	-1.5	19.8
25 Year	0.0	0.0	-8.7	-0.9	13.4
10 Year	0.0	0.0	-7.2	-0.6	10.3
5 Year	0.0	0.0	-6.1	-0.3	8.3
2 Year	0.0	0.0	-4.6	0.0	5.7

1 Year	0.0	0.0	-1.6	0.0	1.5
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PEAK RUNOFF BY SUBBASIN (CFS CHANGE COMPARED TO EXISTING CONDITIONS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	-20.1	-11.6	-11.6	-6.9	-4.1	-4.5
Cobble Dick Creek Below Larry Lane Basin (Node 47)	-0.5	7.4	7.7	1.2	3.1	-2.9
Outlet of Cobble Dick Creek (Node 30)	0.9	6.6	7.0	2.0	3.5	-4.4
Outlet of Shepard Canyon (Node SC-R)	-73.2	-2.6	-3.2	-2.3	-2.3	-7.8
Outlet of Palo Seco Creek (Node 121)	-20.8	-16.9	-13.4	-11.1	-8.3	-1.0
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	-72.1	4.0	3.9	-0.1	0.8	-12.3
Outlet of the Golf Course Basin (GolfCourseOutlet)	-102.1	-20.6	-14.8	-14.5	-11.4	-21.4
Outlet of Dimond Canyon Park (Node 163)	-140.7	-201.6	-206.0	-58.3	-26.2	-34.0
Outlet to the Bay (Node 179)	-101.9	-46.4	-55.3	-35.5	-26.9	-29.9

TOTAL VOLUME (10 ⁶ GAL CHANGE COMPARED TO EXISTING CONDITIONS)						
Storm Return Frequency						
Reach	100 Year	25 Year	10 Year	5 Year	2 Year	1 Year
Shepard Canyon Below Shepard Park (Node SC-F / ShepParkOutlet)	1.1	0.2	-0.5	0.0	-0.6	-0.7
Cobble Dick Creek Below Larry Lane Basin (Node 47)	3.3	1.6	1.6	0.9	0.1	-0.2
Outlet of Cobble Dick Creek (Node 30)	0.5	1.7	0.0	1.0	0.1	-0.3
Outlet of Shepard Canyon (Node SC-R)	-12.1	-0.6	-1.4	-0.7	-1.2	-1.2
Outlet of Palo Seco Creek (Node 121)	-5.4	-2.7	-2.1	-1.7	-1.3	-0.2
Sausal Creek Upstream of Palo Seco Creek Confluence (Node 32)	-11.6	1.1	-3.7	0.3	-1.1	-1.4
Outlet of the Golf Course Basin (GolfCourseOutlet)	-14.1	-0.7	-2.8	-0.9	-2.9	-2.5
Outlet of Dimond Canyon Park (Node 163)	-20.7	-4.8	-11.3	-3.9	-6.4	-3.4
Outlet to the Bay (Node 179)	-21.8	-5.5	-11.9	-4.4	-6.7	-3.5

APPENDIX F

HEC-RAS MODEL OUTPUT SAUSAL CREEK WATERSHED

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	1	38.2	100YR E	610.90	414.89	419.73		420.62	0.023857	8.01	5.99	86.20	26.76	0.67
Sausal	1	38.2	100YR P	543.00	414.89	419.40		420.27	0.025190	7.83	5.87	77.67	25.87	0.68
Sausal	1	38.2	25YR E	420.70	414.89	418.81		419.60	0.027200	7.35	5.44	62.91	24.24	0.69
Sausal	1	38.2	25YR P	424.60	414.89	418.80		419.61	0.028088	7.45	5.60	62.60	24.21	0.70
Sausal	1	38.2	10YR E	346.30	414.89	418.38		419.12	0.030364	7.11	5.32	52.52	22.90	0.71
Sausal	1	38.2	10YR P	346.20	414.89	418.36		419.12	0.030988	7.16	5.40	52.13	22.82	0.72
Sausal	1	38.2	5YR E	284.90	414.89	417.99		418.69	0.033514	6.84	5.15	43.99	21.04	0.73
Sausal	1	38.2	5YR P	286.40	414.89	418.00		418.71	0.033293	6.84	5.14	44.27	21.11	0.73
Sausal	1	38.2	2YR E	195.70	414.89	417.88	417.01	418.24	0.018351	4.92	2.71	41.71	20.52	0.54
Sausal	1	38.2	2YR P	198.00	414.89	417.94	417.02	418.29	0.017305	4.85	2.61	42.95	20.81	0.52
Sausal	1	38.2	1YR E	35.60	414.89	416.20		416.30	0.014794	2.48	0.91	14.38	13.62	0.42
Sausal	1	38.2	1YR P	32.79	414.89	416.12		416.21	0.016169	2.48	0.94	13.24	13.46	0.44
Sausal	1	38	100YR E	610.90	412.89	419.03		419.48	0.008824	5.77	2.86	123.43	30.36	0.42
Sausal	1	38	100YR P	543.00	412.89	418.68		419.10	0.008934	5.57	2.72	112.83	29.38	0.42
Sausal	1	38	25YR E	420.70	412.89	418.11		418.45	0.008274	4.98	2.25	96.48	27.80	0.40
Sausal	1	38	25YR P	424.60	412.89	418.02		418.39	0.009013	5.13	2.41	94.17	27.57	0.41
Sausal	1	38	10YR E	346.30	412.89	417.59		417.91	0.008639	4.72	2.10	82.58	26.39	0.40
Sausal	1	38	10YR P	346.20	412.89	417.51		417.84	0.009320	4.84	2.23	80.34	26.15	0.41
Sausal	1	38	5YR E	284.90	412.89	417.02		417.33	0.010135	4.65	2.14	67.78	24.79	0.42
Sausal	1	38	5YR P	286.40	412.89	416.86		417.21	0.012065	4.93	2.44	63.90	24.36	0.46
Sausal	1	38	2YR E	195.70	412.89	415.09	415.01	415.90	0.063760	7.23	6.57	27.19	15.94	0.94
Sausal	1	38	2YR P	198.00	412.89	415.03	415.03	415.91	0.073191	7.57	7.29	26.22	15.56	1.00
Sausal	1	38	1YR E	35.60	412.89	413.71	413.71	414.03	0.094903	4.51	3.57	7.90	12.73	1.01
Sausal	1	38	1YR P	32.79	412.89	413.73	413.67	413.98	0.072600	4.02	2.81	8.16	12.77	0.89
Sausal	2	35.5	100YR E	744.00	409.89	418.90	414.44	419.11	0.002629	4.12	1.28	222.48	38.95	0.25
Sausal	2	35.5	100YR P	655.20	409.89	418.56	414.16	418.75	0.002397	3.83	1.12	209.49	37.87	0.23
Sausal	2	35.5	25YR E	521.30	409.89	418.01	413.70	418.15	0.002007	3.35	0.87	188.89	36.09	0.21
Sausal	2	35.5	25YR P	508.30	409.89	417.94	413.66	418.08	0.001980	3.31	0.85	186.33	35.86	0.21
Sausal	2	35.5	10YR E	426.30	409.89	417.51	413.29	417.63	0.001745	2.99	0.71	171.45	34.51	0.20
Sausal	2	35.5	10YR P	413.30	409.89	417.44	413.23	417.55	0.001709	2.94	0.69	168.90	34.27	0.19
Sausal	2	35.5	5YR E	349.80	409.89	416.95	412.93	417.05	0.001620	2.73	0.61	152.43	32.89	0.19
Sausal	2	35.5	5YR P	340.30	409.89	416.80	412.88	416.90	0.001675	2.73	0.62	147.60	32.48	0.19
Sausal	2	35.5	2YR E	240.40	409.89	415.12	412.30	415.23	0.002676	2.83	0.73	96.81	27.84	0.23
Sausal	2	35.5	2YR P	235.10	409.89	415.03	412.27	415.14	0.002740	2.84	0.73	94.46	27.60	0.23
Sausal	2	35.5	1YR E	42.26	409.89	411.20	410.79	411.33	0.021191	2.96	1.30	14.30	13.61	0.51
Sausal	2	35.5	1YR P	38.53	409.89	411.08	410.74	411.22	0.025364	3.03	1.42	12.70	13.39	0.55
Sausal	2	35.4		Culvert										
Sausal	2	35	100YR E	744.00	326.57	333.99	332.00	334.59	0.011608	6.57	3.72	129.86	33.92	0.47
Sausal	2	35	100YR P	655.20	326.57	333.65		334.20	0.011330	6.25	3.43	118.65	32.08	0.46
Sausal	2	35	25YR E	521.30	326.57	333.07		333.54	0.010885	5.71	2.96	100.85	28.93	0.44
Sausal	2	35	25YR P	508.30	326.57	333.01		333.47	0.010828	5.65	2.91	99.10	28.60	0.44
Sausal	2	35	10YR E	426.30	326.57	332.59		333.00	0.010468	5.26	2.59	87.72	26.37	0.42
Sausal	2	35	10YR P	413.30	326.57	332.52		332.92	0.010399	5.19	2.54	85.90	25.99	0.42
Sausal	2	35	5YR E	349.80	326.57	332.15		332.50	0.010083	4.84	2.27	76.68	24.03	0.41
Sausal	2	35	5YR P	340.30	326.57	332.09		332.44	0.010029	4.78	2.23	75.28	23.76	0.41
Sausal	2	35	2YR E	240.40	326.57	331.41	329.60	331.67	0.009409	4.12	1.75	60.02	20.56	0.38
Sausal	2	35	2YR P	235.10	326.57	331.36	329.55	331.62	0.009387	4.08	1.73	59.14	20.36	0.38
Sausal	2	35	1YR E	42.26	326.57	328.94		329.00	0.006819	2.08	0.58	20.33	13.39	0.30
Sausal	2	35	1YR P	38.53	326.57	328.85		328.92	0.006711	2.01	0.55	19.21	13.27	0.29
Sausal	2	34	100YR E	744.00	321.02	324.23	324.23	325.59	0.049890	9.85	9.82	83.39	31.82	0.98
Sausal	2	34	100YR P	655.20	321.02	323.99	323.99	325.26	0.051575	9.49	9.38	75.77	31.06	0.98
Sausal	2	34	25YR E	521.30	321.02	323.61	323.61	324.72	0.053972	8.84	8.53	64.16	29.87	0.98
Sausal	2	34	25YR P	508.30	321.02	323.57	323.57	324.66	0.054239	8.77	8.44	63.00	29.75	0.98
Sausal	2	34	10YR E	426.30	321.02	323.31	323.31	324.30	0.056276	8.31	7.85	55.44	28.95	0.98
Sausal	2	34	10YR P	413.30	321.02	323.27	323.27	324.24	0.056666	8.23	7.75	54.21	28.81	0.98
Sausal	2	34	5YR E	349.80	321.02	323.06	323.06	323.94	0.058499	7.81	7.22	48.11	28.15	0.98
Sausal	2	34	5YR P	340.30	321.02	323.02	323.02	323.89	0.058813	7.74	7.14	47.18	28.04	0.98
Sausal	2	34	2YR E	240.40	321.02	322.65	322.65	323.35	0.062821	6.94	6.15	36.86	26.85	0.98
Sausal	2	34	2YR P	235.10	321.02	322.63	322.63	323.32	0.062731	6.87	6.07	36.35	26.79	0.97
Sausal	2	34	1YR E	42.26	321.02	321.59	321.59	321.83	0.093716	4.00	2.98	10.79	22.29	0.99
Sausal	2	34	1YR P	38.53	321.02	321.56	321.56	321.79	0.096693	3.90	2.89	10.09	22.15	0.99
Sausal	2	33	100YR E	744.00	316.37	321.77		323.02	0.021837	9.15	7.16	88.07	18.73	0.70
Sausal	2	33	100YR P	655.20	316.37	321.64		322.66	0.018420	8.27	5.89	85.68	18.64	0.64
Sausal	2	33	25YR E	521.30	316.37	321.38		322.10	0.013942	6.95	4.23	80.83	18.44	0.55
Sausal	2	33	25YR P	508.30	316.37	321.35		322.05	0.013517	6.81	4.08	80.32	18.42	0.55
Sausal	2	33	10YR E	426.30	316.37	321.13		321.67	0.011153	6.00	3.21	76.26	18.25	0.49
Sausal	2	33	10YR P	413.30	316.37	321.10		321.62	0.010669	5.85	3.06	75.82	18.23	0.48
Sausal	2	33	5YR E	349.80	316.37	320.90		321.30	0.008928	5.19	2.44	72.10	18.08	0.44
Sausal	2	33	5YR P	340.30	316.37	320.86		321.25	0.008702	5.09	2.36	71.42	18.05	0.43
Sausal	2	33	2YR E	240.40	316.37	320.43		320.67	0.006187	4.01	1.51	63.71	17.73	0.36
Sausal	2	33	2YR P	235.10	316.37	320.40		320.63	0.006085	3.95	1.48	63.15	17.70	0.35
Sausal	2	33	1YR E	42.26	316.37	317.14	317.14	317.45	0.090840	4.52	3.55	9.41	15.25	1.01
Sausal	2	33	1YR P	38.53	316.37	317.10	317.10	317.40	0.092656	4.38	3.41	8.85	15.22	1.01
Sausal	2	32	100YR E	744.00	314.08	322.36	317.39	322.48	0.001388	2.93	0.65	287.21	53.40	0.19
Sausal	2	32	100YR P	655.20	314.08	322.11	317.18	322.21	0.001219	2.69	0.55	274.10	51.64	0.17
Sausal	2	32	25YR E	521.30	314.08	321.70	316.83	321.77	0.000955	2.29	0.41	253.32	48.71	0.15
Sausal	2	32	25YR P	508.30	314.08	321.66	316.80	321.73	0.000927	2.24	0.39	251.31	48.41	0.15
Sausal	2	32	10YR E	426.30	314.08	321.36	316.58	321.42	0.000765	1.98	0.31	237.25	46.32	0.14
Sausal	2	32	10YR P	413.30	314.08	321.32	316.54	321.37	0.000734	1.93	0.30	235.51	46.05	0.13
Sausal	2	32	5YR E	349.80	314.08	321.07	316.34	321.11	0.000605	1.71	0.24	224.00	44.25	0.12
Sausal	2	32	5YR P	340.30	314.08	321.02	316.31	321.06	0.000587	1.67	0.23	222.04	43.93	0.12
Sausal	2	32	2YR E	240.40	314.08	320.53	315.94	320.55	0.000390	1.29	0.14	201.12	40.82	0.10
Sausal	2	32	2YR P	235.10	314.08	320.49	315.92	320.51	0.000381	1.27	0.13	199.70	40.75	0.09
Sausal	2	32	1YR E	42.26										

HEC-RAS Plan: Scenario1 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	31.5		Culvert										
Sausal	2	30	100YR E	744.00	300.16	302.61	302.61	303.70	0.054861	8.59	8.20	91.38	42.92	0.98
Sausal	2	30	100YR P	655.20	300.16	302.42	302.42	303.43	0.056629	8.27	7.80	83.37	42.29	0.98
Sausal	2	30	25YR E	521.30	300.16	302.11	302.11	303.00	0.060048	7.71	7.13	70.67	41.05	0.99
Sausal	2	30	25YR P	508.30	300.16	302.09	302.09	302.96	0.060146	7.64	7.03	69.51	40.93	0.98
Sausal	2	30	10YR E	426.30	300.16	301.88	301.88	302.67	0.063087	7.24	6.57	61.21	40.09	0.99
Sausal	2	30	10YR P	413.30	300.16	301.85	301.85	302.62	0.063582	7.17	6.49	59.87	39.96	0.99
Sausal	2	30	5YR E	349.80	300.16	301.68	301.68	302.38	0.065738	6.79	6.03	53.31	39.28	0.99
Sausal	2	30	5YR P	340.30	300.16	301.65	301.65	302.34	0.066310	6.74	5.97	52.25	39.17	0.99
Sausal	2	30	2YR E	240.40	300.16	301.40	301.36	301.91	0.064925	5.85	4.80	42.29	38.11	0.95
Sausal	2	30	2YR P	235.10	300.16	301.38	301.35	301.89	0.064507	5.78	4.72	41.79	38.06	0.94
Sausal	2	30	1YR E	42.26	300.16	300.64	300.58	300.77	0.064568	2.94	1.71	14.51	35.01	0.80
Sausal	2	30	1YR P	38.53	300.16	300.61	300.56	300.74	0.067109	2.87	1.67	13.55	34.89	0.80
Sausal	2	29	100YR E	744.00	296.60	299.11	299.11	300.30	0.060017	8.84	8.75	85.84	36.55	1.00
Sausal	2	29	100YR P	655.20	296.60	298.91	298.91	300.01	0.061645	8.50	8.30	78.54	36.26	1.00
Sausal	2	29	25YR E	521.30	296.60	298.59	298.59	299.54	0.064064	7.89	7.50	67.19	35.81	1.00
Sausal	2	29	25YR P	508.30	296.60	298.56	298.56	299.50	0.064378	7.82	7.42	66.03	35.77	1.00
Sausal	2	29	10YR E	426.30	296.60	298.35	298.35	299.19	0.066932	7.41	6.90	58.41	35.42	1.00
Sausal	2	29	10YR P	413.30	296.60	298.31	298.31	299.14	0.067317	7.33	6.80	57.18	35.35	1.00
Sausal	2	29	5YR E	349.80	296.60	298.14	298.14	298.88	0.069003	6.93	6.29	51.13	35.04	1.00
Sausal	2	29	5YR P	340.30	296.60	298.11	298.11	298.84	0.069580	6.88	6.23	50.13	34.98	1.00
Sausal	2	29	2YR E	240.40	296.60	297.80	297.80	298.39	0.074982	6.15	5.37	39.47	34.42	1.00
Sausal	2	29	2YR P	235.10	296.60	297.79	297.79	298.36	0.075310	6.11	5.32	38.88	34.38	1.00
Sausal	2	29	1YR E	42.26	296.60	297.03	296.99	297.19	0.078240	3.15	1.99	13.45	32.99	0.87
Sausal	2	29	1YR P	38.53	296.60	297.02	297.02	297.15	0.074951	3.00	1.83	12.89	32.96	0.84
Sausal	2	28	100YR E	744.00	289.82	292.39	292.37	293.55	0.055568	8.75	8.45	87.36	37.79	0.99
Sausal	2	28	100YR P	655.20	289.82	292.18	292.18	293.27	0.058379	8.44	8.11	79.50	37.46	1.00
Sausal	2	28	25YR E	521.30	289.82	291.86	291.86	292.81	0.061644	7.84	7.36	67.85	36.96	1.00
Sausal	2	28	25YR P	508.30	289.82	291.83	291.83	292.76	0.061983	7.78	7.28	66.69	36.91	1.00
Sausal	2	28	10YR E	426.30	289.82	291.63	291.63	292.45	0.064437	7.34	6.74	59.12	36.59	1.00
Sausal	2	28	10YR P	413.30	289.82	291.59	291.59	292.40	0.064952	7.27	6.66	57.86	36.53	1.00
Sausal	2	28	5YR E	349.80	289.82	291.42	291.42	292.15	0.067519	6.88	6.19	51.60	36.26	1.00
Sausal	2	28	5YR P	340.30	289.82	291.39	291.39	292.11	0.067784	6.82	6.11	50.68	36.22	1.00
Sausal	2	28	2YR E	240.40	289.82	291.10	291.10	291.67	0.073628	6.09	5.27	39.94	35.75	1.00
Sausal	2	28	2YR P	235.10	289.82	291.08	291.08	291.64	0.074034	6.05	5.22	39.33	35.72	1.00
Sausal	2	28	1YR E	42.26	289.82	290.31	290.31	290.49	0.106307	3.40	2.41	12.45	34.51	0.99
Sausal	2	28	1YR P	38.53	289.82	290.29	290.29	290.46	0.111910	3.33	2.36	11.59	34.47	0.91
Sausal	2	27	100YR E	744.00	286.78	290.07	290.07	291.14	0.035203	8.43	7.13	92.80	31.30	0.82
Sausal	2	27	100YR P	655.20	286.78	289.89	289.89	290.82	0.033378	7.89	6.38	87.03	30.99	0.80
Sausal	2	27	25YR E	521.30	286.78	289.56	289.56	290.31	0.031215	7.07	5.32	76.89	30.44	0.75
Sausal	2	27	25YR P	508.30	286.78	289.52	289.52	290.26	0.030985	6.99	5.22	75.85	30.38	0.75
Sausal	2	27	10YR E	426.30	286.78	289.29	289.29	289.92	0.029634	6.44	4.56	68.83	29.99	0.72
Sausal	2	27	10YR P	413.30	286.78	289.25	289.25	289.86	0.029432	6.35	4.46	67.64	29.92	0.72
Sausal	2	27	5YR E	349.80	286.78	289.05	289.05	289.57	0.028408	5.88	3.94	61.59	29.58	0.70
Sausal	2	27	5YR P	340.30	286.78	289.02	289.02	289.53	0.028163	5.80	3.85	60.70	29.53	0.69
Sausal	2	27	2YR E	240.40	286.78	288.65	288.65	289.02	0.026129	4.95	2.98	50.00	28.92	0.65
Sausal	2	27	2YR P	235.10	286.78	288.63	288.63	288.99	0.026014	4.90	2.93	49.38	28.88	0.64
Sausal	2	27	1YR E	42.26	286.78	287.52	287.52	287.60	0.021164	2.33	0.91	18.30	27.03	0.49
Sausal	2	27	1YR P	38.53	286.78	287.48	287.48	287.56	0.021102	2.25	0.86	17.32	26.96	0.49
Sausal	2	26	100YR E	744.00	281.33	284.47	284.47	285.60	0.055120	8.61	8.24	88.67	40.09	0.98
Sausal	2	26	100YR P	655.20	281.33	284.26	284.26	285.32	0.057949	8.32	7.93	80.53	39.49	0.99
Sausal	2	26	25YR E	521.30	281.33	283.95	283.95	284.88	0.061521	7.75	7.23	68.43	38.58	0.99
Sausal	2	26	25YR P	508.30	281.33	283.92	283.92	284.83	0.061965	7.69	7.16	67.21	38.49	0.99
Sausal	2	26	10YR E	426.30	281.33	283.72	283.72	284.53	0.064864	7.28	6.66	59.36	37.88	1.00
Sausal	2	26	10YR P	413.30	281.33	283.68	283.68	284.48	0.065287	7.20	6.57	58.11	37.79	1.00
Sausal	2	26	5YR E	349.80	281.33	283.52	283.52	284.23	0.067586	6.81	6.10	51.83	37.29	1.00
Sausal	2	26	5YR P	340.30	281.33	283.49	283.49	284.19	0.068314	6.76	6.05	50.78	37.21	1.00
Sausal	2	26	2YR E	240.40	281.33	283.19	283.19	283.76	0.075034	6.06	5.25	39.83	36.34	1.01
Sausal	2	26	2YR P	235.10	281.33	283.17	283.17	283.73	0.075441	6.02	5.20	39.23	36.29	1.01
Sausal	2	26	1YR E	42.26	281.33	282.27	282.27	282.52	0.101683	3.96	2.99	10.68	22.58	1.01
Sausal	2	26	1YR P	38.53	281.33	282.24	282.24	282.47	0.102276	3.88	2.90	9.94	21.79	1.01
Sausal	2	25	100YR E	744.00	277.43	281.93	281.93	282.60	0.017559	6.72	4.26	118.76	35.86	0.60
Sausal	2	25	100YR P	655.20	277.43	281.72	281.72	282.30	0.016657	6.30	3.82	111.06	35.23	0.58
Sausal	2	25	25YR E	521.30	277.43	281.34	281.34	281.81	0.015356	5.63	3.16	98.08	34.15	0.54
Sausal	2	25	25YR P	508.30	277.43	281.31	281.31	281.77	0.015184	5.56	3.09	96.82	34.04	0.54
Sausal	2	25	10YR E	426.30	277.43	281.06	281.06	281.44	0.014064	5.08	2.65	88.45	33.32	0.51
Sausal	2	25	10YR P	413.30	277.43	281.02	281.02	281.39	0.013891	5.00	2.58	87.03	33.20	0.51
Sausal	2	25	5YR E	349.80	277.43	280.79	280.79	281.11	0.013095	4.60	2.25	79.58	32.54	0.49
Sausal	2	25	5YR P	340.30	277.43	280.75	280.75	281.06	0.013029	4.55	2.20	78.29	32.43	0.49
Sausal	2	25	2YR E	240.40	277.43	280.34	280.34	280.56	0.011395	3.82	1.64	65.31	31.24	0.44
Sausal	2	25	2YR P	235.10	277.43	280.32	280.32	280.53	0.011280	3.77	1.61	64.59	31.18	0.44
Sausal	2	25	1YR E	42.26	277.43	278.95	278.95	278.99	0.007925	1.73	0.46	24.57	27.05	0.32
Sausal	2	25	1YR P	38.53	277.43	278.89	278.89	278.93	0.007804	1.69	0.44	22.99	26.02	0.31
Sausal	2	24	100YR E	744.00	274.71	278.20	278.20	278.9						

HEC-RAS Plan: Scenario1 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	23	100YR E	744.00	269.26	274.25	273.46	275.12	0.019405	8.00	5.68	107.15	30.08	0.65
Sausal	2	23	100YR P	655.20	269.26	273.98	273.23	274.77	0.019042	7.61	5.25	98.88	29.80	0.64
Sausal	2	23	25YR E	521.30	269.26	273.52	272.82	274.20	0.018413	6.96	4.55	85.45	29.34	0.61
Sausal	2	23	25YR P	508.30	269.26	273.48	272.70	274.14	0.018307	6.89	4.48	84.13	29.30	0.61
Sausal	2	23	10YR E	426.30	269.26	273.19	272.30	273.77	0.017292	6.37	3.93	75.87	29.01	0.59
Sausal	2	23	10YR P	413.30	269.26	273.14	272.24	273.71	0.017163	6.29	3.84	74.42	28.96	0.58
Sausal	2	23	5YR E	349.80	269.26	272.87	271.87	273.38	0.016728	5.90	3.47	66.64	28.69	0.57
Sausal	2	23	5YR P	340.30	269.26	272.82	271.84	273.32	0.016808	5.85	3.43	65.20	28.64	0.57
Sausal	2	23	2YR E	240.40	269.26	272.30	271.41	272.68	0.015787	5.06	2.71	51.41	24.23	0.54
Sausal	2	23	2YR P	235.10	269.26	272.27	271.38	272.65	0.015699	5.01	2.67	50.68	23.96	0.53
Sausal	2	23	1YR E	42.26	269.26	270.64	270.72	270.72	0.011504	2.34	0.79	18.35	17.61	0.39
Sausal	2	23	1YR P	38.53	269.26	270.58	270.66	270.66	0.011354	2.24	0.74	17.39	17.49	0.39
Sausal	2	22	100YR E	744.00	265.90	269.08	269.08	270.47	0.049376	9.67	9.54	82.07	30.64	0.97
Sausal	2	22	100YR P	655.20	265.90	268.85	268.85	270.13	0.050462	9.28	9.02	74.98	30.23	0.97
Sausal	2	22	25YR E	521.30	265.90	268.47	268.47	269.59	0.052520	8.62	8.15	63.71	29.57	0.96
Sausal	2	22	25YR P	508.30	265.90	268.43	268.43	269.53	0.052942	8.56	8.08	62.49	29.45	0.96
Sausal	2	22	10YR E	426.30	265.90	268.12	268.12	269.15	0.058819	8.25	7.86	53.77	27.71	0.99
Sausal	2	22	10YR P	413.30	265.90	268.07	268.07	269.09	0.059627	8.19	7.79	52.47	27.45	1.00
Sausal	2	22	5YR E	349.80	265.90	267.85	267.85	268.77	0.062345	7.77	7.28	46.50	26.45	1.00
Sausal	2	22	5YR P	340.30	265.90	267.83	267.83	268.72	0.061550	7.66	7.10	45.89	26.41	0.99
Sausal	2	22	2YR E	240.40	265.90	267.45	267.45	268.17	0.066528	6.84	6.11	36.06	25.77	0.99
Sausal	2	22	2YR P	235.10	265.90	267.43	267.43	268.13	0.067041	6.79	6.06	35.48	25.73	0.99
Sausal	2	22	1YR E	42.26	265.90	266.45	266.45	266.68	0.098956	3.87	2.87	11.00	24.05	1.00
Sausal	2	22	1YR P	38.53	265.90	266.42	266.42	266.64	0.102195	3.76	2.78	10.30	24.00	1.01
Sausal	2	21	100YR E	744.00	263.02	266.80	266.80	267.36	0.015384	6.13	3.59	128.14	38.09	0.56
Sausal	2	21	100YR P	655.20	263.02	266.56	266.56	267.06	0.014962	5.78	3.27	119.14	37.54	0.54
Sausal	2	21	25YR E	521.30	263.02	266.16	266.16	266.57	0.014346	5.23	2.78	104.33	36.72	0.52
Sausal	2	21	25YR P	508.30	263.02	266.12	266.12	266.52	0.014288	5.17	2.73	102.79	36.63	0.52
Sausal	2	21	10YR E	426.30	263.02	265.84	265.84	266.19	0.013970	4.79	2.43	92.58	36.06	0.51
Sausal	2	21	10YR P	413.30	263.02	265.80	265.80	266.13	0.013889	4.73	2.37	90.95	35.97	0.50
Sausal	2	21	5YR E	349.80	263.02	265.56	265.56	265.85	0.013536	4.39	2.11	82.51	35.49	0.49
Sausal	2	21	5YR P	340.30	263.02	265.53	265.53	265.81	0.013409	4.33	2.07	81.34	35.43	0.49
Sausal	2	21	2YR E	240.40	263.02	265.09	265.09	265.30	0.013018	3.75	1.65	66.00	34.54	0.46
Sausal	2	21	2YR P	235.10	263.02	265.06	265.06	265.27	0.012999	3.71	1.63	65.11	34.48	0.46
Sausal	2	21	1YR E	42.26	263.02	263.80	263.80	263.85	0.012088	1.84	0.56	23.12	31.91	0.38
Sausal	2	21	1YR P	38.53	263.02	263.76	263.76	263.81	0.012142	1.78	0.53	21.83	31.83	0.37
Sausal	2	20	100YR E	744.00	260.09	264.12	264.12	264.81	0.022088	6.78	4.58	115.71	41.01	0.65
Sausal	2	20	100YR P	655.20	260.09	263.84	263.84	264.49	0.023345	6.57	4.43	104.34	39.59	0.66
Sausal	2	20	25YR E	521.30	260.09	263.41	263.41	263.98	0.024853	6.13	4.05	87.95	37.23	0.67
Sausal	2	20	25YR P	508.30	260.09	263.37	263.37	263.93	0.025020	6.08	4.01	86.34	37.02	0.67
Sausal	2	20	10YR E	426.30	260.09	263.09	263.09	263.59	0.026086	5.75	3.73	76.11	35.84	0.67
Sausal	2	20	10YR P	413.30	260.09	263.04	263.04	263.54	0.026217	5.69	3.67	74.51	35.72	0.67
Sausal	2	20	5YR E	349.80	260.09	262.81	262.81	263.25	0.027296	5.40	3.43	66.22	35.12	0.67
Sausal	2	20	5YR P	340.30	260.09	262.77	262.77	263.21	0.027405	5.35	3.38	65.00	35.03	0.67
Sausal	2	20	2YR E	240.40	260.09	262.39	262.39	262.73	0.027994	4.69	2.80	51.95	34.06	0.65
Sausal	2	20	2YR P	235.10	260.09	262.37	262.37	262.71	0.028028	4.65	2.76	51.22	34.00	0.65
Sausal	2	20	1YR E	42.26	260.09	261.32	261.32	261.41	0.027646	2.45	1.06	17.22	28.06	0.55
Sausal	2	20	1YR P	38.53	260.09	261.28	261.28	261.37	0.027443	2.39	1.01	16.11	27.14	0.55
Sausal	2	19	100YR E	744.00	255.79	260.21	260.21	261.96	0.052958	10.71	11.31	71.95	21.33	1.00
Sausal	2	19	100YR P	655.20	255.79	259.93	259.93	261.54	0.054095	10.25	10.65	65.99	21.14	1.00
Sausal	2	19	25YR E	521.30	255.79	259.45	259.45	260.85	0.057870	9.56	9.75	56.02	20.82	1.00
Sausal	2	19	25YR P	508.30	255.79	259.41	259.41	260.79	0.058190	9.48	9.64	55.06	20.79	1.00
Sausal	2	19	10YR E	426.30	255.79	259.10	259.10	260.33	0.060422	8.94	8.92	48.79	20.58	1.00
Sausal	2	19	10YR P	413.30	255.79	259.05	259.05	260.26	0.060996	8.85	8.81	47.72	20.55	1.00
Sausal	2	19	5YR E	349.80	255.79	258.81	258.81	259.88	0.062181	8.34	8.09	42.79	20.38	1.00
Sausal	2	19	5YR P	340.30	255.79	258.77	258.77	259.82	0.062619	8.26	7.99	41.97	20.36	1.00
Sausal	2	19	2YR E	240.40	255.79	258.32	258.32	259.17	0.069470	7.43	6.99	32.83	20.05	1.01
Sausal	2	19	2YR P	235.10	255.79	258.29	258.29	259.13	0.069883	7.37	6.93	32.33	20.03	1.01
Sausal	2	19	1YR E	42.26	255.79	257.12	257.12	257.42	0.098454	4.43	3.51	9.57	16.05	1.01
Sausal	2	19	1YR P	38.53	255.79	257.07	257.07	257.36	0.101518	4.38	3.48	8.82	15.35	1.01
Sausal	2	18	100YR E	744.00	247.75	252.62	252.32	254.29	0.039737	10.39	10.06	72.60	17.87	0.90
Sausal	2	18	100YR P	655.20	247.75	252.38	252.02	253.84	0.037602	9.71	8.97	68.31	17.83	0.87
Sausal	2	18	25YR E	521.30	247.75	251.96	251.51	253.12	0.034935	8.67	7.43	60.76	17.74	0.82
Sausal	2	18	25YR P	508.30	247.75	251.91	251.46	253.05	0.034685	8.57	7.28	59.96	17.73	0.81
Sausal	2	18	10YR E	426.30	247.75	251.61	251.14	252.57	0.033232	7.88	6.36	54.58	17.67	0.78
Sausal	2	18	10YR P	413.30	247.75	251.55	251.08	252.49	0.033049	7.77	6.22	53.65	17.66	0.78
Sausal	2	18	5YR E	349.80	247.75	251.28	250.80	252.09	0.032267	7.22	5.53	48.83	17.61	0.76
Sausal	2	18	5YR P	340.30	247.75	251.23	250.75	252.03	0.032255	7.14	5.44	48.02	17.60	0.76
Sausal	2	18	2YR E	240.40	247.75	250.72	250.72	251.31	0.032226	6.21	4.41	38.90	17.50	0.73
Sausal	2	18	2YR P	235.10	247.75	250.69	250.69	251.27	0.032225	6.16	4.36	38.38	17.50	0.73
Sausal	2	18	1YR E	42.26	247.75	249.16	248.94	249.33	0.035257	3.34	1.78	12.64	15.41	0.65
Sausal	2	18	1YR P	38.53	247.75	249.11	248.90	249.28	0.035074	3.23	1.69	11.95	15.30	0.64
Sausal	2	17	100YR E	744.00	246.75	250.67	250.67	252.14	0.048143	10.13	10.16	81.48	29.16	0.91
Sausal	2	17	100YR P	655.20	246.75	250.43	250.41	251.78	0.047895	9.67	9.47	74.50	28.32	0.90
Sausal	2	17	25YR E	521.30	246.75	250.05	249.96	251.19	0.046305	8.83	8.19	63.98	26.99	0.86
Sausal	2	17	25YR P	508.30	246.75	250.01	249.91	251.13	0.046144	8.75	8.07	62.90	26.85	0.86
Sausal	2	17	10YR E	426.30	246.75	249.75	249.57	250.73	0.044523	8.12	7.15	56.10	25.37	0.83
Sausal	2	17	10YR P	413.30	246.75	249.70	249.51	250.66	0.044189	8.01	6.99	55.01	25.12	0.83
Sausal	2	17	5YR E	349.80	246.75	249.48	249.23	250.32	0.042324	7.43	6.18	49.59	23.85	0.80
Sausal	2	17	5YR P	340.30	246.75	249.45	249.18	250.26	0.042002	7.34	6.06	48.76	23.85	0.80
Sausal	2	17	2YR E	240.40	246.75	249.04	248.67	249.64	0.038092	6.25	4.65	39.58	21.31	0.74
Sausal	2	17	2YR P	235.10	246.75	249.								

HEC-RAS Plan: Scenario1 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	16	25YR E	521.30	244.75	247.86		248.42	0.020813	6.17	3.91	89.66	35.67	0.63
Sausal	2	16	25YR P	508.30	244.75	247.82		248.37	0.020798	6.11	3.86	88.15	35.41	0.62
Sausal	2	16	10YR E	426.30	244.75	247.53		248.02	0.020946	5.72	3.50	78.16	33.57	0.62
Sausal	2	16	10YR P	413.30	244.75	247.48		247.96	0.021007	5.66	3.45	76.51	33.26	0.62
Sausal	2	16	5YR E	349.80	244.75	247.22		247.65	0.021434	5.34	3.18	68.18	31.54	0.61
Sausal	2	16	5YR P	340.30	244.75	247.18		247.60	0.021525	5.29	3.13	66.90	31.26	0.61
Sausal	2	16	2YR E	240.40	244.75	246.73		247.06	0.022425	4.67	2.63	53.06	30.08	0.60
Sausal	2	16	2YR P	235.10	244.75	246.70		247.03	0.022425	4.63	2.60	52.32	30.03	0.60
Sausal	2	16	1YR E	42.26	244.75	245.53		245.62	0.020552	2.29	0.88	18.64	27.73	0.49
Sausal	2	16	1YR P	38.53	244.75	245.50		245.57	0.020318	2.20	0.83	17.68	27.66	0.48
Sausal	2	15	100YR E	744.00	239.86	245.07		245.48	0.017773	5.76	5.50	156.75	46.03	0.46
Sausal	2	15	100YR P	655.20	239.86	244.76		245.15	0.018060	5.56	5.24	142.54	45.08	0.45
Sausal	2	15	25YR E	521.30	239.86	244.24		244.59	0.018784	5.24	4.84	119.48	43.49	0.45
Sausal	2	15	25YR P	508.30	239.86	244.18		244.53	0.018859	5.20	4.80	117.17	43.33	0.45
Sausal	2	15	10YR E	426.30	239.86	243.81		244.14	0.019272	4.94	4.46	101.72	39.94	0.45
Sausal	2	15	10YR P	413.30	239.86	243.75		244.07	0.019320	4.89	4.39	99.24	39.21	0.45
Sausal	2	15	5YR E	349.80	239.86	243.43		243.71	0.019498	4.62	4.04	87.12	35.41	0.45
Sausal	2	15	5YR P	340.30	239.86	243.37		243.66	0.019520	4.57	3.98	85.28	34.80	0.45
Sausal	2	15	2YR E	240.40	239.86	242.78		243.00	0.019824	4.03	3.31	66.25	30.33	0.43
Sausal	2	15	2YR P	235.10	239.86	242.74		242.96	0.019904	4.00	3.28	65.19	30.23	0.43
Sausal	2	15	1YR E	42.26	239.86	241.05		241.13	0.027150	2.35	1.60	18.77	22.87	0.43
Sausal	2	15	1YR P	38.53	239.86	240.99		241.07	0.027730	2.29	1.54	17.55	22.50	0.43
Sausal	2	14	100YR E	744.00	236.10	240.35		241.34	0.025262	8.19	6.29	98.99	33.95	0.72
Sausal	2	14	100YR P	655.20	236.10	240.09		241.00	0.024900	7.79	5.81	90.55	31.91	0.71
Sausal	2	14	25YR E	521.30	236.10	239.65		240.42	0.024458	7.10	5.04	77.33	28.42	0.69
Sausal	2	14	25YR P	508.30	236.10	239.61		240.36	0.024406	7.03	4.96	76.04	28.05	0.68
Sausal	2	14	10YR E	426.30	236.10	239.30		239.95	0.023895	6.52	4.41	67.93	25.64	0.67
Sausal	2	14	10YR P	413.30	236.10	239.25		239.88	0.023848	6.44	4.32	66.59	25.26	0.66
Sausal	2	14	5YR E	349.80	236.10	238.99		239.54	0.023487	6.01	3.88	60.10	24.66	0.65
Sausal	2	14	5YR P	340.30	236.10	238.95		239.49	0.023415	5.94	3.81	59.11	24.56	0.65
Sausal	2	14	2YR E	240.40	236.10	238.49		238.89	0.022544	5.12	3.02	48.00	23.63	0.61
Sausal	2	14	2YR P	235.10	236.10	238.47		238.86	0.022334	5.06	2.96	47.47	23.60	0.61
Sausal	2	14	1YR E	42.26	236.10	237.19		237.27	0.015182	2.28	0.81	18.56	21.71	0.43
Sausal	2	14	1YR P	38.53	236.10	237.15		237.22	0.014885	2.18	0.76	17.66	21.65	0.42
Sausal	2	13	100YR E	744.00	226.99	232.34		233.18	0.017430	8.00	5.53	110.38	30.49	0.62
Sausal	2	13	100YR P	655.20	226.99	231.98		232.77	0.017957	7.73	5.29	99.53	29.06	0.63
Sausal	2	13	25YR E	521.30	226.99	231.40		232.11	0.018655	7.23	4.83	83.32	27.01	0.62
Sausal	2	13	25YR P	508.30	226.99	231.34		232.04	0.018732	7.17	4.78	81.72	26.80	0.62
Sausal	2	13	10YR E	426.30	226.99	230.94		231.58	0.019387	6.81	4.46	71.26	25.43	0.62
Sausal	2	13	10YR P	413.30	226.99	230.87		231.50	0.019457	6.75	4.40	69.63	25.21	0.62
Sausal	2	13	5YR E	349.80	226.99	230.54		231.11	0.019942	6.40	4.10	61.40	24.06	0.62
Sausal	2	13	5YR P	340.30	226.99	230.49		231.05	0.020036	6.35	4.05	60.13	23.87	0.62
Sausal	2	13	2YR E	240.40	226.99	229.88		230.35	0.021316	5.71	3.50	46.26	21.79	0.62
Sausal	2	13	2YR P	235.10	226.99	229.84		230.30	0.021562	5.68	3.49	45.38	21.65	0.62
Sausal	2	13	1YR E	42.26	226.99	228.05		228.24	0.039478	3.55	2.00	12.14	15.71	0.69
Sausal	2	13	1YR P	38.53	226.99	228.00		228.18	0.040768	3.45	1.94	11.35	15.56	0.70
Sausal	2	12	100YR E	744.00	223.66	229.22	228.27	230.23	0.020976	8.57	6.43	100.02	25.75	0.66
Sausal	2	12	100YR P	655.20	223.66	228.94	227.98	229.84	0.020050	8.08	5.82	92.86	25.14	0.64
Sausal	2	12	25YR E	521.30	223.66	228.42	227.48	229.18	0.019331	7.37	5.02	80.02	23.99	0.61
Sausal	2	12	25YR P	508.30	223.66	228.37	227.42	229.11	0.019259	7.30	4.94	78.71	23.86	0.61
Sausal	2	12	10YR E	426.30	223.66	228.02	227.04	228.67	0.018435	6.76	4.36	70.59	23.11	0.59
Sausal	2	12	10YR P	413.30	223.66	227.96	226.98	228.59	0.018405	6.69	4.28	69.11	22.96	0.59
Sausal	2	12	5YR E	349.80	223.66	227.64	226.67	228.21	0.017870	6.24	3.84	62.07	22.28	0.57
Sausal	2	12	5YR P	340.30	223.66	227.60	226.62	228.15	0.017756	6.17	3.76	61.02	22.18	0.57
Sausal	2	12	2YR E	240.40	223.66	227.03	226.08	227.45	0.016478	5.31	2.95	48.97	20.35	0.53
Sausal	2	12	2YR P	235.10	223.66	227.00	226.04	227.41	0.016405	5.26	2.91	48.28	20.23	0.53
Sausal	2	12	1YR E	42.26	223.66	225.20	224.25	225.30	0.011120	2.43	0.83	17.61	14.49	0.38
Sausal	2	12	1YR P	38.53	223.66	225.14	224.19	225.22	0.011017	2.34	0.78	16.65	14.40	0.38
Sausal	2	11	100YR E	744.00	220.94	225.45	225.45	227.10	0.012088	10.63	2.60	74.54	23.39	0.96
Sausal	2	11	100YR P	655.20	220.94	225.14	225.14	226.70	0.012657	10.28	2.50	67.47	22.64	0.97
Sausal	2	11	25YR E	521.30	220.94	224.67	224.67	226.04	0.013107	9.59	2.27	57.16	21.45	0.97
Sausal	2	11	25YR P	508.30	220.94	224.62	224.62	225.97	0.013136	9.52	2.24	56.10	21.32	0.97
Sausal	2	11	10YR E	426.30	220.94	224.28	224.28	225.52	0.013589	9.10	2.11	48.98	20.38	0.97
Sausal	2	11	10YR P	413.30	220.94	224.23	224.23	225.44	0.013652	9.02	2.09	47.85	20.22	0.97
Sausal	2	11	5YR E	349.80	220.94	223.94	223.94	225.06	0.014018	8.61	1.96	42.21	19.44	0.97
Sausal	2	11	5YR P	340.30	220.94	223.90	223.90	225.00	0.014105	8.55	1.95	41.32	19.32	0.98
Sausal	2	11	2YR E	240.40	220.94	223.39	223.39	224.30	0.015035	7.77	1.71	31.85	17.92	0.98
Sausal	2	11	2YR P	235.10	220.94	223.36	223.36	224.26	0.015098	7.72	1.70	31.33	17.84	0.98
Sausal	2	11	1YR E	42.26	220.94	221.96	221.96	222.30	0.021771	4.63	0.86	9.12	13.86	1.01
Sausal	2	11	1YR P	38.53	220.94	221.92	221.92	222.24	0.021855	4.52	0.83	8.52	13.49	1.00
Sausal	2	10	100YR E	744.00	216.69	222.35	222.35	224.09	0.009241	11.86	2.86	78.61	22.86	0.90
Sausal	2	10	100YR P	655.20	216.69	221.98	221.98	223.65	0.009597	11.54	2.77	70.39	21.69	0.90
Sausal	2	10	25YR E	521.30	216.69	221.39	221.39	222.92	0.010097	10.89	2.57	58.13	19.81	0.91
Sausal	2	10	25YR P	508.30	216.69	221.32	221.32	222.85	0.010167	10.83	2.55	56.89	19.61	0.91
Sausal	2	10	10YR E	426.30	216.69	220.94	220.94	222.34	0.010362	10.28	2.37	49.52	18.38	0.90
Sausal	2	10	10YR P	413.30	216.69	220.85	220.85	222.25	0.010590	10.25	2.38	47.99	18.11	0.91
Sausal	2	10	5YR E	349.80	216.69	220.52	220.52	221.80	0.010806	9.75	2.22	42.07	17.04	0.91
Sausal	2	10	5YR P	340.30	216.69	220.46	220.46	221.73	0.010877	9.69	2.20	41.12	16.87	0.91
Sausal	2	10	2YR E	240.40	216.69	219.80	219.80	220.91	0.011993	8.87	1.97	30.72	14.78	0.92
Sausal	2	10	2YR P	235.10	216.69	219.76	219.76	220.86	0.012069	8.82	1.96	30.15	14.65	0.92
Sausal	2	10	1YR E	42.26	216.69	218.01	217.84	218.34	0.011542	4.58	0.72	9.39	9.10	0.77
Sausal	2	10	1YR P	38.53	216.69	217.96	217.78	218.26	0.011418	4.40	0.68	8.89	8.92	0.76
Sausal	2	9	100YR E	744.00	212.30	219.48		219.80	0.001391	5.13	0.51	186.07	53.42	0.35
Sausal	2	9	100YR P	655.20	212.30	219.18		219.48	0.001350	4.90</				

HEC-RAS Plan: Scenario1 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	9	10YR E	426.30	212.30	218.00		218.29	0.001534	4.56	0.43	113.80	44.52	0.35
Sausal	2	9	10YR P	413.30	212.30	217.80		218.10	0.001689	4.66	0.46	105.36	39.08	0.37
Sausal	2	9	5YR E	349.80	212.30	216.77		217.17	0.002941	5.26	0.63	73.51	27.39	0.47
Sausal	2	9	5YR P	340.30	212.30	216.62		217.04	0.003247	5.38	0.67	69.36	26.52	0.49
Sausal	2	9	2YR E	240.40	212.30	214.92	214.79	215.78	0.013808	7.45	1.57	32.42	16.91	0.91
Sausal	2	9	2YR P	235.10	212.30	214.81	214.76	215.73	0.015683	7.67	1.70	30.70	16.32	0.96
Sausal	2	9	1YR E	42.26	212.30	213.31	213.31	213.66	0.021773	4.73	0.89	8.94	13.05	1.01
Sausal	2	9	1YR P	38.53	212.30	213.27	213.27	213.60	0.022040	4.59	0.85	8.40	12.97	1.01
Sausal	2	8	100YR E	744.00	208.57	219.44	214.81	219.61	0.000643	4.07	0.30	258.38	61.66	0.23
Sausal	2	8	100YR P	655.20	208.57	219.14	214.47	219.29	0.000609	3.89	0.27	239.98	61.66	0.22
Sausal	2	8	25YR E	521.30	208.57	218.63	213.86	218.76	0.000522	3.47	0.22	209.58	53.54	0.20
Sausal	2	8	25YR P	508.30	208.57	218.58	213.82	218.70	0.000507	3.40	0.21	206.93	51.93	0.20
Sausal	2	8	10YR E	426.30	208.57	218.00	213.42	218.11	0.000482	3.18	0.19	179.62	43.05	0.19
Sausal	2	8	10YR P	413.30	208.57	217.80	213.35	217.91	0.000499	3.18	0.19	171.40	40.49	0.20
Sausal	2	8	5YR E	349.80	208.57	216.76	213.01	216.89	0.000667	3.36	0.22	132.86	35.56	0.22
Sausal	2	8	5YR P	340.30	208.57	216.61	212.97	216.74	0.000699	3.39	0.23	127.41	34.78	0.23
Sausal	2	8	2YR E	240.40	208.57	214.97	212.40	215.14	0.001089	3.54	0.27	79.72	23.86	0.27
Sausal	2	8	2YR P	235.10	208.57	214.89	212.37	215.05	0.001117	3.55	0.28	77.62	23.52	0.27
Sausal	2	8	1YR E	42.26	208.57	210.92	210.08	211.09	0.004087	3.25	0.33	12.99	7.91	0.45
Sausal	2	8	1YR P	38.53	208.57	210.81	210.00	210.97	0.004100	3.18	0.32	12.12	7.70	0.45
Sausal	2	7.8		Culvert										
Sausal	2	7	100YR E	744.00	204.66	209.26		209.94	0.018524	6.71	4.31	116.56	36.95	0.60
Sausal	2	7	100YR P	655.20	204.66	209.06		209.65	0.017319	6.26	3.83	109.24	35.90	0.57
Sausal	2	7	25YR E	521.30	204.66	208.77		209.22	0.014546	5.44	2.97	99.13	34.40	0.52
Sausal	2	7	25YR P	508.30	204.66	208.73		209.17	0.014367	5.37	2.90	97.85	34.21	0.51
Sausal	2	7	10YR E	426.30	204.66	208.44		208.82	0.013793	4.96	2.55	88.11	32.69	0.49
Sausal	2	7	10YR P	413.30	204.66	208.36		208.74	0.014178	4.94	2.55	85.52	32.27	0.50
Sausal	2	7	5YR E	349.80	204.66	207.95		208.32	0.016702	4.87	2.60	72.69	30.13	0.53
Sausal	2	7	5YR P	340.30	204.66	207.90		208.26	0.016738	4.82	2.56	71.35	29.90	0.53
Sausal	2	7	2YR E	240.40	204.66	207.42		207.69	0.016135	4.20	2.06	57.37	27.61	0.50
Sausal	2	7	2YR P	235.10	204.66	207.39		207.66	0.015995	4.15	2.03	56.70	27.50	0.50
Sausal	2	7	1YR E	42.26	204.66	205.85		205.92	0.013628	2.20	0.75	19.18	21.19	0.41
Sausal	2	7	1YR P	38.53	204.66	205.79		205.86	0.013729	2.14	0.72	18.02	20.97	0.41
Sausal	2	6	100YR E	1106.10	200.31	205.22	205.22	206.72	0.008728	10.81	2.45	122.71	39.40	0.88
Sausal	2	6	100YR P	1041.00	200.31	205.09	205.09	206.54	0.008682	10.58	2.37	117.78	39.18	0.88
Sausal	2	6	25YR E	913.10	200.31	204.76	204.76	206.18	0.009225	10.37	2.34	104.86	38.29	0.89
Sausal	2	6	25YR P	899.60	200.31	204.73	204.73	206.13	0.009258	10.33	2.32	103.56	38.07	0.89
Sausal	2	6	10YR E	789.70	200.31	204.44	204.44	205.78	0.009501	9.98	2.22	93.01	36.20	0.89
Sausal	2	6	10YR P	754.70	200.31	204.35	204.35	205.66	0.009555	9.85	2.18	89.72	35.60	0.89
Sausal	2	6	5YR E	538.30	200.31	203.68	203.68	204.83	0.010463	9.06	1.97	67.45	31.22	0.90
Sausal	2	6	5YR P	521.80	200.31	203.63	203.63	204.76	0.010532	8.98	1.95	65.75	30.86	0.91
Sausal	2	6	2YR E	363.20	200.31	203.03	203.03	204.01	0.011662	8.18	1.73	48.51	26.94	0.92
Sausal	2	6	2YR P	358.10	200.31	203.01	203.01	203.98	0.011716	8.15	1.73	47.93	26.80	0.92
Sausal	2	6	1YR E	58.85	200.31	201.30	201.26	201.64	0.017226	4.72	0.84	12.61	16.46	0.93
Sausal	2	6	1YR P	53.78	200.31	201.25	201.21	201.57	0.017169	4.55	0.79	11.92	16.33	0.92
Sausal	2	5.1	100YR E	1106.10	196.68	204.03	204.03	204.93	0.003632	9.45	1.61	190.65	121.97	0.62
Sausal	2	5.1	100YR P	1041.00	196.68	203.12	203.12	204.76	0.006848	11.85	2.65	113.22	38.23	0.84
Sausal	2	5.1	25YR E	913.10	196.68	203.17	202.77	204.40	0.005062	10.24	1.97	115.27	39.53	0.72
Sausal	2	5.1	25YR P	899.60	196.68	203.22	202.74	204.37	0.004743	9.96	1.86	117.28	45.96	0.70
Sausal	2	5.1	10YR E	789.70	196.68	203.26		204.13	0.003537	8.64	1.40	119.40	51.87	0.60
Sausal	2	5.1	10YR P	754.70	196.68	203.24		204.04	0.003277	8.30	1.29	118.45	49.32	0.58
Sausal	2	5.1	5YR E	538.30	196.68	203.09		203.54	0.001863	6.16	0.72	112.35	38.04	0.44
Sausal	2	5.1	5YR P	521.80	196.68	203.07		203.49	0.001790	6.02	0.69	111.25	37.79	0.43
Sausal	2	5.1	2YR E	363.20	196.68	202.79		203.03	0.001073	4.52	0.39	101.08	35.41	0.33
Sausal	2	5.1	2YR P	358.10	196.68	202.78		203.02	0.001050	4.47	0.38	100.76	35.34	0.32
Sausal	2	5.1	1YR E	58.85	196.68	197.97	197.97	198.47	0.017023	5.78	1.13	10.50	10.75	0.98
Sausal	2	5.1	1YR P	53.78	196.68	197.91	197.91	198.39	0.017342	5.61	1.09	9.86	10.64	0.98
Sausal	2	5	100YR E	1106.10	196.09	203.42	203.42	204.74	0.004864	11.14	2.22	131.96	60.99	0.73
Sausal	2	5	100YR P	1041.00	196.09	202.84	202.84	204.52	0.006160	11.88	2.59	107.79	32.53	0.81
Sausal	2	5	25YR E	913.10	196.09	203.17	202.77	204.24	0.003820	9.65	1.68	119.11	37.87	0.64
Sausal	2	5	25YR P	899.60	196.09	203.22	202.77	204.22	0.003602	9.42	1.60	120.92	44.15	0.62
Sausal	2	5	10YR E	789.70	196.09	203.27	202.76	204.01	0.002691	8.17	1.20	123.19	50.92	0.54
Sausal	2	5	10YR P	754.70	196.09	203.25	202.76	203.94	0.002489	7.85	1.11	122.22	48.16	0.52
Sausal	2	5	5YR E	538.30	196.09	203.10	201.41	203.48	0.001395	5.79	0.61	116.33	35.49	0.39
Sausal	2	5	5YR P	521.80	196.09	203.07	201.30	203.44	0.001336	5.65	0.58	115.30	35.09	0.38
Sausal	2	5	2YR E	363.20	196.09	201.91	200.20	202.92	0.003136	7.67	1.13	45.94	24.77	0.56
Sausal	2	5	2YR P	358.10	196.09	201.94	200.15	202.91	0.003001	7.53	1.09	46.16	25.00	0.55
Sausal	2	5	1YR E	58.85	196.09	197.36	197.36	197.96	0.016062	6.22	1.25	9.49	10.02	0.98
Sausal	2	5	1YR P	53.78	196.09	197.29	197.29	197.85	0.016281	6.03	1.19	8.96	9.84	0.98
Sausal	2	4.5		Culvert										
Sausal	2	4	100YR E	1106.10	187.02	192.63		193.92	0.028544	9.72	8.38	128.28	29.73	0.74
Sausal	2	4	100YR P	1041.00	187.02	192.40		193.67	0.029758	9.63	8.36	121.38	29.28	0.75
Sausal	2	4	25YR E	913.10	187.02	191.92		193.16	0.032724	9.47	8.33	107.57	28.34	0.77
Sausal	2	4	25YR P	899.60	187.02	191.87		193.10	0.033080	9.45	8.33	106.11	28.24	0.77
Sausal	2	4	10YR E	789.70	187.02	191.46		192.64	0.035798	9.24	8.22	94.67	27.44	0.79
Sausal	2	4	10YR P	754.70	187.02	191.32		192.49	0.036863	9.17	8.19	90.94	27.17	0.80
Sausal	2	4	5YR E	538.30	187.02	190.42	190.21	191.50	0.046685	8.73	8.06	67.15	25.40	0.86
Sausal	2	4	5YR P	521.80	187.02	190.34	190.15	191.42	0.047835	8.69	8.07	65.25	25.24	0.87
Sausal	2	4	2YR E	363.20	187.02	189.58	189.58	190.59	0.064538	8.36	8.20	46.61	23.58	0.97
Sausal	2	4	2YR P	358.10	187.02	189.56	189.56	190.56	0.064660	8.32	8.14	46.15	23.54	0.96
Sausal	2	4	1YR E	58.85	187.02	187.94	187.94	188.32	0.097196	4.96	4.15	11.96	16.25	1.00
Sausal	2	4	1YR P	53.78	187.02	187.89	187.89	188.25	0.099136	4.83	4.01	11.21	15.95	1.01
Sausal	2	3	100YR E	1106.10	182.75	190.31		191.76	0.021110	9.92	8.02	126.61	23.90	0.66
Sausal	2	3	100YR P	1041.00	182.75	190.10		191.48	0.020924	9.68	7.71	121.58	23.46	0.

HEC-RAS Plan: Scenario1 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	3	25YR E	913.10	182.75	189.66		190.91	0.020506	9.17	7.06	111.46	22.56	0.64
Sausal	2	3	25YR P	899.60	182.75	189.61		190.84	0.020456	9.11	6.99	110.38	22.46	0.64
Sausal	2	3	10YR E	789.70	182.75	189.21		190.32	0.020001	8.61	6.40	101.42	21.63	0.62
Sausal	2	3	10YR P	754.70	182.75	189.07		190.14	0.019837	8.45	6.20	98.51	21.35	0.62
Sausal	2	3	5YR E	538.30	182.75	188.14		188.95	0.018665	7.29	4.89	79.57	19.44	0.58
Sausal	2	3	5YR P	521.80	182.75	188.07		188.85	0.018526	7.19	4.78	78.11	19.34	0.58
Sausal	2	3	2YR E	363.20	182.75	187.21		187.78	0.017474	6.12	3.70	62.09	17.98	0.55
Sausal	2	3	2YR P	358.10	182.75	187.18		187.74	0.017461	6.08	3.67	61.53	17.92	0.54
Sausal	2	3	1YR E	58.85	182.75	184.38		184.56	0.022373	3.41	1.64	17.30	13.96	0.54
Sausal	2	3	1YR P	53.78	182.75	184.30		184.47	0.023027	3.33	1.59	16.19	13.85	0.54
Sausal	2	2	100YR E	1106.10	176.58	184.58		185.68	0.018574	9.51	7.28	143.26	29.05	0.60
Sausal	2	2	100YR P	1041.00	176.58	184.36		185.43	0.018648	9.34	7.10	136.87	28.70	0.60
Sausal	2	2	25YR E	913.10	176.58	183.90		184.91	0.018805	9.00	6.72	124.00	27.98	0.60
Sausal	2	2	25YR P	899.60	176.58	183.85		184.85	0.018827	8.96	6.68	122.60	27.90	0.60
Sausal	2	2	10YR E	789.70	176.58	183.43		184.37	0.019054	8.64	6.35	110.95	27.22	0.60
Sausal	2	2	10YR P	754.70	176.58	183.29		184.21	0.019146	8.54	6.25	107.13	27.00	0.60
Sausal	2	2	5YR E	538.30	176.58	182.32		183.13	0.019964	7.82	5.53	81.89	24.68	0.59
Sausal	2	2	5YR P	521.80	176.58	182.23		183.03	0.020096	7.76	5.47	79.74	24.34	0.59
Sausal	2	2	2YR E	363.20	176.58	181.33		182.01	0.020947	7.00	4.74	59.40	20.77	0.59
Sausal	2	2	2YR P	358.10	176.58	181.30		181.98	0.020956	6.97	4.71	58.75	20.65	0.59
Sausal	2	2	1YR E	58.85	176.58	178.63		178.80	0.016440	3.37	1.49	17.53	10.51	0.45
Sausal	2	2	1YR P	53.78	176.58	178.54		178.70	0.016103	3.24	1.40	16.63	10.25	0.44
Sausal	2	1	100YR E	1106.10	175.30	182.78	180.57	183.67	0.015003	7.74	5.07	153.91	29.79	0.52
Sausal	2	1	100YR P	1041.00	175.30	182.56	180.30	183.41	0.015004	7.57	4.91	147.34	29.28	0.52
Sausal	2	1	25YR E	913.10	175.30	182.10	179.93	182.88	0.015009	7.22	4.57	134.11	28.21	0.51
Sausal	2	1	25YR P	899.60	175.30	182.05	179.89	182.82	0.015009	7.18	4.54	132.69	28.09	0.51
Sausal	2	1	10YR E	789.70	175.30	181.62	179.55	182.33	0.015018	6.85	4.22	120.85	27.10	0.50
Sausal	2	1	10YR P	754.70	175.30	181.47	179.44	182.17	0.015023	6.74	4.12	116.99	26.77	0.50
Sausal	2	1	5YR E	538.30	175.30	180.49	178.70	181.03	0.015008	5.93	3.40	91.77	23.15	0.49
Sausal	2	1	5YR P	521.80	175.30	180.40	178.65	180.93	0.015018	5.86	3.34	89.80	20.56	0.49
Sausal	2	1	2YR E	363.20	175.30	179.46	178.02	179.87	0.015017	5.16	2.76	70.73	20.07	0.48
Sausal	2	1	2YR P	358.10	175.30	179.43	178.00	179.83	0.015018	5.13	2.74	70.08	20.05	0.48
Sausal	2	1	1YR E	58.85	175.30	176.83	176.25	176.95	0.015024	2.77	1.09	21.24	16.74	0.43
Sausal	2	1	1YR P	53.78	175.30	176.76	176.21	176.87	0.015019	2.69	1.04	20.02	16.60	0.43
Palo Seco	1	37	100YR E	133.20	481.72	484.61	484.55	485.23	0.039095	7.03	5.58	23.68	16.17	0.79
Palo Seco	1	37	100YR P	112.30	481.72	484.46	484.37	485.01	0.037160	6.57	4.97	21.23	15.83	0.76
Palo Seco	1	37	25YR E	100.80	481.72	484.36	484.19	484.88	0.036003	6.29	4.63	19.78	15.62	0.75
Palo Seco	1	37	25YR P	84.00	481.72	484.21	484.00	484.66	0.034062	5.83	4.07	17.45	14.51	0.72
Palo Seco	1	37	10YR E	80.20	481.72	484.17	483.95	484.61	0.033735	5.73	3.95	16.87	14.20	0.71
Palo Seco	1	37	10YR P	67.20	481.72	484.02	483.76	484.41	0.032177	5.32	3.50	14.89	13.10	0.69
Palo Seco	1	37	5YR E	64.90	481.72	483.99	483.72	484.37	0.032137	5.26	3.44	14.48	12.86	0.68
Palo Seco	1	37	5YR P	54.00	481.72	483.84	483.53	484.18	0.031159	4.90	3.06	12.65	11.73	0.66
Palo Seco	1	37	2YR E	44.80	481.72	483.70	483.35	483.99	0.030325	4.55	2.72	11.02	10.63	0.63
Palo Seco	1	37	2YR P	37.20	481.72	483.56	483.20	483.82	0.029835	4.23	2.44	9.60	9.56	0.64
Palo Seco	1	37	1YR E	6.72	481.72	482.42	482.42	482.62	0.108057	3.60	2.63	1.90	4.95	1.00
Palo Seco	1	37	1YR P	5.79	481.72	482.38	482.38	482.56	0.110279	3.48	2.51	1.69	4.70	1.00
Palo Seco	1	36	100YR E	133.20	438.09	440.15	440.15	440.83	0.061643	6.71	5.82	20.86	16.76	0.95
Palo Seco	1	36	100YR P	112.30	438.09	439.98	439.98	440.61	0.065832	6.42	5.54	18.11	15.69	0.96
Palo Seco	1	36	25YR E	100.80	438.09	439.88	439.88	440.48	0.068705	6.24	5.37	16.59	15.07	0.97
Palo Seco	1	36	25YR P	84.00	438.09	439.73	439.73	440.27	0.074348	5.96	5.11	14.31	14.09	0.99
Palo Seco	1	36	10YR E	80.20	438.09	439.69	439.69	440.23	0.075380	5.87	5.02	13.83	13.87	0.99
Palo Seco	1	36	10YR P	67.20	438.09	439.56	439.56	440.05	0.080991	5.60	4.76	12.08	13.06	1.00
Palo Seco	1	36	5YR E	64.90	438.09	439.54	439.54	440.02	0.081116	5.53	4.67	11.80	12.95	1.00
Palo Seco	1	36	5YR P	54.00	438.09	439.42	439.42	439.85	0.085137	5.27	4.39	10.28	12.42	1.01
Palo Seco	1	36	2YR E	44.80	438.09	439.31	439.31	439.70	0.088917	4.99	4.10	8.97	11.95	1.01
Palo Seco	1	36	2YR P	37.20	438.09	439.22	439.22	439.57	0.091248	4.74	3.81	7.85	11.44	1.01
Palo Seco	1	36	1YR E	6.72	438.09	438.96	438.61	438.98	0.009925	1.32	0.32	5.11	9.66	0.32
Palo Seco	1	36	1YR P	5.79	438.09	439.03	438.57	439.04	0.005130	1.00	0.18	5.81	10.14	0.23

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	1	38.2	100YR E	610.90	414.89	419.73		420.62	0.023857	8.01	5.99	86.20	26.76	0.67
Sausal	1	38.2	100YR P	538.60	414.89	419.38		420.25	0.025230	7.81	5.85	77.17	25.82	0.68
Sausal	1	38.2	25YR E	420.70	414.89	418.81		419.60	0.027200	7.35	5.44	62.91	24.24	0.69
Sausal	1	38.2	25YR P	421.00	414.89	418.79		419.59	0.028119	7.43	5.58	62.19	24.16	0.70
Sausal	1	38.2	10YR E	346.30	414.89	418.38		419.12	0.030364	7.11	5.32	52.52	22.90	0.71
Sausal	1	38.2	10YR P	353.20	414.89	418.40		419.16	0.030794	7.19	5.44	53.01	23.00	0.71
Sausal	1	38.2	5YR E	284.90	414.89	417.99		418.69	0.033514	6.84	5.15	43.99	21.04	0.73
Sausal	1	38.2	5YR P	284.70	414.89	417.99		418.69	0.033251	6.82	5.12	44.10	21.07	0.73
Sausal	1	38.2	2YR E	195.70	414.89	417.88	417.01	418.24	0.018351	4.92	2.71	41.71	20.52	0.54
Sausal	1	38.2	2YR P	199.90	414.89	417.95	417.04	418.31	0.017335	4.87	2.63	43.22	20.87	0.52
Sausal	1	38.2	1YR E	35.60	414.89	416.20		416.30	0.014794	2.48	0.91	14.38	13.62	0.42
Sausal	1	38.2	1YR P	23.30	414.89	415.76		415.87	0.032538	2.75	1.30	8.48	12.82	0.60
Sausal	1	38	100YR E	610.90	412.89	419.03		419.48	0.008824	5.77	2.86	123.43	30.36	0.42
Sausal	1	38	100YR P	538.60	412.89	418.66		419.08	0.008902	5.55	2.70	112.31	29.33	0.42
Sausal	1	38	25YR E	420.70	412.89	418.11		418.45	0.008274	4.98	2.25	96.48	27.80	0.40
Sausal	1	38	25YR P	421.00	412.89	418.01		418.37	0.008950	5.11	2.39	93.83	27.54	0.41
Sausal	1	38	10YR E	346.30	412.89	417.59		417.91	0.008639	4.72	2.10	82.58	26.39	0.40
Sausal	1	38	10YR P	353.20	412.89	417.55		417.88	0.009382	4.88	2.26	81.31	26.25	0.42
Sausal	1	38	5YR E	284.90	412.89	417.02		417.33	0.010135	4.65	2.14	67.78	24.79	0.42
Sausal	1	38	5YR P	284.70	412.89	416.83		417.18	0.012318	4.95	2.47	63.16	24.27	0.46
Sausal	1	38	2YR E	195.70	412.89	415.09	415.01	415.90	0.063760	7.23	6.57	27.19	15.94	0.94
Sausal	1	38	2YR P	199.90	412.89	415.04	415.04	415.93	0.072834	7.59	7.31	26.42	15.64	1.00
Sausal	1	38	1YR E	35.60	412.89	413.71	413.71	414.03	0.094903	4.51	3.57	7.90	12.73	1.01
Sausal	1	38	1YR P	23.30	412.89	413.85		413.94	0.021256	2.40	0.95	9.72	12.99	0.49
Sausal	2	35.5	100YR E	744.00	409.89	418.90	414.44	419.11	0.002629	4.12	1.28	222.48	38.95	0.25
Sausal	2	35.5	100YR P	650.80	409.89	418.55	414.15	418.73	0.002385	3.82	1.11	208.83	37.82	0.23
Sausal	2	35.5	25YR E	521.30	409.89	418.01	413.70	418.15	0.002007	3.35	0.87	188.89	36.09	0.21
Sausal	2	35.5	25YR P	504.60	409.89	417.92	413.64	418.06	0.001963	3.29	0.84	185.91	35.82	0.21
Sausal	2	35.5	10YR E	426.30	409.89	417.51	413.29	417.63	0.001745	2.99	0.71	171.45	34.51	0.20
Sausal	2	35.5	10YR P	420.30	409.89	417.48	413.26	417.59	0.001732	2.97	0.70	170.15	34.39	0.19
Sausal	2	35.5	5YR E	349.80	409.89	416.95	412.93	417.05	0.001620	2.73	0.61	152.43	32.89	0.19
Sausal	2	35.5	5YR P	338.50	409.89	416.77	412.87	416.87	0.001688	2.74	0.62	146.60	32.40	0.19
Sausal	2	35.5	2YR E	240.40	409.89	415.12	412.30	415.23	0.002676	2.83	0.73	96.81	27.84	0.23
Sausal	2	35.5	2YR P	236.30	409.89	415.05	412.28	415.16	0.002728	2.84	0.73	94.96	27.65	0.23
Sausal	2	35.5	1YR E	42.26	409.89	411.20	410.79	411.33	0.021191	2.96	1.30	14.30	13.61	0.51
Sausal	2	35.5	1YR P	28.20	409.89	410.62	410.62	410.89	0.099007	4.19	3.24	6.73	12.57	1.01
Sausal	2	35.4		Culvert										
Sausal	2	35	100YR E	744.00	326.57	333.99	332.00	334.59	0.011608	6.57	3.72	129.86	33.92	0.47
Sausal	2	35	100YR P	650.80	326.57	333.63		334.18	0.011314	6.23	3.41	118.09	31.99	0.46
Sausal	2	35	25YR E	521.30	326.57	333.07		333.54	0.010885	5.71	2.96	100.85	28.93	0.44
Sausal	2	35	25YR P	504.60	326.57	332.99		333.45	0.010812	5.63	2.90	98.60	28.51	0.44
Sausal	2	35	10YR E	426.30	326.57	332.59		333.00	0.010468	5.26	2.59	87.72	26.37	0.42
Sausal	2	35	10YR P	420.30	326.57	332.56		332.96	0.010439	5.22	2.57	86.87	26.20	0.42
Sausal	2	35	5YR E	349.80	326.57	332.15		332.50	0.010083	4.84	2.27	76.68	24.03	0.41
Sausal	2	35	5YR P	338.50	326.57	332.08		332.43	0.010016	4.77	2.22	75.03	23.71	0.41
Sausal	2	35	2YR E	240.40	326.57	331.41	329.60	331.67	0.009409	4.12	1.75	60.02	20.56	0.38
Sausal	2	35	2YR P	236.30	326.57	331.37	329.56	331.63	0.009389	4.09	1.73	59.34	20.40	0.38
Sausal	2	35	1YR E	42.26	326.57	328.94		329.00	0.006819	2.08	0.58	20.33	13.39	0.30
Sausal	2	35	1YR P	28.20	326.57	328.60	327.73	328.65	0.006433	1.78	0.45	15.85	12.88	0.28
Sausal	2	34	100YR E	744.00	321.02	324.23	324.23	325.59	0.049890	9.85	9.82	83.39	31.82	0.98
Sausal	2	34	100YR P	650.80	321.02	323.98	323.98	325.24	0.051668	9.47	9.35	75.39	31.02	0.98
Sausal	2	34	25YR E	521.30	321.02	323.61	323.61	324.72	0.053972	8.84	8.53	64.16	29.87	0.98
Sausal	2	34	25YR P	504.60	321.02	323.56	323.56	324.65	0.054307	8.75	8.41	62.67	29.72	0.98
Sausal	2	34	10YR E	426.30	321.02	323.31	323.31	324.30	0.056276	8.31	7.85	55.44	28.95	0.98
Sausal	2	34	10YR P	420.30	321.02	323.29	323.29	324.27	0.056485	8.28	7.81	54.86	28.88	0.98
Sausal	2	34	5YR E	349.80	321.02	323.06	323.06	323.94	0.058499	7.81	7.22	48.11	28.15	0.98
Sausal	2	34	5YR P	338.50	321.02	323.02	323.02	323.88	0.058898	7.73	7.12	46.99	28.02	0.98
Sausal	2	34	2YR E	240.40	321.02	322.65	322.65	323.35	0.062821	6.94	6.15	36.86	26.85	0.98
Sausal	2	34	2YR P	236.30	321.02	322.63	322.63	323.33	0.062793	6.89	6.09	36.46	26.81	0.97
Sausal	2	34	1YR E	42.26	321.02	321.59	321.59	321.83	0.093716	4.00	2.98	10.79	22.29	0.99
Sausal	2	34	1YR P	28.20	321.02	321.47	321.47	321.66	0.103037	3.51	2.51	8.16	21.77	0.99
Sausal	2	33	100YR E	744.00	316.37	321.77		323.02	0.021837	9.15	7.16	88.07	18.73	0.70
Sausal	2	33	100YR P	650.80	316.37	321.64		322.65	0.018141	8.21	5.81	85.73	18.64	0.64
Sausal	2	33	25YR E	521.30	316.37	321.38		322.10	0.013942	6.95	4.23	80.83	18.44	0.55
Sausal	2	33	25YR P	504.60	316.37	321.35		322.04	0.013314	6.76	4.02	80.33	18.42	0.54
Sausal	2	33	10YR E	426.30	316.37	321.13		321.67	0.011153	6.00	3.21	76.26	18.25	0.49
Sausal	2	33	10YR P	420.30	316.37	321.11		321.64	0.010941	5.93	3.14	76.03	18.24	0.49
Sausal	2	33	5YR E	349.80	316.37	320.90		321.30	0.008928	5.19	2.44	72.10	18.08	0.44
Sausal	2	33	5YR P	338.50	316.37	320.86		321.25	0.008619	5.07	2.34	71.39	18.05	0.43
Sausal	2	33	2YR E	240.40	316.37	320.43		320.67	0.006187	4.01	1.51	63.71	17.73	0.36
Sausal	2	33	2YR P	236.30	316.37	320.41		320.65	0.006064	3.95	1.48	63.42	17.72	0.35
Sausal	2	33	1YR E	42.26	316.37	317.14	317.14	317.45	0.090840	4.52	3.55	9.41	15.25	1.01
Sausal	2	33	1YR P	28.20	316.37	316.99	316.99	317.23	0.098847	3.94	2.96	7.18	15.14	1.00
Sausal	2	32	100YR E	744.00	314.08	322.36	317.39	322.48	0.001388	2.93	0.65	287.21	53.40	0.19
Sausal	2	32	100YR P	650.80	314.08	322.11	317.17	322.21	0.001206	2.67	0.55	273.86	51.60	0.17
Sausal	2	32	25YR E	521.30	314.08	321.70	316.83	321.77	0.000955	2.29	0.41	253.32	48.71	0.15
Sausal	2	32	25YR P	504.60	314.08	321.65	316.79	321.72	0.000916	2.23	0.39	251.11	48.39	0.15
Sausal	2	32	10YR E	426.30	314.08	321.36	316.58	321.42	0.000765	1.98	0.31	237.25	46.32	0.14
Sausal	2	32	10YR P	420.30	314.08	321.34	316.56	321.40	0.000750	1.96	0.30	236.42	46.19	0.13
Sausal	2	32	5YR E	349.80	314.08	321.07	316.34	321.11	0.000605	1.71	0.24	224.00	44.25	0.12
Sausal	2	32	5YR P	338.50	314.08	321.02	316.30	321.06	0.000582	1.67	0.22	221.91	43.91	0.12
Sausal	2	32	2YR E	240.40	314.08	320.53	315.94	320.55	0.000390	1.29	0.14	201.12	40.82	0.10
Sausal	2	32	2YR P	236.30	314.08	320.51	315.93	320.53	0.000382	1.27	0.14	200.34	40.78	0.09
Sausal	2	32	1YR E	42.26	31									

HEC-RAS Plan: Scenario2 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	31.5		Culvert										
Sausal	2	30	100YR E	744.00	300.16	302.61	302.61	303.70	0.054861	8.59	8.20	91.38	42.92	0.98
Sausal	2	30	100YR P	650.80	300.16	302.41	302.41	303.42	0.056794	8.25	7.79	82.94	42.25	0.98
Sausal	2	30	25YR E	521.30	300.16	302.11	302.11	303.00	0.060048	7.71	7.13	70.67	41.05	0.99
Sausal	2	30	25YR P	504.60	300.16	302.08	302.08	302.94	0.060259	7.62	7.01	69.14	40.89	0.98
Sausal	2	30	10YR E	426.30	300.16	301.88	301.88	302.67	0.063087	7.24	6.57	61.21	40.09	0.99
Sausal	2	30	10YR P	420.30	300.16	301.86	301.86	302.64	0.063348	7.21	6.54	60.58	40.03	0.99
Sausal	2	30	5YR E	349.80	300.16	301.68	301.68	302.38	0.065738	6.79	6.03	53.31	39.28	0.99
Sausal	2	30	5YR P	338.50	300.16	301.65	301.65	302.33	0.066436	6.73	5.96	52.05	39.15	0.99
Sausal	2	30	2YR E	240.40	300.16	301.40	301.36	301.91	0.064925	5.85	4.80	42.29	38.11	0.95
Sausal	2	30	2YR P	236.30	300.16	301.39	301.34	301.90	0.064488	5.80	4.73	41.93	38.08	0.94
Sausal	2	30	1YR E	42.26	300.16	300.64	300.58	300.77	0.064568	2.94	1.71	14.51	35.01	0.80
Sausal	2	30	1YR P	28.20	300.16	300.54	300.49	300.64	0.069142	2.56	1.41	11.11	34.61	0.79
Sausal	2	29	100YR E	744.00	296.60	299.11	299.11	300.30	0.060017	8.84	8.75	85.84	36.55	1.00
Sausal	2	29	100YR P	650.80	296.60	298.90	298.90	300.00	0.061702	8.48	8.28	78.18	36.25	1.00
Sausal	2	29	25YR E	521.30	296.60	298.59	298.59	299.54	0.064064	7.89	7.50	67.19	35.81	1.00
Sausal	2	29	25YR P	504.60	296.60	298.55	298.55	299.48	0.064076	7.79	7.36	65.82	35.76	1.00
Sausal	2	29	10YR E	426.30	296.60	298.35	298.35	299.19	0.066932	7.41	6.90	58.41	35.42	1.00
Sausal	2	29	10YR P	420.30	296.60	298.33	298.33	299.16	0.067125	7.37	6.86	57.84	35.39	1.00
Sausal	2	29	5YR E	349.80	296.60	298.14	298.14	298.88	0.069003	6.93	6.29	51.13	35.04	1.00
Sausal	2	29	5YR P	338.50	296.60	298.11	298.11	298.83	0.069671	6.86	6.22	49.94	34.97	1.00
Sausal	2	29	2YR E	240.40	296.60	297.80	297.80	298.39	0.074982	6.15	5.37	39.47	34.42	1.00
Sausal	2	29	2YR P	236.30	296.60	297.79	297.79	298.37	0.075329	6.12	5.34	39.00	34.39	1.00
Sausal	2	29	1YR E	42.26	296.60	297.03	296.99	297.19	0.078240	3.15	1.99	13.45	32.99	0.87
Sausal	2	29	1YR P	28.20	296.60	296.95		297.06	0.072700	2.63	1.49	10.77	32.84	0.81
Sausal	2	28	100YR E	744.00	289.82	292.39	292.37	293.55	0.055568	8.75	8.45	87.36	37.79	0.99
Sausal	2	28	100YR P	650.80	289.82	292.17	292.17	293.25	0.058496	8.43	8.09	79.12	37.44	1.00
Sausal	2	28	25YR E	521.30	289.82	291.86	291.86	292.81	0.061644	7.84	7.36	67.85	36.96	1.00
Sausal	2	28	25YR P	504.60	289.82	291.82	291.82	292.75	0.062600	7.76	7.26	66.36	36.90	1.00
Sausal	2	28	10YR E	426.30	289.82	291.63	291.63	292.45	0.064437	7.34	6.74	59.12	36.59	1.00
Sausal	2	28	10YR P	420.30	289.82	291.61	291.61	292.43	0.064660	7.31	6.70	58.54	36.56	1.00
Sausal	2	28	5YR E	349.80	289.82	291.42	291.42	292.15	0.067519	6.88	6.19	51.60	36.26	1.00
Sausal	2	28	5YR P	338.50	289.82	291.39	291.39	292.10	0.067948	6.81	6.10	50.47	36.21	1.00
Sausal	2	28	2YR E	240.40	289.82	291.10	291.10	291.67	0.073628	6.09	5.27	39.94	35.75	1.00
Sausal	2	28	2YR P	236.30	289.82	291.08	291.08	291.65	0.073856	6.05	5.22	39.49	35.73	1.00
Sausal	2	28	1YR E	42.26	289.82	290.31	290.31	290.49	0.106307	3.40	2.41	12.45	34.51	0.99
Sausal	2	28	1YR P	28.20	289.82	290.23	290.23	290.36	0.116192	2.97	2.01	9.50	34.38	0.99
Sausal	2	27	100YR E	744.00	286.78	290.07		291.14	0.035203	8.43	7.13	92.80	31.30	0.82
Sausal	2	27	100YR P	650.80	286.78	289.88		290.81	0.033299	7.87	6.34	86.73	30.97	0.79
Sausal	2	27	25YR E	521.30	286.78	289.56		290.31	0.031215	7.07	5.32	76.89	30.44	0.75
Sausal	2	27	25YR P	504.60	286.78	289.51		290.24	0.030920	6.97	5.19	75.55	30.36	0.75
Sausal	2	27	10YR E	426.30	286.78	289.29		289.92	0.029634	6.44	4.56	68.83	29.99	0.72
Sausal	2	27	10YR P	420.30	286.78	289.27		289.89	0.029547	6.40	4.51	68.28	29.96	0.72
Sausal	2	27	5YR E	349.80	286.78	289.05		289.57	0.028408	5.88	3.94	61.59	29.58	0.70
Sausal	2	27	5YR P	338.50	286.78	289.01		289.52	0.028132	5.79	3.84	60.52	29.52	0.69
Sausal	2	27	2YR E	240.40	286.78	288.65		289.02	0.026129	4.95	2.98	50.00	28.92	0.65
Sausal	2	27	2YR P	236.30	286.78	288.63		289.00	0.026054	4.91	2.94	49.51	28.89	0.64
Sausal	2	27	1YR E	42.26	286.78	287.52		287.60	0.021164	2.33	0.91	18.30	27.03	0.49
Sausal	2	27	1YR P	28.20	286.78	287.37		287.43	0.020966	1.98	0.71	14.35	26.78	0.47
Sausal	2	26	100YR E	744.00	281.33	284.47	284.47	285.60	0.055120	8.61	8.24	88.67	40.09	0.98
Sausal	2	26	100YR P	650.80	281.33	284.25	284.25	285.31	0.058076	8.31	7.91	80.13	39.46	0.99
Sausal	2	26	25YR E	521.30	281.33	283.95	283.95	284.88	0.061521	7.75	7.23	68.43	38.58	0.99
Sausal	2	26	25YR P	504.60	281.33	283.91	283.91	284.82	0.062089	7.67	7.14	66.86	38.46	0.99
Sausal	2	26	10YR E	426.30	281.33	283.72	283.72	284.53	0.064864	7.28	6.66	59.36	37.88	1.00
Sausal	2	26	10YR P	420.30	281.33	283.70	283.70	284.51	0.065038	7.24	6.62	58.79	37.84	1.00
Sausal	2	26	5YR E	349.80	281.33	283.52	283.52	284.23	0.067586	6.81	6.10	51.83	37.29	1.00
Sausal	2	26	5YR P	338.50	281.33	283.48	283.48	284.19	0.068390	6.75	6.03	50.60	37.20	1.00
Sausal	2	26	2YR E	240.40	281.33	283.19	283.19	283.76	0.075034	6.06	5.25	39.83	36.34	1.01
Sausal	2	26	2YR P	236.30	281.33	283.18	283.18	283.74	0.075327	6.03	5.21	39.37	36.30	1.01
Sausal	2	26	1YR E	42.26	281.33	282.27	282.27	282.52	0.101683	3.96	2.99	10.68	22.58	1.01
Sausal	2	26	1YR P	28.20	281.33	282.14	282.14	282.34	0.104613	3.62	2.63	7.80	19.30	1.00
Sausal	2	25	100YR E	744.00	277.43	281.93		282.60	0.017559	6.72	4.26	118.76	35.86	0.60
Sausal	2	25	100YR P	650.80	277.43	281.71		282.29	0.016609	6.28	3.80	110.67	35.20	0.58
Sausal	2	25	25YR E	521.30	277.43	281.34		281.81	0.015356	5.63	3.16	98.08	34.15	0.54
Sausal	2	25	25YR P	504.60	277.43	281.30		281.75	0.015124	5.54	3.07	96.48	34.01	0.54
Sausal	2	25	10YR E	426.30	277.43	281.06		281.44	0.014064	5.08	2.65	88.45	33.32	0.51
Sausal	2	25	10YR P	420.30	277.43	281.04		281.42	0.013984	5.04	2.62	87.80	33.26	0.51
Sausal	2	25	5YR E	349.80	277.43	280.79		281.11	0.013095	4.60	2.25	79.58	32.54	0.49
Sausal	2	25	5YR P	338.50	277.43	280.74		281.05	0.013028	4.54	2.20	78.03	32.40	0.49
Sausal	2	25	2YR E	240.40	277.43	280.34		280.56	0.011395	3.82	1.64	65.31	31.24	0.44
Sausal	2	25	2YR P	236.30	277.43	280.32		280.54	0.011328	3.79	1.62	64.71	31.19	0.44
Sausal	2	25	1YR E	42.26	277.43	278.95		278.99	0.007925	1.73	0.46	24.57	27.05	0.32
Sausal	2	25	1YR P	28.20	277.43	278.69		278.73	0.007497	1.55	0.38	18.26	22.66	0.30
Sausal	2	24	100YR E	744.00	274.71	278.20		278.95	0.029080	6.99	5.14	109.54	41.75	0.73
Sausal	2	24	100YR P	650.80	274.71	277.94		278.64	0.031036	6.77	4.98	98.61	41.11	0.74

HEC-RAS Plan: Scenario2 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	23	100YR E	744.00	269.26	274.25	273.46	275.12	0.019405	8.00	5.68	107.15	30.08	0.65
Sausal	2	23	100YR P	650.80	269.26	273.96	273.22	274.75	0.019018	7.59	5.22	98.46	29.79	0.64
Sausal	2	23	25YR E	521.30	269.26	273.52	272.82	274.20	0.018413	6.96	4.55	85.45	29.34	0.61
Sausal	2	23	25YR P	504.60	269.26	273.47	272.69	274.13	0.018233	6.87	4.45	83.82	29.29	0.61
Sausal	2	23	10YR E	426.30	269.26	273.19	272.30	273.77	0.017292	6.37	3.93	75.87	29.01	0.59
Sausal	2	23	10YR P	420.30	269.26	273.17	272.27	273.74	0.017233	6.34	3.89	75.20	28.99	0.59
Sausal	2	23	5YR E	349.80	269.26	272.87	271.87	273.38	0.016728	5.90	3.47	66.64	28.69	0.57
Sausal	2	23	5YR P	338.50	269.26	272.81	271.84	273.31	0.016850	5.85	3.43	64.89	28.63	0.57
Sausal	2	23	2YR E	240.40	269.26	272.30	271.41	272.68	0.015787	5.06	2.71	51.41	24.23	0.54
Sausal	2	23	2YR P	236.30	269.26	272.28	271.39	272.66	0.015721	5.02	2.68	50.85	24.02	0.53
Sausal	2	23	1YR E	42.26	269.26	270.64	270.72	270.72	0.011504	2.34	0.79	18.35	17.61	0.39
Sausal	2	23	1YR P	28.20	269.26	270.41	270.47	270.47	0.010873	1.96	0.59	14.52	17.13	0.37
Sausal	2	22	100YR E	744.00	265.90	269.08	269.08	270.47	0.049376	9.67	9.54	82.07	30.64	0.97
Sausal	2	22	100YR P	650.80	265.90	268.83	268.83	270.11	0.050548	9.26	9.00	74.61	30.21	0.97
Sausal	2	22	25YR E	521.30	265.90	268.47	268.47	269.59	0.052520	8.62	8.15	63.71	29.57	0.96
Sausal	2	22	25YR P	504.60	265.90	268.41	268.41	269.51	0.053321	8.55	8.09	62.04	29.36	0.97
Sausal	2	22	10YR E	426.30	265.90	268.12	268.12	269.15	0.058819	8.25	7.86	53.77	27.71	0.99
Sausal	2	22	10YR P	420.30	265.90	268.10	268.10	269.12	0.059187	8.22	7.83	53.17	27.59	1.00
Sausal	2	22	5YR E	349.80	265.90	267.85	267.85	268.77	0.062345	7.77	7.28	46.50	26.45	1.00
Sausal	2	22	5YR P	338.50	265.90	267.83	267.83	268.71	0.061199	7.63	7.05	45.82	26.41	0.99
Sausal	2	22	2YR E	240.40	265.90	267.45	267.45	268.17	0.066528	6.84	6.11	36.06	25.77	0.99
Sausal	2	22	2YR P	236.30	265.90	267.44	267.44	268.14	0.066903	6.80	6.07	35.62	25.74	0.99
Sausal	2	22	1YR E	42.26	265.90	266.45	266.45	266.68	0.098956	3.87	2.87	11.00	24.05	1.00
Sausal	2	22	1YR P	28.20	265.90	266.34	266.34	266.51	0.109356	3.39	2.42	8.35	23.86	1.00
Sausal	2	21	100YR E	744.00	263.02	266.80	266.80	267.36	0.015384	6.13	3.59	128.14	38.09	0.56
Sausal	2	21	100YR P	650.80	263.02	266.55	266.55	267.05	0.014943	5.77	3.26	118.67	37.51	0.54
Sausal	2	21	25YR E	521.30	263.02	266.16	266.16	266.57	0.014346	5.23	2.78	104.33	36.72	0.52
Sausal	2	21	25YR P	504.60	263.02	266.11	266.11	266.51	0.014271	5.15	2.72	102.35	36.61	0.52
Sausal	2	21	10YR E	426.30	263.02	265.84	265.84	266.19	0.013970	4.79	2.43	92.58	36.06	0.51
Sausal	2	21	10YR P	420.30	263.02	265.82	265.82	266.16	0.013934	4.76	2.40	91.83	36.02	0.50
Sausal	2	21	5YR E	349.80	263.02	265.56	265.56	265.85	0.013536	4.39	2.11	82.51	35.49	0.49
Sausal	2	21	5YR P	338.50	263.02	265.51	265.51	265.80	0.013493	4.33	2.07	80.90	35.40	0.49
Sausal	2	21	2YR E	240.40	263.02	265.09	265.09	265.30	0.013018	3.75	1.65	66.00	34.54	0.46
Sausal	2	21	2YR P	236.30	263.02	265.07	265.07	265.28	0.013002	3.72	1.63	65.32	34.49	0.46
Sausal	2	21	1YR E	42.26	263.02	263.80	263.80	263.85	0.012088	1.84	0.56	23.12	31.91	0.38
Sausal	2	21	1YR P	28.20	263.02	263.64	263.64	263.67	0.012301	1.58	0.44	17.99	31.59	0.37
Sausal	2	20	100YR E	744.00	260.09	264.12	264.12	264.81	0.022088	6.78	4.58	115.71	41.01	0.65
Sausal	2	20	100YR P	650.80	260.09	263.82	263.82	264.47	0.023411	6.56	4.42	103.78	39.51	0.66
Sausal	2	20	25YR E	521.30	260.09	263.41	263.41	263.98	0.024853	6.13	4.05	87.95	37.23	0.67
Sausal	2	20	25YR P	504.60	260.09	263.35	263.35	263.91	0.025068	6.07	4.00	85.88	36.96	0.67
Sausal	2	20	10YR E	426.30	260.09	263.09	263.09	263.59	0.026086	5.75	3.73	76.11	35.84	0.67
Sausal	2	20	10YR P	420.30	260.09	263.07	263.07	263.56	0.026135	5.72	3.70	75.38	35.79	0.67
Sausal	2	20	5YR E	349.80	260.09	262.81	262.81	263.25	0.027296	5.40	3.43	66.22	35.12	0.67
Sausal	2	20	5YR P	338.50	260.09	262.77	262.77	263.20	0.027427	5.34	3.37	64.77	35.02	0.67
Sausal	2	20	2YR E	240.40	260.09	262.39	262.39	262.73	0.027994	4.69	2.80	51.95	34.06	0.65
Sausal	2	20	2YR P	236.30	260.09	262.38	262.38	262.71	0.028018	4.66	2.77	51.39	34.02	0.65
Sausal	2	20	1YR E	42.26	260.09	261.32	261.32	261.41	0.027646	2.45	1.06	17.22	28.06	0.55
Sausal	2	20	1YR P	28.20	260.09	261.15	261.15	261.23	0.027037	2.20	0.89	12.82	24.21	0.53
Sausal	2	19	100YR E	744.00	255.79	260.21	260.21	261.96	0.052958	10.71	11.31	71.95	21.33	1.00
Sausal	2	19	100YR P	650.80	255.79	259.91	259.91	261.52	0.054147	10.23	10.61	65.69	21.13	1.00
Sausal	2	19	25YR E	521.30	255.79	259.45	259.45	260.85	0.057870	9.56	9.75	56.02	20.82	1.00
Sausal	2	19	25YR P	504.60	255.79	259.39	259.39	260.77	0.058278	9.45	9.61	54.78	20.78	1.00
Sausal	2	19	10YR E	426.30	255.79	259.10	259.10	260.33	0.060422	8.94	8.92	48.79	20.58	1.00
Sausal	2	19	10YR P	420.30	255.79	259.08	259.08	260.30	0.060729	8.90	8.87	48.28	20.57	1.00
Sausal	2	19	5YR E	349.80	255.79	258.81	258.81	259.88	0.062181	8.34	8.09	42.79	20.38	1.00
Sausal	2	19	5YR P	338.50	255.79	258.76	258.76	259.81	0.062695	8.25	7.98	41.82	20.35	1.00
Sausal	2	19	2YR E	240.40	255.79	258.32	258.32	259.17	0.069470	7.43	6.99	32.83	20.05	1.01
Sausal	2	19	2YR P	236.30	255.79	258.30	258.30	259.14	0.069790	7.38	6.94	32.44	20.04	1.01
Sausal	2	19	1YR E	42.26	255.79	257.12	257.12	257.42	0.098454	4.43	3.51	9.57	16.05	1.01
Sausal	2	19	1YR P	28.20	255.79	256.93	256.93	257.19	0.106806	4.13	3.23	6.83	13.31	1.01
Sausal	2	18	100YR E	744.00	247.75	252.62	252.62	254.29	0.039737	10.39	10.06	72.60	17.87	0.90
Sausal	2	18	100YR P	650.80	247.75	252.37	252.37	253.82	0.037514	9.68	8.92	68.08	17.82	0.86
Sausal	2	18	25YR E	521.30	247.75	251.96	251.96	253.12	0.034935	8.67	7.43	60.76	17.74	0.82
Sausal	2	18	25YR P	504.60	247.75	251.90	251.90	253.03	0.034616	8.54	7.24	59.73	17.73	0.81
Sausal	2	18	10YR E	426.30	247.75	251.61	251.61	252.57	0.033232	7.88	6.36	54.58	17.67	0.78
Sausal	2	18	10YR P	420.30	247.75	251.58	251.58	252.53	0.033148	7.83	6.29	54.15	17.67	0.78
Sausal	2	18	5YR E	349.80	247.75	251.28	251.28	252.09	0.032267	7.22	5.53	48.83	17.61	0.76
Sausal	2	18	5YR P	338.50	247.75	251.23	251.23	252.01	0.032141	7.12	5.41	47.92	17.60	0.75
Sausal	2	18	2YR E	240.40	247.75	250.72	250.72	251.31	0.032226	6.21	4.41	38.90	17.50	0.73
Sausal	2	18	2YR P	236.30	247.75	250.69	250.69	251.28	0.032218	6.17	4.37	38.50	17.50	0.73
Sausal	2	18	1YR E	42.26	247.75	249.16	249.16	249.33	0.035257	3.34	1.78	12.64	15.41	0.65
Sausal	2	18	1YR P	28.20	247.75	248.97	248.77	249.10	0.034937	2.87	1.41	9.83	14.96	0.62
Sausal	2	17	100YR E	744.00	246.75	250.67	250.67	252.14	0.048143	10.13	10.16	81.48	29.16	0.91
Sausal	2	17	100YR P	650.80	246.75	250.42	250.39	251.76	0.047835	9.65	9.43	74.18	28.27	0.89
Sausal	2	17	25YR E	521.30	246.75	250.05	249.96	251.19	0.046305	8.83	8.19	63.98	26.99	0.86
Sausal	2	17	25YR P	504.60	246.75	250.00	249.89	251.12	0.046100	8.72	8.03	62.59	26.79	0.86
Sausal	2	17	10YR E	426.30	246.75	249.75	249.57	250.73	0.044523	8.12	7.15	56.10	25.37	0.83
Sausal	2	17	10YR P	420.30	246.75	249.73	249.54	250.70	0.044366	8.07	7.08	55.60	25.25	0.83
Sausal	2	17	5YR E	349.80	246.75	249.48	249.23	250.32	0.042324	7.43	6.18	49.59	23.85	0.80
Sausal	2	17	5YR P	338.50	246.75	249.44	249.17	250.25	0.042026	7.33	6.04	48.57	23.80	0.80
Sausal	2	17	2YR E	240.40	246.75	249.04	248.67	249.64	0.038092	6.25	4.65	39.58	21.31	0.74
Sausal	2	17	2YR P	236.30	246.75	249.02								

HEC-RAS Plan: Scenario2 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	16	25YR E	521.30	244.75	247.86		248.42	0.020813	6.17	3.91	89.66	35.67	0.63
Sausal	2	16	25YR P	504.60	244.75	247.80		248.36	0.020790	6.09	3.84	87.73	35.33	0.62
Sausal	2	16	10YR E	426.30	244.75	247.53		248.02	0.020946	5.72	3.50	78.16	33.57	0.62
Sausal	2	16	10YR P	420.30	244.75	247.50		247.99	0.020976	5.69	3.48	77.40	33.42	0.62
Sausal	2	16	5YR E	349.80	244.75	247.22		247.65	0.021434	5.34	3.18	68.18	31.54	0.61
Sausal	2	16	5YR P	338.50	244.75	247.17		247.59	0.021478	5.27	3.12	66.72	31.22	0.61
Sausal	2	16	2YR E	240.40	244.75	246.73		247.06	0.022425	4.67	2.63	53.06	30.08	0.60
Sausal	2	16	2YR P	236.30	244.75	246.71		247.03	0.022417	4.64	2.60	52.50	30.05	0.60
Sausal	2	16	1YR E	42.26	244.75	245.53		245.62	0.020552	2.29	0.88	18.64	27.73	0.49
Sausal	2	16	1YR P	28.20	244.75	245.40		245.45	0.019550	1.92	0.67	14.80	27.45	0.46
Sausal	2	15	100YR E	744.00	239.86	245.07		245.48	0.017773	5.76	5.50	156.75	46.03	0.46
Sausal	2	15	100YR P	650.80	239.86	244.74		245.13	0.018071	5.55	5.22	141.83	45.03	0.45
Sausal	2	15	25YR E	521.30	239.86	244.24		244.59	0.018784	5.24	4.84	119.48	43.49	0.45
Sausal	2	15	25YR P	504.60	239.86	244.17		244.52	0.018889	5.19	4.78	116.49	43.28	0.45
Sausal	2	15	10YR E	426.30	239.86	243.81		244.14	0.019272	4.94	4.46	101.72	39.94	0.45
Sausal	2	15	10YR P	420.30	239.86	243.79		244.10	0.019288	4.92	4.43	100.59	39.61	0.45
Sausal	2	15	5YR E	349.80	239.86	243.43		243.71	0.019498	4.62	4.04	87.12	35.41	0.45
Sausal	2	15	5YR P	338.50	239.86	243.36		243.64	0.019522	4.56	3.97	84.94	34.69	0.45
Sausal	2	15	2YR E	240.40	239.86	242.78		243.00	0.019824	4.03	3.31	66.25	30.33	0.43
Sausal	2	15	2YR P	236.30	239.86	242.75		242.97	0.019899	4.01	3.28	65.41	30.25	0.43
Sausal	2	15	1YR E	42.26	239.86	241.05		241.13	0.027150	2.35	1.60	18.77	22.87	0.43
Sausal	2	15	1YR P	28.20	239.86	240.83		240.90	0.029828	2.08	1.35	14.00	21.40	0.43
Sausal	2	14	100YR E	744.00	236.10	240.35		241.34	0.025262	8.19	6.29	98.99	33.95	0.72
Sausal	2	14	100YR P	650.80	236.10	240.08		240.98	0.024886	7.76	5.78	90.12	31.80	0.71
Sausal	2	14	25YR E	521.30	236.10	239.65		240.42	0.024458	7.10	5.04	77.33	28.42	0.69
Sausal	2	14	25YR P	504.60	236.10	239.59		240.34	0.024376	7.01	4.93	75.68	27.95	0.68
Sausal	2	14	10YR E	426.30	236.10	239.30		239.95	0.023895	6.52	4.41	67.93	25.64	0.67
Sausal	2	14	10YR P	420.30	236.10	239.28		239.92	0.023890	6.49	4.37	67.29	25.44	0.67
Sausal	2	14	5YR E	349.80	236.10	238.99		239.54	0.023487	6.01	3.88	60.10	24.66	0.65
Sausal	2	14	5YR P	338.50	236.10	238.94		239.48	0.023403	5.92	3.79	58.92	24.54	0.65
Sausal	2	14	2YR E	240.40	236.10	238.49		238.89	0.022544	5.12	3.02	48.00	23.63	0.61
Sausal	2	14	2YR P	236.30	236.10	238.47		238.87	0.022348	5.07	2.97	47.61	23.61	0.61
Sausal	2	14	1YR E	42.26	236.10	237.19		237.27	0.015182	2.28	0.81	18.56	21.71	0.43
Sausal	2	14	1YR P	28.20	236.10	237.02		237.08	0.013932	1.89	0.60	14.90	21.38	0.40
Sausal	2	13	100YR E	744.00	226.99	232.34		233.18	0.017430	8.00	5.53	110.38	30.49	0.62
Sausal	2	13	100YR P	650.80	226.99	231.96		232.75	0.017980	7.72	5.28	99.00	28.99	0.63
Sausal	2	13	25YR E	521.30	226.99	231.40		232.11	0.018655	7.23	4.83	83.32	27.01	0.62
Sausal	2	13	25YR P	504.60	226.99	231.32		232.02	0.018767	7.16	4.77	81.24	26.74	0.62
Sausal	2	13	10YR E	426.30	226.99	230.94		231.58	0.019387	6.81	4.46	71.26	25.43	0.62
Sausal	2	13	10YR P	420.30	226.99	230.91		231.54	0.019401	6.78	4.43	70.53	25.33	0.62
Sausal	2	13	5YR E	349.80	226.99	230.54		231.11	0.019942	6.40	4.10	61.40	24.06	0.62
Sausal	2	13	5YR P	338.50	226.99	230.48		231.04	0.020054	6.34	4.04	59.89	23.84	0.62
Sausal	2	13	2YR E	240.40	226.99	229.88		230.35	0.021316	5.71	3.50	46.26	21.79	0.62
Sausal	2	13	2YR P	236.30	226.99	229.85		230.31	0.021541	5.69	3.50	45.56	21.67	0.62
Sausal	2	13	1YR E	42.26	226.99	228.05		228.24	0.039478	3.55	2.00	12.14	15.71	0.69
Sausal	2	13	1YR P	28.20	226.99	227.85		228.00	0.046367	3.17	1.76	9.00	15.11	0.71
Sausal	2	12	100YR E	744.00	223.66	229.22	228.27	230.23	0.020976	8.57	6.43	100.02	25.75	0.66
Sausal	2	12	100YR P	650.80	223.66	228.93	227.96	229.82	0.020017	8.06	5.79	92.47	25.10	0.64
Sausal	2	12	25YR E	521.30	223.66	228.42	227.48	229.18	0.019331	7.37	5.02	80.02	23.99	0.61
Sausal	2	12	25YR P	504.60	223.66	228.35	227.40	229.09	0.019218	7.27	4.91	78.36	23.83	0.61
Sausal	2	12	10YR E	426.30	223.66	228.02	227.04	228.67	0.018435	6.76	4.36	70.59	23.11	0.59
Sausal	2	12	10YR P	420.30	223.66	227.99	227.02	228.63	0.018458	6.73	4.33	69.86	23.04	0.59
Sausal	2	12	5YR E	349.80	223.66	227.64	226.67	228.21	0.017870	6.24	3.84	62.07	22.28	0.57
Sausal	2	12	5YR P	338.50	223.66	227.59	226.61	228.13	0.017735	6.15	3.75	60.81	22.16	0.57
Sausal	2	12	2YR E	240.40	223.66	227.03	226.08	227.45	0.016478	5.31	2.95	48.97	20.35	0.53
Sausal	2	12	2YR P	236.30	223.66	227.01	226.05	227.42	0.016415	5.27	2.91	48.44	20.26	0.53
Sausal	2	12	1YR E	42.26	223.66	225.20	225.20	225.30	0.011120	2.43	0.83	17.61	14.49	0.38
Sausal	2	12	1YR P	28.20	223.66	224.94	225.01	225.01	0.010438	2.05	0.63	13.89	14.13	0.36
Sausal	2	11	100YR E	744.00	220.94	225.45	225.45	227.10	0.012088	10.63	2.60	74.54	23.39	0.96
Sausal	2	11	100YR P	650.80	220.94	225.13	225.13	226.68	0.012678	10.26	2.49	67.14	22.61	0.97
Sausal	2	11	25YR E	521.30	220.94	224.67	224.67	226.04	0.013107	9.59	2.27	57.16	21.45	0.97
Sausal	2	11	25YR P	504.60	220.94	224.61	224.61	225.95	0.013160	9.50	2.24	55.77	21.27	0.97
Sausal	2	11	10YR E	426.30	220.94	224.28	224.28	225.52	0.013589	9.10	2.11	48.98	20.38	0.97
Sausal	2	11	10YR P	420.30	220.94	224.26	224.26	225.48	0.013618	9.06	2.10	48.46	20.31	0.97
Sausal	2	11	5YR E	349.80	220.94	223.94	223.94	225.06	0.014018	8.61	1.96	42.21	19.44	0.97
Sausal	2	11	5YR P	338.50	220.94	223.89	223.89	224.99	0.014120	8.54	1.94	41.16	19.29	0.98
Sausal	2	11	2YR E	240.40	220.94	223.39	223.39	224.30	0.015035	7.77	1.71	31.85	17.92	0.98
Sausal	2	11	2YR P	236.30	220.94	223.37	223.37	224.27	0.015081	7.73	1.70	31.45	17.86	0.98
Sausal	2	11	1YR E	42.26	220.94	221.96	221.96	222.30	0.021771	4.63	0.86	9.12	13.86	1.01
Sausal	2	11	1YR P	28.20	220.94	221.78	221.78	222.05	0.023238	4.23	0.77	6.67	12.25	1.01
Sausal	2	10	100YR E	744.00	216.69	222.35	222.35	224.09	0.009241	11.86	2.86	78.61	22.86	0.90
Sausal	2	10	100YR P	650.80	216.69	221.96	221.96	223.63	0.009611	11.52	2.76	69.99	21.63	0.90
Sausal	2	10	25YR E	521.30	216.69	221.39	221.39	222.92	0.010097	10.89	2.57	58.13	19.81	0.91
Sausal	2	10	25YR P	504.60	216.69	221.31	221.31	222.82	0.010187	10.81	2.55	56.54	19.56	0.91
Sausal	2	10	10YR E	426.30	216.69	220.94	220.94	222.34	0.010362	10.28	2.37	49.52	18.38	0.90
Sausal	2	10	10YR P	420.30	216.69	220.89	220.89	222.30	0.010547	10.29	2.39	48.67	18.23	0.91
Sausal	2	10	5YR E	349.80	216.69	220.52	220.52	221.80	0.010806	9.75	2.22	42.07	17.04	0.91
Sausal	2	10	5YR P	338.50	216.69	220.45	220.45	221.72	0.010891	9.67	2.19	40.94	16.83	0.91
Sausal	2	10	2YR E	240.40	216.69	219.80	219.80	220.91	0.011993	8.87	1.97	30.72	14.78	0.92
Sausal	2	10	2YR P	236.30	216.69	219.77	219.77	220.87	0.012051	8.83	1.96	30.28	14.68	0.92
Sausal	2	10	1YR E	42.26	216.69	218.01	217.84	218.34	0.011542	4.58	0.72	9.39	9.10	0.77
Sausal	2	10	1YR P	28.20	216.69	217.79	217.62	218.02	0.010609	3.83	0.54	7.44	8.70	0.72
Sausal	2	9	100YR E	744.00	212.30	219.48		219.80	0.001391	5.13	0.51	186.07	53.42	0.35
Sausal	2	9	100YR P	650.80	212.30	219.17		219.47	0.001339	4.88</				

HEC-RAS Plan: Scenario2 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	9	10YR E	426.30	212.30	218.00		218.29	0.001534	4.56	0.43	113.80	44.52	0.35
Sausal	2	9	10YR P	420.30	212.30	217.92		218.21	0.001602	4.61	0.45	110.09	42.93	0.36
Sausal	2	9	5YR E	349.80	212.30	216.77		217.17	0.002941	5.26	0.63	73.51	27.39	0.47
Sausal	2	9	5YR P	338.50	212.30	216.59		217.02	0.003310	5.41	0.68	68.59	26.36	0.49
Sausal	2	9	2YR E	240.40	212.30	214.92	214.79	215.78	0.013808	7.45	1.57	32.42	16.91	0.91
Sausal	2	9	2YR P	236.30	212.30	214.84	214.76	215.74	0.015219	7.62	1.67	31.09	16.45	0.95
Sausal	2	9	1YR E	42.26	212.30	213.31	213.31	213.66	0.021773	4.73	0.89	8.94	13.05	1.01
Sausal	2	9	1YR P	28.20	212.30	213.14	213.14	213.41	0.023660	4.19	0.76	6.74	12.73	1.01
Sausal	2	8	100YR E	744.00	208.57	219.44	214.81	219.61	0.000643	4.07	0.30	258.38	61.66	0.23
Sausal	2	8	100YR P	650.80	208.57	219.13	214.45	219.29	0.000604	3.87	0.27	239.58	61.66	0.22
Sausal	2	8	25YR E	521.30	208.57	218.63	213.86	218.76	0.000522	3.47	0.22	209.58	53.54	0.20
Sausal	2	8	25YR P	504.60	208.57	218.56	213.80	218.69	0.000502	3.38	0.21	206.25	51.51	0.20
Sausal	2	8	10YR E	426.30	208.57	218.00	213.42	218.11	0.000482	3.18	0.19	179.62	43.05	0.19
Sausal	2	8	10YR P	420.30	208.57	217.91	213.39	218.02	0.000488	3.17	0.19	176.14	41.98	0.19
Sausal	2	8	5YR E	349.80	208.57	216.76	213.01	216.89	0.000667	3.36	0.22	132.86	35.56	0.22
Sausal	2	8	5YR P	338.50	208.57	216.58	212.96	216.72	0.000705	3.39	0.23	126.40	34.58	0.23
Sausal	2	8	2YR E	240.40	208.57	214.97	212.40	215.14	0.001089	3.54	0.27	79.72	23.86	0.27
Sausal	2	8	2YR P	236.30	208.57	214.91	212.38	215.07	0.001110	3.55	0.28	78.09	23.60	0.27
Sausal	2	8	1YR E	42.26	208.57	210.92	210.08	211.09	0.004087	3.25	0.33	12.99	7.91	0.45
Sausal	2	8	1YR P	28.20	208.57	210.47	209.78	210.60	0.004179	2.95	0.29	9.56	7.02	0.45
Sausal	2	7.8		Culvert										
Sausal	2	7	100YR E	744.00	204.66	209.26		209.94	0.018524	6.71	4.31	116.56	36.95	0.60
Sausal	2	7	100YR P	650.80	204.66	209.04		209.63	0.017309	6.25	3.81	108.75	35.83	0.57
Sausal	2	7	25YR E	521.30	204.66	208.77		209.22	0.014546	5.44	2.97	99.13	34.40	0.52
Sausal	2	7	25YR P	504.60	204.66	208.73		209.16	0.014234	5.34	2.87	97.68	34.18	0.51
Sausal	2	7	10YR E	426.30	204.66	208.44		208.82	0.013793	4.96	2.55	88.11	32.69	0.49
Sausal	2	7	10YR P	420.30	204.66	208.39		208.77	0.014201	4.98	2.58	86.43	32.42	0.50
Sausal	2	7	5YR E	349.80	204.66	207.95		208.32	0.016702	4.87	2.60	72.69	30.13	0.53
Sausal	2	7	5YR P	338.50	204.66	207.89		208.25	0.016921	4.83	2.57	70.83	29.82	0.53
Sausal	2	7	2YR E	240.40	204.66	207.42		207.69	0.016135	4.20	2.06	57.37	27.61	0.50
Sausal	2	7	2YR P	236.30	204.66	207.39		207.66	0.016186	4.18	2.05	56.67	27.49	0.50
Sausal	2	7	1YR E	42.26	204.66	205.85		205.92	0.013628	2.20	0.75	19.18	21.19	0.50
Sausal	2	7	1YR P	28.20	204.66	205.64		205.70	0.013358	1.90	0.60	14.87	20.37	0.39
Sausal	2	6	100YR E	1106.10	200.31	205.22	205.22	206.72	0.008728	10.81	2.45	122.71	39.40	0.88
Sausal	2	6	100YR P	1035.90	200.31	205.08	205.08	206.53	0.008678	10.57	2.37	117.39	39.16	0.88
Sausal	2	6	25YR E	913.10	200.31	204.76	204.76	206.18	0.009225	10.37	2.34	104.86	38.29	0.89
Sausal	2	6	25YR P	899.60	200.31	204.73	204.73	206.13	0.009258	10.33	2.32	103.56	38.07	0.89
Sausal	2	6	10YR E	789.70	200.31	204.44	204.44	205.78	0.009501	9.98	2.22	93.01	36.20	0.89
Sausal	2	6	10YR P	764.20	200.31	204.38	204.38	205.69	0.009544	9.89	2.19	90.60	35.76	0.89
Sausal	2	6	5YR E	538.30	200.31	203.68	203.68	204.83	0.010463	9.06	1.97	67.45	31.22	0.90
Sausal	2	6	5YR P	512.40	200.31	203.60	203.60	204.72	0.010574	8.94	1.93	64.78	30.65	0.91
Sausal	2	6	2YR E	363.20	200.31	203.03	203.03	204.01	0.011662	8.18	1.73	48.51	26.94	0.92
Sausal	2	6	2YR P	352.90	200.31	202.99	202.99	203.95	0.011771	8.12	1.72	47.34	26.66	0.92
Sausal	2	6	1YR E	58.85	200.31	201.30	201.26	201.64	0.017226	4.72	0.84	12.61	16.46	0.93
Sausal	2	6	1YR P	45.90	200.31	201.19	201.14	201.47	0.016860	4.27	0.72	10.85	16.13	0.90
Sausal	2	5.1	100YR E	1106.10	196.68	204.03	204.03	204.93	0.003632	9.45	1.61	190.65	121.97	0.62
Sausal	2	5.1	100YR P	1035.90	196.68	203.11	203.11	204.75	0.006810	11.81	2.63	113.01	38.19	0.83
Sausal	2	5.1	25YR E	913.10	196.68	203.17	202.77	204.40	0.005062	10.24	1.97	115.27	39.53	0.72
Sausal	2	5.1	25YR P	899.60	196.68	203.22	202.74	204.37	0.004743	9.96	1.86	117.28	45.96	0.70
Sausal	2	5.1	10YR E	789.70	196.68	203.26		204.13	0.003537	8.64	1.40	119.40	51.87	0.60
Sausal	2	5.1	10YR P	764.20	196.68	203.30		204.09	0.003217	8.28	1.28	121.50	57.14	0.58
Sausal	2	5.1	5YR E	538.30	196.68	203.09		203.54	0.001863	6.16	0.72	112.35	38.04	0.44
Sausal	2	5.1	5YR P	512.40	196.68	203.05		203.47	0.001746	5.94	0.67	110.66	37.66	0.42
Sausal	2	5.1	2YR E	363.20	196.68	202.79		203.03	0.001073	4.52	0.39	101.08	35.41	0.33
Sausal	2	5.1	2YR P	352.90	196.68	202.74		202.98	0.001055	4.46	0.38	99.25	34.97	0.33
Sausal	2	5.1	1YR E	58.85	196.68	197.97	197.97	198.47	0.017023	5.78	1.13	10.50	10.75	0.98
Sausal	2	5.1	1YR P	45.90	196.68	197.81	197.81	198.24	0.018098	5.35	1.02	8.80	10.46	0.99
Sausal	2	5	100YR E	1106.10	196.09	203.42	203.42	204.74	0.004864	11.14	2.22	131.96	60.99	0.73
Sausal	2	5	100YR P	1035.90	196.09	202.83	202.83	204.51	0.006159	11.86	2.58	107.32	32.41	0.81
Sausal	2	5	25YR E	913.10	196.09	203.17	202.77	204.24	0.003820	9.65	1.68	119.11	37.87	0.64
Sausal	2	5	25YR P	899.60	196.09	203.22	202.77	204.22	0.003602	9.42	1.60	120.92	44.15	0.62
Sausal	2	5	10YR E	789.70	196.09	203.27	202.76	204.01	0.002691	8.17	1.20	123.19	50.92	0.54
Sausal	2	5	10YR P	764.20	196.09	203.30	202.76	203.99	0.002519	7.94	1.13	125.19	56.11	0.52
Sausal	2	5	5YR E	538.30	196.09	203.10	201.41	203.48	0.001395	5.79	0.61	116.33	35.49	0.39
Sausal	2	5	5YR P	512.40	196.09	203.05	201.24	203.41	0.001301	5.57	0.56	114.76	34.87	0.37
Sausal	2	5	2YR E	363.20	196.09	201.91	200.20	202.92	0.003136	7.67	1.13	45.94	24.77	0.56
Sausal	2	5	2YR P	352.90	196.09	201.92	200.12	202.87	0.002948	7.45	1.07	46.00	24.83	0.54
Sausal	2	5	1YR E	58.85	196.09	197.36	197.36	197.96	0.016062	6.22	1.25	9.49	10.02	0.98
Sausal	2	5	1YR P	45.90	196.09	197.18	197.18	197.68	0.016652	5.72	1.11	8.09	9.55	0.98
Sausal	2	4.5		Culvert										
Sausal	2	4	100YR E	1106.10	187.02	192.63		193.92	0.028544	9.72	8.38	128.28	29.73	0.74
Sausal	2	4	100YR P	1035.90	187.02	192.38		193.65	0.029861	9.63	8.35	120.83	29.24	0.75
Sausal	2	4	25YR E	913.10	187.02	191.92		193.16	0.032724	9.47	8.33	107.57	28.34	0.77
Sausal	2	4	25YR P	899.60	187.02	191.87		193.10	0.033080	9.45	8.33	106.11	28.24	0.77
Sausal	2	4	10YR E	789.70	187.02	191.46		192.64	0.035798	9.24	8.22	94.67	27.44	0.79
Sausal	2	4	10YR P	764.20	187.02	191.36		192.53	0.036564	9.19	8.19	91.96	27.24	0.80
Sausal	2	4	5YR E	538.30	187.02	190.42	190.21	191.50	0.046685	8.73	8.06	67.15	25.40	0.86
Sausal	2	4	5YR P	512.40	187.02	190.30	190.12	191.37	0.048521	8.68	8.07	64.17	25.15	0.88
Sausal	2	4	2YR E	363.20	187.02	189.58	189.58	190.59	0.064538	8.36	8.20	46.61	23.58	0.97
Sausal	2	4	2YR P	352.90	187.02	189.54	189.54	190.53	0.064821	8.28	8.09	45.67	23.50	0.96
Sausal	2	4	1YR E	58.85	187.02	187.94	187.94	188.32	0.097196	4.96	4.15	11.96	16.25	1.00
Sausal	2	4	1YR P	45.90	187.02	187.83	187.82	188.15	0.095366	4.50	3.57	10.26	15.76	0.98
Sausal	2	3	100YR E	1106.10	182.75	190.31		191.76	0.021110	9.92	8.02	126.61	23.90	0.66
Sausal	2	3	100YR P	1035.90	182.75	190.08		191.46	0.020908	9.66	7.68	121.18	23.43	0.65

HEC-RAS Plan: Scenario2 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	3	25YR E	913.10	182.75	189.66		190.91	0.020506	9.17	7.06	111.46	22.56	0.64
Sausal	2	3	25YR P	899.60	182.75	189.61		190.84	0.020456	9.11	6.99	110.38	22.46	0.64
Sausal	2	3	10YR E	789.70	182.75	189.21		190.32	0.020001	8.61	6.40	101.42	21.63	0.62
Sausal	2	3	10YR P	764.20	182.75	189.11		190.19	0.019883	8.49	6.25	99.31	21.42	0.62
Sausal	2	3	5YR E	538.30	182.75	188.14		188.95	0.018665	7.29	4.89	79.57	19.44	0.58
Sausal	2	3	5YR P	512.40	182.75	188.02		188.79	0.018450	7.13	4.72	77.25	19.28	0.58
Sausal	2	3	2YR E	363.20	182.75	187.21		187.78	0.017474	6.12	3.70	62.09	17.98	0.55
Sausal	2	3	2YR P	352.90	182.75	187.15		187.71	0.017449	6.05	3.63	60.95	17.86	0.54
Sausal	2	3	1YR E	58.85	182.75	184.38		184.56	0.022373	3.41	1.64	17.30	13.96	0.54
Sausal	2	3	1YR P	45.90	182.75	184.17		184.33	0.024242	3.19	1.51	14.42	13.69	0.54
Sausal	2	2	100YR E	1106.10	176.58	184.58		185.68	0.018574	9.51	7.28	143.26	29.05	0.60
Sausal	2	2	100YR P	1035.90	176.58	184.34		185.41	0.018654	9.33	7.09	136.36	28.67	0.60
Sausal	2	2	25YR E	913.10	176.58	183.90		184.91	0.018805	9.00	6.72	124.00	27.98	0.60
Sausal	2	2	25YR P	899.60	176.58	183.85		184.85	0.018827	8.96	6.68	122.60	27.90	0.60
Sausal	2	2	10YR E	789.70	176.58	183.43		184.37	0.019054	8.64	6.35	110.95	27.22	0.60
Sausal	2	2	10YR P	764.20	176.58	183.33		184.26	0.019120	8.57	6.28	108.17	27.06	0.60
Sausal	2	2	5YR E	538.30	176.58	182.32		183.13	0.019964	7.82	5.53	81.89	24.68	0.59
Sausal	2	2	5YR P	512.40	176.58	182.18		182.98	0.020167	7.72	5.44	78.53	24.14	0.59
Sausal	2	2	2YR E	363.20	176.58	181.33		182.01	0.020947	7.00	4.74	59.40	20.77	0.59
Sausal	2	2	2YR P	352.90	176.58	181.27		181.94	0.020963	6.94	4.68	58.09	20.52	0.58
Sausal	2	2	1YR E	58.85	176.58	178.63		178.80	0.016440	3.37	1.49	17.53	10.51	0.45
Sausal	2	2	1YR P	45.90	176.58	178.39		178.54	0.015552	3.03	1.25	15.17	9.85	0.43
Sausal	2	1	100YR E	1106.10	175.30	182.78	180.57	183.67	0.015003	7.74	5.07	153.91	29.79	0.52
Sausal	2	1	100YR P	1035.90	175.30	182.54	180.31	183.39	0.015004	7.56	4.90	146.82	29.24	0.52
Sausal	2	1	25YR E	913.10	175.30	182.10	179.93	182.88	0.015009	7.22	4.57	134.11	28.21	0.51
Sausal	2	1	25YR P	899.60	175.30	182.05	179.89	182.82	0.015009	7.18	4.54	132.69	28.09	0.51
Sausal	2	1	10YR E	789.70	175.30	181.62	179.55	182.33	0.015018	6.85	4.22	120.85	27.10	0.50
Sausal	2	1	10YR P	764.20	175.30	181.51	179.47	182.21	0.015021	6.77	4.15	118.04	26.86	0.50
Sausal	2	1	5YR E	538.30	175.30	180.49	178.70	181.03	0.015008	5.93	3.40	91.77	23.15	0.49
Sausal	2	1	5YR P	512.40	175.30	180.34	178.61	180.87	0.015007	5.82	3.31	88.74	20.53	0.48
Sausal	2	1	2YR E	363.20	175.30	179.46	178.02	179.87	0.015017	5.16	2.76	70.73	20.07	0.48
Sausal	2	1	2YR P	352.90	175.30	179.39	177.98	179.80	0.015020	5.10	2.72	69.41	20.03	0.48
Sausal	2	1	1YR E	58.85	175.30	176.83	176.25	176.95	0.015023	2.77	1.09	21.24	16.74	0.43
Sausal	2	1	1YR P	45.90	175.30	176.64	176.13	176.74	0.015010	2.54	0.95	18.06	16.38	0.43
Palo Seco	1	37	100YR E	133.20	481.72	484.61	484.55	485.23	0.039095	7.03	5.58	23.68	16.17	0.79
Palo Seco	1	37	100YR P	112.30	481.72	484.46	484.37	485.01	0.037160	6.57	4.97	21.23	15.83	0.76
Palo Seco	1	37	25YR E	100.80	481.72	484.36	484.19	484.88	0.036003	6.29	4.63	19.78	15.62	0.75
Palo Seco	1	37	25YR P	84.00	481.72	484.21	484.00	484.66	0.034062	5.83	4.07	17.45	14.51	0.72
Palo Seco	1	37	10YR E	80.20	481.72	484.17	483.95	484.61	0.033735	5.73	3.95	16.87	14.20	0.71
Palo Seco	1	37	10YR P	67.20	481.72	484.02	483.76	484.41	0.032177	5.32	3.50	14.89	13.10	0.69
Palo Seco	1	37	5YR E	64.90	481.72	483.99	483.72	484.37	0.032137	5.26	3.44	14.48	12.86	0.68
Palo Seco	1	37	5YR P	53.90	481.72	483.84	483.53	484.18	0.031141	4.89	3.06	12.63	11.72	0.66
Palo Seco	1	37	2YR E	44.80	481.72	483.70	483.35	483.99	0.030325	4.55	2.72	11.02	10.63	0.63
Palo Seco	1	37	2YR P	36.60	481.72	483.54	483.19	483.80	0.029788	4.21	2.41	9.49	9.47	0.64
Palo Seco	1	37	1YR E	6.72	481.72	482.42	482.42	482.62	0.108057	3.60	2.63	1.90	4.95	1.00
Palo Seco	1	37	1YR P	5.80	481.72	482.38	482.38	482.56	0.110686	3.48	2.52	1.69	4.70	1.00
Palo Seco	1	36	100YR E	133.20	438.09	440.15	440.15	440.83	0.061643	6.71	5.82	20.86	16.76	0.95
Palo Seco	1	36	100YR P	112.30	438.09	439.98	439.98	440.61	0.065832	6.42	5.54	18.11	15.69	0.96
Palo Seco	1	36	25YR E	100.80	438.09	439.88	439.88	440.48	0.068705	6.24	5.37	16.59	15.07	0.97
Palo Seco	1	36	25YR P	84.00	438.09	439.73	439.73	440.27	0.074348	5.96	5.11	14.31	14.09	0.99
Palo Seco	1	36	10YR E	80.20	438.09	439.69	439.69	440.23	0.075380	5.87	5.02	13.83	13.87	0.99
Palo Seco	1	36	10YR P	67.20	438.09	439.56	439.56	440.05	0.080991	5.60	4.76	12.08	13.06	1.00
Palo Seco	1	36	5YR E	64.90	438.09	439.54	439.54	440.02	0.081116	5.53	4.67	11.80	12.95	1.00
Palo Seco	1	36	5YR P	53.90	438.09	439.42	439.42	439.85	0.085213	5.26	4.39	10.26	12.41	1.01
Palo Seco	1	36	2YR E	44.80	438.09	439.31	439.31	439.70	0.088917	4.99	4.10	8.97	11.95	1.01
Palo Seco	1	36	2YR P	36.60	438.09	439.21	439.21	439.56	0.091478	4.72	3.79	7.76	11.38	1.01
Palo Seco	1	36	1YR E	6.72	438.09	438.96	438.61	438.98	0.009925	1.32	0.32	5.11	9.66	0.32
Palo Seco	1	36	1YR P	5.80	438.09	439.33	438.58	439.34	0.001394	0.63	0.07	9.17	12.02	0.13

HEC-RAS Plan: Scenario3

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch EI (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	1	38.2	100YR E	610.90	414.89	419.73		420.62	0.023857	8.01	5.99	86.20	26.76	0.67
Sausal	1	38.2	100YR P	538.90	414.89	419.37		420.24	0.025534	7.84	5.91	76.87	25.78	0.68
Sausal	1	38.2	25YR E	420.70	414.89	418.81		419.60	0.027200	7.35	5.44	62.91	24.24	0.69
Sausal	1	38.2	25YR P	424.70	414.89	418.79		419.60	0.028417	7.48	5.65	62.35	24.18	0.70
Sausal	1	38.2	10YR E	346.30	414.89	418.38		419.12	0.030364	7.11	5.32	52.52	22.90	0.71
Sausal	1	38.2	10YR P	350.30	414.89	418.37		419.14	0.031145	7.20	5.46	52.48	22.89	0.72
Sausal	1	38.2	5YR E	284.90	414.89	417.99		418.69	0.033514	6.84	5.15	43.99	21.04	0.73
Sausal	1	38.2	5YR P	284.80	414.89	418.00		418.70	0.032878	6.80	5.08	44.29	21.11	0.72
Sausal	1	38.2	2YR E	195.70	414.89	417.88	417.01	418.24	0.018351	4.92	2.71	41.71	20.52	0.54
Sausal	1	38.2	2YR P	196.60	414.89	417.93	417.02	418.28	0.017291	4.84	2.60	42.74	20.76	0.52
Sausal	1	38.2	1YR E	35.60	414.89	416.20		416.30	0.014794	2.48	0.91	14.38	13.62	0.42
Sausal	1	38.2	1YR P	23.30	414.89	415.79		415.90	0.027772	2.61	1.16	8.92	12.88	0.55
Sausal	1	38	100YR E	610.90	412.89	419.03		419.48	0.008824	5.77	2.86	123.43	30.36	0.42
Sausal	1	38	100YR P	538.90	412.89	418.63		419.05	0.009123	5.59	2.75	111.36	29.24	0.43
Sausal	1	38	25YR E	420.70	412.89	418.11		418.45	0.008274	4.98	2.25	96.48	27.80	0.40
Sausal	1	38	25YR P	424.70	412.89	417.98		418.36	0.009304	5.19	2.47	93.11	27.47	0.42
Sausal	1	38	10YR E	346.30	412.89	417.59		417.91	0.008639	4.72	2.10	82.58	26.39	0.40
Sausal	1	38	10YR P	350.30	412.89	417.48		417.83	0.009755	4.93	2.32	79.70	26.08	0.42
Sausal	1	38	5YR E	284.90	412.89	417.02		417.33	0.010135	4.65	2.14	67.78	24.79	0.42
Sausal	1	38	5YR P	284.80	412.89	416.76		417.13	0.013280	5.08	2.61	61.49	24.08	0.48
Sausal	1	38	2YR E	195.70	412.89	415.09	415.01	415.90	0.063760	7.23	6.57	27.19	15.94	0.94
Sausal	1	38	2YR P	196.60	412.89	415.02	415.02	415.90	0.073365	7.55	7.27	26.08	15.51	1.00
Sausal	1	38	1YR E	35.60	412.89	413.71	413.71	414.03	0.094903	4.51	3.57	7.90	12.73	1.01
Sausal	1	38	1YR P	23.30	412.89	413.80	413.55	413.91	0.026059	2.56	1.11	9.10	12.90	0.54
Sausal	2	35.5	100YR E	744.00	409.89	418.90	414.44	419.11	0.002629	4.12	1.28	222.48	38.95	0.25
Sausal	2	35.5	100YR P	641.90	409.89	418.52	414.12	418.70	0.002349	3.78	1.09	207.88	37.74	0.23
Sausal	2	35.5	25YR E	521.30	409.89	418.01	413.70	418.15	0.002007	3.35	0.87	188.89	36.09	0.21
Sausal	2	35.5	25YR P	500.70	409.89	417.90	413.63	418.04	0.001953	3.28	0.84	185.18	35.76	0.21
Sausal	2	35.5	10YR E	426.30	409.89	417.51	413.29	417.63	0.001745	2.99	0.71	171.45	34.51	0.20
Sausal	2	35.5	10YR P	411.50	409.89	417.42	413.22	417.53	0.001712	2.94	0.69	168.23	34.21	0.19
Sausal	2	35.5	5YR E	349.80	409.89	416.95	412.93	417.05	0.001620	2.73	0.61	152.43	32.89	0.19
Sausal	2	35.5	5YR P	335.20	409.89	416.70	412.85	416.80	0.001723	2.75	0.62	144.48	32.22	0.19
Sausal	2	35.5	2YR E	240.40	409.89	415.12	412.30	415.23	0.002676	2.83	0.73	96.81	27.84	0.23
Sausal	2	35.5	2YR P	229.00	409.89	414.93	412.23	415.04	0.002835	2.84	0.74	91.56	27.31	0.23
Sausal	2	35.5	1YR E	42.26	409.89	411.20	410.79	411.33	0.021191	2.96	1.30	14.30	13.61	0.51
Sausal	2	35.5	1YR P	20.90	409.89	410.51	410.51	410.74	0.101330	3.85	2.87	5.43	11.76	1.00
Sausal	2	35.4		Culvert										
Sausal	2	35	100YR E	744.00	326.57	333.99	332.00	334.59	0.011608	6.57	3.72	129.86	33.92	0.47
Sausal	2	35	100YR P	641.90	326.57	333.60		334.14	0.011285	6.20	3.38	116.94	31.79	0.45
Sausal	2	35	25YR E	521.30	326.57	333.07		333.54	0.010885	5.71	2.96	100.85	28.93	0.44
Sausal	2	35	25YR P	500.70	326.57	332.97		333.43	0.010822	5.62	2.89	97.98	28.39	0.44

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch EI (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	35	10YR E	426.30	326.57	332.59		333.00	0.010468	5.26	2.59	87.72	26.37	0.42
Sausal	2	35	10YR P	411.50	326.57	332.51		332.91	0.010391	5.18	2.53	85.64	25.94	0.42
Sausal	2	35	5YR E	349.80	326.57	332.15		332.50	0.010083	4.84	2.27	76.68	24.03	0.41
Sausal	2	35	5YR P	335.20	326.57	332.06		332.40	0.010001	4.75	2.20	74.53	23.61	0.41
Sausal	2	35	2YR E	240.40	326.57	331.41	329.60	331.67	0.009409	4.12	1.75	60.02	20.56	0.38
Sausal	2	35	2YR P	229.00	326.57	331.32	329.53	331.57	0.009318	4.03	1.69	58.22	20.15	0.38
Sausal	2	35	1YR E	42.26	326.57	328.94		329.00	0.006819	2.08	0.58	20.33	13.39	0.30
Sausal	2	35	1YR P	20.90	326.57	328.39	327.59	328.42	0.006222	1.59	0.38	13.17	12.56	0.27
Sausal	2	34	100YR E	744.00	321.02	324.23	324.23	325.59	0.049890	9.85	9.82	83.39	31.82	0.98
Sausal	2	34	100YR P	641.90	321.02	323.95	323.95	325.21	0.051823	9.43	9.30	74.63	30.95	0.98
Sausal	2	34	25YR E	521.30	321.02	323.61	323.61	324.72	0.053972	8.84	8.53	64.16	29.87	0.98
Sausal	2	34	25YR P	500.70	321.02	323.55	323.55	324.63	0.054067	8.71	8.35	62.44	29.69	0.98
Sausal	2	34	10YR E	426.30	321.02	323.31	323.31	324.30	0.056276	8.31	7.85	55.44	28.95	0.98
Sausal	2	34	10YR P	411.50	321.02	323.27	323.27	324.23	0.056697	8.22	7.74	54.04	28.80	0.98
Sausal	2	34	5YR E	349.80	321.02	323.06	323.06	323.94	0.058499	7.81	7.22	48.11	28.15	0.98
Sausal	2	34	5YR P	335.20	321.02	323.01	323.01	323.86	0.058924	7.70	7.09	46.69	27.99	0.98
Sausal	2	34	2YR E	240.40	321.02	322.65	322.65	323.35	0.062821	6.94	6.15	36.86	26.85	0.98
Sausal	2	34	2YR P	229.00	321.02	322.60	322.60	323.28	0.063495	6.83	6.03	35.60	26.70	0.98
Sausal	2	34	1YR E	42.26	321.02	321.59	321.59	321.83	0.093716	4.00	2.98	10.79	22.29	0.99
Sausal	2	34	1YR P	20.90	321.02	321.40	321.40	321.56	0.109862	3.18	2.20	6.66	21.46	0.99
Sausal	2	33	100YR E	744.00	316.37	321.77		323.02	0.021837	9.15	7.16	88.07	18.73	0.70
Sausal	2	33	100YR P	641.90	316.37	321.62		322.61	0.017911	8.13	5.71	85.32	18.62	0.63
Sausal	2	33	25YR E	521.30	316.37	321.38		322.10	0.013942	6.95	4.23	80.83	18.44	0.55
Sausal	2	33	25YR P	500.70	316.37	321.34		322.02	0.013203	6.72	3.98	80.15	18.41	0.54
Sausal	2	33	10YR E	426.30	316.37	321.13		321.67	0.011153	6.00	3.21	76.26	18.25	0.49
Sausal	2	33	10YR P	411.50	316.37	321.09		321.61	0.010641	5.83	3.04	75.67	18.23	0.48
Sausal	2	33	5YR E	349.80	316.37	320.90		321.30	0.008928	5.19	2.44	72.10	18.08	0.44
Sausal	2	33	5YR P	335.20	316.37	320.85		321.23	0.008539	5.03	2.31	71.16	18.04	0.43
Sausal	2	33	2YR E	240.40	316.37	320.43		320.67	0.006187	4.01	1.51	63.71	17.73	0.36
Sausal	2	33	2YR P	229.00	316.37	320.37		320.60	0.005924	3.88	1.43	62.62	17.68	0.35
Sausal	2	33	1YR E	42.26	316.37	317.14	317.14	317.45	0.090840	4.52	3.55	9.41	15.25	1.01
Sausal	2	33	1YR P	20.90	316.37	316.90	316.90	317.10	0.104433	3.56	2.57	5.89	15.07	1.00
Sausal	2	32	100YR E	744.00	314.08	322.36	317.39	322.48	0.001388	2.93	0.65	287.21	53.40	0.19
Sausal	2	32	100YR P	641.90	314.08	322.07	317.15	322.17	0.001192	2.65	0.54	272.21	51.38	0.17
Sausal	2	32	25YR E	521.30	314.08	321.70	316.83	321.77	0.000955	2.29	0.41	253.32	48.71	0.15
Sausal	2	32	25YR P	500.70	314.08	321.64	316.78	321.71	0.000908	2.22	0.39	250.45	48.29	0.15
Sausal	2	32	10YR E	426.30	314.08	321.36	316.58	321.42	0.000765	1.98	0.31	237.25	46.32	0.14
Sausal	2	32	10YR P	411.50	314.08	321.31	316.54	321.36	0.000731	1.93	0.30	235.07	45.98	0.13
Sausal	2	32	5YR E	349.80	314.08	321.07	316.34	321.11	0.000605	1.71	0.24	224.00	44.25	0.12
Sausal	2	32	5YR P	335.20	314.08	321.00	316.29	321.04	0.000575	1.65	0.22	221.23	43.80	0.12
Sausal	2	32	2YR E	240.40	314.08	320.53	315.94	320.55	0.000390	1.29	0.14	201.12	40.82	0.10
Sausal	2	32	2YR P	229.00	314.08	320.46	315.90	320.48	0.000369	1.25	0.13	198.35	40.67	0.09

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	32	1YR E	42.26	314.08	316.80	314.92	316.81	0.000432	0.68	0.05	63.95	32.87	0.08
Sausal	2	32	1YR P	20.90	314.08	315.94	314.73	315.95	0.000545	0.57	0.04	37.13	28.75	0.09
Sausal	2	31.5		Culvert										
Sausal	2	30	100YR E	744.00	300.16	302.61	302.61	303.70	0.054861	8.59	8.20	91.38	42.92	0.98
Sausal	2	30	100YR P	641.90	300.16	302.39	302.39	303.39	0.057168	8.23	7.76	82.03	42.16	0.98
Sausal	2	30	25YR E	521.30	300.16	302.11	302.11	303.00	0.060048	7.71	7.13	70.67	41.05	0.99
Sausal	2	30	25YR P	500.70	300.16	302.07	302.07	302.93	0.060408	7.60	6.99	68.75	40.85	0.98
Sausal	2	30	10YR E	426.30	300.16	301.88	301.88	302.67	0.063087	7.24	6.57	61.21	40.09	0.99
Sausal	2	30	10YR P	411.50	300.16	301.84	301.84	302.61	0.063645	7.16	6.48	59.69	39.94	0.99
Sausal	2	30	5YR E	349.80	300.16	301.68	301.68	302.38	0.065738	6.79	6.03	53.31	39.28	0.99
Sausal	2	30	5YR P	335.20	300.16	301.64	301.64	302.32	0.066615	6.71	5.94	51.68	39.11	0.99
Sausal	2	30	2YR E	240.40	300.16	301.40	301.36	301.91	0.064925	5.85	4.80	42.29	38.11	0.95
Sausal	2	30	2YR P	229.00	300.16	301.37	301.32	301.86	0.064356	5.72	4.64	41.14	37.99	0.94
Sausal	2	30	1YR E	42.26	300.16	300.64	300.58	300.77	0.064568	2.94	1.71	14.51	35.01	0.80
Sausal	2	30	1YR P	20.90	300.16	300.48		300.56	0.074495	2.32	1.24	9.05	34.36	0.79
Sausal	2	29	100YR E	744.00	296.60	299.11	299.11	300.30	0.060017	8.84	8.75	85.84	36.55	1.00
Sausal	2	29	100YR P	641.90	296.60	298.88	298.88	299.97	0.061871	8.44	8.23	77.44	36.22	1.00
Sausal	2	29	25YR E	521.30	296.60	298.59	298.59	299.54	0.064064	7.89	7.50	67.19	35.81	1.00
Sausal	2	29	25YR P	500.70	296.60	298.54	298.54	299.47	0.064198	7.77	7.34	65.46	35.75	1.00
Sausal	2	29	10YR E	426.30	296.60	298.35	298.35	299.19	0.066932	7.41	6.90	58.41	35.42	1.00
Sausal	2	29	10YR P	411.50	296.60	298.31	298.31	299.13	0.067396	7.32	6.79	57.01	35.35	1.00
Sausal	2	29	5YR E	349.80	296.60	298.14	298.14	298.88	0.069003	6.93	6.29	51.13	35.04	1.00
Sausal	2	29	5YR P	335.20	296.60	298.10	298.10	298.82	0.069884	6.85	6.20	49.59	34.96	1.00
Sausal	2	29	2YR E	240.40	296.60	297.80	297.80	298.39	0.074982	6.15	5.37	39.47	34.42	1.00
Sausal	2	29	2YR P	229.00	296.60	297.77	297.77	298.33	0.075702	6.06	5.26	38.19	34.35	1.00
Sausal	2	29	1YR E	42.26	296.60	297.03	296.99	297.19	0.078240	3.15	1.99	13.45	32.99	0.87
Sausal	2	29	1YR P	20.90	296.60	296.90		296.98	0.067177	2.28	1.18	9.20	32.75	0.76
Sausal	2	28	100YR E	744.00	289.82	292.39	292.37	293.55	0.055568	8.75	8.45	87.36	37.79	0.99
Sausal	2	28	100YR P	641.90	289.82	292.15	292.15	293.22	0.058718	8.39	8.05	78.35	37.41	1.00
Sausal	2	28	25YR E	521.30	289.82	291.86	291.86	292.81	0.061644	7.84	7.36	67.85	36.96	1.00
Sausal	2	28	25YR P	500.70	289.82	291.81	291.81	292.73	0.062129	7.74	7.23	66.02	36.89	1.00
Sausal	2	28	10YR E	426.30	289.82	291.63	291.63	292.45	0.064437	7.34	6.74	59.12	36.59	1.00
Sausal	2	28	10YR P	411.50	289.82	291.59	291.59	292.40	0.065004	7.26	6.64	57.69	36.53	1.00
Sausal	2	28	5YR E	349.80	289.82	291.42	291.42	292.15	0.067519	6.88	6.19	51.60	36.26	1.00
Sausal	2	28	5YR P	335.20	289.82	291.38	291.38	292.09	0.068042	6.78	6.07	50.15	36.20	1.00
Sausal	2	28	2YR E	240.40	289.82	291.10	291.10	291.67	0.073628	6.09	5.27	39.94	35.75	1.00
Sausal	2	28	2YR P	229.00	289.82	291.06	291.06	291.61	0.074378	5.99	5.15	38.65	35.69	1.00
Sausal	2	28	1YR E	42.26	289.82	290.31	290.31	290.49	0.106307	3.40	2.41	12.45	34.51	0.99
Sausal	2	28	1YR P	20.90	289.82	290.17	290.17	290.29	0.128760	2.72	1.81	7.69	34.30	1.01
Sausal	2	27	100YR E	744.00	286.78	290.07		291.14	0.035203	8.43	7.13	92.80	31.30	0.82

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch EI (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	27	100YR P	641.90	286.78	289.86		290.77	0.033173	7.82	6.28	86.07	30.94	0.79
Sausal	2	27	25YR E	521.30	286.78	289.56		290.31	0.031215	7.07	5.32	76.89	30.44	0.75
Sausal	2	27	25YR P	500.70	286.78	289.50		290.23	0.030845	6.94	5.15	75.23	30.34	0.75
Sausal	2	27	10YR E	426.30	286.78	289.29		289.92	0.029634	6.44	4.56	68.83	29.99	0.72
Sausal	2	27	10YR P	411.50	286.78	289.25		289.85	0.029383	6.33	4.44	67.49	29.91	0.72
Sausal	2	27	5YR E	349.80	286.78	289.05		289.57	0.028408	5.88	3.94	61.59	29.58	0.70
Sausal	2	27	5YR P	335.20	286.78	289.00		289.50	0.028036	5.76	3.81	60.21	29.50	0.69
Sausal	2	27	2YR E	240.40	286.78	288.65		289.02	0.026129	4.95	2.98	50.00	28.92	0.65
Sausal	2	27	2YR P	229.00	286.78	288.60		288.96	0.026096	4.85	2.89	48.53	28.84	0.64
Sausal	2	27	1YR E	42.26	286.78	287.52		287.60	0.021164	2.33	0.91	18.30	27.03	0.49
Sausal	2	27	1YR P	20.90	286.78	287.28		287.33	0.020664	1.75	0.59	12.02	26.63	0.46
Sausal	2	26	100YR E	744.00	281.33	284.47	284.47	285.60	0.055120	8.61	8.24	88.67	40.09	0.98
Sausal	2	26	100YR P	641.90	281.33	284.23	284.23	285.28	0.058250	8.27	7.86	79.36	39.40	0.99
Sausal	2	26	25YR E	521.30	281.33	283.95	283.95	284.88	0.061521	7.75	7.23	68.43	38.58	0.99
Sausal	2	26	25YR P	500.70	281.33	283.90	283.90	284.80	0.062246	7.66	7.12	66.48	38.43	1.00
Sausal	2	26	10YR E	426.30	281.33	283.72	283.72	284.53	0.064864	7.28	6.66	59.36	37.88	1.00
Sausal	2	26	10YR P	411.50	281.33	283.68	283.68	284.48	0.065417	7.19	6.57	57.91	37.77	1.00
Sausal	2	26	5YR E	349.80	281.33	283.52	283.52	284.23	0.067586	6.81	6.10	51.83	37.29	1.00
Sausal	2	26	5YR P	335.20	281.33	283.47	283.47	284.17	0.068683	6.73	6.02	50.23	37.17	1.00
Sausal	2	26	2YR E	240.40	281.33	283.19	283.19	283.76	0.075034	6.06	5.25	39.83	36.34	1.01
Sausal	2	26	2YR P	229.00	281.33	283.16	283.16	283.71	0.074762	5.94	5.09	38.71	36.25	1.00
Sausal	2	26	1YR E	42.26	281.33	282.27	282.27	282.52	0.101683	3.96	2.99	10.68	22.58	1.01
Sausal	2	26	1YR P	20.90	281.33	282.04	282.04	282.22	0.109076	3.41	2.43	6.13	17.12	1.00
Sausal	2	25	100YR E	744.00	277.43	281.93		282.60	0.017559	6.72	4.26	118.76	35.86	0.60
Sausal	2	25	100YR P	641.90	277.43	281.68		282.26	0.016518	6.23	3.75	109.86	35.13	0.57
Sausal	2	25	25YR E	521.30	277.43	281.34		281.81	0.015356	5.63	3.16	98.08	34.15	0.54
Sausal	2	25	25YR P	500.70	277.43	281.29		281.74	0.015062	5.51	3.05	96.12	33.98	0.54
Sausal	2	25	10YR E	426.30	277.43	281.06		281.44	0.014064	5.08	2.65	88.45	33.32	0.51
Sausal	2	25	10YR P	411.50	277.43	281.01		281.38	0.013867	4.99	2.57	86.83	33.18	0.51
Sausal	2	25	5YR E	349.80	277.43	280.79		281.11	0.013095	4.60	2.25	79.58	32.54	0.49
Sausal	2	25	5YR P	335.20	277.43	280.73		281.03	0.012997	4.52	2.18	77.59	32.36	0.48
Sausal	2	25	2YR E	240.40	277.43	280.34		280.56	0.011395	3.82	1.64	65.31	31.24	0.44
Sausal	2	25	2YR P	229.00	277.43	280.29		280.50	0.011185	3.73	1.57	63.68	31.09	0.44
Sausal	2	25	1YR E	42.26	277.43	278.95		278.99	0.007925	1.73	0.46	24.57	27.05	0.32
Sausal	2	25	1YR P	20.90	277.43	278.53		278.56	0.007243	1.41	0.33	14.84	20.54	0.29
Sausal	2	24	100YR E	744.00	274.71	278.20		278.95	0.029080	6.99	5.14	109.54	41.75	0.73
Sausal	2	24	100YR P	641.90	274.71	277.91		278.61	0.031243	6.75	4.96	97.55	41.05	0.74
Sausal	2	24	25YR E	521.30	274.71	277.56		278.18	0.034307	6.40	4.69	83.13	40.18	0.76
Sausal	2	24	25YR P	500.70	274.71	277.49	277.15	278.11	0.035340	6.35	4.67	80.32	40.01	0.77
Sausal	2	24	10YR E	426.30	274.71	277.24	276.97	277.82	0.039126	6.15	4.57	70.40	39.40	0.79
Sausal	2	24	10YR P	411.50	274.71	277.19	276.93	277.76	0.039938	6.10	4.54	68.44	39.28	0.80
Sausal	2	24	5YR E	349.80	274.71	276.98	276.77	277.51	0.043313	5.87	4.36	60.36	38.78	0.81

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	24	5YR P	335.20	274.71	276.94	276.73	277.45	0.043579	5.78	4.27	58.68	38.67	0.81
Sausal	2	24	2YR E	240.40	274.71	276.57	276.46	277.02	0.054625	5.42	4.11	44.67	37.86	0.87
Sausal	2	24	2YR P	229.00	274.71	276.53	276.42	276.97	0.056266	5.37	4.07	42.97	37.77	0.88
Sausal	2	24	1YR E	42.26	274.71	275.57	275.57	275.79	0.103043	3.74	2.76	11.30	26.30	1.01
Sausal	2	24	1YR P	20.90	274.71	275.36	275.36	275.52	0.115349	3.27	2.32	6.39	19.77	1.01
Sausal	2	23	100YR E	744.00	269.26	274.25	273.46	275.12	0.019405	8.00	5.68	107.15	30.08	0.65
Sausal	2	23	100YR P	641.90	269.26	273.93	273.20	274.72	0.018984	7.55	5.18	97.60	29.76	0.63
Sausal	2	23	25YR E	521.30	269.26	273.52	272.82	274.20	0.018413	6.96	4.55	85.45	29.34	0.61
Sausal	2	23	25YR P	500.70	269.26	273.45	272.63	274.11	0.018158	6.84	4.42	83.49	29.28	0.61
Sausal	2	23	10YR E	426.30	269.26	273.19	272.30	273.77	0.017292	6.37	3.93	75.87	29.01	0.59
Sausal	2	23	10YR P	411.50	269.26	273.14	272.23	273.70	0.017146	6.28	3.83	74.22	28.95	0.58
Sausal	2	23	5YR E	349.80	269.26	272.87	271.87	273.38	0.016728	5.90	3.47	66.64	28.69	0.57
Sausal	2	23	5YR P	335.20	269.26	272.80	271.83	273.29	0.016852	5.83	3.41	64.42	28.61	0.57
Sausal	2	23	2YR E	240.40	269.26	272.30	271.41	272.68	0.015787	5.06	2.71	51.41	24.23	0.54
Sausal	2	23	2YR P	229.00	269.26	272.24	271.35	272.60	0.015598	4.95	2.62	49.84	23.64	0.53
Sausal	2	23	1YR E	42.26	269.26	270.64		270.72	0.011504	2.34	0.79	18.35	17.61	0.39
Sausal	2	23	1YR P	20.90	269.26	270.27		270.32	0.010700	1.73	0.49	12.14	16.82	0.35
Sausal	2	22	100YR E	744.00	265.90	269.08	269.08	270.47	0.049376	9.67	9.54	82.07	30.64	0.97
Sausal	2	22	100YR P	641.90	265.90	268.81	268.81	270.08	0.050645	9.22	8.94	73.89	30.17	0.97
Sausal	2	22	25YR E	521.30	265.90	268.47	268.47	269.59	0.052520	8.62	8.15	63.71	29.57	0.96
Sausal	2	22	25YR P	500.70	265.90	268.39	268.39	269.50	0.053919	8.56	8.12	61.49	29.26	0.97
Sausal	2	22	10YR E	426.30	265.90	268.12	268.12	269.15	0.058819	8.25	7.86	53.77	27.71	0.99
Sausal	2	22	10YR P	411.50	265.90	268.07	268.07	269.08	0.059734	8.18	7.78	52.29	27.41	1.00
Sausal	2	22	5YR E	349.80	265.90	267.85	267.85	268.77	0.062345	7.77	7.28	46.50	26.45	1.00
Sausal	2	22	5YR P	335.20	265.90	267.81	267.81	268.69	0.061421	7.61	7.03	45.49	26.38	0.99
Sausal	2	22	2YR E	240.40	265.90	267.45	267.45	268.17	0.066528	6.84	6.11	36.06	25.77	0.99
Sausal	2	22	2YR P	229.00	265.90	267.40	267.40	268.10	0.067610	6.74	6.00	34.82	25.68	1.00
Sausal	2	22	1YR E	42.26	265.90	266.45	266.45	266.68	0.098956	3.87	2.87	11.00	24.05	1.00
Sausal	2	22	1YR P	20.90	265.90	266.28	266.27	266.42	0.109147	3.01	2.02	6.97	23.76	0.97
Sausal	2	21	100YR E	744.00	263.02	266.80		267.36	0.015384	6.13	3.59	128.14	38.09	0.56
Sausal	2	21	100YR P	641.90	263.02	266.53		267.02	0.014907	5.73	3.23	117.72	37.45	0.54
Sausal	2	21	25YR E	521.30	263.02	266.16		266.57	0.014346	5.23	2.78	104.33	36.72	0.52
Sausal	2	21	25YR P	500.70	263.02	266.10		266.49	0.014254	5.13	2.70	101.89	36.58	0.52
Sausal	2	21	10YR E	426.30	263.02	265.84		266.19	0.013970	4.79	2.43	92.58	36.06	0.51
Sausal	2	21	10YR P	411.50	263.02	265.79		266.13	0.013879	4.72	2.37	90.72	35.96	0.50
Sausal	2	21	5YR E	349.80	263.02	265.56		265.85	0.013536	4.39	2.11	82.51	35.49	0.49
Sausal	2	21	5YR P	335.20	263.02	265.50		265.78	0.013465	4.31	2.05	80.46	35.38	0.49
Sausal	2	21	2YR E	240.40	263.02	265.09		265.30	0.013018	3.75	1.65	66.00	34.54	0.46
Sausal	2	21	2YR P	229.00	263.02	265.03		265.24	0.012982	3.68	1.60	64.08	34.42	0.46
Sausal	2	21	1YR E	42.26	263.02	263.80		263.85	0.012088	1.84	0.56	23.12	31.91	0.38
Sausal	2	21	1YR P	20.90	263.02	263.54	263.30	263.57	0.012660	1.41	0.38	14.87	31.39	0.36

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	20	100YR E	744.00	260.09	264.12		264.81	0.022088	6.78	4.58	115.71	41.01	0.65
Sausal	2	20	100YR P	641.90	260.09	263.79		264.44	0.023535	6.53	4.40	102.65	39.35	0.66
Sausal	2	20	25YR E	521.30	260.09	263.41		263.98	0.024853	6.13	4.05	87.95	37.23	0.67
Sausal	2	20	25YR P	500.70	260.09	263.34		263.90	0.025121	6.05	3.99	85.39	36.89	0.67
Sausal	2	20	10YR E	426.30	260.09	263.09		263.59	0.026086	5.75	3.73	76.11	35.84	0.67
Sausal	2	20	10YR P	411.50	260.09	263.03		263.53	0.026228	5.68	3.67	74.30	35.71	0.67
Sausal	2	20	5YR E	349.80	260.09	262.81		263.25	0.027296	5.40	3.43	66.22	35.12	0.67
Sausal	2	20	5YR P	335.20	260.09	262.75		263.19	0.027454	5.32	3.36	64.35	34.98	0.67
Sausal	2	20	2YR E	240.40	260.09	262.39		262.73	0.027994	4.69	2.80	51.95	34.06	0.65
Sausal	2	20	2YR P	229.00	260.09	262.35		262.67	0.028055	4.61	2.72	50.37	33.94	0.65
Sausal	2	20	1YR E	42.26	260.09	261.32		261.41	0.027646	2.45	1.06	17.22	28.06	0.55
Sausal	2	20	1YR P	20.90	260.09	261.04	260.82	261.11	0.026608	2.03	0.79	10.30	21.70	0.52
Sausal	2	19	100YR E	744.00	255.79	260.21	260.21	261.96	0.052958	10.71	11.31	71.95	21.33	1.00
Sausal	2	19	100YR P	641.90	255.79	259.88	259.88	261.47	0.054280	10.18	10.54	65.08	21.11	0.99
Sausal	2	19	25YR E	521.30	255.79	259.45	259.45	260.85	0.057870	9.56	9.75	56.02	20.82	1.00
Sausal	2	19	25YR P	500.70	255.79	259.38	259.38	260.74	0.058363	9.43	9.57	54.49	20.77	1.00
Sausal	2	19	10YR E	426.30	255.79	259.10	259.10	260.33	0.060422	8.94	8.92	48.79	20.58	1.00
Sausal	2	19	10YR P	411.50	255.79	259.04	259.04	260.25	0.061096	8.84	8.80	47.57	20.54	1.00
Sausal	2	19	5YR E	349.80	255.79	258.81	258.81	259.88	0.062181	8.34	8.09	42.79	20.38	1.00
Sausal	2	19	5YR P	335.20	255.79	258.75	258.75	259.79	0.062875	8.22	7.94	41.53	20.34	1.00
Sausal	2	19	2YR E	240.40	255.79	258.32	258.32	259.17	0.069470	7.43	6.99	32.83	20.05	1.01
Sausal	2	19	2YR P	229.00	255.79	258.26	258.26	259.09	0.070426	7.31	6.85	31.73	20.01	1.01
Sausal	2	19	1YR E	42.26	255.79	257.12	257.12	257.42	0.098454	4.43	3.51	9.57	16.05	1.01
Sausal	2	19	1YR P	20.90	255.79	256.81	256.81	257.05	0.112108	3.92	3.02	5.33	11.55	1.02
Sausal	2	18	100YR E	744.00	247.75	252.62	252.32	254.29	0.039737	10.39	10.06	72.60	17.87	0.90
Sausal	2	18	100YR P	641.90	247.75	252.34	251.98	253.77	0.037253	9.61	8.80	67.65	17.82	0.86
Sausal	2	18	25YR E	521.30	247.75	251.96	251.51	253.12	0.034935	8.67	7.43	60.76	17.74	0.82
Sausal	2	18	25YR P	500.70	247.75	251.88	251.43	253.01	0.034545	8.50	7.19	59.49	17.73	0.81
Sausal	2	18	10YR E	426.30	247.75	251.61	251.14	252.57	0.033232	7.88	6.36	54.58	17.67	0.78
Sausal	2	18	10YR P	411.50	247.75	251.55	251.08	252.48	0.033025	7.76	6.20	53.52	17.66	0.78
Sausal	2	18	5YR E	349.80	247.75	251.28	250.80	252.09	0.032267	7.22	5.53	48.83	17.61	0.76
Sausal	2	18	5YR P	335.20	247.75	251.21	250.73	251.99	0.032138	7.09	5.38	47.63	17.60	0.75
Sausal	2	18	2YR E	240.40	247.75	250.72		251.31	0.032226	6.21	4.41	38.90	17.50	0.73
Sausal	2	18	2YR P	229.00	247.75	250.65		251.23	0.032273	6.10	4.29	37.76	17.49	0.73
Sausal	2	18	1YR E	42.26	247.75	249.16	248.94	249.33	0.035257	3.34	1.78	12.64	15.41	0.65
Sausal	2	18	1YR P	20.90	247.75	248.86	248.65	248.96	0.034297	2.56	1.19	8.15	14.51	0.60
Sausal	2	17	100YR E	744.00	246.75	250.67	250.67	252.14	0.048143	10.13	10.16	81.48	29.16	0.91
Sausal	2	17	100YR P	641.90	246.75	250.39	250.37	251.72	0.047734	9.60	9.35	73.50	28.19	0.89
Sausal	2	17	25YR E	521.30	246.75	250.05	249.96	251.19	0.046305	8.83	8.19	63.98	26.99	0.86
Sausal	2	17	25YR P	500.70	246.75	249.98	249.87	251.10	0.046054	8.69	7.99	62.26	26.72	0.86
Sausal	2	17	10YR E	426.30	246.75	249.75	249.57	250.73	0.044523	8.12	7.15	56.10	25.37	0.83
Sausal	2	17	10YR P	411.50	246.75	249.70	249.51	250.65	0.044142	7.99	6.97	54.86	25.09	0.83

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	17	5YR E	349.80	246.75	249.48	249.23	250.32	0.042324	7.43	6.18	49.59	23.85	0.80
Sausal	2	17	5YR P	335.20	246.75	249.43	249.16	250.23	0.041913	7.29	6.00	48.28	23.53	0.79
Sausal	2	17	2YR E	240.40	246.75	249.04	248.67	249.64	0.038092	6.25	4.65	39.58	21.31	0.74
Sausal	2	17	2YR P	229.00	246.75	248.99	248.60	249.56	0.037618	6.11	4.48	38.45	21.01	0.73
Sausal	2	17	1YR E	42.26	246.75	247.63		247.77	0.030094	3.01	1.46	14.04	16.67	0.58
Sausal	2	17	1YR P	20.90	246.75	247.33		247.41	0.030241	2.31	0.98	9.06	16.53	0.55
Sausal	2	16	100YR E	744.00	244.75	248.52		249.24	0.020844	7.04	4.78	114.33	38.25	0.65
Sausal	2	16	100YR P	641.90	244.75	248.23		248.89	0.020904	6.68	4.41	103.28	37.74	0.64
Sausal	2	16	25YR E	521.30	244.75	247.86		248.42	0.020813	6.17	3.91	89.66	35.67	0.63
Sausal	2	16	25YR P	500.70	244.75	247.79		248.34	0.020781	6.07	3.82	87.28	35.25	0.62
Sausal	2	16	10YR E	426.30	244.75	247.53		248.02	0.020946	5.72	3.50	78.16	33.57	0.62
Sausal	2	16	10YR P	411.50	244.75	247.47		247.95	0.021015	5.65	3.44	76.28	33.21	0.61
Sausal	2	16	5YR E	349.80	244.75	247.22		247.65	0.021434	5.34	3.18	68.18	31.54	0.61
Sausal	2	16	5YR P	335.20	244.75	247.16		247.58	0.021509	5.26	3.10	66.27	31.12	0.61
Sausal	2	16	2YR E	240.40	244.75	246.73		247.06	0.022425	4.67	2.63	53.06	30.08	0.60
Sausal	2	16	2YR P	229.00	244.75	246.67		246.99	0.022482	4.59	2.56	51.43	29.97	0.60
Sausal	2	16	1YR E	42.26	244.75	245.53		245.62	0.020552	2.29	0.88	18.64	27.73	0.49
Sausal	2	16	1YR P	20.90	244.75	245.31		245.36	0.018642	1.68	0.54	12.51	27.29	0.43
Sausal	2	15	100YR E	744.00	239.86	245.07		245.48	0.017773	5.76	5.50	156.75	46.03	0.46
Sausal	2	15	100YR P	641.90	239.86	244.71		245.09	0.018117	5.53	5.20	140.33	44.93	0.45
Sausal	2	15	25YR E	521.30	239.86	244.24		244.59	0.018784	5.24	4.84	119.48	43.49	0.45
Sausal	2	15	25YR P	500.70	239.86	244.15		244.50	0.018922	5.19	4.77	115.77	43.23	0.45
Sausal	2	15	10YR E	426.30	239.86	243.81		244.14	0.019272	4.94	4.46	101.72	39.94	0.45
Sausal	2	15	10YR P	411.50	239.86	243.74		244.06	0.019327	4.88	4.38	98.90	39.11	0.45
Sausal	2	15	5YR E	349.80	239.86	243.43		243.71	0.019498	4.62	4.04	87.12	35.41	0.45
Sausal	2	15	5YR P	335.20	239.86	243.35		243.62	0.019530	4.55	3.95	84.30	34.47	0.44
Sausal	2	15	2YR E	240.40	239.86	242.78		243.00	0.019824	4.03	3.31	66.25	30.33	0.43
Sausal	2	15	2YR P	229.00	239.86	242.70		242.92	0.019919	3.96	3.23	64.04	30.13	0.43
Sausal	2	15	1YR E	42.26	239.86	241.05		241.13	0.027150	2.35	1.60	18.77	22.87	0.43
Sausal	2	15	1YR P	20.90	239.86	240.70		240.75	0.032333	1.89	1.21	11.27	20.51	0.43
Sausal	2	14	100YR E	744.00	236.10	240.35		241.34	0.025262	8.19	6.29	98.99	33.95	0.72
Sausal	2	14	100YR P	641.90	236.10	240.05		240.94	0.024856	7.72	5.73	89.26	31.59	0.71
Sausal	2	14	25YR E	521.30	236.10	239.65		240.42	0.024458	7.10	5.04	77.33	28.42	0.69
Sausal	2	14	25YR P	500.70	236.10	239.58		240.32	0.024337	6.98	4.91	75.32	27.85	0.68
Sausal	2	14	10YR E	426.30	236.10	239.30		239.95	0.023895	6.52	4.41	67.93	25.64	0.67
Sausal	2	14	10YR P	411.50	236.10	239.24		239.87	0.023839	6.43	4.31	66.41	25.25	0.66
Sausal	2	14	5YR E	349.80	236.10	238.99		239.54	0.023487	6.01	3.88	60.10	24.66	0.65
Sausal	2	14	5YR P	335.20	236.10	238.93		239.46	0.023376	5.90	3.77	58.57	24.51	0.64
Sausal	2	14	2YR E	240.40	236.10	238.49		238.89	0.022544	5.12	3.02	48.00	23.63	0.61
Sausal	2	14	2YR P	229.00	236.10	238.43		238.82	0.022290	5.01	2.91	46.72	23.55	0.61
Sausal	2	14	1YR E	42.26	236.10	237.19		237.27	0.015182	2.28	0.81	18.56	21.71	0.43
Sausal	2	14	1YR P	20.90	236.10	236.90		236.95	0.013151	1.68	0.50	12.41	20.33	0.38

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Shear Chan	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(lb/sq ft)	(sq ft)	(ft)	
Sausal	2	13	100YR E	744.00	226.99	232.34		233.18	0.017430	8.00	5.53	110.38	30.49	0.62
Sausal	2	13	100YR P	641.90	226.99	231.92		232.71	0.018028	7.69	5.25	97.92	28.84	0.63
Sausal	2	13	25YR E	521.30	226.99	231.40		232.11	0.018655	7.23	4.83	83.32	27.01	0.62
Sausal	2	13	25YR P	500.70	226.99	231.30		232.00	0.018811	7.14	4.76	80.73	26.68	0.62
Sausal	2	13	10YR E	426.30	226.99	230.94		231.58	0.019387	6.81	4.46	71.26	25.43	0.62
Sausal	2	13	10YR P	411.50	226.99	230.86		231.49	0.019472	6.74	4.39	69.40	25.17	0.62
Sausal	2	13	5YR E	349.80	226.99	230.54		231.11	0.019942	6.40	4.10	61.40	24.06	0.62
Sausal	2	13	5YR P	335.20	226.99	230.46		231.02	0.020086	6.32	4.03	59.45	23.78	0.62
Sausal	2	13	2YR E	240.40	226.99	229.88		230.35	0.021316	5.71	3.50	46.26	21.79	0.62
Sausal	2	13	2YR P	229.00	226.99	229.80		230.26	0.021638	5.63	3.45	44.52	21.51	0.62
Sausal	2	13	1YR E	42.26	226.99	228.05		228.24	0.039478	3.55	2.00	12.14	15.71	0.69
Sausal	2	13	1YR P	20.90	226.99	227.71		227.85	0.052040	3.01	1.68	7.02	13.86	0.74
Sausal	2	12	100YR E	744.00	223.66	229.22	228.27	230.23	0.020976	8.57	6.43	100.02	25.75	0.66
Sausal	2	12	100YR P	641.90	223.66	228.90	227.93	229.78	0.019948	8.01	5.73	91.69	25.03	0.63
Sausal	2	12	25YR E	521.30	223.66	228.42	227.48	229.18	0.019331	7.37	5.02	80.02	23.99	0.61
Sausal	2	12	25YR P	500.70	223.66	228.34	227.38	229.07	0.019168	7.25	4.88	78.00	23.80	0.61
Sausal	2	12	10YR E	426.30	223.66	228.02	227.04	228.67	0.018435	6.76	4.36	70.59	23.11	0.59
Sausal	2	12	10YR P	411.50	223.66	227.95	226.97	228.58	0.018392	6.67	4.27	68.91	22.95	0.59
Sausal	2	12	5YR E	349.80	223.66	227.64	226.67	228.21	0.017870	6.24	3.84	62.07	22.28	0.57
Sausal	2	12	5YR P	335.20	223.66	227.57	226.60	228.11	0.017698	6.13	3.72	60.44	22.12	0.57
Sausal	2	12	2YR E	240.40	223.66	227.03	226.08	227.45	0.016478	5.31	2.95	48.97	20.35	0.53
Sausal	2	12	2YR P	229.00	223.66	226.95	226.00	227.36	0.016401	5.21	2.86	47.40	20.07	0.53
Sausal	2	12	1YR E	42.26	223.66	225.20		225.30	0.011120	2.43	0.83	17.61	14.49	0.38
Sausal	2	12	1YR P	20.90	223.66	224.78		224.83	0.010075	1.81	0.52	11.63	13.91	0.34
Sausal	2	11	100YR E	744.00	220.94	225.45	225.45	227.10	0.012088	10.63	2.60	74.54	23.39	0.96
Sausal	2	11	100YR P	641.90	220.94	225.10	225.10	226.63	0.012722	10.22	2.48	66.45	22.53	0.97
Sausal	2	11	25YR E	521.30	220.94	224.67	224.67	226.04	0.013107	9.59	2.27	57.16	21.45	0.97
Sausal	2	11	25YR P	500.70	220.94	224.59	224.59	225.93	0.013190	9.48	2.23	55.42	21.23	0.97
Sausal	2	11	10YR E	426.30	220.94	224.28	224.28	225.52	0.013589	9.10	2.11	48.98	20.38	0.97
Sausal	2	11	10YR P	411.50	220.94	224.22	224.22	225.43	0.013660	9.01	2.09	47.69	20.20	0.97
Sausal	2	11	5YR E	349.80	220.94	223.94	223.94	225.06	0.014018	8.61	1.96	42.21	19.44	0.97
Sausal	2	11	5YR P	335.20	220.94	223.87	223.87	224.96	0.014148	8.52	1.94	40.85	19.25	0.98
Sausal	2	11	2YR E	240.40	220.94	223.39	223.39	224.30	0.015035	7.77	1.71	31.85	17.92	0.98
Sausal	2	11	2YR P	229.00	220.94	223.33	223.33	224.22	0.015068	7.64	1.67	30.80	17.76	0.98
Sausal	2	11	1YR E	42.26	220.94	221.96	221.96	222.30	0.021771	4.63	0.86	9.12	13.86	1.01
Sausal	2	11	1YR P	20.90	220.94	221.66	221.66	221.90	0.024033	3.92	0.69	5.33	11.27	1.00
Sausal	2	10	100YR E	744.00	216.69	222.35	222.35	224.09	0.009241	11.86	2.86	78.61	22.86	0.90
Sausal	2	10	100YR P	641.90	216.69	221.92	221.92	223.58	0.009640	11.48	2.75	69.19	21.51	0.90
Sausal	2	10	25YR E	521.30	216.69	221.39	221.39	222.92	0.010097	10.89	2.57	58.13	19.81	0.91
Sausal	2	10	25YR P	500.70	216.69	221.30	221.30	222.80	0.010068	10.74	2.52	56.46	19.54	0.90
Sausal	2	10	10YR E	426.30	216.69	220.94	220.94	222.34	0.010362	10.28	2.37	49.52	18.38	0.90

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	10	10YR P	411.50	216.69	220.84	220.84	222.24	0.010601	10.24	2.37	47.82	18.08	0.91
Sausal	2	10	5YR E	349.80	216.69	220.52	220.52	221.80	0.010806	9.75	2.22	42.07	17.04	0.91
Sausal	2	10	5YR P	335.20	216.69	220.43	220.43	221.70	0.010917	9.65	2.19	40.61	16.77	0.91
Sausal	2	10	2YR E	240.40	216.69	219.80	219.80	220.91	0.011993	8.87	1.97	30.72	14.78	0.92
Sausal	2	10	2YR P	229.00	216.69	219.72	219.72	220.81	0.012159	8.76	1.94	29.50	14.51	0.92
Sausal	2	10	1YR E	42.26	216.69	218.01	217.84	218.34	0.011542	4.58	0.72	9.39	9.10	0.77
Sausal	2	10	1YR P	20.90	216.69	217.66	217.48	217.83	0.010083	3.38	0.44	6.24	8.53	0.68
Sausal	2	9	100YR E	744.00	212.30	219.48		219.80	0.001391	5.13	0.51	186.07	53.42	0.35
Sausal	2	9	100YR P	641.90	212.30	219.15		219.44	0.001326	4.84	0.46	168.84	51.44	0.34
Sausal	2	9	25YR E	521.30	212.30	218.66		218.92	0.001296	4.54	0.41	144.27	48.47	0.33
Sausal	2	9	25YR P	500.70	212.30	218.57		218.83	0.001292	4.48	0.41	139.81	47.92	0.33
Sausal	2	9	10YR E	426.30	212.30	218.00		218.29	0.001534	4.56	0.43	113.80	44.52	0.35
Sausal	2	9	10YR P	411.50	212.30	217.77		218.08	0.001710	4.67	0.46	104.23	38.10	0.37
Sausal	2	9	5YR E	349.80	212.30	216.77		217.17	0.002941	5.26	0.63	73.51	27.39	0.47
Sausal	2	9	5YR P	335.20	212.30	216.54		216.97	0.003430	5.45	0.70	67.18	26.05	0.50
Sausal	2	9	2YR E	240.40	212.30	214.92	214.79	215.78	0.013808	7.45	1.57	32.42	16.91	0.91
Sausal	2	9	2YR P	229.00	212.30	214.72	214.72	215.68	0.017366	7.83	1.80	29.25	15.87	1.01
Sausal	2	9	1YR E	42.26	212.30	213.31	213.31	213.66	0.021773	4.73	0.89	8.94	13.05	1.01
Sausal	2	9	1YR P	20.90	212.30	213.04	213.04	213.27	0.025054	3.81	0.67	5.48	12.54	1.02
Sausal	2	8	100YR E	744.00	208.57	219.44	214.81	219.61	0.000643	4.07	0.30	258.38	61.66	0.23
Sausal	2	8	100YR P	641.90	208.57	219.11	214.41	219.26	0.000597	3.84	0.27	238.16	61.66	0.22
Sausal	2	8	25YR E	521.30	208.57	218.63	213.86	218.76	0.000522	3.47	0.22	209.58	53.54	0.20
Sausal	2	8	25YR P	500.70	208.57	218.54	213.79	218.66	0.000499	3.37	0.21	205.02	50.73	0.20
Sausal	2	8	10YR E	426.30	208.57	218.00	213.42	218.11	0.000482	3.18	0.19	179.62	43.05	0.19
Sausal	2	8	10YR P	411.50	208.57	217.77	213.34	217.88	0.000501	3.18	0.19	170.22	40.11	0.20
Sausal	2	8	5YR E	349.80	208.57	216.76	213.01	216.89	0.000667	3.36	0.22	132.86	35.56	0.22
Sausal	2	8	5YR P	335.20	208.57	216.52	212.94	216.66	0.000716	3.40	0.23	124.56	34.22	0.23
Sausal	2	8	2YR E	240.40	208.57	214.97	212.40	215.14	0.001089	3.54	0.27	79.72	23.86	0.27
Sausal	2	8	2YR P	229.00	208.57	214.78	212.33	214.95	0.001149	3.55	0.28	75.22	23.13	0.28
Sausal	2	8	1YR E	42.26	208.57	210.92	210.08	211.09	0.004087	3.25	0.33	12.99	7.91	0.45
Sausal	2	8	1YR P	20.90	208.57	210.20	209.60	210.31	0.004090	2.70	0.25	7.75	6.49	0.44
Sausal	2	7.8		Culvert										
Sausal	2	7	100YR E	744.00	204.66	209.26		209.94	0.018524	6.71	4.31	116.56	36.95	0.60
Sausal	2	7	100YR P	641.90	204.66	208.92		209.54	0.018921	6.39	4.03	104.47	35.20	0.59
Sausal	2	7	25YR E	521.30	204.66	208.77		209.22	0.014546	5.44	2.97	99.13	34.40	0.52
Sausal	2	7	25YR P	500.70	204.66	208.47		208.98	0.018328	5.76	3.42	89.22	32.86	0.57
Sausal	2	7	10YR E	426.30	204.66	208.44		208.82	0.013793	4.96	2.55	88.11	32.69	0.49
Sausal	2	7	10YR P	411.50	204.66	208.13		208.57	0.018431	5.34	3.06	78.22	31.07	0.56
Sausal	2	7	5YR E	349.80	204.66	207.95		208.32	0.016702	4.87	2.60	72.69	30.13	0.53
Sausal	2	7	5YR P	335.20	204.66	207.84		208.21	0.017604	4.87	2.64	69.43	29.60	0.54
Sausal	2	7	2YR E	240.40	204.66	207.42		207.69	0.016135	4.20	2.06	57.37	27.61	0.50

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch EI (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Shear Chan (lb/sq ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sausal	2	4	100YR E	1106.10	187.02	192.63		193.92	0.028544	9.72	8.38	128.28	29.73	0.74
Sausal	2	4	100YR P	965.40	187.02	192.12		193.37	0.031405	9.53	8.34	113.25	28.73	0.76
Sausal	2	4	25YR E	913.10	187.02	191.92		193.16	0.032724	9.47	8.33	107.57	28.34	0.77
Sausal	2	4	25YR P	711.50	187.02	191.15		192.30	0.038338	9.08	8.15	86.29	26.84	0.81
Sausal	2	4	10YR E	789.70	187.02	191.46		192.64	0.035798	9.24	8.22	94.67	27.44	0.79
Sausal	2	4	10YR P	583.70	187.02	190.62		191.72	0.043969	8.82	8.07	72.27	25.80	0.85
Sausal	2	4	5YR E	538.30	187.02	190.42	190.21	191.50	0.046686	8.73	8.06	67.15	25.40	0.86
Sausal	2	4	5YR P	480.00	187.02	190.15	190.01	191.21	0.051092	8.61	8.08	60.42	24.82	0.89
Sausal	2	4	2YR E	363.20	187.02	189.58	189.58	190.59	0.064538	8.36	8.20	46.61	23.58	0.97
Sausal	2	4	2YR P	337.00	187.02	189.48	189.48	190.44	0.065254	8.16	7.93	44.22	23.36	0.96
Sausal	2	4	1YR E	58.85	187.02	187.94	187.94	188.32	0.097196	4.96	4.15	11.96	16.25	1.00
Sausal	2	4	1YR P	24.90	187.02	187.67	187.60	187.83	0.069911	3.25	2.03	7.69	15.55	0.81
Sausal	2	3	100YR E	1106.10	182.75	190.31		191.76	0.021110	9.92	8.02	126.61	23.90	0.66
Sausal	2	3	100YR P	965.40	182.75	189.85		191.15	0.020680	9.38	7.33	115.65	22.94	0.65
Sausal	2	3	25YR E	913.10	182.75	189.66		190.91	0.020506	9.17	7.06	111.46	22.56	0.64
Sausal	2	3	25YR P	711.50	182.75	188.90		189.92	0.019620	8.23	5.95	94.88	20.99	0.61
Sausal	2	3	10YR E	789.70	182.75	189.21		190.32	0.020001	8.61	6.40	101.42	21.63	0.62
Sausal	2	3	10YR P	583.70	182.75	188.36		189.22	0.018903	7.55	5.17	83.75	19.87	0.59
Sausal	2	3	5YR E	538.30	182.75	188.14		188.95	0.018666	7.29	4.89	79.57	19.44	0.58
Sausal	2	3	5YR P	480.00	182.75	187.87		188.59	0.018204	6.92	4.50	74.24	19.07	0.57
Sausal	2	3	2YR E	363.20	182.75	187.21		187.78	0.017474	6.12	3.70	62.09	17.98	0.55
Sausal	2	3	2YR P	337.00	182.75	187.05		187.59	0.017422	5.93	3.53	59.17	17.66	0.54
Sausal	2	3	1YR E	58.85	182.75	184.38		184.56	0.022373	3.41	1.64	17.30	13.96	0.54
Sausal	2	3	1YR P	24.90	182.75	183.74		183.87	0.031192	2.83	1.35	8.80	12.10	0.58
Sausal	2	2	100YR E	1106.10	176.58	184.58		185.68	0.018574	9.51	7.28	143.26	29.05	0.60
Sausal	2	2	100YR P	965.40	176.58	184.09		185.12	0.018747	9.14	6.88	129.29	28.27	0.60
Sausal	2	2	25YR E	913.10	176.58	183.90		184.91	0.018805	9.00	6.72	124.00	27.98	0.60
Sausal	2	2	25YR P	711.50	176.58	183.11		184.01	0.019275	8.41	6.11	102.32	26.71	0.59
Sausal	2	2	10YR E	789.70	176.58	183.43		184.37	0.019054	8.64	6.35	110.95	27.22	0.60
Sausal	2	2	10YR P	583.70	176.58	182.54		183.38	0.019761	7.99	5.69	87.46	25.46	0.59
Sausal	2	2	5YR E	538.30	176.58	182.32		183.13	0.019964	7.82	5.53	81.89	24.68	0.59
Sausal	2	2	5YR P	480.00	176.58	182.01		182.78	0.020401	7.59	5.32	74.34	23.44	0.59
Sausal	2	2	2YR E	363.20	176.58	181.33		182.01	0.020947	7.00	4.74	59.40	20.77	0.59
Sausal	2	2	2YR P	337.00	176.58	181.17		181.82	0.020974	6.83	4.57	56.06	20.13	0.58
Sausal	2	2	1YR E	58.85	176.58	178.63		178.80	0.016440	3.37	1.49	17.53	10.51	0.45
Sausal	2	2	1YR P	24.90	176.58	177.91		178.00	0.013217	2.35	0.82	10.58	9.22	0.39
Sausal	2	1	100YR E	1106.10	175.30	182.78	180.57	183.67	0.015003	7.74	5.07	153.91	29.79	0.52
Sausal	2	1	100YR P	965.40	175.30	182.29	180.09	183.10	0.015006	7.37	4.71	139.58	28.66	0.51
Sausal	2	1	25YR E	913.10	175.30	182.10	179.93	182.88	0.015009	7.22	4.57	134.11	28.21	0.51
Sausal	2	1	25YR P	711.50	175.30	181.29	179.31	181.96	0.015030	6.59	3.99	112.15	26.35	0.50
Sausal	2	1	10YR E	789.70	175.30	181.62	179.55	182.33	0.015018	6.85	4.22	120.85	27.10	0.50
Sausal	2	1	10YR P	583.70	175.30	180.72	178.88	181.29	0.015004	6.11	3.56	97.37	25.02	0.49

HEC-RAS Plan: Scenario3 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Shear Chan	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(lb/sq ft)	(sq ft)	(ft)	
Sausal	2	1	5YR E	538.30	175.30	180.49	178.72	181.03	0.015007	5.93	3.40	91.78	23.15	0.49
Sausal	2	1	5YR P	480.00	175.30	180.16	178.49	180.66	0.015000	5.69	3.20	84.98	20.44	0.48
Sausal	2	1	2YR E	363.20	175.30	179.46	178.02	179.87	0.015017	5.16	2.76	70.73	20.07	0.48
Sausal	2	1	2YR P	337.00	175.30	179.29	177.91	179.68	0.015027	5.02	2.65	67.35	19.98	0.48
Sausal	2	1	1YR E	58.85	175.30	176.83	176.25	176.95	0.015023	2.77	1.09	21.24	16.74	0.43
Sausal	2	1	1YR P	24.90	175.30	176.27	175.91	176.34	0.015005	2.04	0.69	12.19	15.67	0.41
Palo Seco	1	37	100YR E	133.20	481.72	484.61	484.55	485.23	0.039095	7.03	5.58	23.68	16.17	0.79
Palo Seco	1	37	100YR P	112.40	481.72	484.46	484.37	485.01	0.037190	6.57	4.98	21.24	15.83	0.76
Palo Seco	1	37	25YR E	100.80	481.72	484.36	484.19	484.88	0.036003	6.29	4.63	19.78	15.62	0.75
Palo Seco	1	37	25YR P	83.90	481.72	484.21	484.00	484.66	0.034046	5.83	4.07	17.43	14.50	0.72
Palo Seco	1	37	10YR E	80.20	481.72	484.17	483.95	484.61	0.033735	5.73	3.95	16.87	14.20	0.71
Palo Seco	1	37	10YR P	66.80	481.72	484.02	483.75	484.41	0.032132	5.31	3.49	14.83	13.06	0.68
Palo Seco	1	37	5YR E	64.90	481.72	483.99	483.72	484.37	0.032169	5.26	3.44	14.48	12.86	0.68
Palo Seco	1	37	5YR P	53.90	481.72	483.84	483.53	484.18	0.031141	4.89	3.06	12.63	11.72	0.66
Palo Seco	1	37	2YR E	44.80	481.72	483.70	483.35	483.99	0.030325	4.55	2.72	11.02	10.63	0.64
Palo Seco	1	37	2YR P	36.40	481.72	483.54	483.18	483.80	0.029781	4.20	2.40	9.45	9.44	0.63
Palo Seco	1	37	1YR E	6.72	481.72	482.42	482.42	482.62	0.108057	3.60	2.63	1.90	4.95	1.00
Palo Seco	1	37	1YR P	5.70	481.72	482.37	482.37	482.56	0.110683	3.47	2.51	1.67	4.68	1.00
Palo Seco	1	36	100YR E	133.20	438.09	440.15	440.15	440.83	0.061643	6.71	5.82	20.86	16.76	0.95
Palo Seco	1	36	100YR P	112.40	438.09	439.98	439.98	440.61	0.065762	6.42	5.54	18.13	15.70	0.96
Palo Seco	1	36	25YR E	100.80	438.09	439.88	439.88	440.48	0.068705	6.24	5.37	16.59	15.07	0.97
Palo Seco	1	36	25YR P	83.90	438.09	439.73	439.73	440.27	0.074417	5.96	5.11	14.30	14.08	0.99
Palo Seco	1	36	10YR E	80.20	438.09	439.69	439.69	440.23	0.075380	5.87	5.02	13.83	13.87	0.99
Palo Seco	1	36	10YR P	66.80	438.09	439.56	439.56	440.04	0.081168	5.59	4.75	12.02	13.03	1.00
Palo Seco	1	36	5YR E	64.90	438.09	439.54	439.54	440.02	0.080986	5.53	4.66	11.81	12.95	1.00
Palo Seco	1	36	5YR P	53.90	438.09	439.42	439.42	439.85	0.085213	5.26	4.39	10.26	12.41	1.01
Palo Seco	1	36	2YR E	44.80	438.09	439.31	439.31	439.70	0.088917	4.99	4.10	8.97	11.95	1.01
Palo Seco	1	36	2YR P	36.40	438.09	439.21	439.21	439.55	0.091478	4.71	3.79	7.72	11.36	1.01
Palo Seco	1	36	1YR E	6.72	438.09	438.96	438.61	438.98	0.009925	1.32	0.32	5.11	9.66	0.32
Palo Seco	1	36	1YR P	5.70	438.09	439.23	438.57	439.24	0.002053	0.71	0.09	7.97	11.51	0.15