EXHIBIT F

NAPA COUNTY RESOURCE CONSERVATION DISTRICT											
USLE LAYOUT AND PRACTICE ALTERNATIVES											
FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)							
Block:	1	Existing Conditions	8.8	acres							
USER:	OR	Latitude:	38.3222	degrees							
DATE:	20-Jul-20	Longitude:	-122.1785	degrees							
Soil Type	Sobrante Loam										
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)	4	(site plan)	5	(site plan)
FACTOR:	DESCRIPTION										
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	185	(site plan)	302	(site plan)	205	(site plan)	224	(site plan)	258	(site plan)
S	Slope Gradient (%)	30	(site plan)	26	(site plan)	30	(site plan)	21	(site plan)	19	(site plan)
LS	Calculated LS	7.98		8.51		8.40		5.55		5.22	
C	Crop/Vegetation Management Factor	0.033	(4)	0.033	(4)	0.034	(5)	0.027	(6)	0.033	(4)
P	Support Practice Factor	1	(7)	1	(7)	1	(7)	1	(7)	1	(7)
											Average
A	Soil loss, tons/acre	6.07		6.47		6.58		3.45		3.97	**5.31**
	Soil loss, tons	53.39		56.95		57.91		30.39		34.91	**46.71**

Equations:			A = Average annual soil loss (tons per acre)
Universal Soil Loss Equation (USLE)			R = Rainfall and Runoff Factor
			K = Soil Erodibility Factor
A = R x K x LS x C x P			LS = Slope Length-Gradient Factor
			C = Crop/Vegetation and Management Factor
			P = Support Practice Factor
for slopes of 9% or flatter			
LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)			
where:	L = length in feet along slope		
s = slope gradient in %/100		m = 0.2	for s<1%
m= slope exponent		m = 0.3	for 1%<s<3.5%
		m = 0.4	for 3.6%<s<4.5%
		m = 0.5	for s>4.5%
for slopes steeper than 9%			
LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4			
where:	L = length in feet along slope		
s = slope gradient in %/100			
References:			

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (25% Brush, 65% Grass Cover).
5) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (25% Trees, 65% Grass Cover).
6) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (50% Trees, 70% Grass Cover).
7) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)
Block:	1	Temporary Conditions	8.8	acres
USER:	OR	Latitude:	38.3222	degrees
DATE:	20-Jul-20	Longitude:	-122.1785	degrees

Soil Type: Sobrante Loam

T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)	4	(site plan)	5	(site plan)
FACTOR:	DESCRIPTION										
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	45	(site plan) (6)	70	(site plan) (6)	60	(site plan) (6)	51	(site plan) (6)	150	(site plan) (6)
S	Slope Gradient (%)	30	(site plan)	26	(site plan)	30	(site plan)	21	(site plan)	19	(site plan)
LS	Calculated LS	3.94		4.10		4.54		2.65		3.98	
C	Crop/Vegetation Management Factor	0.043	(4)	0.043	(4)	0.043	(4)	0.043	(4)	0.043	(4)
P	Support Practice Factor	1	(5)	1	(5)	1	(5)	1	(5)	1	(5)
											Average
A	Soil loss, tons/acre	3.90		4.06		4.50		2.62		3.94	**3.81**
	Soil loss, tons	34.31		35.73		39.62		23.10		34.68	**33.49**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 8: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991, pg. C-9. (Vineyard with 75% Cover, All Rows Tilled).
5) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).
6) Inclusion of any or all of the following items: straw rolls, cross slope diversions, rocky and/or grassy avenues, and waterbars.

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)
Block:	1	Permanent Conditions	8.8	acres
USER:	OR	Latitude:	38.3222	degrees
DATE:	20-Jul-20	Longitude:	-122.1785	degrees

Soil Type: Sobrante Loam

T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)	4	(site plan)	5	(site plan)
FACTOR:	DESCRIPTION										
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	75	(site plan) (6)	109	(site plan) (6)	75	(site plan) (6)	102	(site plan) (6)	243	(site plan) (6)
S	Slope Gradient (%)	30	(site plan)	26	(site plan)	30	(site plan)	21	(site plan)	19	(site plan)
LS	Calculated LS	5.08		5.11		5.08		3.75		5.06	
C	Crop/Vegetation Management Factor	0.034	(4)	0.034	(4)	0.034	(4)	0.034	(4)	0.034	(4)
P	Support Practice Factor	1	(5)	1	(5)	1	(5)	1	(5)	1	(5)
											Average
A	Soil loss, tons/acre	3.98		4.01		3.98		2.93		3.97	**3.77**
	Soil loss, tons	35.03		35.25		35.03		25.83		34.90	**33.21**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 8: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991, pg. C-9. (Vineyard with 75% Cover, Non-Tilled).
5) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).
6) Inclusion of any or all of the following items: straw rolls, cross slope diversions, rocky and/or grassy avenues, and waterbars.

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)					
Block:	2	Existing Conditions	1.9	acres					
USER:	OR	Latitude:	38.3222	degrees					
DATE:	20-Jul-20	Longitude:	-122.1785	degrees					
Soil Type	Sobrante Loam								
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)	4	(site plan)
FACTOR:	DESCRIPTION								
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	84	(site plan)	284	(site plan)	113	(site plan)	84	(site plan)
S	Slope Gradient (%)	28	(site plan)	26	(site plan)	19	(site plan)	19	(site plan)
LS	Calculated LS	4.93		8.25		3.45		2.98	
C	Crop/Vegetation Management Factor	0.027	(4)	0.027	(4)	0.026	(5)	0.027	(4)
P	Support Practice Factor	1	(6)	1	(6)	1	(6)	1	(6)
									Average
A	Soil loss, tons/acre	3.07		5.13		2.07		1.85	**3.03**
	Soil loss, tons	5.83		9.76		3.93		3.52	**5.76**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (50% Tree Cover, 70% Grass Cover).
5) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (75% Tree Cover, 70% Grass Cover).
6) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)					
Block:	2	Temporary Conditions	1.9	acres					
USER:	OR	Latitude:	38.3222	degrees					
DATE:	20-Jul-20	Longitude:	-122.1785	degrees					
Soil Type	Sobrante Loam								
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)	4	(site plan)
FACTOR:	DESCRIPTION								
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	25	(site plan) (6)	64	(site plan) (6)	31	(site plan) (6)	18	(site plan) (6)
S	Slope Gradient (%)	28	(site plan)	26	(site plan)	19	(site plan)	19	(site plan)
LS	Calculated LS	2.69		3.92		1.81		1.38	
C	Crop/Vegetation Management Factor	0.043	(4)	0.043	(4)	.043	(4)	0.043	(4)
P	Support Practice Factor	1	(5)	1	(5)	1	(5)	1	(5)
									Average
A	Soil loss, tons/acre	2.67		3.88		1.79		1.37	**2.43**
	Soil loss, tons	5.06		7.38		3.40		2.59	**4.61**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 8: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991, pg. C-9. (Vineyard with 75% Cover, All Rows Tilled).
5) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).
6) Inclusion of any or all of the following items: straw rolls, cross slope diversions, rocky and/or grassy avenues, and waterbars.

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)					
Block:	2	Permanent Conditions	1.9	acres					
USER:	OR	Latitude:	38.3222	degrees					
DATE:	20-Jul-20	Longitude:	-122.1785	degrees					
Soil Type	Sobrante Loam								
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)	4	(site plan)
FACTOR:	DESCRIPTION								
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	50	(site plan) (6)	128	(site plan) (6)	46	(site plan) (6)	35	(site plan) (6)
S	Slope Gradient (%)	28	(site plan)	26	(site plan)	19	(site plan)	19	(site plan)
LS	Calculated LS	3.81		5.54		2.20		1.92	
C	Crop/Vegetation Management Factor	0.034	(4)	0.034	(4)	.034	(4)	0.034	(4)
P	Support Practice Factor	1	(5)	1	(5)	1	(5)	1	(5)
									Average
A	Soil loss, tons/acre	2.98		4.34		1.73		1.51	**2.64**
	Soil loss, tons	5.66		8.25		3.28		2.86	**5.01**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 8: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991, pg. C-9. (Vineyard with 75% Cover, Non-Tilled).
5) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).
6) Inclusion of any or all of the following items: straw rolls, cross slope diversions, rocky and/or grassy avenues, and waterbars.

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)			
Block:	3	Existing Conditions	4.1	acres			
USER:	OR	Latitude:	38.3222	degrees			
DATE:	28-Apr-20	Longitude:	-122.1785	degrees			
Soil Type	Sobrante Loam						
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)
FACTOR:	DESCRIPTION						
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	185	(site plan)	375	(site plan)	130	(site plan)
S	Slope Gradient (%)	18	(site plan)	19	(site plan)	23	(site plan)
LS	Calculated LS	4.11		6.29		4.77	
C	Crop/Vegetation Management Factor	0.033	(4)	0.034	(5)	0.034	(5)
P	Support Practice Factor	1	(6)	1	(6)	1	(6)
							Average
A	Soil loss, tons/acre	3.12		4.93		3.73	**3.93**
	Soil loss, tons	12.81		20.20		15.31	**16.11**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (25% Brush Cover, 65% Grass Cover).
5) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (25% Tree Cover, 65% Grass Cover).
6) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)			
Block:	3	Temporary Conditions	4.1	acres			
USER:	OR	Latitude:	38.3222	degrees			
DATE:	28-Apr-20	Longitude:	-122.1785	degrees			
Soil Type	Sobrante Loam						
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)
FACTOR:	DESCRIPTION						
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	95	(site plan) (6)	125	(site plan) (6)	65	(site plan) (6)
S	Slope Gradient (%)	18	(site plan)	19	(site plan)	23	(site plan)
LS	Calculated LS	2.95		3.63		3.37	
C	Crop/Vegetation Management Factor	0.043	(4)	0.043	(4)	0.043	(4)
P	Support Practice Factor	1	(5)	1	(5)	1	(5)
							Average
A	Soil loss, tons/acre	2.92		3.60		3.34	**3.28**
	Soil loss, tons	11.96		14.75		13.69	**13.47**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 8: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991, pg. C-9. (Vineyard with 75% Cover, All Rows Tilled).
5) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).
6) Inclusion of any or all of the following items: straw rolls, cross slope diversions, rocky and/or grassy avenues, and waterbars.

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)			
Block:	3	Permanent Conditions	4.1	acres			
USER:	OR	Latitude:	38.3222	degrees			
DATE:	28-Apr-20	Longitude:	-122.1785	degrees			
Soil Type	Sobrante Loam						
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)
FACTOR:	DESCRIPTION						
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)	72.0	(3)
	Slope length (ft)	165	(site plan) (6)	200	(site plan) (6)	110	(site plan) (6)
S	Slope Gradient (%)	18	(site plan)	19	(site plan)	23	(site plan)
LS	Calculated LS	3.88		4.59		4.38	
C	Crop/Vegetation Management Factor	0.034	(4)	0.034	(4)	0.034	(4)
P	Support Practice Factor	1	(5)	1	(5)	1	(5)
							Average
A	Soil loss, tons/acre	3.04		3.60		3.43	**3.36**
	Soil loss, tons	12.47		14.75		14.08	**13.77**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 8: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991, pg. C-9. (Vineyard with 75% Cover, Non-Tilled).
5) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).
6) Inclusion of any or all of the following items: straw rolls, cross slope diversions, rocky and/or grassy avenues, and waterbars.

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)	
Block:	4	Existing Conditions	1.3	acres	
USER:	OR	Latitude:	38.3222	degrees	
DATE:	20-Jul-20	Longitude:	-122.1785	degrees	
Soil Type	Sobrante Loam				
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)
FACTOR:	DESCRIPTION				
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)
	Slope length (ft)	175	(site plan)	244	(site plan)
S	Slope Gradient (%)	13	(site plan)	13	(site plan)
LS	Calculated LS	2.57		3.04	
C	Crop/Vegetation Management Factor	0.027	(4)	0.027	(5)
P	Support Practice Factor	1	(6)	1	(6)
					Average
A	Soil loss, tons/acre	1.60		1.89	**1.74**
	Soil loss, tons	2.08		2.46	**2.27**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per ac
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management F
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (25% Tree Cover, 70% Grass Cover).
5) Table 10: "Predicting Rainfall Erosion Losses", USDA Handbook No. 537. (50% Tree Cover, 70% Grass Cover).
6) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)	
Block:	4	Temporary Conditions	1.3	acres	
USER:	OR	Latitude:	38.3222	degrees	
DATE:	20-Jul-20	Longitude:	-122.1785	degrees	
Soil Type	Sobrante Loam				
T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)
FACTOR:	DESCRIPTION				
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)
	Slope length (ft)	54	(site plan) (6)	95	(site plan) (6)
S	Slope Gradient (%)	13	(site plan)	13	(site plan)
LS	Calculated LS	1.43		1.89	
C	Crop/Vegetation Management Factor	0.043	(4)	0.043	(4)
P	Support Practice Factor	1	(5)	1	(5)
					Average
A	Soil loss, tons/acre	1.42		1.88	**1.65**
	Soil loss, tons	1.84		2.44	**2.14**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope

s = slope gradient in %/100

m= slope exponent

m = 0.2	for s<1%
m = 0.3	for 1%<s<3.5%
m = 0.4	for 3.6%<s<4.5%
m = 0.5	for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope

s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 8: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991, pg. C-9. (Vineyard with 75% Cover, All Rows Tilled).
5) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).
6) Inclusion of any or all of the following items: straw rolls, cross slope diversions, rocky and/or grassy avenues, and waterbars.

NAPA COUNTY RESOURCE CONSERVATION DISTRICT
USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR:	Lyons Hillside Vineyards	Precipitation (inches)	1.97	(2)	
Block:	4	Permanent Conditions	1.3	acres	
USER:	OR	Latitude:	38.3222	degrees	
DATE:	20-Jul-20	Longitude:	-122.1785	degrees	
Soil Type	Sobrante Loam				

T	Natural Soil Loss Factor (tons/acre)	2	(1)	2	(1)
K	Soil Erodibilty Factor	0.32	(1)	0.32	(1)
Transect		1	(site plan)	2	(site plan)
FACTOR:	DESCRIPTION				
R	Rainfall and Runoff Factor	72.0	(3)	72.0	(3)
	Slope length (ft)	92	(site plan) (6)	154	(site plan) (6)
S	Slope Gradient (%)	13	(site plan)	13	(site plan)
LS	Calculated LS	1.86		2.41	
C	Crop/Vegetation Management Factor	0.034	(4)	0.034	(4)
P	Support Practice Factor	1	(5)	1	(5)
					Average
A	Soil loss, tons/acre	1.46		1.89	**1.67**
	Soil loss, tons	1.90		2.46	**2.18**

Equations:
Universal Soil Loss Equation (USLE)

A = R x K x LS x C x P

A = Average annual soil loss (tons per acre)
R = Rainfall and Runoff Factor
K = Soil Erodibility Factor
LS = Slope Length-Gradient Factor
C = Crop/Vegetation and Management Factor
P = Support Practice Factor

for slopes of 9% or flatter

LS = ((L/72.6 x cos(arctan(s))^m) x ((65.41 x (sin(arctan(s)))^2)+4.56 x sin(arctan(s))+0.065)

where: L = length in feet along slope
s = slope gradient in %/100
m= slope exponent

m = 0.2 for s<1%
m = 0.3 for 1%<s<3.5%
m = 0.4 for 3.6%<s<4.5%
m = 0.5 for s>4.5%

for slopes steeper than 9%

LS = ((L/72.6 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(sin5.143radians))^1.4

where: L = length in feet along slope
s = slope gradient in %/100

References:

1) Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2) NOAA Atlas 14, Volume 6, Version 2 Isopluvials for 2yr - 6hr storm event
3) Table A-1 "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1996, pg. A-3
4) Table 8: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991, pg. C-9. (Vineyard with 75% Cover, Non-Tilled).
5) Table 4: "Guides for Erosion and Sediment Control in California", USDA-SCS, Davis CA, 1991 pg. 11. (Up/Down Hill).
6) Inclusion of any or all of the following items: straw rolls, cross slope diversions, rocky and/or grassy avenues, and waterbars.