SEE Engineering
P.O. Box 308 ~ Arcata, CA. 95518
Phone (707) 498-6315 Fax (707) 822-8703
www.seeengineering.com
PLANS * CONSTRUCTION * SPECIAL PROJECTS * SHORING * TEMPORARY SYSTEMS
Stanley Elcock, P.E. C41457

March 16, 2023

Client: Robert W. and Cindi L. Sutter
Project: Minor subdivision
Location: 1643 Azalea Ave
McKinleyville, CA.

County of Humboldt
3015 H St.
Eureka, CA. 95501

Attn: Public Works Department – Land Use

Re: Stormwater Mitigation

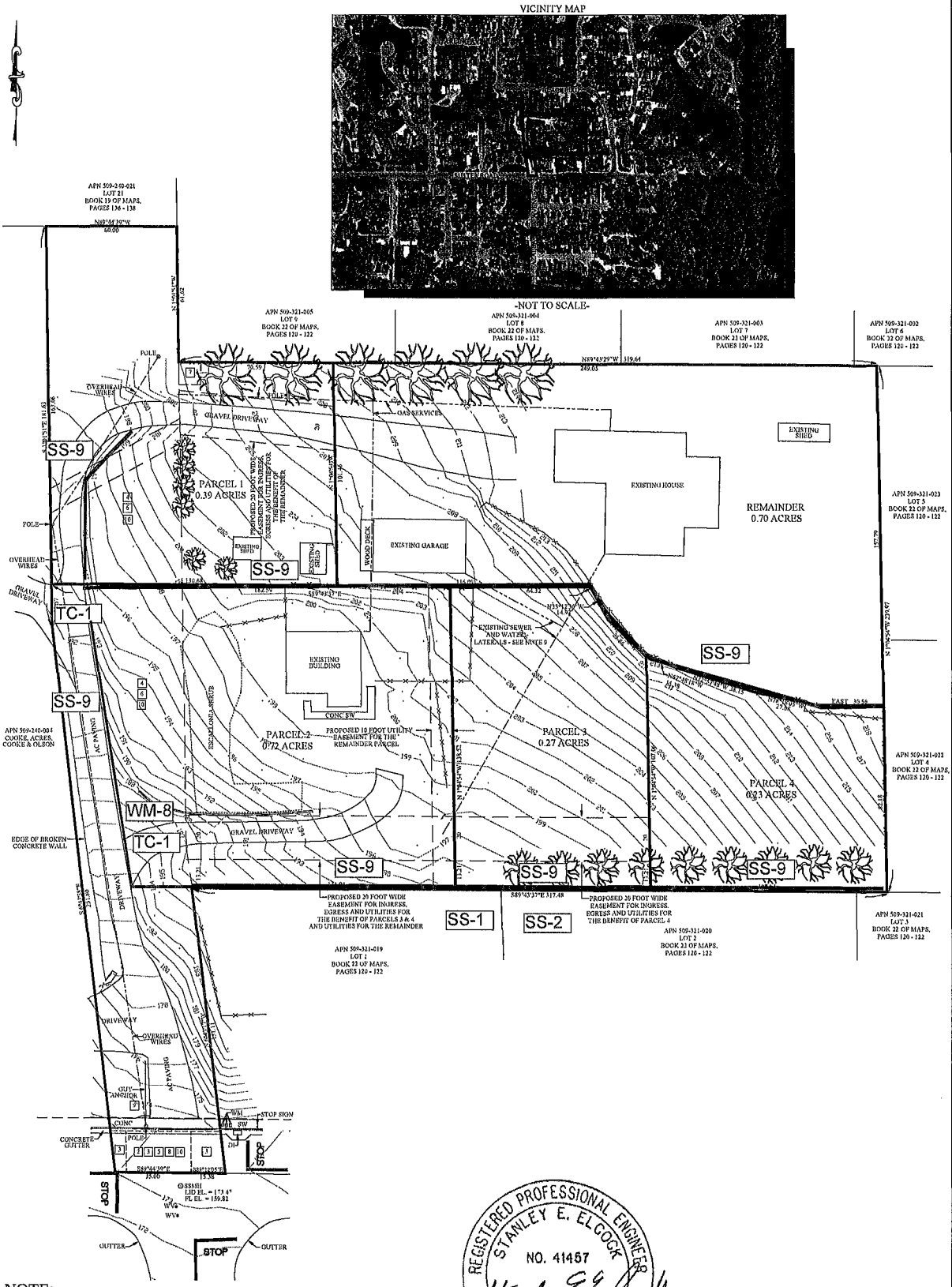
Brenda Howell, P.E.

Attached are calculations for retaining all stormwater onsite of the proposed parcels being created. The existing paved driveway will remain unchanged. Percolation tests were conducted on each parcel on November 17, 2022 and again on March 16, 2023. The percolation rates did not change between November and March. The results are incorporated in the calculations. Roof gutter water will be hard piped to 18" diameter perforated pipes in 2' wide x 3' deep x 75' to 100' long trenches. The exact locations will be determined by the owners at the time of construction.

If you have any questions, please do not hesitate to call or e-mail:stanelcock@gmail.com
Ph. (707) 498-6315

Sincerely,

Stanley Elcock, P.E.



NOTE:

1) SS-9 may be the permanent Berm Detail or the BMP detail or a combination of both.

2) Stormwater will be retained onsite.

REGISTERED PROFESSIONAL ENGINEER
STANLEY E. ELCOCK
NO. 41457
Exp.
CIVIL
STATE OF CALIFORNIA

3/11/23

EROSION CONTROL PLAN

FOR
ROBERT W. & CINDI L. SUTTER
IN
SECTIONS 4 & 5 T6N, R1E, HUMBOLDT MERIDIAN
IN THE UNINCORPORATED AREA OF HUMBOLDT COUNTY
JUNE 2022 SCALE 1" = 20'

HUMBOLDT COUNTY
STATE OF CALIFORNIA

KELLY-O'HERN ASSOCIATES
EUREKA, CALIFORNIA

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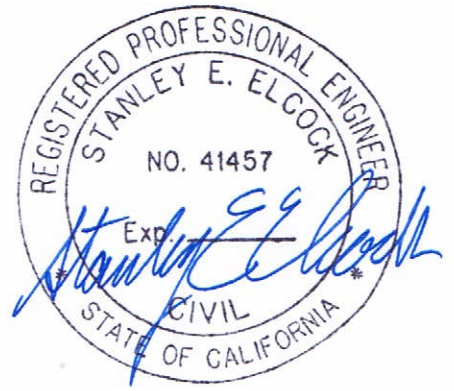
PLANS * CONSTRUCTION * SPECIAL PROJECTS * SHORING * TEMPORARY SYSTEMS
Stanley Elcock, P.E. C41457

Client: Robert W. and Cindi L. Sutter, Owners

Project: Stormwater Calculations

Location:

Sutter Subdivision
APN 509-321-018
McKinleyville, CA.



CALCULATIONS

References

Humboldt Low Impact Stormwater Manual

November 17, 2022

March 10, 2023

SEE Engineering
P.O. Box 308 ~ Arcata, CA. 95518
Phone (707) 498-6315 Fax (707) 822-8703
www.seeengineering.com
PLANS * CONSTRUCTION * SPECIAL PROJECTS * SHORING * TEMPORARY SYSTEMS
Stanley Elcock, P.E. C41457

March 10, 2023

Client: Robert W. and Cindi L. Sutter
Project: Minor subdivision
Location: 1643 Azalea Ave
McKinleyville, CA.

County of Humboldt
3015 H St.
Eureka, CA. 95501

Attn: Public Works Department – Land Use

Re: Stormwater Mitigation

Brenda Howell, P.E.

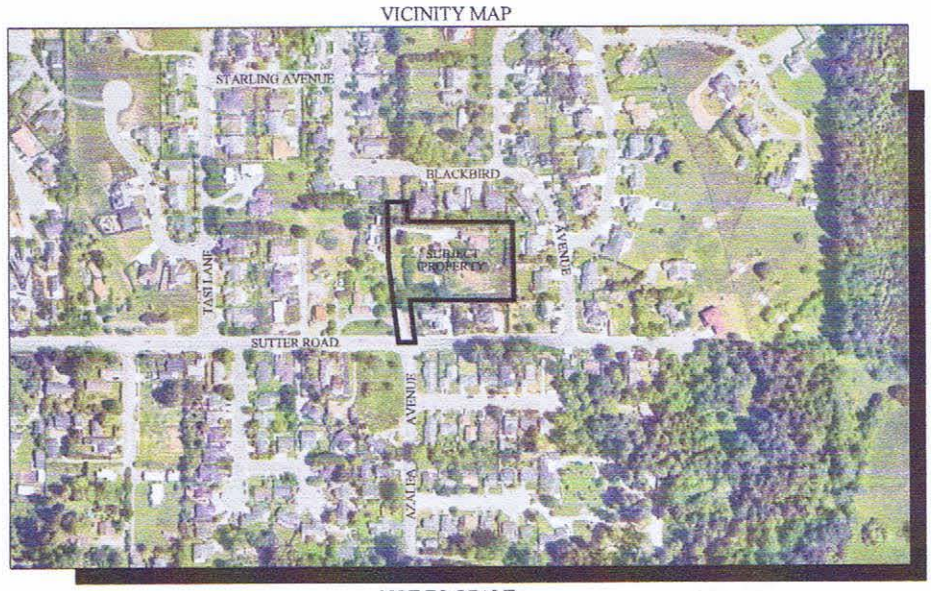
Attached are calculations for retaining all stormwater onsite of the proposed parcels being created. The existing paved driveway will remain unchanged. Percolation tests were conducted on each parcel on November 17, 2022. The results are incorporated in the calculations. Roof gutter water will be hard piped to 18" diameter perforated pipes in 2' wide x 3' deep x 75' to 100' long trenches. The exact locations will be determined by the owners at the time of construction.

If you have any questions, please do not hesitate to call or e-mail:stanelcock@gmail.com
Ph. (707) 498-6315

Sincerely,

Stanley Elcock, P.E.

VICINITY MAP



-NOT TO SCALE-

APN 509-240-021
LOT 21
BOOK 19 OF MAPS,
PAGES 136 - 138

APN 509-321-005
LOT 9
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-321-004
LOT 8
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-321-003
LOT 7
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-321-002
LOT 6
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-321-023
LOT 5
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-321-022
LOT 4
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-321-021
LOT 3
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-321-020
LOT 2
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-321-019
LOT 1
BOOK 22 OF MAPS,
PAGES 120 - 122

APN 509-240-004
COOKE, ACRES,
COOKE & OLSON

PARCEL 1
0.39 ACRES

PARCEL 2
0.72 ACRES

PARCEL 3
0.27 ACRES

PARCEL 4
0.23 ACRES

REMAINDER
0.70 ACRES

EXISTING HOUSE
EXISTING GARAGE
EXISTING SHED
EXISTING BUILDING
WOOD DECK
CONC SW
GAS SERVICES
POLE
OVERHEAD WIRES
GRAVEL DRIVEWAY
AC PAVING
ESCALLONIA SHRUB
CONCRETE CURB
EDGE OF BROKEN CONCRETE WALL
DRIVEWAY
GUY ANCHOR
CONCRETE GUTTER
STOP SIGN
STOP
GUTTER
SSMH
LID EL. = 173.47
FL EL. = 159.82
WM
DI

PROPOSED 20 FOOT WIDE EASEMENT FOR INGRESS, EGRESS AND UTILITIES FOR THE BENEFIT OF THE REMAINDER

PROPOSED 10 FOOT UTILITY EASEMENT FOR THE REMAINDER PARCEL

PROPOSED 20 FOOT WIDE EASEMENT FOR INGRESS, EGRESS AND UTILITIES FOR THE BENEFIT OF PARCELS 3 & 4 AND UTILITIES FOR THE REMAINDER

PROPOSED 20 FOOT WIDE EASEMENT FOR INGRESS, EGRESS AND UTILITIES FOR THE BENEFIT OF PARCEL 4

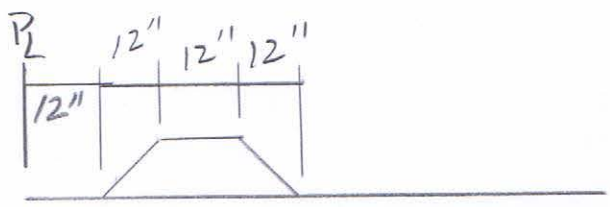
Proposed infiltration trench 2' WIDE X 3' DEEP x 100' LONG

Proposed infiltration trench 2' WIDE X 3' DEEP x 100' LONG

Proposed infiltration trench 2' WIDE X 3' DEEP x 75' LONG

Proposed infiltration trench 2' WIDE X 3' DEEP x 100' LONG

EXISTING SEWER AND WATER LATERALS - SEE NOTE 9



BERM DETAIL
NTS

BERM LIMITS

NOTE:
1) The exact locations of the gutter drain 18" diameter pipes will be determined by the owners at the time of construction.
2) Stormwater will be retained onsite.

STORM WATER PLAN

REGISTERED PROFESSIONAL ENGINEER
STANLEY E. ELCOCK
NO. 41457
Exp
CIVIL
STATE OF CALIFORNIA

3/10/23

FOR
ROBERT W. & CINDI L. SUTTER
IN
SECTIONS 4 & 5 T6N, R1E, HUMBOLDT MERIDIAN
IN THE UNINCORPORATED AREA OF HUMBOLDT COUNTY
JUNE 2022 SCALE 1" = 20'

HUMBOLDT COUNTY
STATE OF CALIFORNIA

KELLY-O'HERN ASSOCIATES
EUREKA, CALIFORNIA

SUTTER SUBDIVISION McKinleyville, CA.

DRAINAGE AREA BREAK-DOWNS				AREA CALCS		RUNOFF COEFFICIENTS, C				PEAK FLOW RATES AT INDIVIDUAL SUB-AREAS															
										TIME OF CONCENTRATION, t_c CALCULATION							Q_2			Q_{10}			Q_{100}		
ZONE	SUB ZONE	COLL POINT	DESCRIPTION	AREA	AREA	PRE "C"	$A*C_{PRE}$	POST "C"	$A*C_{POST}$	L_{MAX}	L_{MAX}	$ELEV_{MAX}$	$ELEV_{MIN}$	$\Delta ELEV$	t_C	$t_{c\text{-}MIN}$	i_2	PRE	POST	i_{10}	PRE	POST	i_{100}	PRE	POST
				[SF]	[ACRES]					[FT]	[MILE]	[FT]	[FT]	[FT]	[MIN]	[MIN]		[CFS]	[CFS]		[CFS]	[CFS]		[CFS]	[CFS]
A			TOTAL AREA							200	0.04	32.50	30.00	2.50	2.5	**10.0**									
			<E> RESIDENTIAL	16,988	0.39	0.38	0.15	0.70	0.27																
			Parcel '1'																						
			ZONE A TOTAL →	**Σ A→**	**0.39**	Σ A * C→	0.15	Σ A * C→	0.27																
			ZONE As', is', Qs' →			**$C_{PRE\text{-}AVG}$→**	**0.38**	**$C_{PRE\text{-}AVG}$→**	**0.70**								**1.29**	**0.19**	**0.35**	**2.04**	**0.30**	**0.56**	**3.03**	**0.45**	**0.83**

$Q100_{Pre}$ =	0.45	cfs		
Percolation Rate	12.0	in/hr		
11/17/22				
Required Permeable/Non-Paved Area	**1,616**	**SQFT**	**Per Lot**	**PRE**
$Q100_{Post}$ =	0.83	cfs		
Percolation Rate	12.0	in/hr		
7/4/22				
Required Permeable/Non-Paved Area	**2,976**	**SQFT**	**Per Lot**	**POST**
Post Non-Paved Area =	**10,388**	**SQFT**	**Maximum Based On**	
Post Design is Adequate			**build out to setbacks**	

EUREKA IDF CURVES

EUREKA NWS IDF CURVE DATA								
FREQUENCY	5 MINUTE		24 HOUR				CALC'D	FORMULA
	i_n	LOG(i_n)	i_n	LOG(i_n)	m	b	i_n @ 1 hr	
	LOG_{10}(5 min)=	-1.0792	LOG_{10}(24 hr)=	1.3802				
2 YEAR	1.740	0.2405	0.111	-0.9547	-0.4860	-0.2839	0.5201	$LOG_{10}(F_Y) = -0.2839 + -0.4860 * LOG_{10}(F_X)$
10 YEAR	2.750	0.4393	0.176	-0.7545	-0.4854	-0.0845	0.8232	$LOG_{10}(F_Y) = -0.0845 + -0.4854 * LOG_{10}(F_X)$
25 YEAR	3.310	0.5198	0.213	-0.6716	-0.4844	-0.0030	0.9932	$LOG_{10}(F_Y) = -0.0030 + -0.4844 * LOG_{10}(F_X)$
50 YEAR	3.690	0.5670	0.236	-0.6271	-0.4855	0.0430	1.1042	$LOG_{10}(F_Y) = 0.0430 + -0.4855 * LOG_{10}(F_X)$
100 YEAR	4.070	0.6096	0.264	-0.5784	-0.4830	0.0883	1.2255	$LOG_{10}(F_Y) = 0.0883 + -0.4830 * LOG_{10}(F_X)$

SUTTER SUBDIVISION McKinleyville, CA.

DRAINAGE AREA BREAK-DOWNS				AREA CALCS		RUNOFF COEFFICIENTS, C				PEAK FLOW RATES AT INDIVIDUAL SUB-AREAS															
										TIME OF CONCENTRATION, t_c CALCULATION							Q_2			Q_{10}			Q_{100}		
ZONE	SUB ZONE	COLL POINT	DESCRIPTION	AREA	AREA	PRE "C"	$A*C_{PRE}$	POST "C"	$A*C_{POST}$	L_{MAX}	L_{MAX}	$ELEV_{MAX}$	$ELEV_{MIN}$	$\Delta ELEV$	t_C	$t_{c\text{-}MIN}$	i_2	PRE	POST	i_{10}	PRE	POST	i_{100}	PRE	POST
				[SF]	[ACRES]					[FT]	[MILE]	[FT]	[FT]	[FT]	[MIN]	[MIN]		[CFS]	[CFS]		[CFS]	[CFS]		[CFS]	[CFS]
A			TOTAL AREA							200	0.04	32.50	30.00	2.50	2.5	**10.0**									
			<E> RESIDENTIAL	31,363	0.72	0.38	0.27	0.70	0.50																
			Parcel '2'																						
			ZONE A TOTAL →	**Σ A→**	**0.72**	Σ A * C→	0.27	Σ A * C→	0.50																
			ZONE As', is', Qs' →			**$C_{PRE\text{-}AVG}$→**	**0.38**	**$C_{PRE\text{-}AVG}$→**	**0.70**								**1.29**	**0.35**	**0.65**	**2.04**	**0.56**	**1.03**	**3.03**	**0.83**	**1.53**

$Q100_{Pre}$ = 0.83 cfs

Percolation Rate 12.0 in/hr
11/17/22

Required Permeable/Non-Paved Area **2,983 SQFT** **Per Lot** **PRE**

$Q100_{Post}$ = 1.53 cfs

Percolation Rate 12.0 in/hr
7/4/22

Required Permeable/Non-Paved Area **5,495 SQFT** **Per Lot** **POST**

Post Non-Paved Area = **20,163 SQFT** **Maximum Based On**

Post Design is Adequate **build out to setbacks**

EUREKA IDF CURVES

EUREKA NWS IDF CURVE DATA								
FREQUENCY	5 MINUTE		24 HOUR				CALC'D	FORMULA
	i_n	LOG(i_n)	i_n	LOG(i_n)	m	b	i_n @ 1 hr	
	LOG_{10}(5 min)=	-1.0792	LOG_{10}(24 hr)=	1.3802				
2 YEAR	1.740	0.2405	0.111	-0.9547	-0.4860	-0.2839	0.5201	$LOG_{10}(F_Y) = -0.2839 + -0.4860 * LOG_{10}(F_X)$
10 YEAR	2.750	0.4393	0.176	-0.7545	-0.4854	-0.0845	0.8232	$LOG_{10}(F_Y) = -0.0845 + -0.4854 * LOG_{10}(F_X)$
25 YEAR	3.310	0.5198	0.213	-0.6716	-0.4844	-0.0030	0.9932	$LOG_{10}(F_Y) = -0.0030 + -0.4844 * LOG_{10}(F_X)$
50 YEAR	3.690	0.5670	0.236	-0.6271	-0.4855	0.0430	1.1042	$LOG_{10}(F_Y) = 0.0430 + -0.4855 * LOG_{10}(F_X)$
100 YEAR	4.070	0.6096	0.264	-0.5784	-0.4830	0.0883	1.2255	$LOG_{10}(F_Y) = 0.0883 + -0.4830 * LOG_{10}(F_X)$

SUTTER SUBDIVISION McKinleyville, CA.

DRAINAGE AREA BREAK-DOWNS				AREA CALCS		RUNOFF COEFFICIENTS, C				PEAK FLOW RATES AT INDIVIDUAL SUB-AREAS															
										TIME OF CONCENTRATION, t_c CALCULATION							Q_2			Q_{10}			Q_{100}		
ZONE	SUB ZONE	COLL POINT	DESCRIPTION	AREA	AREA	PRE "C"	$A*C_{PRE}$	POST "C"	$A*C_{POST}$	L_{MAX}	L_{MAX}	$ELEV_{MAX}$	$ELEV_{MIN}$	$\Delta ELEV$	t_C	$t_{c\text{-}MIN}$	i_2	PRE	POST	i_{10}	PRE	POST	i_{100}	PRE	POST
				[SF]	[ACRES]					[FT]	[MILE]	[FT]	[FT]	[FT]	[MIN]	[MIN]		[CFS]	[CFS]		[CFS]	[CFS]		[CFS]	[CFS]
A			TOTAL AREA							200	0.04	32.50	30.00	2.50	2.5	**10.0**									
			<E> RESIDENTIAL	11,761	0.27	0.38	0.10	0.70	0.19																
			Parcel '3'																						
			ZONE A TOTAL →	**Σ A→**	**0.27**	Σ A * C→	0.10	Σ A * C→	0.19																
			ZONE As', is', Qs' →			**$C_{PRE\text{-}AVG}$→**	**0.38**	**$C_{PRE\text{-}AVG}$→**	**0.70**								**1.29**	**0.13**	**0.24**	**2.04**	**0.21**	**0.39**	**3.03**	**0.31**	**0.57**

$Q100_{Pre}$ =	0.31	cfs			
Percolation Rate 11/17/22	12.0	in/hr			
Required Permeable/Non-Paved Area	**1,119**	**SQFT**	**Per Lot**	**PRE**	
$Q100_{Post}$ =	0.57	cfs			
Percolation Rate 7/4/22	12.0	in/hr			
Required Permeable/Non-Paved Area	**2,061**	**SQFT**	**Per Lot**	**POST**	
Post Non-Paved Area =	**6,961**	**SQFT**	**Maximum Based On**		
Post Design is Adequate			**build out to setbacks**		

EUREKA IDF CURVES

EUREKA NWS IDF CURVE DATA								
FREQUENCY	5 MINUTE		24 HOUR				CALC'D	FORMULA
	i_n	LOG(i_n)	i_n	LOG(i_n)	m	b	i_n @ 1 hr	
	LOG_{10}(5 min)=	-1.0792	LOG_{10}(24 hr)=	1.3802				
2 YEAR	1.740	0.2405	0.111	-0.9547	-0.4860	-0.2839	0.5201	$LOG_{10}(F_Y) = -0.2839 + -0.4860 * LOG_{10}(F_X)$
10 YEAR	2.750	0.4393	0.176	-0.7545	-0.4854	-0.0845	0.8232	$LOG_{10}(F_Y) = -0.0845 + -0.4854 * LOG_{10}(F_X)$
25 YEAR	3.310	0.5198	0.213	-0.6716	-0.4844	-0.0030	0.9932	$LOG_{10}(F_Y) = -0.0030 + -0.4844 * LOG_{10}(F_X)$
50 YEAR	3.690	0.5670	0.236	-0.6271	-0.4855	0.0430	1.1042	$LOG_{10}(F_Y) = 0.0430 + -0.4855 * LOG_{10}(F_X)$
100 YEAR	4.070	0.6096	0.264	-0.5784	-0.4830	0.0883	1.2255	$LOG_{10}(F_Y) = 0.0883 + -0.4830 * LOG_{10}(F_X)$

SUTTER SUBDIVISION McKinleyville, CA.

DRAINAGE AREA BREAK-DOWNS				AREA CALCS		RUNOFF COEFFICIENTS, C				PEAK FLOW RATES AT INDIVIDUAL SUB-AREAS															
										TIME OF CONCENTRATION, t_c CALCULATION							Q_2			Q_{10}			Q_{100}		
ZONE	SUB ZONE	COLL POINT	DESCRIPTION	AREA	AREA	PRE "C"	$A*C_{PRE}$	POST "C"	$A*C_{POST}$	L_{MAX}	L_{MAX}	$ELEV_{MAX}$	$ELEV_{MIN}$	$\Delta ELEV$	t_C	$t_{c\text{-}MIN}$	i_2	PRE	POST	i_{10}	PRE	POST	i_{100}	PRE	POST
				[SF]	[ACRES]					[FT]	[MILE]	[FT]	[FT]	[FT]	[MIN]	[MIN]		[CFS]	[CFS]		[CFS]	[CFS]		[CFS]	[CFS]
A			TOTAL AREA							200	0.04	32.50	30.00	2.50	2.5	**10.0**									
			<E> RESIDENTIAL	10,019	0.23	0.38	0.09	0.70	0.16																
			Parcel '4'																						
			ZONE A TOTAL →	**Σ A→**	**0.23**	Σ A * C→	0.09	Σ A * C→	0.16																
			ZONE As', is', Qs' →			**$C_{PRE\text{-}AVG}$→**	**0.38**	**$C_{PRE\text{-}AVG}$→**	**0.70**								**1.29**	**0.11**	**0.21**	**2.04**	**0.18**	**0.33**	**3.03**	**0.26**	**0.49**

$Q100_{Pre}$ = 0.26 cfs

Percolation Rate 12.0 in/hr
11/17/22

Required Permeable/Non-Paved Area **953 SQFT** **Per Lot** **PRE**

$Q100_{Post}$ = 0.49 cfs

Percolation Rate 12.0 in/hr
7/4/22

Required Permeable/Non-Paved Area **1,755 SQFT** **Per Lot** **POST**

Post Non-Paved Area = **6,019 SQFT** **Maximum Based On**

Post Design is Adequate **build out to setbacks**

EUREKA IDF CURVES

EUREKA NWS IDF CURVE DATA								
FREQUENCY	5 MINUTE		24 HOUR				CALC'D	FORMULA
	i_n	LOG(i_n)	i_n	LOG(i_n)	m	b	i_n @ 1 hr	
	LOG_{10}(5 min)=	-1.0792	LOG_{10}(24 hr)=	1.3802				
2 YEAR	1.740	0.2405	0.111	-0.9547	-0.4860	-0.2839	0.5201	$LOG_{10}(F_Y) = -0.2839 + -0.4860 * LOG_{10}(F_X)$
10 YEAR	2.750	0.4393	0.176	-0.7545	-0.4854	-0.0845	0.8232	$LOG_{10}(F_Y) = -0.0845 + -0.4854 * LOG_{10}(F_X)$
25 YEAR	3.310	0.5198	0.213	-0.6716	-0.4844	-0.0030	0.9932	$LOG_{10}(F_Y) = -0.0030 + -0.4844 * LOG_{10}(F_X)$
50 YEAR	3.690	0.5670	0.236	-0.6271	-0.4855	0.0430	1.1042	$LOG_{10}(F_Y) = 0.0430 + -0.4855 * LOG_{10}(F_X)$
100 YEAR	4.070	0.6096	0.264	-0.5784	-0.4830	0.0883	1.2255	$LOG_{10}(F_Y) = 0.0883 + -0.4830 * LOG_{10}(F_X)$

SUTTER SUBDIVISION McKinleyville, CA.

DRAINAGE AREA BREAK-DOWNS				AREA CALCS		RUNOFF COEFFICIENTS, C				PEAK FLOW RATES AT INDIVIDUAL SUB-AREAS															
										TIME OF CONCENTRATION, t_c CALCULATION							Q_2			Q_{10}			Q_{100}		
ZONE	SUB ZONE	COLL POINT	DESCRIPTION	AREA	AREA	PRE "C"	$A*C_{PRE}$	POST "C"	$A*C_{POST}$	L_{MAX}	L_{MAX}	$ELEV_{MAX}$	$ELEV_{MIN}$	$\Delta ELEV$	t_C	$t_{c\text{-}MIN}$	i_2	PRE	POST	i_{10}	PRE	POST	i_{100}	PRE	POST
				[SF]	[ACRES]					[FT]	[MILE]	[FT]	[FT]	[FT]	[MIN]	[MIN]		[CFS]	[CFS]		[CFS]	[CFS]		[CFS]	[CFS]
A			TOTAL AREA							200	0.04	32.50	30.00	2.50	2.5	**10.0**									
			<E> RESIDENTIAL	30,492	0.70	0.38	0.27	0.70	0.49																
			Remainder Parcel																						
			ZONE A TOTAL →	**Σ A→**	**0.70**	Σ A * C→	0.27	Σ A * C→	0.49																
			ZONE As', is', Qs' →			**$C_{PRE\text{-}AVG}$→**	**0.38**	**$C_{PRE\text{-}AVG}$→**	**0.70**								**1.29**	**0.34**	**0.63**	**2.04**	**0.54**	**1.00**	**3.03**	**0.81**	**1.48**

$Q100_{Pre}$ = 0.81 cfs

Percolation Rate 12.0 in/hr
11/17/22

Required Permeable/Non-Paved Area **2,900 SQFT** **Per Lot** **PRE**

$Q100_{Post}$ = 1.48 cfs

Percolation Rate 12.0 in/hr
7/4/22

Required Permeable/Non-Paved Area **5,342 SQFT** **Per Lot** **POST**

Post Non-Paved Area = **22,992 SQFT** **Maximum Based On**

Post Design is Adequate **build out to setbacks**

EUREKA IDF CURVES

EUREKA NWS IDF CURVE DATA								
FREQUENCY	5 MINUTE		24 HOUR				CALC'D	FORMULA
	i_n	LOG(i_n)	i_n	LOG(i_n)	m	b	i_n @ 1 hr	
	LOG_{10}(5 min)=	-1.0792	LOG_{10}(24 hr)=	1.3802				
2 YEAR	1.740	0.2405	0.111	-0.9547	-0.4860	-0.2839	0.5201	$LOG_{10}(F_Y) = -0.2839 + -0.4860 * LOG_{10}(F_X)$
10 YEAR	2.750	0.4393	0.176	-0.7545	-0.4854	-0.0845	0.8232	$LOG_{10}(F_Y) = -0.0845 + -0.4854 * LOG_{10}(F_X)$
25 YEAR	3.310	0.5198	0.213	-0.6716	-0.4844	-0.0030	0.9932	$LOG_{10}(F_Y) = -0.0030 + -0.4844 * LOG_{10}(F_X)$
50 YEAR	3.690	0.5670	0.236	-0.6271	-0.4855	0.0430	1.1042	$LOG_{10}(F_Y) = 0.0430 + -0.4855 * LOG_{10}(F_X)$
100 YEAR	4.070	0.6096	0.264	-0.5784	-0.4830	0.0883	1.2255	$LOG_{10}(F_Y) = 0.0883 + -0.4830 * LOG_{10}(F_X)$

SUTTER
SUBDIVISION
3-10-23

1/1

GUTTER DRAINS

ROOF AREA (E) HOUSE = 3500 SF

USE 5000 SQFT ROOF AREA / PARCEL

$Q_{10} = 0.95(2.04)(5000/43560)$

$= 0.22$ CFS

$0.22 \frac{CF}{S} \times 3600 \frac{S}{hr} / \left(12 \frac{in}{hr}\right)\left(\frac{1 Ft}{12 in}\right) = 792$ SQFT

792 SQFT / (3+2+3) = 99 LF

⇒ Install 100 LF OF 2' WIDE x 3' DEEP TRENCH W/ 18" dia PERF PIPE W/ No. 3 ROCK AND Filter Fabric FOR HOUSE GUTTER DRAINS

NOTE:
AT PARCEL 3 2' x 3' x 75' LONG TRENCH ASSUMING ROOF AREA ≤ 3750 SQFT

Preliminary Stormwater Control Plan (CDP, CUP, and SP ≥ 5000 sf)

For Office Use Only
Application No._____
Received By: _____

Instructions

The following worksheet is used to demonstrate that for each and every lot, the intended use can be achieved with a design which disperses runoff from the roofs, driveways, sidewalks, streets and other impervious areas to self-retaining pervious areas. It is also used to demonstrate that drainage to treatment and/or flow control facilities is feasible and that the project is in overall compliance with the MS4 permit. Use this form to assist you in designing your project to comply with the design standards for Multi-Parcel Regulated projects. The completed, signed Preliminary SCP for Subdivision Projects, a site map, plus any additional applicable information, must be submitted with your application to the Planning Department.

Project Name: Sutter Subdivision

Physical Site Address: APN 509-321-018

Project Applicant: Robert W. and Cindi L. Sutter

Mailing Address: P.O. Box 2663, McKInleyville, CA. 95519

Phone: (707)499-1731

Consultant's Information

Name: Stanley Elcock

Firm: SEE ENGINEERING

Address: 2865 Woodland Ct., Arcata, CA.

Email: stanelcock@gmail.com

Phone: 707 498-6315

A. Project Information

1a. Does Project create or replace 1-acre or more of impervious surface?	☐ **Yes** (see question below)	☒ **No** (skip question 1b.)
b. If 'Yes' to the above question than does project increase impervious surface from pre-project conditions?	☐ **Yes** (hydromodification requirements must be met)	☐ **No** (regulated project requirements must be met)
Total pre-project Impervious Surface (sf):	12448	
Total new or replaced Impervious Surface Area (square feet) **[Sum of impervious area that will be constructed as part of the project]**	14780 New	

Preliminary Stormwater Control Plan (CDP, CUP, and SP ≥ 5000 sf)

B. Summary Table of Pervious to Impervious Surface

The following table will be used by staff to ensure that adequate measures have been utilized within the project design to capture, retain, and/or infiltrate the design storm.
Each DMA shown in the table shall be designated with the same name on the site plan. All site design measures used to meet the runoff reduction goals and all treatment facilities utilized to capture remaining runoff volumes must be shown on the site plan at an appropriate scale. Please use the Flowchart as a reference of the process.

1. **Utilize Worksheet 1 to Calculate Impervious to Pervious Ratio to determine if further runoff reduction is needed**
2. **Utilize the Runoff Reduction Calculator (Worksheet 2*) to increase reduction**
3. **Utilize Bioretention or equivalent if reduction cannot be achieved using site design measures**

DMA Name	Does pervious to impervious ratio Achieve 3.5:1 or better, Worksheet 1(Yes or No)	Does runoff reduction with site design measures equal 100% or greater, Box DD (Worksheet 2)	Value from Box BB (worksheet 2) Impervious surface amount that must be treated using additional methods	Bioretention facility name and size (sf) (Use a sizing factor of 0.04 to calculate bioretention facility size or equivalent sizing technique if different treatment/baseline hydromodification facility is proposed)
(A)	(B)	(C)	(D)	
Example A	*Yes*	*Yes*	----------	----------
Example B	*No*	*Yes*	----------	----------
Example C	*No*	*No*	*1350 sf*	*C : (1350 X .04)=54 sf*
SUTTER	YES	YES	0.0	N/A

*Worksheet 1 and 2 showing calculations for each DMA must be included with the Preliminary SCP
Attach additional sheets as needed for the table above

Preliminary Stormwater Control Plan (CDP, CUP, and SP ≥ 5000 sf)

C. Preliminary Site Plan Checklist –items that must be include on the site plan

- [x] Topographic lines (2 ft. contours)
- [ ] On-site waterways/drainages, vegetation and areas to be left undisturbed all shown with appropriate buffers
- [x] DMAs clearly delineated and labeled with name and area (square feet)
- [x] Location of site design measures used in worksheet 2
- [ ] Location, size, and name of Bioretention/Treatment Facility
- [ ] Flow direction that clearly demonstrates the ability of self-retaining areas, ~~infiltration site design measure~~, and treatment facilities to capture runoff from impervious surfaces
- [x] Hydrologic soil class

D. Operation and Maintenance Plan Requirements

Each Bioretention facility or equivalent will be required to have an operation and maintenance plan attached to the final SCP and shall include all details found in Appendix 3, 4, and 5 of the LID Manual.

E. Additional Requirements

A detailed final Stormwater Control Plan with narrative sections will need to be submitted prior to issuance of a grading/building permit (see, Appendix 1. However, by completing the Preliminary SCP a more efficient and timely review of the final SCP is enabled.

F. Signature and Certification

I, the below signed, confirm that I have accurately described my project to the best of my ability, and that I have not purposely omitted any detail affecting my project's classification for storm water regulation. I hereby certify that the site design measures and storm water flow treatment measures identified herein as being incorporated into my project have been designed in accordance with the approved BMP Fact Sheet or equivalent, and are included in the final site plans. I also hereby certify that my project meets the storm water runoff reduction criteria identified in Worksheet 2, or as determined through other approved means.

Signature _____ Date 4-8-2023

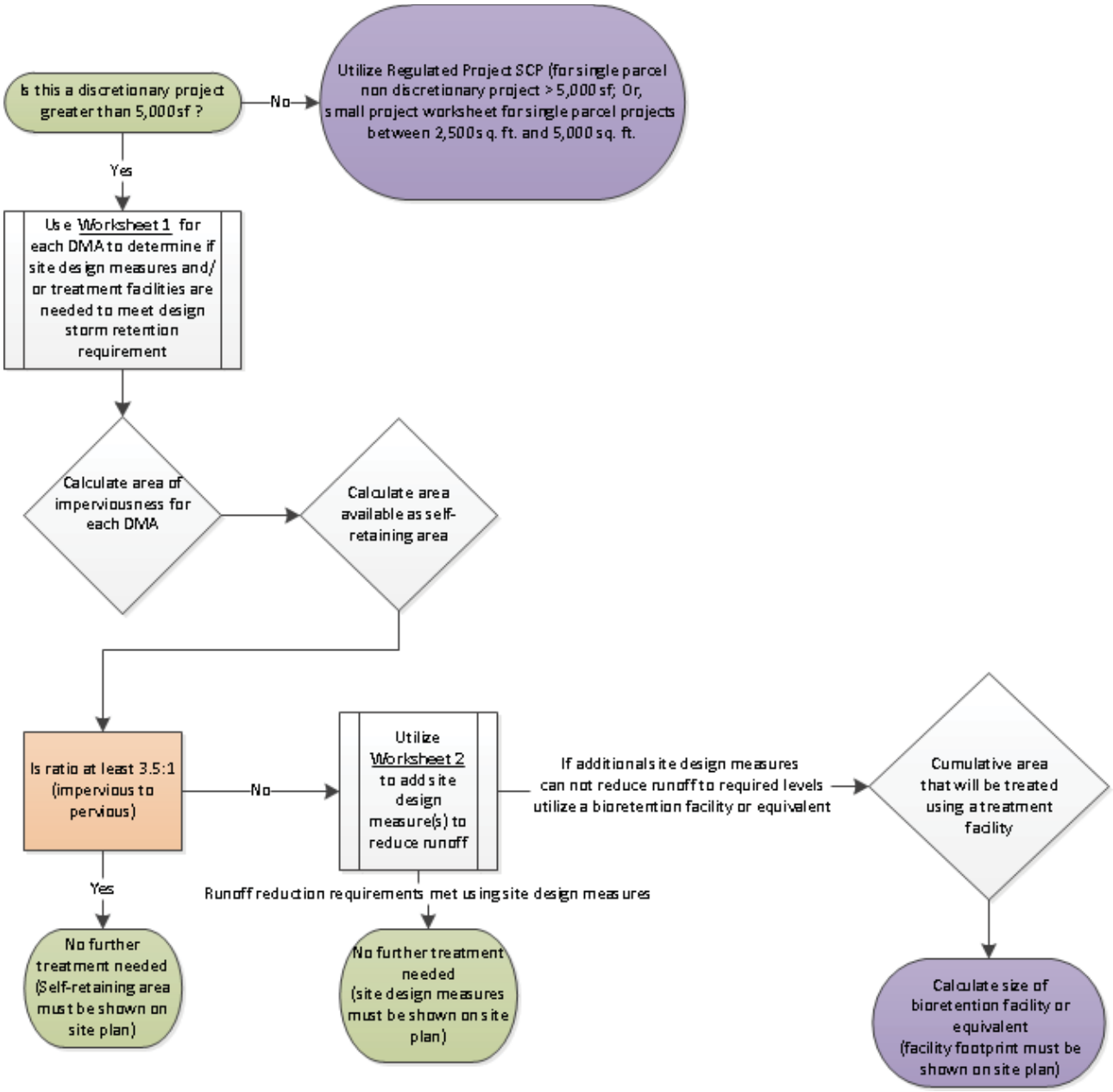
Robert Sutter
Print Name

I am the:

☒ Property Owner ☐ Applicant ☐ Contractor

Preliminary Stormwater Control Plan (CDP, CUP, and SP ≥ 5000 sf)

The following example illustrates the elements necessary for evaluating a project for compliance with the MS4 permit only. Additional requirements will most likely be needed for compliance with other regulations please consult the full planning submission checklist to make certain all required elements are presented on the preliminary site plan.



Preliminary Stormwater Control Plan (CDP, CUP, and SP ≥ 5000 sf)

Worksheet 1 Example

Regulated Projects Worksheet 1 - Humboldt Low Impact Development Stormwater Manual				
DMA Name	Total Post Project Impervious Surface Area (square feet)	Pervious Self-Retaining Area[1] (square feet)	Ratio of Impervious Surface Area to Self-Retaining Pervious Surface Area	Does Ratio Achieve 3.5 : 1 ratio or better of Impervious Surface Area to Self-Retaining Pervious Surface Area (Yes or No)[2]
Example A	500	150	3.3 : 1	YES
Example B	500	100	5.0 : 1	NO
SUTTER	27228	73395		2.7

1: Self-Retaining Areas where impervious surface runoff is directed to the Pervious Self-Retaining Area in accordance with Humboldt LID Manual - Part C, Section 6.0

2: If "Yes", Ratio of Impervious Surface Area to Self-Retaining Pervious Surface Area is equal to 3.5:1 or better (1.3:1 or better in the Shelter Cove MS4 area), then compliance with runoff reduction measures have been met for DMA.
If "No", Ratio of Impervious Surface Area to Self-Retaining Pervious Surface Area does not achieve 3.5:1 or better (1.3:1 in Shelter Cove), then compliance with runoff reduction measures have not been met for DMA (Complete Worksheet 2).

Preliminary Stormwater Control Plan (CDP, CUP, and SP ≥ 5000 sf)

Worksheet 2: (Use one Worksheet for each DMA as applicable)

Regulated Projects Worksheet 2
Humboldt Low Impact Development Stormwater Manual

Project Information							Formulas/Notes
DMA Name: Sutter Subdivision							
Total Post-Project Impervious Surface Area (square feet)			27228	A		square feet	
24 hour - 85th Percentile Design Storm			0.65	B		inch	B = Select Design Storm Value (0.65-inch Humboldt Bay Area, 1.3-inch Shelter Cove)
Impervious Surface Runoff Value (Potential Stormwater Runoff due to impervious surface area and design storm value)			10988	C		Gallons per 24 hours	C = A x B x 0.083 x 7.48
Pervious Self-Retaining Area (SRA) Credit (if applicable, if none enter 0)							
Self-Retaining Area (square feet)	73395	3.5	SRA Credit			square feet	SRA Credit = Self-Retaining Area x Multiplier. Select Multiplier (3.5 Humboldt Bay Area, 1.3 Shelter Cove)
Site Design Measure Credits							
Tree Planting and Preservation							
New Trees		# of trees					
100 square feet per deciduous tree		D	0	E	0	square feet	E = D x 100
200 square feet per evergreen tree		F	0	G	0	square feet	G = F x 200
Existing Trees (Credit for 50% of existing canopy area)		Canopy diameter (feet)					
Tree #1		H_1	0	J_1	0	square feet	$J_1 = 3.14 \times (H_1/2)^2 \times 0.50$
Tree #2		H_2	0	J_2	0	square feet	$J_2 = 3.14 \times (H_2/2)^2 \times 0.50$
Tree #3		H_3	0	J_3	0	square feet	$J_3 = 3.14 \times (H_3/2)^2 \times 0.50$
Rain Barrel or Cisterns (55 gallon minimum)							
Square foot credit per gallon based on 24-hour, 85th Percentile Design Storm		K	0				K = Select square foot credit per gallon (2.48 Humboldt Bay Area, 1.24 Shelter Cove)
			Gallons				
Rain Barrels		L	0	M	0	square feet	M = L x K
Cisterns		N	0	O	0	square feet	O = N x K
~~**Infiltration Trench/Basin (55 gallon minimum - 21 ft³**)**~~			cubic feet				
~~volume(ft^3) = length x width x depth~~		P		Q		~~square feet~~	~~Q = P x R x K x 7.48~~
~~porosity (approximate %)~~		R	~~35%~~				
~~**Subsurface Infiltrators (55 gallon minimum)**~~							
~~Proprietary units vary, insert estimated storage in ft^3~~		S		T		~~square feet~~	~~T = S x 7.48~~
Impervious Area Disconnection Credit per square foot of impervious area feeding into pervious area			27228	U		square feet	U = Enter square foot value
Soil Quality Improvement							
Credit per square foot of soil quality improvement				V	0	square feet	V = Enter square foot value
Green Roof							
Credit per square foot of green roof installation				W	0	square feet	W = Enter square foot value
PPPP (Porous Asphalt, Pervious Concrete, Permeable Pavers)							
Credit per square foot of PPPP				X	0	square feet	X = Enter square foot value
Vegetated Swales							
Credit per square foot of vegetated swale				Y	0	square feet	Y = Enter square foot value
Stream Setbacks and Buffers							
Credit per square foot of stream setback and buffer#				Z	0	square feet	Z = Enter square foot value
Credits Total			27228	AA		square feet	AA = SRA Credit + E + G + J_1 + J_2 + J_3 + M + O + Q + T + U + V + W + X + Y + Z
Post-Project Impervious Surface Area minus Site Design Measure Credits				BB	0	square feet	BB = A - AA
NEW Impervious Surface Runoff Value (Potential Stormwater Runoff due to impervious surface area and design storm after implementation of Site Design Measures)				CC	0	Gallons per 24 hours	CC = BB x B x 0.083 x 7.48
Percent reduction in Impervious Surface Runoff Value*				DD	100	%	DD = ((C - CC) / C) x %100

***If value for DD is not greater than or equal to %100 then bioretention is required for treating remaining runoff from impervious area indicated by value BB. Design and implement bioretention facility in accordance with Humboldt LID Stormwater Manual - Part C.**

****Infiltration Trench/Basin calculations are based on porosity (35%). Increased trench dimensions (volume) are required to meet 55 gallon minimum capacity.**

Green — Fill In [Enter Value]	Conversions Used:
Red — Calculated Value	1 inch = 0.083 feet
Black — Fixed Value/Selectable Value	1 cubic foot = 7.48 gallons
Regulated Projects Worksheet 2, Version 2.0 - June 29, 2016	# check with agency with project area jurisdiction for requirements