

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.

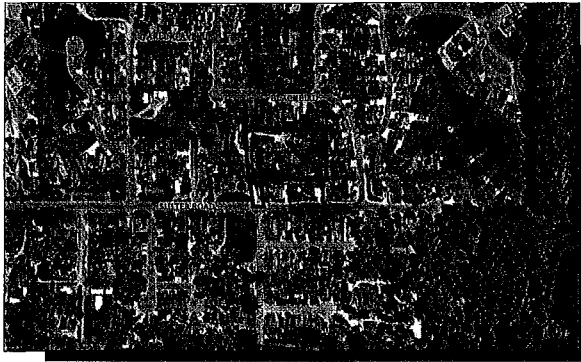
If you have any questions, please do not hesitate to call or e-mail: stanelcock@gmail.com
Ph. (707) 498-6315

Sincerely,

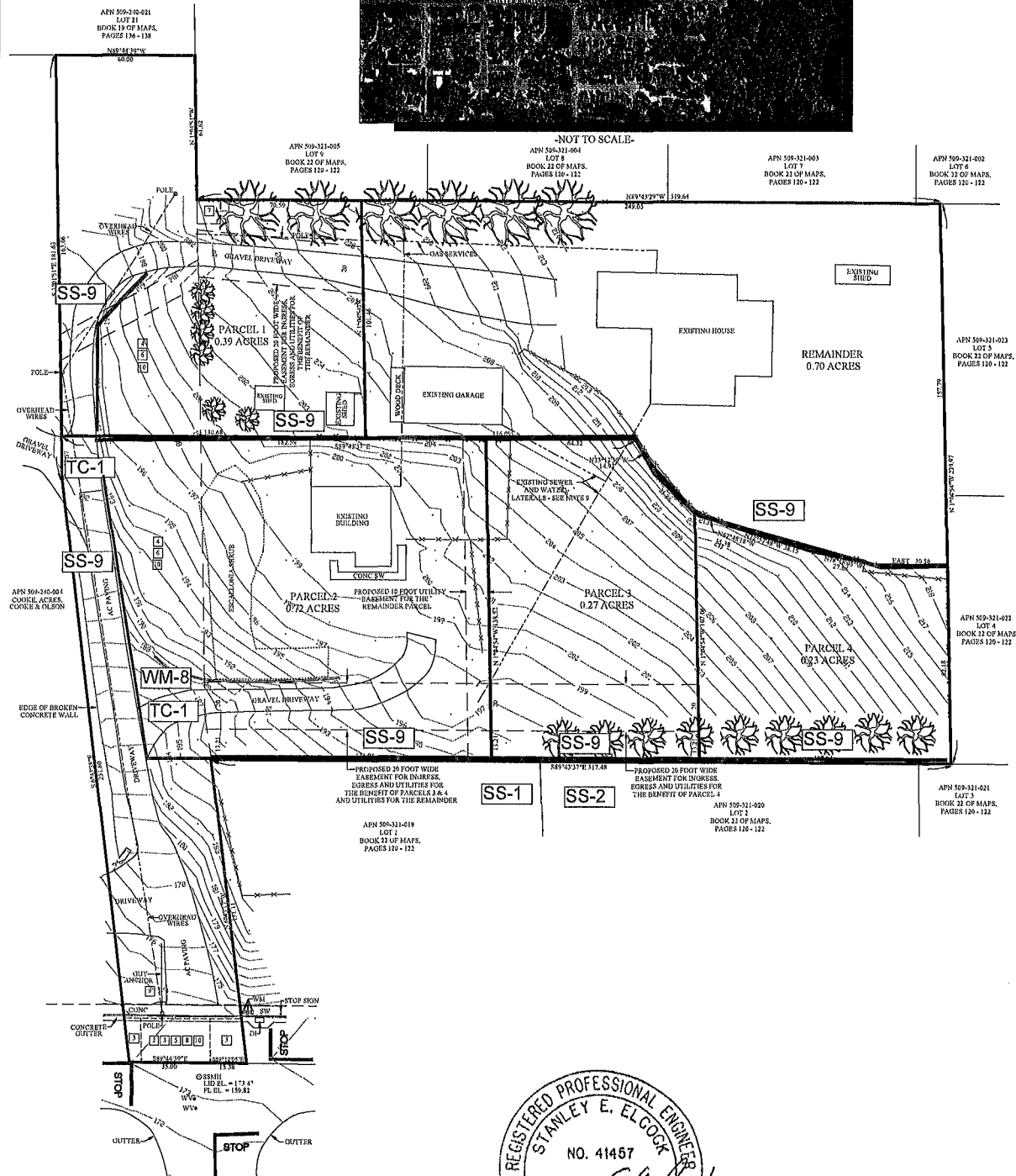
Stanley Elcock, P.E.



VICINITY MAP



-NOT TO SCALE-



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.



EROSION CONTROL PLAN

3/11/23

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

SEE Engineering

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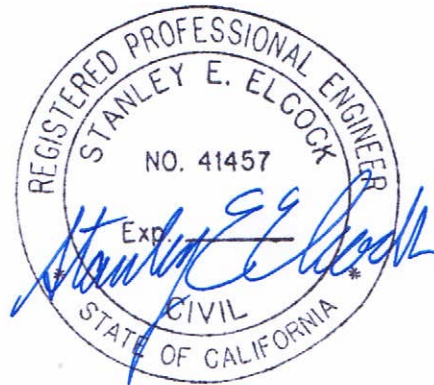
PLANS * CONSTRUCTION * SPECIAL PROJECTS * SHORING * TEMPORARY SYSTEMS
Stanley Elcock, P.E. C41457

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

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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.

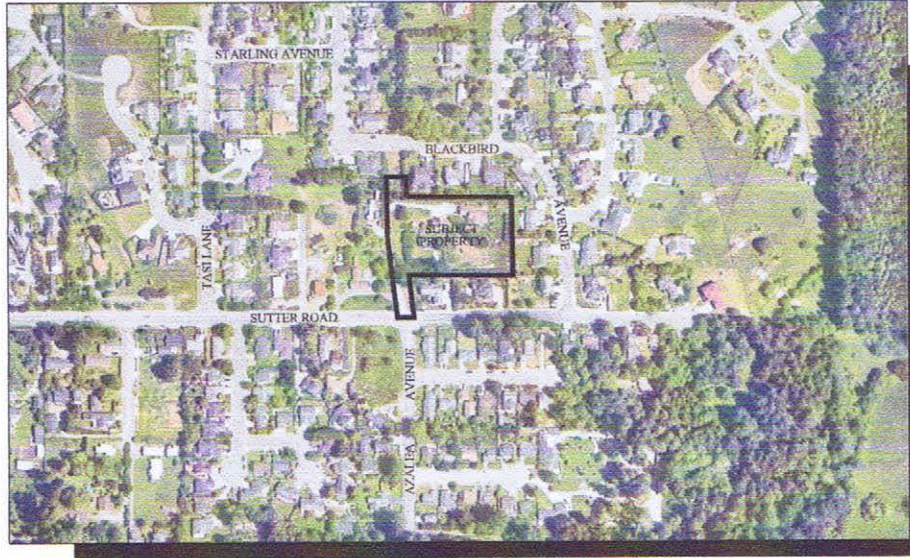
Attached are calculations for retaining all stormwater onsite of the proposed parcels being created. The existing paved driveway will remain unchanged. Percolation tests were conducted on each parcel on November 17, 2022. The results are incorporated in the calculations. Roof gutter water will be hard 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

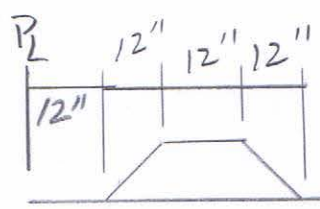
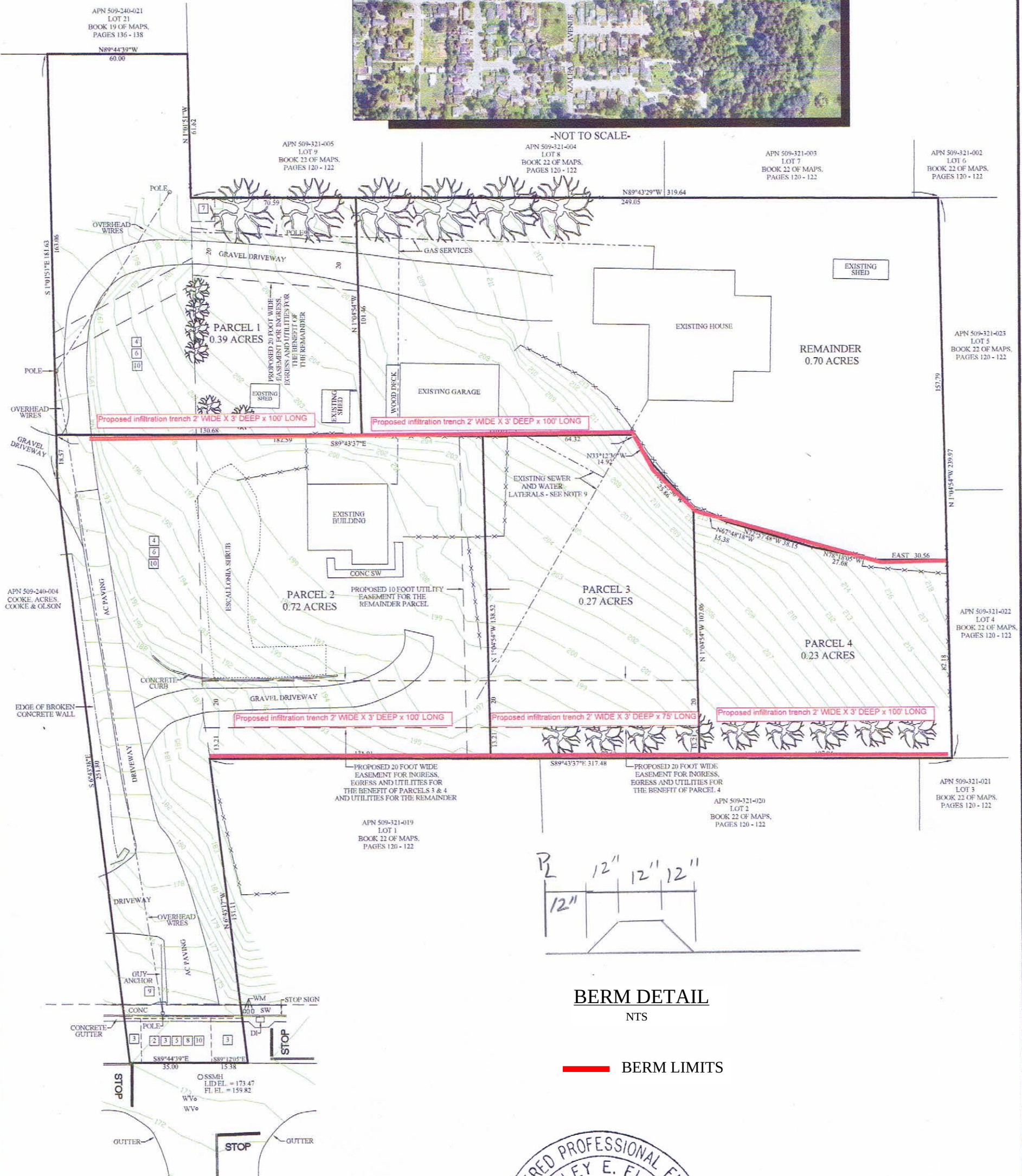
Sincerely,

Stanley Elcock, P.E.

VICINITY MAP



-NOT TO SCALE-



BERM DETAIL

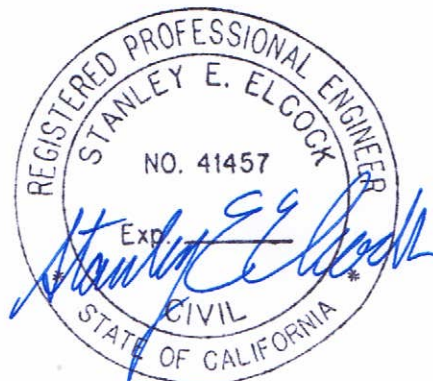
NTS

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



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

STORMWATER CALCULATION

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} | ΔELEV | t_c | t_{c-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 <E> RESIDENTIAL Parcel '1' | 16,988 | 0.39 | 0.38 | 0.15 | 0.70 | 0.27 | 200 | 0.04 | 32.50 | 30.00 | 2.50 | 2.5 | 10.0 | | | | | | | | | |
| | | | ZONE A TOTAL → | Σ A → | 0.39 | Σ A * C → | 0.15 | Σ A * C → | 0.27 | | | | | | | | | | | | | | | | |
| | | | ZONE As', is', Qs' → | | | C_{PRE-AVG} → | 0.38 | C_{PRE-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
11/17/22 12.0 in/hr

Required Permeable/Non-Paved Area 1,616 SQFT Per Lot PRE

Q100_{Post} = 0.83 cfs

Percolation Rate
7/4/22 12.0 in/hr

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) |

STORMWATER CALCULATION

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} | ΔELEV | t _c | t _{c-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 <E> RESIDENTIAL Parcel '2' | 31,363 | 0.72 | 0.38 | 0.27 | 0.70 | 0.50 | 200 | 0.04 | 32.50 | 30.00 | 2.50 | 2.5 | 10.0 | | | | | | | | | |
| | | | ZONE A TOTAL → | Σ A → | 0.72 | Σ A * C → | 0.27 | Σ A * C → | 0.50 | | | | | | | | | | | | | | | | |
| | | | ZONE As', is', Qs' → | | | C_{PRE-AVG} → | 0.38 | C_{PRE-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
11/17/22 12.0 in/hr

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

Q100_{Post} = 1.53 cfs

Percolation Rate
7/4/22 12.0 in/hr

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) |

STORMWATER CALCULATION

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} | ΔELEV | t_c | t_{c-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 <E> RESIDENTIAL Parcel '3' | 11,761 | 0.27 | 0.38 | 0.10 | 0.70 | 0.19 | 200 | 0.04 | 32.50 | 30.00 | 2.50 | 2.5 | 10.0 | | | | | | | | | |
| | | | ZONE A TOTAL → | Σ A → | 0.27 | Σ A * C → | 0.10 | Σ A * C → | 0.19 | | | | | | | | | | | | | | | | |
| | | | ZONE As', is', Qs' → | | | C_{PRE-AVG} → | 0.38 | C_{PRE-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) |

STORMWATER CALCULATION

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} | ΔELEV | t _c | t _{c-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 <E> RESIDENTIAL Parcel '4' | 10,019 | 0.23 | 0.38 | 0.09 | 0.70 | 0.16 | 200 | 0.04 | 32.50 | 30.00 | 2.50 | 2.5 | 10.0 | | | | | | | | | |
| | | | ZONE A TOTAL → | Σ A → | 0.23 | Σ A * C → | 0.09 | Σ A * C → | 0.16 | | | | | | | | | | | | | | | | |
| | | | ZONE As', is', Qs' → | | | C_{PRE-AVG} → | 0.38 | C_{PRE-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
11/17/22 12.0 in/hr

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

Q100_{Post} = 0.49 cfs

Percolation Rate
7/4/22 12.0 in/hr

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) |

STORMWATER CALCULATION

SUTTER SUBDIVISION McKinleyville, CA.

| DRAINAGE AREA BREAK-DOWNS | | | | AREA CALCS | | RUNOFF COEFFICIENTS, C | | | | PEAK FLOW RATES AT INDIVIDUAL SUB-AREAS | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|----------|------------|--|--------------|-----------------|------------------------|--------------------|------------------------------|---------------------|---|----------------------------|-----------------------------|-----------------------------|---------------|-------------------------|-----------------------------|----------------|--------------|-----------------|-----------------|--------------|------------------|------------------|--------------|---------------|--|--|--|--|--|--|--|--|--|--|--|--|
| ZONE | SUB ZONE | COLL POINT | DESCRIPTION | AREA [SF] | AREA [ACRES] | PRE "C" | A*C _{PRE} | POST "C" | A*C _{POST} | TIME OF CONCENTRATION, t _c CALCULATION | | | | | | Q ₂ | | | Q ₁₀ | | | Q ₁₀₀ | | | | | | | | | | | | | | | |
| | | | | | | | | | | L _{MAX} [FT] | L _{MAX} [MILE] | ELEV _{MAX} [FT] | ELEV _{MIN} [FT] | ΔELEV [FT] | t _c [MIN] | t _{c-MIN} [MIN] | i ₂ | PRE [CFS] | POST [CFS] | i ₁₀ | PRE [CFS] | POST [CFS] | i ₁₀₀ | PRE [CFS] | POST [CFS] | | | | | | | | | | | | |
| A | | | TOTAL AREA <E> RESIDENTIAL Remainder Parcel | 30,492 | 0.70 | 0.38 | 0.27 | 0.70 | 0.49 | 200 | 0.04 | 32.50 | 30.00 | 2.50 | 2.5 | 10.0 | | | | | | | | | | | | | | | | | | | | | |
| | | | ZONE A TOTAL → ZONE As', is', Qs' → | Σ A → | 0.70 | Σ A * C → | 0.27 | Σ A * C → | 0.49 | | | | | | | | 1.29 | 0.34 | 0.63 | 2.04 | 0.54 | 1.00 | 3.03 | 0.81 | 1.48 | | | | | | | | | | | | |
| | | | C_{PRE-AVG} → | | | 0.38 | | C_{PRE-AVG} → | 0.70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Q_{100Pre} = 0.81 cfs

Percolation Rate
11/17/22 12.0 in/hr

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

Q_{100Post} = 1.48 cfs

Percolation Rate
7/4/22 12.0 in/hr

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) |

GUTTER
SUBDIVISION

3-10-23

1/1

GUTTER DRAINS

ROOF AREA (E) HOUSE = 3500^{sq}'

USE 5000 SQFT ROOF AREA / PARCEL

$$Q_{10} = 0.95(2.04)(5000/3500)$$

$$= 0.22 \text{ cfs}$$

$$\frac{0.22 \text{ cfs} \times 3600 \text{ s}}{\text{hr}} \left/ \left(\frac{12 \text{ in}}{\text{hr}} \right) \left(\frac{1 \text{ ft}}{12 \text{ in}} \right) \right. = 792 \text{ SQFT}$$

$$792 \text{ SQFT} / (3+2+3) = 99 \text{ LF}$$

⇒ Install 100LF 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)

| |
|--|
| <p>For Office Use Only Application No. _____ Received By: _____</p> |
|--|

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: <u>Sutter Subdivision</u> |
| Physical Site Address: <u>APN 509-321-018</u> |
| Project Applicant: <u>Robert W. and Cindi L. Sutter</u> |
| Mailing Address: <u>P.O. Box 2663, McKinleyville, CA. 95519</u> |
| Phone: <u>(707) 499-1731</u> |
| Consultant's Information |
| Name: <u>Stanley Elcock</u> |
| Firm: <u>SEE ENGINEERING</u> |
| Address: <u>2865 Woodland Ct., Arcata, CA.</u> |
| Email: <u>stanelcock@gmail.com</u> |
| Phone: <u>707 498-6315</u> |

A. Project Information

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



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

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

- Topographic lines (2 ft. contours)
- On-site waterways/drainages, vegetation and areas to be left undisturbed all shown with appropriate buffers
- DMAs clearly delineated and labeled with name and area (square feet)
- 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
- Hydrologic soil class

D. Operation and Maintenance Plan Requirements

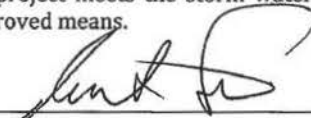
Each Bioretention facility or equivalent will be required to have an operation and maintenance plan attached to the final SCP and shall include all details found in Appendix 3, 4, and 5 of the LID Manual.

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

4-8-2023

 Date

Robert Sutter

 Print Name

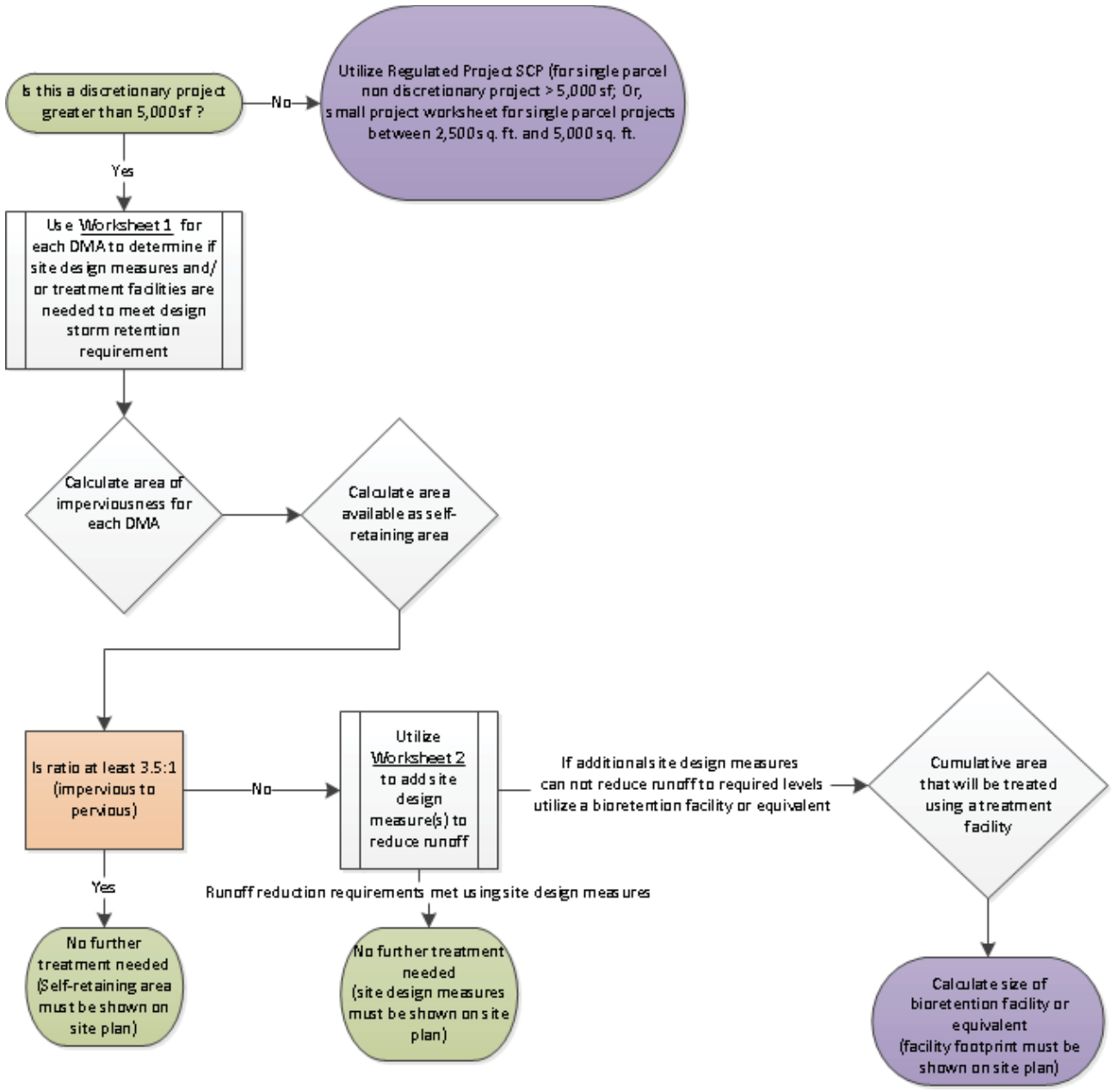
I am the:

- 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 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 | | | | | | | | | | | | | | | | | |
| 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 x (H ₁ /2) ² x 0.50 | | | | | | | | | | | | | | | | | |
| Tree #2 | H ₂ | 0 | J ₂ | 0 | square feet | | | | | | | | | | | | |
| J ₂ = 3.14 x (H ₂ /2) ² x 0.50 | | | | | | | | | | | | | | | | | |
| Tree #3 | H ₃ | 0 | J ₃ | 0 | square feet | | | | | | | | | | | | |
| J ₃ = 3.14 x (H ₃ /2) ² x 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) | | | | | | | | | | | | | | | | | |
| volume (ft³) = length x width x depth | | | | | | | | | | | | | | | | | |
| porosity (approximate %) | | | | | | | | | | | | | | | | | |
| Subsurface Infiltrators (55 gallon minimum) | | | | | | | | | | | | | | | | | |
| Proprietary units vary, insert estimated storage in ft³ | | | | | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | |
| T | | | | | | | | | | | | | | | | | |
| T = S x 7.48 | | | | | | | | | | | | | | | | | |
| Impervious Area Disconnection Credit per square foot of impervious area feeding into pervious area | U | 27228 | | | U = Enter square foot value | | | | | | | | | | | | |
| Soil Quality Improvement | | | | | | | | | | | | | | | | | |
| Credit per square foot of soil quality improvement | V | 0 | | | V = Enter square foot value | | | | | | | | | | | | |
| Green Roof | | | | | | | | | | | | | | | | | |
| Credit per square foot of green roof installation | W | 0 | | | W = Enter square foot value | | | | | | | | | | | | |
| PPPP (Porous Asphalt, Pervious Concrete, Permeable Pavers) | | | | | | | | | | | | | | | | | |
| Credit per square foot of PPPP | X | 0 | | | X = Enter square foot value | | | | | | | | | | | | |
| Vegetated Swales | | | | | | | | | | | | | | | | | |
| Credit per square foot of vegetated swale | Y | 0 | | | Y = Enter square foot value | | | | | | | | | | | | |
| Stream Setbacks and Buffers | | | | | | | | | | | | | | | | | |
| Credit per square foot of stream setback and buffer [#] | Z | 0 | | | Z = Enter square foot value | | | | | | | | | | | | |
| Credits Total | AA | 27228 | | | 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 | | | 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 | | | 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. | | | | | | | | | | | | | | | | | |
| <table border="0"> <tr> <td>Green</td> <td>Fill In [Enter Value]</td> <td>Conversions Used:</td> </tr> <tr> <td>Red</td> <td>Calculated Value</td> <td>1 inch = 0.083 feet</td> </tr> <tr> <td>Black</td> <td>Fixed Value/Selectable Value</td> <td>1 cubic foot = 7.48 gallons</td> </tr> <tr> <td colspan="3"># check with agency with project area jurisdiction for requirements</td> </tr> </table> | | | | | | 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 | # check with agency with project area jurisdiction for requirements | | |
| Green | Fill In [Enter Value] | Conversions Used: | | | | | | | | | | | | | | | |
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| Black | Fixed Value/Selectable Value | 1 cubic foot = 7.48 gallons | | | | | | | | | | | | | | | |
| # check with agency with project area jurisdiction for requirements | | | | | | | | | | | | | | | | | |

