Figure 3. Culvert under Deer Springs Road at Lower End of Reach 1

Figure 4. Looking Downstream towards Reach 2 from Upper End

Figure 5. Middle of Reach 2

Figure 6. Looking Upstream at Reach 2 from near Lower End

Figure 7. Grouted Riprap Check Dam near Lower End of Reach 2

Figure 8. Large Rock on Channel Bed and Banks at Lower End of Reach 2

Figure 9. Looking Downstream at Reach 3 from Upper End

Figure 10. Upper Middle Portion of Reach 3

Figure 11. Middle Portion of Reach 3

Figure 12. Culverts and Driveway at Middle Portion of Reach 3

Figure 13. Lower Middle Portion of Reach 3

Figure 14. Looking Upstream from Country Garden Lane at Lower End of Reach 3

Figure 15. Culvert and Country Garden Lane Roadway at Lower End of Reach 3

Figure 16. Upstream End of Reach 4

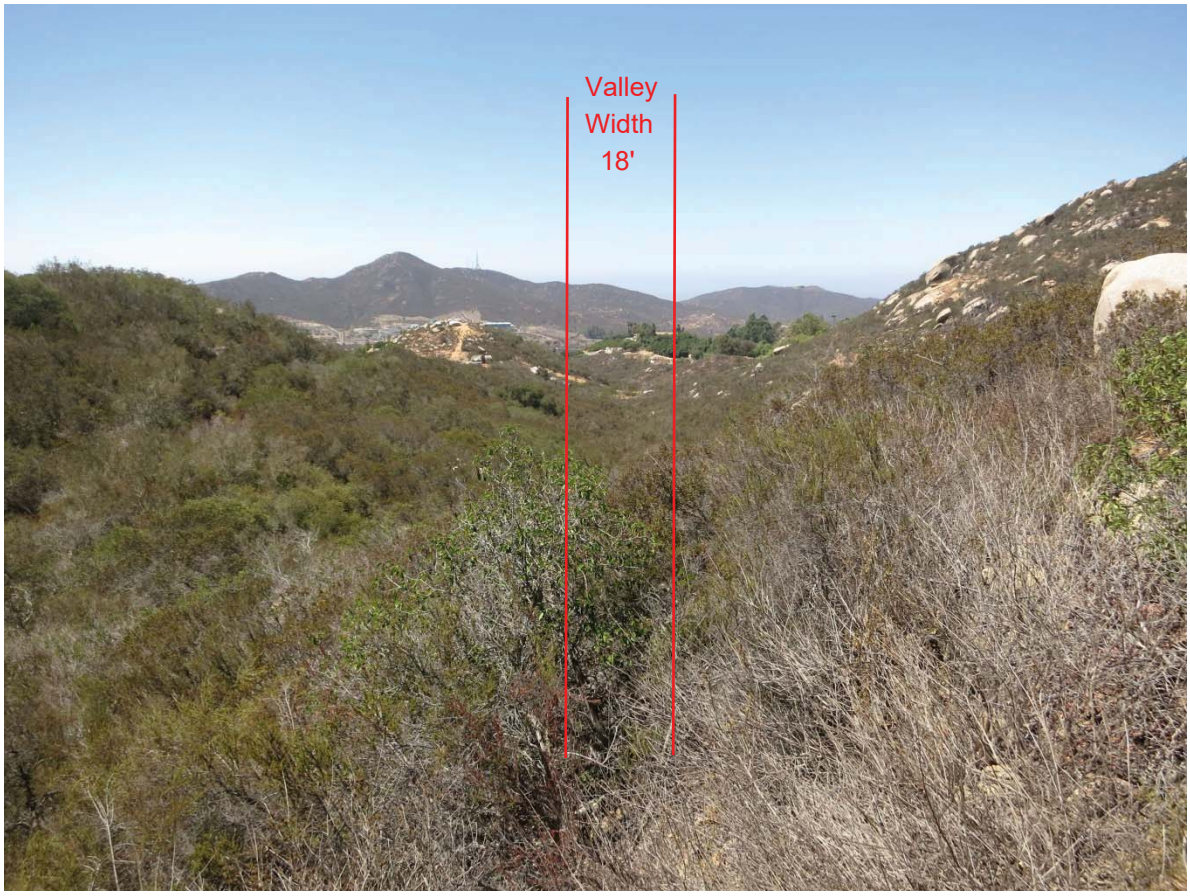


Figure 17. Looking Downstream at Reach 4 from Upper End

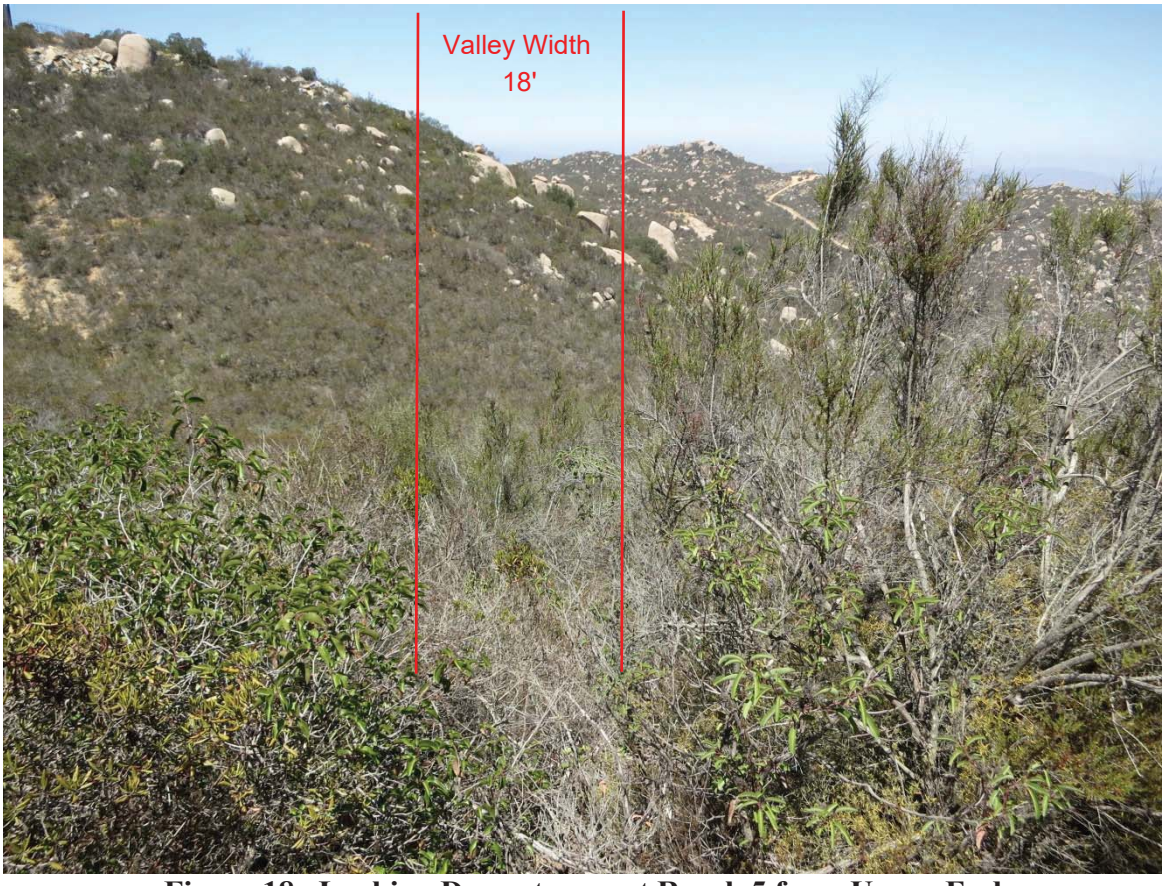


Figure 18. Looking Downstream at Reach 5 from Upper End

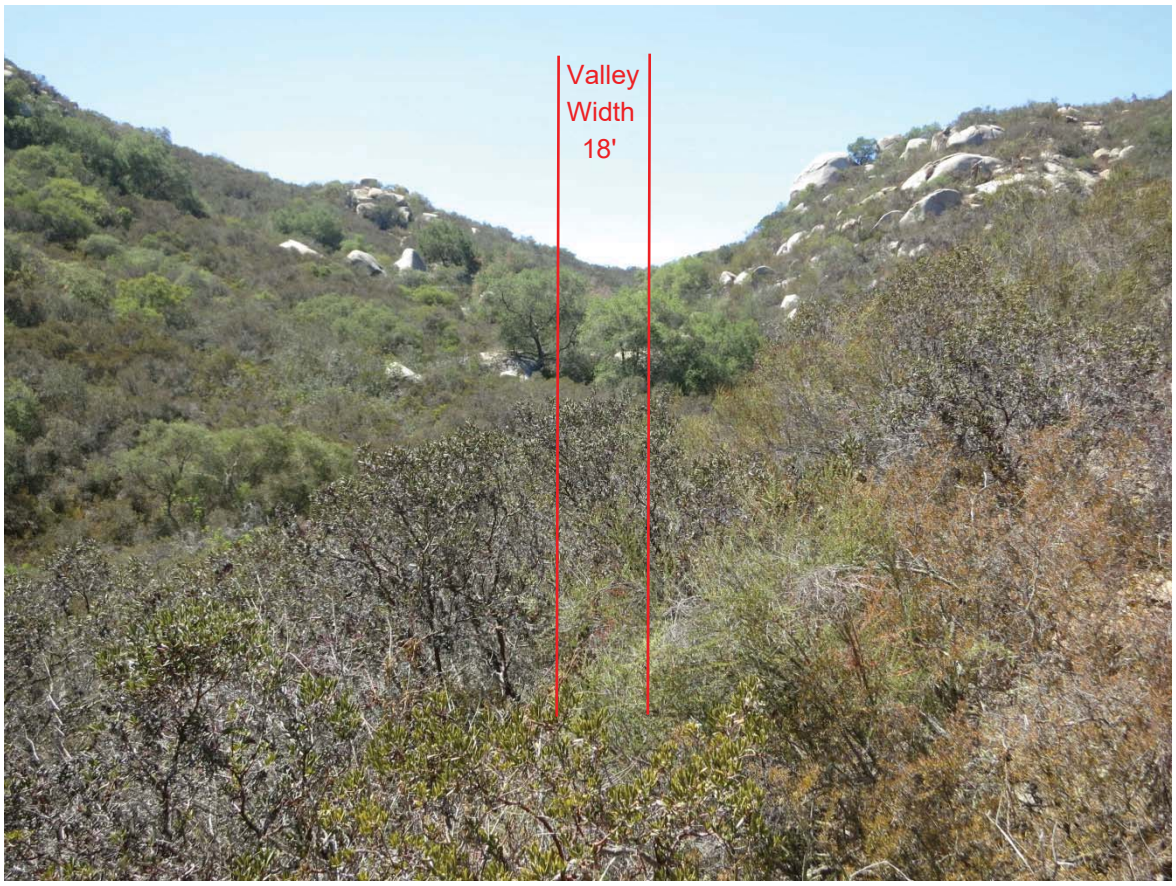


Figure 19. Looking Upstream at Reach 5 from Lower End

Figure 20. Looking Upstream towards Upper End of Reach 6 from First Grade Control

Figure 21. Culvert under Driveway near Middle of Reach 6 (First Grade Control)

Figure 22. Looking at Upper and Middle Portion of Reach 6

Figure 23. Looking at Lower Portion of Reach 6

Figure 24. Driveway at Lower Portion of Reach 6 (Surrounded by Densely Vegetated Channel)

Figure 25. Gravelometer within Reach 1

Figure 26. Gravelometer within Reach 2

Figure 27. Gravelometer within Reach 3

Figure 28. Gravelometer within Reach 4

Figure 29. Gravelometer within Reach 5

Figure 30. Gravelometer within Reach 6

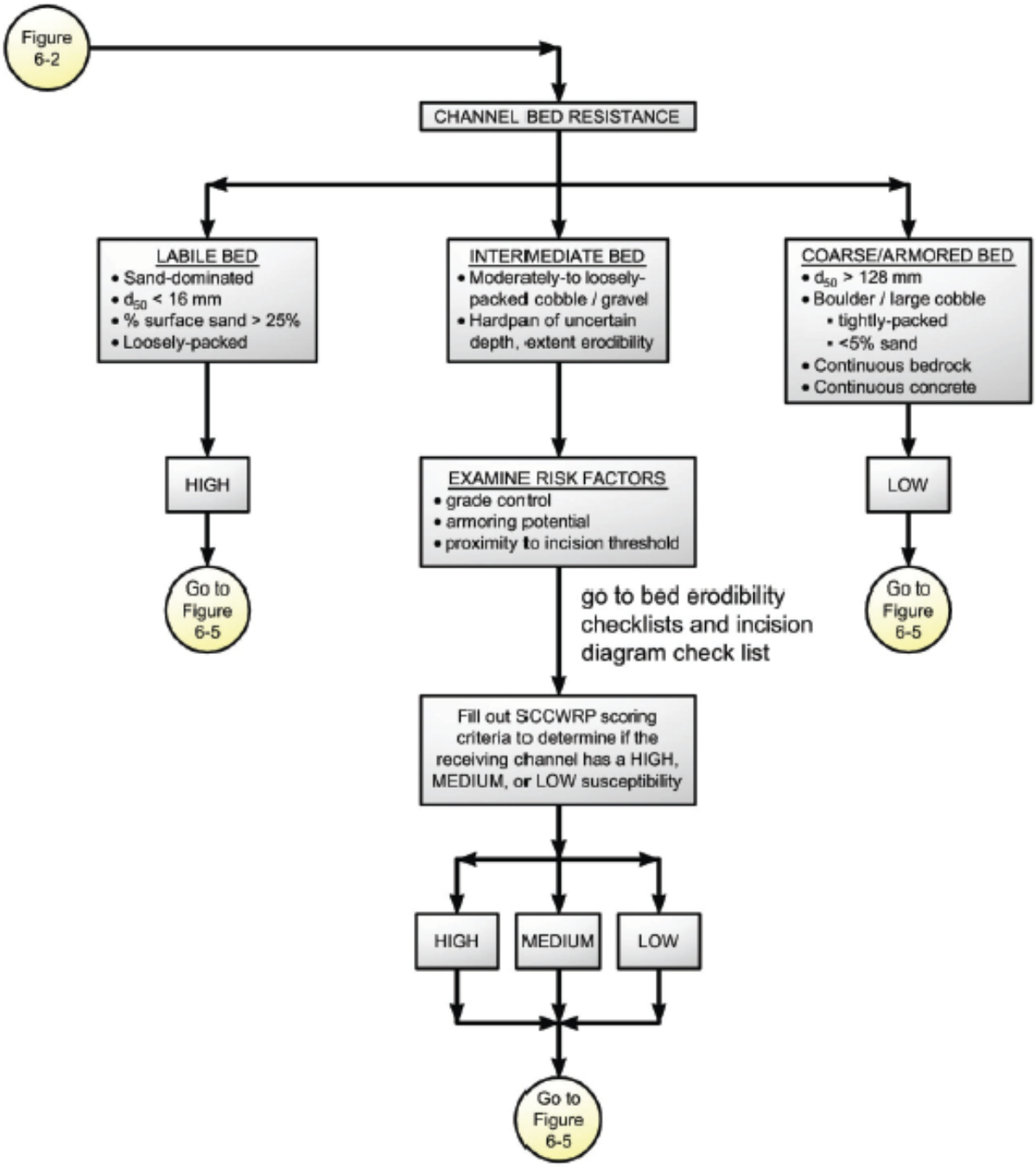


Figure 6-4. SCCWRP Vertical Susceptibility

Figure 31. SCCWRP Vertical Channel Susceptibility Matrix

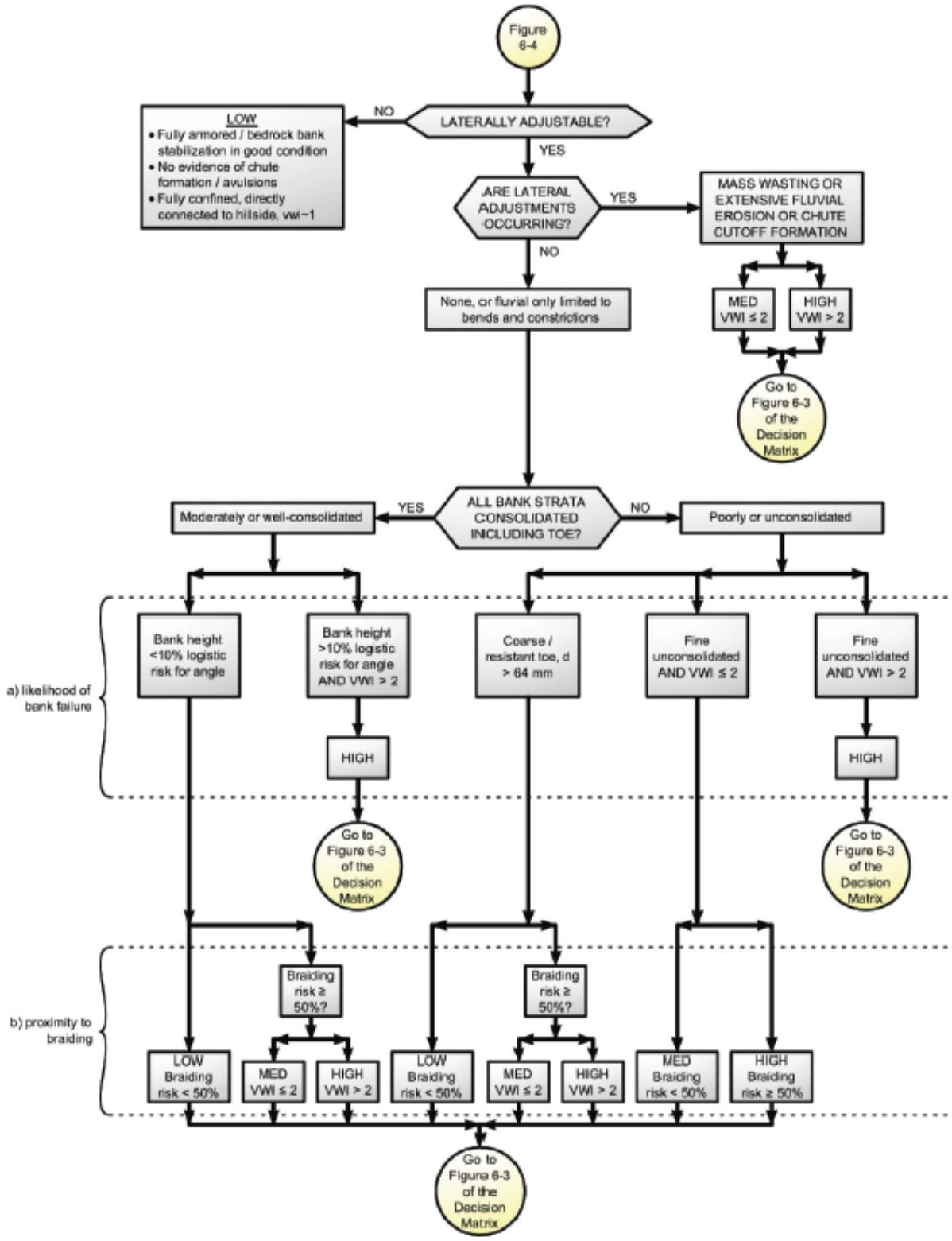


Figure 6-5. Lateral Channel Susceptibility

Figure 32. SCCWRP Lateral Channel Susceptibility Matrix

APPENDIX A

SCCWRP INITIAL DESKTOP ANALYSIS

FORM 1: INITIAL DESKTOP ANALYSIS

Complete all shaded sections.

IF required at multiple locations, circle one of the following site types:

Applicant Site / Upstream Extent / Downstream Extent

Location: Latitude: 33.2060 Longitude: -117.1393

Description (river name, crossing streets, etc.): Newland Sierra

North of Deer Springs Road and West of Interstate 15

GIS Parameters: The International System of Units (SI) is used throughout the assessment as the field standard and for consistency with the broader scientific community. However, as the singular exception, US Customary units are used for contributing drainage area (A) and mean annual precipitation (P) to apply regional flow equations after the USGS. See SCCWRP Technical Report 607 for example measurements and "Screening Tool Data Entry.xls" for automated calculations.

Form 1 Table 1. Initial desktop analysis in GIS.

Symbol		Variable	Description and Source	Value
Watershed properties (English units)	**A**	Area (mi^2)	Contributing drainage area to screening location via published Hydrologic Unit Codes (HUCs) and/or ≤ 30 m National Elevation Data (NED), USGS seamless server	See attached Form 1 table on next page for calculated values for each reach.
	P	Mean annual precipitation (in)	Area-weighted annual precipitation via USGS delineated polygons using records from 1900 to 1960 (which was more significant in hydrologic models than polygons delineated from shorter record lengths)	
Site properties (SI units)	**S_v**	Valley slope (m/m)	Valley slope at site via NED, measured over a relatively homogenous valley segment as dictated by hillslope configuration, tributary confluences, etc., over a distance of up to ~500 m or 10% of the main-channel length from site to drainage divide	
	W_v	Valley width (m)	Valley bottom width at site between natural valley walls as dictated by clear breaks in hillslope on NED raster, irrespective of potential armoring from floodplain encroachment, levees, etc. (imprecise measurements have negligible effect on rating in wide valleys where VWI is >> 2, as defined in lateral decision tree)	

Form 1 Tabl e 2. Simplif ied peak flo w, screening index, and valley width index. Values for this table should be calculated in the sequence shown in this table, using values from Form 1 Table 1.

Symbol	Dependent Variable	Equation	Required Units	Value
Q_{10cfs}	10-yr peak flow (ft^3/s)	$Q_{10cfs} = 18.2 * A^{0.87} * P^{0.77}$	A (mi^2) P (in)	See attached Form 1 table on next page for calculated values for each reach.
Q_{10}	10-yr peak flow (m^3/s)	$Q_{10} = 0.0283 * Q_{10cfs}$	Q_{10cfs} (ft^3/s)	
INDEX	10-yr screening index ($m^{1.5}/s^{0.5}$)	$INDEX = S_v * Q_{10}^{0.5}$	Sv (m/m) Q_{10} (m^3/s)	
W_{ref}	Reference width (m)	$W_{ref} = 6.99 * Q_{10}^{0.438}$	Q_{10} (m^3/s)	
VWI	Valley width index (m/m)	$VWI = W_v/W_{ref}$	W_v (m) W_{ref} (m)	

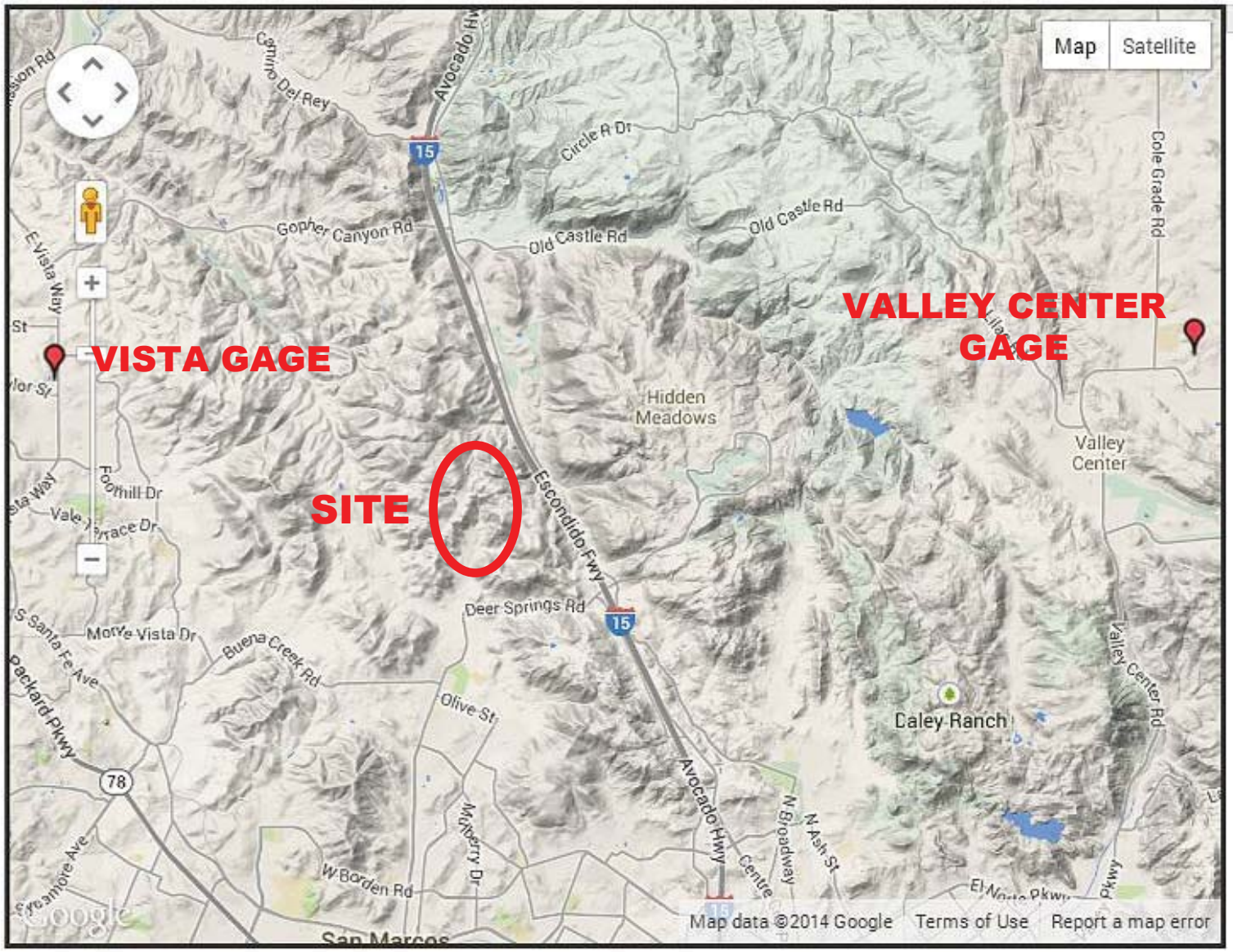
(Sheet 1 of 1)

SCCWRP FORM 1 ANALYSES

Reach	Area A, sq. mi.	Mean Annual Precip. P, inches	Valley Slope Sv, m/m	Valley Width Wv, m	10-Year Flow Q10cfs, cfs	10-Year Flow Q10, cms
1	0.02	14.6	0.1021	3.7	6	0.2
2	0.78	14.6	0.0419	3.0	116	3.3
3	0.77	14.6	0.0202	6.1	115	3.2
4	0.06	14.6	0.1003	5.5	13	0.4
5	0.03	14.6	0.3630	5.5	6	0.2
6	0.22	14.6	0.0901	8.5	38	1.1

Reach	10-Year Screening Index INDEX	Reference Width Wref, m	Valley Width Index VWI, m/m
1	0.041	3.1	1.17
2	0.076	11.8	0.26
3	0.036	11.7	0.52
4	0.061	4.5	1.21
5	0.154	3.3	1.66
6	0.093	7.2	1.19

US COOP Station Map



RAIN GAGES NEAREST TO STUDY AREA

VISTA 1 NE, CALIFORNIA (049378)

Period of Record Monthly Climate Summary

Period of Record : 8/ 1/1957 to 3/31/2013

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	67.4	67.8	68.2	70.8	72.9	76.3	81.3	83.0	82.2	77.9	72.3	67.4	74.0
Average Min. Temperature (F)	44.0	45.0	46.3	48.5	53.5	56.6	60.3	61.6	60.0	55.0	48.3	44.0	51.9
Average Total Precipitation (in.)	2.76	2.55	2.24	1.05	0.22	0.11	0.06	0.07	0.25	0.54	1.40	1.83	13.09
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 86.6% Min. Temp.: 87% Precipitation: 87.6% Snowfall: 87.7% Snow Depth: 87.3%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

VALLEY CENTER 2 NNE, CALIFORNIA (049232)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1969 to 4/30/1978

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)					Insuff	icient	Data						
Average Min. Temperature (F)					Insuff	icient	Data						
Average Total Precipitation (in.)	3.23	3.82	3.93	1.09	0.59	0.09	0.02	0.00	0.51	0.46	1.41	2.30	17.46
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 0.9% Min. Temp.: 0.9% Precipitation: 83.8% Snowfall: 83.8% Snow Depth: 83.8%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

APPENDIX B

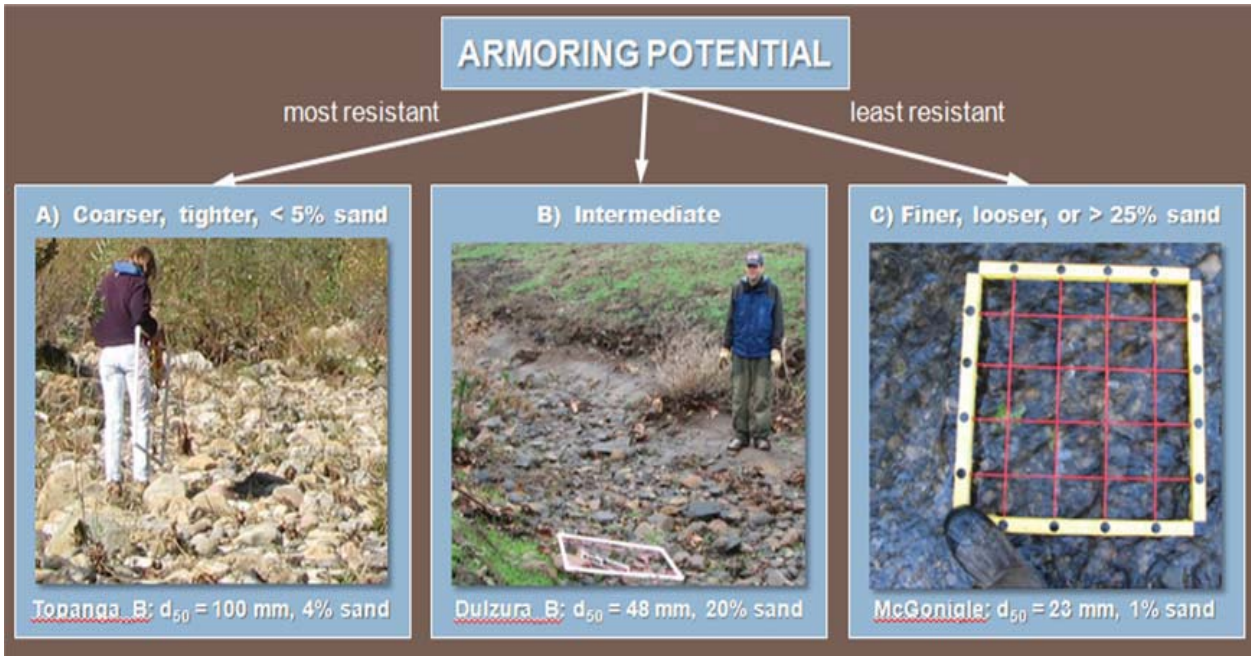
SCCWRP FIELD SCREENING DATA

Form 3 Support Materials

Form 3 Checklists 1 and 2, along with information recording in Form 3 Table 1, are intended to support the decisions pathways illustrated in Form 3 Overall Vertical Rating for Intermediate/Transitional Bed.

Form 3 Checklist 1: Armoring Potential

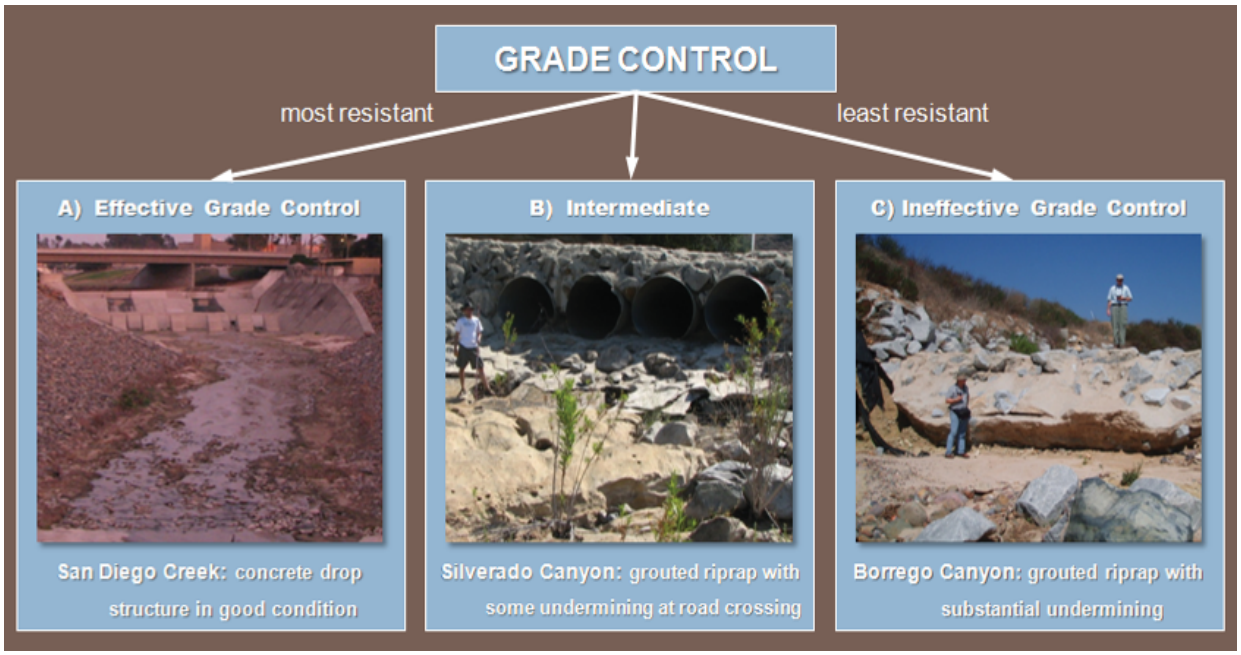
X	A	A mix of coarse gravels and cobbles that are tightly packed with <5% surface material of diameter <2 mm
X	B	Intermediate to A and C or hardpan of unknown resistance, spatial extent (longitudinal and depth), or unknown armoring potential due to surface veneer covering gravel or coarser layer encountered with probe
□	C	Gravels/cobbles that are loosely packed or >25% surface material of diameter <2 mm



Form 3 Figure 2. Armoring potential photographic supplement for assessing intermediate beds (16 < d_{50} < 128 mm) to be used i**n conjunction with Form 3 Checklist 1.**

Form 3 Checklist 2: Grade Control

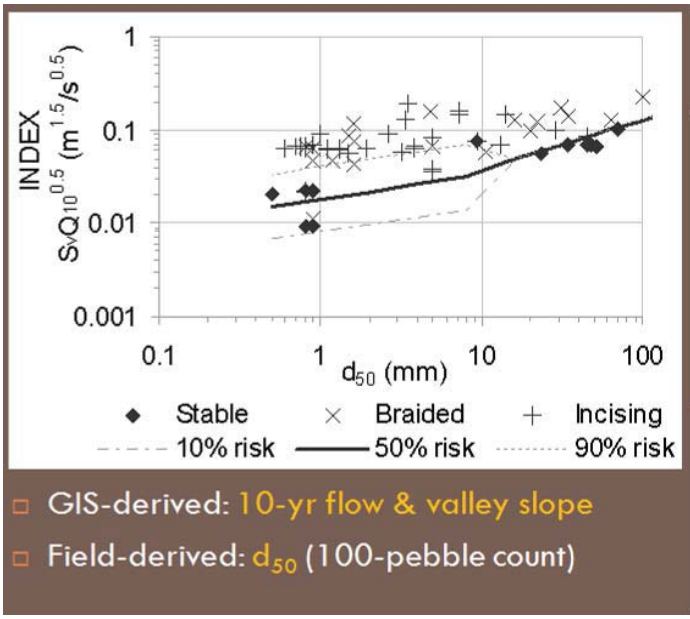
X	A	Grade control is present with spacing <50 m or $2/S_v$ m • No evidence of failure/ineffectiveness, e.g., no headcutting (>30 cm), no active mass wasting (analyst cannot say grade control sufficient if mass-wasting checklist indicates presence of bank failure), no exposed bridge pilings, no culverts/structures undermined • Hard points in serviceable condition at decadal time scale, e.g., no apparent undermining, flanking, failing grout • If geologic grade control, rock should be resistant igneous and/or metamorphic; For sedimentary/hardpan to be classified as 'grade control', it should be of demonstrable strength as indicated by field testing such as hammer test/borings and/or inspected by appropriate stakeholder
X	B	Intermediate to A and C – artificial or geologic grade control present but spaced 2/Sv m to 4/Sv m or potential evidence of failure or hardpan of uncertain resistance
X	C	Grade control absent, spaced >100 m or $>4/S_v$ m, or clear evidence of ineffectiveness



Form 3 Figure 3. Grade-control (condition) photographic supplement for assessing intermediate beds ($16 < d_{50} < 128$ mm) to be used in conjunction with Form 3 Checklist 2.

Regionally-Calibrated Screening Index Threshold for Incising/Braiding

For transitional bed channels (d_{50} between 16 and 128 mm) or labile beds (channel not incised past critical bank height), use Form 3 Figure 3 to determine Screening Index Score and complete Form 3 Table 1.



Model Type	d_{50} (mm)	50% Risk $S_vQ_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$)
Logistic Regression $d_{50} \geq 16$ mm	128	0.145
	96	0.125
	80	0.114
	64	0.101
	48	0.087
	32	0.070
	16	0.049
Logistic Reg. $d_{50} < 16$ mm	8	0.031
	4	0.026
	2	0.022
	1	0.018
	0.5	0.015

50% Risk is 0.0378 for 11 mm and over 0.165 for 180 mm

Form 3 Figure 4. Probability of incising/braiding based on logistic regression of Screening Index and d_{50} to be used in conjunction with Form 3 Table 1.

Form 3 Table 1. Values for Screening Index Threshold (probability of incising/braiding) to be used in conjunction with Form 3 Figure 4 (above) to complete Form 3 Overall Vertical Rating for Intermediate/Transitional Bed (below).. Screening Index Score: A = <50% probability of incision for current Q_{10}, valley slope, and d_{50}; B = Hardpan/d_{50} indeterminate; and C = ≥50% probability of incising/braiding for current Q_{10}, valley slope, and d_{50}.

d_{50} (mm) *From Form 2*	$S_v*Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$) *From Form 1*	$S_v*Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$) *50% risk of incising/braiding from table in Form 3 Figure 3 above*	Screening Index Score (A, B, C)

Overall Vertical Rating for Intermediate/Transitional Bed

Calculate the overall Vertical Rating for Transitional Bed channels using the formula below. Numeric values for responses to Form 3 Checklists and Table 1 as follows: A = 3, B = 6, C = 9.

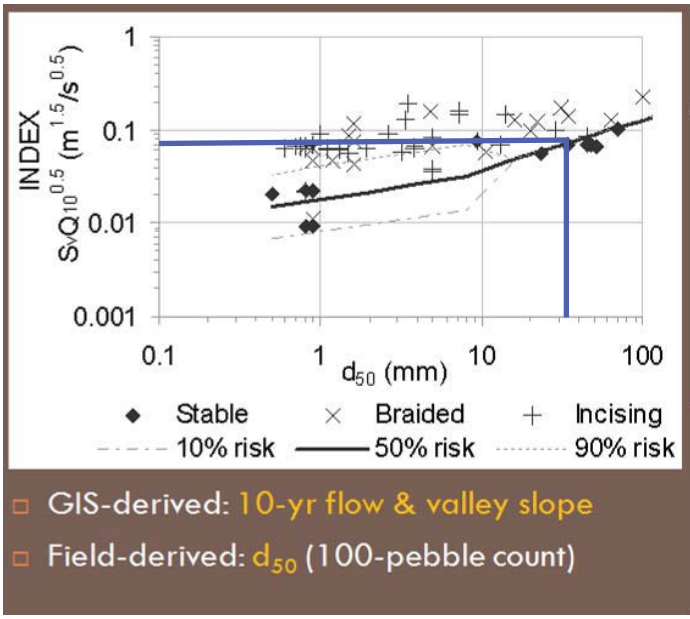
$$Vertical\ Rating = \sqrt{\{(\sqrt{armoring} * grade\ control) * screening\ index\ score\}}$$

See Table 3 in Report for Vertical Rating Results

Vertical Susceptibility based on Vertical Rating: <4.5 = LOW; 4.5 to 7 = MEDIUM; and >7 = HIGH.

Regionally-Calibrated Screening Index Threshold for Incising/Braiding

For transitional bed channels (d_{50} between 16 and 128 mm) or labile beds (channel not incised past critical bank height), use Form 3 Figure 3 to determine Screening Index Score and complete Form 3 Table 1.



Model Type	d_{50} (mm)	50% Risk $S_vQ_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$)
Logistic Regression $d_{50} \geq 16$ mm	128	0.145
	96	0.125
	80	0.114
	64	0.101
	48	0.087
	32	0.070
	16	0.049
Logistic Reg. $d_{50} < 16$ mm	8	0.031
	4	0.026
	2	0.022
	1	0.018
	0.5	0.015

50% Risk is 0.0378 for 11 mm and over 0.165 for 180 mm

Form 3 Figure 4. Probability of incising/braiding based on logistic regression of Screening Index and d_{50} to be used in conjunction with Form 3 Table 1.

Form 3 Table 1. Values for Screening Index Threshold (probability of incising/braiding) to be used in conjunction with Form 3 Figure 4 (above) to complete Form 3 Overall Vertical Rating for Intermediate/Transitional Bed (below).. Screening Index Score: A = <50% probability of incision for current Q_{10}, valley slope, and d_{50}; B = Hardpan/d_{50} indeterminate; and C = ≥50% probability of incising/braiding for current Q_{10}, valley slope, and d_{50}.

d_{50} (mm) *From Form 2*	$S_v{*}Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$) *From Form 1*	$S_v{*}Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$) *50% risk of incising/braiding from table in Form 3 Figure 3 above*	Screening Index Score (A, B, C)

Overall Vertical Rating for Intermediate/Transitional Bed

Calculate the overall Vertical Rating for Transitional Bed channels using the formula below. Numeric values for responses to Form 3 Checklists and Table 1 as follows: A = 3, B = 6, C = 9.

$$Vertical\ Rating = \sqrt{\{(\sqrt{armoring} * grade\ control) * screening\ index\ score\}}$$

See Table 3 in Report for Vertical Rating Results

Vertical Susceptibility based on Vertical Rating: <4.5 = LOW; 4.5 to 7 = MEDIUM; and >7 = HIGH.

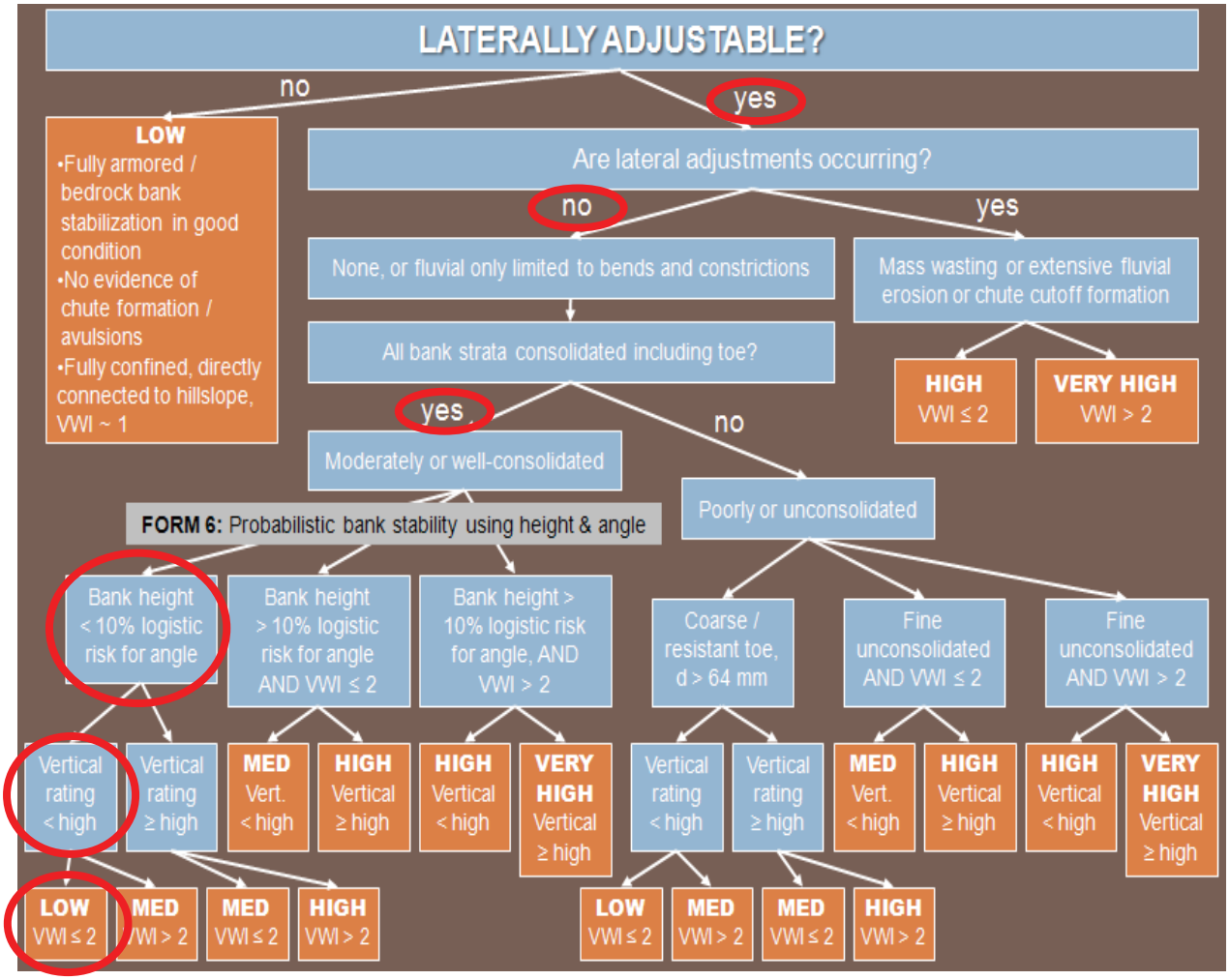
PEBBLE COUNT

#	Reach 1 Diameter, mm	Reach 2 Diameter, mm	Reach 3 Diameter, mm	Reach 4 Diameter, mm	Reach 5 Diameter, mm	Reach 6 Diameter, mm	
1	2.8	2.8	2.8	5.6	32	5.6	
2	2.8	2.8	2.8	5.6	32	5.6	
3	2.8	4	2.8	5.6	32	8	
4	2.8	4	4	8	32	8	
5	2.8	4	4	8	32	8	
6	2.8	5.6	4	8	32	11	
7	4	5.6	4	8	45	11	
8	4	5.6	4	11	45	11	
9	4	8	4	11	45	11	
10	4	8	4	11	45	16	
11	4	8	4	16	45	16	
12	4	8	4	16	45	16	
13	5.6	8	5.6	16	45	16	
14	5.6	8	5.6	16	45	16	
15	5.6	8	5.6	16	64	22.6	
16	5.6	8	5.6	16	64	22.6	
17	5.6	8	5.6	22.6	64	22.6	
18	5.6	8	5.6	22.6	64	22.6	
19	5.6	8	5.6	22.6	64	32	
20	5.6	11	5.6	22.6	64	32	
21	5.6	11	8	22.6	64	32	
22	5.6	11	8	32	64	32	
23	8	11	8	32	90	32	
24	8	11	8	32	90	32	
25	8	11	8	32	90	32	
26	8	11	8	32	90	32	
27	8	11	8	32	90	32	
28	8	11	8	32	90	32	
29	8	11	8	32	90	45	
30	8	16	8	32	128	45	
31	8	16	8	45	128	45	
32	11	16	8	45	180	45	
33	11	16	8	45	180	45	
34	11	16	8	45	180	45	
35	11	16	11	45	180	45	
36	11	16	11	45	180	45	
37	11	16	11	45	180	45	
38	11	16	11	45	180	45	
39	11	16	11	45	180	45	
40	11	16	11	45	180	45	
41	11	22.6	11	45	180	45	
42	11	22.6	11	45	180	45	
43	11	22.6	11	45	180	45	
44	11	22.6	11	45	180	45	
45	11	22.6	11	45	180	45	
46	16	22.6	11	45	180	45	
47	16	22.6	11	45	180	45	
48	16	32	11	45	180	45	
49	16	32	11	45	180	64	
50	16	32	11	64	180	64	D50
51	16	32	11	64	180	64	
52	16	32	11	64	180	64	
53	16	32	11	64	180	64	
54	16	32	11	64	180	64	
55	16	32	11	64	180	64	
56	16	32	11	64	180	64	
57	16	32	11	64	180	64	

#	Reach 1 Diameter, mm	Reach 2 Diameter, mm	Reach 3 Diameter, mm	Reach 4 Diameter, mm	Reach 5 Diameter, mm	Reach 6 Diameter, mm
58	16	32	16	64	180	64
59	16	32	16	64	180	64
60	16	32	16	64	180	64
61	16	32	16	64	180	64
62	16	32	16	64	180	64
63	16	32	16	64	180	64
64	16	32	16	64	180	64
65	16	32	16	64	180	64
66	16	32	16	64	180	64
67	16	32	16	64	180	64
68	16	32	16	64	180	64
69	16	45	16	64	180	64
70	16	45	16	64	180	64
71	16	45	16	64	180	64
72	16	45	16	64	180	64
73	16	45	16	64	180	64
74	16	45	16	64	180	64
75	16	45	16	64	180	64
76	22.6	45	16	90	180	64
77	22.6	64	16	90	180	64
78	22.6	64	16	90	180	90
79	22.6	64	16	90	180	90
80	22.6	64	16	90	180	90
81	22.6	64	16	90	180	90
82	22.6	64	16	90	180	90
83	22.6	64	16	90	180	90
84	22.6	64	16	90	180	90
85	22.6	64	16	90	180	90
86	22.6	90	16	90	180	90
87	32	90	16	90	180	90
88	32	90	16	90	180	90
89	32	90	16	90	180	90
90	32	90	16	90	180	90
91	32	90	22.6	90	180	90
92	32	90	22.6	90	180	90
93	45	90	22.6	90	180	90
94	45	90	22.6	90	180	90
95	45	90	22.6	90	180	90
96	45	90	22.6	90	180	128
97	45	90	22.6	90	180	128
98	64	180	22.6	180	180	128
99	64	180	32	180	180	180
100	64	180	32	180	180	180

FORM 4: LATERAL SUSCEPTIBILTY FIELD SHEET

Circle appropriate nodes/pathway for proposed site
OR use sequence of questions provided in Form 5.



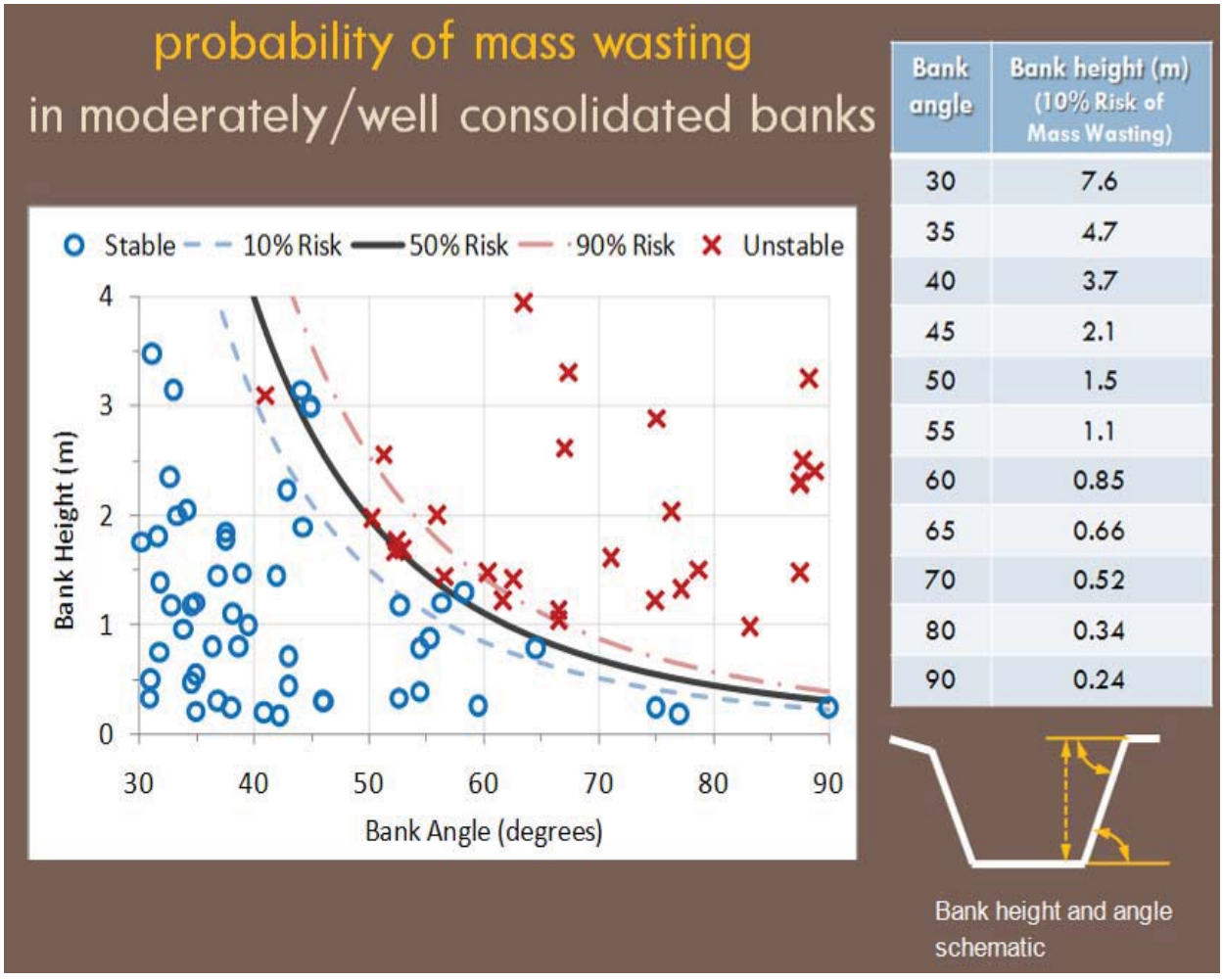
(Sheet 1 of 1)

REACH 1 THROUGH 6 RESULTS

FORM 6: PROBABILITY OF MASS WASTING BANK FAILURE

If mass wasting is not currently extensive and the banks are moderately- to well-consolidated, measure bank height and angle at several locations (i.e., at least three locations that capture the range of conditions present in the study reach) to estimate representative values for the reach. Use Form 6 Figure 1 below to determine if risk of bank failure is >10% and complete Form 6 Table 1. Support your results with photographs that include a protractor/rod/tape/person for scale.

	Bank Angle (degrees) *(from Field)*	**Bank Height (m)** *(from Field)*	**Corresponding Bank Height for 10% Risk of Mass Wasting (m)** *(from Form 6 Figure 1 below)*	**Bank Failure Risk** *(<10% Risk)* *(>10% Risk)*
Left Bank	<26.6 (2:1)	---	---	<10%
Right Bank	<26.6 (2:1)	---	---	<10%



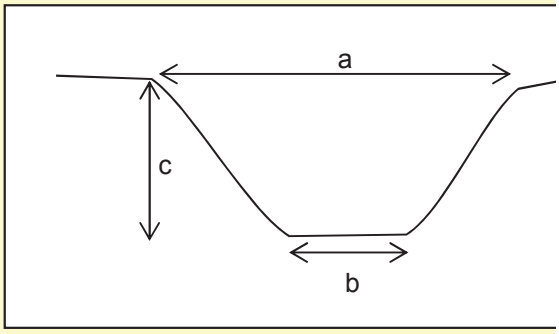
Form 6 Figure 1. Probability Mass Wasting diagram, Bank Angle:Height/% Risk table, and Band Height:Angle schematic.

(Sheet 1 of 1)

Critical Flow Calculator

enter all values in green cells
and drop down boxes

Example using Otay Village



Inputs

a) Receiving channel width at top of bank (ft) - see figure on right	12.0
b) Channel width at bed (ft)	3.0
c) Bank height at top of bank (ft)	2.0
Channel gradient (ft/ft)	0.102
Receiving channel roughness	Same as above, but some weeds and stones n=0.045
Channel materials (use weakest of bed or banks). If materials are varied use weakest material covering more than 20% of channel.	unconsolidated sandy loam 0.035 lb/sq ft alluvial silt (non coloidal) 0.045 lb/sq ft medium gravel 0.12 lb/sq ft alluvial silt/clay 0.26 lb/sq ft 2.5 inch cobble 1.1 lb/sq ft enter own d50 (variable) vegetation (bed and banks) 0.6 lb/sq ft
Select method of calculating Q2	Input own Q2 Calculate Q2 using USGS regression

Receiving water watershed annual precip (inches)	14.6	Receiving water watershed area at PoC (sq mi)	0.02
Project watershed annual precipitation (inches)	14.6	Project watershed area draining to PoC (sq mi)	0.02

Outputs - Flow control range

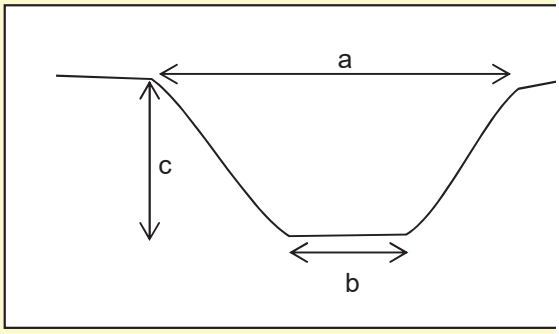
Receiving water Q2	0.7	**Point of Compliance low flow rate (cfs)**	**0.4**
Project site Q2	0.7	**Low flow class**	**0.5Q2**
		Channel vulnerability	**Low**

CRITICAL STRESS RESULTS FOR REACH 1

Critical Flow Calculator

enter all values in green cells
and drop down boxes

Inputs



a) Receiving channel width at top of bank (ft) - see figure on right	10.0
b) Channel width at bed (ft)	2.5
c) Bank height at top of bank (ft)	2.0
Channel gradient (ft/ft)	0.042
Receiving channel roughness	Clean, winding, some pools and shoals n=0.04
Channel materials (use weakest of bed or banks). If materials are varied use weakest material covering more than 20% of channel.	unconsolidated sandy loam 0.035 lb/sq ft alluvial silt (non coloidal) 0.045 lb/sq ft medium gravel 0.12 lb/sq ft alluvial silt/clay 0.26 lb/sq ft 2.5 inch cobble 1.1 lb/sq ft enter own d50 (variable) vegetation (bed and banks) 0.6 lb/sq ft
Select method of calculating Q2	Input own Q2 Calculate Q2 using USGS regression

Receiving water watershed annual precip (inches)	14.6	Receiving water watershed area at PoC (sq mi)	0.78
Project watershed annual precipitation (inches)	14.6	Project watershed area draining to PoC (sq mi)	0.78

Outputs - Flow control range

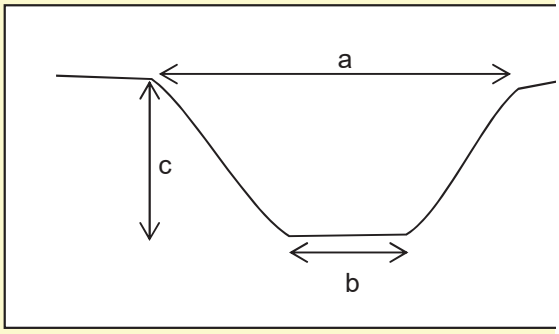
Receiving water Q2	9.0	**Point of Compliance low flow rate (cfs)**	**2.7**
Project site Q2	9.0	**Low flow class**	**0.3Q2**
		Channel vulnerability	**Low**

CRITICAL STRESS RESULTS FOR REACH 2

Critical Flow Calculator

enter all values in green cells
and drop down boxes

Inputs



a) Receiving channel width at top of bank (ft) - see figure on right	20.0
b) Channel width at bed (ft)	3.0
c) Bank height at top of bank (ft)	4.0
Channel gradient (ft/ft)	0.020
Receiving channel roughness	Clean, winding, some pools and shoals n=0.04
Channel materials (use weakest of bed or banks). If materials are varied use weakest material covering more than 20% of channel.	unconsolidated sandy loam 0.035 lb/sq ft alluvial silt (non coloidal) 0.045 lb/sq ft medium gravel 0.12 lb/sq ft alluvial silt/clay 0.26 lb/sq ft 2.5 inch cobble 1.1 lb/sq ft enter own d50 (variable) vegetation (bed and banks) 0.6 lb/sq ft
Select method of calculating Q2	Input own Q2 Calculate Q2 using USGS regression

Receiving water watershed annual precip (inches)	14.6	Receiving water watershed area at PoC (sq mi)	0.77
Project watershed annual precipitation (inches)	14.6	Project watershed area draining to PoC (sq mi)	0.77

Outputs - Flow control range

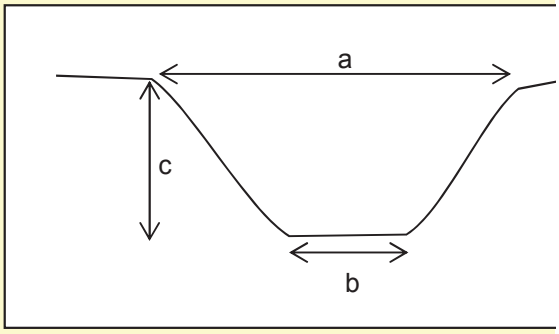
Receiving water Q2	9.0	**Point of Compliance low flow rate (cfs)**	**4.5**
Project site Q2	9.0	**Low flow class**	**0.5Q2**
		Channel vulnerability	**Low**

CRITICAL STRESS RESULTS FOR REACH 3

Critical Flow Calculator

enter all values in green cells
and drop down boxes

Example using Otay Village



Inputs

a) Receiving channel width at top of bank (ft) - see figure on right	18.0
b) Channel width at bed (ft)	14.0
c) Bank height at top of bank (ft)	1.0
Channel gradient (ft/ft)	0.100
Receiving channel roughness	Same as above. with flood stage reaching branches n=0.12
Channel materials (use weakest of bed or banks). If materials are varied use weakest material covering more than 20% of channel.	unconsolidated sandy loam 0.035 lb/sq ft alluvial silt (non coloidal) 0.045 lb/sq ft medium gravel 0.12 lb/sq ft alluvial silt/clay 0.26 lb/sq ft 2.5 inch cobble 1.1 lb/sq ft enter own d50 (variable) vegetation (bed and banks) 0.6 lb/sq ft
Select method of calculating Q2	Input own Q2 Calculate Q2 using USGS regression

Receiving water watershed annual precip (inches)	14.6	Receiving water watershed area at PoC (sq mi)	0.1
Project watershed annual precipitation (inches)	14.6	Project watershed area draining to PoC (sq mi)	0.1

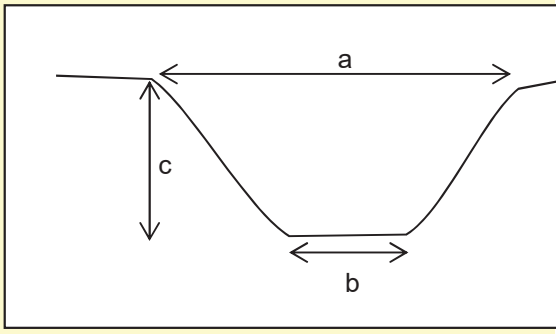
Outputs - Flow control range

Receiving water Q2	2.1	**Point of Compliance low flow rate (cfs)**	**0.7**
Project site Q2	1.5	**Low flow class**	**0.5Q2**
		Channel vulnerability	**Low**

CRITICAL STRESS RESULTS FOR REACH 4

Critical Flow Calculator

enter all values in green cells
and drop down boxes



Inputs

a) Receiving channel width at top of bank (ft) - see figure on right	18.0
b) Channel width at bed (ft)	14.0
c) Bank height at top of bank (ft)	1.0
Channel gradient (ft/ft)	0.363
Receiving channel roughness	Same as above. with flood stage reaching branches n=0.12
Channel materials (use weakest of bed or banks). If materials are varied use weakest material covering more than 20% of channel.	unconsolidated sandy loam 0.035 lb/sq ft alluvial silt (non coloidal) 0.045 lb/sq ft medium gravel 0.12 lb/sq ft alluvial silt/clay 0.26 lb/sq ft 2.5 inch cobble 1.1 lb/sq ft enter own d50 (variable) vegetation (bed and banks) 0.6 lb/sq ft
Mean bed particle size (mm)	180.0
Critical shear stress for d50 lb/sq ft	3.4
Select method of calculating Q2	Input own Q2 Calculate Q2 using USGS regression

Receiving water watershed annual precip (inches)	14.6	Receiving water watershed area at PoC (sq mi)	0.028
Project watershed annual precipitation (inches)	14.6	Project watershed area draining to PoC (sq mi)	0.028

Outputs - Flow control range

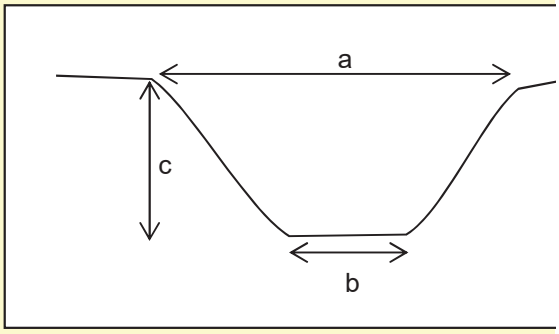
Receiving water Q2	0.8	**Point of Compliance low flow rate (cfs)**	**0.4**
Project site Q2	0.8	**Low flow class**	**0.5Q2**
		Channel vulnerability	**Low**

CRITICAL STRESS RESULTS FOR REACH 5

Critical Flow Calculator

enter all values in green cells
and drop down boxes

Inputs



a) Receiving channel width at top of bank (ft) - see figure on right	28.0
b) Channel width at bed (ft)	20.0
c) Bank height at top of bank (ft)	2.0
Channel gradient (ft/ft)	0.090
Receiving channel roughness	Same as above. with flood stage reaching branches n=0.12
Channel materials (use weakest of bed or banks). If materials are varied use weakest material covering more than 20% of channel.	unconsolidated sandy loam 0.035 lb/sq ft alluvial silt (non coloidal) 0.045 lb/sq ft medium gravel 0.12 lb/sq ft alluvial silt/clay 0.26 lb/sq ft 2.5 inch cobble 1.1 lb/sq ft enter own d50 (variable) vegetation (bed and banks) 0.6 lb/sq ft
Select method of calculating Q2	Input own Q2 Calculate Q2 using USGS regression

Receiving water watershed annual precip (inches)	14.6	Receiving water watershed area at PoC (sq mi)	0.22
Project watershed annual precipitation (inches)	14.6	Project watershed area draining to PoC (sq mi)	0.22

Outputs - Flow control range

Receiving water Q2	3.6	**Point of Compliance low flow rate (cfs)**	**1.8**
Project site Q2	3.6	**Low flow class**	**0.5Q2**
		Channel vulnerability	**Low**

CRITICAL STRESS RESULTS FOR REACH 6