ATTACHMENT 1

SONOMA RESOURCE CONSERVATION DISTRICT

Your trusted resource for rural and agricultural soil and water conservation.

June 30, 2014

Ms. Rita Miller
City of Santa Rosa
Utilities Department
4300 Llano Road
Santa Rosa, California 95407

Re: Credit Verification and Annual Monitoring and Reporting for Pepperwood Preserve Sediment Reduction Project SRNO-2H

Dear Ms. Miller,

The following constitutes the annual monitoring and reporting for Pepperwood Preserve per the Sonoma Resource Conservation District (SRCD) contract with the City of Santa Rosa SRNO Task 2H. Crediting options and associated credits for the Pepperwood Preserve Sediment Reduction Project were approved as part of the City of Santa Rosa's Nutrient Offset Program by the Regional Water Quality Control Board (RWQCB), North Coast Region and are listed in Table 1 below. This report outlines adjustments made to these credits as a result of project implementation.

Table 1: Credits Approved by RWQCB

Approved Crediting Options	Annual Phosphorus Credits (lbs. TP/yr.)	Annual Nitrogen Credits (lbs. TN/yr.)	BMP Eligibility Period
BMP 1: Repair 26 currently eroding stream crossings	178	2,008	4 years
BMP 2: Stabilize 8 additional stream crossings to reduce future sediment load delivery	7	81	4 years
BMP3: Repair 2.3 miles of currently eroding road surface and ditches	341	9,652	30 years
Total Credits	526	11,741	

Project Implementation

The Pepperwood Preserve Sediment Reduction Project was successfully implemented between September and October 2013 as outlined in Pacific Watershed Associates December 2013 Report. The proposed and implemented treatments are compared below in Table 2.

Deviations exist between the proposed and implemented treatments due to changes in site conditions and refinement of implementation methods that affected the final layout and execution of the treatments. Deviations include three proposed stream crossing treatments that were not implemented and an additional five other site treatments that were identified in the field and implemented. All of the 2.3 miles of proposed treatment to roads were implemented, plus an additional 0.86 miles.

Table 2: BMP Implementation: Proposed vs. Implemented

	Proposed for Treatment[1]	Implemented[2]
BMP#1 Stream Crossings	26 sites	23 sites
BMP#2 Other sites[3]	8 sites	13 sites
BMP#3 Roads	2.3 miles	3.16 miles

[1]: Information taken from PWA's 2008 and April 2013 reports.
[2]: Information taken from PWA's Dec 2013 report.
[3]: Other sites include ditch relief culverts, discharge points for road surface drainage, point source springs, a road inboard ditch and one landslide.

BMP Inspection

On May 15, 2014, RCD staff inspected all installed BMPs at Pepperwood Preserve and made the following observations:

- All BMPs were found to be functional and properly maintained. Please note treatment areas to watch include the following:
    - Site 7.2: Landslide should be monitored for further movement.
    - Site 6: Rock armor on outlet of stream crossing should be monitored for further movement.
    - RD 26: Monitor rolling dip due to visible tire ruts.
    - RD 27: Monitor rolling dip due to visible tire ruts.
    - Site 33: Monitor road bed due to visible tire ruts.

Please see field sheets included in Appendix A and associated Photo Plates included in Appendix B.

Credit Verification

Based on the RCD's review of the December 2013 PWA report regarding as-built conditions and subsequent site monitoring, the SRCD verifies the following:

- Mass of P controlled and credits eligible during the previous 12 months (July 1, 2013- June 30, 2014) = 543.3 lbs

- Mass of N controlled and credits eligible during the previous 12 months (July 1, 2013- June 30, 2014) = 11,882.1 lbs

Please refer to Table 3 below for proposed vs. as-built credits. The project was completed by November 1, 2013 so please note that calculations have not been prorated.

Table 3: Proposed vs. As-Built Credits

	Proposed (approved) [1]					As Built [2]			
Crediting Option	*Eligibility Period*	*# of sites or length*	*Estimated Sediment reduction*	*Annual Credits*		*# of sites or length*	*Estimated Sediment reduction*	*Annual Credits*	
				lbs TP/yr	*Lbs TN/yr*			*lbs TP/yr*	*Lbs TN/yr*
BMP#1: Currently Eroding stream crossings	4 years	26 sites	864 cy	178	2,008	23 sites	815 cy	168.3	1,893.4
BMP #2: Other Sites (future potential erosion sites)	4 years	8 sites	29 cy	7	81	13 sites	150cy	37.2	418.3
BMP #3: Currently eroding road surfaces/ditches	30 years	2.3 miles	2,249 cy	341	9,652	2.28 miles	2,230cy	337.5	9,570.4
Totals	-	-	3,142 cy	526	11,741	-	3,195cy	543.3	11,882.1

[1] Information based on PWA's 2008 Report, June 2012 credit proposal, and Oct 2012 approval
[2] Information taken from Pacific Watershed Associates Dec 2013 Report

Conclusions

The Pepperwood Preserve Sediment Reduction Project was successfully implemented in late 2013 and subsequent monitoring found that all installed BMPs were found to be functional and properly maintained. Differences between the work proposed and the work implemented were based on changes in site conditions and refinement of implementation methods, and were consistent with the water quality goals of the project. These types of "field-fit" changes are typical to road-related sediment reduction projects.

If you have any questions, please contact me at 707-569-1448 ext. 101 or at kwester@sonomarcd.org.

Thank you,

Kari Wester

Kari Wester
Project Manager
Sonoma Resource Conservation District

Appendix A: BMP Monitoring Field Sheets
Appendix B: Photo Plates

References:

Pacific Watershed Associates, Inc. *Pepperwood Preserve Upper Mark West Creek Erosion Inventory and Assessment, Sonoma County, California.* March 2008.

Pacific Watershed Associates, Inc. *Construction road logs and typical drawings for* the *Pepperwood Preserve Sediment Reduction Implementation Project, Sonoma County, California.* April 2013.

Pacific Watershed Associates, Inc. *Pepperwood Preserve Sediment Reduction Implementation Project, Sonoma County, California.* December 2013.

Pepperwood Preserve Sediment Reduction Implementation Project
Appendix A- BMP Monitoring Field Sheets

Date: 6/4/14 RCD Staff: Kevin Cullinen (SRCD)
Observation date: 5/15/14

By signing this form, I attest that this information is true and complete to the best of my abilities.

Staff Signature: Kevin Cull

Bechtel House Road (upgrade):

Abbreviations: CCD =Clean and cute ditch; CD = Critical dip; EOS = End of survey/road log; GCS = Grade control structure; DRC = Ditch relief culvert; OSR-FD = Outslope road and fill the ditch; OSR-KD = Outslope road and keep the ditch; RD = Rolling dip; RSP = Rock slope protection; SOS = Start of survey/road log. Sediment source site numbers and original problem description in bold.

Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
Road description and general road log notes: Bechtel House road is a year-round use, rock-surfaced road driven by a variety of individuals and groups visiting the Preserve. All disturbed road surfaces were re-rocked with a 10' wide road width using rock estimates associated with each treatment. Sediment source site numbers and original problem description in bold.						
00+00		SOS	Start road log near northern property boundary at intersection with sign to Three Tree Hill and Wiemar Falls nearly 1.9 mi from Franz Valley Road.		N/A	
05+30			Road surface drainage divide		N/A	
06+45		RD 46	1. Installed a type 3 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	☑
08+30		RD 46.1	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface. 3. No treatments at existing 12" ditch relief culvert.	RD functioning well with no erosion, 12" DRC in good condition and functioning well	☑Y N☐	
09+50		RD 47	1. Installed a type 3 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
11+50		RD 48	1. Installed a type 3 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
13+25		RD 48.1	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface. 3. No treatments at existing 18" ditch relief culvert.	RD functioning well with no erosion, 18" DRC still functioning well	☑Y N☐	
15+35		RD 49	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface. 3. No treatments at existing 18" ditch relief culvert.	RD functioning well with no erosion, 18" DRC in good condition	☑Y N☐	
16+20	7.2	Start RSP 1	**Site 7.2: Large creeping hillslope landslide.** 1. Started rock slope protection for 70' along cutbank where active slumping was occupying ditch and roadway. 2. Excavated slumping hillslope and a 70' wide x 3' deep x 10' tall trench and placed 50 yd^3 of 0.5'-3' riprap. 3. Spoils placed below road and along road surface. 3. Re-rocked the road surface.	Recent slumping activity, from Feb and March 2014 storm events, has led to a 20'*wide* x 40'*long* x 1'*deep* lobe of sediment to move several feet down slope. There are multiple cracks in the soil and a 1 to 2ft head scarp at the top of the slump. Some finer sediments have reached the rock armor at the bottom of the slope, but are not yet affecting the drainage ditch. The majority of the mobilized material is still 20 ft from the bottom of the slope. **Site should be monitored for further movement.**	☑Y N☐	☑
16+90		End RSP 1	Ended rock slope protection treatment.	The rock armor is still functioning, but should be monitored for future slumping	☑Y N☐	

Bechtel House Road (upgrade):

Abbreviations: CCD =Clean and cute ditch; CD = Critical dip; EOS = End of survey/road log; GCS = Grade control structure; DRC = Ditch relief culvert; OSR-FD = Outslope road and fill the ditch; OSR-KD = Outslope road and keep the ditch; RD = Rolling dip; RSP = Rock slope protection; SOS = Start of survey/road log. Sediment source site numbers and original problem description in bold.

Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
17+80		RD 50	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface. 3. No treatments at existing 18" ditch relief culvert.	RD functioning well with no erosion, 18" DRC still functioning well	☑Y N☐	
19+80	8	RD 51	**Site 8: Existing 18" ditch relief culvert at spring.** 1. No treatment at site. 2. Installed a type 1 rolling dip. 3. Re-rocked the road surface.	RD functioning well with no erosion, 18" DRC still functioning well	☑Y N☐	
20+25			Corral / McCann Homestead		N/A	
21+20	7.1	GCS 1	**Site 7.1: Existing 12" ditch relief culvert draining springs with 5' active headcut ~15' below culvert.** 1. Installed a grade control structure at headcut using 20 yd^3 of 0.5'-1.5' mixed riprap with u-shape. 2. Spoiled locally on hillslope and road.	Grade control rock armor is still in place and functioning well. No erosion observed and 12" DRC still in good condition.	☑Y N☐	☑
21+70		RD 52	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
23+80			Added 3 yd^3 of 1'-2' riprap to inlet area of existing 18" ditch relief culvert.	Rock armor intact and functioning well	☑Y N☐	
23+90		RD 1	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	

Bechtel House Road (upgrade):

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
25+30	7	CD 1	**Site 7: Stream crossing with 12" rusted and plugged culvert.** 1. Replaced with 24" x 60' long culvert at base of fill in natural channel alignment. 2. Transitioned existing stream channel above road into new lowered inlet and added 5 yd^3 of 1'-2' rip rap at new grade change and inboard fillslope. 3. Installed 20 yd^3 of 1'-3' riprap on outboard fillslope. 4. Installed a critical dip on right hingeline to eliminate diversion potential down road. 5. Re-rocked the road surface.	24" Culvert in good condition and functioning well. Rock armor intact and functioning. Critical dip looks stable.	☑Y N☐	☑
26+55			Intersection on right to Turtle Pond and start of road log for Goodman Road.		N/A	
		Start OSR-KD 1	1. Started road outsloping and keep ditch for 880'. 2. Re-rocked all disturbed road surfaces through outslope for average 10' road width x 0.3' depth x 880' long with 100 yd^3 of 1.5" minus road rock.	Ditch looks stable, road outslope functioning well with no rilling observed	☑Y N☐	
27+50		RD 2	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
29+05	6.2		**Site 6.2: Existing 30" ditch relief culvert draining hillslope.** 1. No treatment at site.	Slight rusting at inlet of culvert, but still in good condition and functioning well	☑Y N☐	

Bechtel House Road (upgrade):

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
29+80	6.1	DRC 1/ RD 3	**Site 6.1: 10" existing ditch relief culvert that is high and dry and carries no flow.** 1. Replaced with a 24" x 40' long culvert. 2. Installed 2 yd^3 of 0.5'-1.5' of riprap to inboard fillslope. 3. Installed 3 yd^3 of 0.5'-1.5' of riprap to outboard fillslope. 4. Plugged ditch on downhill side. 5. Installed a type 1 rolling dip. 6. Re-rocked the road surface.	Culvert in good conditioning and functioning well. Cattle activity has caused muddy area at outlet, but channel is vegetated well immediately after muddy area	☑Y N☐	
30+65		RD 3.1	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
32+15		RD 4/ Start CCD 1	1. Installed a type 2 rolling dip. 2. Started clean and cut inboard ditch for 320'. 3. Re-rocked the road surface.	RD functioning well with no erosion, ditch stable	☑Y N☐	
33+75	6		**Site 6: Stream crossing with 60" culvert and failing fillslopes.** 1. Replaced with a new 60" x 40' long culvert. 2. Installed 30 yd^3 of 0.5'-2' riprap to inboard and outboard fillslopes. 3. Directed new ditches into inlet. 4. Re-rocked the road surface.	Overall site looks good. A 2 – 3ft diameter rock has been knocked out of place on the outboard fill by the last storm and is now at the bottom of the channel near the outlet. Rock armor cannot be keyed into the fill at this location because of the underlying bedrock. **Monitor site for further movement, but no action is needed at this point.**	☑Y N☐	☑
35+35			Road surface drainage divide.		N/A	

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
		End OSR-KD 1/ End CCD 1	1. Ended road outsloping. 2. Ended clean and cut ditch. 3. Re-rocked the road surface.	Ditch looks stable, road outslope functioning well with no rilling observed	☑Y N☐	
36+40	5	CD 3	**Site 5: Stream crossing with 48" culvert and failing fillslopes.** 1. Replaced with a 48" x 40' long culvert. 2. Installed 20 yd^3 of 0.5'-2' riprap to inboard and outboard fillslopes. 3. Connected right inboard ditch to new inlet. 4. Installed a critical dip on left hingeline. 5. Re-rocked the road surface.	Culvert in good condition and functioning well, rock armor intact, critical dip in good condition	☑Y N☐	☑
37+05	4	Start CCD 2	**Site 4: Small stream crossing with 10" culvert.** 1. Replaced with an 18" x 40' long culvert. 2. Started clean and cut ditch for 120'. 3. Re-rocked the road surface.	Culvert in good conditioning and functioning well. Cattle activity has caused muddy area at outlet, but channel is vegetated well immediately after muddy area	☑Y N☐	
38+25		DRC 2/ End CCD 2/ RD 6	1. Installed an 18" x 40' long ditch relief 2. Plugged ditch on downhill side. 3. Ended clean and cut ditch. 4. Installed a type 1 rolling dip. 5. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
40+25		RD 7	1. Installed a type 3 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
42+70			Road surface drainage divide		N/A	

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
44+50			Clean inlet and interior of existing 12" ditch relief culvert in low spot.	Inlet was 30% filled with road gravel. Outlet was not obvious and may have been cover by road rock, but no erosion	☑Y N☐	
45+25	3		**Site 3: Stream crossing with 10" culvert.** 1. Cleaned culvert inlet.	10" Culvert functioning well	☑Y N☐	
46+25			Road surface drainage divide.		N/A	
49+40		RD 8	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
50+10	2	DRC 3/ Start CCD 3	**Site 2: 12" ditch relief culvert draining spring and diverted stream.** 1. Replaced with a 30" x 40' long culvert. 2. Installed 25 yd^3 of 0.5'-1.5' riprap on inboard fillslope and ditch. 3. Installed 10 yd^3 of 1'-3' riprap on outboard fillslope. 4. Started clean and cut ditch for 110' to better direct flow from diverted stream crossing. 5. Re-rocked the road surface.	Culvert in good conditioning and rock armor intact at IBF and OBF. Ditch looks stable, but could use more vegetation	☑Y N☐	☑

Bechtel House Road (upgrade):

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
51+20	1	End CCD 3	**Site 1: Diverted stream crossing.** 1. Laid back vertical slopes where stream makes tight turn down to ditch. 2. Keyed in 5 yd^3 of 0.5'-2' riprap to base of bend. 3. Increased channel width and slope down to Site 2. 4. Ended clean and cut ditch.	Rock armor intact and functioning well, no sign of erosion and ditch stable	☑Y N☐	☑
51+30			Roller coaster ridge trail on left.		N/A	
51+50			Locked metal gate.		N/A	
53+15		EOS	End road log at road surface drainage divide and intersection to Bechtel House on left.		N/A	

Goodman Road (upgrade):

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
Road description and general treatment notes: Goodman Road road log extends from Bechtel House Road near corral for over 1.7 mi where it terminates at Rogers Creek. It is rocked and regularly used by the public for the first 0.3 mi from Bechtel House Road to ridge top. From the ridge down the other side the road network is primarily used by the Preserve staff. All disturbed road surfaces that were rocked were re-rocked with a 10' wide road width using rock estimates associated with each treatment in the road log below. Sediment source site numbers and original problem description in bold.						
00+00		SOS	Start road log at intersection with Bechtel House Road with sign to Turtle Pond and Rogers Canyon. No treatments to ditch relief culvert under road at intersection.		N/A	
01+30		RD 9	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
01+35	8.1	GCS 1.1/ GCS 1.2/ GCS 1.3/ Start OSR-KD 3	**Site 8.1: Existing 18" ditch relief culvert with outlet erosion gully.** 1. Installed a grade control structure (GCS 1.1) at ditch relief culvert outlet using 10 yd^3 of 0.5'-1' ripap. 2. Installed a grade control structure (GCS 1.2) 75' long 10' below GCS 1.1 using 30 yd^3 of 0.5'-1' ripap. 3. Installed a grade control structure (GCS 1.3) at 2' headcut in inboard ditch 50' up from inlet using 5 yd^3 of 0.5'-1' ripap to armor the headcut, protect the inboard fillslope and contain ditch flow. 4. Started road outsloping and keep ditch for 445'. 5. Re-rocked all disturbed road surfaces for average 10' road width x 0.3' depth x 445' long with 50 yd^3 of 1.5" minus road rock.	All grade control structures look intact and stable, culvert in good condition	☑Y N☐	☑
02+80		RD 10	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	

Goodman Road (upgrade):

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
04+05		RD 11	1. Installed a type 1 rolling dip at existing 18" ditch relief culvert. 2. Re-rocked the road surface.	RD functioning well with no erosion, culvert in good condition	☑Y N☐	
05+80		RD 12/ End OSR-KD 3 /Start OSR-FD 1	1. Installed a type 1 rolling dip. 2. Ended road outsloping with a ditch. 3. Started road outsloping with no ditch for 670'. 4. Re-rock all disturbed road surfaces through outslope for average 10' road width x 0.3' depth x 670' long with 75 yd^3 of 1.5" minus road rock.	Road outslope functioning well with no rilling observed, RD functioning well with no erosion	☑Y N☐	
07+80		RD 13	1. Installed a type 1 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
09+95		Enhanced outslope bend	1. Installed an enhanced outslope around bend in road 2. Re-rocked the road surface.	Enhanced outslope around bend is functioning well, no erosion	☑Y N☐	
12+50		RD 15/ End OSR-FD 1	1. Installed a type 2 rolling dip. 2. Ended road outsloping and fill ditch at RD 15. 3. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
13+05		RD 16	1. Installed a type 2 rolling dip. 2. Re-rocked the road surface.	RD functioning well with no erosion	☑Y N☐	
15+90			Road surface drainage divide with "road closed" sign on post in middle of road. No project specific treatments from this location to Site 9 located 2,500' (0.5 mi) below.		N/A	
21+70			Green unlocked gate-livestock present, keep closed.		N/A	
36+50			Intersection with Goodman Spur on the right.		N/A	

Goodman Road (upgrade):

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Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
39+70	9		**Site 9: Ditch relief culvert with very large outlet gully.** 1. No treatments at site.	N/A	N/A	
40+20	10	Start OSR-FD 2	**Site 10: Diverted Class III stream.** 1. Installed an armored fill crossing using 20 yd^3 of 0.5'-1.5' riprap. 2. Added 3 yd^3 of 0.5'-1.5' riprap above inboard road to stabilize grade change. 3. Started road outsloping and fill ditch for 2,480' to Site 16.	Rock armor looks stable and functioning well. May want to monitor gully at Site 9, which shouldn't be receiving any more drainage from site 10	☑Y N☐	
42+95	11	CD 4/ GCS 2	**Site 11: Stream crossing with 24" culvert and active 8' tall headcut below culvert.** 1. Replaced with a 24" x 60' long culvert. 2. Installed a critical dip on right hingeline. 3. Defined inboard ditch on left for 20' and directed flow into new inlet. 4. Installed a total of 30 yd^3 of 0.5'-2' riprap to inboard and outboard fillslopes. 5. Installed a grade control structure to headcut in channel below outlet 30 yd^3 of 0.5'-2' riprap.	Culvert in good condition. Rock armor intact and stable, no erosion observed, critical dip in good condition and well vegetated	☑Y N☐	☑
43+80			Steel unlocked gate-livestock present, keep closed.		N/A	
44+80			Road surface drainage divide.		N/A	
46+70		RD 18	1. Installed a type 1 rolling dip.	RD functioning well with no erosion	☑Y N☐	
50+45		RD 20	1. Installed a type 1 rolling dip.	RD functioning well with no erosion	☑Y N☐	

Goodman Road (upgrade):

Abbreviations: CD = Critical dip; EOS = End of survey/road log; DRC = Ditch relief culvert; GCS = Grade control structure; OSR-FD = Outslope road and fill the ditch; OSR-KD = Outslope road and keep the ditch; RD = Rolling dip; SOS = Start of survey/road log.

Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
51+80	12	RD 20.1	**Site 12: Small gully or possible overflow from Turtle pond.** 1. Created a wide and broad dip to drain concentrated flow and create better drivability.	Dip functioning well with no erosion observed	☑Y N☐	
52+95		RD 21	1. Installed a type 2 rolling dip.	RD functioning well with no erosion	☑Y N☐	
54+55		RD 22	1. Installed a type 1 rolling dip.	RD functioning well with no erosion	☑Y N☐	
55+35			Intersection with Skovie Road on left.		N/A	
56+10	13		**Site 13: Existing 12" ditch relief culvert.** 1. No treatment at site.	No erosion observed	N/A	
57+00		RD 24	1. Installed a type 1 rolling dip. 2. Added 10 yd^3 of 0.5'-2' riprap to outboard road.	RD functioning well with no erosion	☑Y N☐	
58+35	14	RD 25	**Site 14: Multiple road surface discharge points with gully development.** 1. Installed a type 1 rolling dip. 2. Added 3 yd^3 of 0.5' riprap to outboard road.	RD functioning well with no erosion, rock armor intact	☑Y N☐	
59+95			Road surface drainage divide.		N/A	
60+75		RD 26	1. Installed a type 2 rolling dip.	RD functioning, but there are 2-3 inch tire ruts on the road surface and on RD. Monitor rolling dip.	☑Y N☐	
61+70	15	RD 27	**Site 15: Road surface discharge point into Class III stream 20' above.** 1. Installed a type 1 rolling dip.	RD functioning, there are 3-4 inch tire ruts on the road surface and on RD. Monitor rolling dip.	☑Y N☐	

Goodman Road (upgrade):

Abbreviations: CD = Critical dip; EOS = End of survey/road log; DRC = Ditch relief culvert; GCS = Grade control structure; OSR-FD = Outslope road and fill the ditch; OSR-KD = Outslope road and keep the ditch; RD = Rolling dip; SOS = Start of survey/road log.

Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
64+00		RD 28	1. Installed a type 1 rolling dip.	RD functioning well with no erosion	☑Y N☐	
65+00	16	CD 6/ End OSR-FD 2	**Site 16: Ford crossing on grassy road.** 1. Enhanced dip to eliminate diversion potential down road and make better drivability. 2. Ended road outsloping.	Ford in good condition and well vegetated. No tire ruts and dip functioning well	☑Y N☐	
68+05			Road surface drainage divide		N/A	
69+20		RD 29	1. Installed a type 1 rolling dip.	RD functioning well with no erosion	☑Y N☐	
70+45		RD 30	1. Installed a type 1 rolling dip.	RD functioning well with no erosion	☑Y N☐	
71+25	18	CD 7	**Site 18: Very small ford crossing with waterbar.** 1. Enhanced dip to eliminate diversion potential down road and make better drivability.	Dip functioning well and draining to landing	☑Y N☐	
83+05		RD 31	1. Installed a type 3 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
83+60	19		**Site 19: Fill crossing.** 1. Installed an armored fill crossing using 15 yd^3 of 0.5'-1.5' riprap.	Rock armor intact and crossing looks stable with no erosion	☑Y N☐	☑
85+00		RD 32	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
85+90		RD 33	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
86+90		RD 34	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	

Goodman Road (upgrade):

Abbreviations: CD = Critical dip; EOS = End of survey/road log; DRC = Ditch relief culvert; GCS = Grade control structure; OSR-FD = Outslope road and fill the ditch; OSR-KD = Outslope road and keep the ditch; RD = Rolling dip; SOS = Start of survey/road log.

Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/maintained properly?*	*Photo taken? (Check box)*
87+40	20		**Site 20: Fill crossing with outboard fillslope gully and debris torrented channel.** 1. Installed an armored fill crossing using 20 yd^3 of 0.5'-1.5' riprap.	Armored fill in good condition, no movement or erosion	☑Y N☐	☑
88+20		RD 34.1	1. Installed a type 3 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
89+80	21		**Site 21: Oblique fill crossing with small gully across road.** 1. Installed an armored fill crossing using 10 yd^3 of 0.5'-1.5' riprap.	Armored fill in good condition, rock armor intact and no erosion	☑Y N☐	
91+85			Road surface drainage divide.		N/A	
92+30		RD 34.2	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
93+15		RD 34.3	1. Installed a type 2 rolling dip.	RD functioning well w/ no erosion, well vegetated	☑Y N☐	
93+90	22		**Site 22: Diverted stream crossing.** 1. Defined ditch for 50' up road and connected to new armored fill. 2. Install an armored fill crossing using 15 yd^3 of 0.5'-1.5' riprap.	Rock armor intact and ditch looks stable and vegetated	☑Y N☐	☑
94+75	23		**Site 23: Ditch with gully delivering to main channel.** 1. Enhanced berm along ditch and created a turnaround and a parking area with spoils from decommissioning on Rogers Canyon Road.	Ditch and berm intact and appear stable	☑Y N☐	
95+45		EOS	End road log at Site 24 (Site 24 detailed in the road log for Rogers Canyon Road).		N/A	

Goodman Spur Road (upgrade):

Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/ maintained properly?*	*Photo taken? (Check box)*
Road description and general treatment notes: Goodman Spur Road extends from Goodman Road near "The Goodman Homestead" to a lower flat lying area with loop access back up to the ridge for ranch vehicles. This road log details treatment only for the first 1,345' from Goodman Spur Road. The road is currently grassed over and used for tending cattle. Sediment source site numbers and original problem description in bold.						
00+00		SOS	Start road log at intersection with Goodman Road near Goodman homestead.		N/A	
06+00	32		**Site 32: Ford crossing.** 1. No treatments at site.	Ford looks good, but there is some minor bank erosion up and downstream from crossing 1 to 2 foot banks	☑Y N☐	
07+65			No treatments at newly installed ditch relief culvert.		N/A	
9+60			Road surface drainage divide.		N/A	
11+60		RD 34.4	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
12+20	33		**Site 33: Stream crossing with 18" culvert with scour at outlet and plugged inlet.** 1. Installed an armored fill crossing using 25 yd^3 of 0.5'-1.5' riprap.	Rock armor itself looks good and stable, but PG&E crews left 1 ft deep tire ruts in the middle of the road. Recommend that vehicles don't drive on this road during wet conditions.	☑Y N☐	☑
13+45		EOS	End road log at road surface drainage divide.		N/A	

Skovie Road (upgrade):

Abbreviations: CD = Critical dip; EOS = End of survey/road log; ISR = Inslope road; RD = Rolling dip; SOS = Start of survey/road log.						
Distance on road (feet)	***PWA site#***	***Road treatment***	***Site / treatment description***	***Observations (Note any deficiencies)***	***Is BMP operating/ maintained properly?***	***Photo taken? (Check box)***
Road description and general road log notes: Skovie Road extends from Goodman Road near hairpin turn and Site 13 down to middle southern area of property. It is unsurfaced and used seasonally for ranch and power line maintenance. Sediment source site numbers and original problem description in bold.						
00+00		SOS	Start road log at intersection with Goodman Road near sign for Horse Hill and Skovie Basin.		N/A	
00+40		RD 35	1. Installed a type 2 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
01+15		RD 36	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
02+50	34		**Site 34: Existing ditch relief culvert in good condition.** 1. No treatment at site.	Culvert in good condition, slight rust at inlet, but functioning well	N/A	
05+70			Existing 12" ditch relief culvert in good condition.	Pipe still in good condition	N/A	
07+75			Road surface drainage divide.		N/A	
09+70			Intersection on left, road log continues to right with no gate.		N/A	
10+90		RD 36.1	1. Installed a type 1 rolling dip.	RD functioning well, but there are tire ruts on road surface	☑Y N☐	
12+10		RD 37	1. Installed a type 1 rolling dip.	Small rilling occurring downslope as volcanic native soils settle out. RD functioning well. If regrading on this road, enhance outslope.	☑Y N☐	☑
13+85		RD 38	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	

Skovie Road (upgrade):

Abbreviations: CD = Critical dip; EOS = End of survey/road log; ISR = Inslope road; RD = Rolling dip; SOS = Start of survey/road log.						
Distance on road (feet)	***PWA site#***	***Road treatment***	***Site / treatment description***	***Observations (Note any deficiencies)***	***Is BMP operating/ maintained properly?***	***Photo taken? (Check box)***
14+80		RD 39	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
15+75	35	CD 8/ Start ISR 1	**Site 35: Poorly defined ephemeral stream diverted down road.** 1. Installed a critical dip on lower left hinge to prevent diversion potential down road. 2. Started inslope road to drain hillslope and road towards spring and historic alignment for 100'.	Dip functioning well	☑Y N☐	
16+75		End ISR 1	Ended inslope road.	Road in good condition	☑Y N☐	
18+00		RD 40	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	Y N	
19+00	36		**Site 36: Diverted ephemeral stream crossing.** 1. Installed an armored fill crossing using 5 yd^3 of 0.5'-1.5' riprap.	Armor fill in good condition, but very springy area makes road surface wet and soft.	☑Y N☐	
20+10	37		**Site 37: 5' x 1' stream crossing with eroding fill.** 1. Installed an armored fill crossing with 20 yd^3 of 0.5'-2.0' riprap.	Armored fill appears stable	☑Y N☐	
20+60			Road surface drainage divide.		N/A	
24+40		RD 41	1. Installed a type 1 rolling dip.	RD functioning well w/ no erosion	☑Y N☐	
25+40	38	EOS	**Site 38: Washed out crossing with foot bridge.** 1. Decommissioned crossing by excavating sideslopes to natural grade or minimum 2:1 grade. 2. End road log at Site 38.	Everything looks stable	☑Y N☐	

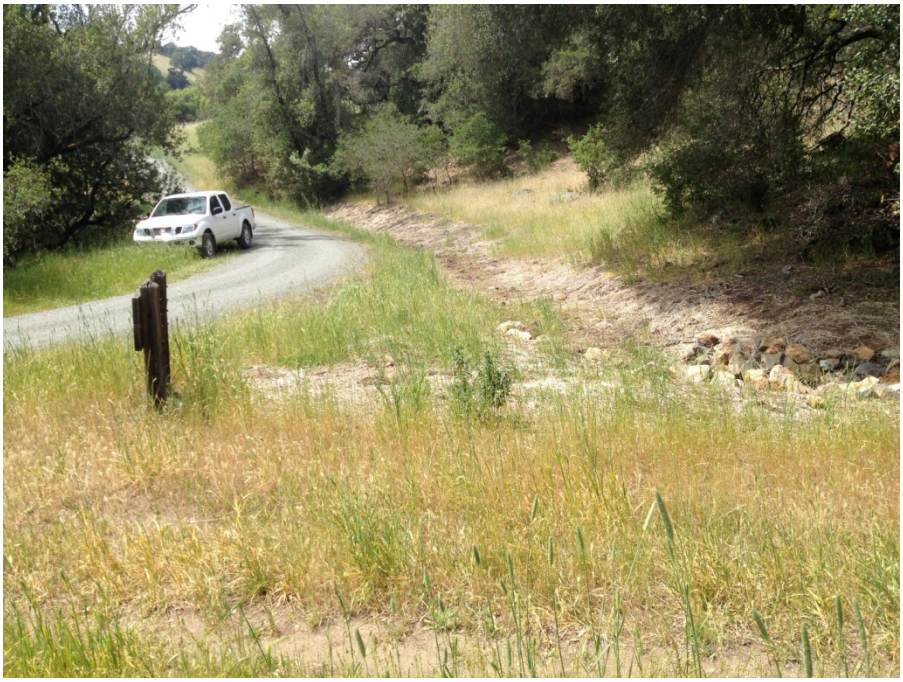
Rogers Canyon Road (decommission):

Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/ maintained properly?*	*Photo taken? (Check box)*
Road description and general road log notes: Rogers Canyon Road travels alongside Rogers Creek and is impassable by vehicle traffic from Goodman Road. Sediment source site numbers and original problem description in bold.						
00+00		SOS	Start road log at the new terminus of Goodman Road and Site 24 on Rogers Creek.		N/A	
	24	Start IPOS 1	**Site 24: (2) 48" metal culverts with gabion walls.** 1. Decommissioned crossing by removing all fill, culverts, gabions and any other foreign material. 2. Cobbles from gabions were placed along right bank to protect slight bend in Rogers Creek during first winter. 3. Started road ripping and in-place outsloping with a 4' wide foot trail along base of cutbank for 435'.	All rock armor intact and site looks stable.	☑Y N☐	☑
01+20	25		**Site 25: Washed out stream crossing with 9' x 2' channel and large gully in alluvial fan setting.** 1. Decommissioned crossing by laying back vertical sideslopes of gully with minimum 2:1 slopes over 70' long to Rogers Creek. 2. Spoiled locally along cutbanks away from streams and on native hillslope above crossing.	Banks are stable and revegetating.	☑Y N☐	☑

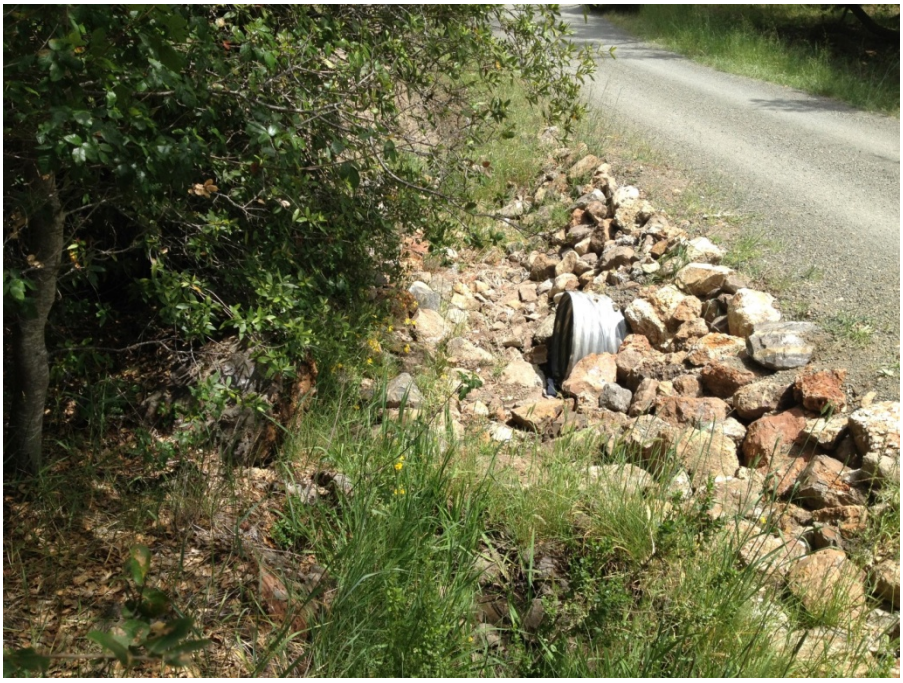
Rogers Canyon Road (decommission):

Distance on road (feet)	*PWA site#*	*Road treatment*	*Site / treatment description*	*Observations (Note any deficiencies)*	*Is BMP operating/ maintained properly?*	*Photo taken? (Check box)*
03+50	26		**Site 26: 95% washed out stream crossing with 10' tall vertical scour banks.** 1. Decommissioned crossing by excavating for 90' around vertical face and laying back 2:1 where possible or natural slope. 2. Spoiled locally along cutbanks away from streams and incorporated within in-place outslope.	Site looks good and banks are stable with mulch and vegetation	☑Y N☐	
04+35		End IPOS 1/ EOS	1. Ended ripping and in-place outsloping at road surface drainage divide. 2. End all 2013 construction and road log (historic road is washed out or unstable in most locations, and continues to property boundary nearly 0.29 mi to gate and property boundary).	Ripped road looks stable and revegetating	☑Y N☐	

Pepperwood Preserve Sediment Reduction Implementation Project
Appendix B- Photo Plates
Photos taken May 15, 2014



PWA Site #1



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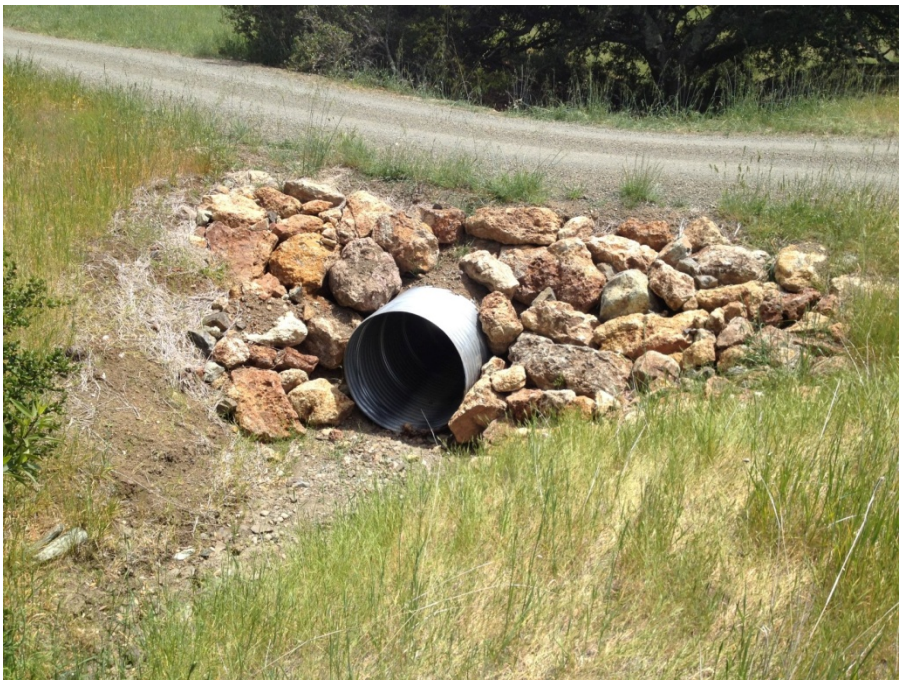
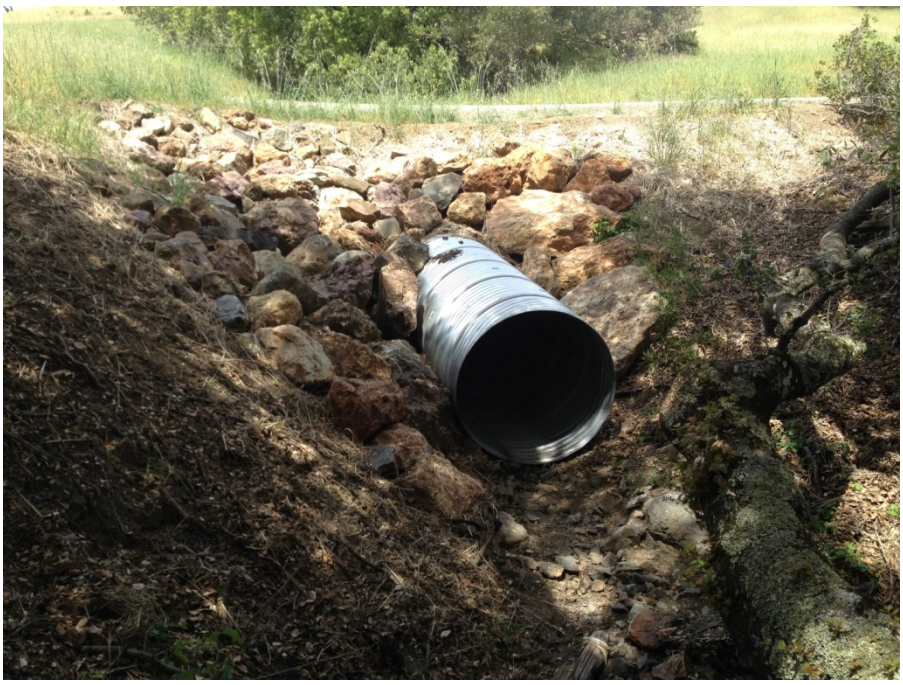
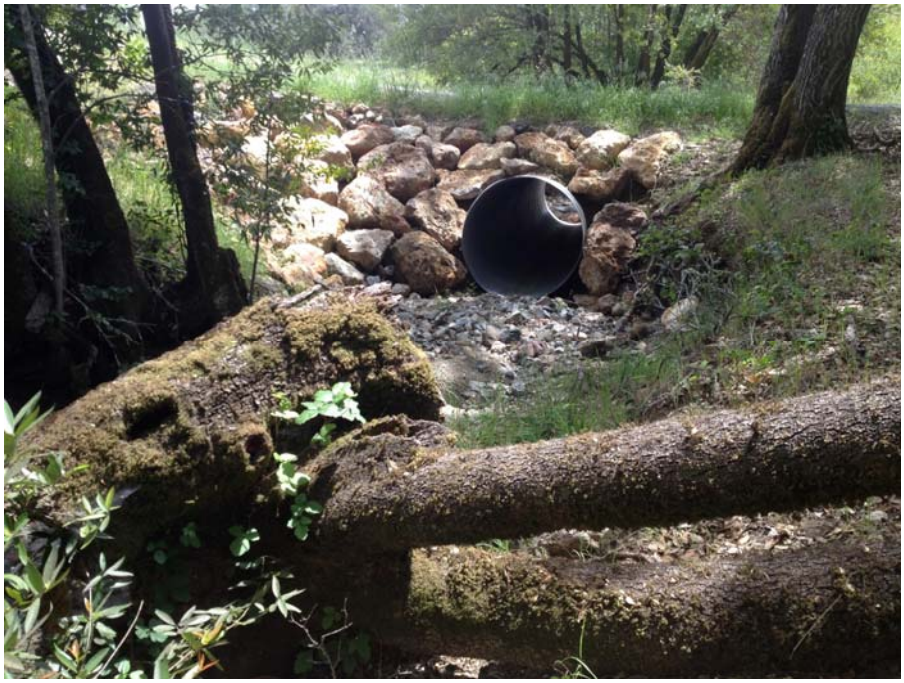


PWA Site #5 outlet



PWA Site #5 inlet



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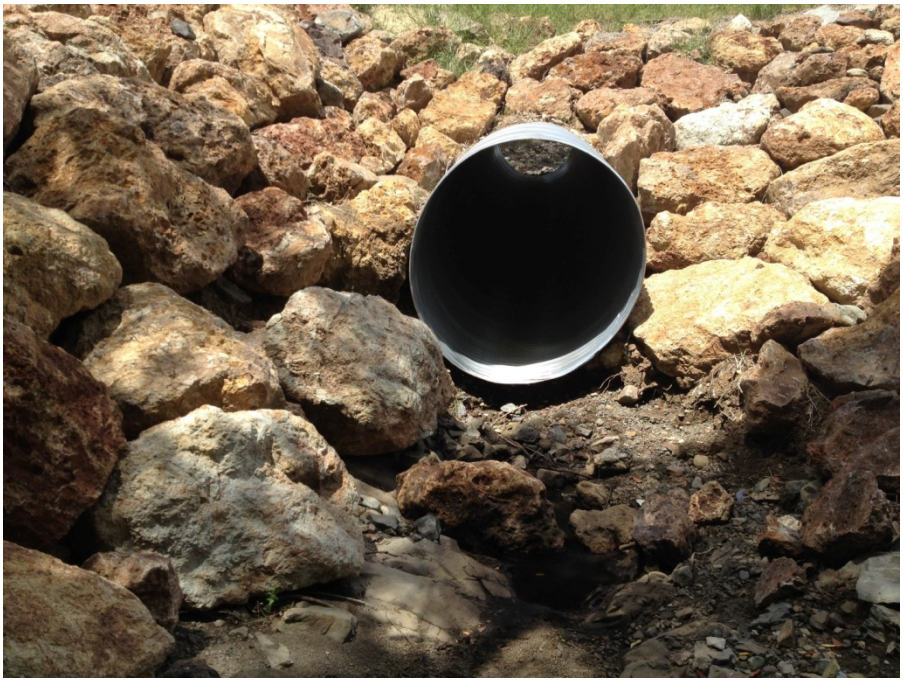
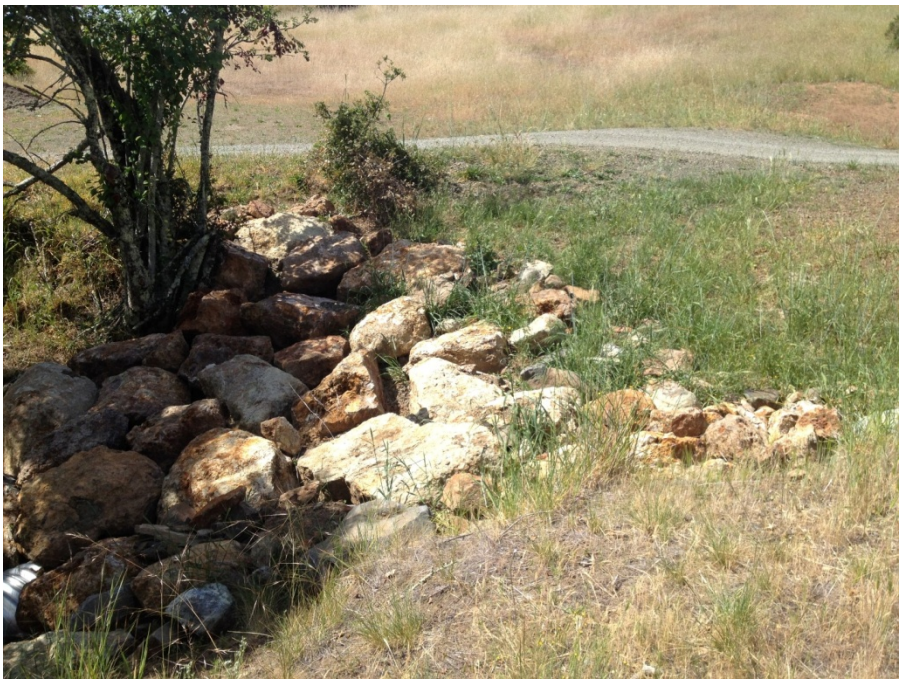


PWA Site #6 outlet



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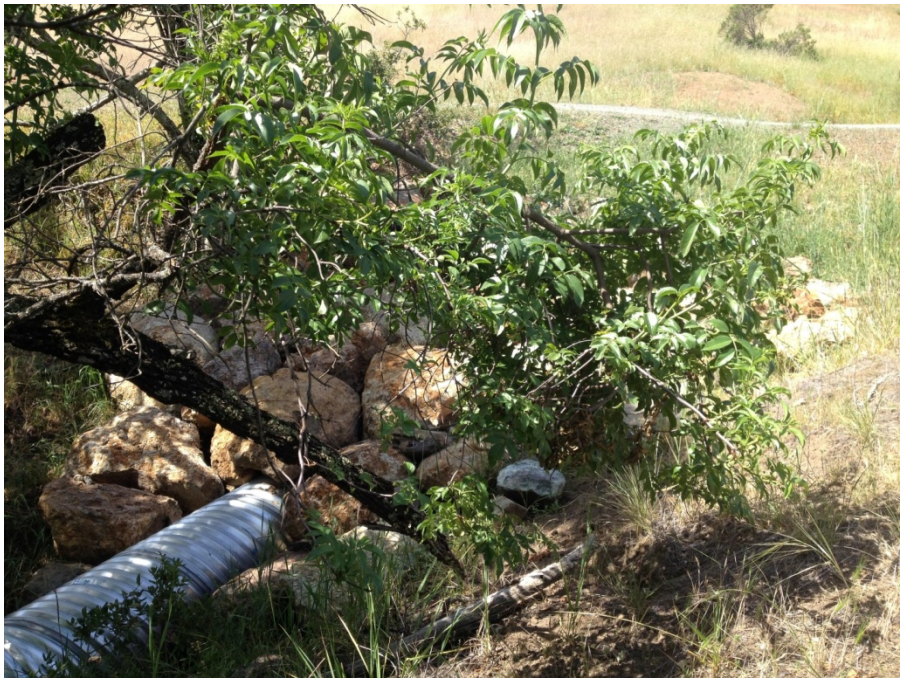
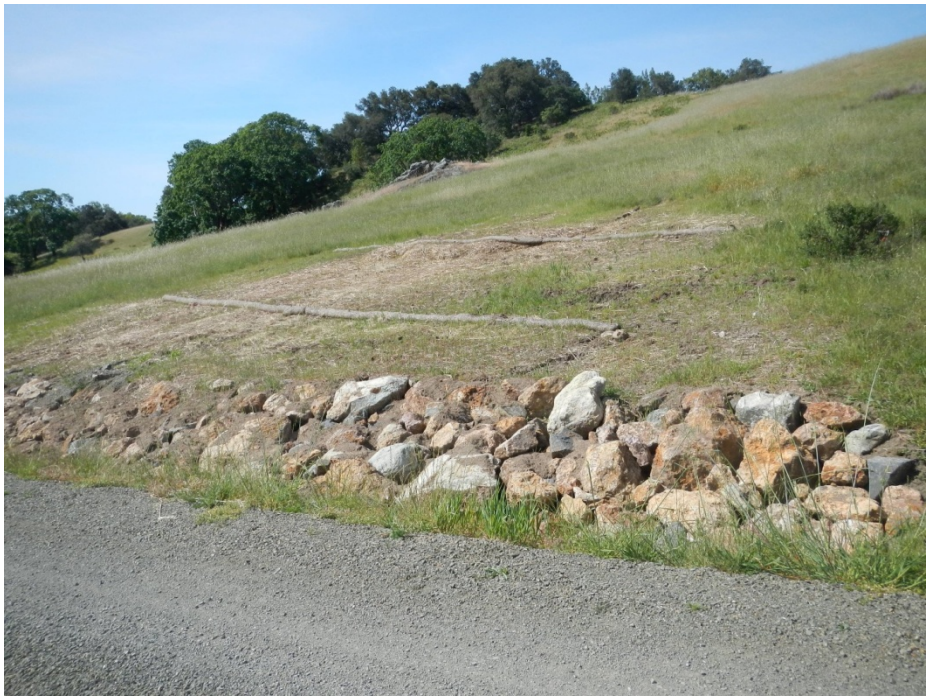
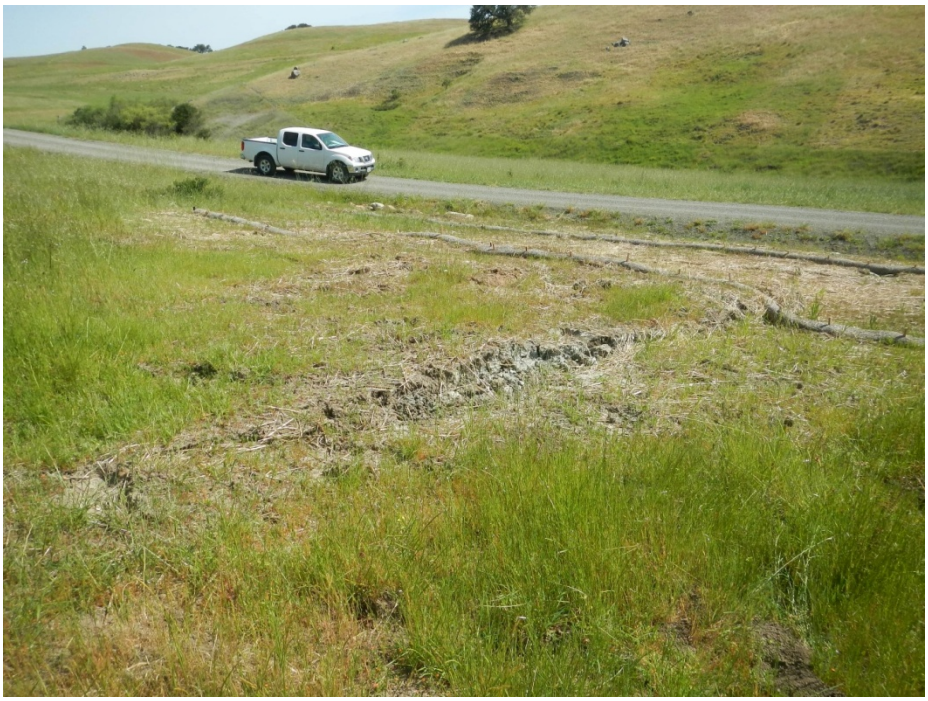


PWA Site #7 alternate view

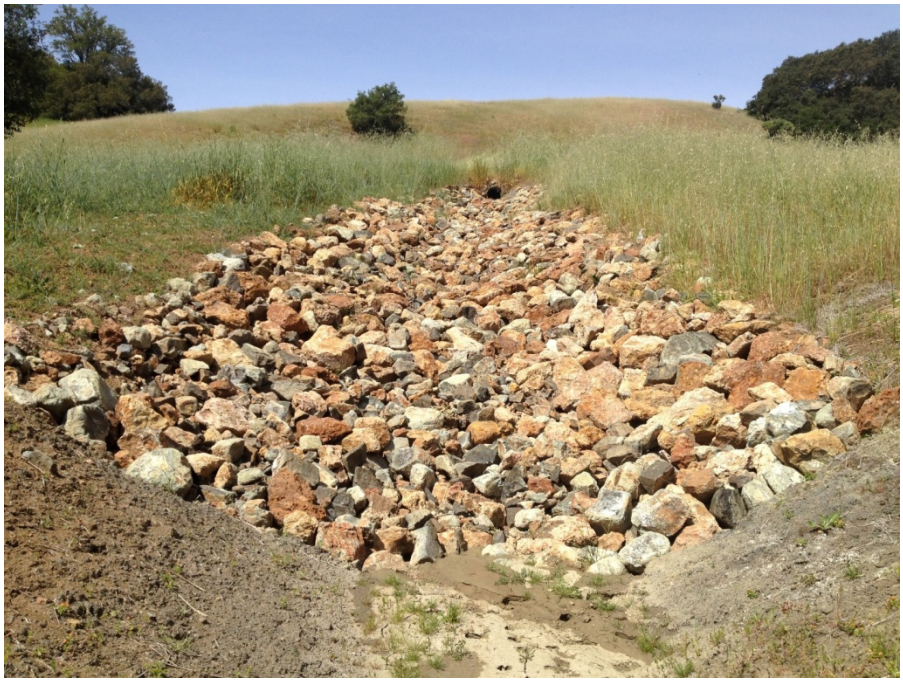
PWA Site # 7.1



PWA Site 7.2 landslide



PWA Site # 7.2 alternate view



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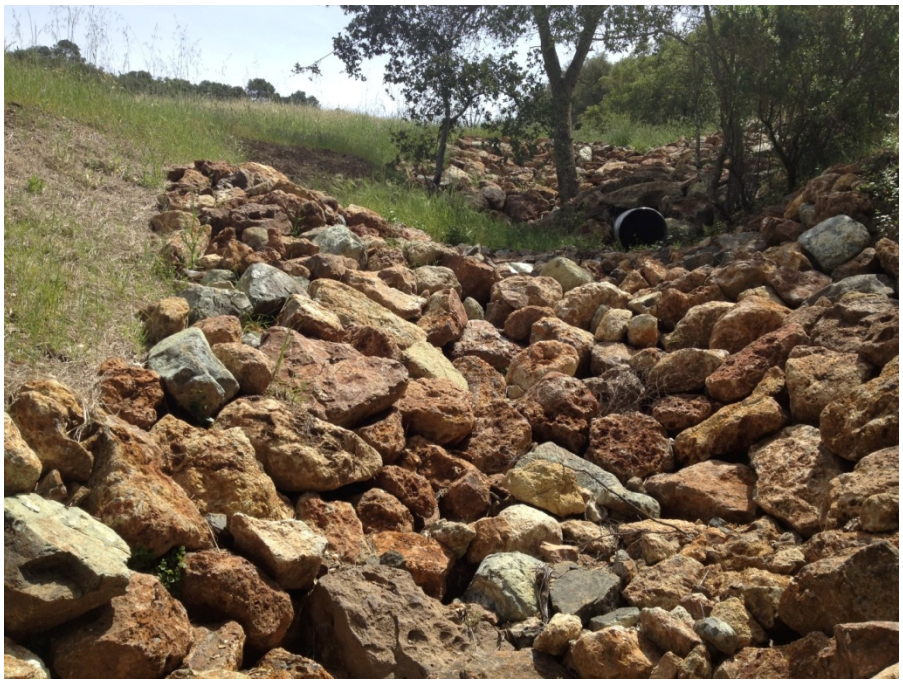

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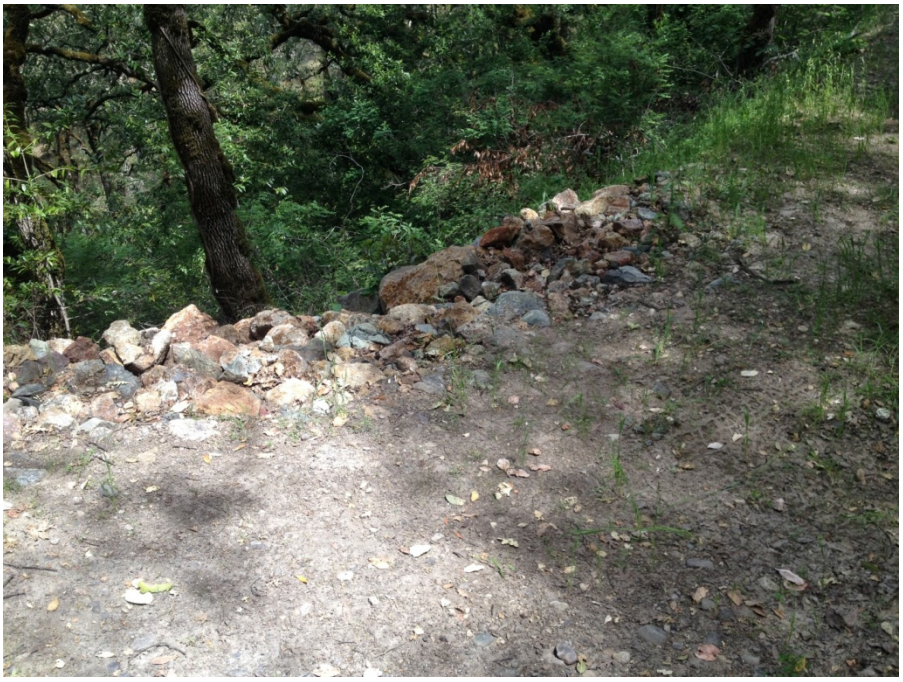

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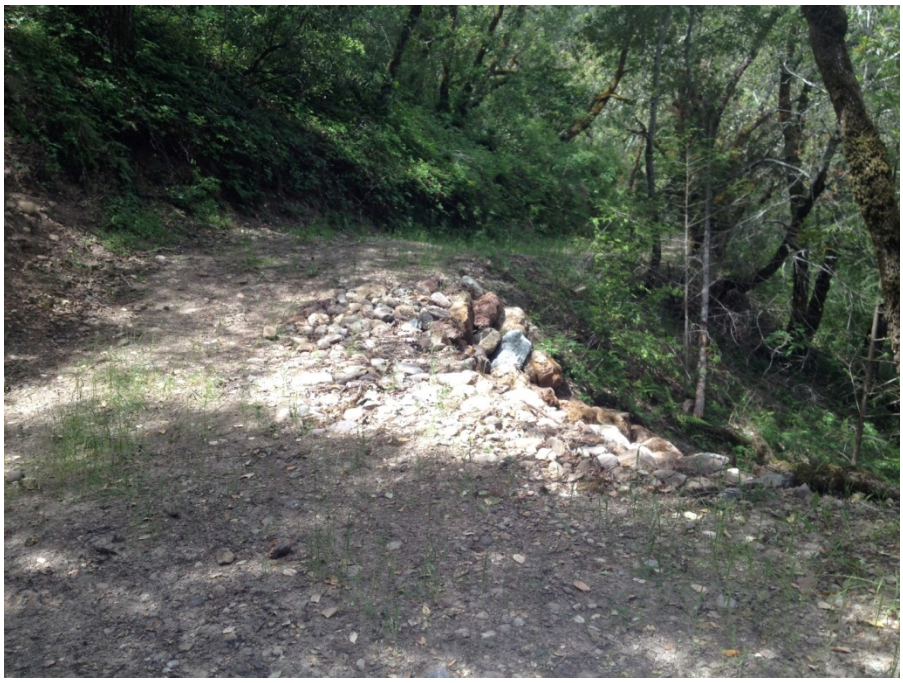

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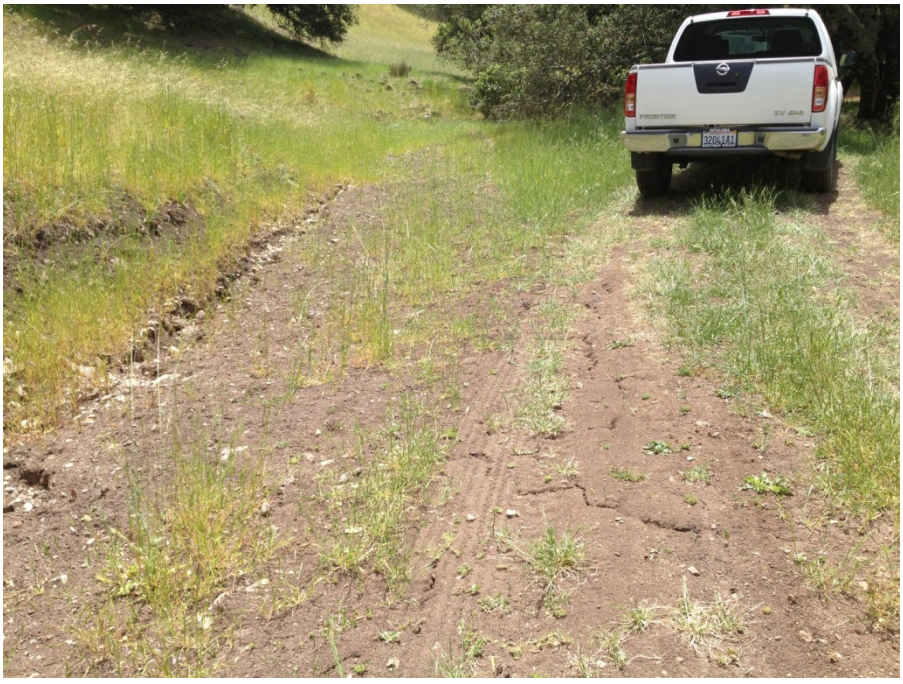

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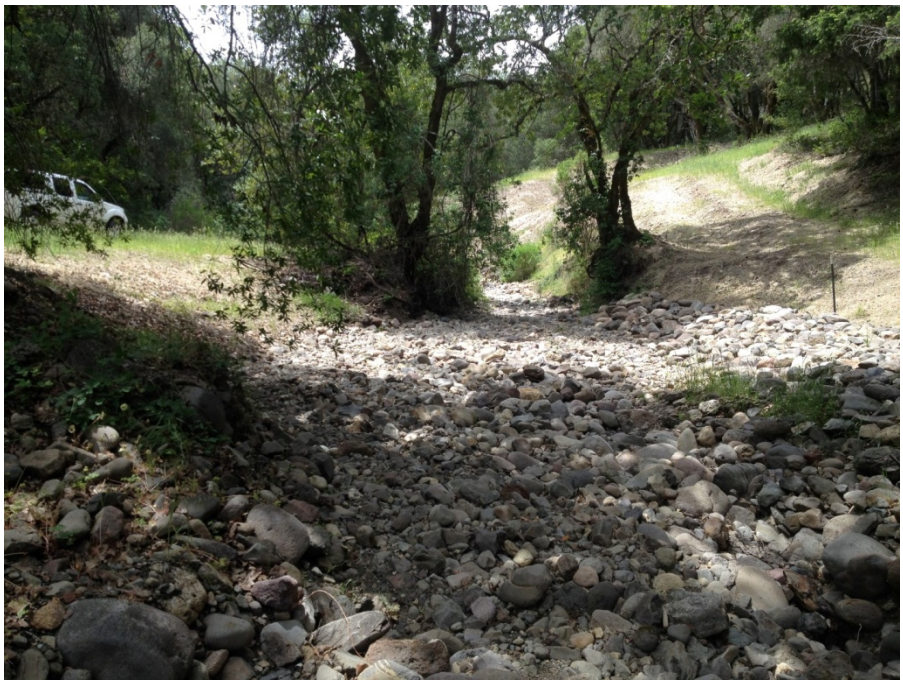
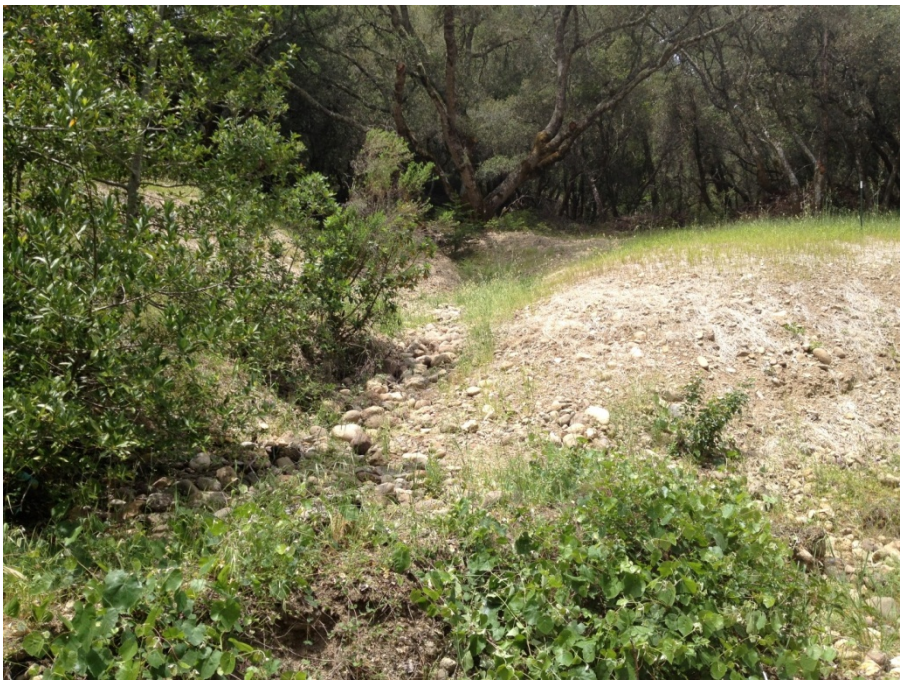
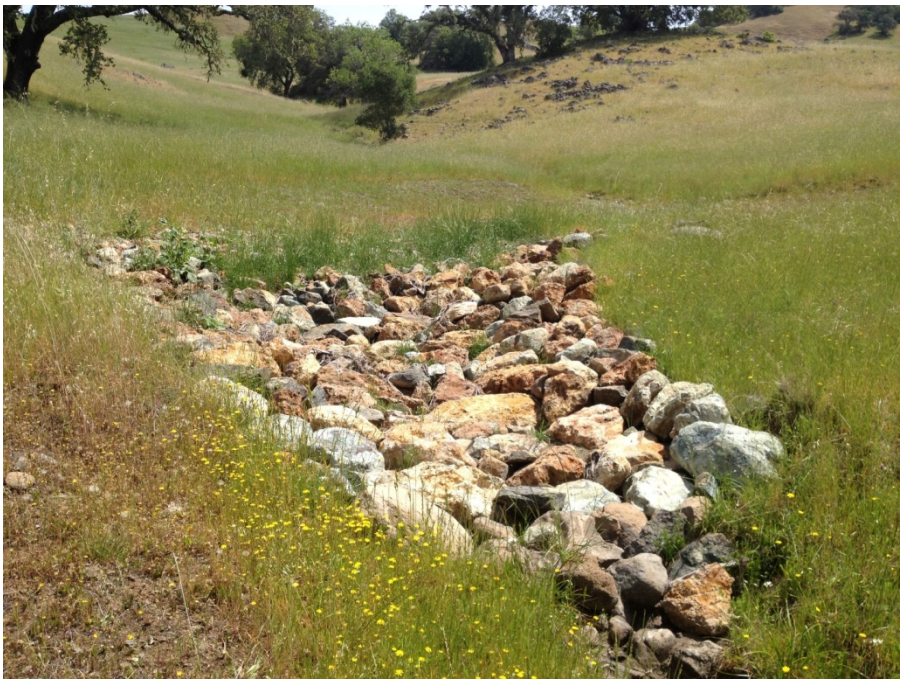


PWA Site #24

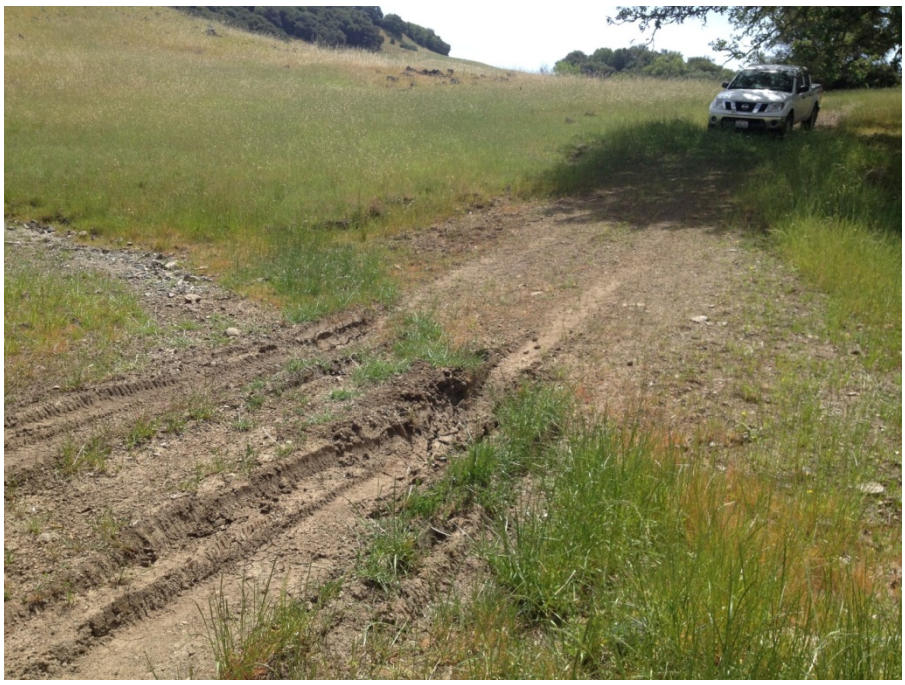
PWA Site # 25



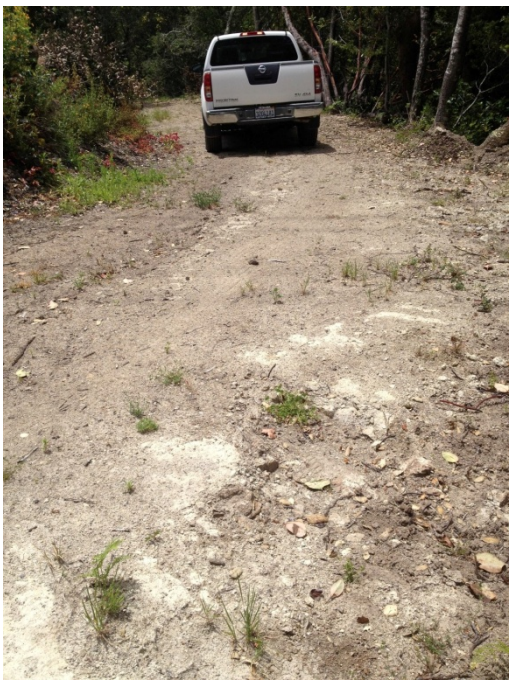
PWA Site # 25 alternate view



PWA Site #33 (uphill)



PWA Site # 33 – Tire ruts in road



PWA #RD37

PWA # RD46