Anderson, Skyler@Waterboards

From: Joey Howard <joey@cascadestreamsolutions.com>
Sent: Thursday, April 21, 2016 5:23 PM
To: Will Harling
Cc: Petruzzelli, Kenneth@Waterboards; Barbara Brenner; Murano, Taro@Waterboards; Henrioulle, Diana@Waterboards; Anderson, Skyler@Waterboards; Feiler, Stormer@Waterboards; Margaret Tauzer - NOAA Federal; Kerry Fuller; Rocco Fiori; Bean, Caitlin@Wildlife; Elfgen, Mark@Wildlife
Subject: Re: Stanshaw Scope of Work - Questions from Water Rights Division and North Coast Regional Water Quality Board
Attachments: Marble Mountain Pipeline.pdf; HW Pipe Calcs.xlsx

I mistakenly thought the preliminary pipe alignment plan had made it to Margret. I apologize for not getting it to you. Please note that I based the pipe size on open channel flow within the pipe using Manning's equation and ignoring losses at bends. I also calculated the flow in the pipe assuming full flow and a friction slope equivalent to the ditch slope using Hazen-Williams equation (see attached spreadsheet). I believe it is prudent to use a valve to regulate flow in the pipe (i.e. headgate) and having the pipe a bit larger to accommodate debris that may collect in the pipe.

Joey

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On Thu, Apr 21, 2016 at 3:45 PM, Joey Howard <joey@cascadestreamsolutions.com> wrote:
Attached is a figure to refer to during our discussion.

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On Thu, Apr 21, 2016 at 3:39 PM, Will Harling <will@mkwc.org> wrote:
Sorry for the delay in responding. Here are my brief answers to inform future talks.

Will

On Wed, Apr 20, 2016 at 4:08 PM, Will Harling <will@mkwc.org> wrote:
Hi Kenneth et al,
We had a good field review today up at Marble Mountain Ranch with engineer Joey Howard, geologist Rocco Fiori, electrician Pavel Nalezek, and Doug Cole. I shared your list of questions with the group and will work on written responses by noon tomorrow.
Thanks,
Will

On Wed, Apr 20, 2016 at 9:13 AM, Petruzzelli, Kenneth@Waterboards <Kenneth.Petruzzelli@waterboards.ca.gov> wrote:

Barbara –

In your letter dated April 15, 2016, you stated that the Coles were meeting with their engineering and implementation teams today to discuss and approve designs for the outfall point. The Division and the Regional Board have a number of questions about the scope of work and, in light of the meeting today, I wanted you to have the questions available. Also, I still believe it would be productive for us to go over these questions in a meeting or conference call. If you are open to meeting, please let me know so we can set up some dates.

Here are the questions from staff -

Water Right Division questions

1) The numeric consumptive use rate of 0.31 CFS (excludes hydropower water) reported by Mr. Cole is not supported by the Division. The Division would like to point out that .31 CFS over a 24-hour period is approximately 200,000 gallons of water per day. Based on the Division's field visits to the Ranch, the Division does not support that MMR uses that amount of water daily. Task # 5 in the Summary of Work (SOW) states that there will be a Water Efficiency Study preformed (Study). The Division is interested in reviewing and commenting on the Study in order to determine what a reasonable daily use of water at the ranch is.

2) The two documents cite different amounts of water that will be diverted via the 6-inch pipes. On page 2 of the PDF titled Marble Mountain Pipeline the Q value = 0.35 CFS. In the document titled "40710 Revised SOW for Additional Funds _Task six Revision" (SOW) in the second paragraph of section Task # 6 it states that the pipeline is sized to convey 0.31 CFS. The two documents are reporting a different volume of water will be diverted in the 6-in pipe.

3) Under Task # 6 in the SOW the following is stated – "This pipe is sized to convey consumptive flows (0.31 cfs), or 10% of Stanshaw Creek flow at the Point of Diversion (POD), (whichever is less), to MMR between May 15-October 31. In Order for MMR to accomplish this by-pass flow schedule, MMR will need to know what the flow is in Stanshaw Creek at the POD on a daily occurrence. Furthermore, how will MMR measure the amount of water diverted when they are restricted to 10 percent of the stream flow? In order to maintain compliance with the bypass requirement, MMR will need to measure the daily flow rate of Stanshaw Creek and have the ability of reducing the water diverted at the POD accordingly. The head gate will need to accommodate the reduced diversion rate to the 6 –inch pipe from 0.31 CFS to 10 % of the instantaneous flow in Stanshaw Creek.

4) Under Task # 6 in the SOW the following is stated. "Additionally, a short term modification to the MMR water system will be an engineered design for the outflow to Irving Creek from the MMR ditch where a head cut is causing active erosion into Irving Creek." The Division would like some elaboration of this statement. What exactly will be done? When will water diverted be returned to Stanshaw Creek? Is the "short term modification" needed so that construction can begin to return water back to Stanshaw?

5) The document gives the reader the impression that between May 15-October 31 that water for hydropower will not be diverted, is that true?

Water Quality questions

1) Who did the Coles speak to at the USFS and what was provided from the USFS stating that changing the ditch location was not an acceptable option? Please have this decision provided in a written format signed by a USFS representative.

2) Where did the 6 inch temporary pipe size come from? We would like an analysis of how the size was determined and a detailed, written explanation of how summer flows will be controlled in regard to limiting the 6 inch pipe in the event it is necessary to do so to ensure adequate by pass flows.

3) Is the 10% of flow recommendation from NMFS for all users on Stanshaw or for only the Coles? Our impression is that it was the former.

4) The Restoration and Monitoring Plan described does not appear to have been submitted to the Regional Board or State Board for review and approval based upon the timeline and task milestones provided by the Coles. In addition, the Region does not see a discussion of permits required or any reference to conditional approvals of designs by the Regional Water Board or Division. Please have the Coles provide the designs for the pipe installation, including any necessary limitations during construction to mitigate impacts, and a complete list of all permits 1) required, 2) they have applied for, 3) and those permits received that allow them to conduct this

scope of work of 1) preparing the ditch through excavation 2) installing the pipe and of 3) installing a temporary culvert fix at the outfall of the ditch into Irving Creek.

5) The proposed interim fixes are likely costly and do not appear to meet expectations in terms of reducing impacts and stabilizing –restoring streams. The Region is curious as to whether there has been a biological assessment of the existing ditch habitat value and the species that are occupying the ditch? What does DFW think about this?

6) Will the plans be submitted to the North Coast Regional Water Board and Division of Water Rights for review and approval prior to submission to other agencies for required permits and approvals to conduct the scope of work?

7) How have the Coles addressed CEQA through the scope of work they appear to have conducted and are intending to conduct?

8) As the water use analysis is incomplete, how have the Coles determined that the 6 inch pipe is appropriate, and how has the project design been influenced by the potential to develop efficiencies in the system?

9) Have any alternatives been considered in terms of 1) planning to put the water back into Stanshaw Creek; and 2) project alternatives to control erosion and diversion of the ditch? If not, why were these alternatives not considered and why was the preferred alternative chosen?

Ken Petruzzelli, Attorney III

State Water Resources Control Board

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Drawing Information	
Date	----
Status	PRELIMINARY
Designer	jh
Drafter	jh
Checked	
File Name	Marble Mountain Pipeline
Plotted Scale	0 1/2 1

Revisions		
No.	Date	Description

PRELIMINARY
NOT FOR CONSTRUCTION

Marble Mountian Ranch Water Efficiency Study

Plan View

Job Number 2015-115

Sheet Number 1

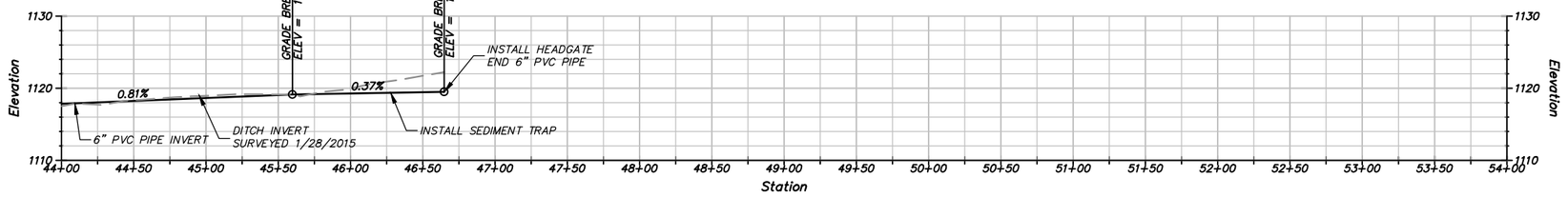
Sheet 1 of

002864

STATION 43+40.24 TO 45+59.76
SLOPE = 0.0081 FT/FT
Q = 0.35 CFS
NORMAL DEPTH = 0.284 FT
NORMAL VELOCITY = 2.8 FT/S

STATION 45+59.76 TO 46+64.83
SLOPE = 0.0037 FT/FT
Q = 0.35 CFS
NORMAL DEPTH = 0.39 FT
NORMAL VELOCITY = 2.1 FT/S

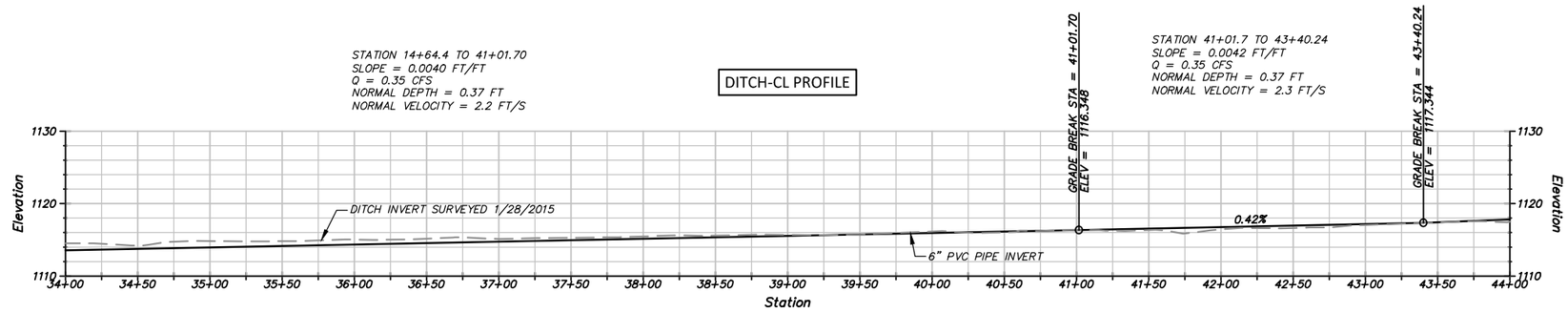
DITCH-CL PROFILE



STATION 14+64.4 TO 41+01.70
SLOPE = 0.0040 FT/FT
Q = 0.35 CFS
NORMAL DEPTH = 0.37 FT
NORMAL VELOCITY = 2.2 FT/S

STATION 41+01.7 TO 43+40.24
SLOPE = 0.0042 FT/FT
Q = 0.35 CFS
NORMAL DEPTH = 0.37 FT
NORMAL VELOCITY = 2.3 FT/S

DITCH-CL PROFILE



STATION 14+64.4 TO 41+01.70
SLOPE = 0.0040 FT/FT
Q = 0.35 CFS
NORMAL DEPTH = 0.37 FT
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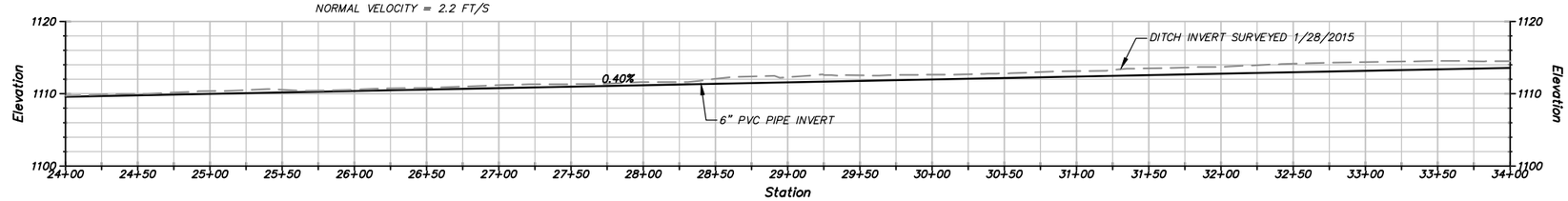
DITCH-CL PROFILE



STATION 14+64.4 TO 41+01.70
SLOPE = 0.0040 FT/FT
Q = 0.35 CFS
NORMAL DEPTH = 0.37 FT
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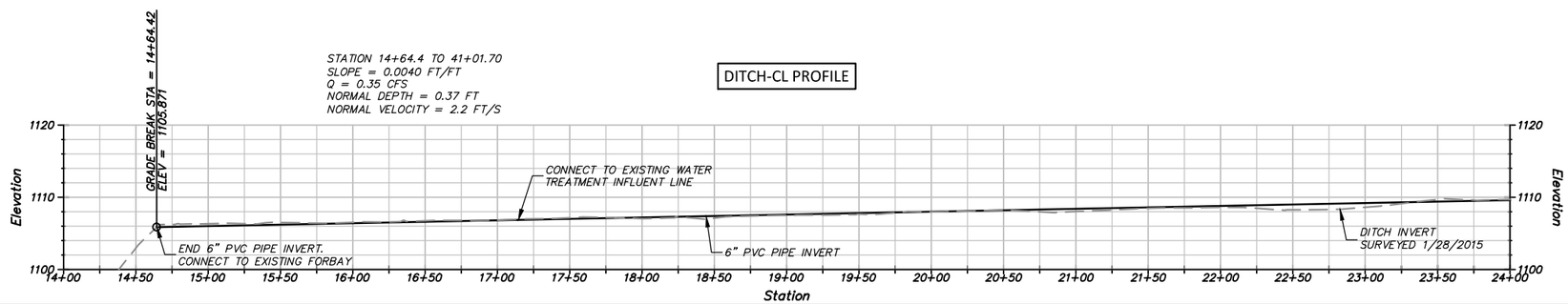
DITCH-CL PROFILE



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Cascade STREAM SOLUTIONS

Drawing Information	
Date	----
Status	PRELIMINARY
Designer	jh
Drafter	jh
Checked	
File Name	Marble Mountain Pipeline
Plotted Scale	0 1/2 1

Revisions		
No.	Date	Description

PRELIMINARY
NOT FOR CONSTRUCTION

Marble Mountian Ranch Water Efficiency Study

Pipe Profile

Job Number 2015-115

Sheet Number 2

Sheet 2 of

002865

$Q=1.318 \times C \times A \times R^{0.63} \times S^{0.54}$

where Q = quantity rate of flow, cfs C = roughness coefficient, dime
R = hydraulic radius, feet; V = Velocity, feet per second A = cross se

Pipe diam	4	in
Pipe diam	0.333333	ft
Pipe Area	0.087266	
Pipe Hyd Radius	0.083333	
Roughness Coeff	150	
Entrance loss	0.5	

Station	Slope	V	Q	Entrance Loss
1464				
	0.004	2.095245	0.182845	0.034084
4101				
	0.0042	2.151182	0.187726	0.035928
4340				
	0.0081	3.066934	0.26764	0.073029
4559				
	0.0037	2.008868	0.175307	0.031332
4664				

Station	Elev	Slope	V	Q
1464	1119.5			
		0.004259	2.17	0.19
4664	1105.87			
-3200	13.63			

ensionless d = inside pipe diameter, in. ,
ection area, ft^2

Pipe diam	5	in
Pipe diam	0.416667	ft
Pipe Area	0.136354	
Pipe Hyd R:	0.104167	
Roughness	150	

Station	Slope	V	Q	Entrance Loss
1464				
	0.004	2.411505	0.328818	0.04515
4101				
	0.0042	2.475885	0.337596	0.047593
4340				
	0.0081	3.529862	0.48131	0.096739
4559				
	0.0037	2.31209	0.315262	0.041504
4664				

Station	Elev	Slope	V	Q	Inlet head
1464	1119.5				
		0.004259	2.49	0.34	0.258867
4664	1105.87				

Pipe diam	6	
Pipe diam	0.5	
Pipe Area	0.19635	
Pipe Hyd R:	0.125	
Roughness	150	

Station	Slope
1464	
	0.004
4101	
	0.0042
4340	
	0.0081
4559	
	0.0037
4664	

Station	Elev
1464	1119.5
4664	1105.87

in
ft

V	Q	Entrance Loss
2.411505	0.473498	0.04515
2.475885	0.486139	0.047593
3.529862	0.693087	0.096739
2.31209	0.453978	0.041504

Slope	V	Q	Inlet head
0.004259	2.80	0.55	0.325721

Flowing Full
Pipe Diam 4 in
Pipe Diam 0.333333 ft
Manning's n = 0.012

Station	Slope	Q, cfs	Vel, fps
1464			
	0.004	0.127	1.484
4101			
	0.0042	0.13	1.521
4340			
	0.0081	0.181	2.112
4559			
	0.0037	0.122	1.47
4664			

Flowing Full
Pipe Diam 6 in
Pipe Diam 0.5 ft
Manning's 0.012

Station	Slope	Q, cfs	Vel, fps
1464			
	0.004	0.384	1.958
4101			
	0.0042	0.394	2.006
4340			
	0.0081	0.547	2.786
4559			
	0.0037	0.037	1.883
4664			

Flowing Full
Pipe Diam 4 in
Pipe Diam 0.333333 ft
Manning's n = 0.012

Station	Slope	Q, cfs	Vel, fps
1464			
	0.004	0.127	1.484
4101			
	0.0042	0.13	1.521
4340			
	0.0081	0.181	2.112
4559			
	0.0037	0.122	1.47
4664			

Flowing Full
Pipe Diam 6 in
Pipe Diam 0.5 ft
Manning's 0.012

Station	Slope	Q, cfs	Vel, fps
1464			
	0.004	0.384	1.958
4101			
	0.0042	0.394	2.006
4340			
	0.0081	0.547	2.786
4559			
	0.0037	0.037	1.883
4664			