OPERATIONS & ADMINISTRATION COMMITTEE MEETING

MONTECITO WATER DISTRICT
583 SAN YSIDRO ROAD

Tuesday November 13, 2018
9:30 A.M.

AGENDA

1) CALL TO ORDER, DETERMINATION OF COMMITTEE QUORUM

2) PUBLIC FORUM

NOTE: This portion of the agenda may be utilized by any person to address the Operations & Administration Committee on any matter within the jurisdiction of the Committee. No consideration or discussion shall be undertaken by Committee members at this time on any item not appearing on this agenda except as permitted by the Ralph M. Brown Act. Discussion items receiving recommendations by the Committee, and/or items requiring action will be placed on the agenda of a future meeting of the Montecito Water District Board of Directors.

3) ITEMS FOR COMMITTEE CONSIDERATION

A. Partial Release of Easement – 891 Toro Canyon Road

B. Juncal Dam and Jameson Reservoir Judged Safe by DSOD

C. Bella Vista Treatment Plant Aeration Project

D. FEMA Project Status

4) ADJOURNMENT

Note: This agenda was posted at the Montecito Water District front counter and outside the front office at 9:30 a.m. on Friday, November 9, 2018. The Americans with Disabilities Act provides that no qualified individual with a disability shall be excluded from participation in, or denied the benefits of, the District's programs, services or activities because of any disability. If you need special assistance to participate in this meeting, please contact the District Office at 805/969-2271. Notification at least twenty-four (24) hours prior to the meeting will enable the District to make appropriate arrangements.

Materials related to an item on this agenda submitted to the Board's Operations and Administration Committee after distribution of the agenda packet are available for public inspection in the Montecito Water District offices located at 583 San Ysidro Road, Montecito, during normal business hours.

MONTECITO WATER DISTRICT
MEMORANDUM

SECTION: **3-A**

DATE: **NOVEMBER 13, 2018**

TO: **OPERATIONS COMMITTEE**

FROM: **ENGINEERING MANAGER**

SUBJECT: **PROPOSED PARTIAL RELEASE OF EASEMENT FOR 891 TORO CANYON ROAD (APN 155-240-016)**

RECOMMENDATION:

- That the Operations Committee recommend the Board of Directors authorize the execution of the attached Partial Release of Easement for the Private Property located at 891 Toro Canyon Road.

DISCUSSION:

The attached proposed Partial Release of Easement between Montecito Water District and the Gavasse Family Trust has been requested by the property owner because the easement is no longer used by the District. The attachment contains four property descriptions:

1) Exhibit A – 891 Toro Canyon Road (subject property APN 155-240-016)
2) Exhibit B – 50 foot MWD easement from 1924 (not currently used by District within subject property)
3) Exhibit C – 12 foot easement from 1926 following Toro Canyon Road (currently used by District)
4) Exhibit D – proposed quitclaim of 50-foot easement within subject property

The District has two easements intersecting the subject property. The first easement was created in 1924 as a 50-foot easement across multiple private and public lands from Doulton Tunnel continuing south into the community. The purpose of this easement was likely for distribution piping from Doulton Tunnel into the community. The second easement was created in 1926 and is a 12-foot-wide easement from Doulton Tunnel continuing to the south, following what is now Toro Canyon Road.

The District only has known infrastructure within the second easement; the 12-foot easement along Toro Canyon Road. There is no known infrastructure inside the 50-foot easement within the subject property.

The homeowner is requesting a partial release of easement for the 50-foot easement within their property at 891 Toro Canyon Road. Given the District does not have infrastructure within the easement and has no future plans for infrastructure within the easement on the subject property, staff recommend moving forward with the partial release of easement for the subject property.

The proposed Partial Release of Easement has been reviewed by District Legal counsel.

ATTACHMENTS:

- Proposed Partial Release of Easement – 891 Toro Canyon

RECORDING REQUESTED BY AND WHEN RECORDED RETURN TO:

Montecito Water District
583 San Ysidro Road
Santa Barbara, CA 93108
Telephone: (805) 969-2271

SPACE ABOVE THIS LINE FOR RECORDER'S USE

APN 155-240-016

Exempt from fee for recordation per Government Code §§ 6103 and 27383.

PARTIAL RELEASE OF EASEMENT

This PARTIAL RELEASE OF EASEMENT ("Release") is made this _____ day of November, 2018 (the "Effective Date") by Montecito Water District ("District"), a County Water District organized and existing under Water Code §§30000 – 33901 and successor in interest to Montecito County Water District with reference to the following facts:

A. Gavasse Family Trust, Gavasse, Gregory L (trustee) and Gavasse, Erin A (trustee) ("Owner(s)") is/are the owner(s) of that certain real property as described and depicted in the attached Exhibit "A" and commonly referred to as 891 Toro Canyon Road, Montecito, California (the "Property").

B. The Property is subject to that certain 50 foot right of way easement granted to and in favor of Montecito Water District as described and depicted in the attached Exhibit "B".

C. The Property is subject to that certain 12 foot right of way easement granted to and in favor of Montecito Water District as described and depicted in the attached Exhibit "C".

D. Owner(s) request(s) that District release that portion of the above referenced 50 foot easement located on the Property, which portion of the 50-foot easement to be released is described and depicted in the attached Exhibit "D", and District wishes to release that portion of the 50-foot easement as described and depicted in the attached Exhibit "D".

NOW THEREFORE, Montecito Water District hereby agrees as follows:

1. That portion of the 50 foot right of way easement depicted in Exhibit D is hereby released, remised and quitclaimed by District to Owner.

2. Except as provided herein, the easement described and depicted in the attached Exhibit "B" remains in full force and effect.

3. This Release does not in any way release, remise, or quitclaim the 12 foot right of

way easement described and depicted in the attached Exhibit “C”, which remains in full force and effect.

4. This Release shall be binding upon the assigns and successors of Owner and District.

Dated: _____

Montecito Water District

By:_____

Name:_____

Its:_____

EXHIBIT A

LEGAL DESCRIPTION

EXHIBIT "A"

Parcel One:

Parcel "Two" of Parcel Map No. 14,230, in the County of Santa Barbara, State of California, as shown and recorded in Book 52, Pages 74 through 77 of Parcel Maps, in the Office of the County Recorder of said County.

Parcel Two:

An easement for ingress, egress, public utilities and incidental purposes to be used in common with others over a strip of land 60.00 feet wide within Section 11 in Township 4 North, Range 26 West San Bernardino Base and Meridian, in the County of Santa Barbara, State of California, lying 30.00 feet on each side of the center line described as follows:

Beginning at a point on the Easterly boundary line of said Section 11, distant thereon North 0°04'20" East, 412.00 feet from the Southeast corner of the North half of the Northeast Quarter of said section being the beginning of a curve concave Northeasterly having a radius of 200.33 feet the tangent of said curve bearing North 76°21'45" West;

thence Northwesterly and Northerly along said curve through a central angle of 98°21'45";

thence North 22°00'00" East, 18.83 feet to the beginning of a tangent curve concave Southwesterly having a radius of 30.00 feet;
thence Northerly and Westerly along said curve through a central angle of 136°00';

thence South 66°00' West, 100.75 feet to the beginning of a tangent curve concave Northeasterly having a radius of 300.00 feet;

thence Westerly and Northerly along said curve through a central angle of 90°00'00";

thence North 24°00'00" West, 150.00 feet to the intersection with the Westerly boundary line of the land described as Parcel One in the deed to Bruce L. Gitelson et ux., recorded June 24, 1980 as Instrument No. 80-24424 of Official Records;

thence along said Westerly line North 10°06'08" West, 138.62 feet to a point thereon distant South 10°06'08" East, 201.38 feet from the Northwest corner of said land and the beginning of a tangent curve concave Southerly having a radius of 40.00 feet;

thence Northwesterly and Westerly along said curve through a central angle of 121°28'07";

thence South 48°25'45" West, 339.78 feet;

thence South 22°00'00" West, 120.00 feet;

thence South 40°00'00" West, 89.09 feet to the beginning of a tangent curve concave Easterly having a radius of 96.38 feet;

thence Southerly along said curve through a central angle of 46°00'00" to the beginning of a reverse curve having a radius of 150.00 feet;

thence Southerly along said curve through a central angle of 52°34'20";

thence South 46°34'20" West, 186.56 feet to the beginning of a tangent curve concave Northerly having a radius of 80.00 feet;

thence Southwesterly, Westerly and Northwesterly along said curve through a central angle of 129°25'40";

thence North 4°00'00" West, 332.53 feet to the beginning of a tangent curve concave Southerly having a radius of 30.00 feet;

thence Northwesterly and Westerly along said curve through a central 146°00'00";

thence South 30°00' West, 67.60 feet to the beginning of a tangent curve concave Northerly having a radius of 40.00 feet;

thence Westerly along said curve through a central angle of 120°00';

thence North 30°00' West, 131.70 feet to the beginning of a tangent curve concave Southwesterly having a radius of 60.00 feet;

thence Westerly along said curve through a central angle of 98°00';

thence South 52°00' West, 49.83 feet to the beginning of a tangent curve concave Northerly having a radius of 100.00 feet;

thence Westerly along said curve through a central angle of 54°11';

thence North 73°49' West, 18.85 feet to the beginning of a tangent curve concave Southeasterly having a radius of 51.76 feet;

thence Westerly and Southerly along said curve through a central angle of 115°11';

thence South 9°00' East, 22.47 feet to the beginning of a tangent curve concave having a radius of 84.70 feet;

thence Southerly and Westerly along said curve through a central angle of 123°00' to the beginning of a reverse curve having a radius of 90.00 feet;

thence Westerly along said curve through a central angle of 90°00';

thence South 24°00' West, 50.00 feet to the beginning of a tangent curve concave Northwesterly having a radius of 90.00 feet;

thence Southwesterly and Westerly along said curve through a central angle of 90°00';

thence North 66°00' West, 150.00 feet;

thence West 181.47 feet to the beginning of a tangent curve concave Southeasterly having a radius of 100.00 feet and that is at its Westerly terminus to the center line of the 60.00 foot easement described as Parcel One in the deed to William A. Wood et ux., recorded June 29, 1972 as Instrument No. 24203 in Book 2408, Page 368 of Official Records in the Office of the County Recorder of said County, said point of tangency being at the Northeasterly terminus of that line in said deed described as having a bearing of North 24°20' East and a length of 250.04 feet;

thence Southwesterly along said curve through a central angle of 65°40' to said point of tangency;

thence along said center line as described in said Parcel One, South 24°20' West, 250.04 feet to the beginning of a tangent curve concave Northwesterly having a radius of 100.00 feet;

thence Southwesterly along said curve through a central angle of 58°00', South 82°20' West, 262.44 feet to the beginning of a tangent curve concave Southeasterly having a radius of 108.29 feet;

thence Southwesterly along said curve through a central angle of 67°20' to the beginning of a reverse curve having a radius of 30.00 feet;

thence Southerly, Westerly and Northerly along said curve through a central angle of 165°00' North, 229.51 feet to the beginning of a tangent curve having a radius of 40.00 feet;

thence Northwesterly and Southwesterly along said curve through a central angle of 148°40', South 31°20'

West, 156.79 feet to the beginning of a tangent curve concave Northerly having a radius of 100.00 feet;

thence Westerly along said curve through a central angle of 100°40', North 48°00' West, 184.99 feet to the beginning of a tangent curve concave Southwesterly having a radius of 100.00 feet;

thence Northwesterly along said curve through a central angle of 42°02' and South 89°58' West, 41.58 feet to the intersection with the center line of Ladera Lane.

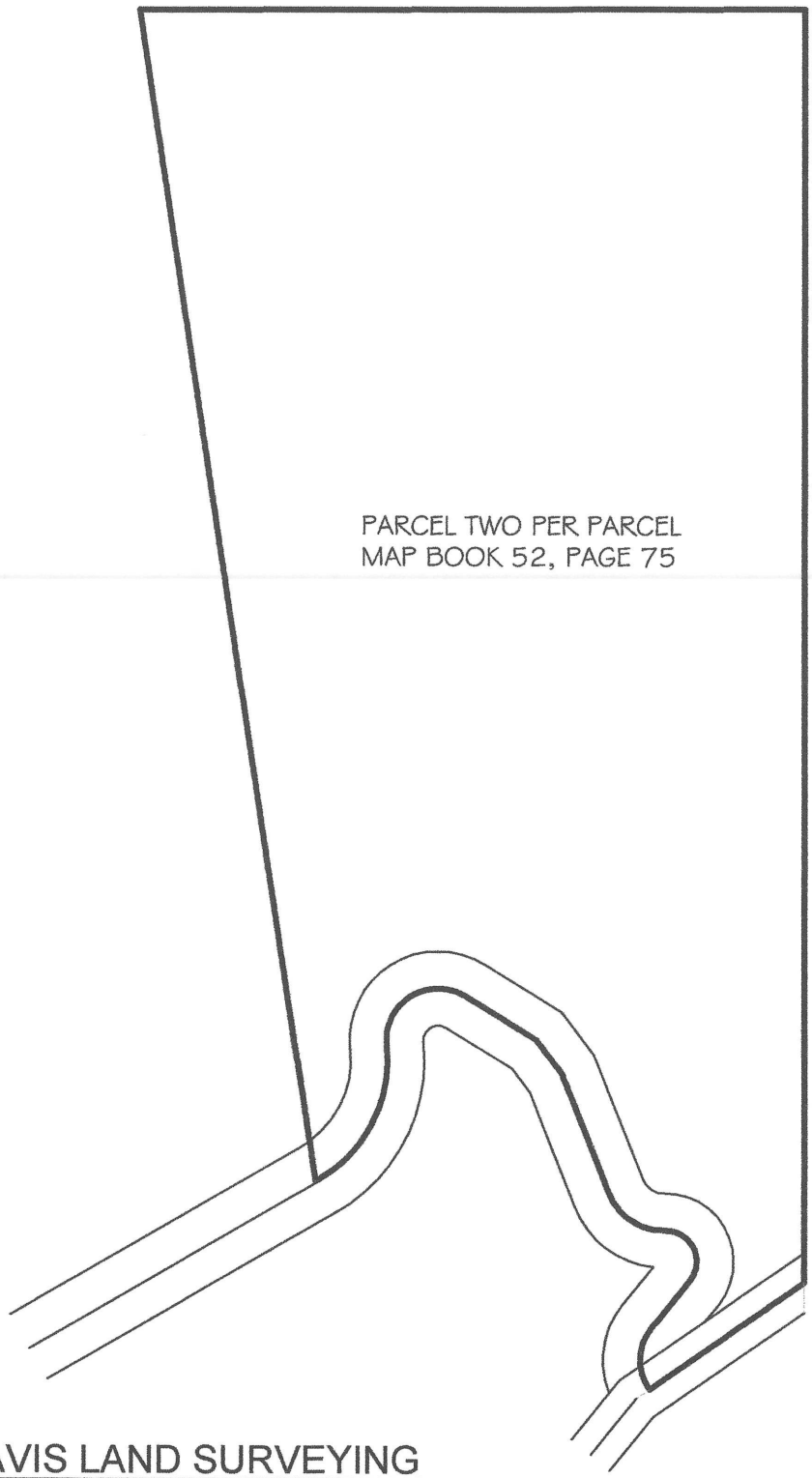
Parcel Three:

An easement for private road and public utilities, as reserved in deeds recorded November 25, 1997 as Instrument No. 97-072012 and December 19, 1997 as Instrument No. 97-077795, both of Official Records, over those portions of Parcel One and Three of Parcel Map No. 14,230 as recorded in Book 52, Pages 74 through 77 of Parcel Maps, shown and described as:

"28.72' private road and public utility esmt. in favor of Parcels One and Two per this map", "31.28' private road and public utility esmt. in favor of Parcels Two and Three per this map" and "30' private road and public utility esmt. in favor of Parcels One and Two per this map".

APN: 155-240-16

EXHIBIT MAP



SCALE 1 inch = 150 feet

DAVIS LAND SURVEYING
comprehensive land surveying and project consulting
44 HELENA AVENUE
SANTA BARBARA, CALIFORNIA 93101
L.S.5742 (805)564-8756

EXHIBIT B

EXHIBIT A

Those strips of land for right of way of Montecito County Water District in Toro Canyon, County of Santa Barbara, State of California, the centerlines of which are shown on Record of Survey Book 21, pages 144 thru 147 filed in the said County Recorder's Office and incorporated herein as Exhibit B.

End of Description

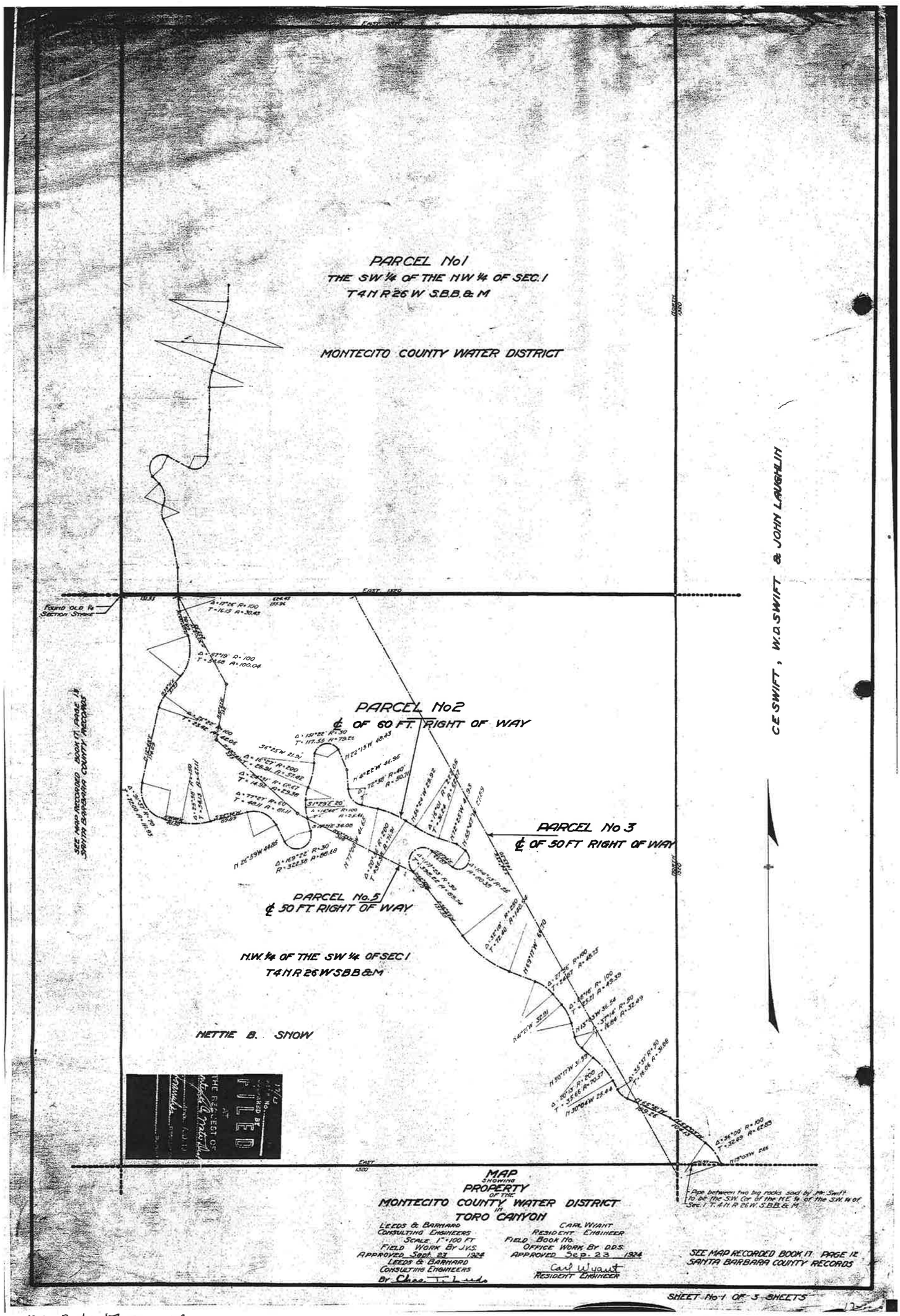
See attached Exhibit B

Prepared by:

Stephen K. Davis, PLS 5742

9/10/18
Date

Exhibit "B"



RS Book 17, Page 13

RS Book 17, Page 12

3 of 4

MAP
SHOWING
RIGHT OF WAY
FOR THE
MONTECITO COUNTY WATER DISTRICT
ON THE
NETTIE B. SNOW PROPERTY

LEEDS & DARRARO — CHAS. WRIGHT
CONSULTING ENGINEERS — RESIDENT ENGINEER

SCALE 1 INCH = 100 FEET — OFFICE WORK BY JAS.
FIELD WORK BY JAS. — FIELD BOOK No. SI

APPROVED Sept. 23 1898

Carl Wyant
RESIDENT ENGINEER

SHEET No 2 OF 3 SHEETS

INDEXED
FILED AT THE REQUEST OF Montecito County Water D
A.D. 19

NETTIE B. SNOW

SEE MAP RECORDED BOOK 17 PAGE 11
SANTA BARBARA COUNTY RECORDS

NE¼ OF THE SE¼
OF SEC. 2 T4N. R26W.
S.B.B.&M.

NETTIE B. SNOW

NW¼ OF THE SE¼
OF SEC. 2 T4N. R26W.
S.B.B.&M.

NETTIE B. SNOW

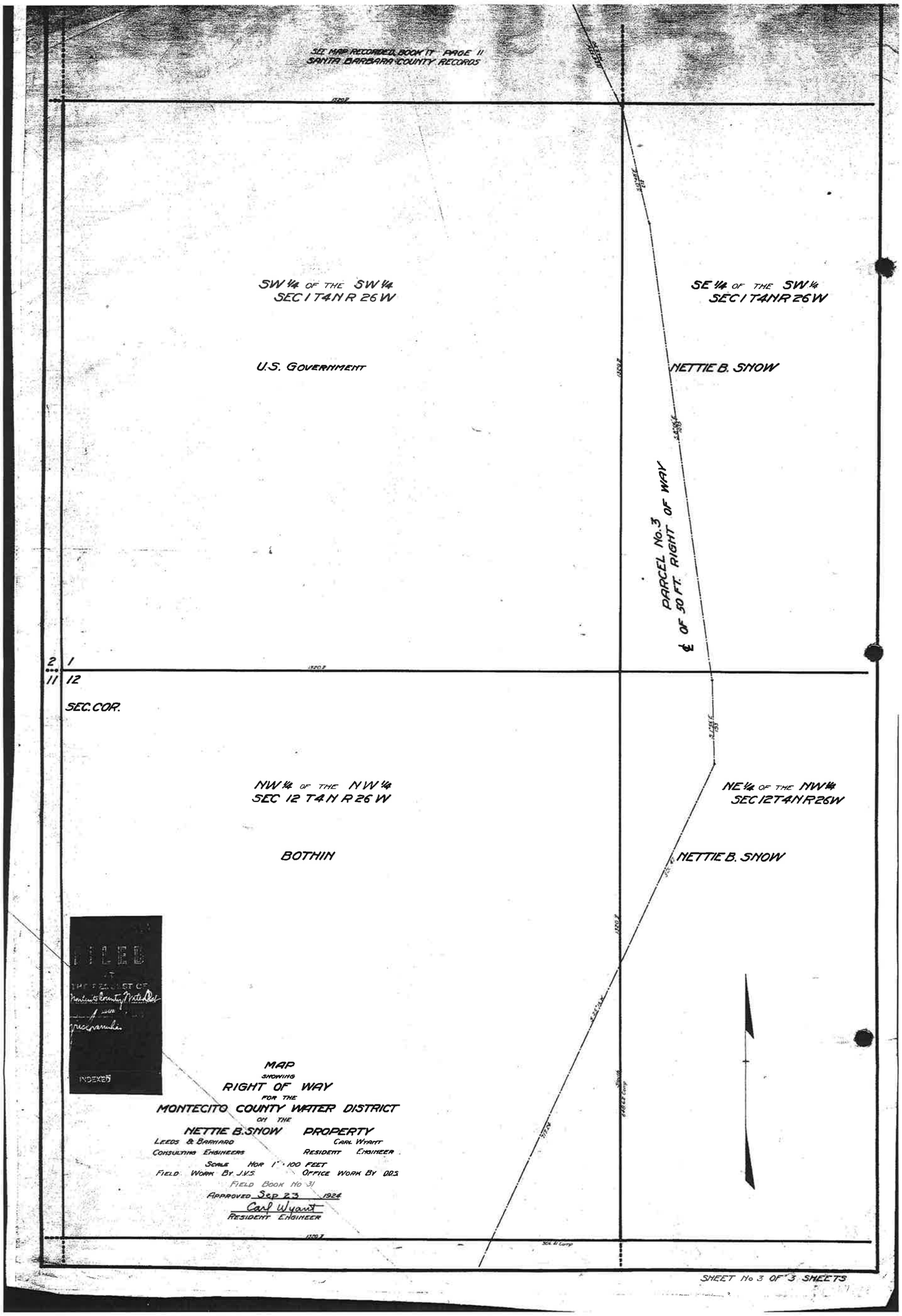
PARCEL No 4
50 FT RIGHT OF WAY

CENTER LINE OF

Northerly end of course No 47 of Item No.1
Recorded in Book 81 of Official Records Page
349 Santa Barbara County Records

Found 3/4" Iron Pipe
Replaced with Pipe

SHEET No 2 OF 3 SHEETS



RS Book 17, Page 11

4 of 4

EXHIBIT C

EXHIBIT A

Those strips of land for right of way of Montecito County Water District in Toro Canyon, County of Santa Barbara, State of California, the centerlines of which are shown on Record of Survey Book 17, pages 11 thru 13 filed in the said County Recorder's Office and incorporated herein as Exhibit B.

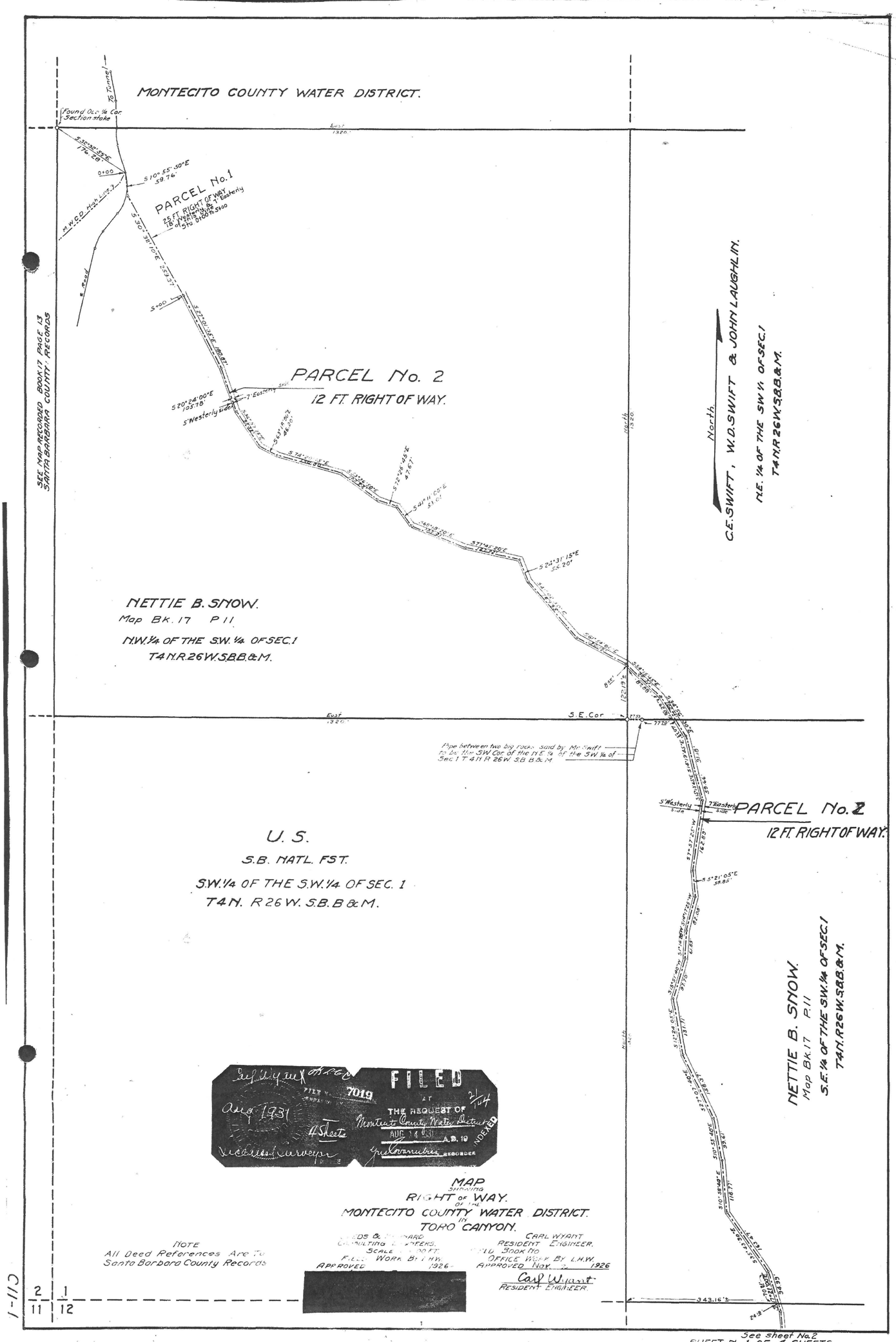
End of Description

See attached Exhibit B

Prepared by:

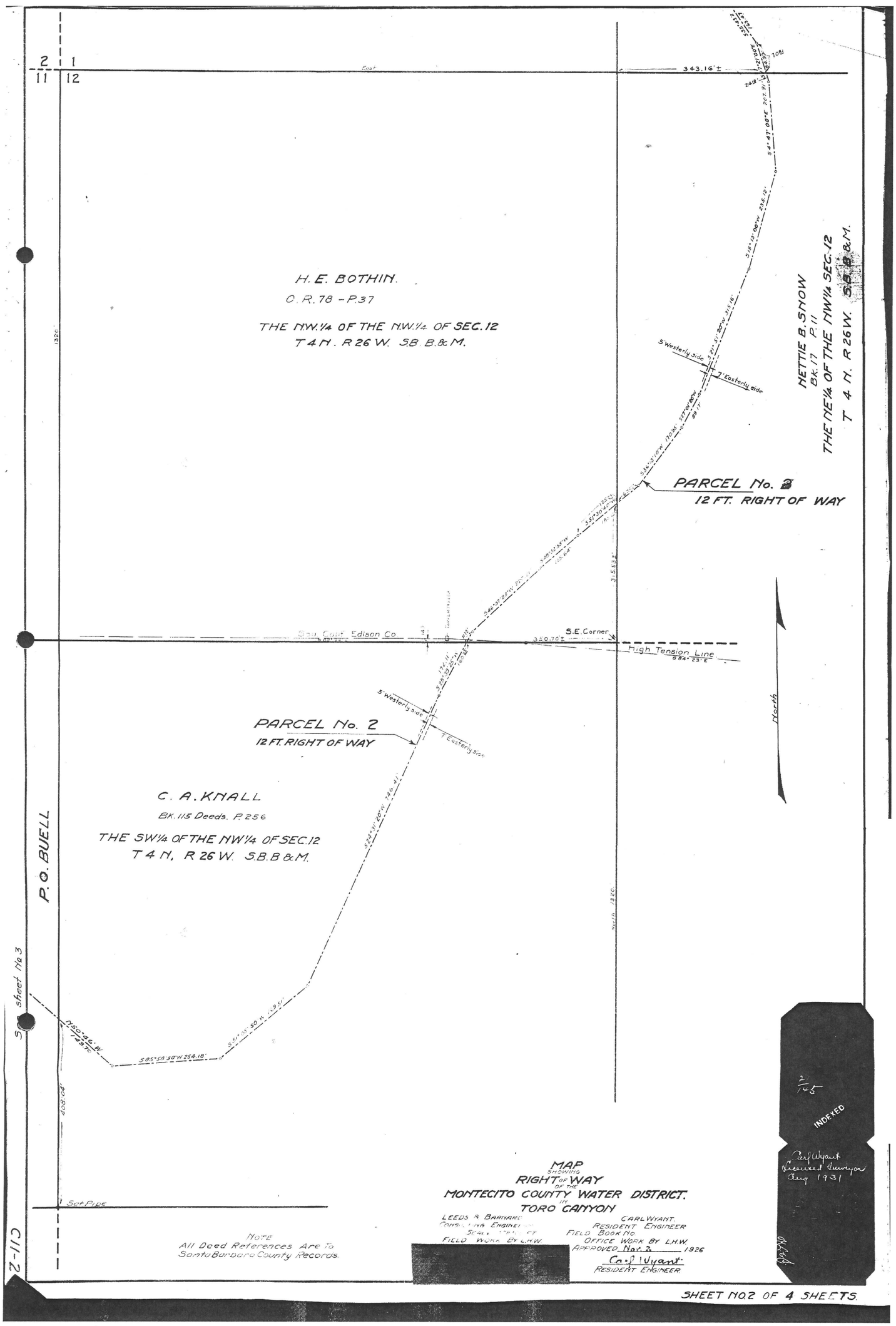
Stephen K. Davis, PLS 5742

9/10/18
Date



RS Book 21, page 144

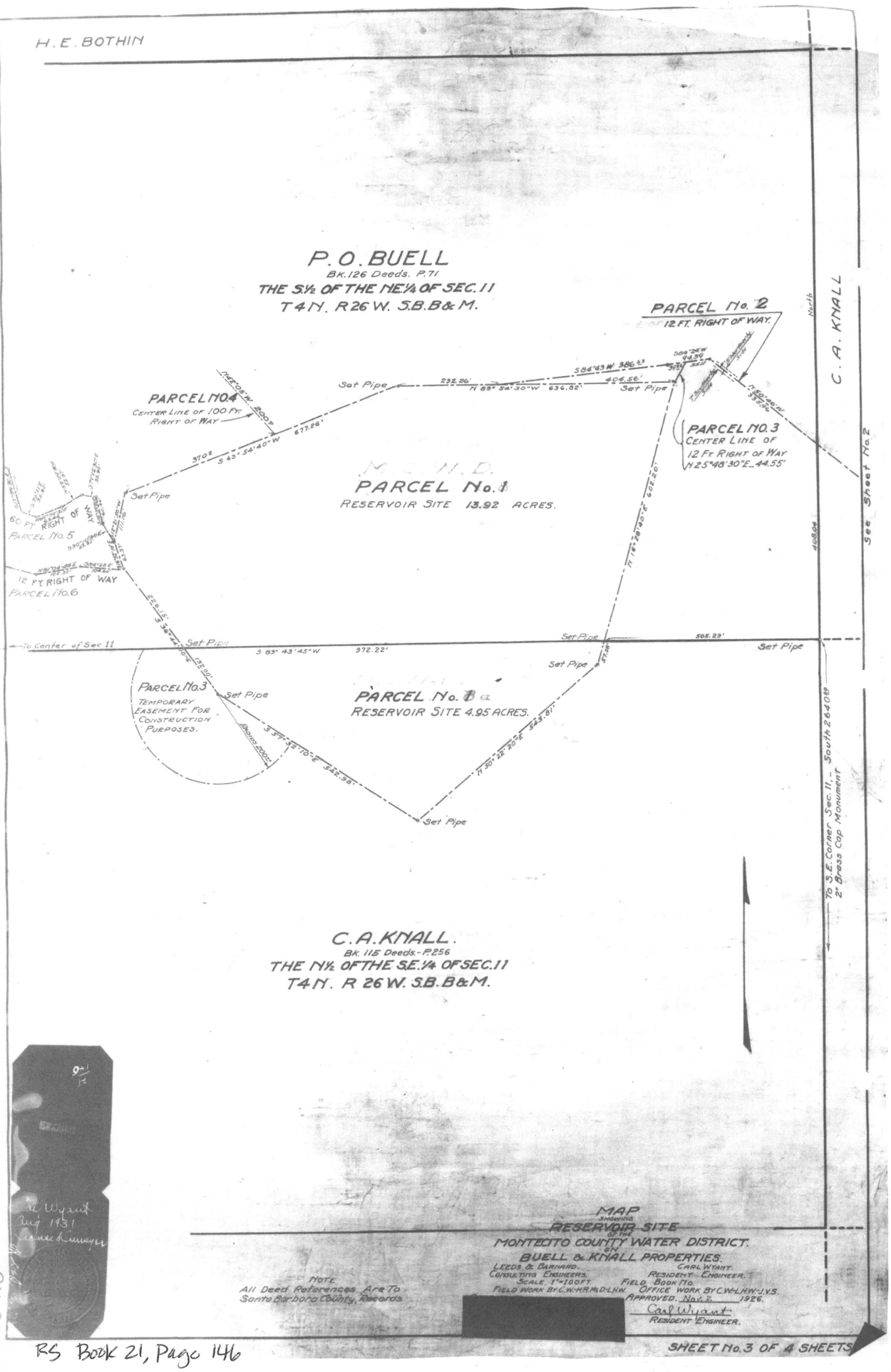
2 of 5



RS Book 21, page 145

3 of 5

B.21-P.146



RS Book 21, Page 146

RS Book 21, Page 141

5 of 5

SHEET NO. 4 OF 4 SHEETS.

L. SWIFT
Maps and Surveys, Bk. 11, P. 142

R.R. WHITEHEAD
Official Records Bk. 78, P. 37
S.E. 1/4 OF THE N.W. 1/4 OF SEC. 11
T. 4 N., R. 26 W., S.B.B. & M.

P.O. BUELL
Bk. 126 Deeds P. 71
S. 1/2 OF THE N.E. 1/4 OF SEC. 11
T. 4 N., R. 26 W., S.B.B. & M.

PARCEL NO. 1
CENTER LINE OF 60 FT. RIGHT OF WAY

PARCEL NO. 5
CENTER LINE OF 60 FT.
RIGHT OF WAY

PARCEL NO. 3 CENTER
LINE OF 12 FT. RIGHT OF WAY

PARCEL NO. 6
CENTER LINE OF 12 FT. RIGHT OF WAY

RESERVOIR SITE

FOUND 2" PIPE

N89°43'45"E 1072.19'

663± ft

663± ft

SET 1" PIPE

N89°43'45"E 1176°±

RESERVOIR SITE

PARCEL NO. 2
CENTER LINE OF 60 FT.
RIGHT OF WAY

PARCEL NO. 7
CENTER LINE OF 60 FT.
RIGHT OF WAY

2196 FOUTH

MRS. KNIGHT
Maps and Surveys, Bk. 11, P. 150

LADERA LANE

TIE 30°40'20" 52.56'

PARCEL NO. 4
CENTER LINE OF 12 FT.
RIGHT OF WAY

P.O. BUELL
Bk. 126, Deeds P. 71
THE E. 1/2 OF THE N.E. 1/4 OF THE S.W. 1/4 OF SEC. 11
T. 4 N., R. 26 W., S.B.B. & M.

C.A. KNALL
Bk. 115 Deeds P. 256
N. 1/2 OF THE S.E. 1/4 OF SEC. 11
T. 4 N., R. 26 W., S.B.B. & M.

R.R. WHITEHEAD
Bk. 167 Deeds P. 49
THE N.W. 1/4 OF THE N.E. 1/4
OF THE S.W. 1/4 OF SEC. 11
T. 4 N., R. 26 W., S.B.B. & M.

NOTE
All Deed References Are To
Santa Barbara County Records.

MAP
SHOWING
RIGHT OF WAYS
FOR THE
MONTECITO COUNTY WATER DISTRICT
THROUGH
BUELL AND WHITEHEAD
PROPERTY

LEEDS & BARNARD — CONSULTING ENGINEERS
CARL WYANT — RESIDENT ENGINEER
SCALE HOR. 1" = 100 FEET
FIELD WORK BY L.H.W
OFFICE WORK BY J.V.S.
FIELD BOOK NO.
APPROVED Nov 2 1926.
Carl Wyant
RESIDENT ENGINEER

C11-4

EXHIBIT D

Exhibit A

That portion of Parcel Two as shown on Parcel Map No. 14,230 filed in Parcel Map Book 52, page 75 in the Office of the County Recorder, County of Santa Barbara, State of California, being a 50 foot strip of land the centerline of which is described as follows:

Commencing at the northeasterly corner of said Parcel Two, thence along the easterly boundary of said Parcel Two, South 0°00'36" West, a distance of 673.29 feet to the **True Point of Beginning**;

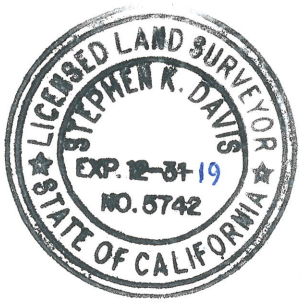
Thence 1st, leaving said easterly boundary, South 25°16'37" West, a distance of 335.41 to a point on the southerly boundary of said Parcel Two and a point on a curve concave northeasterly, having a radius of 48.00 feet and a central angle of 69°49'21", said point having a radial bearing of South 37°44'21" West.

The side lines of said strip shall be shortened or lengthened so as to terminate at said easterly and southerly boundaries of said Parcel Two.

End of Description

See attached Exhibit B

Prepared by:



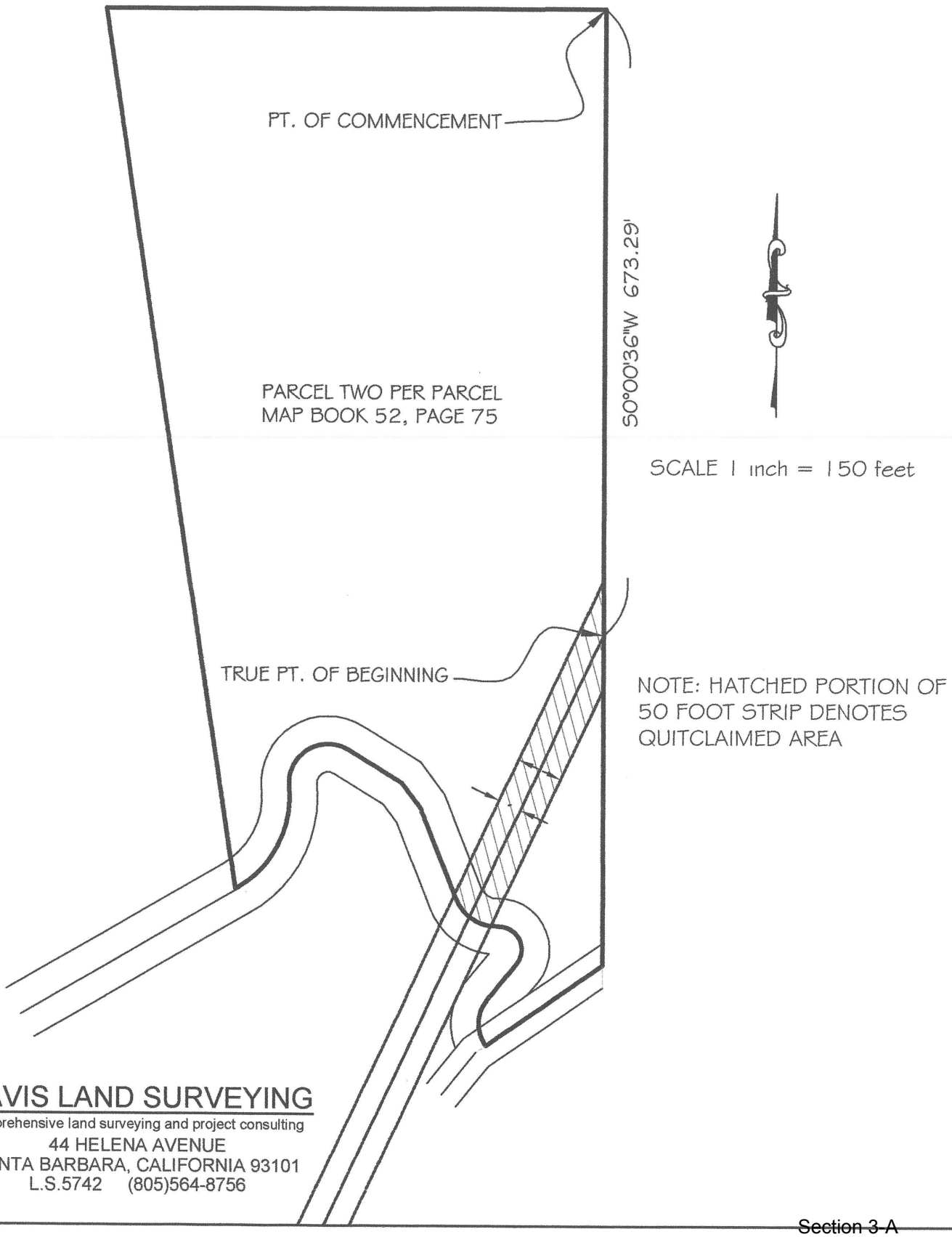
S. K. Davis

Stephen K. Davis, PLS 5742

8/2/18

Date

EXHIBIT B



DAVIS LAND SURVEYING
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SANTA BARBARA, CALIFORNIA 93101
L.S.5742 (805)564-8756

MONTECITO WATER DISTRICT
MEMORANDUM

SECTION: **3-B**

DATE: **NOVEMBER 13, 2018**

TO: **OPERATIONS COMMITTEE**

FROM: **ENGINEERING MANAGER**

SUBJECT: **JUNCAL DAM AND JAMESON RESERVOIR ANNUAL INSPECTION BY DSOD**

RECOMMENDATION:

For information only.

DISCUSSION:

On June 20, 2018, the California Department of Water Resources (DWR) Division of Safety of Dams (DSOD) visited Juncal Dam, escorted by District staff, to perform their routine annual inspection of the main dam, multiple arch dam, and ridgeline located between the two dams. On September 6, 2018, District staff submitted the annual Instrumentation and Monitoring Report (Attachment 1) to DSOD which summarizes the piezometer, ridge drains, and arch seepage readings from the previous year. On September 11, 2018, staff then provided the Dam Deflection Report (Attachment 2) summarizing observed deflections over the reporting period. On November 1, 2018, the District received an inspection report (Attachment 3) from DSOD containing their recommendations and certification of dam status.

Based on the results of the DSOD inspection, DSOD reported ***"From the known information and visual inspection, the dam, reservoir, and the appurtenances are judged safe for continued use…"***

The report also provided the three following observations and recommendations:

1) Remove all trees and vegetation growing out of all concrete on a vigilant year-round basis;
2) Consideration of an updated evaluation of this dam as suggested by the District Engineer (including seismic, geologic, and instrumentation monitoring program) is encouraged; and
3) The District plans to refurbish the two 36-inch gate valves through the dam to allow for redundancy and allow safe valve operation without threat of uncontrolled water loss.

To address Item 1, the District's Dam Caretaker has already addressed the removal of vegetation at the main dam and photos of this work have been provided to DSOD (See the attached photos). The Dam Caretaker will remain vigilant about the removal of any vegetation near any of the dam sites.

To address item 2, the District will pursue a seismic stability analysis of the main dam, multiple arch dam, and ridgeline. Staff will provide the results to DSOD as recommended. Additionally, the District will reassess the Monitoring Program to determine the necessity of the weir readings by the Dam Caretaker.

The District must develop a plan in the coming months to address Item 3; refurbishing the two 36-inch emergency release gate valves. These valves must be operational in the event of a spilling dam and additional rains threatening to overtop the dam. As of now, the two 36-inch original 1920s valves are operational but are unreliable. It is feasible either of the valves could get stuck during annual operation, thus emptying the reservoir. The proposed solution will add redundant valves downstream of the existing valves to act as the long-term emergency release valves. These will need to be fully engineered and plans approved by DSOD prior to construction.

ATTACHMENTS:

1) Juncal Dam Instrumentation and Monitoring Report
2) Juncal Dam Deflection Survey
3) DSOD Inspection Report
4) Before and after photos of vegetation removal

MONTECITO WATER DISTRICT

September 6, 2018

Sharon K. Tapia, Chief
Division of Safety of Dams
2200 X Street, Room 200
Sacramento, California 95818

Attention: Philip Lee

Re: Juncal Dam No. 34-2: Santa Barbara County – Report on Dam Operation and Conditions for Reporting Period January 2013 – May 2018

Dear Ms. Tapia:

The Montecito Water District (District) is submitting this report on operating conditions observed at the Juncal Dam for the period from January 2013 through May 2018. The last report submitted by the District to the Division of Safety of Dams (DSOD) dated August 15th, 2013 reported on operating conditions through July of 2013.

Please find attached to this report graphs and tabular data of auxiliary dam ridge conditions. The District continues to carefully monitor and collect data regarding dam operating conditions with a focus on the auxiliary dam ridge. The data is collected by the District's full time dam keeper who resides at the Juncal Dam site. The dam keeper's primary function is to monitor and record dam operations and report any operational anomalies.

It should be noted the District property at Juncal Dam was burned entirely during the Thomas Fire in December 2017. The fire did not significantly impact any of the monitoring program infrastructure except for the loss of the plastic tubing from the ridge drains to Weir 2, eliminating inflow into Weir 2. The presence of the fire also delayed District employee's presence at the property and therefore reduced the frequency of reads from December 2017 through May 2018. The District caretaker has now returned to the property and is monitoring instrumentation data with the same frequency as before the fire.

Rainfall and Stage of Lake

Below is a summary of the monthly rainfall that occurred at Jameson Lake from 2013 to May 2018. Please see Appendix A for a complete record of historical rainfall data for Jameson Lake dating back to 1925.

January 2013 – December 2013

Rainfall amounts recorded in 2013 were below the historical average. The cumulative historical average rainfall that occurs between the months of January

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info@montecitowater.com
www.montecitowater.com

and December is 28.85 inches. However, in 2013 the lake received 4.69 inches which is approximately 16% of the historical average.

Table 1 - Rainfall Recorded at Jameson Lake - 2013 Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2013	1.47	0.25	1.01	0.05	0.43	0.00	0.02	0.00	0.00	0.20	0.93	0.33	4.69
Historical Average	6.34	6.83	4.69	2.20	0.45	0.08	0.03	0.02	0.28	0.85	2.60	4.48	28.85

January 2014 – December 2014

Rainfall amounts recorded in 2014 were 67% of the historical average. The majority of rainfall occurred during the months of March 2014 and December 2014. The historical average rainfall for the months of March and December are 4.69 inches and 4.48 inches respectively. During 2014, rainfall recorded in March 2014 was 5.15 inches and rainfall recorded in December 2014 was 7.42 inches.

Table 2 - Rainfall Recorded at Jameson Lake - 2014 Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2014	0.02	4.36	5.15	1.24	0.17	0.00	0.00	0.13	0.00	0.00	0.86	7.42	19.35
Historical Average	6.34	6.83	4.69	2.20	0.45	0.08	0.03	0.02	0.28	0.85	2.60	4.48	28.85

January 2015 – December 2015

Rainfall amounts recorded in 2015 were 24% of the historical average with a total amount of 6.98 inches. The months with the highest rainfall in 2015 were January and July. These months received 1.29 inches of rain and 1.39 inches, respectively.

Table 3 - Rainfall Recorded at Jameson Lake - 2015 Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2015	1.29	0.94	0.74	0.57	0.37	0.62	1.39	0.00	0.14	0.25	0.29	0.38	6.98
Historical Average	6.34	6.83	4.69	2.20	0.45	0.08	0.03	0.02	0.28	0.85	2.60	4.48	28.85

January 2016 – December 2016

Rainfall amounts recorded in 2016 were again below average, with a total rainfall amount of 17.84 inches, which is 62% of the historical average. The reservoir storage was at 9% at the end of December 2016, with the stage of lake at 61-ft below the dam spillway.

Table 4 - Rainfall Recorded at Jameson Lake - 2016 Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2016	4.66	2.63	4.36	0.32	0.09	0.00	0.00	0.00	0.00	1.07	1.16	3.55	17.84
Historical Average	6.34	6.83	4.69	2.20	0.45	0.08	0.03	0.02	0.28	0.85	2.60	4.48	28.85

January 2017 – December 2017

The lake reached its lowest level in decades in December 2016 (9% or 470 AF storage) due to the ongoing drought. However, the rainfall amounts measured in January 2017 and February 2017 were 11.07 inches and 11.59 inches respectively. This rainfall for January 2017 and February 2017 are 75% above the monthly average of 6.34 inches and 70% above the monthly average of 6.83 inches respectively. The lake recovered from 9% to 55% (2,695 AF storage) due to the early 2017 storms. Despite heavy rainfall in January and February, rainfall totals for 2017 at Jameson Lake were 14% below the historical annual averages.

Table 5 - Rainfall Recorded at Jameson Lake - 2017 Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2017	11.07	11.59	1.09	0.35	0.28	0.00	0.00	0.00	0.23	0.00	0.23	0.00	24.84
Historical Average	6.34	6.83	4.69	2.20	0.45	0.08	0.03	0.02	0.28	0.85	2.60	4.48	28.85

January 2018 – May 2018

As of May 2018, 13.27 inches of rain have been recorded at Jameson Lake, 25% below the historical average rainfall through May. March 2018 rainfall was above average but all other months have been well below average. At the end of May 2018, the stage of lake remains steady at approximately 18-ft below the dam spillway, or 60% (3,243 AF) of full lake capacity of 5,430 AF.

Table 6 - Rainfall Recorded at Jameson Lake – 2018 Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2018	3.60	0.27	9.06	0.04	0.30	-	-	-	-	-	-	-	13.27
Historical Average	6.34	6.83	4.69	2.20	0.45	0.08	0.03	0.02	0.28	0.85	2.60	4.48	28.85

Auxiliary Dam Piezometers

There are fourteen (14) piezometers in the auxiliary dam ridge. These piezometers were installed in 1985. The fourteen piezometers were installed at two depth ranges, 2190-ft and 2150-ft. Piezometers 2,3,6,8,10,12 and 14 are the deep piezometers with bottom elevations in the 2150-ft range. Piezometers 4,5,7,9,11 and 13 are the shallow piezometers with bottom elevations in the 2190-ft range. More detailed information on the piezometer array can be found in the *Piezometer Installation, Auxiliary Dam Ridge – Juncal Dam* report by Lindvall, Richter and Associates dated June 20th, 1985. Please see Appendix B for a schematic which shows the piezometer array. Also see Appendix C which contains the piezometer graphs as well as tabular data for each reporting period.

It is noted that there is an irregularity in the data recorded at several of the piezometers in which these piezometers reflect a sudden drop in level with no significant change in the lake stage. Discussions with the dam keeper indicate that these water level

fluctuations are a function of the sounder probe sensitivity and its operating characteristics.

January 2013 – December 2013

This reporting period experienced below average rainfall amounts, with 16% of the annual historical average falling. Due to the dry conditions, the lake level steadily declined during the year. The shallower piezometers (4, 5, 7, 9, 11 and 13) did not indicate the presence of water. Levels in the deeper piezometers (2, 3, 6, 8, 10, 12 and 14) declined throughout the year.

There is an unexplained irregularity in the data recorded at piezometers 8, 10, and 14 on July 29, which reflects a sudden drop in level with no significant change in the lake stage. As discussed above, this irregularity is likely due to probe sensitivity.

January 2014 – December 2014

This reporting period also experienced below average rainfall amounts, with the majority of the rainfall occurring during the months of March and December. The storage reservoir began the year at 29% capacity and declined throughout the year, reaching 22% capacity at the end of December 2014. As expected during periods with low lake levels, the shallower piezometers (4, 5, 7, 9, 11, and 13) did not indicate the presence of water. The deeper piezometers at 2, 3, 6, and 12 also did not indicate the presence of water. The deeper piezometers at 8, 10, and 14 dropped as the stage of lake declined.

January 2015 – December 2015

Rainfall amounts continued below average in this reporting period, and the lake stage continued to drop. At the end of December 2015, the reservoir storage reached 15% of capacity. The piezometers that did not indicate the presence of water in 2014 (2, 3, 4, 5, 6, 7, 9, 11, 12, and 13) also did not indicate the presence of water in 2015. Piezometer 8 reached recorded water in January and February, but then reached the bottom elevation. As the stage of lake declined, water elevations at piezometers 10 and 14 also dropped.

Unexplained irregularities in the data recorded at piezometer 10 on August 25, and recorded at piezometer 14 on August 11 and August 14, which reflects a sudden drop in the level with no significant change in the lake stage. As previously mentioned, this irregularity is likely due to probe sensitivity.

January 2016 – December 2016

This reporting period also experienced below average rainfall amounts. As the lake stage continued to decline, the piezometers continued to drop in elevation. As expected, piezometers 2 – 9, and 11 – 13 continued to indicate the absence of water. Piezometers 10 and 14 slowly dropped as the lake stage steadily declined throughout the year.

Unexpected irregularities in the data reflecting a sudden drop in the level with no significant change in the lake stage occur in the data for piezometer 14 on March 21 and April 11, and in piezometer 10 on April 11 and July 4, likely due to probe sensitivity.

January 2017 – December 2017

During this reporting period, rainfall fell heavy in January and February but total rainfall amounts for the year were still 14% below the historical average. Due to the above average rainfall in January and February, the lake stage increased from 9% in December 2016 to 55% by May 2017 and with low rainfall after February, stage of lake steadily declined to 48% at the end of December 2017 with water deliveries existing to Montecito. As expected, the level of all of the deeper piezometers (2, 3, 6, 8, 10, 12, and 14) increased after the early 2017 rainfall events to within typical ranges observed in previous years with similar stage of lake. The remaining piezometers (4, 5, 7, 9, 11, and 13) did not indicate the presence of water.

January 2018 – May 2018

During this reporting period, rainfall amounts remain 25% below the historical average for this period with an above average rainfall total in March 2018. The level of the deeper piezometers (2, 3, 6, 8, 10, 12, and 14) has steadily increased throughout 2018 and experienced a slight jump up in March 2018 due to rainfall and increasing stage of lake. The remaining piezometers (4, 5, 7, 9, 11, and 13) did not indicate the presence of water.

Auxiliary Dam Ridge Horizontal Drainage System

The auxiliary dam ridge horizontal drainage system was installed in 1992. The drainage system consists of fifteen near-horizontal drain holes in the auxiliary dam ridge. The drainage system was installed in an attempt to lower the piezometric levels within the ridge to an elevation of approximately 2165. More detailed information on the ridge drain system can be found in the *Juncal Auxiliary Dam Ridge Drainage Program Specifications* by Lindvall, Richter, Benuska dated January 24th, 1992 as well as the *Juncal Auxiliary Dam Ridge Drainage Emplacement* report by Lindvall, Richter, Benuska dated January August 26th, 1992. Please see Appendix B for a schematic which shows the locations of the horizontal ridge drains and Appendix D, which contains the horizontal ridge drain graphs as well as tabular data for the reporting period.

January 2013 – December 2013

During this reporting period the rainfall recorded at Jameson Lake was 16% of the historical average. The lack of rainfall caused the stage of lake to steadily decline throughout the year, with the lake 29% full at the end of December.

Table 7 compares ridge drain flows from September 2004 to those recorded in June 2013. These periods had a similar stage of lake and rainfall amounts. As shown in the table and as seen in the attached graphs, the flows from all ridge drains appear to be within ranges previously observed under similar conditions.

Table 7 – Comparison of Ridge Drain Flows (2004 vs. 2013)

Date	Auxiliary Dam Horizontal Ridge Drain Flows (gpm)																Lake Stage (ft)
	I-1	I-2	I-3	II-4	II-5	II-6	III-7	III-8	III-9	IV-10	IV-11	IV-12	V-13	V-14	V-15	VI	
9/7/04	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	-	2194.90
6/3/13	0.0	0.0	0.0	0.0.	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	2194.95

January 2014 – December 2014

During this reporting period, the total rainfall recorded at Jameson Lake was 67% of the historical average, with the majority of the rainfall occurring during the months of March and December. Table 8 shows highest ridge drain flows from 2014, which occurred in February 2014. The stage of lake remained below historical records and continued to decline all year, thus no comparison of similar conditions is available. At the end of December 2014, the reservoir storage capacity was at 22%.

Table 8 –Ridge Drain Flows (2014)

Date	Auxiliary Dam Horizontal Ridge Drain Flows (gpm)																Lake Stage (ft)
	I-1	I-2	I-3	II-4	II-5	II-6	III-7	III-8	III-9	IV-10	IV-11	IV-12	V-13	V-14	V-15	VI	
2/24/2014	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	2182.90

January 2015 – December 2015

During this reporting period, the total rainfall recorded at Jameson Lake was 24% of the historical average, continuing the dry conditions. There was no flow through the ridge drains during 2015. The stage of lake continued to remain well below historical records, and declined through the year. At the end of December 2015, the storage of the reservoir was at approximately 15% of capacity.

January 2016 – December 2016

During this reporting period the total rainfall recorded at Jameson Lake remained below the historical average. The rainfall recorded in 2015 was 62% of the historical average. The stage of lake continued to remain below historical records, and declined through 2016. At the end of December 2016, the reservoir storage was at 9% of capacity. Due to the persisting dry conditions, there was no flow through the ridge drains during 2016.

January 2017 – December 2017

During this reporting period, rainfall fell heavy in January and February but total rainfall amounts for the year were still 14% below the historical average. Due to the above average rainfall in January and February, the lake stage increased sharply from 9% in December 2016 to 55% by May 2017 and with low rainfall after February, stage of lake steadily declined to 48% at the end of December 2017 with water deliveries existing to Montecito.

Similarly, ridge drain flows also increased significantly in early 2017 following the heavy rainfall in January and February. All ridge drains registered flow starting in early 2017. Ridge drains 6, 7, and 9 increased sharply to higher levels than typically seen historically but after 2 months reduced to typical ranges. This is likely due to the ridge being dry for several years. Additionally, ridge drains that rarely flow such as ridge drains 1, 2,3 , 10, 11, and 12 all showed flow in early 2017 before settling into a lower flow rate.

January 2018 – May 2018

During this reporting period, rainfall amounts remain 25% below the historical average for this period with an above average rainfall total in March 2018. Table 9 compares the ridge drain from April 2018 to those recorded in 2003, 2007, and 2009. These periods had a similar stage of lake. As shown in the table and as seen in the attached graphs, the flows in the ridge drains recorded in April 2018 are greater than those observed at a similar stage of lake and also the presence of flow in ridge drains 1, 4, 11, and 12 which were not present in 2003, 2007 or 2009. The rainfall during the early 2017 period was exceptionally high and likely contributed to the higher flows. The District will continue to monitor the ridge drains.

Table 9 – Comparison of Ridge Drain Flows (2009 vs. 2018)

Date	Auxiliary Dam Horizontal Ridge Drain Flows (gpm)																Lake Stage (ft)
	I-1	I-2	I-3	II-4	II-5	II-6	III-7	III-8	III-9	IV-10	IV-11	IV-12	V-13	V-14	V-15	VI	
04/04/2018	**0.5**	**0.4**	**2.7**	**0.1**	**0.0**	**0.6**	**3.8**	**0.3**	**5.9**	**4.7**	**1.3**	**2.2**	**1.8**	**0.5**	**0.5**	**0.0**	**2207.64**
08/16/2009	0.0	0.1	0.1	0.0	2.2	0.1	3.3	0.1	0.2	0.1	0.0	0.0	0.7	0.2	0.2	2.0	2207.94
08/13/2007	0.0	0.2	0.1	0.0	2.0	0.8	2.9	0.1	0.3	0.2	0.0	0.0	0.7	0.3	0.2		2207.30
06/17/2003	0.0	0.0	0.0	0.0	2.2	0.2	7.0	0.1	0.6	0.2	0.0	0.0	1.2	0.3	0.4		2207.79

Observation Wells

As has been noted in previous reports to the DSOD, the observation wells were considered inadequate for monitoring the water elevations in the ridge by Lindvall, Richter Associates (LRA), consultants working with the District and the DSOD. This inadequacy led to the installation of the piezometers in 1985. However, the observation wells continue to be monitored by the District. Please see Appendix E which contains the graphs and tabular data for the observation wells.

The data from the observation wells does show a decrease in water elevations as the stage of lake decreases during the drought years until winter of 2017 when significant rainfall occurred and generally higher trends in 2017 and 2018 with a higher stage of lake.

Multiple Arch and Weir 1 and 2 Flows

The multiple arch dam has a subsurface drainage system comprised of 4-inch diameter clay pipe that is located along the inside perimeter of the multiple arches. The flow from

the multiple arches is measured and referred to as the Multiple Arch flow. The multiple arch flow meter was changed to a magnetic flow meter in April 2018.

Weirs 1 and 2 reflect the auxiliary dam ridge surface and subsurface drainage. Currently, the weirs collect surface water. The weirs were originally installed following the 1969 rainfall year due to water flow emanating from portions of the auxiliary dam ridge. Weir flows were steadily measured through 2016 and discontinued due to the ongoing drought and lack of readings. The weirs were not recorded from May 2017 to May 2018 due to a change in dam caretaker employees and lack of flow. The District is currently considering changing the flow measurement for the weirs to a magnetic flow meter.

Please see Appendix F, which contains the Multiple Arch and Weir 1 and 2 graphs as well as tabular data for each reporting period.

January 2013 – December 2013

Rainfall recorded at Jameson Lake in 2013 was 16% of the historical average. The lack of significant rainfall caused the stage of lake to drop to 29% of capacity at the end of December 2013.

An anomaly in the data occurred in the Multiple Arch flow data, which shows a steady decrease in flow immediately followed by a sharp increase in flow even though the lake stage was steadily declining. Originally it was believed that the decrease in flow was directly related to the very low stage of lake. However, after further investigation, it was determined that roots were impeding flow within this drainage system. District staff cleared the roots from the drainage system, which likely resulted in the sharp increase in flow.

Table 18 compares two periods that had similar rainfall and stage of lake. It is noted that the flows at Weir 1 & 2 for this reporting period are lower than a similar period in 2004, however the Multiple Arch flow is higher. However, at the end of July 2013, the Multiple Arch flow was only 1.3 gpm with a stage of Lake of 2190.95. By the end of 2013, Weir 1 & 2 and the Multiple Arch flow rates had decreased to zero.

Table 18 – Comparison of Multiple Arch and Weir Flows (2004 vs. 2013)

Date	Weir 1 Flow (gpm)	Weir 2 Flow (gpm)	Multiple Arch Flow (gpm)	Lake Stage (ft)
9/20/04	0.10	0.30	1.49	2193.89
7/1/13	0.03	0.02	6.25	2193.33

January 2014 – December 2016

No flow was recorded in Weir 1, Weir 2 or the Multiple Arch data between January 2014 and December 2016. This is likely due to the exceptionally low lake stage, which dropped to 9% of capacity by the end of 2016.

January 2017 – May 2018

Rainfall during 2017 increased the stage of lake to 59% of capacity. No flow was

recorded in Weir 1 or Weir 2. The Multiple Arch flow returned in February 2017 and steadily increased to over 100 GPM. This level of flow rate has not been observed since 1995. However, this could be due to the change in measuring devices at the Multiple Arch meter. Starting in April 2018, the use of a magnetic flow meter is much more accurate than the previous bucket and stopwatch method used since the 1990s.

Conclusions

The instrumentation data from the January 2013 through May 2018 reporting period from showed steadily declining trends from 2013 to early 2017 when significant rainfall fell over a two-month period. The response of the piezometers, ridge drains and multiple arch flows were within the expected ranges based on historical observations. The instrumentation data does not indicate any abnormalities during this reporting period. The District caretaker and Engineering Department will continue to collect, analyze and report this data to DSOD.

Please contact me with any questions regarding the data and findings presented in this report.

Respectfully submitted,

Adam Kanold, P.E.
Engineering Manager

Copy: Nick Turner, MWD
Laura Menahen, MWD
David Wong, MWD

PROBER Land Surveying
645 Flora Vista Drive | Santa Barbara, CA 93109 | 805-452-9690 | plssb@cox.net | www.ProberLandSurveying.com

Monitoring Survey Procedure & Results
Juncal Dam
June 22, 2017

1. Initial Station and GNSS Benchmark: Monument well in east side of dirt road 1475' west of gravity dam.
   Base Station Pt. 1001: N.2003905.499, E.6106363.502, EL.2205.002
   State Plane Coordinates, CA0501, Epoch 2004?, Units sFT, Static Obs. from CORS CSST
   Prior Survey by MNS Eng.; CP1 Panel, N.2005148.250, E.6107243.171, ELEV.2230.38

2. Pt.1001 held fixed
   Verify and record GNSS coordinates:

B-0 pt.1002	record Pt.2002	(point key: 1000 series = GNSS; & next session 2000 etc.)
CP Dock pt.1004,	record Pt.2004	
C-4 pt.1005	record Pt. 2005	
C-7 1007	reocrd Pt. 2007	

   Tolerance: measured coordinate should be within +/- 0.025 horizontally & +/- 0.035 vertically

3. Clear line of site & mark center of targets

4. Total Station is setup on B-0 pt.1 with a backsite on CP Dock pt.2;
   A) check B-14 (note: only top of rod visible & point bump is insufficient for precision measurement)
   B) manually flip to F2 on backsite to check instrument & always use digital bubble

4. Manually site targets on Multiple Arch Dam

5. Flip to face two and re-shot each target

6. If the variance is over 0.015, record shot to take average in office & label shot F2

7. Check backsite before accepting series of measurements
   A) Point management: Record points increasing by 100 for each session (i.e., Pt.108 = Pt.208 for next session)

8. Manually site targets on Auxiliary Dam

9. Flip to face two and re-shot each target

10. If the variance is over 0.015, record shot to take average in office & label shot F2

11. Check back-site before pickup

12. Move to Main Dam and set total station on C-4 Pt.4; BS CP11; check CP12; check CP3; turn to CP13 & measured

13. Manually site targets on back of Main Dam

14. Flip to face two and re-shot each target

15. If the variance is over 0.01, record shot to take average in office & label shot F2

16. Check back-site before pickup; turn to CP13 & re-measure; set back-site on CP4

17. Setup on CP Dam pt.3 w/ back-site C-4 pt.4; check CP13 "X on conc."

19. Manually site targets on face of Main Dam

20. Flip to face two and re-shot each target

21. If the variance is over 0.01, record shot to take average in office & label shot F2

22. Check back-site before pickup

Notes based on survey results to improve accuarcy:

1) Smart Targets need to be remarked with sharpie "X" to insure the center-point is clear.

2) Sites from CP3 to the main dam face are at a 71° zenith angle, which is problematic for the total station.

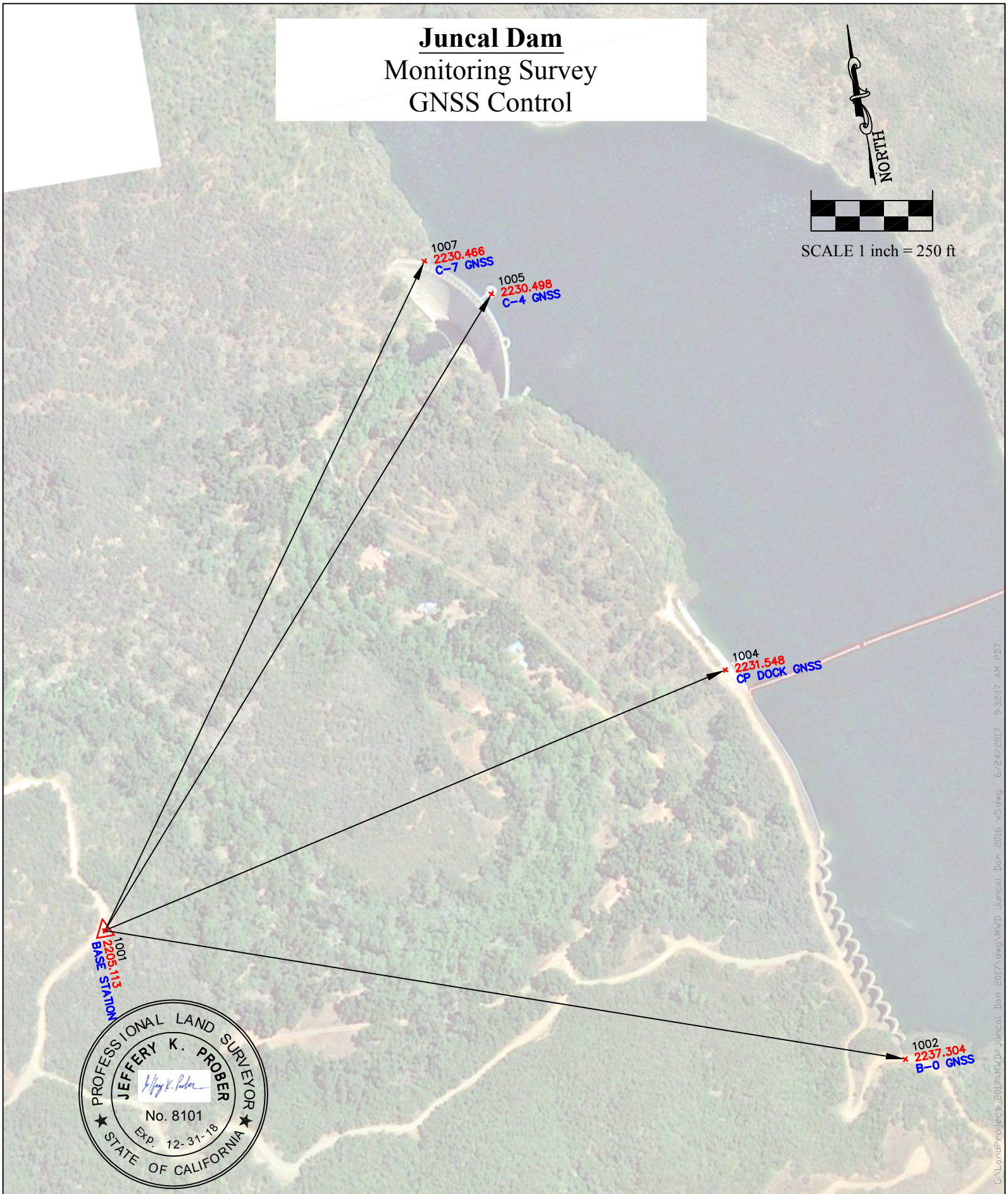
3) A small hole with a 3/16" drill bit need to need to be made in B-14 to insure the rob tip's position.

4) GNSS observation check on C-7 needs confirmation with future GNSS monitoring. Multi-path issues might be cause of the measured variance. MNS Eng. aerial panel (elevation = 2230.38') is 7' westerly. If said panel is determined to be adequate for GNSS observation, it will be employed as a primary vertical benchmark.

5) A third GNSS observation of CP3 Dock is needed to determine it's true CCS83 position
(i.e., average, or exclude on observation)

Preliminary
06/25/2017 9:54:09 AM

Juncal Dam
Monitoring Survey
GNSS Control



PROFESSIONAL LAND SURVEYOR
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Exp. 12-31-18
STATE OF CALIFORNIA

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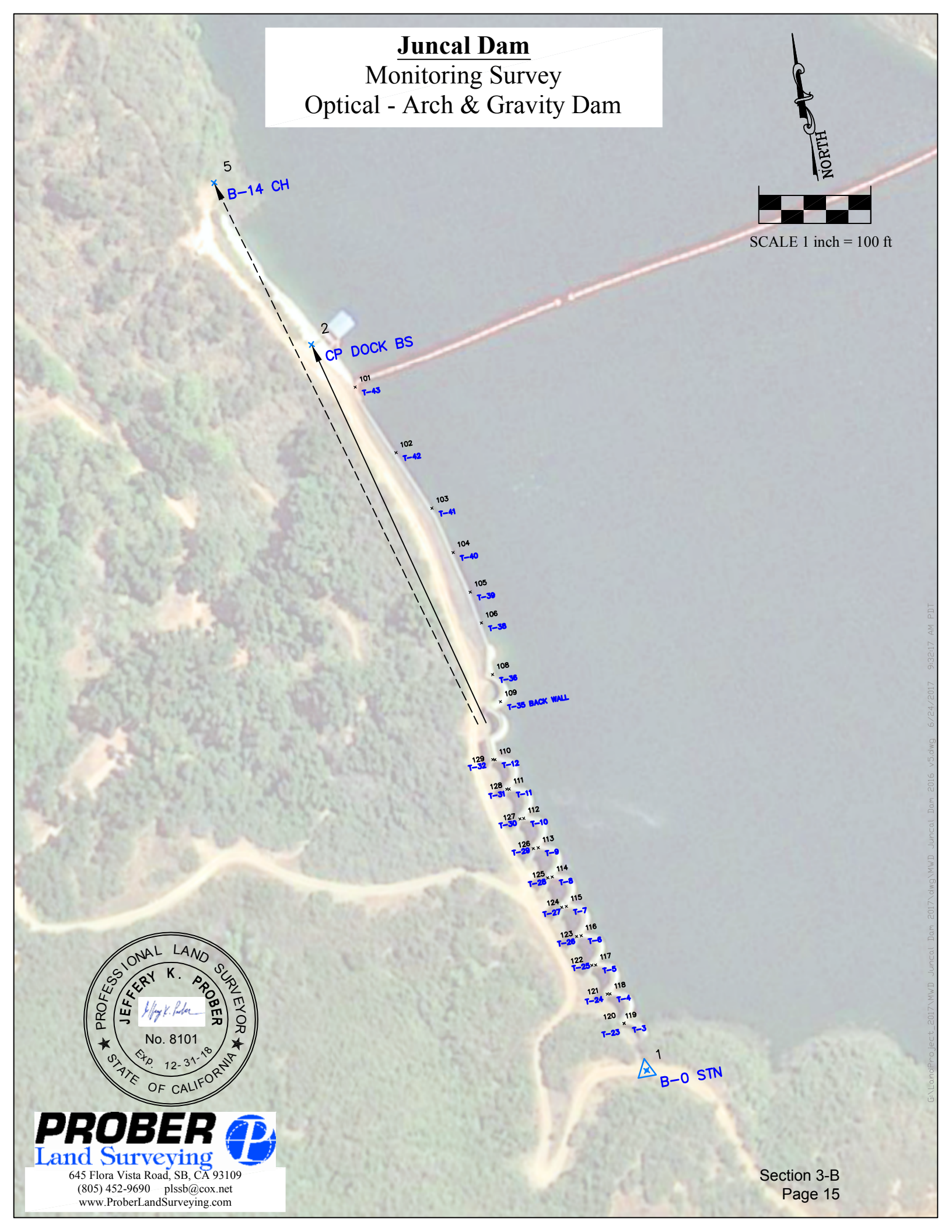
Juncal Dam
Monitoring Survey
Optical - Arch & Gravity Dam



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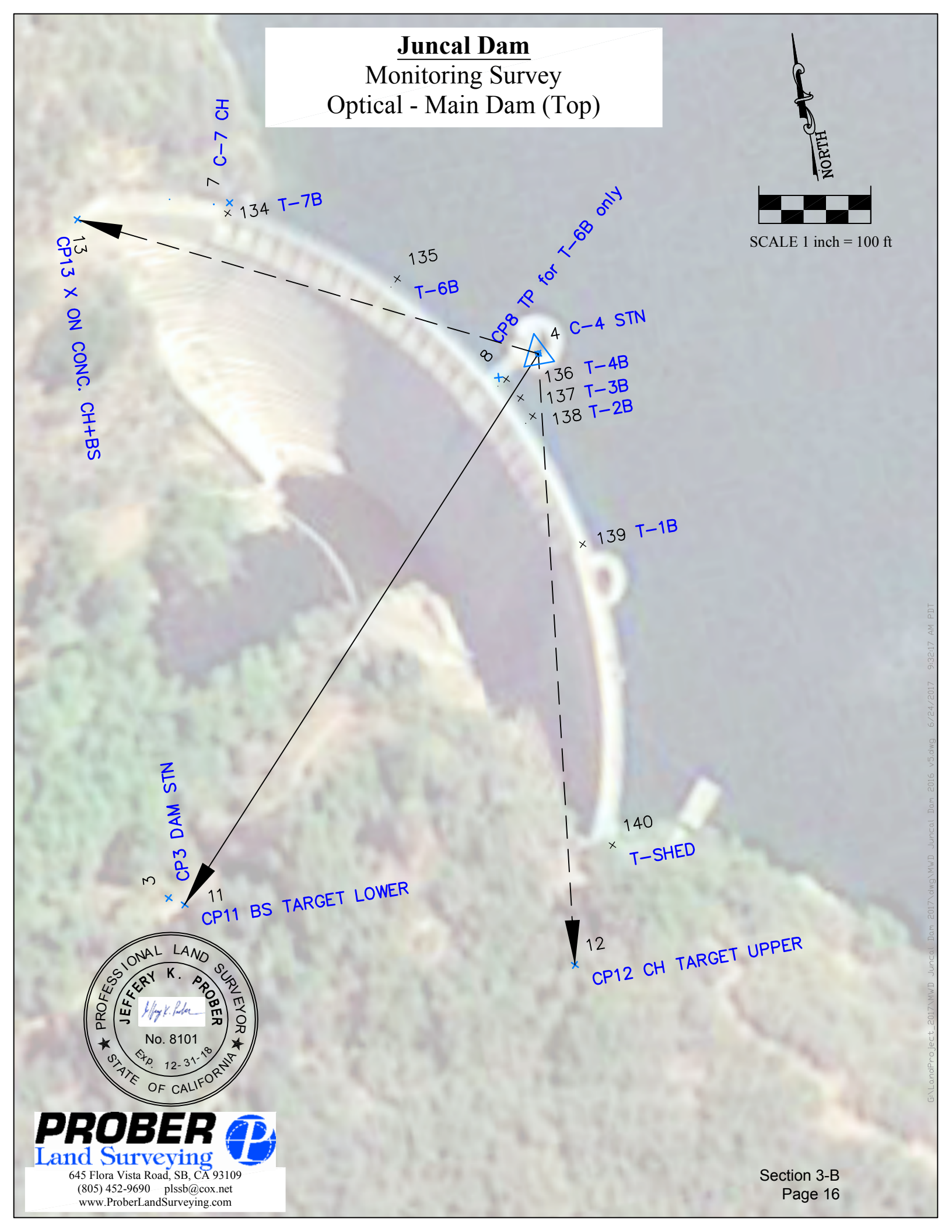
Juncal Dam
Monitoring Survey
Optical - Main Dam (Top)



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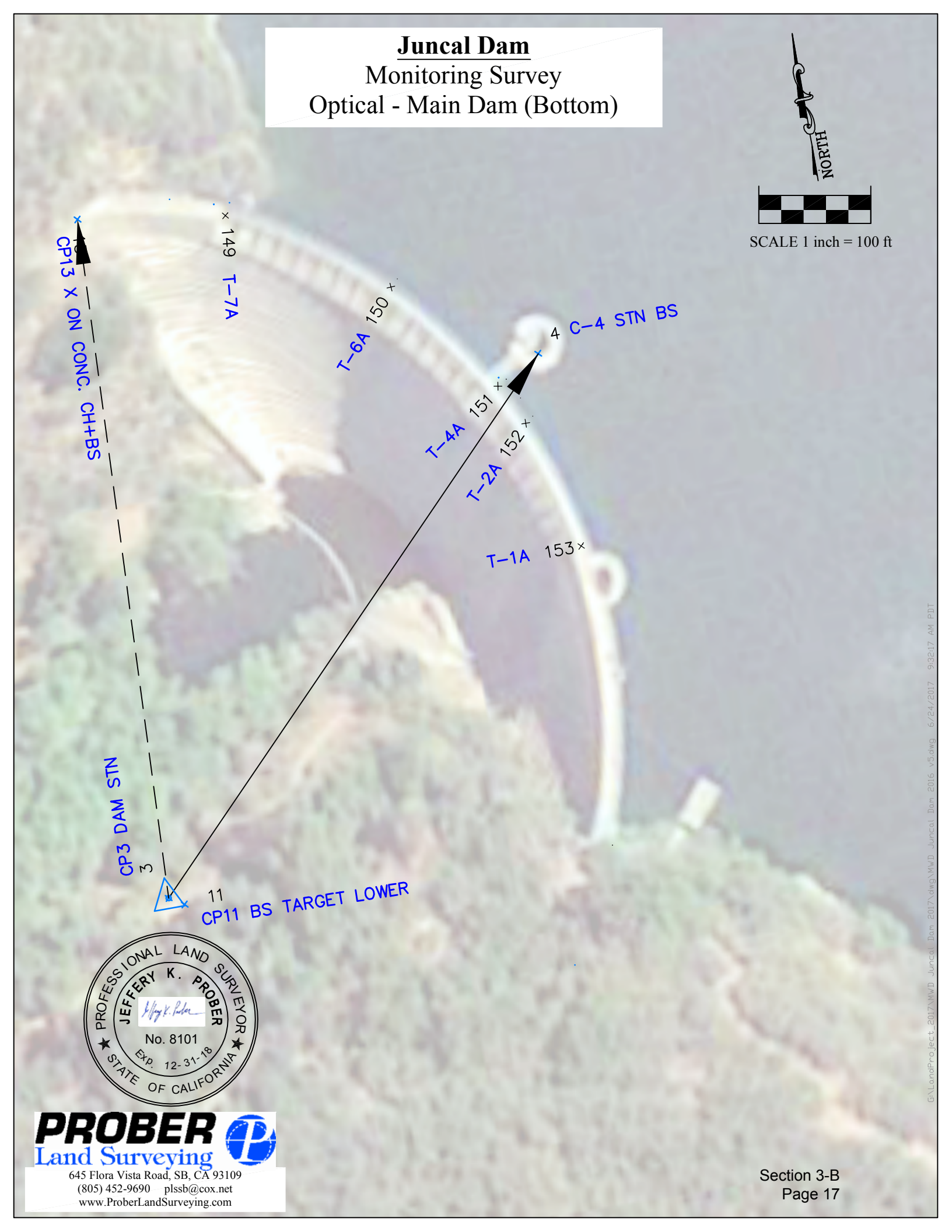
Juncal Dam
Monitoring Survey
Optical - Main Dam (Bottom)



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Optical Survey Control Held Fixed

Point No.	Northing	Easting	Elevation	Description
1	2003358.816	6107939.414	2237.304	B-0
2	2004211.722	6107714.242	2231.566	CP2 DOCK
3	2004846.728	6107169.534	2411.518	CP3 DAM LOWER
4	2005057.390	6107374.234	2230.498	C-4
5	2004406.200	6107639.459	2233.515	B-14
7	2005147.724	6107250.188	2230.528	C-7
8	2005049.997	6107354.964	2230.648	CP8 MAIN DAM
11	2004842.639	6107176.046	2125.537	CP11 BS TARGET LOWER
12	2004785.831	6107342.949	2273.862	CP12 CHECK TARGET UPPER
13	2005152.139	6107182.066	2230.196	CP13 X ON CONC.

GNSS Survey Control Held Fixed

1001	2003905.499	6106363.502	2205.113	BASE STATION
1002	2003358.816	6107939.414	2237.304	B-0 GNSS
1004	2004211.726	6107714.248	2231.548	CP2 DOCK GNSS
1005	2005057.390	6107374.234	2230.498	C-4 GNSS
1007	2005147.704	6107250.216	2230.466	C-7 GNSS

Survey 4-27-2016

Point No.	Northing	Easting	Elevation	Description
101	2004157.053	6107753.674	2231.784	T-43
102	2004078.037	6107785.396	2230.986	T-42
103	2004010.819	6107813.852	2230.959	T-41
104	2003958.632	6107828.355	2230.957	T-40
105	2003912.392	6107839.385	2231.514	T-39
106	2003876.712	6107845.566	2230.919	T-38
				T-37
108	2003818.515	6107847.788	2230.969	T-36
109	2003787.454	6107851.176	2230.309	T-35
110	2003725.420	6107834.181	2227.226	T-12
111	2003690.773	6107843.952	2227.213	T-11
112	2003656.173	6107854.129	2227.016	T-10
113	2003621.556	6107864.279	2227.347	T-9
114	2003587.178	6107873.842	2227.164	T-8
115	2003552.343	6107883.570	2226.764	T-7
116	2003517.787	6107894.066	2226.995	T-6
117	2003483.143	6107904.195	2226.934	T-5
118	2003448.900	6107914.141	2227.138	T-4
119	2003414.239	6107923.949	2227.013	T-3
120	2003414.339	6107923.806	2217.229	T-23
121	2003449.459	6107911.279	2206.394	T-24
122	2003483.555	6107899.951	2199.680	T-25
123	2003517.790	6107888.994	2195.111	T-26
124	2003552.183	6107878.352	2192.539	T-27
125	2003586.952	6107868.806	2192.765	T-28
126	2003621.587	6107858.807	2194.224	T-29
127	2003656.357	6107849.915	2198.409	T-30
128	2003691.254	6107841.345	2205.855	T-31
129	2003726.058	6107831.694	2207.744	T-32
134	2005143.229	6107248.567	2230.226	T-7B
135	2005101.226	6107318.072	2229.317	T-6B
136	2005048.671	6107358.144	2229.463	T-4B
137	2005039.327	6107362.967	2229.554	T-3B
138	2005030.357	6107366.953	2229.503	T-2B
139	2004970.181	6107378.967	2230.236	T-1B
140	2004835.582	6107368.740	2236.167	T-SHED
149	2005142.362	6107247.358	2230.152	T-7A
150	2005098.113	6107314.610	2229.263	T-6A
151	2005046.241	6107353.950	2229.155	T-4A
152	2005027.806	6107363.301	2229.644	T-2A
153	2004969.550	6107378.157	2230.008	T-1A
161	2004211.722	6107714.242	2231.566	CP2 DOCK
162	2004406.200	6107639.459	2233.515	B-14

Optical Survey	June 22, 2017				Results		
Point No.	Northing	Easting	Elevation	Description	delta N.	delta E.	delta Elev.
201	2004157.043	6107753.643	2231.747	T-43	0.01	0.03	0.04
202	2004078.026	6107785.406	2230.964	T-42	0.01	-0.01	0.02
203	2004010.819	6107813.874	2230.939	T-41	0.00	-0.02	0.02
204	2003958.634	6107828.374	2230.956	T-40	0.00	-0.02	0.00
2001	2003912.392	6107839.385	2231.514	T-39	0.00	0.00	0.00
206	2003876.704	6107845.568	2230.901	T-38	0.01	0.00	0.02
207	2003852.810	6107849.896	2231.486	T-37			
208	2003818.514	6107847.785	2230.951	T-36	0.00	0.00	0.02
209	2003787.442	6107851.164	2230.301	T-35	0.01	0.01	0.01
210	2003725.415	6107834.177	2227.203	T-12	0.01	0.00	0.02
211	2003690.758	6107843.953	2227.202	T-11	0.02	0.00	0.01
212	2003656.153	6107854.125	2227.014	T-10	0.02	0.00	0.00
213	2003621.541	6107864.280	2227.331	T-9	0.02	0.00	0.02
214	2003587.152	6107873.827	2227.133	T-8	0.03	0.01	0.03
215	2003552.335	6107883.565	2226.755	T-7	0.01	0.01	0.01
216	2003517.787	6107894.055	2226.970	T-6	0.00	0.01	0.03
217	2003483.135	6107904.191	2226.916	T-5	0.01	0.00	0.02
218	2003448.891	6107914.138	2227.118	T-4	0.01	0.00	0.02
219	2003414.234	6107923.951	2226.997	T-3	0.00	0.00	0.02
220	2003414.342	6107923.810	2217.206	T-23	0.00	0.00	0.02
221	2003449.449	6107911.282	2206.371	T-24	0.01	0.00	0.02
222	2003483.556	6107899.952	2199.652	T-25	0.00	0.00	0.03
223	2003517.793	6107889.000	2195.083	T-26	0.00	-0.01	0.03
224	2003552.182	6107878.352	2192.520	T-27	0.00	0.00	0.02
225	2003586.937	6107868.803	2192.727	T-28	0.01	0.00	0.04
226	2003621.569	6107858.800	2194.201	T-29	0.02	0.01	0.02
227	2003656.357	6107849.915	2198.409	T-30	0.00	0.00	0.00
228	2003691.248	6107841.342	2205.837	T-31	0.01	0.00	0.02
229	2003726.044	6107831.689	2207.729	T-32	0.01	0.00	0.02
234	2005143.224	6107248.546	2230.214	T-7B	0.01	0.02	0.01
235	2005101.239	6107318.084	2229.314	T-6B	-0.01	-0.01	0.00
236	2005048.685	6107358.160	2229.459	T-4B	-0.01	-0.02	0.00
237	2005039.349	6107362.986	2229.552	T-3B	-0.02	-0.02	0.00
238	2005030.365	6107366.961	2229.496	T-2B	-0.01	-0.01	0.01
239	2004970.201	6107378.960	2230.228	T-1B	-0.02	0.01	0.01
240	2004835.599	6107368.724	2236.168	T-SHED	-0.02	0.02	0.00
249	2005142.362	6107247.358	2230.041	T-7A	0.00	0.00	0.11
250	2005098.112	6107314.600	2229.321	T-6A	0.00	0.01	-0.06
251	2005046.240	6107353.944	2229.206	T-4A	0.00	0.01	-0.05
252	2005027.747	6107363.295	2229.676	T-2A	0.06	0.01	-0.03
253	2004969.516	6107378.178	2230.050	T-1A	0.03	-0.02	-0.04
261	2004211.692	6107714.245	2231.512	CP2 DOC	0.03	0.00	0.05
262	2004406.164	6107639.470	2233.481	B-14	0.04	-0.01	0.03 Note: subject monument is a brass bump & tip of rod will fall to on si

GNSS Survey Check							
Point No.	Northing	Easting	Elevation	Description	delta N.	delta E.	delta Elev.
1001	2003905.499	6106363.502	2205.113	BASE STATION	0.00	0.00	0.00
2002	2003358.805	6107939.411	2237.307	B-0 GNSS	0.01	0.00	0.00
2000	2004211.730	6107714.293	2231.499	CP2 DOCK GNSS	0.00	-0.04	0.05
2004	2005057.380	6107374.247	2230.498	C-4 GNSS	0.01	-0.01	0.00
2007	2005147.674	6107250.280	2230.626	C-7 GNSS *	0.03	-0.06	-0.16

* = GNSS multipath obstruction

Optical precision
Horizontal tolerance +/- 0.025'
Vertical tolerance +/-0.035'

STATE OF CALIFORNIA
CALIFORNIA NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF SAFETY OF DAMS

INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUS

Name of Dam Juncal Dam No. 34-2 County Santa Barbara
Type of Dam Arch, Gravity, Multiple Arch Type of Spillway Overpour
Water is 17.5 feet below spillway crest and 23.5 feet below dam crest.

Weather Conditions Clear, warm
Contacts Made Adam Kanold, Chad Hurshman, Alan Prichard
Reason for Inspection Periodic Maintenance Inspection

Important Observations, Recommendations or Actions Taken

1. Remove all trees and vegetation growing out of all concrete on a vigilant year-round basis.
2. Consideration of an updated evaluation of this dam as suggested by the District Engineer (including seismic, geologic, and instrumentation monitoring program) is encouraged.
3. The District plans to refurbish the two 36-inch gate valves through the dam to allow for redundancy and allow safe valve operation without threat of uncontrolled water loss.

Conclusions

From the known information and visual inspection, the dam, reservoir, and the appurtenances are judged safe for continued use.

Observations and Comments

Dam

The reservoir is called Jameson Lake. There are 3 separate dams with 3 different configurations: an arch section (main dam), a concrete gravity section, and a multiple arch section, from right to left. The gravity and multiple arch sections rest on a narrow natural ridge with a cross sectional configuration similar to that of a typical embankment dam. This ridge is identified as the “auxiliary dam ridge” and is known to be highly fractured, blocky, and with a history of seepage sensitive to reservoir levels. Comments for each section are as follows:

Arch Section: The arch section is the tallest and is identified as the main dam, which also contain the overpour spillway, outlet towers, and emergency outlet valves. The concrete surfaces on both the upstream and downstream faces were in relatively good condition. The abutments appeared tight, with no noticeable seepage. A small tree growing against a concrete wall adjacent the twin 36-inch outlets must be removed. A small seep on the downstream face was observed emanating from a lift joint on the left side of the spillway, 11 lifts down from the crest. The staining indicates this is longstanding. The pool of water collected in the plunge pool at the toe is due to seepage from the lower lift joints. No other detrimental conditions were noted.

Gravity Section: All visible concrete surfaces appeared in satisfactory condition. No concerning cracks or spalls were observed. This section was in satisfactory condition.

Multiple Arch Section: The crest and parapet walls were level and the visible upstream portions of the barrels appeared uniform. No obvious large cracks were detected. The soils against the downstream side of the bays were mostly wet or saturated due to heavy seepage through the lift joints. Bay 5 had the greatest seepage. Mr. Kanold indicated he is considering future plans for a seismic evaluation of the dam. Based on the observed conditions, I encouraged the endeavor.

Auxiliary Dam Ridge: There was no evidence of excessive seepage, erosion, or instability with the relatively low reservoir level at this time.

Photos taken? Yes X No
cc for Owner/Book

Electronic Signature:
Philip Lee, PE
Safety of Dams
11/1/2018; 11:45 AM

Inspected by PW Lee
Date of Inspection 6/20/2018
Date of Report 9/13/2018

INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUS

Name of Dam Juncal Dam No. 34-2

Date of Inspection 6/20/2018

Observations and Comments

Spillway	The overpour spillway is located on the main dam, and appeared in satisfactory condition. The concrete weir and stepped downstream face were intact, and the catwalk revealed no signs of distress. The joints were relatively tight with a few minor seeps manifested by grasses growing there. Vegetation growing out of all concrete should be removed.
Outlet	The outlets include two 36-inch upstream valves and an 18-inch downstream blowoff valve. The 18-inch blowoff valve was fully cycled satisfactorily. The two 36-inch gate valves were not cycled due to concerns they may not close. There are plans underway to install redundant valves to permit cycling of these valves without risk of water loss.
Seepage	There were a few seeps through the lift joints in the main dam arch section that are longstanding. The seepage flowing over the plunge pool confinement wall was estimated at 2 gpm. The abutments were dry. There was no visible seepage through the gravity section. There was a fair amount of seepage through the lift joints in the multiple arch section. Bay 5 was observed to have the highest flow. Total flow was recorded as 110 gpm, from the September 6, 2018 instrumentation data report. The poly pipes associated with the ridge drain were damaged by the Thomas Fire in winter of 2017, and plans are in place to repair them.
Instr.	Instrumentation at this dam include 14 piezometers, 5 observation wells, 16 horizontal drains, 4 weirs, and 42 survey monuments. The most recent instrumentation report was submitted on September 6, /2018 and included data from January 2013 through May 2018. The following comments summarize my review: Rainfall and Reservoir Level: The drought of 2011 – 2017 caused a steady reduction in the reservoir level from highs of El. 2225 to a low of El. 2162, a total drop of 63 feet. The winter rains of 2017-2018 brought the reservoir back up to El. 2207, but not near full recovery. Piezometers: All 14 piezometers are located in the auxiliary dam ridge. The piezometric plots clearly mirrored the reservoir level. The few single point anomalies were found to be due to sensor issues. No trends were indicative of unusual behavior. Observation Wells: The observation wells are also located in the ridge and likewise tracked the reservoir levels. No adverse trends were noted for the reporting period. Weirs: The readings for Weir 1 & 2 reflect the auxiliary dam ridge's surface and subsurface drainage. The readings varied from dry to 50 gpm and appeared to track the reservoir levels and rain. Readings were discontinued from May 2017 to May 2018 due to the drought, lack of flow, and change in dam tender personnel. Weirs 3 and 4 have been dry for decades and were destroyed in the Thomas Fire. Monitoring of Weirs 3 and 4 have since been abandoned. The District is considering going to a magnetic flow meter system of recording for Weirs 1 and 2. I recommend a re-evaluation of the monitoring program for the weirs as to necessity. Multiple Arch Seepage Flow: This measurement tracks total seepage through the lift joints and cracks in the arches. The readings trend with the reservoir levels. The readings went dry in 2014 – 2017 due to low reservoir levels, and bumped up during the winter of 2017 rains to 110 gpm. This flow was still below historic highs. Ridge Drains: The 15 near-horizontal drains were drilled into the auxiliary dam ridge in 1992 to lower the piezometric levels within the ridge. There are 5 collection points with 3 branches of drains

Observations and Comments

splayed into the ridge from each collection point, identified by Roman Numerals I - 1,2,&3 through V - 13,14&15. The plots ranged from dry to upwards of 20 gpm for each collection point, and directly track the reservoir levels. They all went dry or were very low during the drought years, then shot up higher than normal consequent to the heavy rains of January -February 2017, before subsiding to normal historic levels. For this reporting period, it was noted that when the reservoir level dropped below El. 2200, all of the drains (except II-4,5,&6) were dry. When the reservoir was above El. 2200, many of the drains began to flow. In the winter of 2017, the Thomas Fire completely destroyed the exposed parts of the poly drain pipes. Efforts are underway to replace them.

Survey Monuments: The survey report was dated June 27, 2017. The monuments are located along the crest of all 3 concrete dams. The maximum delta offset of 0.06 feet (upstream direction) was at Monument T-2A, near the outlet tower on the main dam. The offsets are likely subject to the loading associated with fluctuating reservoir levels. Maximum delta settlement of 0.06 feet was at Monument T-6A, near the right third of the main dam. All other measurements had smaller offsets or settlements and were within the expected norms for a dam of this height.

Note: Mr. Kanold requested consideration towards changing the instrumentation readings from weekly to monthly intervals. In reviewing the extensive instrumentation for this dam, I recommend consideration of an updated re-evaluation of the monitoring program as to applicability, optimization, necessity, and monitoring intervals. As for now, we concur with the reduction of reading intervals to monthly, when the reservoir is below El. 2200. When the reservoir rises above El. 2200, readings should return to weekly intervals.

Other

The 2017 Thomas Fire burned the resident dam tender's house to the ground and efforts are underway to rebuild the structure, including plumbing, power, and communication.

Arch Section – Upstream Face

Name of Dam Juncal Dam No. 34-2

Date of Inspection 6/20/2018

Arch Section – Crest and Outlet Towers

Arch Section – Downstream Face

INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUS

Name of Dam Juncal Dam No. 34-2

Date of Inspection 6/20/2018

Arch Section – remove the small tree

Arch Section – downstream face of spillway and plunge pool below

Gravity Section – Upstream Face

Gravity Section – Downstream face

Name of Dam Juncal Dam No. 34-2

Date of Inspection 6/20/2018

Multiple Arch Section – Upstream View

Seepage through lift joints in Bay 5 of the multiple arch section

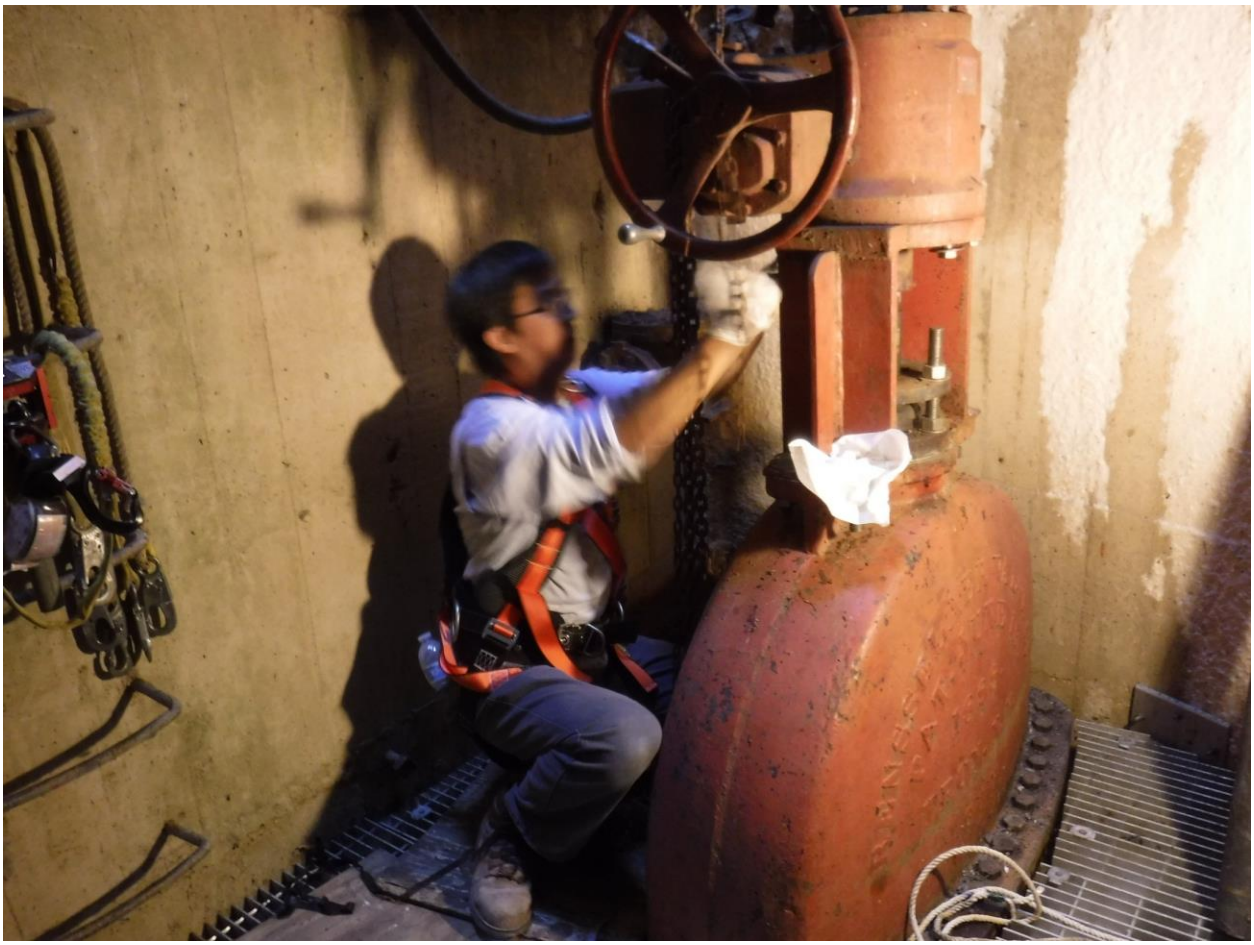
INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUS

Name of Dam Juncal Dam No. 34-2

Date of Inspection 6/20/2018

Spillway over the main dam (arch section)

Cycling the 18-inch Blowoff Valve



MONTECITO WATER DISTRICT
MEMORANDUM

SECTION: 3-C

DATE: NOVEMBER 13, 2018

TO: OPERATIONS COMMITTEE

FROM: ENGINEERING MANAGER

SUBJECT: BELLA VISTA RESERVOIR AERATION PROJECT

RECOMMENDATION:

- For information only.

DISCUSSION:

The FY 2018/19 budget includes $200,000 for treatment enhancements at Bella Vista Treatment Plant in order to provide enhanced treatment of water from Jameson Lake following the Thomas Fire. Runoff into the reservoir this past winter has resulted in an elevated level of organics in the water. The organics level in Jameson Lake is consistently between three and four times the historical average. The improvements at Bella Vista reservoir are imperative to reinstating deliveries from Jameson Lake and managing Disinfection By-Products (DBPs).

The FY 2018/19 budget item included two separate projects at Bella Vista Treatment Plant; (1) replacing anthracite filter media with granular activated carbon (GAC) filter media and (2) installing an aeration system at Bella Vista Reservoir to air strip DBPs from the finish water.

Part 1 of this project was completed on July 20, 2018 when a contractor replaced Filter #1 anthracite with GAC for a total cost of approx. $80,000. The cost of the GAC replacement was approx. $55,000 but one change order was issued to replace the garnet layer located below the anthracite which had cemented itself in the bottom of the filter and had to be replaced to avoid short circuiting. This added an additional cost of approx. $25,000 in labor and materials for a total project cost of approx. $80,000.

Part 2 of this project includes the installation of a water recirculation system and air blower system to simultaneously spray finish water from the ceiling of the reservoir while blowing ambient air from outside the reservoir through an “alley” created within the reservoir to remove DBPs, specifically chloroform. The exact scope of this project was unknown at the time of budgeting the project.

During the design phase, several challenges with construction were identified. Those include: (1) the reservoir must remain in service during construction (2) any penetrations

in the reservoir require structural reinforcement (3) recirculating finished reservoir water requires a large amount of piping.

The District contracted with Tetra Tech, an engineering consulting firm familiar with Bella Vista reservoir to design the recirculation and blower system including the technical specifications of the blower and pump, structural penetrations and details for the Hypalon curtain, pipe hangers, and nozzles. Schock Construction and C.A. Larsen were requested to review the plans during the design phase and provide input on the constructability of the aeration system. The District Engineer and Contractors considered multiple approaches for location of the pump and blower, method of structural reinforcement, and agreed to the most constructible and effective solution. Given the reservoir must remain in service during the modifications, a temporary barge must be constructed inside the reservoir. The recirculating pump must target high DBP to send into the aeration system so the water pump was sited on the outlet pipe of the reservoir. A submersible pump inside the reservoir was considered but is not feasible due to the limited reservoir access on the northeast corner and reservoir outlet on the southern edge of the reservoir. Attachment 1 shows the final project layout and details.

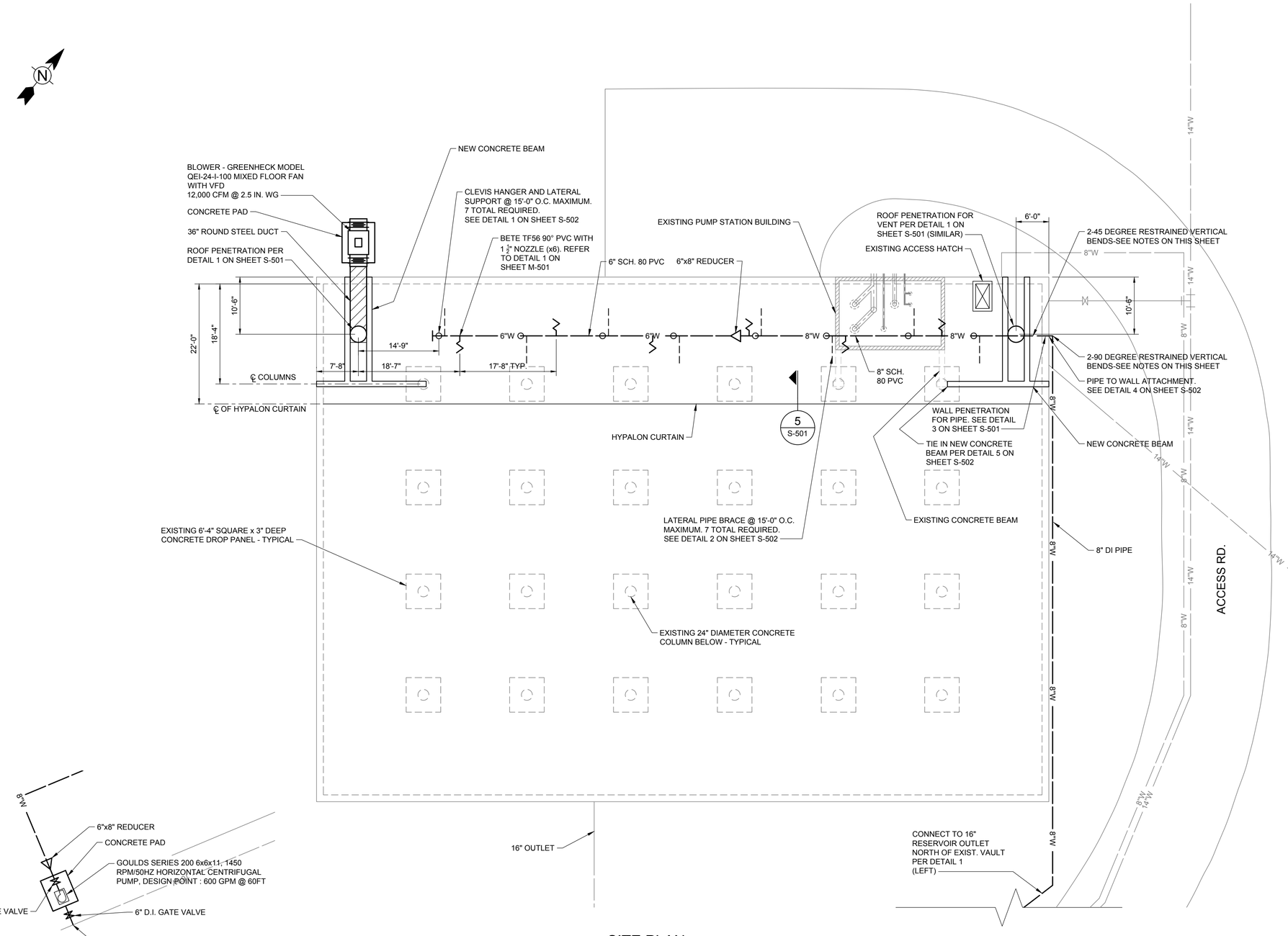
Schock Construction and C.A. Larsen have provided the District Engineer with a cost estimate, shown in Table 1. The estimate of $280,000 plus the GAC installation costs will total approximately $360,000. These costs will exceed the total available budget for this project by an estimated $160,000. Staff has identified two budgeted capital improvement projects with funds that will not be spent that could be reallocated to this work. These budgeted projects include (1) Hodges Well Abandonment for $20,000 and (2) US101 Crossing $200,000 but only $57,000 was spent. Surplus budget from these two projects could be used to cover the additional costs to construct the reservoir improvements.

Table 1 – Aeration Project Cost Estimate (Schock Constr. & C.A. Larsen)

#	**Item**	**Cost**
1	Mobilization	$10,000
2	Blower, FRP Piping	$25,000
3	Recirculating Pump, Fittings	$20,000
4	Piping (400 ft 8” DIP, fittings + 36” FRP pipe)	$80,000
5	Concrete Work (structural reinforcement)	$40,000
6	Inside Reservoir Work (piping, coring, temp. barge)	$60,000
7	Set Pump/Blower, Commission	$10,000
8	Hypalon Curtain	$25,000
9	Temporary Work Barge inside Reservoir	$10,000
	TOTAL	**$280,000**

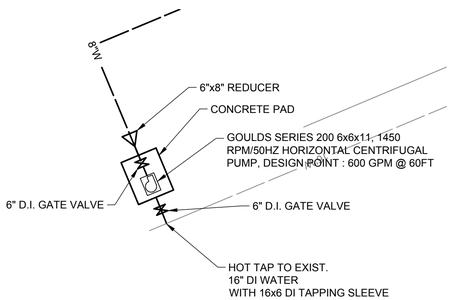
ATTACHMENTS:

1) Bella Vista Reservoir Aeration Design Drawings



SITE PLAN

SCALE: 1"=10'



1 / – CONNECTION DETAIL

SCALE:

NOTES:

1. TRANSITION FROM DUCTILE IRON PIPE PVC OUTSIDE OF TANK, NEAR THE WALL PENETRATION, WITH A RESTRAINED COUPLING.
2. PROVIDE A PIPE CLAMP PER DETAIL 4 ON SHEET S-502 AT EACH SIDE OF THE RESTRAINED COUPLING.
3. PROVIDE UV PROTECTION COATING ON EXPOSED PVC PIPE.
4. INSTALL TWO 45 DEGREE VERTICAL BENDS JUST INSIDE GET PIPE TO 2'-0" BELOW THE SOFFIT OF THE EXISTING TANK ROOF DECK. ALL JOINTS RESTRAINED.

TETRA TECH
www.tetratech.com
160 East Via Verde, Suite 200
San Dimas, California, 91773
Phone: (909) 305-2930 Fax: (909) 305-2959

MARK	DATE	DESCRIPTION	BY

MONTECITO WATER DISTRICT

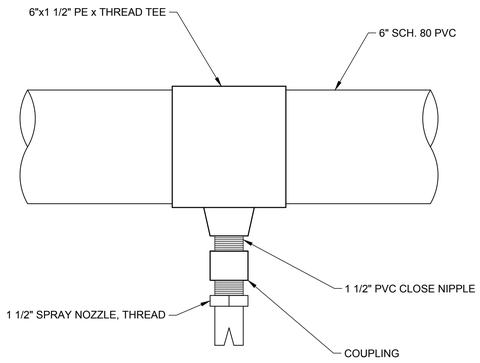
IMPROVEMENTS AT BELLA VISTA RESERVOIR

SITE PLAN

Project No.:	200-106490-18002
Designed By:	AL
Drawn By:	EJH
Checked By:	KRB

C-101

Bar Measures 1 inch
Section 3-C
Page 3



1 – NOZZLE DETAIL
SCALE: 3"=1'-0"

2 – NOT USED
SCALE:

3 – NOT USED
SCALE:

4 – NOT USED
SCALE:

5 – NOT USED
SCALE:

6 – NOT USED
SCALE:

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MONTECITO WATER DISTRICT

MARK	DATE	DESCRIPTION	BY

MONTECITO WATER DISTRICT
IMPROVEMENTS AT BELLA VISTA RESERVOIR

DETAILS

Project No.:	200-106490-18002
Designed By:	AL
Drawn By:	EJH
Checked By:	KRB

M-501

Bar Measures 1 inch
Section 3-C
Page 4

GENERAL STRUCTURAL NOTES

THESE NOTES SHALL APPLY UNLESS SHOWN/INDICATED OTHERWISE ELSEWHERE IN THE STRUCTURAL DRAWINGS.

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE 2016 CALIFORNIA BUILDING CODE (C.B.C) BASED UPON THE 2015 EDITION OF THE INTERNATIONAL BUILDING CODE (I.B.C.).

2. THE CONTRACTOR ACKNOWLEDGES RESPONSIBILITY FOR JOBSITE SAFETY AND ACKNOWLEDGES THAT THE ENGINEER WILL NOT HAVE SUCH RESPONSIBILITY. IF A LAWSUIT IS FILED BY ONE OF THE CONTRACTOR'S OR SUBCONTRACTOR'S EMPLOYEES, OR ANY ONE ELSE, THE CONTRACTOR WILL INDEMNIFY, DEFEND AND HOLD THE OWNER AND TETRA TECH, INC., THEIR PARENT AND SUBSIDIARY COMPANIES HARMLESS OF ANY AND ALL SUCH CLAIMS.

3. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE STARTING WORK. DIMENSIONS OF (E) CONSTRUCTION WHERE SHOWN ON THESE DRAWINGS ARE NOMINAL AND SHOULD BE FIELD VERIFIED. SHOULD CONDITIONS EXIST WHICH ARE CONTRARY TO THOSE SHOWN ON PLANS, THE ENGINEER SHALL BE NOTIFIED IN WRITING BEFORE PROCEEDING WITH WORK.

4. UNLESS DETAILED, SPECIFIED, OR INDICATED OTHERWISE, CONSTRUCTION SHALL BE AS INDICATED IN THE APPLICABLE TYPICAL DETAILS AND THESE GENERAL NOTES. TYPICAL DETAILS ARE MEANT TO APPLY EVEN THOUGH NOT REFERENCED AT SPECIFIC LOCATIONS ON DRAWINGS WHERE THE OCCUR.

5. THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKERS AND PEDESTRIANS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, TEMPORARY STRUCTURES, AND PARTIALLY COMPLETED WORK, ETC. OBSERVATION VISITS TO THE SITE BY THE ENGINEER SHALL NOT BE CONSIDERED AS INSPECTION OF SUCH ITEMS.

6. DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON DRAWINGS.

7. ALL EXISTING ITEMS REMOVED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED OR REPAIRED TO MATCH EXISTING.

8. ALL WORK SHALL CONFORM TO THE PLANS AND SPECIFICATIONS IN ALL RESPECTS AND SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.

9. BY ACCEPTING THIS CONTRACT, CONTRACTOR HEREBY RELEASES AND AGREES TO INDEMNIFY, DEFEND, HOLD HARMLESS THE OWNER, ENGINEER, (HEREINAFTER TETRA TECH, INC.), THEIR PARENT AND SUBSIDIARY COMPANIES, AGENTS, EMPLOYEES, CONSULTANTS AND REPRESENTATIVES FOR ANY AND ALL DAMAGE TO PERSONS OR PROPERTY OR WRONGFUL DEATH REGARDLESS OF WHETHER OR NOT SUCH CLAIM, DAMAGE, LOSS OR EXPENSE IS CAUSED IN WHOLE OR IN PART BY THE NEGLIGENCE, ACTIVE OR PASSIVE, OF OWNER, ENGINEER, THEIR PARENT AND SUBSIDIARY COMPANIES AS WELL AS THEIR AGENTS AND EMPLOYEES, TO THE FULLEST EXTENT PERMITTED BY LAW. SUCH INDEMNIFICATION SHALL EXTEND TO ALL CLAIMS, DEMANDS, ACTIONS, OR LIABILITY FOR INJURIES, DEATH OR DAMAGES OCCURRING AFTER COMPLETION OF THE PROJECT, AS WELL AS DURING THE WORK'S PROGRESS. CONTRACTOR FURTHER AGREES THAT IT SHALL ACCOMPLISH THE ABOVE AT ITS OWN COST, EXPENSE AND RISK EXCLUSIVE OF AND REGARDLESS OF ANY APPLICABLE INSURANCE POLICY OR POSITION TAKEN BY ANY INSURANCE COMPANY REGARDING COVERAGE.

10. CONTRACTOR SHALL VERIFY LOCATION OF ALL SITE UTILITIES PRIOR TO STARTING WORK, BOTH ABOVE GROUND AND BELOW GROUND, WHICH MAY BE IMPACTED BY THE WORK SHOWN ON THESE DRAWINGS. ANY CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

11. CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE CLIENT AND TETRA TECH, INC. THEIR PARENT AND SUBSIDIARY COMPANIES, ITS EMPLOYEES, OFFICERS, OR AGENTS, HARMLESS AGAINST ANY AND ALL CLAIMS BY ANY PARTIES ARISING FROM, OR RELATED TO, ANY AND ALL DAMAGES, INCLUDING LEGAL COSTS AND ATTORNEY'S FEES, RESULTING FROM INTERFERENCE WITH, INTERRUPTION OF, DAMAGE TO, OR ANY AND ALL INJURIES WHICH RESULT FROM DAMAGE CAUSED TO SUBSURFACE INSTALLATION, WHICH IS UNFORESEEN AND DESPITE ENGINEER'S EFFORT DURING THE DESIGN PROCESS WAS NOT LOCATED, EXCEPTING ONLY THE GROSS NEGLIGENCE OR WILLFUL MISCONDUCT OF ENGINEER IN PROVIDING ITS SERVICES.

12. ALL ITEMS SHOWN ON THESE PLANS ARE NEW UNLESS NOTED (E), EXIST. OR EXISTING.

REINFORCING NOTES

1. REINFORCEMENT FOR CONCRETE AND MASONRY SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. SPECIFICATION A615 (A706/A706M FOR WELDED REINFORCING). GRADE 60 STEEL SHALL BE USED EXCEPT THAT #3 BARS AND SMALLER MAY BE GRADE 40 STEEL.

2. ALL REINFORCEMENT, ANCHOR BOLTS, AND OTHER ANCHORAGES PLACED IN MASONRY AND CONCRETE SHALL BE ACCURATELY PLACED AND POSITIVELY SECURED AND SUPPORTED BY CONCRETE BLOCKS, METAL CHAIRS, SPACERS, OR METAL HANGERS, AND SHALL BE IN POSITION BEFORE CONCRETE PLACING OR GROUTING IS BEGUN. DETAILING AND PLACING OF BARS SHALL CONFORM TO THE A.C.I. MANUAL OF STANDARD PRACTICES.

3. BARS SPECIFIED AS "CONTINUOUS" SHALL EXTEND THE FULL LENGTH OF THE MEMBER CONTAINING THEM AND MAY BE SPLICED (UNLESS NOTED OR SHOWN WITHOUT SPLICES ON THE PLANS). PROVIDE CLASS B LAP SPLICES PER ACI 318.

4. DOWELS SHALL BE PROVIDED AT ALL POUR JOINTS AND SHALL BE THE SAME SIZE AND SPACING AS REINFORCING DIRECTLY BEYOND POUR JOINTS.

5. WELDING OF REINFORCING STEEL, METAL INSERTS AND CONNECTIONS IN REINFORCED CONCRETE OR MASONRY CONSTRUCTION SHALL CONFORM TO ANSI/AWS D1.4-11. USE LOW HYDROGEN E-70 SERIES ELECTRODES FOR WELDING OF REINFORCING BARS. CONTINUOUS INSPECTION IS REQUIRED OF ALL FIELD WELDING IN ACCORDANCE WITH C.B.C. CHAPTER 17.

6. THE SPECIFIED DIMENSIONS OF THE VERTICAL LEGS OF "L" DOWELS, WHOSE HORIZONTAL LEGS ARE CAST INTO A FOOTING OR SLAB CAST ON TOP OF EARTH, ARE BASED UPON THE SLAB THICKNESS AS SHOWN ON THE DRAWINGS. IF A SLAB IS POURED THICKER THAN SHOWN ON THE DRAWINGS, SUCH AS FOR THE SUBGRADE OCCURRING AT A LOWER ELEVATION THAN SHOWN, THE VERTICAL LEGS MUST BE FABRICATED TO A LONGER LENGTH OR THE HORIZONTAL TAILS MUST BE SUPPORTED ABOVE SUBGRADE HIGH ENOUGH TO PROVIDE THE SAME AMOUNT OF LAP LENGTH BETWEEN THE DOWEL AND THE WALL VERTICAL REINFORCING.

CONCRETE NOTES

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. THE MINIMUM CEMENT CONTENT SHALL BE 564 POUNDS PER CUBIC YARD; THE MAXIMUM WATER/CEMENT RATIO SHALL BE 0.42.

2. CEMENT FOR CONCRETE SHALL BE TYPE V PORTLAND CEMENT CONFORMING TO A.S.T.M. C150.

3. CONCRETE COVER FOR REINFORCING BARS SHALL BE:
   CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH = 3"
   EXPOSED TO EARTH OR WEATHER: NO. 6 THROUGH NO. 18 BARS = 2"
   5 BARS AND SMALLER = 1 1/2"
   NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND:
   SLABS, WALLS, JOISTS: NO. 14 AND NO. 18 BARS = 1 1/2"
   11 BARS AND SMALLER = 3/4"
   BEAMS, COLUMNS: PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS = 1 1/2"

4. DRYPACK SHALL BE 1 PART CEMENT AND 3 PARTS SAND (BY VOLUME).

5. NO PIPES OR DUCTS SHALL BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED. SEE MECHANICAL AND/OR ELECTRICAL DRAWINGS FOR LOCATION OF SLEEVES THROUGH WALLS AND FLOORS.

7. THE LOCATION OF ALL CONSTRUCTION JOINTS NOT SPECIFICALLY NOTED OR SHOWN SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.

8. "ROUGHENED SURFACES", WHERE SPECIFIED ON THE DRAWINGS, SHALL BE MECHANICALLY ROUGHENED SUCH THAT A 1/4" AMPLITUDE (±) IS ACHIEVED BETWEEN HIGH AND LOW SPOTS OF THE ROUGHENED SURFACE. THE SURFACE SHALL BE CLEAN AND FREE OF LAITANCE.

STEEL NOTES

1. ALL STEEL ITEMS SHALL BE MARINE GRADE 316 STAINLESS CONFORMING TO CONFORM TO A.S.T.M. A276/A.I.S.I. 316.

5. HOLES FOR BOLTS IN STEEL SHALL BE OF SAME DIAMETER AS BOLT +1/16" MAXIMUM.

6. ALL WELDING SHALL BE SHIELDED ARC TYPE AND SHALL BE PERFORMED BY A CERTIFIED WELDER IN A FABRICATION SHOP REGISTERED AND APPROVED IN ACCORDANCE WITH NOTE 1 ABOVE.CONTINUOUS INSPECTION IS REQUIRED OF ALL FIELD WELDING IN ACCORDANCE WITH AWS D1.1.

7. NO STRUCTURAL STEEL MEMBER SHALL BE CUT FOR PIPES, DUCTS, ETC. UNLESS SPECIFICALLY DETAILED AND APPROVED BY STRUCTURAL ENGINEER.

8. STAINLESS STEEL BOLTS SHALL CONFORM TO A.S.T.M. F593. STAINLESS STEEL NUTS SHALL CONFORM TO A.S.T.M. F594.

9. WELDING OF STAINLESS STEEL SHALL CONFORM TO STRUCTURAL WELDING CODE - STAINLESS STEEL, ANSI/AWS D1.6-07.

12. WELDING EQUIPMENT SHALL BE CHECKED PRIOR TO WELDING AS REQUIRED BY AISC 360-10 TABLE N5.4-1.

13. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED SHALL BE PERFORMED AS REQUIRED BY AISC 360-10 TABLE N5.6-1

ADHESIVE ANCHORS

1. ADHESIVE ANCHORS SHALL BE "SIMPSON" ADHESIVE ANCHORS, MANUFACTURED BY SIMPSON STRONG-TIE.

2. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH I.C.C. EVALUATION REPORT No. 1772.

3. SPECIAL INSPECTION PER CHAPTER 17 OF THE CALIFORNIA BUILDING CODE SHALL BE PROVIDED DURING ANCHOR INSTALLATION.

4. AN ALTERNATIVE ADHESIVE ANCHOR PRODUCT MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL, PROVIDED THAT IT HAS A CURRENT I.C.C. EVALUATION REPORT APPROVAL.

5. ALL ABANDONED HOLES SHALL BE FILLED WITH A DRYPACK GROUT A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. THE FILLED HOLE(S) SHALL BE PREPARED AND CLEANED AS REQUIRED BY THE GROUT MANUFACTURER.

6. LOCATE EXISTING REINFORCING USING A NON-DESTRUCTIVE METHOD (PACHOMETER OR OTHER), PRIOR TO STEEL FABRICATION OF THE AFFECTED COMPONENTS AND PRIOR TO DRILLING HOLES FOR ANCHORS. MAINTAIN A MINIMUM CLEARANCE OF 1" BETWEEN THE REINFORCEMENT AND THE ANCHOR. NOTIFY ENGINEER IF ADHESIVE ANCHORS CANNOT BE INSTALLED DUE TO REBAR INTERFERENCE(S) SO STRUCTURAL STEEL DETAILING SHOWN HEREON CAN BE MODIFIED TO ACCOMMODATE.

EXPANSION ANCHORS

1. EXPANSION ANCHORS SHALL BE "STRONG BOLT 2" MANUFACTURED BY SIMPSON.

2. ANCHORS SHALL BE INSTALLED PER I.C.C. REPORT No. 2251.

3. ANCHORS SHALL BE INSTALLED PER LOS ANGELES CITY RESEARCH REPORT No. RR 2748.

3A. SPECIAL INSPECTION PER SECTION 17 OF THE C.B.C. SHALL BE PROVIDED DURING ANCHOR INSTALLATION.

3B. SPECIAL INSPECTION PER SECTION 1701 OF LOS ANGELES CITY BUILDING CODE SHALL BE PROVIDED DURING ANCHOR INSTALLATION.

4A. AN ALTERNATIVE EXPANSION ANCHOR PRODUCT MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE PRODUCT ALTERNATIVE MUST HAVE A CURRENT I.C.C. EVALUATION REPORT APPROVAL.

4B. AN ALTERNATIVE WEDGE ANCHOR PRODUCT MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL, BUT THE PRODUCT MUST HAVE A CURRENT CITY OF LOS ANGELES RESEARCH REPORT APPROVAL.

5. ALL ABANDONED HOLES SHALL BE FILLED WITH A DRYPACK GROUT A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. THE FILLED HOLE(S) SHALL BE PREPARED AND CLEANED AS REQUIRED BY THE GROUT MANUFACTURER.

6. LOCATE EXISTING REINFORCING USING A NON-DESTRUCTIVE METHOD (PACHOMETER OR OTHER), PRIOR TO DRILLING HOLES FOR ANCHORS. MAINTAIN A MINIMUM CLEARANCE OF 1" BETWEEN THE REINFORCEMENT AND THE ANCHOR.

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MONTECITO WATER DISTRICT

MARK	DATE	DESCRIPTION	BY

MONTECITO WATER DISTRICT

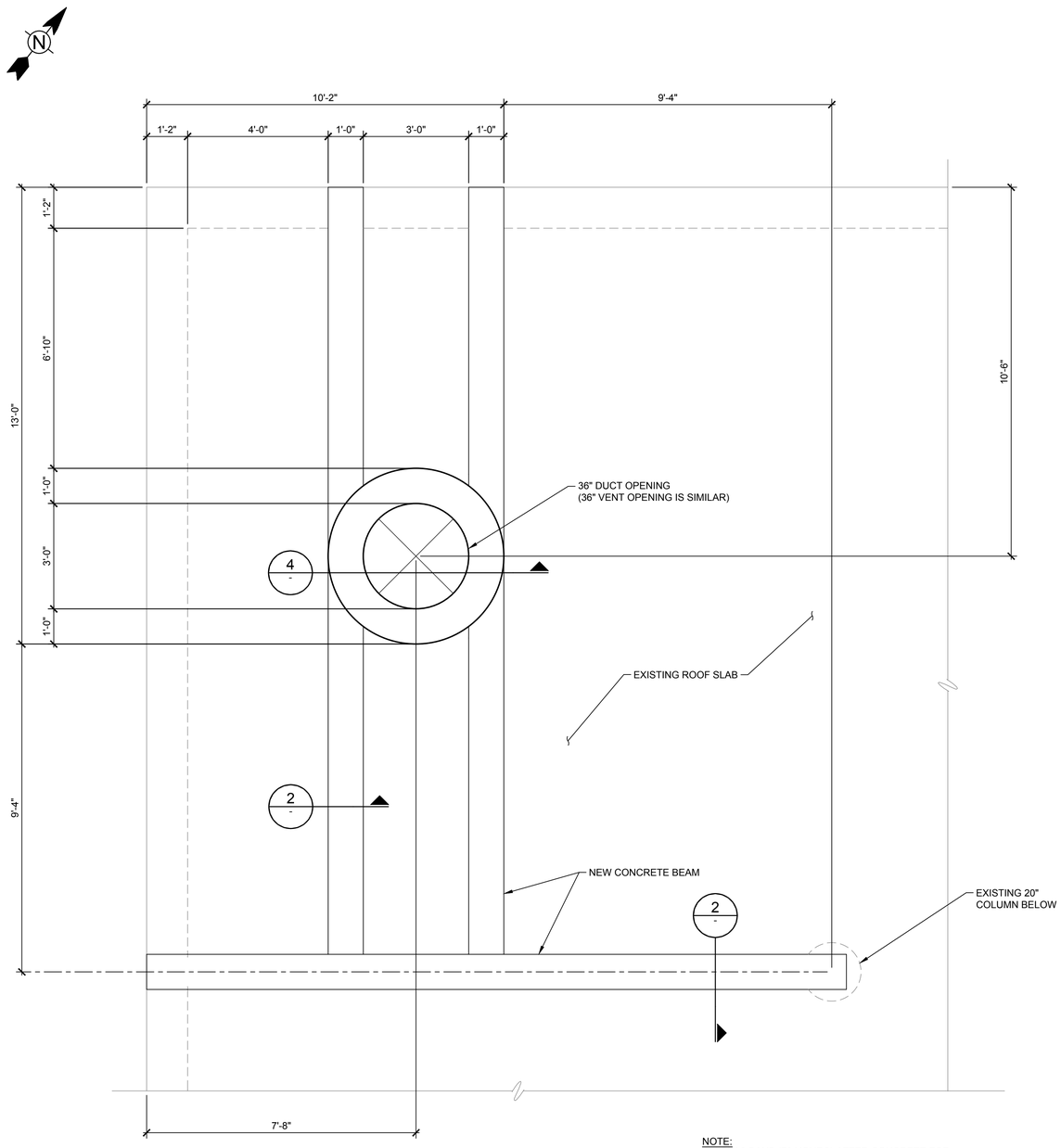
IMPROVEMENTS AT BELLA VISTA RESERVOIR

GENERAL STRUCTURAL NOTES

Project No.:	200-106490-18002
Designed By:	JQ
Drawn By:	EJH
Checked By:	VMR

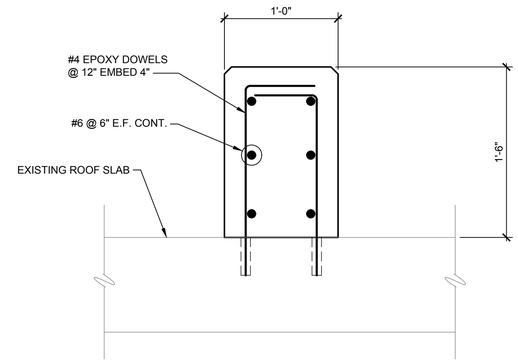
S-001

Bar Measures 1 inch
Section 3-C

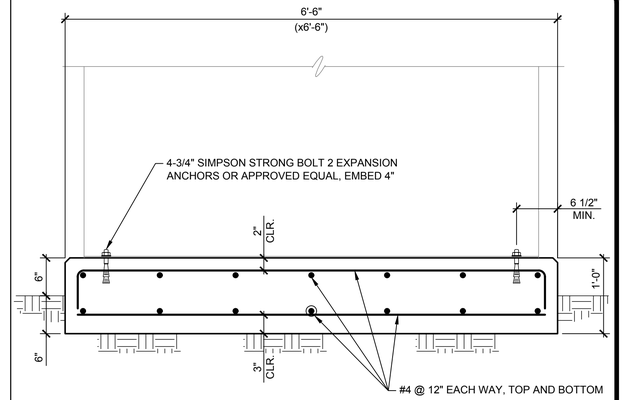


NOTE:
ALLOW 3 DAYS (72 HOURS) AFTER CONCRETE FOR THE NEW BEAMS AND CURBS IS PLACED BEFORE REPLACING THE BACKFILL ON THE RESERVOIR ROOF (USING HAND TOOLS ONLY) OR INSTALLING THE BLOWER DUCT. DO NOT APPLY DESIGN LOADS TO THE ROOF DECK UNTIL THE CONCRETE FOR THE BEAMS AND CURBS HAS REACHED ITS 28 DAY COMPRESSIVE STRENGTH.

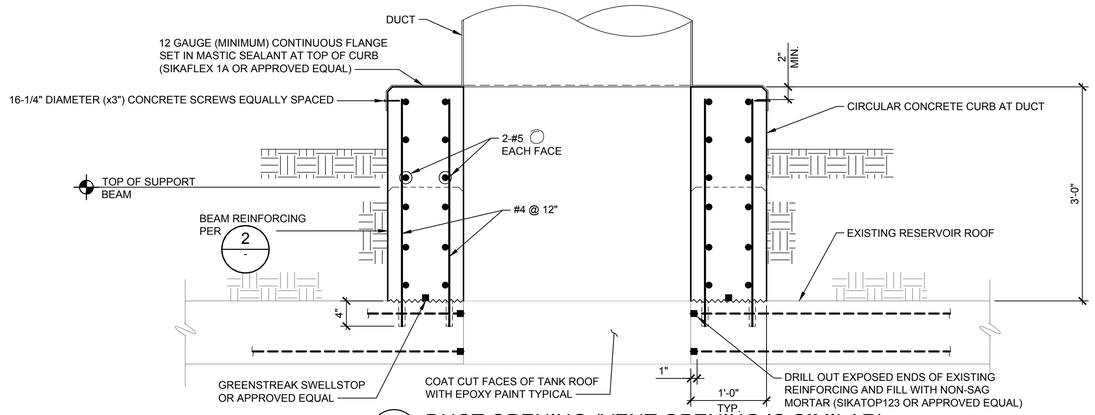
1 PLAN
SCALE: 1/2"=1'-0"



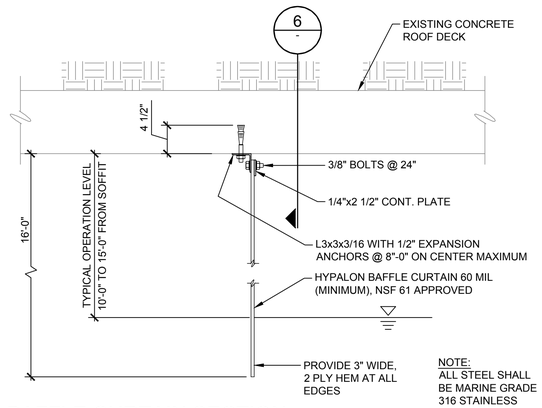
2 SUPPORT BEAM N-S
SCALE: 1 1/2"=1'-0"



3 MIX FLOW FAN EQUIPMENT PAD
SCALE: 1"=1'-0"

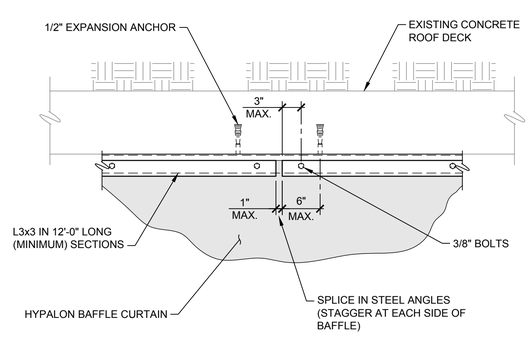


4 DUCT OPENING (VENT OPENING IS SIMILAR)
SCALE: 1"=1'-0"



NOTE:
ALL STEEL SHALL BE MARINE GRADE 316 STAINLESS

5 BAFFLE CURTAIN SECTION
SCALE: 1"=1'-0"



6 BAFFLE CURTAIN ELEVATION
SCALE: 1"=1'-0"

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MONTECITO WATER DISTRICT

MARK	DATE	DESCRIPTION	BY

MONTECITO WATER DISTRICT

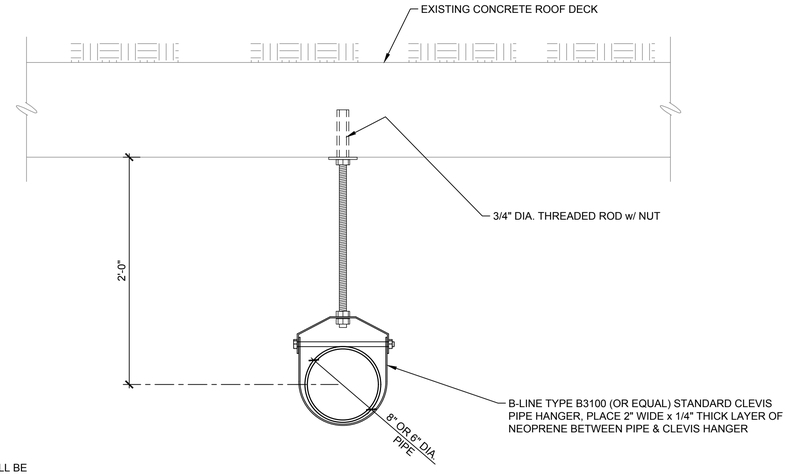
IMPROVEMENTS AT BELLA VISTA RESERVIOR

DETAILS

Project No.:	200-106490-18002
Designed By:	JQ
Drawn By:	EJH
Checked By:	VMR

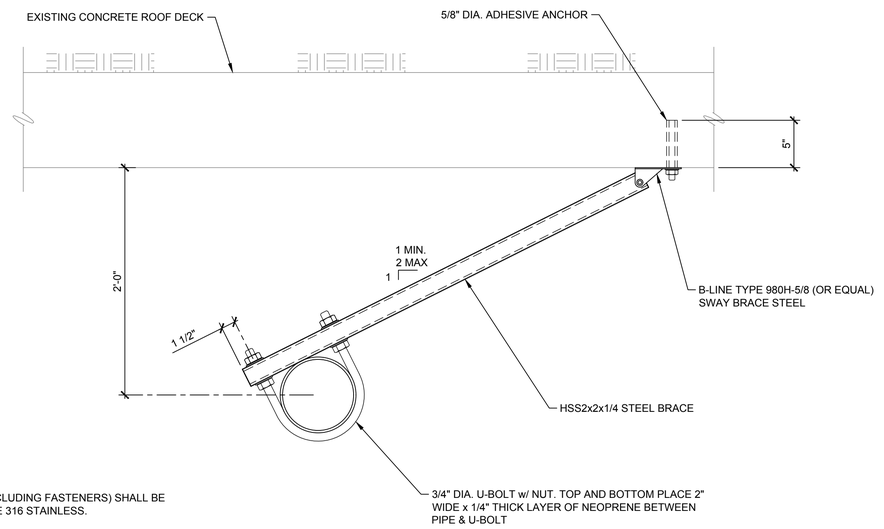
S-501

Bar Measures 1 inch
Section 3-C
Page 6



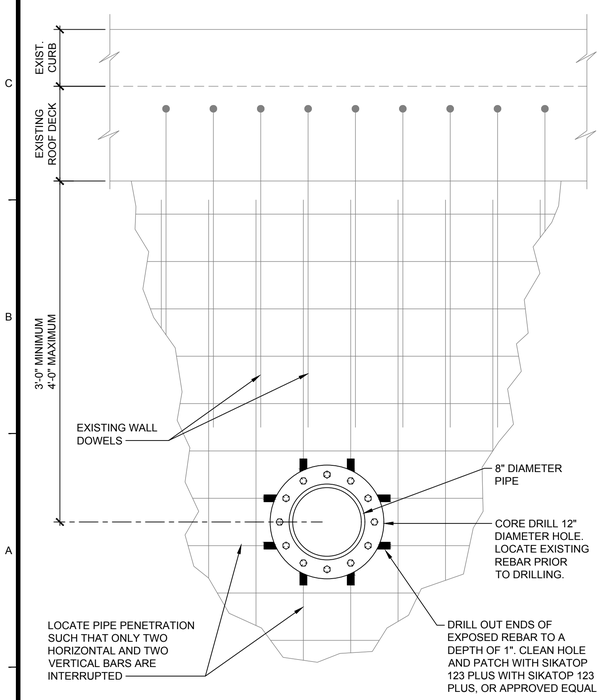
NOTE:
ALL STEEL (INCLUDING FASTENERS) SHALL BE MARINE GRADE 316 STAINLESS.

1 PIPE HANGER SUPPORT
SCALE: 1 1/2"=1'-0"

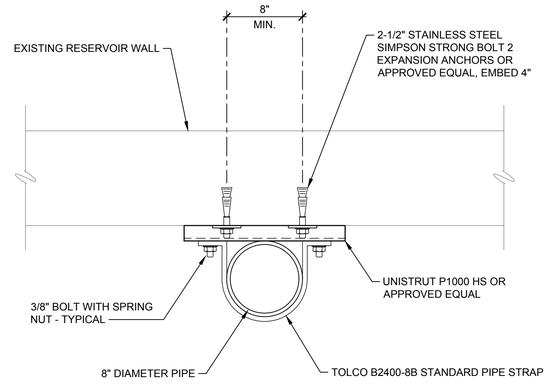


NOTE:
ALL STEEL (INCLUDING FASTENERS) SHALL BE MARINE GRADE 316 STAINLESS.

2 PIPE HANGER SUPPORT
SCALE: 1 1/2"=1'-0"

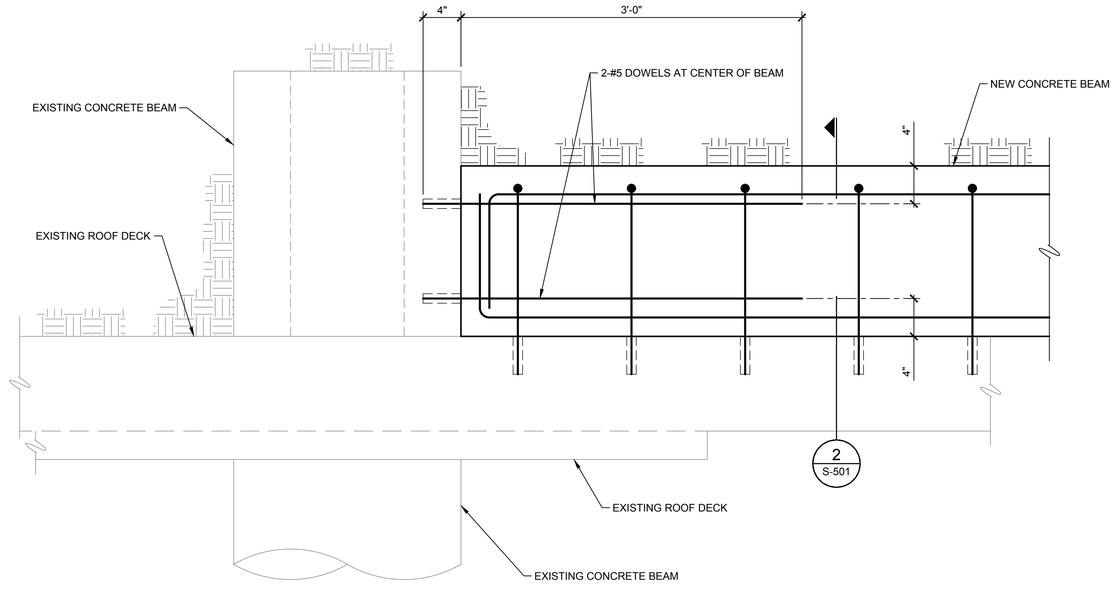


3 8" PIPE IN PENETRATION WALL
SCALE: 1 1/2"=1'-0"



NOTE:
UNLESS OTHERWISE NOTED, ALL STEEL FOR PIPE RISER SUPPORT SHALL BE HOT DIPPED GALVANIZED

4 8" PIPE RISER
SCALE: 1 1/2"=1'-0"



5 CONCRETE BEAM TO EXISTING CONNECTION
SCALE: 1 1/2"=1'-0"

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MARK	DATE	DESCRIPTION	BY

MONTECITO WATER DISTRICT

IMPROVEMENTS AT BELLA VISTA RESERVIOR

DETAILS

Project No.:	200-106490-18002
Designed By:	JQ
Drawn By:	EJH
Checked By:	VMR

S-502

Bar Measures 1 inch
Section 3-C
Page 7

MONTECITO WATER DISTRICT
MEMORANDUM

SECTION: 3-D

DATE: NOVEMBER 13, 2018

TO: OPERATIONS COMMITTEE

FROM: ENGINEERING MANAGER

SUBJECT: FEMA PROJECTS UPDATE

RECOMMENDATION:

- For information only.

DISCUSSION:

The Thomas Fire and debris flow damages are categorized for reimbursement purposes into insurance or FEMA reimbursable repairs. Insurance-related repairs total approximately $1.8M and are approximately 50% complete to date with the outstanding insurance-related repairs being the Jameson Lake property reconstruction. FEMA-related repairs currently total approximately $4.6M and are also approximately 50% complete. FEMA repairs are categorized as emergency or permanent. 100% of FEMA emergency repairs have been completed but the permanent repairs remain to be completed. This staff report describes the FEMA permanent repairs currently underway.

Until May 2018, the District was in what FEMA considered an “emergency” period. All repairs completed through May 2018, which total approximately $2.2M have been submitted to FEMA and are being processed for payment. Reimbursement is anticipated within the next several months.

The District is now in the permanent project phase. Permanent repairs must go through a full engineering design, environmental review, competitive bidding process, and permitting. The District has been working diligently since May on the survey, geotechnical investigations, engineering designs, environmental documentation including CEQA and NEPA, permitting with RWQCB, SWRCQ, CDFW, USACE, NMFS, and USFWS, and coordination with other utilities such as Caltrans for these permanent projects. There are eleven permanent projects that remain to be completed for a total estimated cost of approximately $2.4M. These projects are listed in Table 1.

The goal is to complete construction of the projects located within creeks or on bridges (9 out of the 11 projects) by mid-January 2019 with most being completed before the end of 2018. Park Lane Reservoir roof repairs should be completed by the end of November. Alder Creek Flume will take longer to complete and is scheduled to be completed by mid-2019.

Of the eleven remaining projects to be completed, $1.8M of the total $2.4M projected expense has been obligated by FEMA. This means FEMA has reviewed the project, deemed it eligible for funding, and the District can submit a request for reimbursement from CalOES (FEMA) immediately following completion of the work. According to the District's FEMA project manager, the remaining projects are expected to be obligated soon.

Table 1 – Total Remaining FEMA Project Costs

Project Name	RFP Awarded Date	Contractor	Construction Begin	Completion	Bid Price	CO #1	Total Price
Caltrans Bridge - Toro East	10/05/2018	Tierra	11/19/2018	11/28/2018	$ 86,650	$3,795	$ 90,445
Caltrans Bridge - Romero Creek	10/24/2018	Lash	11/28/2018	12/7/2018	$ 79,493		$ 79,493
Caltrans Bridge - Montecito Creek	11/23/2018	TBD	12/03/2018	12/10/2018	$ 130,000*		$ 130,000
Glen Oaks North Bridge	08/27/2018	Tierra	11/08/2018	11/15/2018	$ 26,430	$475	$ 26,905
Hidden Valley Lane Creek Crossing	09/21/2018	Lash	11/19/2018	12/05/2018	$ 71,000		$ 71,000
Bella Vista Highline Crossing	10/19/2018	Tierra	12/03/2018	12/11/2018	$ 184,245		$ 184,245
San Ysidro Creek Highline Crossing	11/13/2018	TBD	12/4/2018	Jan 2019	$ 357,000*		$ 357,000
Romero Cyn Creek Highline Crossing	11/13/2018	TBD	12/4/2018	Jan 2019	$ 358,000*		$ 358,000
Cold Springs Creek Highline Crossing	11/13/2018	TBD	12/4/2018	Jan 2019	$ 474,000*		$ 474,000
Alder Creek Flume	TBD	TBD	TBD	TBD	$ 493,000*		$ 493,000
Park Lane Reservoir Roof	11/2/2018	Schock	11/14/2018	11/20/2018	$ 80,000*		$ 80,000
						TOTAL OUTSTANDING PROJECT COSTS	**$2,344,088**

* Estimated cost

FISCAL IMPACT:

In accordance with CalOES (FEMA) processes, the District must fund project-related expenses initially before requesting and receiving reimbursement. The District's payment of project-related expenses over the next several months could have a short-term negative impact on cash flow. Payments will be made using operating revenues and if needed, unrestricted cash reserves. This shortfall will be remedied once CalOES (FEMA) provides payment to the District for the completed work. A request for reimbursement for completed work can be made as-needed. CalOES (FEMA) has reassured District staff that the estimated turnaround time for reimbursement requests is 2-3 weeks. Staff will remain diligent in the timely submittal of FEMA-related invoices to CalOES (FEMA). During this same period, it is possible that reimbursement for some of the "emergency work", totaling $2.2M could be received, which would greatly improve cash flow.