MASSON
& ASSOCIATES, INC.
PLANNING ▲ ENGINEERING ▲ SURVEYING

200 E. Washington Ave., Suite 200
Escondido, CA 92025

P. 760.741.3570
F. 760.741.1786

www.masson-assoc.com

November 26, 2013

Sherrill Schoepe
Shadow Run Ranch, LLC
Post Office Box 1249
Pauma Valley, CA 92061

RE: Other County Requirements (Addendum to Geotechnical Plan)

Dear Ms. Schoepe:

This letter is to address GEI and County Comments “Other County Requirements” in the response letter from GEI dated August 12, 2013 it requests additional information including:

> In addition to the geotechnical assessment of the Reservoir embankment stability, the county also required that the applicant provide the following:
>
> 1. Relocate reservoir spillway
> 2. Reservoir drainage (1000 yr flood calcs)
> 3. Reservoir overtopping (seiche overtopping - short term concentrated flows)
> 4. Failure analyses including path and limits of inundation (in the event of a reservoir embankment failure).
> 5. Detailed maintenance plan to control deterioration due to erosion, vegetation, and small animals.
> 6. Emergency drawdown calculations

Page 6-7, Other Hazards. The geotechnical report states that the project drainage system should be checked for its ability to handle short-term, concentrated flows if significant reservoir overtopping were to occur during an earthquake. Please include an addendum to the geotechnical report which provides a detailed evaluation of the project drainage system and whether it can handle short-term concentrated flows if significant reservoir overtopping were to occur. The addendum should consider the worst case scenario of failure of the existing reservoir embankment in its evaluation. The addendum should include specific design measures as necessary to dissipate and/or divert flows to levels that ensure the safety of all proposed house pads to be placed below the dam. The addendum shall include the following concluding statement and must be signed and stamped by a California Certified Engineering Geologist and if necessary a California Licensed Civil Engineer: “Based on the available information described in this addendum, it is the opinion of the undersigned, that the measures described herein are sufficient to assure the house pads would be safe from the potential effects of dam inundation at the site.” 12/14/2012 2nd Request. This comment was not addressed.

Item 1: See revised preliminary grading plan moved spillway (Attachment 1)

Item 2: See additional drainage 1,000 yr. calculations (Attachment 2)

Item 3: Previously addressed in May 31, 2013 letter submitted by Masson & Associates Inc. (Attachment 3)

Item 4: With regard to the worst case scenario of failure, by piping, we reference the URS letter dated August 22, 2013 “Work plan for Geotechnical Assessment” which indicates failure and inundation analysis is not required at this time.

Item 5: See Operation & Maintenance Plan (Attachment 5)

Item 6: See Emergency drawdown calculations (Attachment 6)

Sincerely,

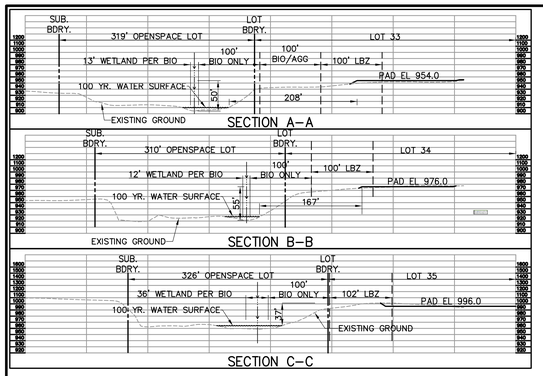
Bruce A. Tait, QSP/QSD
Director of Engineering

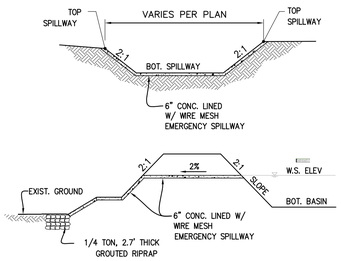
Cc: David Schug
Cc: Robert Hingtgen

COUNTY OF SAN DIEGO TRACT NO. TM 5223 RPL-3

SHADOW RUN RANCH, PAUMA VALLEY

PRELIMINARY GRADING PLAN





EMERGENCY SPILLWAY @ RESERVOIR

N.T.S

NOTE: NO LIGHTING IS PROPOSED PER THE DARK SKIES ORDINANCE DUE TO THE PROXIMITY TO PALOMAR MOUNTAIN OBSERVATORY.

C/L 20' ESMT ACCESS TO WELLS

PROPOSED 100' LIMITED BUILDING ZONE (TYP.)

111-070-12

Por. 111-080-07

111-080-13

VOLLEYBALL COURT

PARKING LOT (16 SPACES)

TENNIS COURT

PATHS

PICNIC AREA

PLAY EQUIP.

SUBDIVISION BOUNDARY

PROPOSED 100' LIMITED BUILDING ZONE (TYP.)

100 YR. FLOOD LIMITS

WETLAND PER BIO

OPEN SPACE BOUNDARY

C/L 20' ESMT ACCESS TO WELLS

FAULT SETBACK 100'

ELSINORE FAULT

NORTH BRANCE FAULT

BIOLOGICAL OPEN SPACE LOT

EXISTING 24" OUTLET (EL 1085.4)

±1082.6 WATER SURFACE ELEVATION AT SPILLWAY SEE DETAIL UPER LEFT THIS SHEET

EXISTING 6" OUTLET PIPE

EXISTING 10" DISCHARGE PIPE

8' RET. WALL

1,415 S.F. IMP-1A

PROPOSED 20' FIRE CLEARING ZONE (TYP.)

111-080-19

111-080-18

PROPOSED 100' LIMITED BUILDING ZONE (TYP.)

INDIAN RESERVATION APN 111-070-14

HAAS VIEW WAY

PROPOSED BIO BUFFER EASEMENT AS INDICATED

111-080-06

SAME OWNERSHIP NOT A PART

NE 1/4 SE 1/4

DBL RCP @ 36"

PROPOSED YUIMA PAUMA VALLEY - NORTHERN ROUTE PIPELINE

111-080-07

4,288 S.F. IMP-3A

PROPOSED 40' PRIVATE DRIVEWAY EASEMENT OVER 40' EXISTING ACCESS ROAD. NO IMPROVEMENTS PROPOSED.

3,554 S.F. IMP-2A.2

WETLAND PER BIO

C/L 20' ESMT ACCESS TO WELLS

BIOLOGICAL OPEN SPACE LOT

AGRICULTURAL OPEN SPACE LOT

111-080-10

111-080-14

SOUTH BRANCE FAULT

1,589 S.F. IMP-2A.3

5,110 S.F. IMP-1D

AQUA CREST TRAIL

995 S.F. IMP-2A.4

PROPOSED OFF-SITE PVT. RD. EASEMENT BY SEPARATE DOCUMENT

PROPOSED YUIMA PAUMA VALLEY - NORTHERN ROUTE PIPELINE

MAIN FAULT

SEE SHEET 2

SEE SHEET 2

4,075 S.F. IMP-1A

PROPOSED OFF-SITE PVT. RD. EASEMENT BY SEPARATE DOCUMENT

SHERRILL SCHOEPE 111-080-12

1,240 S.F. IMP-1B

SEE LETTER OF PERMISSION TO DEDICATE AND CONSTRUCT IMPROVEMENTS BY SHERRILL SCHOEPE DATED: APRIL 2012.

SEE LETTER OF PERMISSION TO DEDICATE AND CONSTRUCT IMPROVEMENTS BY SHERRILL SCHOEPE DATED: APRIL 2012.

PROPOSED OFF-SITE PVT. RD. EASEMENT BY SEPARATE DOCUMENT

SHERRILL SCHOEPE 111-080-13

PROPOSED 20' FIRE CLEARING ZONE (TYP.)

1,324 S.F. IMP-1C

INDIAN RESERVATION APN 111-070-18

ADAMS DRIVE "PRD-6"

LEGEND

- BROWDITCH
- SWALE / PAD DRAINAGE
- STORM DRAIN
- DAYLIGHT
- FILL SLOPES 2:1 MAX
- CUT SLOPES 2:1 MAX
- LOT#
- PAD GRADE
- AC BERM / 8' TRAIL
- SUB BOUNDARY
- FIRE CLEARING
- PROPOSED WATER
- EXISTING YUIMA WATER
- 8.3% DIRECTION OF DRAINAGE % SLOPE
- 796.2 FS STREET ELEVATION
- LEACH FIELD
- HYDRO-MOD / IMP#

N

SCALE IN FEET
GRAPHIC SCALE
1"=100'

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Escondido, CA 92025 P. 760.741.3570
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CALIF. COORD. INDEX: 427-1764

1,000 YR. RESERVOIR CALCULATIONS

For
SHADOW RUN RANCH

TM 5223

Preparation/Revision Date:

November 25, 2013

Prepared for:

Sherrill Ann Schoepe, General Partner

Shadow Run Ranch, LLC

P.O. Box 1249

Pauma Valley, CA 92061

Telephone: (760) 742-1893

Prepared by:

Masson & Associates, Inc.

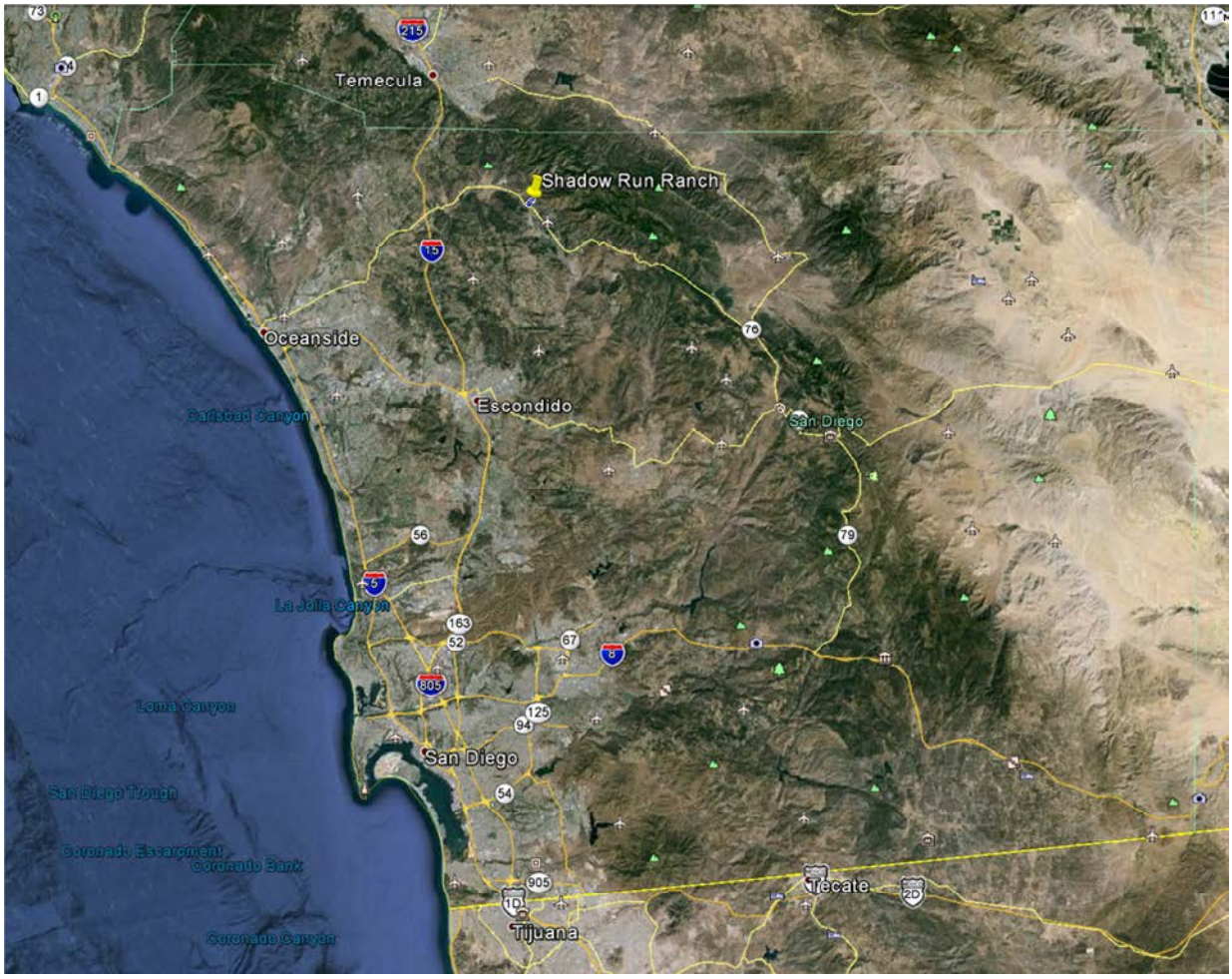
200 East Washington Avenue, Suite 200

Escondido, CA 92025

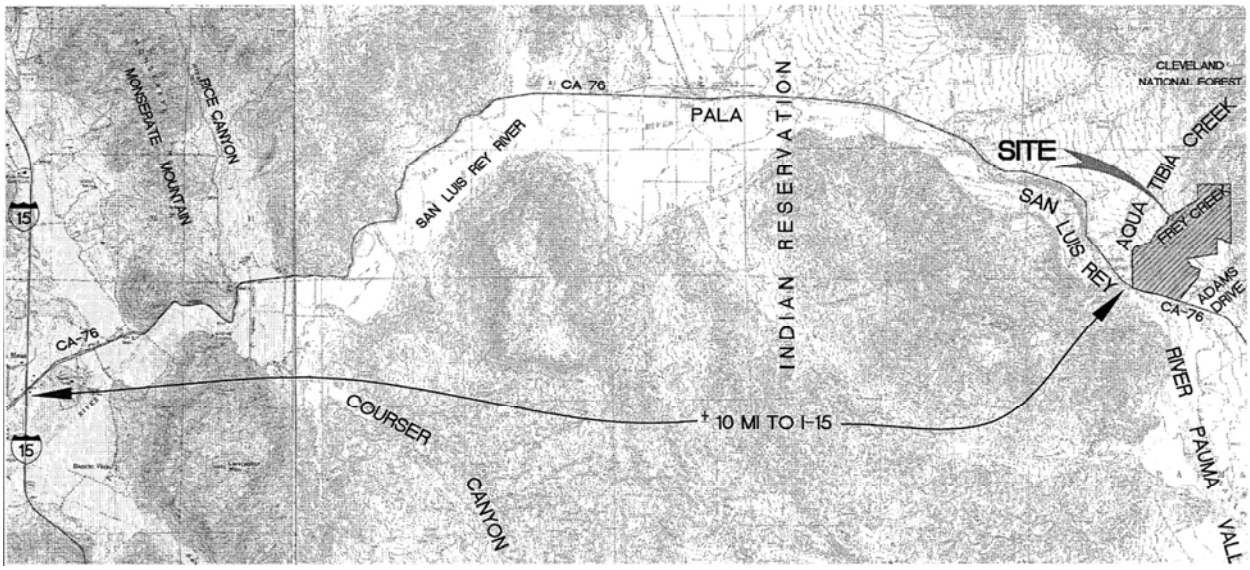
Telephone: (760) 741-3570

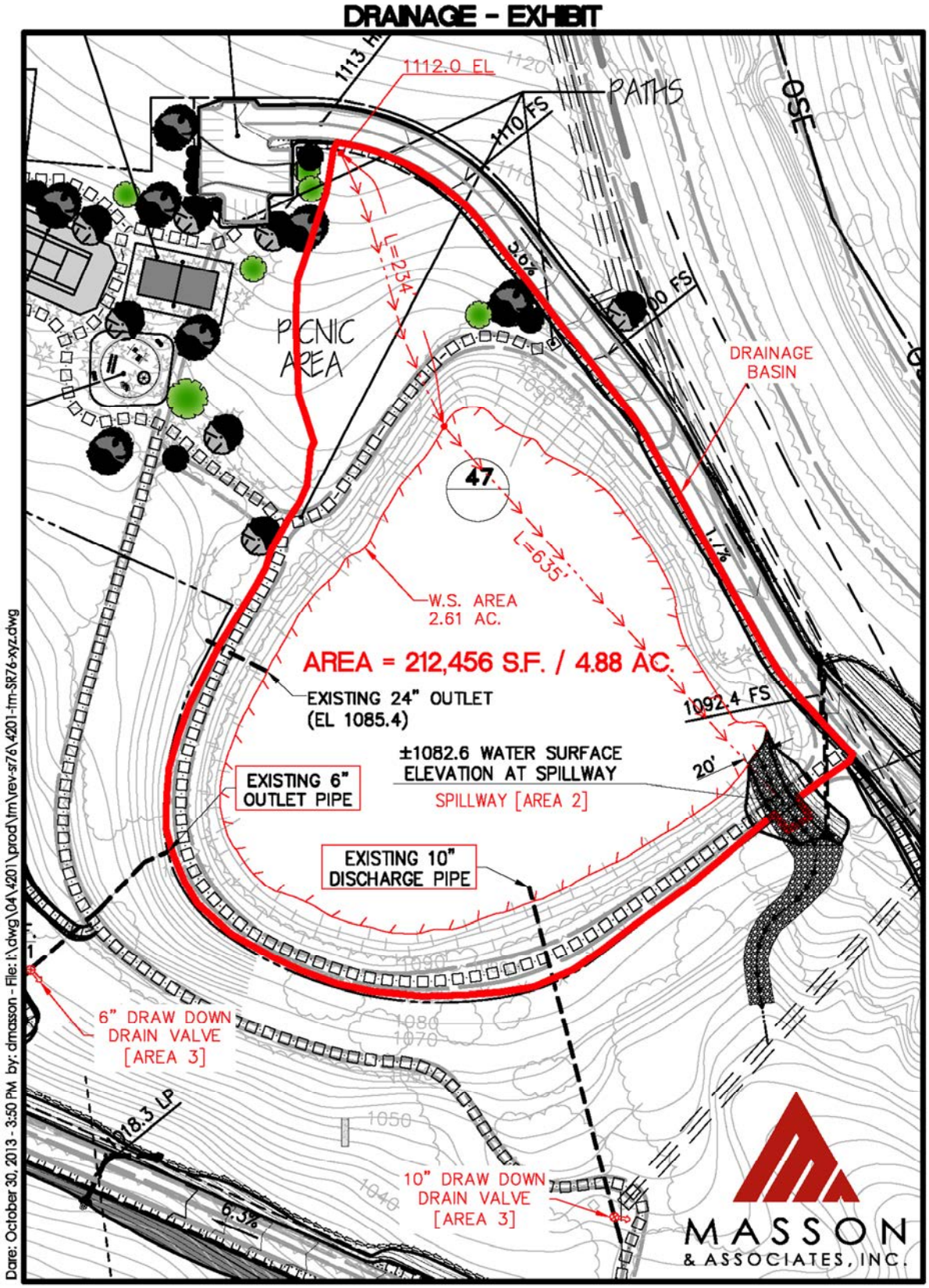
Tuesday, November 26, 2013

Regional map:



Project location Map:




DRAINAGE - EXHIBIT
1112.0 EL
PATHS
1110 FS
L=234'
5.0%
PICNIC AREA
DRAINAGE BASIN
47
L=635'
1.7%
W.S. AREA
2.61 AC.
AREA = 212,456 S.F. / 4.88 AC.
EXISTING 24" OUTLET
(EL 1085.4)
1092.4 FS
±1082.6 WATER SURFACE
ELEVATION AT SPILLWAY
SPILLWAY [AREA 2]
20'
EXISTING 6"
OUTLET PIPE
EXISTING 10"
DISCHARGE PIPE
6" DRAW DOWN
DRAIN VALVE
[AREA 3]
18.3 LF
6.3%
10" DRAW DOWN
DRAIN VALVE
[AREA 3]
MASSON
& ASSOCIATES, INC.
Date: October 30, 2013 - 3:50 PM by: dmasson - File: i:\dwg\04\4201\prod\tm\rev-sr76\4201-tm-SR76-xyz.dwg

MASSON & ASSOCIATES, INC.

PROJECT NO.:
DESCRIPTION:
CALCULATED BY: DATE:
CHECKED BY: DATE:
SHEET OF
SCALE:

Calculating Q for 1000 years

soil Type D ⇒ C = 0.35 From Table 3.1, A = 4.88 Ac

$T_c = T_i + T_t$

$T_i = 6.9$ min from Table 3.2 (for 10% slope, slope on site is around 12%)

$T_t = 0$ ∴ $T_c = 6.9$ min

By calculation Q for years 2, 5, 10, 25, 50, 100, we will find the fraction for Q between $Q_{2,5,10,25,100}$ to Estimate the Q_{1000}

year 2

$P_6 = 1.68$ in $P_{24} = 2.7$ in $\frac{P_6}{P_{24}} = \frac{1.68}{2.7} \times 100 = 62\%$ ✓ ∴ $P_6 = 1.68$ in

∴ $I = 3.7$ in/hr (From figure 3.1)

$Q_2 = CIA$ $Q_2 = 0.35 \times 3.7 \times 4.88 = 6.3$ cfs

year 5

$P_6 = 2.2$ in $P_{24} = 4.1$ in $\frac{P_6}{P_{24}} = \frac{2.2}{4.1} \times 100 = 53.7\%$ ✓ ∴ $P_6 = 2.2$ in

∴ $I = 4.4$ in/hr (figure 3.1)

$Q_5 = CIA$ $Q_5 = 0.35 \times 4.4 \times 4.88 = 7.5$ cfs

200 EAST WASHINGTON AVENUE, SUITE 200 ESCONDIDO, CA 92025 TEL (760) 741-3570 FAX (760) 741-1786

MASSON & ASSOCIATES, INC.

PROJECT NO.:
DESCRIPTION:
CALCULATED BY: DATE:
CHECKED BY: DATE:
SHEET OF
SCALE:

Year 10

$P_6 = 2.43$ in $P_{24} = 5.2$ in $\frac{P_6}{P_{24}} = \frac{2.43}{5.2} \times 100 = 46.7\%$ ✓ $\therefore P_6 = 2.43$ in

$I = 4.8$ in/hr (Figure 3-1)

$Q_{10} = CIA$ $Q_{10} = 0.35 \times 4.8 \times 4.88 = 8.2$ cfs

Year 25

$P_6 = 2.9$ in $P_{24} = 5.6$ in $\frac{P_6}{P_{24}} = \frac{2.9}{5.6} \times 100 = 51.8\%$ ✓ $\therefore P_6 = 2.9$

$I = 5.8$ in/hr (Figure 3-1)

$Q_{25} = CIA$ $Q_{25} = 0.35 \times 5.8 \times 4.88 = 9.9$ cfs

Year 50

$P_6 = 2.3$ in $P_{24} = 6.7$ in $\frac{P_6}{P_{24}} = \frac{2.3}{6.7} \times 100 = 49.3\%$ ✓ $\therefore P_6 = 3.3$ in

$I = 6.8$ in/hr (Figure 3-1)

$Q_{50} = CIA$ $Q = 0.35 \times 6.8 \times 4.88 = 11.6$ cfs

Year 100

$P_6 = 3.7$ in $P_{24} = 7.5$ in $\frac{P_6}{P_{24}} = \frac{3.7}{7.5} \times 100 = 49.3\%$ ✓ $\therefore P_6 = 3.7$ in

$I = 7.7$ in/hr (Figure 3-1)

$Q_{100} = CIA$ $Q_{100} = 0.35 \times 7.7 \times 4.88 = 13.2$ cfs

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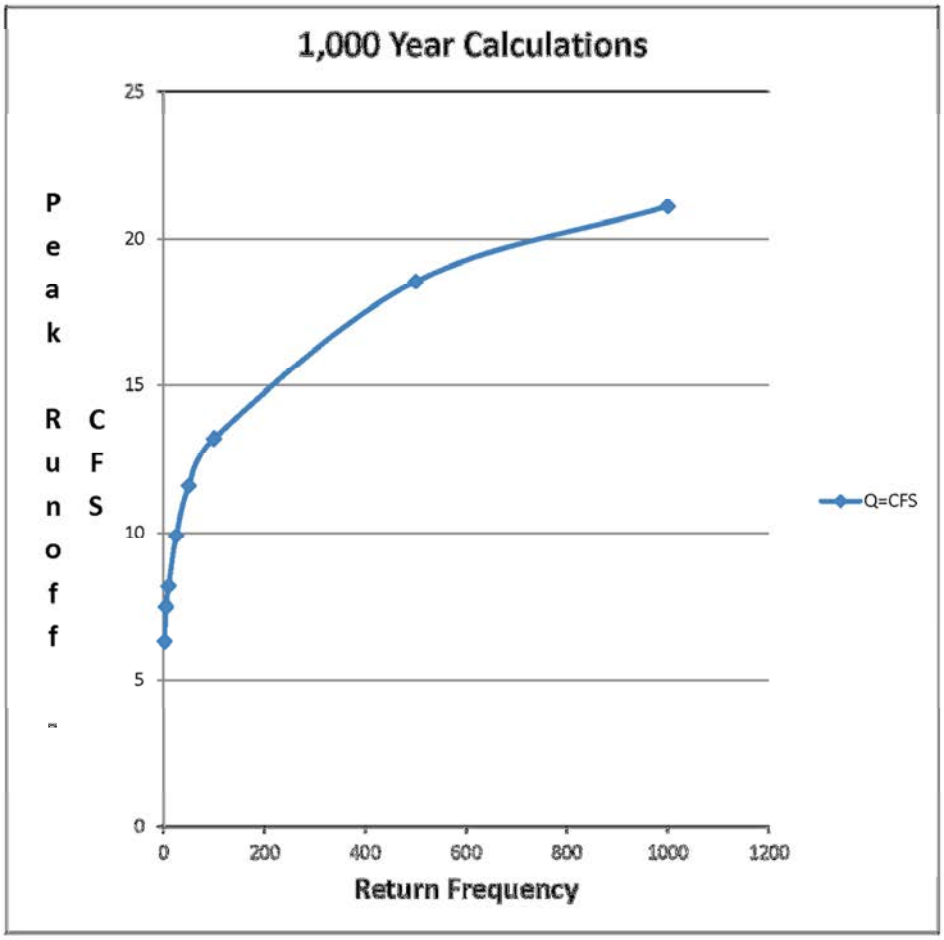
Yr	Q=CFS
2	6.3
5	7.5
10	8.2
25	9.9
50	11.6
100	13.2
500	18.56
1000	21.1



Methodology:

The peak runoff for the 2, 5, 10, 25, 50 and 100 year frequency storms have been calculated on the previous page and summarize on this page, in accordance with the requirements of the County of San Diego Hydrology Manual. The relationship between the values of the storms remains fairly consistent. The relationship between runoff intensity / flow is 1.6:1 for storm frequencies that have a return frequency that is 10:1. For example:

The flow for a 50 year storm is 1.6 times the flow rate for a 5 year storm and the flow rate for a 100 year storm is 1.6 times the flow rate for a 10 year storm.

Using this relationship we can extrapolate and calculate the peak flow rate for a 1000 year storm, which would be 1.6 times the 100 year storm (or 21.1 cfs).

page (4)

MASSON & ASSOCIATES, INC.

PROJECT NO.:
DESCRIPTION:
CALCULATED BY: DATE:
CHECKED BY: DATE:
SHEET OF
SCALE:

We calculation Q fraction between 50/5 , 100/10 to find out fraction between 1000/100 :

$\frac{50}{5} = \frac{116}{75} = 1.55$ $\frac{100}{10} = \frac{13.2}{8.2} = 1.6$

$\Rightarrow Q_{1000} = 13.2 \times 1.6 = 21.1$ cfs

We use weirs equation for trapezoidal cross section to find H in feet:

$Q = CLH^{3/2}$ $H = \left(\frac{Q}{CL}\right)^{2/3} = \left(\frac{21.1}{3.1 \times 20}\right)^{2/3} = 0.5$ ft

for C value please refer to table 5.9 from Hand Book of Hydraulics (Brater and King)

Therefore, we have shown that the spillway is more than sufficient to convey the 1000 year storm.

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May 31, 2013

Sherrill Schoepe
Shadow Run Ranch, LLC
Post Office Box 1249
Pauma Valley, CA 92061

RE: Scoping letter comment DPLU 20-5

Dear Ms. Schoepe:

This letter is to address DPLU Comment #20-5, in the County of San Diego EIR Scoping Letter dated December 14, 2012, it states:

> Page 6-7, Other Hazards. The geotechnical report states that the project drainage system should be checked for its ability to handle short-term, concentrated flows if significant reservoir overtopping were to occur during an earthquake. Please include an addendum to the geotechnical report which provides a detailed evaluation of the project drainage system and whether it can handle short-term concentrated flows if significant reservoir overtopping were to occur. The addendum should consider the worst case scenario of failure of the existing reservoir embankment in its evaluation. The addendum should include specific design measures as necessary to dissipate and/or divert flows to levels that ensure the safety of all proposed house pads to be placed below the dam. The addendum shall include the following concluding statement and must be signed and stamped by a California Certified Engineering Geologist and if necessary a California Licensed Civil Engineer: "Based on the available information described in this addendum, it is the opinion of the undersigned, that the measures described herein are sufficient to assure the house pads would be safe from the potential effects of dam inundation at the site." 12/14/2012 2nd Request. This comment was not addressed.

Per this request we have looked into the proposed downstream drainage system and have determined that the proposed downstream drainage system is sized appropriately to convey the water outlined in the seiche overtopping scenario italicized below for the short term concentrated flow.

> *From URS - We modeled the reservoir water level like a seiche, with a 1-ft wave running up the inner slope of the reservoir. Based on this we estimate the reservoir could overflow (or overtop) at a rate of about 0.2 ft3/ft-sec.*

The area of most concern is the southwesterly portion of the reservoir facing the proposed project. This area has a total overtopping rate of 62 cfs. This area is upstream from a proposed 1,415 s.f. hydro-modification basin 2A.1. HMP basin 2A.1 has been designed to accommodate water storage of 1,179 cubic feet, which is several times the amount of the overtopping volume. This basin has a 36" stand pipe and an outlet flow capacity of 24 cfs. Therefore, the overtopping flows would not exceed the original design capacity of the proposed drainage system.

Solved.

With regard to the worst case scenario of failure, by piping, we reference the URS letter dated May 22, 2013 which includes a proposal for a synthetic liner system. Preliminary recommendations for the liner, based on input from URS and liner manufacturers, are attached. In our opinion, a properly designed and installed impervious liner system would be sufficient to mitigate the hazard of piping related seepage from the reservoir.

Sincerely,

Bruce A. Tait, QSP/QSD
Director of Engineering

Cc: David Schug
Cc: Robert Hingtgen

OPERATION & MAINTENANCE PLAN

For
SHADOW RUN RANCH

TM 5223

Preparation/Revision Date:

November 21, 2013

Prepared for:

Sherrill Ann Schoepe, General Partner

Shadow Run Ranch, LLC

P.O. Box 1249

Pauma Valley, CA 92061

Telephone: (760) 742-1893

Prepared by:

Masson & Associates, Inc.

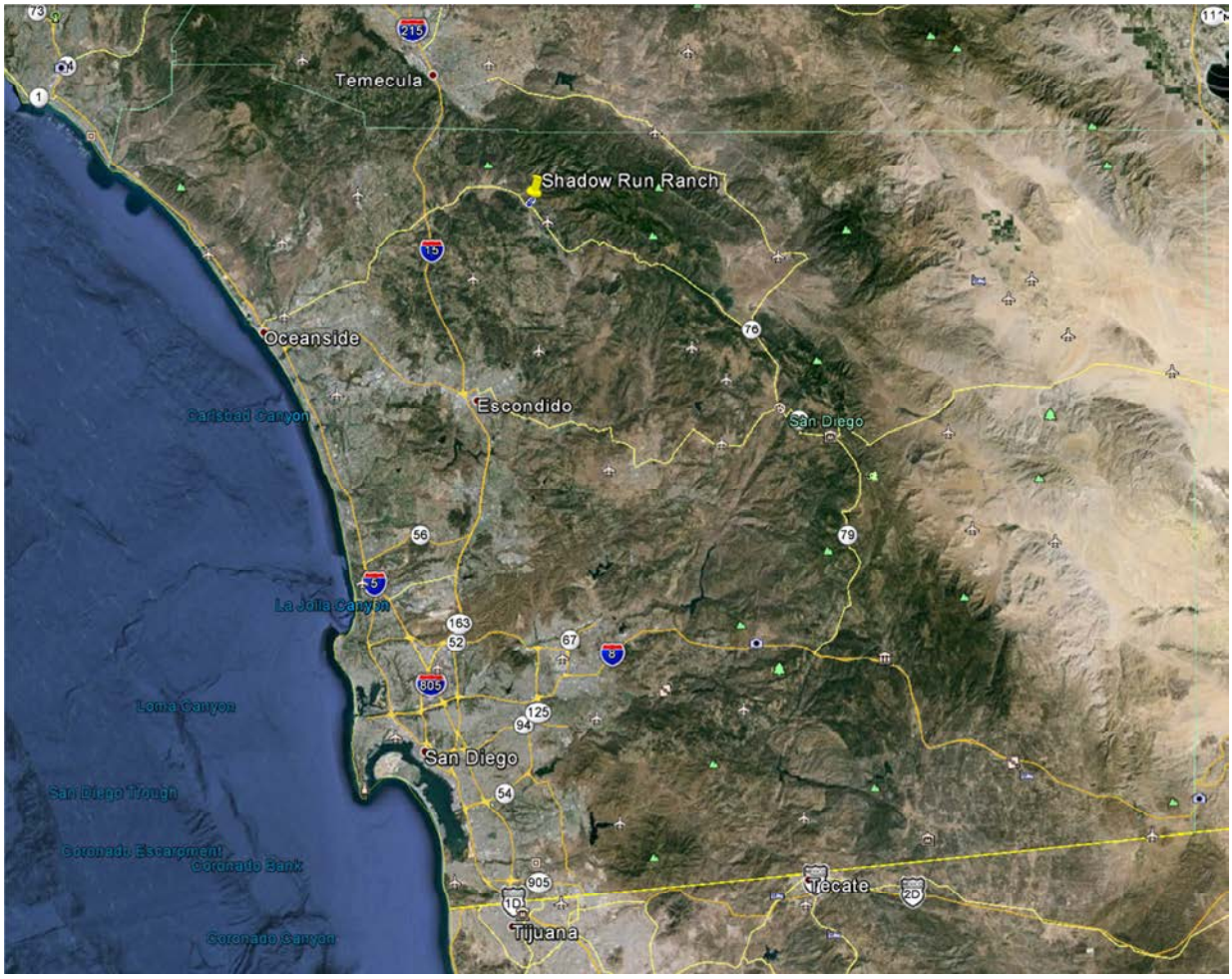
200 East Washington Avenue, Suite 200

Escondido, CA 92025

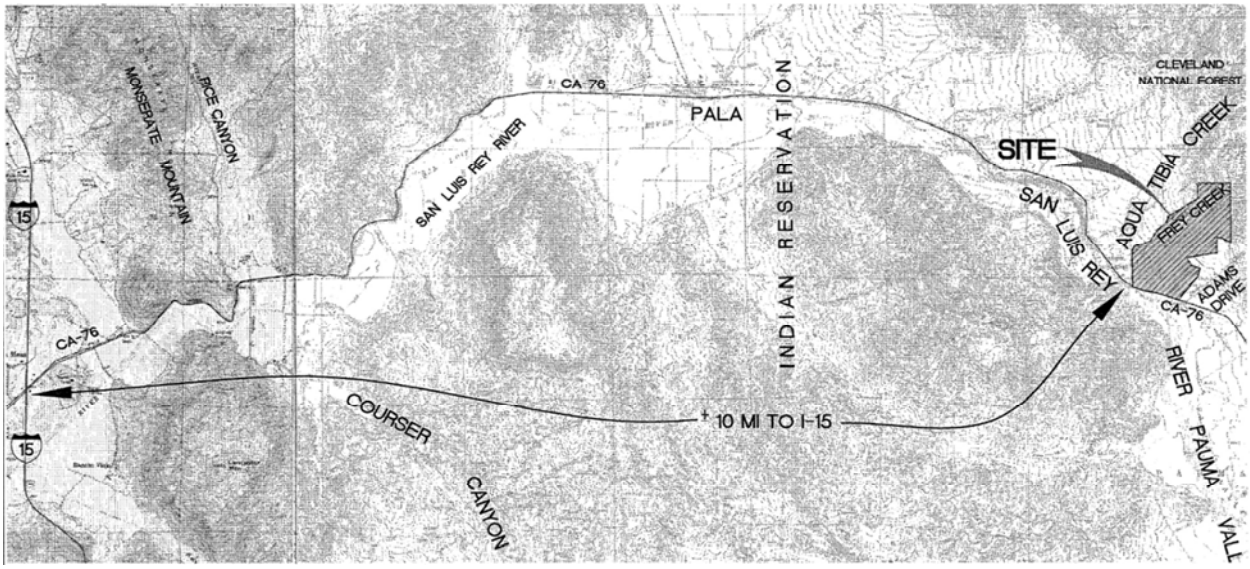
Telephone: (760) 741-3570

Tuesday, November 26, 2013

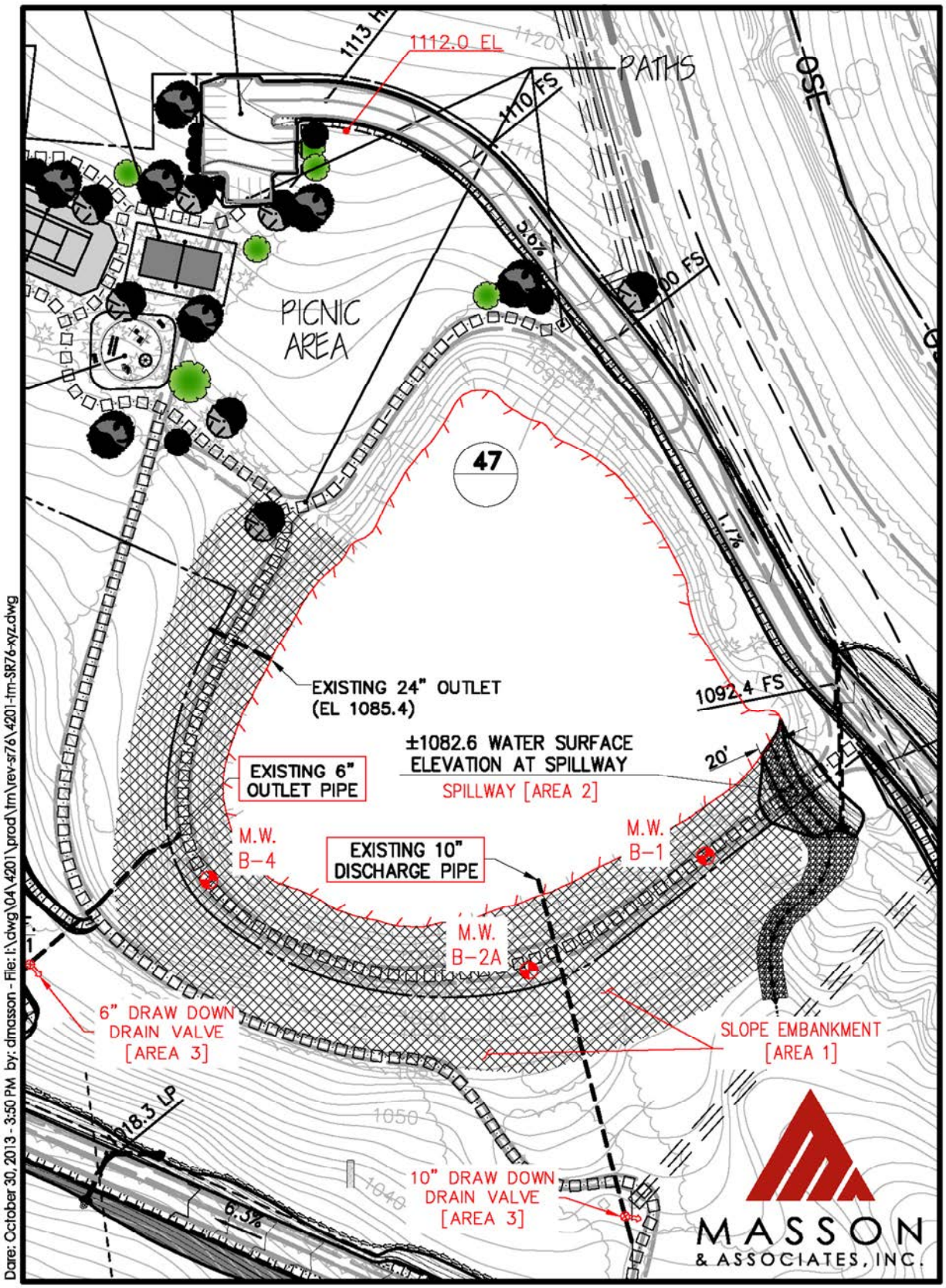
Regional map:



Project location Map:



Reservoir area:



1.0 Purpose of Document

The proposed project's HOA, County of San Diego as well as the ongoing agricultural operations and future home owners of the project are stakeholders in this Operations and Maintenance Plan (O&M). The following is an outline of the system and elements affected by this O&M. The operation and maintenance of the existing reservoir are the responsibility of the project proponent. They will enter into a MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT with the County of San Diego to implement this O&M. The operation and maintenance associated with the existing reservoir are discussed below. The discussion includes a routine action, maintenance indicator, field observation methods, frequency, and maintenance activity. Costs associated with each activity are included. The scope and purpose of this O&M is to ensure the operational items associated with the existing reservoir are working properly and the safety and stability of the reservoir are maintained at optimum working levels.

The three primary maintenance areas for the reservoir are as follows:

1. Reservoir embankment [AREA 1]
    a. Stability
    b. Landscaping
    c. Irrigation
    d. Burrowing animals
2. Reservoir spillway [AREA 2]
    a. Stability
    b. Energy dissipaters
    c. Scour
3. Reservoir drain lines [AREA-3]
    a. Pipeline condition
    b. Shutoff valves
    c. Drain valves
4. Monitoring wells [AREA-4]
    a. Depth to ground water

The landscape architect should choose plant coverage for slope protection and erosion control along the outer edge of the reservoir embankment that will be high in erosion control value with shallow root systems and which will deter small burrowing animals. The reservoir slope embankment shall be watered sparingly to maintain landscape coverage for erosion control.

2.0 Facilities and Resources

The facilities and resources identified to be managed and inspected are shown the graphic on page 3, "Reservoir areas." The management and inspection of the reservoir will be the responsibility of the ownership of the recreational open space lot 47 of TM 5223 (the homeowners association (HOA)). The property manager(s) of the HOA shall at all times have a qualified grove manager(s) that will be employed by said HOA and have a set number of hours dedicated monthly to inspect and fill out inspection reports in conformance with this Operations

and Maintenance Plan. General qualifications shall be on-site training for all systems and grounds. The HOA shall dedicate $____ monthly and have a reserve fund to anticipate any startup and ongoing maintenance of the reservoir systems.

3.0 Operations

The goal of this O&M is to ensure safety and operational conditions of all reservoir systems on a monthly basis. Testing the valves on the two (2) 6" irrigation/down drain lines and the one (1) 10" down drain line shall be maintained and operational to be opened in case of an emergency to drawdown ½ the reservoir capacity within 7 days, and completely drain the reservoir within 20 days.

The report shall contain, at a minimum, the following items:

Inspection Protocol: Inspections will include:

- Date of inspection
- Reservoir level
- Water use in previous month
- Note any unusual signs of changed water levels
- Condition of the spillway
- Check scour and erosion
- Condition of the 6" drain line
- Condition of the 10" drain line
- Overall embankment stability
- Any signs of slope movement
- Any signs of seepage around or below reservoir
- Any rock falls nearby
- Vegetation control
- Control of burrowing animals
- Irrigation control
- Recommendations for repairs
- Three existing monitoring wells
- Record depth to ground water

Quarterly inspections:

The grove manager shall visually inspect on a quarterly basis, the entire slope embankment [Area 1] of the reservoir including the spillway [Area 2] looking for any settlement, surface cracking, burrowing animals, overwatering and seepage. In addition the (2) 6" drain line pipes and (1) 10" drain line pipe [Area 3] shall be tested monthly, to ensure the valves and drain capacities are working properly.

On a quarterly basis, or if an earthquake is felt at or near the reservoir (as outlined below), measure and record the depth to groundwater in the three existing monitoring wells at the top of the reservoir embankment [Area 4]. The HOA shall be notified immediately if any substantially changed groundwater levels are indicated. The reports shall be submitted to the HOA and COSD within 10 working days of the date of the inspection and will be filed in the HOA manager's office and shall be stored for 5 years.

Special inspections:

If an earthquake occurs at or near the reservoir, or has been reported to occur, within the following criteria, immediate inspection shall be required:

- M ≥ 4.0 w/in 25 miles,
- M ≥ 5.0 w/in 50 miles,
- M ≥ 6.0 w/in 75 miles,
- M ≥ 7.0 w/in 125 miles,
- M ≥ 8.0 w/in 200 miles,

If such an earthquake occurs, the following items shall be inspected and reported upon:

- Date of inspection
- Reservoir level
- Note any unusual signs of changed water levels
- Condition of the spillway
- Condition of the 6" drain line
- Condition of the 10" drain line
- Overall embankment stability
- Any signs of slope movement
- Any signs of seepage around or below reservoir
- Any rock falls nearby
- Recommendations for repairs

Repairs recommended in the inspection reports shall be accomplished within: 10 working days, or immediately for repairs that are mandated by reservoir stability issues.

4.0 Maintenance / Repair

IMPLEMENTATION AND MAINTENANCE REQUIREMENTS

Reservoir Embankment

The primary maintenance requirements for the reservoir embankment are as follows:

- Weed, prune, and water, especially during plant establishment
- Keep landscape healthy and clean
- The grounds shall be free of large deep rooted trees and bushes
- Maintain control of small burrowing animals
- When encountered burrowing animals shall be removed and any holes filled in

Aesthetic and Functional Maintenance:

Aesthetic maintenance is important for public acceptance of facilities. Functional maintenance is important for performance and safety reasons.

Both forms of maintenance will be combined into overall system maintenance.

Aesthetic Maintenance

The following activities will be included in the aesthetics maintenance program:

- Replace dead or dying plants.
- Weed Control.
- Weeds will be removed through mechanical means.
- Herbicide will not be used because these chemicals impact the water quality.
- Prune overgrown plants.

Functional Maintenance

Components of a Functional Maintenance program include Preventive Maintenance and Corrective Maintenance.

a. **Preventive Maintenance -** Preventive maintenance activities to be instituted are:

- Trash and Debris. During each inspection, debris and trash removal will be conducted.
- Down drain outlet piping: Visual inspection of (2) 6" drain line pipes and (1) 10" drain line pipe shall be inspected and checked for leaking and or corrosive condition.
- Test down drain system. During each inspection, each down drain pipe shall be tested. Open valves check piping for any leaking.
- Sediment Removal. Sediment accumulation, as part of the operation and maintenance program at the spillway, will be monitored quarterly during the dry season, and after every large storm (0.50 inch), and monthly during the wet season. If accumulation of debris or sediment is determined to cause of decline in design performance, prompt action (i.e., within ten working days) will be taken to restore to design performance standards. Actions will include removal of sediment. Characterization and appropriate disposal of sediment will comply with applicable local, county, state, or federal requirements.
- Removal of Standing Water - Standing water must be removed if it contributes to the development of aquatic plant communities or mosquito breeding areas. Water standing for more than 96 hours will be removed at outflow.
- Fertilization – Any vegetation seed mix will be designed so that fertilization and irrigation (after establishment of the planting) is not necessary. Fertilizers will not be used to maintain the vegetation.
- On a quarterly basis, and if an earthquake is felt at or near the reservoir (as outlined above) measure and record the depth to groundwater in the three existing monitoring wells at the top of the reservoir embankment. Notify the HOA immediately if any substantially changed groundwater levels are indicated.

b. **Corrective Maintenance -** Corrective maintenance is required on an emergency or non-routine basis to correct problems and to restore the intended operation and safe function.

Corrective maintenance activities include:

- Removal of Debris and Sediment - Sediment, debris and trash, which impede the hydraulic functioning of reservoir spillway and vegetative growth, will be removed and properly disposed.
- Down drain outlet piping – two (2) 6" drain line pipes and one (1) 10" drain line pipe. Paint exposed piping, poly-wrap pipe protection if necessary, replace damaged sections.
- Test down drain system. Replace valves if necessary.
- Embankment and Slope Repairs – Damaged to slopes and embankments will be evidenced by erosion or collapsed surface areas. Once deemed necessary, damage to the slopes of the reservoir embankment will be repaired (within 10 working days).
- Erosion Repair – Erosion will be evident by rills or small gullies in the surfaces of the reservoir embankment slope. Corrective steps will be taken to prevent loss of soil and any subsequent danger to the performance of the reservoir embankment. There are a number of corrective actions that can be taken. These include temporary measures such as erosion control blankets or reducing flow through the area. Designers or contractors will be consulted to address erosion problems if the solution is not evident.
- Elimination of Animal Burrows - Animal burrows (evidenced by holes & mounds) will be filled and steps taken to remove the animals if burrowing problems continue to occur (filling and compacting). If the problem persists, vector control specialists will be consulted regarding removal steps. This consulting is necessary as the threat of rabies in some areas may necessitate the animals being destroyed rather than relocated. If the reservoir embankment performance is affected, abatement will begin. Otherwise, abatement will be performed annually in September.
- General Facility Maintenance - In addition to the above elements of corrective maintenance, general corrective maintenance will address the overall facility and its associated components. If corrective maintenance is being done to one component, other components will be inspected to see if maintenance is needed.
- Replace dead or dying plant material.

Regulatory Assurance

Maintenance is assured by the Major Use Permit # _____ and conditions of approval, as well as a MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT with the County of San Diego, which will be recorded against the property and run with the land.

Maintenance Costs

A detailed cost breakdown for the operation & maintenance of each area / system are attached and made part of this document. Total estimated annual costs for each are:

Reservoir embankment = $_____
Down drain piping = $_____
Water valves = $_____
Landscaping = $_____
Irrigation = $_____
Burrowing animals = $_____

Inspection Frequency

- All items above will be monitored quarterly during the dry season, and after every large storm (0.50 inch), and monthly during the rainy season.
- Condition of vegetation: Monthly
- After each seismic event as listed above.

Each inspection will be fully documented and made available upon request. Records will be kept for a minimum of 5 years.

Appendix

Sherrill Schoepe Shadow Run Ranch, LLC Post Office Box 1249 Pauma Valley, CA 92061

RESERVOIR DRAWDOWN CALCULATIONS

For
SHADOW RUN RANCH

TM 5223

Preparation/Revision Date:

November 25, 2013

Prepared for:

Sherrill Ann Schoepe, General Partner

Shadow Run Ranch, LLC

P.O. Box 1249

Pauma Valley, CA 92061

Telephone: (760) 742-1893

Prepared by:

Masson & Associates, Inc.

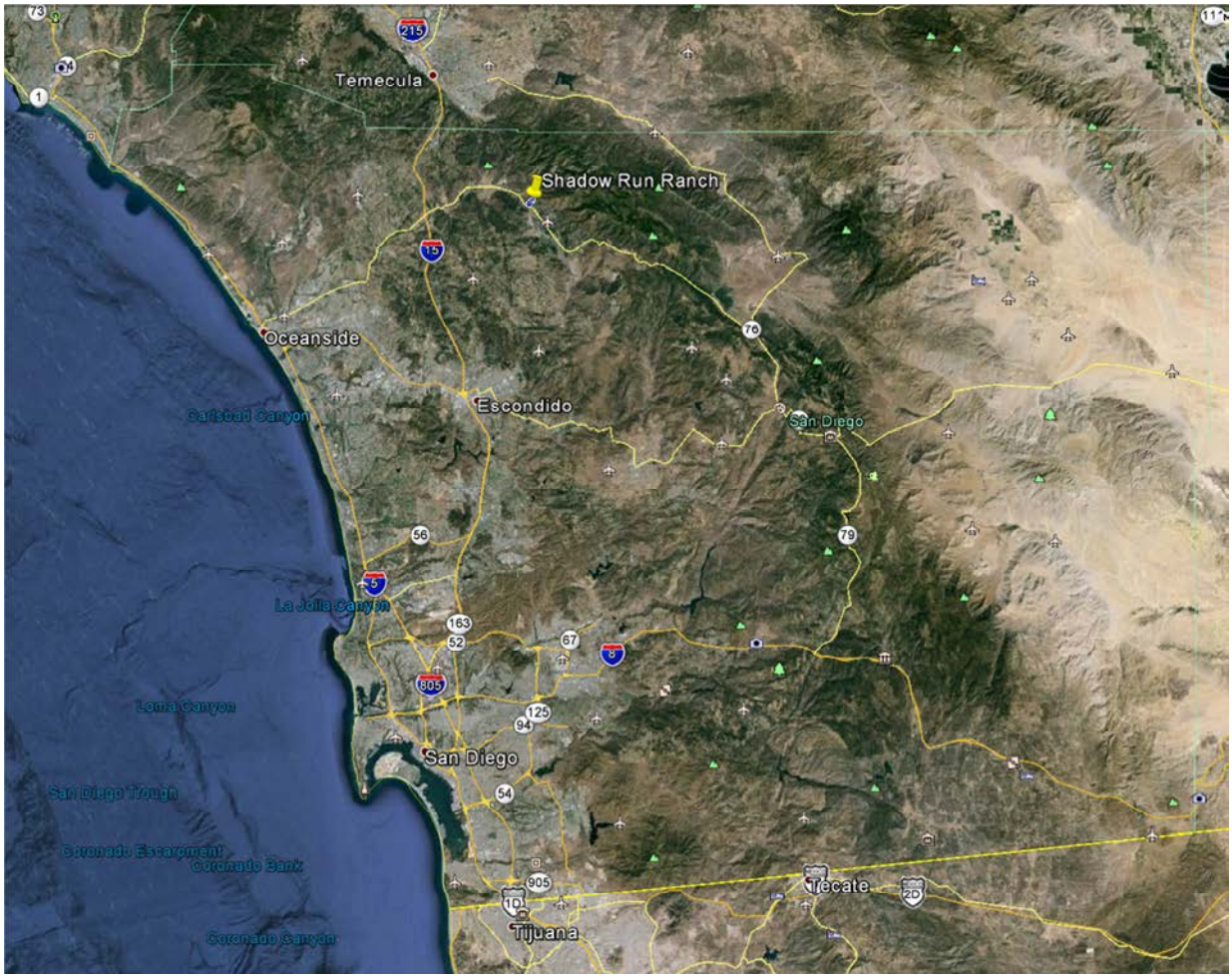
200 East Washington Avenue, Suite 200

Escondido, CA 92025

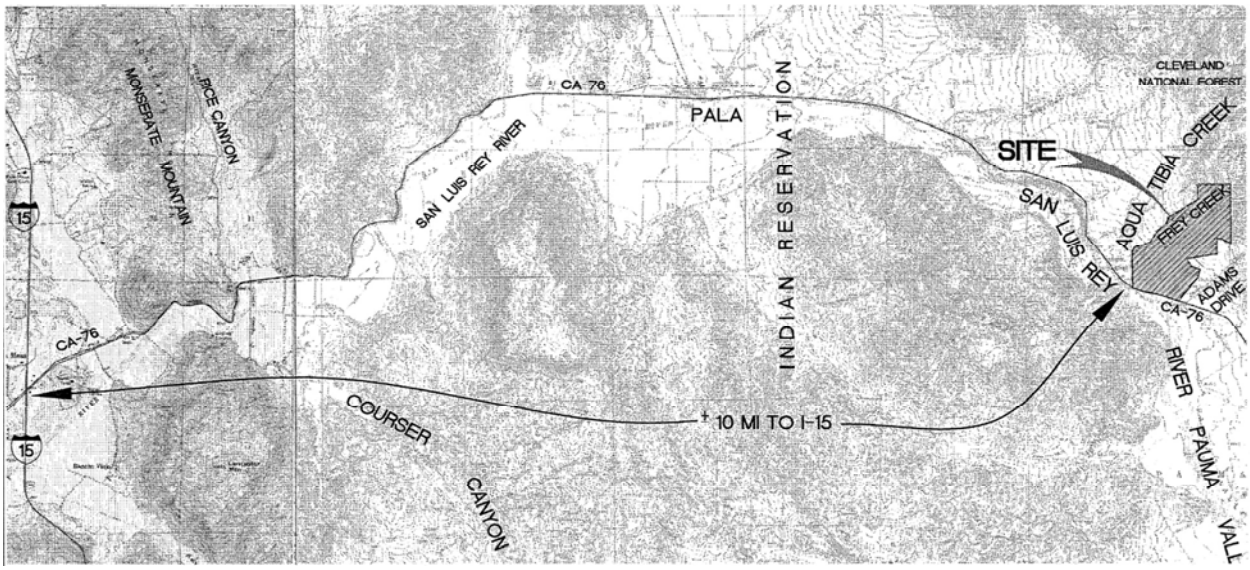
Telephone: (760) 741-3570

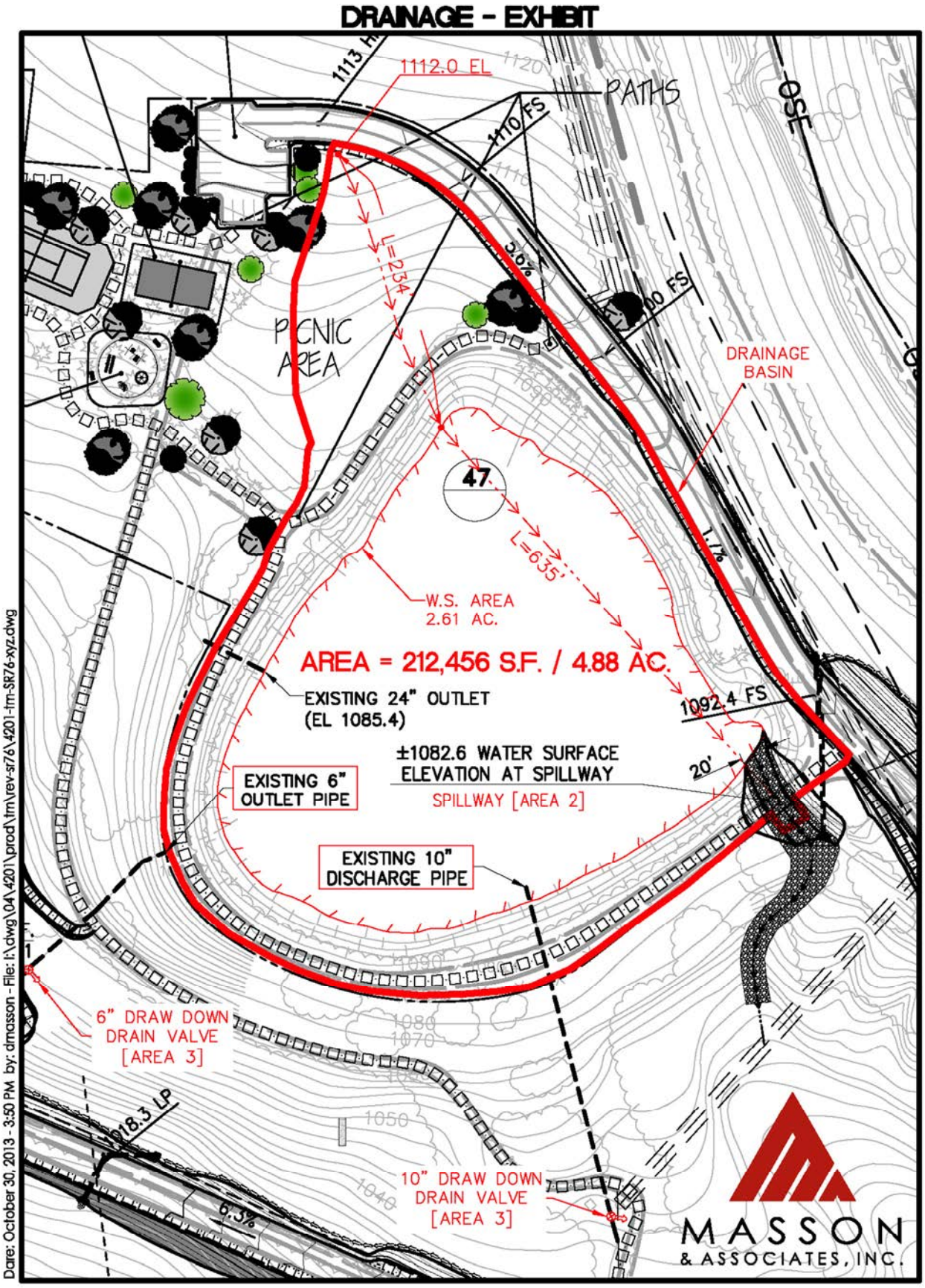
Tuesday, November 26, 2013

Regional map:

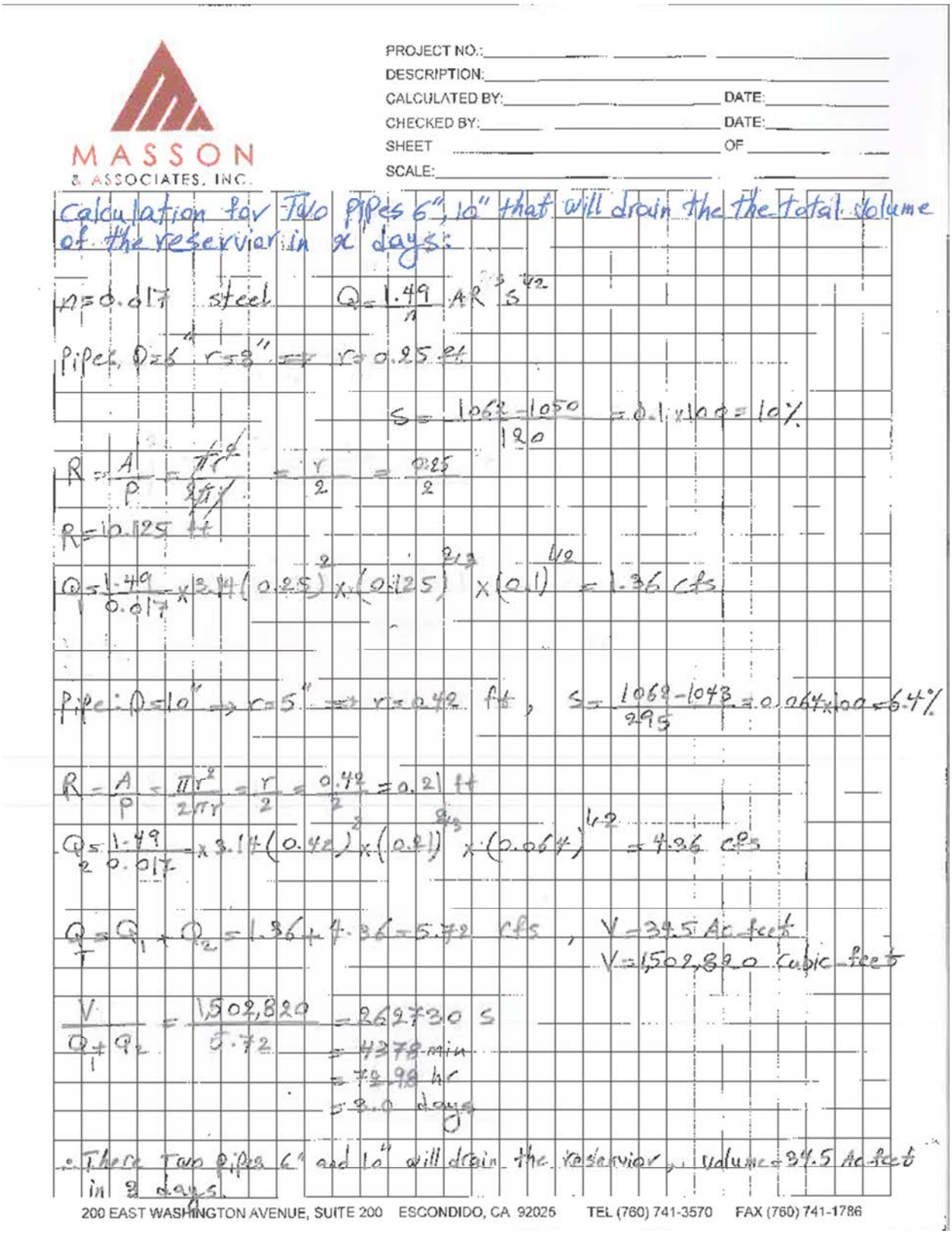


Project location Map:




DRAINAGE - EXHIBIT
1113 HP
1112.0 EL
PATHS
1110 FS
OSE
L=234'
3.0%
PICNIC AREA
DRAINAGE BASIN
47
L=635'
1.7%
W.S. AREA
2.61 AC.
AREA = 212,456 S.F. / 4.88 AC.
EXISTING 24" OUTLET
(EL 1085.4)
1092.4 FS
±1082.6 WATER SURFACE
ELEVATION AT SPILLWAY
SPILLWAY [AREA 2]
20'
EXISTING 6"
OUTLET PIPE
EXISTING 10"
DISCHARGE PIPE
6" DRAW DOWN
DRAIN VALVE
[AREA 3]
218.3 LF
6.3%
10" DRAW DOWN
DRAIN VALVE
[AREA 3]
MASSON
& ASSOCIATES, INC.
Date: October 30, 2013 - 3:50 PM by: dmasson - File: I:\dwg\04\4201\prod\tm\rev-sr76\4201-tm-SR76-xyz.dwg

Per the exhibit above there are two existing drawdown pipes 6" and 10" that can be used to drain the entire reservoir within 3 days per the calculations provided below.



MASSON & ASSOCIATES, INC.

PROJECT NO.:
DESCRIPTION:
CALCULATED BY: DATE:
CHECKED BY: DATE:
SHEET OF
SCALE:

Calculation for Two pipes 6", 10" that will drain the the total volume of the reservior in x days:

$n = 0.017$ steel $\quad Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$

Pipe: $D = 6" \Rightarrow r = 3" \Rightarrow r = 0.25$ ft

$S = \frac{1062 - 1050}{120} = 0.1 \times 100 = 10\%$

$R = \frac{A}{P} = \frac{\pi r^2}{2\pi r} = \frac{r}{2} = \frac{0.25}{2}$

$R = 0.125$ ft

$Q = \frac{1.49}{0.017} \times 3.14 (0.25)^2 \times (0.125)^{2/3} \times (0.1)^{1/2} = 1.36$ cfs

Pipe: $D = 10" \Rightarrow r = 5" \Rightarrow r = 0.42$ ft, $S = \frac{1062 - 1043}{295} = 0.064 \times 100 = 6.4\%$

$R = \frac{A}{P} = \frac{\pi r^2}{2\pi r} = \frac{r}{2} = \frac{0.42}{2} = 0.21$ ft

$Q = \frac{1.49}{2 \times 0.017} \times 3.14 (0.42)^2 \times (0.21)^{2/3} \times (0.064)^{1/2} = 4.36$ cfs

$Q_T = Q_1 + Q_2 = 1.36 + 4.36 = 5.72$ cfs, $V = 34.5$ Ac feet

$V = 1,502,820$ Cubic feet

$\frac{V}{Q_1 + Q_2} = \frac{1,502,820}{5.72} = 262730$ s

$= 4378$ min

$= 72.96$ hr

$= 3.0$ days

∴ There Two pipes 6" and 10" will drain the reservior, volume = 34.5 Ac feet in 3 days.

200 EAST WASHINGTON AVENUE, SUITE 200 ESCONDIDO, CA 92025 TEL (760) 741-3570 FAX (760) 741-1786