



Final Supplemental Watershed Plan No. 1 - Environmental Assessment

United States
Department of
Agriculture

Central Sonoma Watershed - Matanzas Creek Dam Rehabilitation Project
Sonoma County, California

Natural
Resources
Conservation
Service

Sponsoring Local Organization: Sonoma County Water Agency
Lead Agency: Natural Resources Conservation Service (NRCS)

October 2026

Appendix D - TM004 - Hazard Classification



TM004 – Hazard Classification

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1.0 Introduction

Matanzas Creek Dam (CA00794) is an earthen embankment dam located in Sonoma County, California. Construction of the dam was proposed in result of the Central Sonoma Watershed project, which was developed in 1958 under the National Resources Conservation Service (NRCS) PL-566 program. The dam was designed by the NRCS and constructed in 1964 as a flood control structure to protect downstream infrastructure. Sonoma County Water Agency (Sonoma Water) currently owns, operates, and maintains the dam.

In 2016, HDR and Kleinfelder completed a dam assessment for the NRCS, which evaluated the dam based on Technical Release 210-60 (TR-60) design criteria. It was determined that Matanzas Creek is out of compliance with TR-60 criteria due to its inability to route the principal spillway hydrograph without activating the auxiliary spillway (HDR; Kleinfelder, 2016).

1.1 Purpose and Scope

Jones & DeMille Engineering (JDE) and AECOM have contracted with the NRCS to develop a supplemental watershed plan and environmental document that focuses on bringing Matanzas Creek Dam into compliance with NRCS and California Division of Safety of Dams (CA DSOD) standards.

As part of this contracted work, a dam breach analysis for Matanzas Creek Dam was completed to evaluate the hazard classification per NRCS criteria. In addition, the NRCS's "Evaluation of Potential Rehabilitation Projects" and "PAR (Population at Risk) Computation Worksheet" spreadsheets were completed. The minimum modes of failure included in the dam breach analysis are a hydrologic breach, static breach, and seismic breach, as described in TR-60. Sonoma Water completed a dam breach analysis in January 2020 that meets CA DSOD criteria for inundation mapping of Extremely High Hazard dams (Sonoma Water, 2020). The study has since then been reviewed and accepted by CA DSOD. JDE has reviewed the 2020 dam breach analysis and concluded it meets current CA DSOD standards; therefore, an additional CA DSOD criteria based dam breach analysis is not needed.

This document outlines the methods and procedures performed to complete the NRCS TR-60 dam breach analysis for Matanzas Creek Dam. The resulting breach inundation maps and NRCS hazard classification for the dam are provided.

1.2 Hazard Classifications

The NRCS TR-60 and CA DSOD hazard classifications, shown in Table 1-1, are applicable to Matanzas Creek Dam. CA DSOD also classifies dams with a numerical rating termed the "Total Class Weight" (TCW) which is based on reservoir capacity, dam height, estimated population at risk that would require evacuation, and potential downstream damage (Calzascia and Fitzpatrick, 1989).

According to the 2016 dam assessment completed by HDR/Kleinfelder, the NRCS currently classifies Matanzas Creek Dam as High Hazard (HDR; Kleinfelder, 2016). CA DSOD classifies the dam as Extremely High Hazard with a TWC of 30 (CA DSOD, 2019).

Table 1-1. Hazard Classifications

Hazard Classification	TR-60 (NRCS, 2019)	California Division of Safety of Dams (CA DSOD, 2019)
Low	Dams in rural or agricultural areas where failure may damage farm buildings, agricultural land, or township and country roads.	No probable loss of human life and low economic and environmental losses. Losses are expected to be principally limited to the owner's property.
Significant	Dams in predominantly rural or agricultural areas where failure may damage isolated homes, main highways or minor railroads, or interrupt service of relatively important public utilities.	No probable loss of human life but can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts
High	Dams where failure may cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, main highways, or railroads.	Expected to cause loss of at least one human life.
Extremely High	Not applicable.	Expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more.

2.0 Dam Breach Analysis

2.1 Dam Breach Parameters

The peak breach flow and breach hydrograph for the dam was determined using TR-60 (NRCS, 2019) and TR-66 (NRCS, 1985) guidelines. The three failure modes included in the dam breach analysis were hydrologic failure, static failure, and seismic failure which correspond to a reservoir pool elevation at the peak reservoir level during the Freeboard Hydrograph, auxiliary spillway crest, and principal spillway crest, respectively.

A summary of peak breach flows for the failure modes considered are found in Table 2-1. Calculations for dam breach parameters and the resulting breach hydrographs are included in Appendix A.

Table 2-1. Matanzas Creek Dam Peak Breach Flows

Failure Mode (TR-60)	Reservoir Elevation¹ at Time of Breach (ft)	Reservoir Storage at Time of Breach (ac-ft)	Peak Breach Flow (cfs)
Hydrologic	422.77	2,215	173,546
Static	412.63	1,445	122,692
Seismic	377.63	88.9	20,247

¹NAVD88 vertical datum

2.2 Hydraulic Modeling

The U.S. Army Corps of Engineers River Analysis System (HEC-RAS 5.0.7) software was used to complete the hydraulic modeling (USACE, 2019). HEC-RAS was used to create a 2D model simulating the dam breach hydrographs and inundated flood areas. This section outlines the development and parameters of the 2D model.

2.2.1 Terrain Data

The best available elevation surface data for the area was obtained from Sonoma Water. The terrain is a 2013 LiDAR surface with a 3-foot resolution. The coordinate system for the received LiDAR surface was California State Plane Zone II NAD83 with a vertical datum of NAVD88 (12A).

The terrain was preprocessed by Sonoma Water for a dam breach model of Matanzas Creek Dam that was completed in January 2020 (Sonoma Water, 2020). JDE reviewed the terrain in the Sonoma Water 2020 dam breach model and determined it was acceptable for the purposes of the dam breach model; therefore, the terrain was used in JDE's HEC-RAS 2D model.

2.2.2 Surface Roughness (Manning's n)

Land cover data from the National Land Cover Database (NLCD) 2016 was utilized to model the surface roughness for the model (MRLC, 2018). Colorado Dam Safety Branch recommendations for Manning's n values by NLCD land use were used (CDSB, 2020). In addition to the NLCD land cover data, the stream channels for Matanzas Creek, Santa Rosa Creek, and Spring Creek included a Manning's n value based on site observations and typical values for channels. The Manning's n values chosen for the model are shown in Table 2-2.

Table 2-2. Manning's n Values by Land Cover

NLCD Code	Land Use Description	Manning's n
11	Open Water	0.032
21	Developed, Open Space	0.046
22	Developed, Low Intensity	0.095
23	Developed, Medium Intensity	0.104
24	Developed, High Intensity	0.147
31	Barren land rock/sand/clay	0.033
41	Deciduous Forest	0.115
42	Evergreen Forest	0.122
52	Shrub/Scrub	0.082
71	Herbaceous	0.037
81	Pasture/Hay	0.04
82	Cultivated Crops	0.047
90	Woody Wetlands	0.095
95	Emergent Herbaceous Wetlands	0.075
NA	Channels: Matanzas Creek, Santa Rosa Creek, Spring Creek	0.035
NA	Directly Downstream of Dam	0.15

2.2.3 2D Mesh Parameters

A computational grid, or mesh, was created for the HEC-RAS 2D model. The base size of the cells were 100-feet by 100-feet, and a refinement region with 50-feet by 50-feet cells was used in the main breach floodplain and within the City of Santa Rosa. Breaklines were enforced in the mesh to capture important terrain features, such as channel centerlines, channel banks, dikes, and major roads.

Time steps for the model were selected to maintain a Courant number of approximately 1.0. Several time steps were considered for a sensitivity analysis to ensure stable, accurate results.

2.2.4 Culverts

There are numerous road crossings along the major channels within the Central Sonoma Watershed. As previously mentioned, these road crossings were removed from the LiDAR terrain for as part of the 2020 Sonoma Water dam breach analysis. However, two large culverts near the confluence of Matanzas Creek and Santa Rosa Creek are represented in the model. The culvert type, size, alignment, and length of the culverts were provided in Sonoma Water's HEC-RAS model. For Santa Rosa Creek, there are two 15-feet by 16-feet concrete box culverts; for Matanzas Creek, there is a single 16.6-feet by 14.5-feet concrete box culvert.

2.2.5 Boundary Conditions

The developed dam breach hydrographs (see Appendix A) were used for the unsteady flow data boundary conditions located downstream of Matanzas Creek dam. The downstream boundary condition was located downstream of the confluence of Santa Rosa Creek and Laguna de Santa Rosa, and it was modeled using a normal depth approach.

3.0 Results

Inundation maps for the hydrologic, static, and seismic breaches are provided in Appendix B. In general, the breach flows pass through Santa Rosa, California and eventually drain towards the Laguna de Santa Rosa floodplain. The hydrologic and static breaches pose significant threat to public safety and damage to infrastructure in the City of Santa Rosa. Breach flood depths range from 0.5 to greater than 5 feet through residential neighborhoods and commercial buildings. For the seismic breach, the inundation zone includes Bennett Valley Golf Course and residential neighborhoods along Yulupa Avenue; however, the breach flows become contained within Matanzas Creek approximately 0.4 miles upstream of California Highway 12.

3.1 Failure Index, Risk Index, and Population at Risk

The Failure and Risk Indexes were calculated using the "Evaluation of Potential Rehabilitation Projects" spreadsheets, and the population at risk (PAR) was calculated by using the "PAR Computation Worksheet" spreadsheets; both spreadsheets were provided by the NRCS.

The Failure Index, Risk Index, and PAR results are summarized in Table 3-1. The completed spreadsheets are located in Appendix C. The depths produced by the hydraulic modeling and GIS data (building footprints, parcels, schools, roads, etc.), obtained from Sonoma County, were utilized for the PAR analysis. As shown in Table 2-1 and the dam breach parameters provided in Appendix A, the peak breach flow for the seismic failure mode is significantly less than the static and hydrologic failure modes. This resulted in a much smaller breach inundation area and PAR value.

Table 3-1. Failure Index, Risk Index, and PAR

Scenario	Load Factor	Response Factor	Failure Index	Fatality Rate	PAR	Risk Index
Static	1	92	92	0.007	16,938	10,908
Hydrologic	--	--	116	0.007	28,680	23,288
Seismic	1.0	25	25	0.007	184	32
TOTAL =			233	TOTAL =		34,228

3.2 Recommended Hazard Classification

Definitions for NRCS and CA DSOD hazard classifications are provided in Table 1-1. Based on the results of the dam breach analysis presented in this report, it is recommended to maintain the current High Hazard classification for Matanzas Creek Dam, per NRCS criteria.

As previously mentioned in Section 1.1, Sonoma Water completed a dam breach analysis in 2020 for Matanzas Creek Dam that has been reviewed and accepted by CA DSOD. The 2020 dam breach analysis confirmed the dam's Extremely High Hazard classification, per CA DSOD criteria. JDE has reviewed the 2020 dam breach analysis and agrees with its results and confirmed hazard classification. In addition, the TCW for the dam was reviewed and confirmed with a score of 30 (see Appendix D).

4.0 Summary

JDE has completed a dam breach analysis for Matanzas Creek Dam according to TR-60 criteria. The dam's current hazard classification has been confirmed; High Hazard and Extremely High Hazard for NRCS and CA DSOD hazard classifications, respectively.

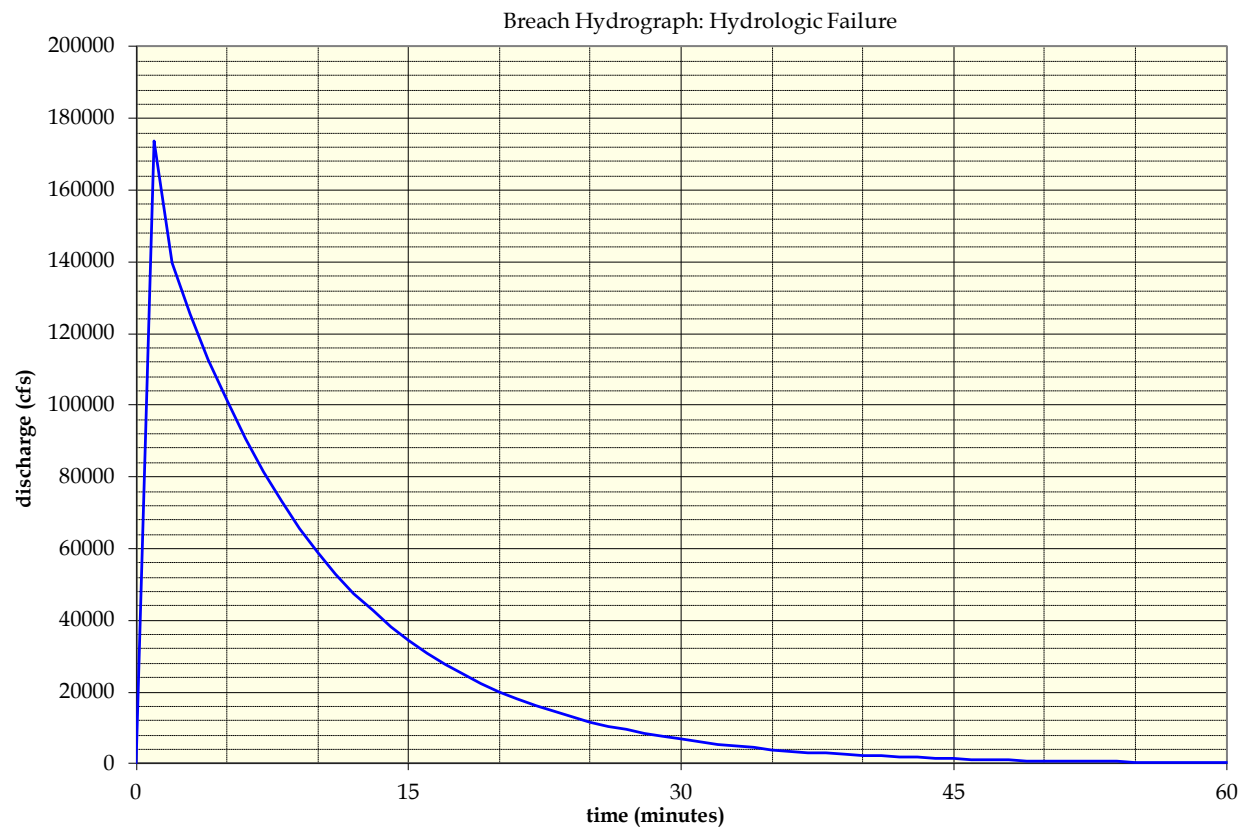
5.0 References

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Appendix A. Dam Breach Parameters and Hydrographs

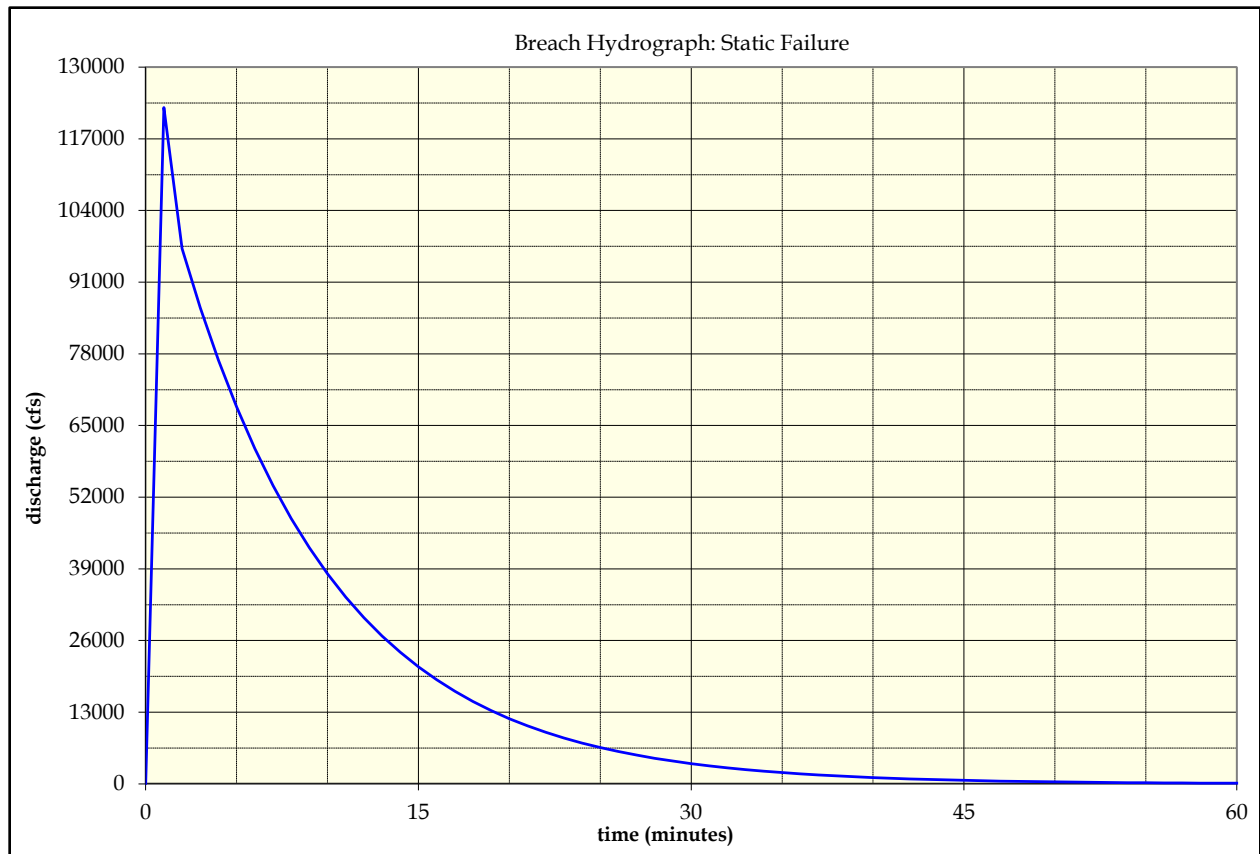
Dambreach Hydrographs via TRs 60 & 66 NRCS guidance

version 3, July 2018		Failure Mode: Hydrologic		
Input data required:		NGVD29 to NAVD88 Datum Shift (ft):		+2.63
data	variable	explanation		
427.63	crestEL	dam crest elevation		
422.77	wsEL	w.s. elev at time of breach		
24	TW	dam top width (feet)		
3	SSup	dam side slope (upstream, SSUp:1)		
2.5	SSdn	dam side slope (downstream, SSdn:1)		
344.48	floorEL	valley floor elev (see note)		
2215	Vs	resv vol at time of breach (acre-feet)		
640	L	valley width at dam axis & w.s. elev (feet)		
377.63	ELwave	top of wave berm elevation		
10	Wwave	width of top of wave berm feet		
3	SSwave	wave berm side slope (SSwave:1)		
382.63	ELstab	top of stability berm elevation		
10	Wstab	width of top of stability berm (feet)		
2.5	SSstab	stability berm side slope (SSstab:1)		
1	ts	timestep (minutes) for breach hydrograph		
output	breach hydrograph			
variable	results	time (min)	Q (cfs)	
T	719	0	0	
(L < T)?	Y	1	173546	
H _w	78.29	2	139852	
Q ₁	184431	3	125544	
(H _w < 103)?	Y	4	112699	
Awave	331.5	5	101169	
Astab	381.5	6	90818	
A	21722	7	81527	
Br	8	8	73186	
Q ₂	18167	9	65698	
Q _{min}	173546	10	58977	
(Q ₂ < Q _{min})?	Y	11	52943	
(Q ₂ > Q ₁)?	N	12	47526	
(Q ₁ < Q _{min})?	N	13	42664	
Q_{max}	173546	14	38299	



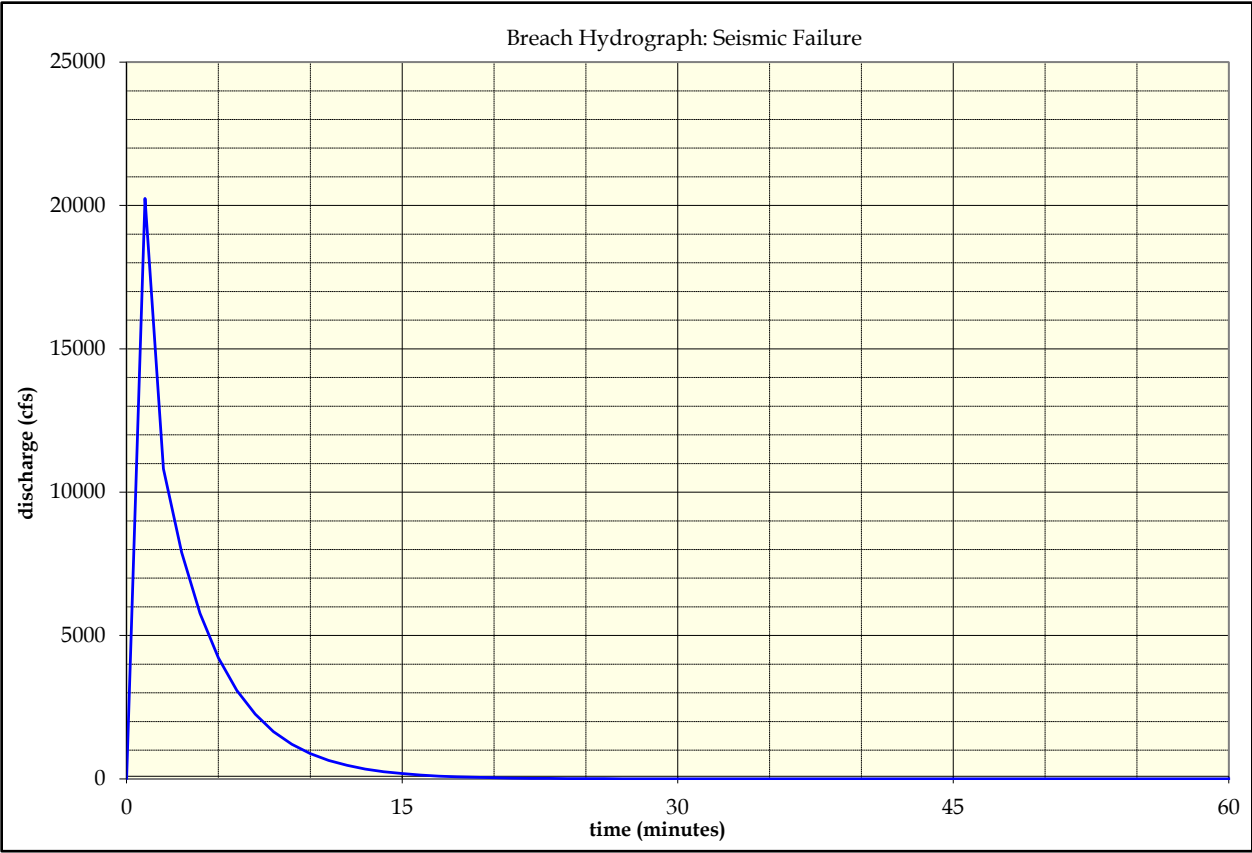
Dambreach Hydrographs via TRs 60 & 66 NRCS guidance

version 3, July 2018		Failure Mode: Static		
Input data required:		NGVD29 to NAVD88 Datum Shift (ft):		+2.63
data	variable	explanation		
427.63	crestEL	dam crest elevation		
412.63	wsEL	w.s. elev at time of breach		
24	TW	dam top width (feet)		
3	SSup	dam side slope (upstream, SSUp:1)		
2.5	SSdn	dam side slope (downstream, SSdn:1)		
344.48	floorEL	valley floor elev (see note)		
1445	Vs	resv vol at time of breach (acre-feet)		
570	L	valley width at dam axis & w.s. elev (feet)		
377.63	ELwave	top of wave berm elevation		
10	Wwave	width of top of wave berm feet		
3	SSwave	wave berm side slope (SSwave:1)		
382.63	ELstab	top of stability berm elevation		
10	Wstab	width of top of stability berm (feet)		
2.5	SSstab	stability berm side slope (SSstab:1)		
1	ts	timestep (minutes) for breach hydrograph		
output		breach hydrograph		
variable	results	time (min)	Q (cfs)	
T	685	0	0	
(L < T)?	Y	1	122692	
H _w	68.15	2	97099	
Q ₁	133403	3	86380	
(H _w < 103)?	Y	4	76845	
Awave	331.5	5	68362	
Astab	381.5	6	60816	
A	21722	7	54102	
Br	5	8	48130	
Q ₂	8462	9	42817	
Q _{min}	122692	10	38091	
(Q ₂ < Q _{min})?	Y	11	33886	
(Q ₂ > Q ₁)?	N	12	30145	
(Q ₁ < Q _{min})?	N	13	26817	
Q_{max}	122692	14	23857	

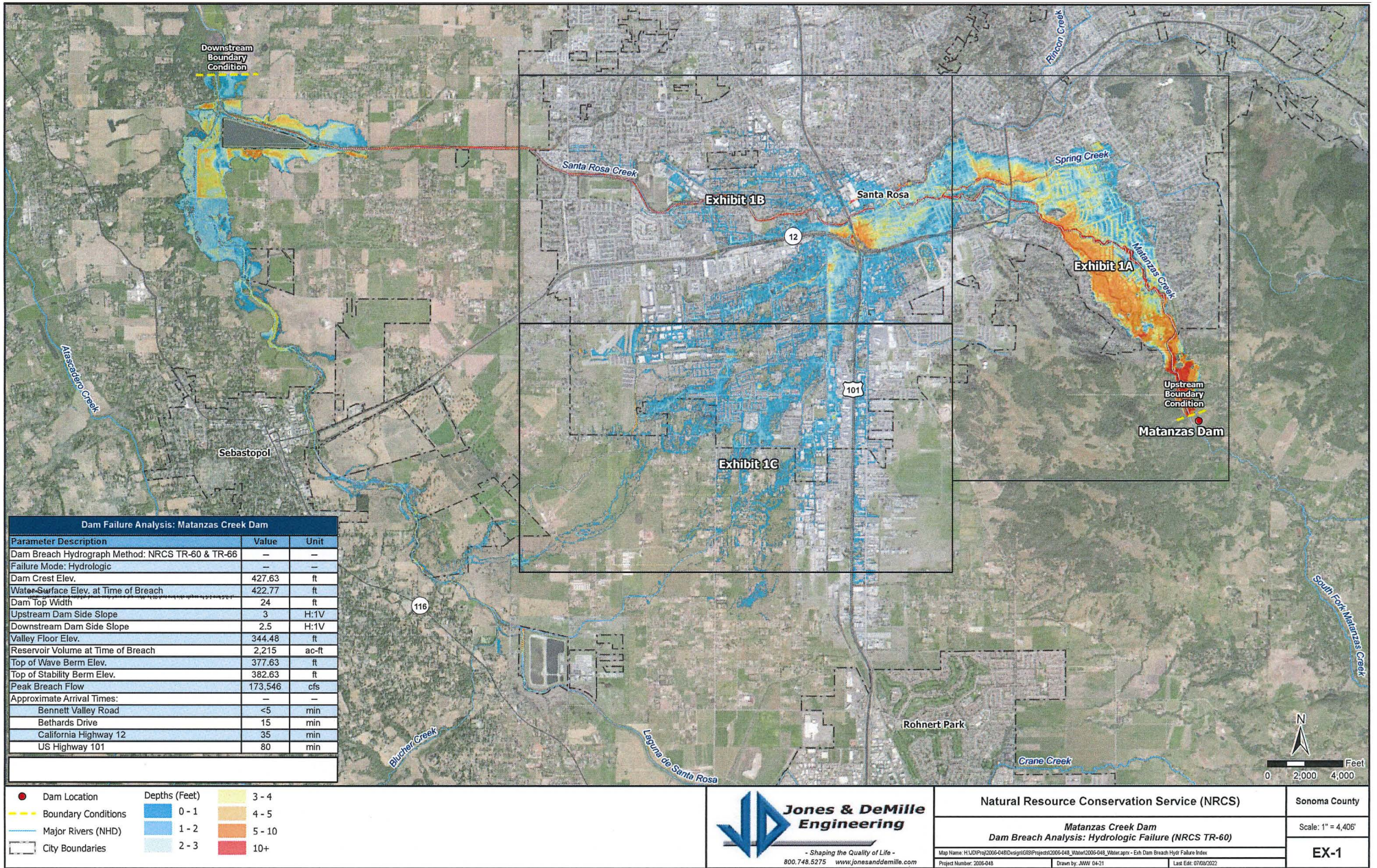


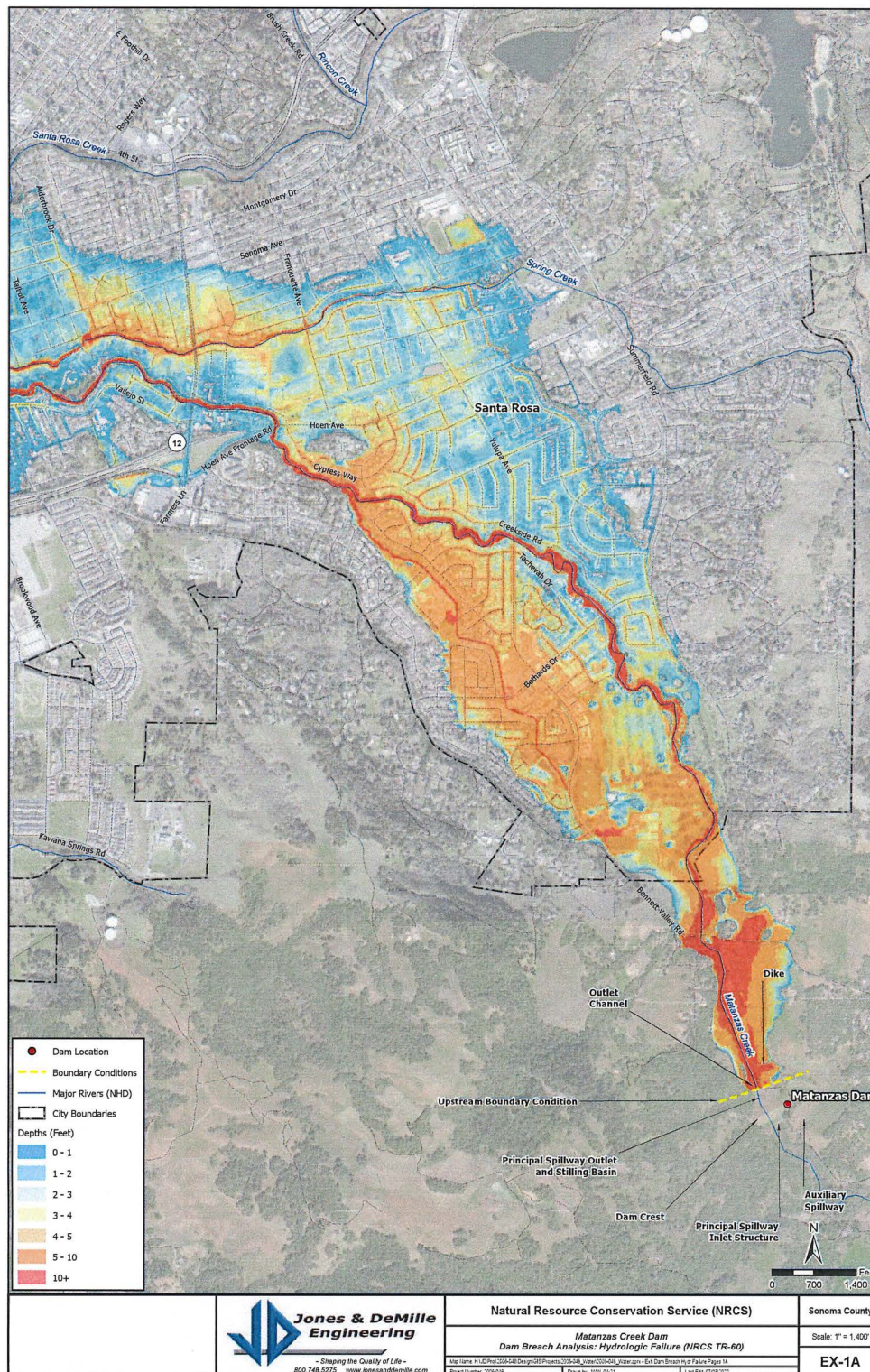
Dambreach Hydrographs via TRs 60 & 66 NRCS guidance

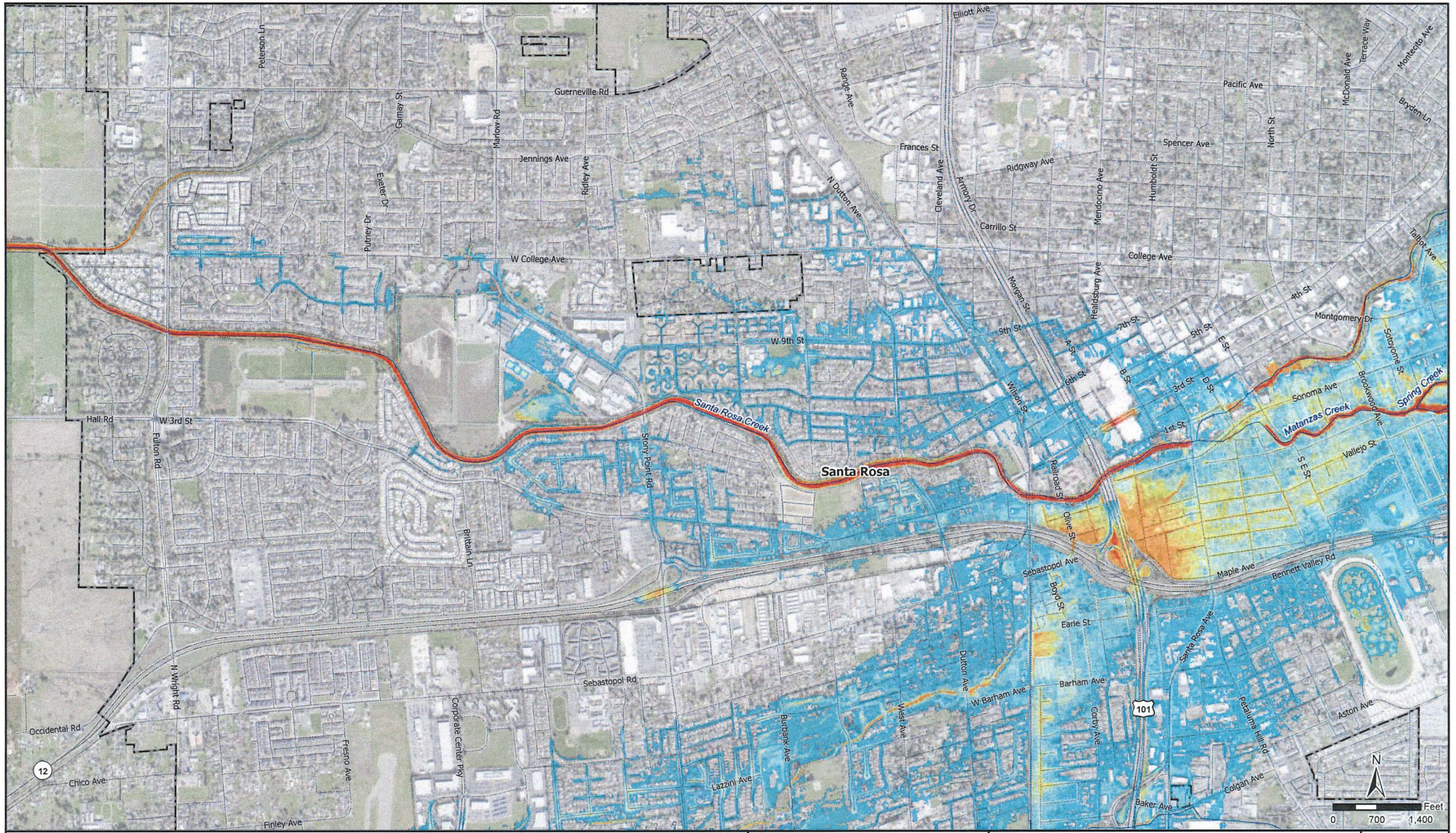
version 3, July 2018		Failure Mode: Seismic		
Input data required:		NGVD29 to NAVD88 Datum Shift (ft):		+2.63
data	variable	explanation		
427.63	crestEL	dam crest elevation		
377.63	wsEL	w.s. elev at time of breach		
24	TW	dam top width (feet)		
3	SSup	dam side slope (upstream, SSUp:1)		
2.5	SSdn	dam side slope (downstream, SSdn:1)		
344.48	floorEL	valley floor elev (see note)		
88.9	Vs	resv vol at time of breach (acre-feet)		
300	L	valley width at dam axis & w.s. elev (feet)		
377.63	ELwave	top of wave berm elevation		
10	Wwave	width of top of wave berm feet		
3	SSwave	wave berm side slope (SSwave:1)		
382.63	ELstab	top of stability berm elevation		
10	Wstab	width of top of stability berm (feet)		
2.5	SSstab	stability berm side slope (SSstab:1)		
1	ts	timestep (minutes) for breach hydrograph		
output		breach hydrograph		
variable	results	time (min)	Q (cfs)	
T	532	0	0	
(L < T)?	Y	1	20247	
H _w	33.15	2	10812	
Q ₁	23820	3	7901	
(H _w < 103)?	Y	4	5774	
Awave	331.5	5	4220	
Astab	381.5	6	3084	
A	21722	7	2253	
Br	0	8	1647	
Q ₂	74	9	1203	
Q _{min}	20247	10	879	
(Q ₂ < Q _{min})?	Y	11	643	
(Q ₂ > Q ₁)?	N	12	470	
(Q ₁ < Q _{min})?	N	13	343	
Q_{max}	20247	14	251	



Appendix B. Inundation Maps







● Dam Location	Depths (Feet)	3 - 4
--- Boundary Conditions	0 - 1	4 - 5
--- Major Rivers (NHD)	1 - 2	5 - 10
--- City Boundaries	2 - 3	10 +

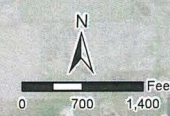


**Jones & DeMille
Engineering**

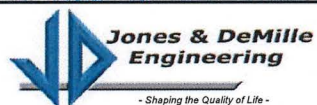
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800.748.5275 www.jonesanddemille.com

Natural Resource Conservation Service (NRCS)		Sonoma County
Matanzas Creek Dam Dam Breach Analysis: Hydrologic Failure (NRCS TR-60)		
Scale: 1" = 1,400'		
EX-1B		

Map Name: H:\UD\Proj\2005-04\Design\GIS\Project\2005-04\MatanzasCreekDam\Map\Map1B_1C
 Project Number: 2005-048 Drawn by: JWW 04-21 Last Edit: 07/08/2022



Depths (Feet)		
	0 - 1	 3 - 4
	1 - 2	 4 - 5
	2 - 3	 5 - 10
		 10+



Natural Resource Conservation Service (NRCS)

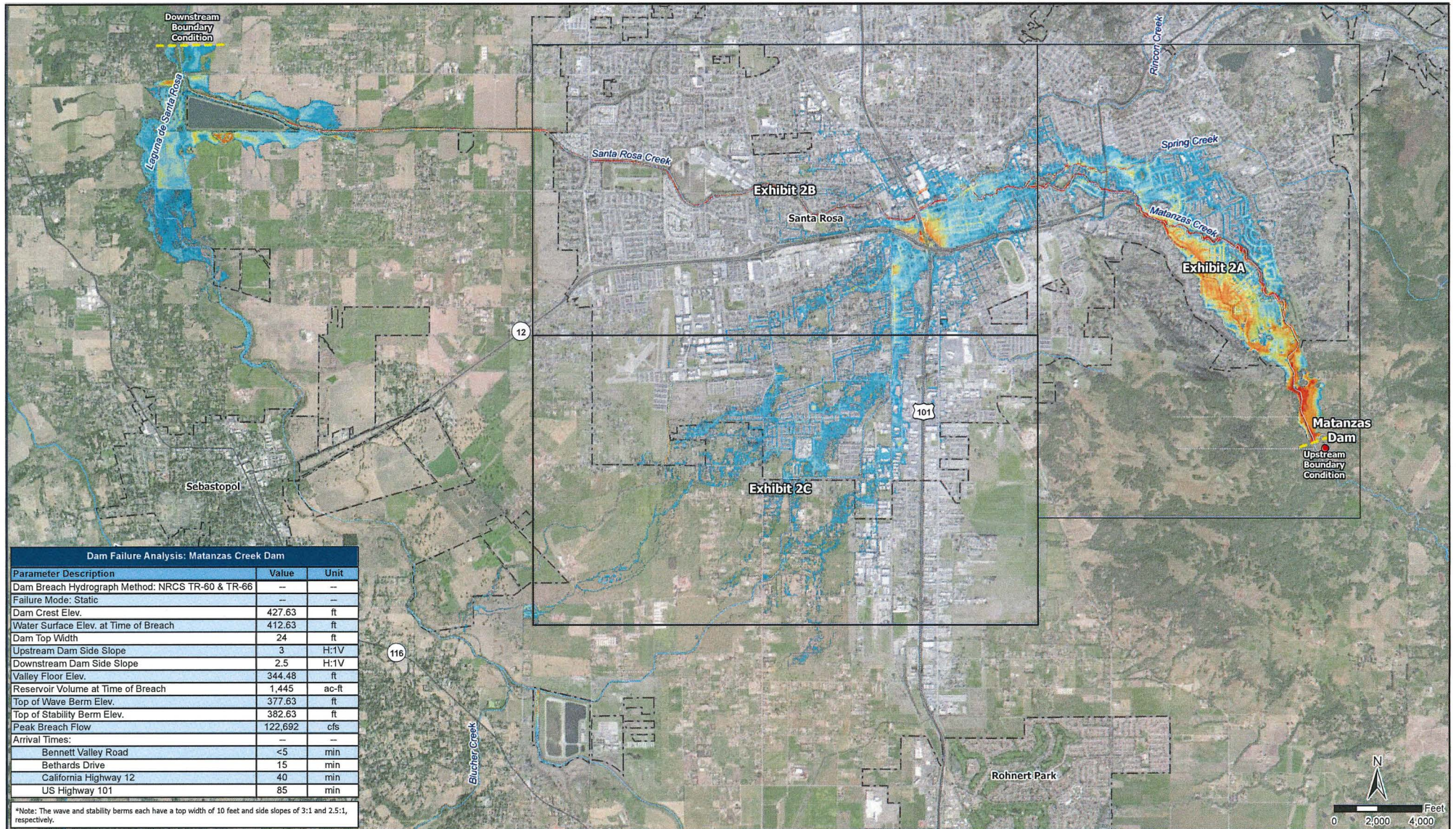
Matanzas Creek Dam
Dam Breach Analysis: Hydrologic Failure (NRCS TR-60)

Map Name: H:\JD\Proj\2006-048\Design\GIS\Projects\2006-048_Water\2006-048_Water.aprx - Est Dam Breach Hydr Failure Pages 18		
Project Number: 2006-048	Drawn by: JWW 04-21	Last Edit: 07/08/2022

Sonoma County

Scale: 1" = 1,400'

EX-1C



- Dam Location
- Boundary Conditions
- Major Rivers (NHD)
- City Boundaries

- Depths (Feet)**
- | | | | |
|--|-------|--|--------|
| | 0 - 1 | | 3 - 4 |
| | 1 - 2 | | 4 - 5 |
| | 2 - 3 | | 5 - 10 |
| | 10+ | | |



Natural Resource Conservation Service (NRCS)

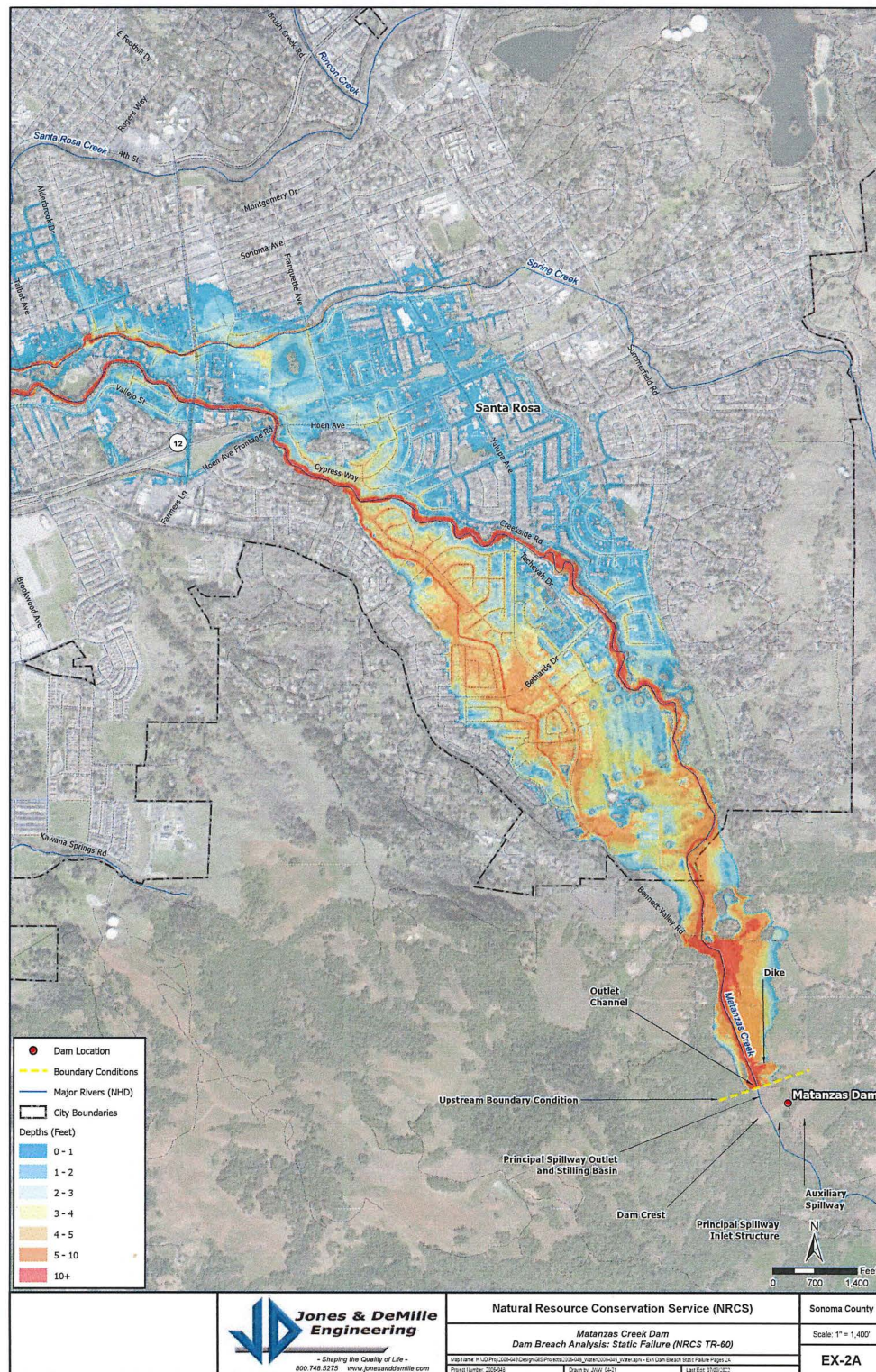
Sonoma County

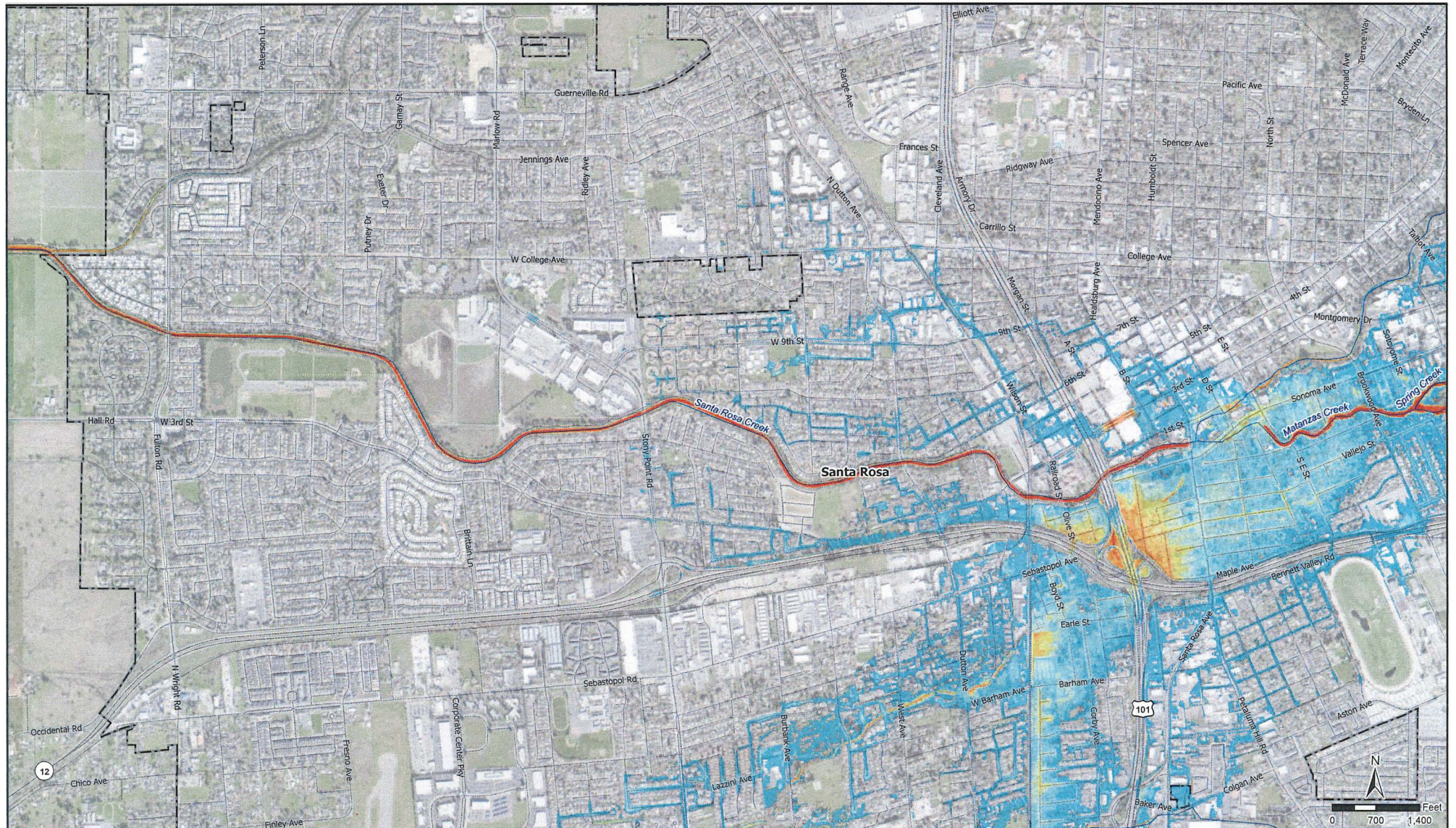
Matanzas Creek Dam
Dam Breach Analysis: Static Failure (NRCS TR-60)

Scale: 1" = 4,000'

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Project Number: 2005-048
Drawn by: JMW 04-21
Last Edit: 07/09/2022

EX-2





- Dam Location
- Boundary Conditions
- Major Rivers (NHD)
- City Boundaries

Depths (Feet)	
0 - 1	3 - 4
1 - 2	4 - 5
2 - 3	5 - 10
10+	



Natural Resource Conservation Service (NRCS)

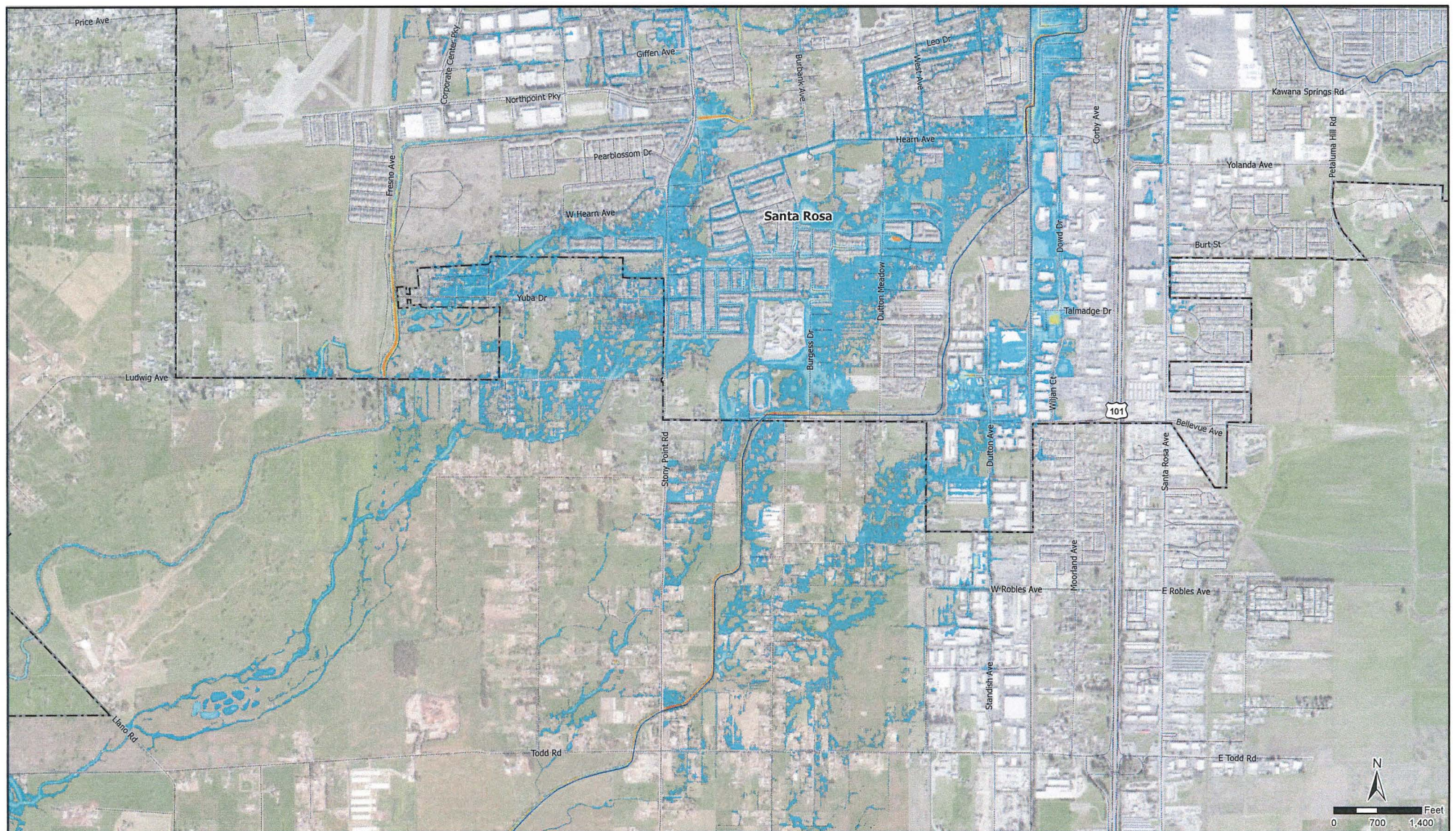
Sonoma County

Matanzas Creek Dam
Dam Breach Analysis: Static Failure (NRCS TR-60)

Scale: 1" = 1,400'

EX-2B

Map Name: H:\DProj\2005-048\Design\GIS\Project\2005-048_Visual\2005-048_Visual.aprx - Esh Dam Breach Static Failure Pages 2B 2C
 Project Number: 2005-048
 Drawn by: JMW 04-21
 Last Edit: 07/08/2022



- Dam Location
 - Boundary Conditions
 - Major Rivers (NHD)
 - City Boundaries
- | Depths (Feet) | |
|---------------|--------|
| | 0 - 1 |
| | 1 - 2 |
| | 2 - 3 |
| | 3 - 4 |
| | 4 - 5 |
| | 5 - 10 |
| | 10+ |



Natural Resource Conservation Service (NRCS)

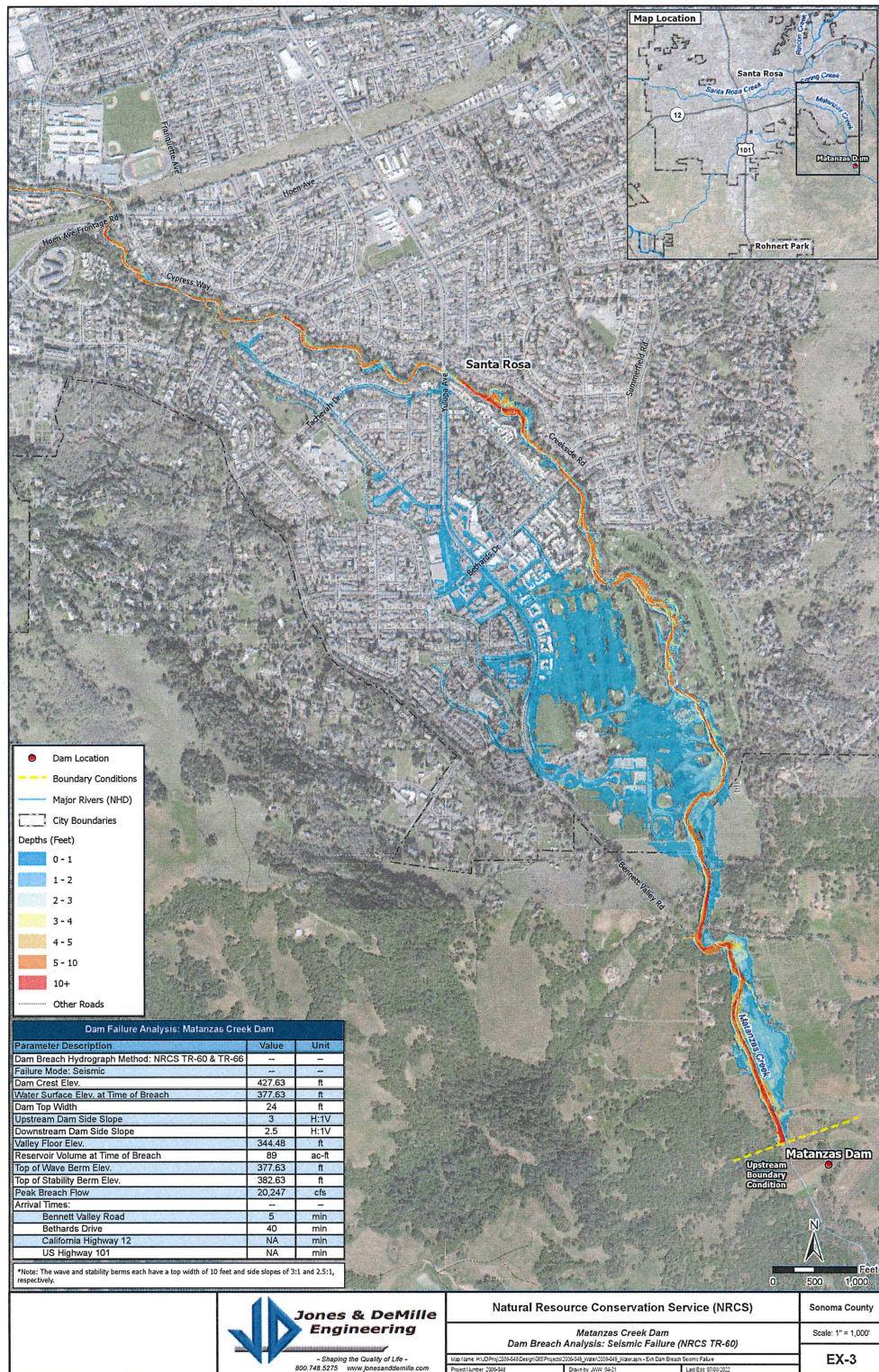
Matanzas Creek Dam
Dam Breach Analysis: Static Failure (NRCS TR-60)

Map Name: H:\UDP\Proj\2006-048\Design\GIS\Project\2006-048_Visual\2006-048_Visual.aprx - Esh Dam Breach Static Failure Pages 28-2C
 Project Number: 2006-048
 Drawn by: JMW 04-21
 Last Edit: 07/08/2022

Sonoma County

Scale: 1" = 1,400'

EX-2C



Appendix C. “Evaluation of Potential Rehabilitation Projects” and “PAR Computation Worksheet” Spreadsheets

COMPUTATION OF POPULATION AT RISK (PAR) DURING DAM FAILURE						
STATE	California		BY	HC	DATE	4/14/21
DAM	Matanzas Creek		CHECKED BY	RA	DATE	4/19/21
YEAR BUILT	1964	DESIGN HAZARD CLASS	H	DRAINAGE AREA	11.45	mi ²
WORK PLAN DATE	1958	CURRENT HAZARD CLASS	H	DAM HEIGHT	95	ft
sht 1 of 3	STATIC FAILURE SCENARIO (ver. 2013-01)				NID ID	CA00794
Structures (Elevated) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=2.0 Ft.	PAR	
	Inundation Depth Above Natural Ground		Total			
	<2.0 Ft	>=2.0 Ft.				
Mobile Homes	36	1	37	3	3	
Seasonal Use RV's	0	0		2		
Other						
Structures (With Foundations) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR	
	Inundation Depth Above Natural Ground		Total			
	<1.0 Ft	>=1.0 Ft.				
Homes	2278	2227	4505	3	6,681	
Seasonal Use Homes and Cabins	0	0		1.5		
Duplexes	133	143	276	5	715	
Apartments	438	420	858	10	4,200	
Commercial Buildings	258	207	465	15	3,105	
Schools (In Use)	3	8	11	250	2,000	
Schools (Not in Use)	0	0		10		
Hospitals	4	4	8	25	100	
Other				10		
Highways and Railroads	Number of Roads, Highways and Railways			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR	
	Road Overflow Depth		Total			
	<1.0 Ft	>=1.0 Ft.				
Main Local Roads and Minor State Highways						
Roads	23	53	76	2	106	
Name(s) (if applicable)	See attached table	See attached table		2		
Major State and Minor Federal Highways						
Highway 101, Highway 12	0	2	2	4	8	
Highway Name(s) or Number(s)	0	0		4		
Major Federal and Interstate Highways						
Highway Name(s) or Number(s)	0	0		8		
Highway Name(s) or Number(s)	0	0		8		
Railroads						
UPSF Freight Traffic Only	0	0		3		
Passenger Traffic (Northwestern Pacific)	0	1	1	20	20	
TOTAL NUMBER OF PEOPLE AT RISK (PAR)					16,938	

COMPUTATION OF POPULATION AT RISK (PAR) DURING DAM FAILURE						
STATE	California		BY	HC	DATE	4/14/21
DAM	Matanzas Creek		CHECKED BY	RA	DATE	4/19/21
YEAR BUILT	1964	DESIGN HAZARD CLASS	H	DRAINAGE AREA	11.45	mi ²
WORK PLAN DATE	5/11/1905	CURRENT HAZARD CLASS	H	DAM HEIGHT	95	ft
sht 2 of 3	HYDROLOGIC FAILURE SCENARIO (ver. 2013-01)				NID ID	CA00794
Structures (Elevated) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=2.0 Ft.	PAR	
	Inundation Depth Above Natural Ground		Total			
	<2.0 Ft	>=2.0 Ft.				
Mobile Homes	227	2	229	3	6	
Seasonal Use RV's	0	0		2		
Other						
Structures (With Foundations) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR	
	Inundation Depth Above Natural Ground		Total			
	<1.0 Ft	>=1.0 Ft.				
Homes	2876	4165	7041	3	12,495	
Seasonal Use Homes and Cabins	0	0		1.5		
Duplexes	143	210	353	5	1,050	
Apartments	454	686	1140	10	6,860	
Commercial Buildings	286	361	647	15	5,415	
Schools (In Use)	2	10	12	250	2,500	
Schools (Not in Use)	0	0		10		
Hospitals	4	8	12	25	200	
Other				10		
Highways and Railroads	Number of Roads, Highways and Railways			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR	
	Road Overflow Depth		Total			
	<1.0 Ft	>=1.0 Ft.				
Main Local Roads and Minor State Highways						
Roads	18	63	81	2	126	
Name(s) (if applicable)	See attached table	See attached table		2		
Major State and Minor Federal Highways						
Highway 101, Highway 12	0	2	2	4	8	
Highway Name(s) or Number(s)	0	0		4		
Major Federal and Interstate Highways						
Highway Name(s) or Number(s)	0	0		8		
Highway Name(s) or Number(s)	0	0		8		
Railroads						
UPSF Freight Traffic Only	0	0		3		
Passenger Traffic (Northwestern Pacific)	0	1	1	20	20	
TOTAL NUMBER OF PEOPLE AT RISK (PAR)					28,680	

COMPUTATION OF POPULATION AT RISK (PAR) DURING DAM FAILURE						
STATE	California		BY	HC	DATE	4/14/21
DAM	Matanzas Creek		CHECKED BY	RA	DATE	4/19/21
YEAR BUILT	1964	DESIGN HAZARD CLASS	H	DRAINAGE AREA	11.45	mi ²
WORK PLAN DATE	5/11/1905	CURRENT HAZARD CLASS	H	DAM HEIGHT	95	ft
sht 3 of 3	SEISMIC FAILURE SCENARIO (ver. 2013-01)				NID ID	CA00794
Structures (Elevated) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=2.0 Ft.	PAR	
	Inundation Depth Above Natural Ground		Total			
	<2.0 Ft	>=2.0 Ft.				
Mobile Homes	0	0		3		
Seasonal Use RV's	0	0		2		
Other						
Structures (With Foundations) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR	
	Inundation Depth Above Natural Ground		Total			
	<1.0 Ft	>=1.0 Ft.				
Homes	42	10	52	3	30	
Seasonal Use Homes and Cabins	0	0		1.5		
Duplexes	0	0		5		
Apartments	29	7	36	10	70	
Commercial Buildings	9	2	11	15	30	
Schools (In Use)	0	0		250		
Schools (Not in Use)	0	0		10		
Hospitals	0	0		25		
Other				10		
Highways and Railroads	Number of Roads, Highways and Railways			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR	
	Road Overflow Depth		Total			
	<1.0 Ft	>=1.0 Ft.				
Main Local Roads and Minor State Highways						
Roads	0	15	15	2	30	
Name(s) (if applicable)	See attached table	See attached table		2		
Major State and Minor Federal Highways						
Highway 101	0	1	1	4	4	
Highway Name(s) or Number(s)	0	0		4		
Major Federal and Interstate Highways						
Highway Name(s) or Number(s)	0	0		8		
Highway Name(s) or Number(s)	0	0		8		
Railroads						
UPSF Freight Traffic Only	0	0		3		
Passenger Traffic (Northwestern Pacific)	0	1	1	20	20	
TOTAL NUMBER OF PEOPLE AT RISK (PAR)					184	

EVALUATION OF POTENTIAL REHABILITATION PROJECTS									
STATE	CA	DAM	Matanzas Creek Dam		BY	HC	DATE	4/15/2021	
YEAR BUILT		1964	DESIGN HAZARD CLASS		H	DRAINAGE AREA		11.45	mi ²
WORK PLAN DATE		1958	CURRENT HAZARD CLASS		H	DAM HEIGHT		95	ft
sht 1 of 5	CONSEQUENCES OF DAM FAILURE (ver. 2013-02)						NID ID	CA00794	
POTENTIAL DAM FAILURE:									
Total Failure Index							233	A	
POTENTIAL LOSS OF LIFE:									
Maximum Population-at-Risk [PAR]							(number)	28,680	B
Total Risk Index								34,228	C
POTENTIAL LOSS OF PROPERTY:									
Identify major community affected by breach and rate impact as High (H), Medium (M), Low (L) or None(blank)									
Community		Santa Rosa, California				(H,M,L,-)	H	D	
Number of homes, businesses, major buildings							(number)	0	E
POTENTIAL LIFELINE DISRUPTION:									
Water supply, identify community disrupted by dam failure, and estimate number/amount									
Municipal sole source		None identified		Users	(number)	0	F		
Supplemental source		None identified		Users	(number)	0	G		
Irrigation water		None identified		Storage	(Ac-Ft)	0	H		
POTENTIAL INFRASTRUCTURE DISRUPTION:									
Transportation system crossings, identify major crossing rendered unusable by dam failure, and estimate number									
Major/Interstate		Highway 101, Highway 12		Roads	(number)	2	I		
Secondary/County		See attached table		Roads	(number)	81	J		
POTENTIAL ADVERSE IMPACTS ON THE ENVIRONMENT:									
Describe impacts and rate each as High (H), Medium (M), Low (L), or None (blank)									
Threatened & endangered species		CA Red-legged Frog, CA Tiger Salamander, Northe		(H,M,L,-)	H	K			
Sensitive riparian areas		None identified		(H,M,L,-)	L	L			
Contaminated reservoir sediment		None identified		(H,M,L,-)	-	M			
Wetland and wildlife habitat		Threatened and endangered species in area		(H,M,L,-)	H	N			
Other				(H,M,L,-)	-	O			
POTENTIAL ADVERSE SOCIAL IMPACTS:									
Describe impacts and rate each as High (H), Medium (M), Low (L) or None(blank)									
Known cultural resources		None identified		(H,M,L,-)	L	P			
Historic preservation issues		None identified		(H,M,L,-)	L	Q			
Socially disadvantaged community		None identified		(H,M,L,-)	L	R			
POTENTIAL ADVERSE ECONOMIC IMPACTS:									
Average annual benefits attributed to this dam, updated workplan value							(\$)	674,000	S
Changes in benefits since workplan; Increase(I), No change(NC), Decrease(D)							(I,NC,D)	I	T
Low income families impacted							(number)	Unknown	U
INPUT BY STATE DAM SAFETY AGENCY:									
State dam safety order issued for repair, modification, removal issued, Yes(Y), No(N)							(Y,N)	N	V
State Dam Safety Agency Priority, High(H), Medium(M), Low(L), None(blank)							(H,M,L,-)	-	W
OTHER CONSIDERATIONS:									
Identify any other considerations and rate as High(H), Medium(M), Low(L) or None(blank)									
							(H,M,L,-)	-	X
							(H,M,L,-)	-	Y

EVALUATION OF POTENTIAL REHABILITATION PROJECTS

STATE	CA	DAM	Matanzas Creek Dam	BY	HC	DATE	4/15/2021
sht 2 of 5	FAILURE & RISK INDEXES						ver 2013-02

Adopted from Bureau of Reclamation "Risk Based Profile System"

see: <http://www.usbr.gov/dsis/risk/rbpsdocumentation.pdf>

LIFE LOSS:

Population-at-Risk [PAR], see NRCS dams inventory definition (number of people)

Estimate PAR for static loading failure; typically assume water at or above invert of the lowest open channel auxiliary spillway

16,938

A

Estimate PAR for hydrologic loading failure; typically assume water at or above invert of the lowest open channel auxiliary spillway

28,680

B

Estimate PAR for seismic loading failure; typically assume water at or above invert of the lowest non-gated spillway (sunny day failure)

184

C

Fatality Rates [FR] from dam breach

Adopted from BuRec "A Procedure for Estimating Loss of Life Caused by Dam Failure" DSO-99-06

see: http://www.usbr.gov/research/dam_safety/documents/dso-99-06.pdf

Flood Severity/Lethality [DV] is the average depth [D] times velocity [V] across flood plain (ft2/sec)

DV = (breach discharge - bank full discharge) / breach floodplain width

Warning Time [T] between failure warning and flood wave at population (minutes)

Flood Severity Understanding [U] of the warning issuer of the likely flooding magnitude

Scenario	Breach Discharge	Bankfull Discharge	Breach Floodplain Width	DV	Warning Time, T	Understanding, U
	(cfs)	(cfs)	(ft)	(ft2/sec)	(minutes)	(N/A or Vague)
Static	122,692	1,200	4500	27	5	Vague
Hydrologic	173,546	1,200	4300	40	5	Vague
Seismic	29,718	1,200	2000	14	10	Vague

For DV ≥ 50	T ≤ 60	U = vague	FR = 0.04
	T > 60		FR = 0.03
For DV < 50	T ≤ 60	U = vague	FR = 0.007
	T > 60		FR = 0.0003

Estimate FR for static loading failure scenario

0.007

D

Estimate FR for hydrologic loading failure scenario

0.007

E

Estimate FR for seismic loading failure scenario

0.007

F

Scenario	Load Factor	Response Factor	Failure Index	Fatality Rate	PAR	Risk Index
Static Hydrologic Seismic	1	92	92	0.007	16,938	10,908
	*	*	116	0.007	28,680	23,288
	1.00	25	25	0.007	184	32
TOTAL=			233	TOTAL=		34,228

EVALUATION OF POTENTIAL REHABILITATION PROJECTS							
STATE	CA	DAM	Matanzas Creek Dam	BY	HC	DATE	4/15/2021
sht 3 of 5	STATIC FAILURE INDEX						ver 2013-02
PRINCIPAL SPILLWAY SYSTEM (60 points max):				(total points)	30		A
Downstream filter or filter zone around conduit (yes=0 or no=10)					0		B
Conduit trench deep (>2d) and narrow (<3d) and steep sideslope (<2:1) (no=0 or yes=10)					10		C
Principal spillway system (inlet, pipe, or outlet) in deteriorated condition (no=0 or yes=10)					0		D
Conduit has seepage cutoff collars or other compaction adverse features (no=0 or yes=10)					10		E
Conduit contains open joints, open cracks, steady seepage (no=0 or yes=10)					0		F
Conduit founded on competent bedrock (yes=0 or no=10)					10		G
Reservoir control gate located at outlet of conduit (no=0 or yes=10)					0		H
RESERVOIR FILLING HISTORY (75 points max):				(total points)	25		I
Reservoir has filled to x% of effective height (earth spillway crest minus original streambed)					90		J
(<50%=75 or 51-75%=50 or 76-90%=25 or 91-95%=10 or 96-100%=5 or >100%=0)					25		K
SEEPAGE AND DEFORMATION (85 points max):				(total points)			L
Seepage carrying fines, or seepage increases with reservoir elevation increases, or sinkholes/jugholes exist in embankment (no=0 or yes=80)					0		M
Large amounts of seepage (no=0 or yes=6)					0		N
Visible and significant slope movement or sloughing (no=0 or yes=6)					0		O
Longitudinal or transverse embankment cracking greater than one foot in depth (no=0 or yes=6)					0		P
Sinkholes/depressions within two times effective height of the dam, either face (no=0 or yes=6)					0		Q
Poor top of dam condition, eroded, trees, rodent holes, settlement (no=0 or yes=6)					0		R
Abnormally wet areas at downstream toe/groin of embankment (no=0 or yes=6)					0		S
Inadequate slope protection against erosion by rainfall or waves (no=0 or yes=6)					0		T
FOUNDATION GEOLOGY (41 points max):				(total points)	33		U
Highly fractures rock under core (no=0 or treated=3 or untreated=30)					30		V
Karst terrain and soluble rock (gypsum or limestone) (no=0 or treated=3 or untreated=30)					0		W
Collapsible soils (no=0 or treated=3 or untreated=30)					0		X
Significant stress relief fractures in abutments (no=0 or treated=3 or untreated=30)					0		Y
History of underground mining under embankment area (no=0 or treated=3 or untreated=30)					0		Z
Coarse grained and highly permeable soils (no=0 or yes=3)					0		AA
Presence of weak layers/conditions diminishing embankment stability (no=0 or yes=3)					0		AB
Erodible soils (sandy/silty materials) or weakly cemented rock (no=0 or yes=3)					3		AC
Reservoir area prone to landslides that could cause overtopping (no=0 or yes=3)					0		AD
EMBANKMENT DESIGN AND CONSTRUCTION (24 points max):				(total points)	4		AE
Filters for core or foundation or incompatibility between zones (no=4 or yes=0)					0		AF
Embankment or foundation drainage system (yes=0 or no=4)					0		AG
Erodible core material (sands, silts, dispersive clays) (no=0 or yes=4)					4		AH
Incomplete or no foundation cutoff of shallow permeable layers (no=0 or yes=4)					0		AI
Poorly placed earthfill, inadequate density (no=0 or yes=4)					0		AJ
Gate features to drain reservoir (yes=0 or no=4)					0		AK
EMBANKMENT MONITORING (15 points max):				(total points)			AL
Instruments (except surficial survey points) installed at dam (yes=0 or no=4)					0		AM
Installed instruments routinely read and evaluated (yes=0 or no=4)					0		AN
Visual inspection of dam by engineer less often than yearly (no=0 or yes=4)					0		AO
Good physical/visual access to downstream groin/toe for inspection (yes=0 or no=4)					0		AP
STATIC FAILURE INDEX:				A+I+L+U+AE+AL	92		AQ

EVALUATION OF POTENTIAL REHABILITATION PROJECTS								
STATE	CA	DAM	Matanzas Creek Dam	BY	HC	DATE	4/15/2021	
sht 4 of 5		HYDROLOGIC FAILURE INDEX					ver 2013-02	
HYDROLOGIC LOADING:								
Total Spillway Capacity (PS&ES) for 6hr storm [Pfb], Work Plan Tbl 3 (rainfall inches)						6.6	A	
Obtained from Work Plan Tbl 3, or dams inventory data, or computer routings								
100 year, 6hr rainfall [P100] (inches)						4.8	B	
Probable Maximum Precipitation [PMP] (inches)						6.6	C	
if Pfb <= P100 = 4.77 enter 40								
if Pfb = P100+0.2(PMP-P100) = 5.13 enter 25								
if Pfb = P100+0.4(PMP-P100) = 5.49 enter 15								
if Pfb = P100+0.6(PMP-P100) = 5.85 enter 7								
if Pfb = P100+0.8(PMP-P100) = 6.21 enter 3								
if Pfb => PMP = 6.57 enter 1								
Enter interpolated value						1	D	
HYDROLOGIC UNCERTAINTY:								
Drainage Area [DA] (square miles)						11.45	E	
DA<10 enter 1.5 ; 10<DA<20 enter 1.4 ; 20<DA<50 enter 1.3 ; DA=>50 enter 1.2						1.4	F	
PIPE SPILLWAY PLUGGING:								
Pipe Diameter [D] (inches)						63	G	
D<12 enter 1.1; 12<=D<24 enter 1.0; 24<=D enter 0.9						0.9	H	
Riser & trash rack type:								
Non-standardized inlet enter 1.1, Open Top riser enter 1.0; Covered or Baffle Top enter 0.9						0.9	I	
EARTH SPILLWAY FLOW:								
Earth spillway flow depth [Des] from top of dam to spillway crest (feet)(10' max)						10.0	J	
DAM EROSION RESISTANCE:								
Non-plastic (PI<10) fill enter 2.0 ; Plastic core enter 1.7 ; Overtopping armoring enter 0.8						2.0	K	
Vegetal Cover Factor [Cf], see SITES or AH667						0.5	L	
http://www.pswcrl.ars.usda.gov/ah667/ah667.htm								
Cf <0.4 enter 1.1; Cf < 0.7 enter 1.0; Cf<1.0 enter 0.9; larger Cf enter 0.8						1	M	
EARTH SPILLWAY EROSION RESISTANCE:								
Low, can be excavated with hand tools, enter 2.0								
PI>10 and SPT blows<8, PI<10 and SPT blows>8, Kh<0.10, seismic velocity<2000fps								
Moderate, can be excavated with construction equipment, easy ripping, enter 1.2								
PI>10 and SPT blows>8, PI<10 and SPT blows>30, Kh<10, seismic velocity<7000fps								
High, very hard ripping, requires drilling and blasting, enter 0.2								
moderately hard rock, Kh>10, seismic velocity>7000fps						2	N	
Vegetal Cover Factor [Cf], see SITES or AH667						0.5	O	
Cf <0.4 enter 1.1; Cf < 0.7 enter 1.0; Cf<1.0 enter 0.9; larger Cf enter 0.8						1	P	
HYDROLOGIC FAILURE INDEX:								
dam overtopping breach: (2)(D)(F)(H)(I)(K)(M)						5	Q	
earth spillway breach: (D+5J)(F)(H)(I)(N)(P)						116	R	
larger of (2)(D)(F)(H)(I)(K)(M) or (D+5J)(F)(H)(I)(N)(P) but less than 300						116	S	

School Name	PAR Category	Address	Depth Category		
			Hydrologic	Static	Seismic
Luther Burbank Elementary	School	203 S A St	>=1.0 Ft.	>=1.0 Ft.	NONE
Montgomery High	School	1250 Hahman Dr	>=1.0 Ft.	>=1.0 Ft.	NONE
Santa Rosa French-American Charter	School	1350 Sonoma Ave	>=1.0 Ft.	<1.0 Ft	NONE
Rincon Valley Charter School - Matanzas Campus	School	1687 Yulupa Ave	>=1.0 Ft.	>=1.0 Ft.	NONE
Merryhill Preschool (Preschool)	School	4044 Mayette Ave	>=1.0 Ft.	<1.0 Ft	NONE
PRIVATE SCHOOL	School	4305 Hoen Ave	>=1.0 Ft.	>=1.0 Ft.	NONE
Robert L. Stevens Elementary	School	2345 Giffen Ave	>=1.0 Ft.	>=1.0 Ft.	NONE
PAROCHIAL SCHOOL	School	2626 Dutton Meadow	<1.0 Ft	NONE	NONE
Clarus Academy	School	630 Dutton Ave	<1.0 Ft	<1.0 Ft	NONE
Roseland Collegiate Prep (Temporary location)	School	100 Sebastopol Rd	>=1.0 Ft.	>=1.0 Ft.	NONE
Roseland Creek Elementary	School	1683 Burbank Av	>=1.0 Ft.	>=1.0 Ft.	NONE
Yulupa Elementary	School	2250 Mesquite Dr	>=1.0 Ft.	>=1.0 Ft.	NONE

Hospital/Rest Home Name	PAR Category	Address	Depth Category		
			Hydrologic	Static	Seismic
Providence Santa Rosa Memorial Hospital	Hospitals	1165 MONTGOMERY DR, SANTA ROSA	>=1.0 Ft.	>=1.0 Ft.	NONE
CONVALESCENT HOSPITAL	Hospitals	151 SOTOYOME ST, SANTA ROSA	>=1.0 Ft.	<1.0 Ft	NONE
CONVALESCENT HOSPITAL	Hospitals	850 SONOMA AVE, SANTA ROSA	>=1.0 Ft.	>=1.0 Ft.	NONE
Sutter Pacific Medical Foundatio	Hospitals	500 DOYLE PARK DR, SANTA ROSA	>=1.0 Ft.	NONE	NONE
REST HOME	Hospitals	2370 MELBROOK WAY, SANTA ROSA	>=1.0 Ft.	>=1.0 Ft.	NONE
ASSISTED CARE FACILITY	Hospitals	1038 KENMORE LN, SANTA ROSA	<1.0 Ft	NONE	NONE
CONVALESCENT HOSPITAL	Hospitals	446 ARROWOOD DR, SANTA ROSA	<1.0 Ft	<1.0 Ft	NONE
CONVALESCENT HOSPITAL	Hospitals	440 ARROWOOD DR, SANTA ROSA	<1.0 Ft	<1.0 Ft	NONE
REST HOME	Hospitals	857 HEARN AVE, SANTA ROSA	>=1.0 Ft.	<1.0 Ft	NONE
Redwood Senior Living	Hospitals	1727 BURBANK AVE, SANTA ROSA	<1.0 Ft	NONE	NONE
REST HOME	Hospitals	2643 STONY POINT RD, SANTA ROSA	>=1.0 Ft.	>=1.0 Ft.	NONE
ASSISTED CARE FACILITY	Hospitals	2416 CACTUS AVE, SANTA ROSA	>=1.0 Ft.	NONE	NONE

Road	PAR Category	Depth Category		
		Hydrologic	Static	Seismic
1st St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
3rd St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
4th St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
5th St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
6th St	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
7th St	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
9th St	Main Local Roads and Minor State Highways	>=1.0 Ft.	<1.0 Ft	NONE
A St	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Alderbrook Dr	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Aston Ave	Main Local Roads and Minor State Highways	<1.0 Ft	NONE	NONE
B St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Baker Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	<1.0 Ft	NONE
Barham Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Bellevue Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	<1.0 Ft	NONE
Bennett Valley Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Bethards Dr	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Boyd St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Brookwood Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Burbank Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	<1.0 Ft	NONE
Burgess Dr	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Burt St	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Cleveland Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Colgan Ave	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
College Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	<1.0 Ft	NONE
Corby Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Corporate Center Pky	Main Local Roads and Minor State Highways	>=1.0 Ft.	<1.0 Ft	NONE
Creekside Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Cypress Way	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
D St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Dowd Dr	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Dutton Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Dutton Meadow	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
E St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Earle St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Farmers Ln	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Franquette Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Fresno Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	NONE	NONE
Fulton Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Giffen Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Guerneville Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Healdsburg Ave	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Hearn Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Hoen Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Hoen Ave Frontage Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Hwy 101	Major State and Minor Federal Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Hwy 12	Major State and Minor Federal Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Kawana Springs Rd	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Lazzini Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Leo Dr	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Llano Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Ludwig Ave	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Maple Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Mendocino Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	<1.0 Ft	NONE

Montgomery Dr	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Morgan St	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Northpoint Pky	Main Local Roads and Minor State Highways	>=1.0 Ft.	NONE	NONE
Northwestern Pacific Main Line	Railroads: Passenger Traffic	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Occidental Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Olive St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Pearblossom Dr	Main Local Roads and Minor State Highways	<1.0 Ft	NONE	NONE
Petaluma Hill Rd	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Railroad St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Robles Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Sanford Rd	Main Local Roads and Minor State Highways	<1.0 Ft	NONE	NONE
Santa Rosa Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Sebastopol Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Sebastopol Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	<1.0 Ft	NONE
Sonoma Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Sotoyome St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Standish Ave	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Stony Point Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Summerfield Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Tachevah Dr	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Talbot Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Talmadge Dr	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Todd Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Vallejo St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
West Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Wiljan Ct	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Willowside Rd	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.
Wilson St	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	NONE
Yolanda Ave	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Yuba Dr	Main Local Roads and Minor State Highways	<1.0 Ft	<1.0 Ft	NONE
Yulupa Ave	Main Local Roads and Minor State Highways	>=1.0 Ft.	>=1.0 Ft.	>=1.0 Ft.

Appendix D. Total Class Weight



Project:	Matanzas Creek Dam - Watershed Plan-ED
Project #:	2006-048
Dam:	Matanzas Creek (CA00794)
By/Checked:	HC/RA

Parameter	Value	Unit	Rating	Class Weight
Capacity	2,671	ac-ft	High	4
Height (Jurisdictional)	95	ft	Moderate	2
Estimated Evacuation (PAR)		persons	Extreme	12
Potential Downstream Damage	--	--	High	12
Total Class Weight (TCW) =				30

DAMAGE POTENTIAL CLASSIFICATION FOR FLOOD ESTIMATE AND SPILLWAY ANALYSIS					
Name of Dam _____		Type of Dam _____		Dam No. _____	
County _____		Located on _____			
Damage Potential Rating					
		Extreme	High	Moderate	Low
Capacity _____ AF		100,000 & Over	1,000-99,999	100-999	15-99
(circle weight)		6	4	2	0
Height _____ Ft.		150 & Over	100-149	50-99	6-49
(circle weight)		6	4	2	0
Estimated Evacuation _____		1,000 & Over	100-999	1-99	None
(circle weight)		12	8	4	0
Potential D/S Damage		High	Moderate	Low	None
(circle weight)		12	8	4	0
Total Class Weight _____					

References:

E. Calzascia; J. Fitzpatrick. (1989). "Hydrologic Analysis Within California's Dam Safety Program."
State of California Department of Water Resources