

ALAMEDA DAM

CASE STUDY

BUREAU OF LAND MANAGEMENT
DAM SAFETY INSPECTION REPORT
ALAMEDA DAM

Geographical Data		
Name of Dam:	ALAMEDA	
Administrative State:	NM	
Geographic State (if diff):		
County:	DONA ANA	
Field Office:	LAS CRUCES DO	
Section:	1	T: 28S R: 02E
Aliquot Part:	NE	
Latitude at Benchmark (nearest 10 th):		
Longitude at Benchmark (nearest 10 th):		
Meridian:		
BLM ID No.:		
Equip. No.:		

BUREAU OF LAND MANAGEMENT
DAM SAFETY INSPECTION REPORT
ALAMEDA DAM

Classification Data
Current Hazard Class (L/S/H): L
Population at Risk (High Hazard Only):
Size Class (Minor/Small/Inter/Large): SMALL
Type of Dam (If not earth):
Safety Rating (0-9 & description) 4 - POOR
River/Stream Crossed: NONE
Seismic PGA (high haz only):
Date Dam Constructed: 1930's
Date Dam Modified: UNKNOWN
Plan/Section Dwg No.: N/A

BUREAU OF LAND MANAGEMENT
DAM SAFETY INSPECTION REPORT
ALAMEDA DAM

Inspector Data
Date of Inspection: 10-08-2008
Inspector Name: D. CORK, M. MONTGOMERY
Weather: SUNNY & WARM
Date of Last Inspection: 03-07-2007
Safety issues/warnings for inspectors: Snakes, exposed gas lines in road, road is washed out in several areas.
Driving Directions to Dam: East of Las Cruces City Limits. Draining into the Las Cruces Main Dam.

BUREAU OF LAND MANAGEMENT
DAM SAFETY INSPECTION REPORT
ALAMEDA DAM

For High Hazard dams, note any low water crossings, private land crossings, locked gates, poor roads, etc: **There are 2 major road crossings downstream of the structure. Roadrunner Road and Sonoma Ranch Road.**

Describe any development within 3 miles downstream since the last inspection. If none, write "None":
There are numerous new housing and commercial developments downstream of the structure.

Describe any active County, State, or Federal roads, active railroads, or utilities within 3 miles downstream. If none, write "None." **For County roads, list the number of vehicles per day: Two main thorough ways which cross the drainage downstream. Roadrunner Road had a 12,658 Annual Average Weekly Traffic count as per the Las Cruces MPO maps 2006 count. No traffic counts on Sonoma Ranch Road which was constructed in 2007. A 10" gas line runs 260' downstream from the primary spillway outlet has eroded and exposed the existing line.**

DAM SAFETY INSPECTION REPORT

Dimensional Data			
Benchmark Elevation:	Station 0+00	A	100
Dam Crest Elevation (max):	Station 1+89	B	99
Dam Crest Elevation (minimum):	Station 6+37	C	98
Emergency Spillway Crest Elevation:	Station 0+75	D	87
Principal Spillway Inlet Invert Elevation:	Station 3+75	E	66
Principal Spillway Inlet (Riser) Diameter:		F	3.5' x 3'
Principal Spillway Material: (m/c/p)			C
Principal Spillway Drop Inlet Height (Riser):		G	5'
Water Level at Survey Date Elevation:	Station DRY	H	66
Lowest Point on the Upstream Toe Elevation:		I	66
Low-Level Gated Outlet Inlet Invert Elevation:	Station N/A	J	N/A
Low-Level Gated Outlet Diameter:		K	N/A
Low-Level Gated Outlet Material: (m/c/p) N/A			
Distance From Centerline of Dam to Inlet of Low-Level Gated Outlet:		L	N/A
Distance From Centerline of Dam to Lowest Point on Upstream Face:		M	98
Distance From Centerline of Dam to Inlet of Principal Spillway:		N	103

DAM SAFETY INSPECTION REPORT

Dimensional Data			
Slope of Upstream Face (H:V):		O	3:1
Principal Spillway Outlet Invert Elevation:	Station 3+75	P	61
Principal Spillway Outlet Diameter:		Q	3.5'x 3'
Low-Level Gated Outlet Outlet Invert Elevation:	Station N/A	R	N/A
Lowest Point on the Downstream Toe Elevation:	Station 4+35	S	65
Distance From Centerline of Dam to Outlet of Principal Spillway:		T	82
Distance From Centerline of Dam to Outlet of Low-Level Gated Outlet:		U	N/A
Distance From Centerline of Dam to Lowest Point on Downstream Face:		V	80
Slope of Downstream Face (H:V):		W	2:1
Crest Width:	Station 5+62	X	9
Dam Crest Length Along Centerline of the Dam:		Y	750
Emergency Spillway Width at the Crest:		Z	90'
Emergency Spillway Length at the Crest:		AA	200'
Emergency Spillway Sideslope on Left (H:V):		BB	3:1
Emergency Spillway Sideslope on Right (H:V):		C C	3:1
Reservoir Surface Area (Acres) at Emergency Spillway Crest:		D D	104

CALC 1 HYDRAULIC HEIGHT

- HYDRAULIC HEIGHT
= $D - S$
- $D = 87 \text{ FT}$
- $S = 65 \text{ FT}$
- $D - S = 87 - 65$
= 22 FT
- $S =$ LOWEST POINT
ON THE
DOWNSTREAM TOE
ELEVATION

CALC 2. STRUCTURAL HEIGHT

- STRUCTURAL HEIGHT = $B - S$
- $B = \text{MAX. DAM CREST ELEVATION}$
- $S = \text{LOWEST POINT ON THE DOWNSTREAM TOE ELEVATION}$
- $B = 99 \text{ FT}$
- $S = 65 \text{ FT}$
- $B - S = 99 - 65$
 $= \underline{34 \text{ FT}}$

CALC 3. MINIMUM FREEBOARD

- MINIMUM FREEBOARD = C-D
- C = MIN. DAM CREST ELEVATION
- D= EMERGENCY SPILLWAY CREST ELEVATION
- C = 98 FT
- D = 87 FT
- C-D = 98 – 87
= 11 FT

CALC 4. NORMAL STORAGE DEPTH

- NORMAL STORAGE DEPTH = $E - I$
- $E = 66 \text{ FT}$
- $I = 66 \text{ FT}$
- $E - I = \underline{0 \text{ FT}}$
- $E =$ PRINCIPAL SPILLWAY INLET INVERT ELEVATION
- $I =$ LOWEST POINT ON UPSTREAM TOE ELEVATION

CALC 5. ACTUAL STORAGE DEPTH

- ACTUAL STORAGE DEPTH = $H - I$
- $H = 66$ FT
- $I = 66$ FT
- $H - I = \underline{0}$ FT
- $H =$ WATER LEVEL ELEVATION AT DATE OF SURVEY
- $I =$ LOWEST POINT ON UPSTREAM TOE ELEVATION

CALC 6. MAXIMUM STORAGE DEPTH

- MAXIMUM STORAGE DEPTH = $D - I$
- $D = 87 \text{ FT}$
- $I = 66 \text{ FT}$
- $D - I = 87 - 66$
 $= \underline{21 \text{ FT}}$
- $D =$ EMERGENCY SPILLWAY CREST ELEVATION
- $I =$ LOWEST POINT ON UPSTREAM TOE ELEVATION

CALC 7. PRINCIPAL SPILLWAY OUTLET PIPE LENGTH

- PRINCIPAL SPILLWAY
OUTLET PIPE LENGTH
= $T + N$
- $T =$ DISTANCE FROM
CENTERLINE DAM TO
OUTLET OF PRINCIPAL
SPILLWAY
- $N =$ DISTANCE FROM
CENTERLINE DAM TO
INLET OF PRINCIPAL
SPILLWAY
- $T = 82$ FT
- $N = 103$ FT
- $T + N = 82 + 103 =$
185 FT

CALC 8. LOW-LEVEL GATED OUTLET PIPE LENGTH

- THIS CALCULATION DOES NOT APPLY TO ALAMEDA DAM

CALC 9. ESTIMATED MAX. RESERVOIR STORAGE

- ESTIMATED MAX. RESERVOIR STORAGE
= $((DD * \text{CALC 6})/3)$
- DD = RESERVOIR SURFACE AREA (ACRES) AT EMERGENCY SPILLWAY
- DD = 104 ACRES
- CALC6 = 21 FT
- $((DD * \text{CALC 6})/3) = ((104 * 21)/3) = (2,184/3) = \underline{728 \text{ ACRE/FT}}$
- CALC 6. = MAX. STORAGE DEPTH

$$\text{CALC 10 VOLUME OF EMBANKMENT} = \frac{(((\text{CALC2} * \text{Y}) * (\text{X} + ((\text{CALC2} * \text{O}) / 2) + ((\text{CALC2} * \text{W}) / 2)))}{54}$$

- CALC 2 = STRUCTURAL HEIGHT
- Y = DAM CREST LENGTH ALONG CENTERLINE
- X = CREST WIDTH
- O = SLOPE OF UPSTREAM FACE
- W = SLOPE OF DOWNSTREAM FACE
- CALC 2 = 34 FT
- Y = 750 FT
- X = 9 FT
- O = 3:1
- W = 2:1

$$\text{CALC 10 VOLUME OF EMBANKMENT} = \frac{((\text{CALC2} * \text{Y}) * (\text{X} + ((\text{CALC2} * \text{O}) / 2) + ((\text{CALC2} * \text{W}) / 2)))}{54}$$

- $\text{CALC2} * \text{Y} = (34 * 750) = \underline{25,500 \text{ SF}}$
- $(\text{X} + ((\text{CALC2} * \text{O}) / 2)) = (9 + ((34 * 3) / 2)) = (9 + (102 / 2)) = (9 + 51) = \underline{60 \text{ FT}}$
- $((\text{CALC2} * \text{W}) / 2) = (34 * 2) / 2 = \underline{34 \text{ FT}}$
- $(25,500)(60 + 34) / 54 = \underline{44,388.9 \text{ CY}}$

DAM SAFETY INSPECTION REPORT

Calculated Data			
Calc1. Hydraulic Height (D-S):	22	Calc7. Principal Spillway Outlet Pipe Length (T+N):	185
Calc2. Structural Height (B-S):	34	Calc8. Low Level Gated Outlet Pipe Length(U+L):	N/A
Calc3. Minimum Freeboard (C-D):	11	Calc9. Estimated Max Reservoir Storage ((DD * Calc6.) / 3) :	728
Calc4. Normal Storage Depth (E-I):	0	Calc10. Volume of Embankment: (((Calc2. * Y) * (X + ((Calc2. * O)/2) + ((Calc2. * W)/2))) / 54)	44,388.9
Calc5. Actual Storage Depth (H-I):	0	Other:	
Calc6. Maximum Storage Depth (D-I):	21	Other:	

Notes:

1. See Figures 1 for Definition of Dimensions
2. Indicate all Dimensions in Feet Unless Otherwise Noted
3. If reservoir is dry at time of inspection, Actual Storage Depth is "0"
4. Datum for permanent benchmark shall be Elevation 100'
5. For Calc10. Dimensions O & W are slope ratios and All other parameters are in Feet, The Answer is in Cubic yards.

EMBANKMENT

1. CREST

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Any Visual Settlements		x				Minor – surface erosion
b	Cracking			x			
c	Lateral Movement			x			
d	Visible Sinkhole			x			
e	Erosion		x				Minor – surface erosion
f	Trees & Brush		x				Along edges, 3' high
g	FAMs Road on Crest			x			
h	Rodent holes			x			

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: LOOKING ACROSS CREST OF DAM FROM LEFT TO RIGHT



EMBANKMENT

2. UPSTREAM SLOPE

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Erosion		x		R	4	
b	Trees & Brush		x		R	5	
c	Longitudinal Cracks	x				5	
d	Transverse Cracks	x				5	
e	Visual depressions or bulges	x				5	
f	Visual settlements	x				5	
g	Visible sinkhole	x				5	
h	Debris		x		R		By intake structure
i	Rodent holes			x			

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

- CALCULATIONS NOTE: Recommended work items listed below were discovered during the field inspection. List Flag No.'s from checklist and comment as needed. Group similar items, calculate estimated quantities, and enter totals on Summary .
4. **1 foot of debris on top of trash rack and around bottom 5 feet of intake structure. Scour around right half of intake and up to 8 feet vertical height of upstream slope of embankment. Sediment deposit in impoundment area and along left side of intake structure.**
 5. **Vegetation covers 90% of upstream slope impeding ability to inspect upstream face of embankment. Mesquite is 8'+ and other brush is up to 5' high. Vegetation should be removed.**

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: LOOKING ACROSS UPSTREAM FACE OF DAM FROM LEFT TO RIGHT



EMBANKMENT

3. DOWNSTREAM SLOPE

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Erosion		x		R	3	
b	Trees & Brush		x				Up to 6' high, 75% coverage
c	Longitudinal Cracks			x			
d	Transverse Cracks			x			
e	Visual depressions or bulges			x			
f	Visual settlements			x			
g	Visible sinkhole			x			
h	Boils present at toe			x			

EMBANKMENT

3. DOWNSTREAM SLOPE

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
i	Seepage present			x			
j	Rodent holes			x			
k	Is toe drain dry?	x					

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

- CALCULATIONS NOTE: Recommended work items listed below were discovered during the field inspection. List Flag No.'s from checklist and comment as needed. Group similar items, calculate estimated quantities, and enter totals on Summary .
3. **Several locations of surface runoff erosion on downstream face of embankment (Sta. 3+18, 4+82, 6+62, 7+60 and above conduit). Max. depth of erosion is 2' deep at Sta. 6+62. There appears to be vehicle tracks near the erosion at Sta. 6+62. Both downstream groins also have surface erosion. This erosion should be repaired.**
 4. 1 foot of debris on top of trash rack and around bottom 5 feet of intake structure. Scour around right half of intake and up to 8 feet vertical height of upstream slope of embankment. Sediment deposit in impoundment area and along left side of intake structure.
 5. Vegetation covers 90% of upstream slope impeding ability to inspect upstream face of embankment. Mesquite is 8'+ and other brush is up to 5' high. Vegetation should be removed.

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: LOOKING ACROSS DOWNSTREAM FACE OF DAM FROM LEFT TO RIGHT



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Erosion downstream face at Sta. 3+18



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Erosion upper half of downstream face at Sta. 4+82



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Erosion on downstream face above outlet works



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Downstream face, surface erosion at Sta. 6+62



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Close up of surface erosion at Sta. 6+62, downstream face.

Note: Depth of erosion is 2 feet deep.



EMBANKMENT

4. Abutment Contacts

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Erosion			x			
b	Visual differential movement			x			
c	Cracks			x			
d	Seepage Present			x			
e	Trees & Brush		x				

EMBANKMENT

5. Groins

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Erosion		x		RM	3	
b	Visual differential movement			x			
c	Cracks			x			
d	Seepage Present			x			
e	Trees & Brush		x				

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Left downstream face groin, surface erosion.



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Surface erosion, right downstream face groin



EMBANKMENT

6. Reservoir Control

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Recent downstream developments		x				Several houses
b	Slides in Reservoir area			x			
c	Change in reservoir operation			x			
d	Other large impoundments u/s			x			
e	Evidence of recreational use		x				Graffiti, garbage, empty shotgun shells

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking downstream at recent development



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking upstream at impoundment from Sta. 5+21

Note: Thick vegetation in impoundment



EMBANKMENT

7. Instrumentation

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	List any instrumentation present	x					
b	Is Instrumentation functional	x					
c	Record measurements	x					

CONDITION RATING CODES

EMBANKMENT

- 5 FAIR CONDITION - Moderate deterioration or disintegration, extensive cracking and leaching, or spalling on concrete. Minor settlement, depressions, or bulges present in the embankment. Minor differential movement present at the abutment contacts. Major amount of rodent holes, cracking and erosion present in the embankment and associated slope protection. Embankment has vegetative growth (trees and brush) covering large portions of the embankment. Vegetation is less than 5 feet in height.
- 4 POOR CONDITION - Major spalling, heavy scaling, wide cracks, or exposed rebar in concrete. Major settlement, depressions, or bulges present in the embankment. Severe amount of rodent holes, cracking and erosion present in the embankment and associated slope protection. Indication of sinkhole and/or boils developing in the embankment. Major differential movement present at the abutment contacts. Embankment has vegetative growth (trees and brush) covering large portions of the embankment. Vegetation is greater than 5 feet in height.
- 3 SERIOUS CONDITION - Any condition described in code 4 but which is excessive in scope. Severe movement or differential settlement of the embankment. Major amount of sinkhole and/or boils present in the embankment or downstream toe. Piping is evident. Sediment is present in seepage. Rate of seepage has increased from previous monitoring. Concrete has loss of section, deterioration, or spalling has seriously affected the primary structural components. Shear cracks in concrete may be present.
- 2. CRITICAL CONDITION – Advanced deterioration of primary structural elements. Shear cracks in concrete may be present and seeping water. Dam embankment is near a state of failure.
- 1 “IMMINENT FAILURE” - Dam will fail if not taken out of service. Reconstruction of the embankment would put the dam back in service.
- 0 FAILED CONDITION - Dam has failed. Replacement of the entire structure is necessary.
- Good Condition (codes 7-9)
- Fair Condition (codes 5-6)
- Poor Condition (codes 2-4)
- Unsatisfactory (codes 0-1)

Embankment Safety Rating

4



PRINCIPAL SPILLWAY OR OUTLET

8. INTAKE STRUCTURE

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Debris present		x		R	4	
b	Concrete surface condition						
(1)	Spalling		x				Minor - Wing walls and conduit
(2)	Cracking			x			
(3)	Erosion			x			
(4)	Scaling		x				
(5)	Exposed Reinforcement		x				Left top wing wall
(6)	Other, list						

PRINCIPAL SPILLWAY OR OUTLET

8. INTAKE STRUCTURE

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
c.	Joint condition	x					
(1)	Displacement or offset	x					
(2)	Loss of joint material	x					
(3)	Leakage	x					
d.	Metal appurtenances		x				8' dia. X 8' high trash rack
(1)	Corrosion present		x				On RR iron trash rack
(2)	Breakage present			x			
(3)	Anchor system secure		x				

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking RR tie trash rack at intake structure

Note: Debris



PRINCIPAL SPILLWAY OR OUTLET

9. CONDUIT

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Is Conduit Concrete		x				42" wide x 36" high
b	Concrete Surface condition						
(1)	Spalling		x				Minor at inlet
(2)	Cracking			x			
(3)	Erosion			x			
(4)	Scaling		x				Minor on outlet
(5)	Exposed reinforcement			x			
(6)	Displacement or offset			x			

PRINCIPAL SPILLWAY OR OUTLET

9. CONDUIT

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
(7)	Leakage			x			
(8)	Other, list	x					
c.	Metal conduit condition	x					
(1)	Corrosion present	x					
(2)	Protection coating adequacy	x					
(3)	Conduit misalignment	x					
(4)	Leakage	x					

PRINCIPAL SPILLWAY OR OUTLET

9. CONDUIT

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
d	Plastic conduit condition	x					
(1)	Displacement or offset	x					
(2)	Leakage	x					
(3)	Crushed or broken	x					
e.	Conduit trash rack condition	x					
(1)	Operational	x					
(2)	Plugged	x					
(3)	Corrosion or damage present	x					

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking upstream at conduit outlet



PRINCIPAL SPILLWAY OR OUTLET

10. GATE

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Flood Gate Condition	x					
(1)	Broken or bent	x					
(2)	Corroded or rusted	x					
(3)	Regularly maintained	x					
(4)	Gates operational	x					
c	Is there a low-level gate	x					
d	Is low-level gate operational	x					

CONDITION RATING CODES

OUTLET WORKS

- This describes the physical conditions associated with the alignment, settlement, joints, structural conditions, scour and other items associated with outlet works (intake structures, conduits, gates, and stilling basins).
- N Not applicable. Use when the dam has no outlet works
- 9 EXCELLENT CONDITION - No deficiencies
- 8 VERY GOOD CONDITION -No noticeable or noteworthy deficiencies which affect the operation of the outlet works. Minor debris accumulation on trash racks.
- 7 GOOD CONDITION - Concrete surfaces have shrink cracks, light scaling and insignificant spalling which does not expose reinforcing steel. Insignificant damage caused by drift with no alignment change and not requiring corrective action. Some minor scouring has occurred near conduit outlet or basin outlet. Metal conduits have smooth symmetrical curvature with superficial corrosion and no pitting. Gates operate smoothly, but may have superficial corrosion and no pitting.
- 6 SATISFACTORY CONDITION – Minor deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalling on concrete. Conduit outlet or stilling basin has local minor scouring. Metal appurtenances have significant corrosion or moderate pitting. Gate operator stems may be leaking lubricant. Significant debris accumulation at gates and conduit inlets that does not impede flow or operation.
- 5 FAIR CONDITION - Moderate deterioration or disintegration, extensive cracking and leaching, or spalling on concrete. Minor settlement or misalignment. Noticeable scouring or erosion at the outlet works or the stilling basin. Metal appurtenances have significant distortion and deflection in one section, significant corrosion or deep pitting present. Gate operator stems have misalignments that do not affect the full operation of the gate. Major debris accumulation at gates and conduit inlets that impedes flow or operation.
- 4 POOR CONDITION- Major spalling, heavy scaling, wide cracks, or exposed rebar in concrete. Conduits, appurtenances, stilling basins, and intakes have major settlement or misalignment. Considerable scour or erosion present at the outlet works or stilling basin. Metal appurtenances have significant distortion and deflection throughout, extensive corrosion or pitting. Gate does not have complete range of operation.



**Principle spillway or outlet
works safety rating**

6

EMERGENCY SPILLWAY OR OUTLET WORKS

11. STILLING BASIN

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Concrete surface condition				M	1	Left Emergency Spillway
(1)	Spalling		x				Bullet damage
(2)	Cracking		x				minor
(3)	Erosion			x			
(4)	Scaling			x	M	1	unknown
(5)	Exposed Reinforcement			x	M	1	unknown
(6)	Other, list	X					

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

- CALCULATIONS NOTE: Recommended work items listed below were discovered during the field inspection. List Flag No.'s from checklist and comment as needed. Group similar items, calculate estimated quantities, and enter totals on Summary .
1. **No apparent drain in stilling basin. Standing water is approximately 7' deep at time of inspection, and siltation is up to 5" deep. Water and siltation inhibits ability to inspect bottom of stilling basin.**
 3. Several locations of surface runoff erosion on downstream face of embankment (Sta. 3+18, 4+82, 6+62, 7+60 and above conduit). Max. depth of erosion is 2' deep at Sta. 6+62. There appears to be vehicle tracks near the erosion at Sta. 6+62. Both downstream groins also have surface erosion. This erosion should be repaired.
 4. 1 foot of debris on top of trash rack and around bottom 5 feet of intake structure. Scour around right half of intake and up to 8 feet vertical height of upstream slope of embankment. Sediment deposit in impoundment area and along left side of intake structure.
 5. Vegetation covers 90% of upstream slope impeding ability to inspect upstream face of embankment. Mesquite is 8'+ and other brush is up to 5' high. Vegetation should be removed.

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Water and silt in concrete stilling basin, left emergency spillway



EMERGENCY SPILLWAY OR OUTLET WORKS

11. STILLING BASIN

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
b	Joint condition						Buried by sediment
(1)	Displaced or offset	x					
(2)	Loss of joint material	x					
(3)	Leakage	x					
c.	Energy dissipater condition						Could be buried??
(1)	Deterioration	x					
(2)	Covered with debris	x					
(3)	Other, list	x					

EMERGENCY SPILLWAY OR OUTLET WORKS

11. STILLING BASIN

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
d	Channel Condition						Full of Sediment
(1)	Eroding or backcutting			x			
(2)	Sloughing			x			
(3)	Obstructed		x				Sediment and brush
(4)	Undercut by released water			x			
(5)	Embankment erosion by released water			x			

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking downstream through left emergency spillway

Note: channel siltation and brush growth



EMERGENCY SPILLWAY OR OUTLET WORKS

11. STILLING BASIN

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
e	Gabion condition						@ Conduit Outlet works
(1)	Corroded			x			
(2)	Baskets misalign			x			
(3)	Basket settlement		x		R	2	Scour of gabion rock
(4)	Brush growing in gabions			x			
f	Riprap Condition						Left side by gabion structure
(1)	Erosion, undercut or settlement		x				
(2)	Vegetation			x			
(3)	Extent of riprap adequacy			x	R		Could use more on top
(4)	Migration of riprap		x		R	2	

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

- CALCULATIONS NOTE: Recommended work items listed below were discovered during the field inspection. List Flag No.'s from checklist and comment as needed. Group similar items, calculate estimated quantities, and enter totals on Summary .
- 1. No apparent drain in stilling basin. Standing water is approximately 7' deep at time of inspection, and siltation is up to 5" deep. Water and siltation inhibits ability to inspect bottom of stilling basin.
- 2. **Scour of rock from lower 2 gabion mattresses due to utilization of undersize rock. Siltation and debris on baskets. Left channel riprap has been transported downstream in channel. Surface runoff erosion on ground above top of left bank riprap and on top of right channel at end of gabions. Old scour pocket on right of gabion stilling basin is covered with vegetation**
- 3. Several locations of surface runoff erosion on downstream face of embankment (Sta. 3+18, 4+82, 6+62, 7+60 and above conduit). Max. depth of erosion is 2' deep at Sta. 6+62. There appears to be vehicle tracks near the erosion at Sta. 6+62. Both downstream groins also have surface erosion. This erosion should be repaired.
- 4. 1 foot of debris on top of trash rack and around bottom 5 feet of intake structure. Scour around right half of intake and up to 8 feet vertical height of upstream slope of embankment. Sediment deposit in impoundment area and along left side of intake structure.
- 5. Vegetation covers 90% of upstream slope impeding ability to inspect upstream face of embankment. Mesquite is 8'+ and other brush is up to 5' high. Vegetation should be removed.

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking downstream thru gabion stilling basin at conduit outlet



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking upstream thru gabion stilling basin at conduit outlet



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Scour in gabion baskets due to undersize rock



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Scour at end of gabion stilling basin, right side



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Brush growing in old scour pocket to the right of the gabion stilling basin



EMERGENCY SPILLWAY OR OUTLET WORKS

12. SPILLWAY OR OUTLETWORKS

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
a	Spillway Concrete condition						Left emergency spillway
(1)	Spalling		x				Bullet damage
(2)	Cracking		x				Minor
(3)	Erosion		x				Vehicle tracks at outlet
(4)	Scaling		x				
(5)	Exposed reinforcement			x			
(6)	Concrete undercut			x			
(7)	Settlement			x			
(8)	Other: graffiti		x				On both wing walls
(9)	Trees & Brush - Obstructed		x				In approach channel, on wing walls, and veg. in joints

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Change of material on left wing wall of left emergency spillway

Note: Masonry on the left and concrete on the right side of picture



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Graffiti on left wall of left emergency spillway



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Graffiti on right wall of left emergency spillway

Note: Brush obstructing spillway.



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking downstream through approach channel of left emergency spillway



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Bullet damage and graffiti on left wall of left emergency spillway



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Vegetation and siltation at lower left wall of left emergency spillway



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Vegetation and siltation at lower right wall of left emergency spillway



EMERGENCY SPILLWAY OR OUTLET WORKS

12. SPILLWAY OR OUTLETWORKS

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
b	Joint condition						Left emergency spillway
(1)	Displacement of offset			x			
(2)	Loss of joint material			x			
(3)	Leakage			x			
c	Energy dissipater condition	x					Unknown if exists
(1)	Signs of deterioration	x					
(2)	Covered with debris	x					
(3)	Riprap dissipater	x					
(4)	Missing	x					

EMERGENCY SPILLWAY OR OUTLET WORKS

12. SPILLWAY OR OUTLETWORKS

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
d	Excavated earth spillway condition						Right Emergency Spillway
(1)	Slopes eroding		x				
(2)	Slopes sloughing		x				Right side
(3)	Headcutting		x		M		Up to 5' deep
(4)	Trees & brush – obstructed		x				minor
e	Natural earth spillway condition	x					
(1)	Slopes eroding	x					
(2)	Slopes sloughing	x					
(3)	Headcutting	x					
(4)	Trees & brush – obstructed	x					

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Looking downstream through right emergency spillway

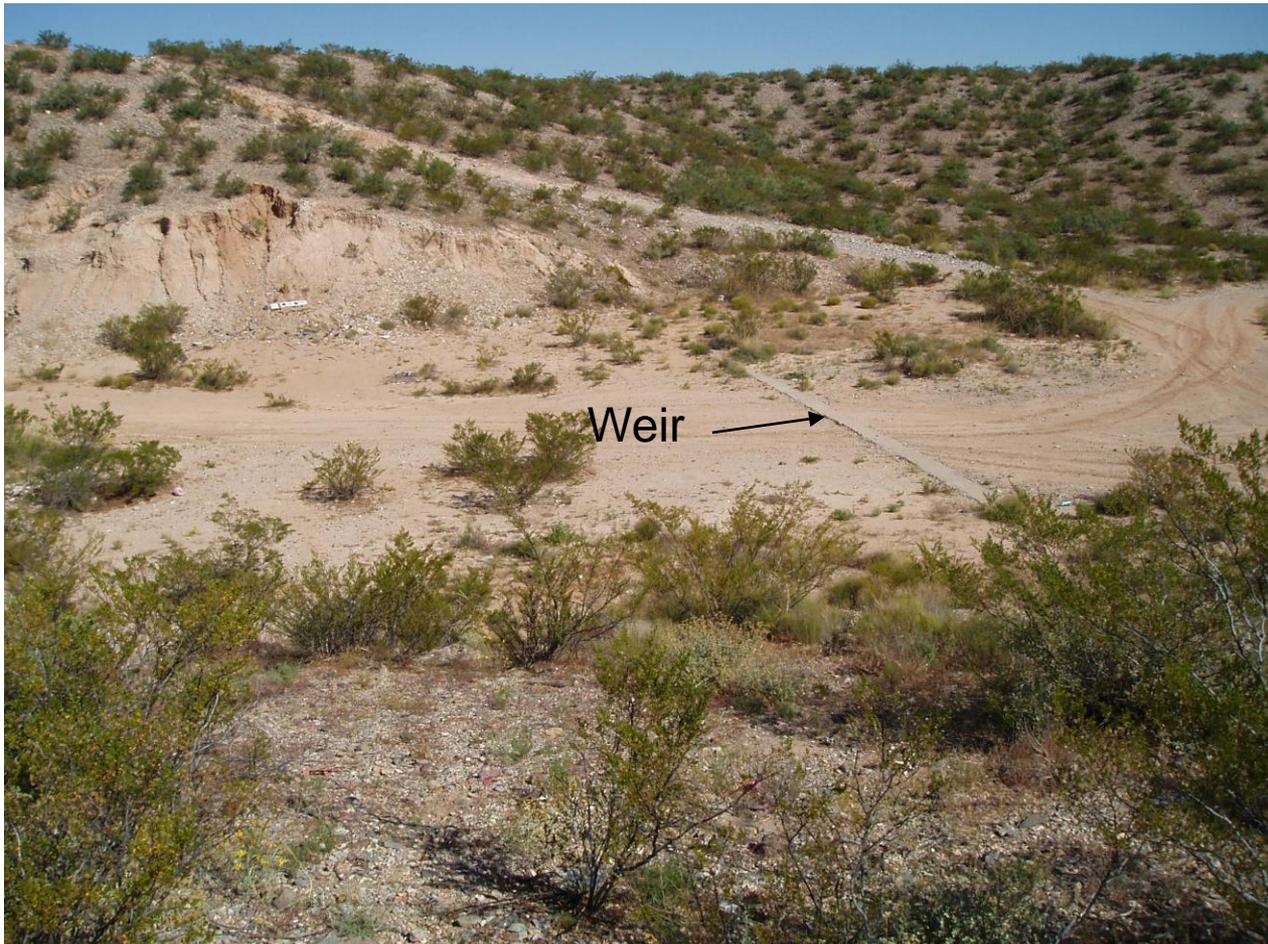


DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Concrete control weir in right emergency spillway



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Erosion in right emergency spillway downstream of concrete weir



DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-8-08

PHOTO: Headcutting up to 5' deep in right emergency spillway 100' downstream of weir



EMERGENCY SPILLWAY OR OUTLET WORKS

12. SPILLWAY OR OUTLETWORKS

Item No.	Item	N/A	Y	N	CAR RIM	Flag No.	Remarks
f	Damage from released water						Applies to both left and right emergency spillways
(1)	Eroded embankment			x			
(2)	Undercutting of outlet			x			
(3)	Recent discharge		x				Surface runoff
(4)	Other damage, list						
g	Is weir in good condition						Right emergency spillway weir is buried
h	Is control at weir		x				

CONDITION RATING CODES EMERGENCY SPILLWAY

- 7 **GOOD CONDITION** - Concrete surfaces have shrink cracks, light scaling and insignificant spalling which does not expose reinforcing steel. Spillway channel and bank protection is in need of minor repairs. Spillway control devices and channel side slopes have a little minor damage. Banks and/or channel have minor amounts of drift or vegetation growth.

- 6 **SATISFACTORY CONDITION** - Minor deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalling on concrete. Spillway banks are beginning to slough. Spillway control devices and channel protection have widespread minor damage. There is minor spillway channel bed movement (erosion) evident. Debris and/or vegetation (short, less than 1 foot in height) are restricting the waterway slightly.

- 5 **FAIR CONDITION** - Moderate deterioration or disintegration, extensive cracking and leaching, or spalling on concrete. Spillway protection is being eroded. Spillway control devices and/or channel side slopes have major damage. Trees and brush restrict the channel.

- 4 **POOR CONDITION**- Major spalling, heavy scaling, wide cracks, or exposed rebar in concrete. Spillway and channel side slope protection is severely undermined. Spillway channel has severe headcutting and widespread erosion. Spillway control devices have severe damage.

- 3 **SERIOUS CONDITION** - Concrete has loss of section, deterioration, or spalling has seriously affected the primary structural components. Shear cracks in concrete may be present. Spillway protection has failed. Spillway control devices have been destroyed. Channel aggradation, degradation or lateral movement has changed the spillway to now threaten the dam.



**EMERGENCY SPILLWAY OR
OUTLET WORKS SAFETY
RATING**

5

OVERALL SAFETY RATING

- EMBANKMENT SAFETY RATING = 4
- PRINCIPAL SPILLWAY SAFETY RATING = 6
- EMERGENCY SPILLWAY SAFETY RATING = 5
- THE OVERALL SAFETY RATING IS CANNOT EXCEED THE LOWEST INDIVIDUAL RATING
- OVERALL RATING = 4 - POOR

DO YOU RECOMMEND A HAZARD CLASSIFICATION REASSESSMENT?

EXPLAIN:

- YES, as we understand this dam does not have a classification assessment. With the number of houses downstream, we recommend that the District have BOR or an A-E perform a hazard classification.

DAM SAFETY INSPECTION REPORT

NAME OF DAM: Alameda

DATE INSPECTED: 10-8-08

RECOMMENDED WORK SUMMARY

Item No.	Item	Work Type	Est. QTY.	UOM	Remarks
1f, 2b, 3b	Trees and Brush on dam embankment	A	3.5	Acres	Remove all trees and brush from crest, upstream face and downstream face of dam
2a, 3a, 5a	Erosion on upstream and downstream face	D	3500	SF	Repair vertical erosion on upstream face near intake structure. Repair erosion on downstream face and groins.
8a	Debris on trash rack	A	6.5	CY	Remove debris around and on top of trash rack
11e(3)	Gabion Basket settlement	D	4	CY	Add rock to lower 2 gabion mattresses
11f (1,3 &4)	Riprap	D	5	CY	Add riprap at scour pockets at end of gabion stilling basin
12 a (9) d (4)	Trees and Brush in emergency spillways	A	0.5	Acres	Remove all trees and brush from emergency spillways and approach channels

Work Types are to be classified as: A = Annual Maintenance D = Deferred Maintenance CI= Capital Improvement. UOM = Unit of Measure

DAM SAFETY INSPECTION REPORT

NAME OF DAM: ALAMEDA DAM

DATE INSPECTED: 10-08-2008

REMARKS:

This dam is in poor condition due to the amount of vegetation growth on the upstream face of the embankment. The vegetation is up to 8 feet tall and covers 90% of the upstream face impeding the ability to inspect the upstream face for cracks, depressions, sink holes and settlement. Recommend removing all vegetation from dam embankment (upstream face, downstream face, and crest) and both spillways.

The downstream face of the embankment has several areas showing signs of erosion including the groins. This erosion is up to 2 feet deep in some locations. In addition, the upstream face also is eroding near the intake structure. These areas should be repaired so that rainfall runoff does not concentrate in these locations creating further damage.

Headcutting is developing in the right spillway and should be monitored during future inspections. Other maintenance needs at this dam include removing debris from intake trash rack, adding rock to the gabion baskets where they have settled, and riprapping scour pockets adjacent to gabion structure at the outlet.

Coordinator, Safety of Dams Signature _____

Date_____

THE END

