



Planning and Resource Management for Our Communities and the Environment

June 4, 2002

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Richard Floch
Richard Floch and Associates
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Subject: **Final for Distribution (revised)** Technical Memorandum Number 7
March 2002 Deer Fence And Canal Feature Survey

Dear Dr. Shewbridge and Mr. Floch:

Attached please find the final results (revised-June 4, 2002) for the above-referenced report prepared by EIP Associates as requested by the Forest Service for the El Dorado Irrigation District project license application, FERC No. 184. This is a final draft for distribution. The primary preparers of this report are listed below:

EIP Associates

Roy Leidy
Mark Genaris

If you would like copies of the datasheets or additional copies of the maps for purposes of EID files I can provide hardcopies. Should you have any questions or wish to discuss this report please contact me.

Sincerely,

A handwritten signature in cursive script that reads 'Roy Leidy'.

Roy Leidy
Principal
Director, Fisheries and Aquatic Sciences

Attachments

EL DORADO IRRIGATION DISTRICT FEDERAL ENERGY REGULATORY COMMISSION PROJECT NUMBER 184

MARCH 2002 DEER FENCE AND CANAL FEATURE SURVEY

Introduction

The El Dorado Irrigation District (EID) erected deer fencing along segments of the El Dorado Canal in order to reduce the level of mule deer (*Odocoileus hemionus*) mortality associated with individual deer that drown after entering the canal. This study was conducted for the EID project license application, FERC No. 184 to assess the locations and conditions of deer fencing and other wildlife related features along the canal.

Survey Methods

On 11, 12, and 19 March 2002, EIP Associates staff conducted a survey of the El Dorado Canal to document the locations and conditions of deer fencing that has been erected along the canal. The locations of deer fencing and other features were documented using a Trimble Pro XRS GPS receiver. Associated data were recorded in an electronic data dictionary, which collects attribute information (e.g., type of fence, fence height, etc.) at the same time as GPS position data are collected. Information that was collected in the data dictionary included the type of fencing (chain link, barb wire, etc.), fence height, and fence condition. Additional data that were collected during the survey included the locations and conditions of deer bridges, human bridges, deer escape ramps, canal under-crossings, road crossings, and stream crossings (Table 1). Field GPS data were transferred in the office to a geographic information system (GIS) interface, where they were compiled, mapped, and analyzed.

Survey Results

The results of the deer fence survey are summarized in Table 2 and shown on Figures 1-8. The labels in Table 2 correspond with the labels on Figures 2-8. The majority of deer fencing is located in the upper reaches of the canal (Figures 2-4). With the exception of several locations along the canal where the fence was damaged, the majority of deer fence appeared to be in a functional condition (i.e., serving to effectively exclude deer from portions of the canal). Within the areas of the canal where deer fence has been erected, there were segments where gaps in the fence were observed. In some cases these gaps consisted of a steep rock wall adjacent to the canal, which functionally replaced the missing deer fence. In other cases, the gaps consisted of flume sections. Since the flumes were elevated, they were not enclosed with deer fencing.

However, the flumes were constructed to include a catwalk and associated wood or metal rail fence. Although in some cases the wood/metal rail fence may exclude deer from the canal (especially where the south side of the flume is in close proximity to the uphill slope), its main function is for human safety, and is therefore not shown as “deer fence” on Figures 1-8. However, point locations that are described as canal under-crossings on Figures 1-8 coincide with the locations of flumes and the wood/metal rail fence, as most under-crossings consist of trails that go under the canal via a flume section.

TABLE 1							
EL DORADO IRRIGATION DISTRICT DEER FENCE SURVEY – MARCH 2002							
DATA DICTIONARY¹							
DATE							
FENCE TYPE	Chain Link	Barb Wire	Chain/Barb	Wood	Metal	No Fence	Other
FENCE HEIGHT	6 FT.	8 FT.	10 FT.	Other			
FENCE CONDITION	Functional	Needs Repair		Other			
CANAL OVERCROSS TYPE	Bridge	Road		Other			
OVERCROSS CONDITION	Functional	Needs Repair		Other			
CANAL UNDERCROSS TYPE	Flume	Suspended Pipe		Other			
UNDERCROSS CONDITION	Functional	Needs Repair		Other			
DEER ESCAPE RAMP CONDITION	Functional	Needs Repair		Other			
PHOTO NUMBER AND DESCRIPTION							
SPECIAL STATUS ANIMAL							
SPECIAL STATUS PLANT							
ROAD CROSSING NAME							
STREAM CROSSG FLOW	Under Canal	Over Canal	Into Canal	Other			
MISC. FEATURES							
COMMENTS							
Source: EIP Associates 2002							
Notes:							
1 – A data dictionary is an electronic data form that is created on the computer for conducting GPS field surveys. The data dictionary contains information that describes features that will be recorded in the field using GPS. In the field, the surveyor enters information into the data dictionary at the same time as position data are collected so that the two are always tied together.							

TABLE 2					
EL DORADO IRRIGATION DISTRICT					
DEER FENCE AND CANAL FEATURES SURVEY DATA					
DEER FENCING					
FENCE TYPE	APPROX. LENGTH¹	AVERAGE HEIGHT	CONDITION	DATE (2002)	TIME
Chain/Barb ²	14,300 FT.	6 FT	Functional	3/11, 3/12, 3/19	-
Metal Rail ³ (On Flume)	1,400 FT.	4 FT	Functional	3/11, 3/12, 3/19	-
No Fence	108,300 FT.	Other	Other	3/11, 3/12, 3/19	-
Wood Rail ³ (On Flume)	860 FT.	4 FT	Functional	3/11, 3/12, 3/19	-
DEER AND HUMAN BRIDGES					
LABEL	CROSSING TYPE	CONDITION	COMMENT	DATE	TIME
DB-1	Deer Bridge	Functional	NONE	3/11/2002	11:19:15am
DB-2	Deer Bridge	Functional	NONE	3/11/2002	11:30:37am
DB-3	Deer Bridge	Functional	NONE	3/11/2002	11:40:15am
DB-4	Deer Bridge	Functional	NONE	3/11/2002	11:49:26am
DB-5	Deer Bridge	Functional	NONE	3/11/2002	12:02:17pm
DB-6	Deer Bridge	Functional	NONE	3/11/2002	12:22:00pm
DB-7	Deer Bridge	Functional	NONE	3/11/2002	12:32:50pm
DB-8	Deer Bridge	Functional	NONE	3/11/2002	12:46:40pm
DB-9	Deer Bridge	Functional	NONE	3/11/2002	13:11:02pm
DB-10	Deer Bridge	Functional	NONE	3/11/2002	13:24:12pm
DB-11	Deer Bridge	Functional	NONE	3/12/2002	10:03:45am
DB-12	Deer Bridge	Functional	NONE	3/12/2002	10:15:07am
DB-13	Deer Bridge	Other	To Be Installed (per EID)	3/12/2002	11:06:08am
DB-14	Deer Bridge	Functional	NONE	3/12/2002	11:38:56am
DB-15	Deer Bridge	Needs Repair	NONE	3/12/2002	11:50:22am
DB-16	Deer Bridge	Needs Repair	NONE	3/12/2002	11:55:17am
DB-17	Deer Bridge	Functional	NONE	3/12/2002	12:02:45pm
DB-18	Deer Bridge	Needs Repair	TOP BROKEN	3/19/2002	09:54:11am
DB-19	Deer Bridge	Functional	NONE	3/19/2002	11:59:54am
DB-20	Deer Bridge	Functional	NONE	3/19/2002	12:05:16pm
HB-1	Human Bridge	Functional	NONE	3/12/2002	12:25:11pm
HB-2	Human Bridge	Functional	NONE	3/12/2002	12:24:05pm
HB-3	Human Bridge	Functional	NONE	3/12/2002	13:39:01pm
HB-4	Human Bridge	Functional	NONE	3/19/2002	08:42:21am
HB-5	Human Bridge	Functional	NONE	3/19/2002	08:49:57am
HB-6	Human Bridge	Functional	NONE	3/19/2002	09:06:38am
HB-7	Human Bridge	Functional	NONE	3/19/2002	09:15:02am
HB-8	Human Bridge	Functional	METAL	3/19/2002	09:22:38am
HB-9	Human Bridge	Functional	NONE	3/19/2002	09:28:37am
HB-10	Human Bridge	Functional	NONE	3/19/2002	09:40:58am
HB-11	Human Bridge	Functional	NONE	3/19/2002	09:44:54am
HB-12	Human Bridge	Functional	NONE	3/19/2002	09:45:52am
HB-13	Human Bridge	Functional	NONE	3/19/2002	10:10:33am
HB-14	Human Bridge	Functional	NONE	3/19/2002	10:26:58am
HB-15	Human Bridge	Functional	NONE	3/19/2002	11:25:05am

TABLE 2					
EL DORADO IRRIGATION DISTRICT					
DEER FENCE AND CANAL FEATURES SURVEY DATA					
DEER AND HUMAN BRIDGES					
LABEL	CROSSING TYPE	CONDITION	COMMENT	DATE	TIME
HB-16	Human Bridge	Functional	NONE	3/19/2002	11:26:24am
HB-17	Human Bridge	Functional	NONE	3/19/2002	11:35:30am
HB-18	Human Bridge	Functional	NONE	3/19/2002	11:49:20am
HB-19	Human Bridge	Functional	NONE	3/19/2002	11:53:11am
HB-20	Human Bridge	Functional	NONE	3/19/2002	11:54:47am
HB-21	Human Bridge	Functional	NONE	3/19/2002	12:15:17pm
HB-22	Human Bridge	Functional	NONE	3/19/2002	12:23:26pm
HB-23	Human Bridge	Functional	NONE	3/19/2002	12:24:52pm
CANAL UNDERCROSSINGS					
LABEL	CROSSING TYPE	CONDITION	COMMENT	DATE	TIME
UC-1	Flume	Functional	NONE	37326	11:02:32am
UC-2	Flume	Functional	NONE	37326	11:56:09am
UC-3	Flume	Functional	NONE	37326	12:06:07pm
UC-4	Flume	Functional	NONE	37326	12:27:57pm
UC-5	Flume	Functional	BULL CREEK	37327	09:49:55am
UC-6	Flume	Functional	NONE	37327	12:06:56pm
UC-7	Flume	Functional	NONE	37334	11:23:09am
UC-8	Flume	Functional	NONE	37334	11:45:05am
DEER ESCAPE RAMPS					
LABEL	FEATURE	CONDITION	COMMENT	DATE	TIME
DE-1	Deer Escape Ramp	Functional	NONE	3/11/2002	11:45:25am
DE-2	Deer Escape Ramp	Functional	NONE	3/11/2002	01:24:23pm
DE-3	Deer Escape Ramp	Functional	NONE	3/12/2002	10:15:46am
DE-4	Deer Escape Ramp	Functional	LEFT BANK	3/19/2002	08:37:11am
DE-5	Deer Escape Ramp	Functional	ROAD RAMP	3/19/2002	09:07:44am
DE-6	Deer Escape Ramp	Functional	NONE	3/19/2002	09:33:17am
DE-7	Deer Escape Ramp	Functional	CAR RAMP	3/19/2002	09:33:49am
DE-8	Deer Escape Ramp	Functional	NONE	3/19/2002	10:50:45am
DE-9	Deer Escape Ramp	Functional	NONE	3/19/2002	12:43:43pm
MISCELLANEOUS FEATURES					
LABEL	NAME	COMMENT 1	COMMENT 2	DATE	TIME
Portal	Bull Creek Tunnel Portal	NONE	NONE	3/12/2002	09:49:23am
Siphon House	Siphon House	Fences End On Both Sides	NONE	3/11/2002	01:30:30pm
FENCE REPAIRS NEEDED					
LABEL	COMMENT	COMMENT 2	COMMENT 3	DATE	TIME
R-1	Needs Patch	NONE	NONE	-	-
R-2	20 Ft Section Knocked Down	NONE	NONE	-	-
R-3	50 Ft Upslope Tree On Fence	NONE	NONE	-	-
R-4	15 Ft Upslope-Needs Patch	NONE	NONE	-	-

TABLE 2					
EL DORADO IRRIGATION DISTRICT DEER FENCE AND CANAL FEATURES SURVEY DATA					
FENCE REPAIRS NEEDED					
LABEL	COMMENT	COMMENT 2	COMMENT 3	DATE	TIME
R-5	Gap In Fence	NONE	NONE	-	-
R-6	20 Ft Section Knocked Down	NONE	NONE	-	-
R-7	Gap In Fence	NONE	NONE	-	-
R-8	Fence Needs Patch	NONE	NONE	-	-
R-9	Fence Needs Patch	NONE	NONE	-	-
R-10	Fence Patch Needed	NONE	NONE	-	-
R-11	Connect Fence To Flume	NONE	NONE	-	-
R-12	Trees Down On Fence	NONE	NONE	-	-
R-13	Trees Down On Fence	NONE	NONE	-	-
ROAD CROSSINGS					
LABEL	ROAD_NAME	COMMENT 1	COMMENT 2	DATE	TIME
RC-1	UNKNOWN	Over Tunnel	NONE	3/19/2002	09:35:03am
RC-2	UNKNOWN	None	NONE	3/19/2002	10:48:27am
RC-3	UNKNOWN	Over Canal	NONE	3/19/2002	11:36:20am
RC-4	UNKNOWN	None	NONE	3/19/2002	12:14:35pm
TRAILMASTER CAMERA LOCATIONS					
LABEL	COMMENT	COMMENT 2	COMMENT 3	DATE	TIME
TM-1	BRIDGE 3	NONE	NONE	-	-
TM-2	BRIDGE 4	NONE	NONE	-	-
TM-3	BRIDGE 6	NONE	NONE	-	-
TM-4	BRIDGE 5	NONE	NONE	-	-
TM-5	BRIDGE 2	NONE	NONE	-	-
TM-6	BRIDGE 1	NONE	NONE	-	-
PHOTOGRAPHS					
LABEL	PHOTO NO.	PHOTO	COMMENT1	DATE	TIME
P-1	1 AND 2	Dead Fawn In Canal	NONE	3/11/2002	01:27:36pm
Source: EIP Associates 2002					
Notes:					
1 – Length in feet as measured on one side of the canal from east to west.					
2 – Chain/Barb fence is a square-link fence with a row of barbed wire along the top.					
3 – Wood/metal rail fence along flume catwalk. Not technically deer fencing but functions as deer fence in some places, especially where the south side of the flume comes in close proximity to the hill.					