APPENDIX A : **Boat survey of San Joaquin River diversions and drainage between the Deep Water Ship Channel and Mossdale.**

Date : June 5, 2001
Time : 8:25 a.m. to 3:00 p.m

San Joaquin River Diversions – Stockton DWSC to Mossdale, June 5, 2001
Field Survey commenced at 8:25 AM PDT, during apparent high tide, from the DeltaKeeper boat ramp on the Calaveras River, 37º 57.82'N, 121º 20.32'W. All diversions or returns observed were in operational condition unless otherwise noted. Wind speeds were still in the morning, increasing to 15-25 mph from the west by mid-day. Lat/Lon. is plus or minus 100 yds. Field survey ended at 3:00 PM at the starting point.

Landmark #	Diversion or Return? Which bank?	Latitude, Longitude[1]	Approximate river mile[2]	Description	Comments
1	Div	37º 57.22' N 121º 20.50' W	39.5	10" Ø suction	Below Channel Pt.
2	2 Div	37º 56.97' 121º 20.22'	39.8	2 10" Ø suctions	Inactive
3	Div	37º 56.82 121º 20.35'	40.1	10" Ø suction	
4	2 Ret Left	37º 56.29' 121º 20.13		Est. 2 – 3' Ø submerged discharge lines	**Stockton WWTP**
5	Ret Right	37º 56.29' 121º 20.13		__" Ø pipe	**Port of Stockton**
6	Ret Right	37º 55.89' 121º 19.69'		Broken pipe	Abandoned
7	Div & Gage right	37º 56.10' 121º 19.81'		WWTP Gage house and 2 10" Ø suctions	
8	Div	37º 55.68' 121º 19.64'		8" Ø suction and pump	Near Highway 4 bridge
9	Return	37º 55.55' 121º 19.50'		8" Ø pipe	Possible storm drain?
10	2 Div	37º 55.55' 121º 19.50'		2 - 12" Ø suctions	
11	Div	37º 55.45' 121º 19.43'		6" Ø suction	
12	Div	37º 55.38' 121º 19.39'		6" Ø suction	
13	Div	37º 55.32' 121º 19.33'		10" Ø suction	

[1] Magellan Trailblazer XL GPS Unit
[2] From USGS topographic maps, Stockton West and Lathrop quads

Landmark #	Diversion or Return? Which bank?	Latitude, Longitude	Approximate River Mile	Description	Comments
14	Div	37º 55.30' N 121º 19.29' W		8" Ø suction	
15	Uncertain	37º 55.30' 121º 19.29'		8" Ø pipe	Inactive
16	Div	37º 55.23' 121º 19.24'	43	12" Ø suction	
--	--	37º 55.14' 121º 19.13'		French Camp Slough	
17	Div Left	37º 54.98' 121º 19.30'		12" Ø suction	
18	Div. Left	37º 54.96' 121º 19.31'		14" Ø suction	
19	Div Left	37º 54.81' 121º 19.44'	43.5	14" Ø suction	
20	Div Left	37º 54.48' 121º 19.51'		12" Ø suction	Very old centrifugal pump, running
21	6 Returns right	37º 54.38' 121º 19.45'		6 24" Ø flap gates	Possible Weston Ranch stormwater discharges
22	Div & Ret right	37º 54.38' 121º 19.45'		12" Ø suction, 12" Ø return	
23	Div & Ret Left	37º 54.25' 121º 19.47'		16" Ø suction, 16" Ø return	Running
24	Div & Ret Left	37º 54.17' 121º 19.53'		14" Ø suction, 10" Ø return	
25	Div right	37º 54.12' 121º 19.54'		8" Ø suction	
26	Div Left	37º 54.08' 121º 19.54'		6" Ø suction	
27	2 Div right	37º 54.05' 121º 19.55'		12" Ø and 6" Ø suctions	River depth 12 ft.

Landmark #	Diversion or Return? Which bank?	Latitude, Longitude	Approximate River Mile	Description	Comments
28	Div Left	37º 53.97' N 121º 19.58' W		8" Ø suction	
29	2 Div & Ret Right	37º 53.89' 121º 19.61'		12" Ø and 14" Ø suctions, 8" Ø return	Running
30	Div & Ret right	37º 53.89' 121º 19.61'		14" Ø suction, __" Ø return	
31	Div left	37º 53.97' 121º 19.74'		10" Ø suction	Near old brick tower, labeled S B Co., 1893
32	Div right	37º 53.97' 121º 19.74'		10" Ø suction	
33	Div & Ret left	37º 53.37' 121º 19.91'		14" Ø suction, 12" Ø return	
34	Div & Ret right	37º 53.36' 121º 19.83'		14" Ø suction, 14" Ø return	
35	Div right	37º 53.27' 121º 19.84'		20" Ø suction	
36	Div left	37º 53.27' 121º 19.84'		6" Ø suction	
37	Div & Ret left	37º 53.10' 121º 19.91'		12" Ø suction, __" return	
38	3 Div right	37º 52.90' 121º 19.96'	46	3 pipes: 12", 10", and 10"	Near high voltage power lines
39	2 Ret left	37º 52.85' 121º 19.98'		2 12" Ø pipes	
40	Div right	37º 52.86' 121º 19.97'		10" Ø suction	
41	Div left	37º 52.79' 121º 19.97'		12" Ø suction	Near Matthews Road bridge
42	Div Left	37º 52.68' 121º 19.91'		18" Ø suction	New

Landmark #	Diversion or Return? Which bank?	Latitude, Longitude	Approximate River Mile	Description	Comments
43	Div Right	37º 52.68' 121º 19.90'		12" Ø suction	
44	2 Div right	37º 52.60' 121º 19.93'		10" and 8" Ø suctions	
45	Div left	37º 52.56' 121º 19.92'		14" Ø suction	
46	Div Right	37º 52.51' 121º 20.00'		12" Ø suction	
47	Div left	37º 52.37' 121º 19.90'		12" Ø suction	
48	Div & Ret right	37º 52.32' 121º 19.87'		16" Ø suction	Running
49	Div Left	37º 52.32' 121º 19.87'		10" Ø suction	
50	Div Left	37º 52.37' 121º 19.90'		12 "Ø suction	
51	2 Div Left	37º 52.30' 121º 19.85'		12" and 10" Ø suctions	
52	Div right	37º 52.14' 121º 19.72'		10" Ø suction	
53	Div right	37º 52.06' 121º 19.67'		10" ? Ø suction	
54	Div Left	37º 51.99' 121º 19.67'		16" Ø suction	Running and discharging to river
55	Unknown left	37º 51.85' 121º 19.59'		Top of buried 14" gate valve observed on levee	
56	Gage right	37º 51.87' 121º 19.40'		Tide gage station?	DWR?
57	Div Right	37º 51.82' 121º 19.28'		8" Ø suction	Running
58	Div Right	37º 51.65' 121º 19.23'		8" Ø suction	

Landmark #	Diversion or Return? Which bank?	Latitude, Longitude	Approximate River Mile	Description	Comments
59	Div Right	37º 51.46' N 121º 19.14' W		14" Ø suction	
60	Div Left	37º 51.44' 121º 19.17'		20" Ø suction	
61	Div Right	37º 51.33' 121º 19.22'		10" Ø suction	
62	Div Right	37º 51.29' 121º 19.21'		14" Ø suction	
63	Div Left	37º 51.27' 121º 19.40'		16" Ø suction	
64	-- right	37º 51.07' 121º 19.32'	49	Heaven Acres mobile home community	Septic Tanks? Observed one 6" drainage pipe to the edge of the river. Access by way of Manila Road, off Roth Rd exit, I-5.
65	Div Left	37º 50.91' 121º 19.45'		12" Ø suction	Running
66	Div & Ret Left	37º 50.90' 121º 19.47'		18" Ø suction, 10" Ø return	
67	Div Right	37º 50.80' 121º 19.43'		6" Ø suction	
68	Unknown Left	37º 50.78' 121º 19.39'		8" Ø suction	
69	Div Left	37º 50.72' 121º 19.33'		14" Ø suction	
70	Div & Ret? right	37º 50.68" 121º 19.33'		14" Ø suction or casing, 12" Ø return?	
71	Div Right	37º 50.36' 121º 19.07'		14" Ø suction	
72	Div & Ret Left	37º 50.31' 121º 19.04'		16" Ø suction, 12" Ø return	
73	Div Left	37º 50.19' 121º 18.99'		14" Ø suction	9: 45 AM, water depth 9 ft, river width about 80 ft.

Landmark #	Diversion or Return? Which bank?	Latitude, Longitude	Approximate River Mile	Description	Comments
74	Div Left	37º 50.06' N 121º 18.87' W		14" Ø suction	
75	Div & 2 Ret Right	37º 50.03' 121º 18.85'		16" Ø suction, 10" and 6" Ø returns	
76	Div Right	37º 50.02' 121º 18.84'		12" Ø suction	Running
77	Div Right	37º 49.99' 121º 18.81'	50.7	6" Ø suction	Near Dos Rios Park & boat ramp
78	Div Right	37º 49.84' 121º 18.72'		12" Ø suction	
79	Ret Right	37º 49.84' 121º 18.72'		8" Ø return	
80	Div Right	37º 49.59' 121º 18.61'		14" Ø suction	
81	2 Div & Ret right	37º 49.58' 121º 18.61'		16" and 14" Ø suctions, __" Ø return	Both pumps running
82	2 Div Left	37º 49.48' 121º 18.80'		16" Ø inactive 12" Ø suction	One pipe inactive
83	2 Div left	37º 49.48' 121º 18.82'		2 14" Ø suctions	
84	Ret Left	37º 49.26' 121º 19.20'		14" Ø pipe	
85	Div Left	37º 49.26' 121º 19.21'	52	10" Ø suction	
86	Div Right	37º 49.08' 121º 18.89'		14" Ø suction	
87	2 Div Right	37º 49.08' 121º 18.89'		12" and 10" Ø suctions	
88	Div Right	37º 48.93' 121º 18.83'		8" Ø suction	

Landmark #	Diversion or Return? Which bank?	Latitude, Longitude	Approximate River Mile	Description	Comments
89	Div Left	37º 48.66' N 121º 19.38' W	53	12" Ø suction	Running w/ discharge to river
90	--	37º 48.52' 121º 19.64'	53.5	**Head of Old River**	Pulling remains of Old River barrier out. Channel had been open since the weekend before. Goat herd resident on right bank. Lots of trash, due to public access on left bank. 10:10 AM
91	Div & Ret Right	37º 48.17' 121º 18.77'		14" Ø suction, __ " Ø return	Running
92	Div Right	37º 48.11' 121º 18.75'		12" Ø suction	
93	2 Div Right	37º 47.94' 121º 18.91'		2 - 6" Ø suctions	Abandoned and inactive
94	3 Div & 2 Ret Left	37º 47.72' 121º 18.92'		3 pumps w/ 2 – 16" and 1 – 12" Ø suctions, 2 – 12" Ø returns	
95	Div Right	37º 47.72' 121º 18.47'		6" Ø suction	
96	Ret Right	37º 47.66' 121º 18.44'		16" Ø suction	
97	3 Div	37º 47.48' 121º 18.47'		8", 6" and 4" Ø suctions	
98	--	37º 47.32' 121º 18.49'		SPRR Bridge at Mossdale	Water depth 13.5 ft
99	Div Left	37º 47.24' 121º 18.48'		14" Ø suction	
100	--	37º 47.21' 121º 18.40'	56	Continuous monitoring station	On balascule bridge at I-5 crossing
101	--	37º 47.04' 121º 17.95'		Mossdale mobil home community	Septic tanks? Water depth 5-8 ft.

Landmark #	Diversion or Return? Which bank?	Latitude, Longitude	Approximate River Mile	Description	Comments
102	Div Left	37º 46.81' N 121º 18.05' W		12" Ø suction	Near UPRR bridge
103	2 Div right	37º 46.86' 121º 18.19'		2 – 16" Ø suctions	
104	2 Ret right	37º 46.86' 121º 18.19'		14" and 6" Ø flap gates	
105	-- right	37º 46.73' 121º 18.04'	57	Walthall Slough	Oakwood Park and Weatherbee Lake are directly upstream in the slough. Residential area adjancent.
106	Div Right	37º 45.81' 121º 18.55'		10" Ø suction	
107	Div Left	37º 45.81' 121º 18.55'		12" Ø suction	
108	Div Left	37º 45.68' 121º 18.55'		20" Ø suction	
109	--	37º 45.22' 121º 18.27'	60	Paradise Cut dam	
110	3 Div Left	37º 45.08' 121º 18.22'		3 pumps: 16", 14", and 12" Ø suctions	All 3 running
111	Div Left	37º 45.06' 121º 17.81'		12" Ø suction	
112	Div & Ret Right	37º 45.09' 121º 17.77'		12" Ø suction, 14" Ø return	10:45 AM. Boat grounded on sandbar. Water depth quite variable,up to 18 ft. Maximum extent of survey upstream.

Note: CDFG was observed sampling for salmon smolts above the head of Old River, 37º 48.28' N, 121º 18.81' W

San Joaquin River Water Quality Sampling, 6/5/01

Sampling began about 11:30 AM, after tide had been going out for some time. Observed tidal difference was at least 2 feet at French Camp Slough.
Second letter on sample number indicates sampling units used: Q = Quanta, H = Hydrolab Scout 2[3]

Sample number	Latitude/ Longitude[4]	River Mile[5]	Location	Water Depth	Sample Depth	Temp, ºC	EC, mS/cm	DO, mg/l
A-Q	37º 45.10' N 121º 17.72' W	60	Above Paradise Cut dam.		1 ft.	20.25	702	10.14
A-H	37º 45.10' 121º 17.72'	60	"		1 ft.	20.26	795	6.6
B-Q	37º 45.28' 121º 18.27'	59			1 ft.	20.3	702	9.97
B-H	37º 45.28' 121º 18.27'	59			1 ft.	20.3	793	6.7
C-Q	37º 46.03' 121º 18.50'	58		14 ft.	1 ft.	20.4	697	10.3
C-H	37º 46.03' 121º 18.50'	58		"	1 ft.	20.4	787	8.44
D-Q	37º 46.27' 121º 18.12'	57.5	At mouth of ox bow	5 – 12 ft Quite variable	1 ft	20.5	695	10.4
D-H	37º 46.27' 121º 18.12'	57.5	"	"	1 ft.	20.5	785	8.8
E-Q	37º 46.72' 121º 18.00'	56.5	Below Walthall Slough	10-17 ft.	1 ft.	20.7	695	10.2
E-H	37º 46.72' 121º 18.00'	56.5	"	"	1 ft.	20.7	786	8.8
F-Q	37º 47.08' 121º 18.31'	56.2	Under Mossdale I-5 bridge	8 ft.	1 ft.	20.4	697	10.3
F-H	37º 47.08' 121º 18.31'	56.2	"	"	1 ft.	20.9	787	9.4

[3] The probe membrane on the Hydrolab unit was possibly dried out, and exhibited DO drift over sampling period.
[4] Magellan Trailblazer XL GPS unit.
[5] From USGS topographic maps, Stockton West and Lathrop quadrangles, and SJR Stockton to Merced River Aerial Atlas, USCE, April 1984.

Sample number	Latitude/ Longitude	River Mile	Location	Water Depth	Sample Depth	Temp, ºC	EC, mS/cm	DO, mg/l
G-Q	37º 48.31' N 121º 19.37' W	54	Above Old River[6]	13 ft.	1 ft.	21.2	708	10.5
G-H	37º 48.31' 121º 19.37'	54	"	"	1 ft.	21.4	799	9.8
H-Q	37º 48.55' 121º 19.60'	53.5	Below Old River	16 ft	L ft.	21.4	708	10.4
H-H	37º 48.55' 121º 19.60'	53.5	"	"	1 ft.	21.4	799	9.6
I-Q	37º 49.72' 121º 18.68'	50.7	Dos Rios boat ramp	9 ft.	1 ft.	21.0	689	10.9
I-H	37º 49.72' 121º 18.68'	50.7	"	"	1 ft.	21.1	778	10.2
J-Q	37º 50.87' 121º 19.46'	49.2	Above Heaven Acres	11 - 20 ft.	1 ft.	21.6	693	10.8
J-H	37º 50.87' 121º 19.46'	49.2	"	"	1 ft.	21.6	783	10.5
K-Q	37º 50.87' 121º 19.46'	49.2	"	"	3 m, near bottom	21.5	693	11.0
L-Q	37º 51.06' 121º 19.35'	48.9	Below Heaven Acres	11 ft.	1 ft.	21.6	693	10.7
L-H	37º 51.06' 121º 19.35'	48.9	"	"	1 ft.	21.6	783	9.8
M-Q	37º 52.63' 121º 19.90'	46.3	At Matthews Road bridge and power lines	12 ft	1 ft.	21.5	705	10.5
M-H	37º 52.63' 121º 19.90'	46.3	"	"	1 ft.	21.9	797	9.8

[6] An estimated 2/3rds of SJR flow was going down Old River.

Sample number	Latitude/ Longitude	River Mile	Location	Water Depth	Sample Depth	Temp, ºC	EC, mS/cm	DO, mg/l
N-Q	37º 54.67' N 121º 19.46' W	43.5	Above French Camp Slough	10 ft.	1 ft.	22.1	691	9.38
N-H	37º 54.67' 121º 19.46'	43.5	"	"	1 ft.	22.1	781	8.9
O-Q	37º 55.20' 121º 19.11'	42.8	Mouth of French Camp Slough	8 ft.	1 ft.	21.8	197	7.0
O-H	37º 55.20' 121º 19.11'	42.8	"	"	1 ft.	21.9	225	7.14
P-Q	37º 54.95' 121º 18.30'	--	About ¾ mile up French Camp Slough[7]	0-8 ft.	1ft.	22.7	166	6.6
P-H	37º 54.95' 121º 19.11'	--	"	"	1 ft.	22.6	186	6.8
Q-Q	37º 55.69' 121º 19.70'	42.1	At Garwood Bridge, above Stockton WWTP	15 ft.	1 ft.	22.2	575	8.3
Q-H	37º 55.69' 121º 19.70'	42.1	"	"	1 ft.	22.2	700	7.82
R-Q	37º 56.35' 121º 20.53	41	Below Stockton WWTP discharge point.	12 ft.	1 ft.	22.3	585	8.48
R-H	37º 56.35' 121º 20.53'	41	"	"	1 ft.	22.3	661	7.97
S-Q	37º 57.09' 121º 20.18'	39.5	At Channel Point, near shore. Channel marker 48	15 ft.	1 ft.	23.8	618	6.23
S-H	37º 57.09' 121º 20.18'	39.5	"	"	1 ft.	23.8	698	6.53

[7] Turbidity was noticeably higher in French Camp Slough. Stream bed was shallow mud flats, with quite variable depth, high organic content fine soils.

Sample number	Latitude/ Longitude	River Mile	Location	Water Depth	Sample Depth	Temp, ºC	EC, mS/cm	DO, mg/l
T-Q	37º 57.09' N 121º 20.18' W	39.5	Channel Point, mid channel. Channel marker 48.	40 ft.	Bottom	22.8	610	7.1
U-Q	37º 57.09' 121º 20.18'	39.5	"	"	8 m	22.9	612	6.9
V-Q	37º 57.09' 121º 20.18'	39.5	"	"	4 m	22.3	613	6.6
W-Q	37º 57.09' 121º 20.18'	39.5	"	"	1 m	22.2	613	6.5
X-Q	37º57.92' 121º 22.03'	38	Opposite mouth of Calaveras River, mid channel[8]	37 ft.	Bottom	22.9	625	4.69
Y-Q	37º 57.92' 121º 22.03'		"	"	8 m	23.1	634	4.86
Z-Q	37º 57.92' 121º 22.03'		"	"	4 m	23.2	635	4.89
AA-Q	37º 57.92' 121º 22.03'		"	"	1 m	24.3	635	5.28
BB-Q	37º 58.08 121º 21.73'	--	About ½ mile up the Calaveras River	6 ft.	1 ft.	25.2	457	5.65
BB-H	37º 58.08' 121º 21.73'	--	"	"	1 ft.	25.1	516	6.14

Sampling Team: Nigel Quinn, Alice Tulloch, Bill Johnston, Fred Lee
Boat and crew provided courtesy of the DeltaKeeper and Bill Jennings.

[8] Opposite the lower end of Burns Cut and Rough and Ready Island, near the continuous monitoring station.

Additional comments from Bill Jennings on sources and diversions on the SJR below Mossdale:

1. Weston Ranch storm water system discharges can occur at any time. In summer, nuisance water from landscape overirrigation is automatically pumped from their ponds to the SJR.
2. The outfall opposite the Stockton WWTP discharge point is surface water drainage from about 90% of the Port property.
3. There is a hog ranch above Channel Point. He doesn't know where the waste is going.
4. Duell correctional facility operates a dairy near Mossdale.
5. He described suspected past incidents of improper sewage disposal at Heaven Acres or Mossdale mobile home parks.