FLOW FLUCUATION MONITORING FOR FOOTHILL YELLOW-LEGGED FROG (Rana boylii) ON THE SOUTH FORK AMERICAN RIVER, EL DORADO COUNTY, CALIFORNIA FOR THE EL DORADO HYDROELECTRIC PROJECT (FERC NO. 184)

Prepared for:

EL DORADO IRRIGATION DISTRICT 2890 MOSQUITO ROAD PLACERVILLE, CALIFORNIA 95667

Prepared by:

GARCIA AND ASSOCIATES 2601 MISSION STREET, SUITE 600 SAN FRANCISCO, CALIFORNIA 94110

September 2009

TABLE OF CONTENTS

1.0 INTRODUCTION
1.1 Monitoring Requirements 1 1.2 FYLF Status, Distribution and Current Threats to Populations 3
2.0 METHODS
2.1 Visual Encounter Surveys
3.0 RESULTS
3.1 Visual Encounter Survey Results
4.0 LITERATURE CITED
FIGURES: Figure 1. Flow fluctuation monitoring sites and the Kyburz Diversion Dam
TABLES:
Table 1. Survey results for the Kyburz Diversion Dam flow fluctuation monitoring 4
APPENDICES:
Appendix A: VES Data sheets Appendix B: Site Photographs

1.0 INTRODUCTION

1.1 Monitoring Requirements

The El Dorado Irrigation District (District) owns and operates the El Dorado Hydroelectric Project (Project) in El Dorado County, California. The Project is licensed by the Federal Energy Regulatory Commission (Project 184). The District, in coordination with the U.S. Forest Service, the California State Water Resources Control Board, and the Ecological Resources Committee, developed the Project 184 Foothill Yellow-legged Frog Monitoring Plan (Plan) as required by the Project 184 License¹. The Plan requires monitoring for foothill yellow-legged frog (*Rana boylii*; FYLF) be conducted at four sites "June through September at any time the SFAR flow is 100 cfs or less and the reach between Kyburz Diversion Dam and Silver Creek changes 50 cfs or more in 1 day."

On August 25 at approximately 6:00 pm, the 36 inch by-pass valve at Kyburz Diversion Dam opened causing streamflows in the SFAR below Kyburz diversion dam to increase from approximately 24 cfs to 98 cfs for a period of approximately one hour (Figure 1). The release from the Kyburz Diversion Dam resulted in a flow fluctuation on the SFAR that triggered monitoring as required by the Plan. This report summarizes the results of monitoring conducted pursuant to the Plan.

¹ United States Forest Service Section 4(e) Conditions 37 and 38; State Water Resources Control Board 401 Water Quality Certification Condition 13; Project 184 Settlement Agreement Sections 7 and 8.

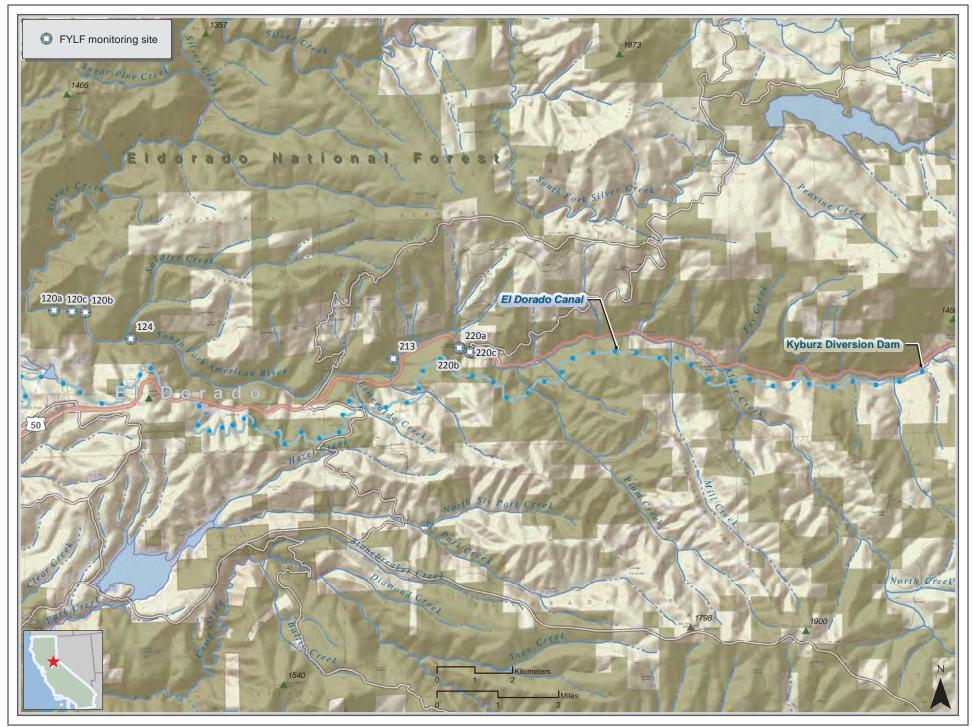


Figure 1. Flow fluctuation monitoring sites and Kyburz Diversion Dam.

1.2 FYLF Status, Distribution and Current Threats to Populations

The FYLF is designated as a Federal Species of Concern, a Forest Service Sensitive species, and a California Species of Special Concern. FYLF occur in the Coast Ranges from the Santiam River in Oregon south to the San Gabriel River in Los Angeles County and along the west slopes of the Sierra/Cascade crest in most of central and northern California. Other isolated populations have been reported in Baja California Norte (Loomis 1965), in southern California, and at Sutter Buttes in Butte County, California (Stebbins 2003). The elevational range of FYLF extends from sea level to 2,042 m (6,700 ft.) in Baja California Norte. In California, FYLF have been recorded in the Sierra as high as 1,830 m (6,000 ft.) near McKessick Peak, Plumas National Forest and 1,940 m (6,365 ft.) at Snow Mountain in Trinity County (Stebbins 2003). In the Project Area, FYLF are recorded along the mainstem SFAR as far upstream as Riverton and downstream to Slab Creek Reservoir (USFS, file data).

In the Sierra Nevada, FYLF have disappeared from an estimated 66 percent of their former range (Stebbins 2003). Non-native predators, land use conversion, pesticide use, and modification of hydrology are considered the main threats to FYLF populations (Jennings and Hayes 1994, Davidson et al. 2002). Non-native bullfrogs (*Lithobates catesbeiana*) negatively affect FYLF populations via larval competition and direct predation (Moyle 1973, Kupferberg 1997, Crayon 1998). Signal crayfish feed on FYLF eggs and tadpoles (Rombough and Hayes, 2005; Wiseman et al. 2005) and have been shown to negatively affect other amphibians through direct predation and egg mass displacement in ponds (Nyström et al. 2001). Invasive fish, particularly centrarchids, are suspected to feed upon FYLF (Werschkul and Christensen 1977, Van Wagner 1996). Construction of dams and altered hydrological systems continue to threaten FYLF populations by reduction of breeding habitat and scouring of egg masses by untimely water releases (Lind et al. 1996, GANDA 2005).

2.0 METHODS

2.1 Visual Encounter Surveys

Visual Encounter Surveys (VES) were conducted at a total of eight subsites including sites 120a, 120b, 120c,124R, 213R, 220a, 220b, and 220c) (Figure 1). Surveys were conducted according to *A Standardized Approach for Habitat Assessments and Visual Encounter Surveys for the Foothill Yellow-Legged Frog (Rana boylii)* (Seltenrich and Pool 2002). All VES were conducted by GANDA biologists Kevin Wiseman and Reed Levitt. Sites 120R and 124R were surveyed on August 31, 2009 and Sites 213R and 220R were surveyed on September 1, 2009.

Survey data were recorded onto Visual Encounter Survey Data Sheets for each subsite surveyed. Separate data sheets were completed for tadpoles, while data for young-of-the-year (YOY), juveniles and adults were recorded on separate data sheets. YOY were defined as recently metamorphosed frogs, 20-29 mm snout-vent length (SVL). Juvenile and subadult frogs were defined as frogs from previous years' cohorts, ranging approximately 30-40 mm SVL, but not considered of adult size. Adults were defined as frogs \geq 40 mm SVL.

Data parameters collected for tadpoles included: tadpole group location in site; number of tadpoles in each group; distance from the shore; velocity; total length; substrate; percent algae and detritus; and, water depth. The data parameters collected for juvenile and adult FYLF included: number of frogs observed; frog location within the site; sex; age; snoutvent length; habitat type; activity; percent cover of vegetation; percent shade; and, substrate.

3.0 RESULTS

3.1 Visual Encounter Survey Results

Results for the visual encounter surveys are summarized in Table 1. Copies of survey data sheets are provided in Appendix A, and site photographs are located in Appendix B.

Table 1. Survey results for the Kyburz Diversion Dam flow fluctuation monitoring.

Subsite #	Date	Beg. Time	End Time	Actual VES time (min.)	Beg. Air Temp. (°C)	End Air Temp. (°C)	Water Temp. (edgew.) (°C)	Water Temp. (channel) (°C)	# Egg Masses	# Tadpoles/ # groups	# Juvenile /YOY Frogs	# Adult Frogs
120a	8/31/09	1025	1050	25	24.5	25	17	20	0	0	0	0
120b	8/31/09	1145	1200	15	31	27	19	19	0	0	0	0
120c	8/31/09	1105	1135	30	25	29	17	16.5	0	0	0	0
124R	8/31/09	1350	1442	42	27	27	19.5	20	0	1	0	0
213R	9/01/09	1005	1105	50	21.5	24.5	17.5	17	0	1/1	6	0
220a	9/01/09	0830	0850	20	17	17	16.5	17	0	0	0	0
220b	9/01/09	0855	0925	30	17	21	17	17	0	0	0	0
220c	9/01/09	0930	0950	20	21	21	18	17.5	0	0	0	0

3.1.1 Site 120R – SFAR upstream of Silver Creek

Site 120R is located on the SFAR approximately 1.0 km upstream of the confluence with Silver Creek at an elevation of 685 m (2,240 ft). The total site length is 352 m and includes three subsites: 120a, 120b, and 120c.

Subsite 120a (Photos 1-2, App. B) is located approximately 27.4 km downstream of the discharge site (Figure 1). No FYLF life stages were observed during the survey. Fish observed at this site included cyprinids and suckers. Osprey, crayfish, and bear scat were also observed during the survey.

Subsite 120b (Photos 3-4, App. B) is located approximately 26.6 km downstream of the discharge site (Figure 1). Subsite 120b was largely dry during the survey on August 31, 2009, except for an area approximately 20 x 20 m which contained a few small, shallow (20 cm max. depth) pools (Photo 4, App. B). Cyprinid fish were observed at this site, but no FYLF life stages were observed.

Subsite 120c (Photos 5-6, App. B) is located approximately 26.9 km downstream of the discharge site (Figure 1). No FYLF lifestages were observed at this site. Fish observed at this site included salmonids, cyprinids, centrarchids, and suckers.

3.1.2 Site 124R – SFAR at confluence with Soldier Creek

Site 124R is located on the SFAR at the confluence with Soldier Creek at an elevation of 755 m (2,480 ft). Subsite 124R (Photo 7, App. B) is located approximately 24.8 km downstream of the discharge site. One FYLF tadpole (Gosner stage 37) was observed within the site during the survey (Photo 8, App. B; Table 1; App. A). Fish observed at this site included salmonids and cyprinids. One juvenile mountain garter snake (*Thamnophis elegans elegans*, ~25 cm SVL), an osprey, and crayfish were also observed at the site.

3.1.3 Site 213R – SFAR upstream of Ogilby Creek

Site 213R is located on the left bank of the SFAR about 0.6 km (1,970 ft) upstream of the confluence with Ogilby Creek, at an elevation of 930 m (3,050 ft). Subsite 213R (Photos 9 and 12, App. B) is located approximately16.1 km downstream of the discharge site (Figure 1). Biologists from U.C. Davis identified at least two FYLF egg masses at this site in 2009, noted by the pink flagging left behind, dated June 24. One FYLF tadpole was observed (Photo 10, App. B) at Gosner stage 43 which had four fully developed legs in addition to a tail. In addition, six young-of-the-year FYLF were observed (see Photo 11, App. B), two of which measured 17 mm snout-urostyle length (App. A). Fish observed at this site included cyprinids and suckers. One juvenile Sierra garter snake (*Thamnophis couchii*) was also observed at the site.

3.1.4 Site 220R – SFAR at Maple Grove

Site 220R is located near Maple Grove Campground at an elevation of 965 m (3,160 ft). Three subsites were established within the site: 220a, 220b, and 220c. The total site length is 286 m.

Subsite 220a (Photos 13-14, App. B) is located approximately 13.8 km downstream of the discharge site (Figure 1). No FYLF lifestages were observed during the survey. Juvenile cyprinid fish were observed at the site in addition to one juvenile Sierra garter snake (*T. couchii*, 25 cm SVL) observed approximately 40 m upstream of the top of Subsite 220a.

Subsite 220b (Photos 15-16, App. B) is located approximately 13.8 km downstream of the discharge site (Figure 1). No FYLF lifestages were observed during the survey. Juvenile cyprinid fish were observed at the site.

Subsite 220c (Photos 17-18, App. B) is located approximately 13.5 km downstream of the discharge site (Figure 1). No FYLF lifestages were observed during the survey. Fish observed included salmonids, juvenile cyprinids, and sucker juveniles. One juvenile Sierra garter snake (*T. couchii*, 25 cm SVL) was also observed (App. A).

4.0 LITERATURE CITED

- Crayon, J.J. 1998. Rana catesbeiana (bullfrog) Diet. Herpetological Review 29(4):232.
- Davidson, C., H. B. Shaffer, and M. R. Jennings. 2002. Spatial tests of the pesticide drift, habitat destruction, UV-B, and climate-change hypotheses for California amphibian declines. Conservation Biology 16:1588-1601.
- El Dorado Irrigation District (EID). 2007. Project 184 Foothill yellow legged frog monitoring plan. May, 2007. 6 pp. plus appendices.
- Garcia and Associates (GANDA). 2005. Results of 2004 Surveys and Monitoring for Foothill Yellow-Legged Frog (*Rana boylii*) within the Rock Creek-Cresta Project Area, North Fork Feather River, and 2002-2004 Recreation And Pulse Flow Biological Evaluation Summary. Report to Pacific Gas and Electric Company by Garcia and Associates, San Francisco, CA.
- ______ 2008. Results of 2007 Surveys for Foothill Yellow-legged Frog (*Rana boylii*) on the South Fork American River, El Dorado County, California for the Eldorado Hydroelectric Project (FERC No. 184). Prepared for Eldorado Irrigation District. January 2008.
- Jennings, M.R., and M.P. Hayes. 1994. Amphibian and reptile species of special concern. Final report submitted to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California.

September 2009

- Kupferberg, S.J. 1997. Bullfrog (*Rana catesbeiana*) invasion of a California river: the role of larval competition. Ecology 78, 1736-1751.
- Lind, A.J., H.H. Welsh, Jr., and R.A. Wilson. 1996. The effects of a dam on breeding habitat and egg survival of the foothill yellow-legged frog (*Rana boylii*) in northwestern California. Herpetological Review 27(2):62-67.
- Loomis, R.B. 1965. The yellow-legged frog, *Rana boylii*, from the Sierra San Pedro Martin, Baja California Norte, Mexico. Herpetologica 21(1):78-80.
- Moyle, P. B. 1973. Effects of introduced bullfrogs, *Rana catesbeiana*, on the native frogs of the San Joaquin Valley, California. *Copeia* 1973:18-22.
- Nyström et al. 2001. The influence of multiple introduced predators on a littoral pond community. Ecology 82: 1023-1039.
- Rombough, C.J. and M.P. Hayes. 2005. *Rana boylii* (Foothill yellow-legged frog) Predation: eggs and hatchlings. Herpetological Review 36(2): 163-164.
- Seltenrich, C.P. and A.C. Pool. 2002. A Standardized Approach for Habitat Assessments and Visual Encounter Surveys for the Foothill Yellow-Legged Frog (*Rana boylii*). May 2002. Pacific Gas and Electric Company, Technical and Ecological Services, unpublished report.
- Stebbins, R.C. 2003. A Field Guide to Western Reptiles and Amphibians. Third Edition. Houghton Mifflin Company, Boston, New York.
- Van Wagner, T.J. 1996. Selected life history and ecological aspects of a population of foothill yellow-legged frogs (*Rana boylii*) from Clear Creek, Nevada County, California. Masters Thesis, Department of Biological Sciences, California State University, Chico. 143 pp.
- Werschkul, D. F., and M. T. Christensen. 1977. Differential predation by *Lepomis macrochirus* on the eggs and tadpoles of *Rana. Herpetologica* 33:237-241.
- Wiseman, K. D., K.R. Marlow, R.E. Jackman, and J.E. Drennan. 2005. *Rana boylii* (foothill yellow-legged frog) predation. Herpetological Review 36(2): 162-163.

Appendix A: Visual Encounter Survey Data Sheets

	Group Letter – if multiple groups of tadpoles at a site/subsite 2. Distance – distance from bottom of site/subsite 3. No. of Tadpoles – Estimate the total number of tadpoles for the area. If tadpole counts are determined by number/meter², convert number of tadpoles/m² to number of tadpoles/site/subsite 4. Distance From Shore – For an aggregation of tadpoles, measure to the center of the group. If tadpoles are dispersed along the shoreline, record an average distance from the water's edge. 5. Max. Water Depth – Max. depth at tadpole location Type: Ship Present Yes No Type: Ship Present (A J T E) tree 1. Other Species Observed:	g or one	Group Distance ² No. of Tadpoles ³	Date: mm \(\begin{align*} \text{ dd } \begin{align*} \text{Syy 0 } \end{align*} \) Site \(\text{#: } \end{align*} \) 20 \text{Subsite } \(\text{#: } \end{align*} \) 20 \text{A River Name/Location: } \(\text{SPRR} \) Survey Method: tandem separate Start Time: \(\text{Ione: } \end{align*} \) 50 \text{Actual VES} \) Water Temp: (edgewater) \(\text{Inc} \) (main channel) \(\text{Ione: } \) (pool) \(\text{Ione: } \) Discharge: \(\text{SR} \text{Aca Searched: } \) Search Area Width: Total Area Searched: (m²): Weather: \(Sky: \text{Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Photograph \(\text{# (index to notebook): } \) Pool \(\text{Inclement Fair Ideal Past 24 hrs: } \)
	a site/subsite fradpoles for the cer/meter², conve te/subsite tpoles, measure rsed along the water's edge. ation Type: Type: Type: Type:		ox. Distance Water of From Depth ⁵ Shore ⁴ (cm)	Site #: 20 Subsite : rate Start Time: 10
	10 10 9 8 7 6		. Yelocity ⁶ Tadpole (cm/sec) Stage ⁷	bsite #: 120 A River Name/L : 102 S End Time: 1650 \(\frac{102}{\chi_0^{\chi_0}} \) (pool) \(\frac{16}{\chi_0^{\chi_0}} \) Total Are: Wind: Inclement Fair (dea)
	3		ole Gosner TL ⁹ e ⁷ Stage ⁸ (mm)	er Name/Location: SFAR e: \[\left(\left(\left) \) Actual VES Time: C \[\left(\left(\left) \) Discharge: \[\tilde{\gamma} \left(\left) \] cf Total Area Searched: (\(m^2 \right): Past 24 hrs: \[Sky:
	III SUULU gar		m) Algae Detritus	overc
-1 (2)	isolated side pool, (3) ackwater pool, (5) ackwater pool, (5) acdgewater, (8) pool oitat (1) low gradien un, (4) glide, (5) ma Other ratt Other ratt Other ratt		Dominant Micro- Substrate ¹⁰ Habitat ¹¹	$\frac{24}{3}$
0 0/5	2) connected side pool, side channel, (6) ail-out, (9) riffle, (10) triffle, (2) high in channel pool, (6)		Or Water Creek Temp. Habitat ¹² (°C)	Subsite Length: Subsite Length: Wind: Inclement Fair Ideal #:

QA/QC (initials):

Date:

Comments:	Group Letter—P Distance—dist No. of Tadpolo area. If tadpo number of tadp Ustance From to the center or shoreline, reco Max. Water D Fish Present Herpetofaum.	0	Group Letter ¹	Date: mmdd/ Survey Method: tan Water Temp: (edgew Search Area Length: Weather: <i>Sky</i> : Over Photograph # (index to
tials):	Group Letter – if multiple group Distance – distance from botto No. of Tadpoles – Estimate the area. If tadpole counts are de number of tadpoles/m² to num birto the center of the group. If to the center of the group. If to the center of the group. If to shoreline, record an average destroy of the present Yes Herpetofauna & Lifestag Other Species Observed:		Distance ²	Date: mm dd yy Sitt Survey Method: tańdem separate Water Temp: (edgewater) 4° c Search Area Length: Weather: Sky: Overcast Partly Ove Photograph # (index to notebook):
S M 6	Group Letter – if multiple groups of tadpoles at a site/subsite 2 Distance – distance from bottom of site/subsite 3 No. of Tadpoles – Estimate the total number of tadpoles for the area. If tadpole counts are determined by number/meter², convert number of tadpoles/m² to number of tadpoles/site/subsite 4 Distance From Shore – For an aggregation of tadpoles, measure to the center of the group. If tadpoles are dispersed along the shoreline, record an average distance from the water's edge. 5 Max. Water Depth – Max. depth at tadpole location Fish Present Fish Present Herpetofauna & Lifestage (A J T E) Type: Second of the stage of the		Approx. No. of Tadpoles ³	arate
the seen	at a site/subsite ite r of tadpoles for the imber/meter², conve s/site/subsite tadpoles, measure spersed along the ne water's edge. ocation Type: E) tree		Distance From Shore ⁴	Start Time: 4 (main channel) 4 Search Area Width: reast Clear Wind:
note over	sfrog_		Max. Water Depth ⁵ (cm)	width: Width: Wind: Inclement
2 of 1.	locity – loc		Velocity ⁶ (cm/sec)	Tim
le ti	measure where tadpo tage – (1) no legs, (2) , (4) legs fully grown, ge or Field Stage (e.g. average total length (e.g. Substrate – (1) silvola bble, (4) cobble, (5) bo bris, (8) large woody (Centrarchid nullfrog		Tadpole Stage ⁷	e: /200 Actual VES Discharge: ~2 Total Area Searched: (m²): r (dea) Past 24 hrs:
to Councily	oles are located rear legs, (3) rear legs a but with tail, (5) mixed a, GS 36 or FS 3) of tadpoles ay/mud, (2) sand, (3) oulder, (6) bedrock, (7) sudderis (9) aquatic vegeta cyprinid Othe western pond turtle		Gosner Stage ⁸	al d: (d: (24
mas de	ear legs and b) mixed c) mixed 3) 4, (3) cock, (7) small ic vegetation Other: d turtle		Avg. TL ⁹ (mm)	VES Time: 15 m. ~ 10 cfs (m²): hrs: Sky: Overcast
dat im	(3) se bould other 12 River gradii step-		% Algae	Tota
channel.	(3) scour pool, (4) boulder/sedge, (7) e other 12 River or Creek Hat gradient riffle, (3) r step-pool, (7) other garter snake		% Detritus	Total Site Length: Site Visit: 1 2 Partly Overcast Clear Roll/Disc/C
	Microhabitat – (1) isolated side pool, (2) connected side (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater, (8) pool till-out, (9) riffle, other 12 River or Creek Habitat (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, step-pool, (7) other Other Other		Dominant Substrate ¹⁰	mp: 3/
social significant to pool	e pool, (2) con ool, (5) side cl (8) pool till-ou gradient tiffle s, (5) main cha		Micro- Habitat ¹¹	Subsite Length: Subsite Length: High results the second
5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Microhabitat – (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater, (8) pool tail-out, (9) riffle, (10) other River or Creek Habitat (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, (6) step-pool, (7) other Other Other		River or Creek Habitat ¹²	N
50 m	5)) ,		Water Temp. (°C)	7°C

Group Letter – if multiple groups of tadpoles at a site/subsite Troup Letter – if multiple groups of tadpoles at a site/subsite Distance – distance from bottom of site/subsite No. of Tadpoles – Estimate the total number of tadpoles, for the area. If tadpole counts are determined by number/meter, convert No. of Tadpoles – Estimate the total number of tadpoles, for the area. If tadpole counts are determined by number/meter, convert Somer Stage – (1) no legs, (2) rear legs, (3) rear legs, and front nuls, (4) legs fully grown, but with tail, (5) mixed To position of tadpoles are idopoles are located Tadpole Stage – (1) no legs, (2) rear legs, (3) rear legs, and socour pool, (4) backwater pool, (5) side channel, (6) Somer Stage or Field Stage (e.g., GS 36 or FS 3) Positionee – For an aggregation of tadpoles, measure to the center of the group. If tadpoles are dispersed along the shoreline, record an average distance from the water's edge. No Type: Salmonid Centrarchid Cyprinid Other: Salmonid Salmonid Centrarchid Cyprinid Other: Salmo	Approx. Distance Water No. of From Depth ⁵ Velocity ⁶ Tadpole Gosner TL ⁹ % Dominant Micro- (m) Tadpoles ³ Shore ⁴ (cm) (cm/sec) Stage ⁷ Stage ⁸ (mm) Algae Detritus Substrate ¹⁰ Habitat ¹¹	Date: mm 3 dd 3) yy 0 Site #: 120 Subsite #: 120 River Name/Location: STAR - WYSTHEAM OF SHEET OBSERVERS: WTHEN Survey Method: tandem separate Start Time: 1105 End Time: 1125 Actual VES Time: 30 M/A. Start Air Temp: 25°C End Air Temp: 40 Subsite Length: Subsite Length: Search Area Length: Search Area Length: Search Area Width: Total Area Searched: (m²): Site Visit: 1 2 3 4 Weather: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Past 24 hrs:
rohabitat – (1) isolated side psecour pool, (4) backwater poelder/sedge, (7) edgewater, (8) of er or Creek Habitat (1) low gitent riffle, (3) run, (4) glide, pool, (7) other snake Other Snake Other	Dominant Substrate ¹⁰	tart Air Temp: 75 ite Length: te Visit: 1 2 3 Overcast Clear Roll/Disc/Card t

		Comments:	Other Spo	Herpetofa	SMax. Water D Fish Present	Group Lett Group Lett Distance – No. of Tac area. If ta number of Distance F to the cent shoreline,				>	A	Group	Date: mm d d 3 Survey Method: tan Water Temp: (edgew Search Area Length: Weather: Sky: Over Photograph # (index to
		ts:	Other Species Observed.	una & Lifes	er Depth – Max. d	distance from b blooles – Estimat dpoles – Estimat dpole counts are tadpoles/m² to 1 rom Shore – For er of the group.					56	Distance ²	
Date:			Si Ci	e (A J	SMax. Water Depth - Max. depth at tadpole location Fish Present Yes No	Group Letter – if multiple groups of tadpoles at a site/subsite Distance – distance from bottom of site/subsite No. of Tadpoles – Estimate the total number of tadpoles for the area. If tadpole counts are determined by number/meter ² , convert number of tadpoles/m ² to number of tadpoles/site/subsite Distance From Shore – For an aggregation of tadpoles, measure to the center of the group. If tadpoles are dispersed along the shoreline, record an average distance from the water's edge.					_	Approx. No. of Tadpoles	D P 1
			031 254 170			ite r of tadpoles frumber/meter, of tadpoles frumber/meter, of tadpoles, mean system along the water's edge					0.2	Distance From Shore ⁴	Site #: 124 Subsite #: separate Start Time: 135 [9.5°C (main channel) 20°C Search Area Width: artly Overcast Clear Wind:
	7		ACKA LISK	tree trog_	Type: Salmonid	10 8 7 6					25	Max. Water Depth ⁵ (cm)	Start Time: 1350 1 channel) 200 (1 1 ch Area Width: Wind: Inc
				Borning		⁶ Velocity – measure where tadpoles are located ⁷ Tradpole Stage – (1) no legs, (2) rear legs, (3) rear legs and front nubs, (4) legs fully grown, but with tail, (5) mixed ⁸ Gosner Stage or Field Stage (e.g., GS 36 or FS 3) ⁹ Avg. TL – average total length of tadpoles ¹⁰ Dominant Substrate – (1) silt/clay/mud, (2) sand, (3) gravel/pebble, (4) cobble, (5) boulder, (6) bedrock, (7) small woody debris, (8) large woody debris (9) aquatic vegetation				1	0	Velocity ⁶ (cm/sec)	Ibsite #: River Nam :: 1350 End Time: Loo_C (pool) 23,50 Total 1 Wind: Inclement Fair (deal)
				900	Centrarchid	sure where tadp -(1) no legs, (2 egs fully grown Field Stage (e., tage total length trate - (1) silvel 4) cobble, (5) b 8) large woody	**				(,,	Tadpole Stage ⁷	e/Lo
K	10	· h	-	western bond mine	Cyprinid	oles are located) rear legs, (3), but with tail, but with tail, g., GS 36 or FS g., GS 36 or FS ay/mud, (2) san oulder, (6) bed debris (9) aque					37	Gosner Stage ⁸	Actual VES Time: Discharge: 120 ct Searched: (m²): Past 24 hrs: Sky:
	2	horas kond	T. Con	Id mine	Other:	rear legs and (5) mixed (3) and (4) mixed (7) small tric vegetation					50	Avg. TL ⁹ (mm)	on: SFAR O SOLDIER CACEX Actual VES Time: 42 Min. Start Air Temp: charge: 20 cfs Total Site Length: rched: (m²): Site Visit: 1 2 Past 24 hrs: Sky: Overcast Partly Overcast Clear Roll/Disc/C:
(1)) de	21 4 902	21-25)	Chi.	galki	raptor	(3) so bould other 12 River gradiu step-1				-0,	40	% Algae	Total Sercast Partle
6/1): top -> d/s	SYR			garter snake	- cycus	Microhabitat – (1) is (3) scour pool, (4) b boulder/sedge, (7) e other River or Creek Hab gradient riffle, (3) ru step-pool, (7) other					99	% 1	Total Site Length: Site Visit: 1 2 Partly Overcast Clear Roll/Disc/Ca
£30	36)	} +	swoyd	tratalis	Other	(1) isolated side po (4) backwater pool, (7) edgewater, (8) p Habitat (1) low gra (3) run, (4) glide, (5) ther					5.5	Dominant Substrate ¹⁰	ard #
isolded hols	po How -		May sa	5		11 Microhabitat – (1) isolated side pool, (2) connected side po (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater, (8) pool till-out, (9) riffle, (1) other 12 River or Creek Habitat (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, step-pool, (7) other			600		2	Micro- Habitat ¹¹	Start Air Temp: 2.7° End Air Temp: 2.7° End Air Temp: 2.7° End Air Temp: 2.7° End Air Temp: 2.5° End Air Tem
cheer confl. 1	5 m S		26-29	Som dis		Microhabitat – (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater, (8) pool tail-out, (9) riffle, (10) other River or Creek Habitat (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, (6) step-pool, (7) other			2×4×			or Creek Habitat ¹²	Temp: 2
m From L				of site, L		9 9 1,					23,5 36-		RSL 27°C

Foothill Yellow-Legged Frog River and Creek Visual Encounter Survey Data Sheet Juveniles/Subadults and Adults

Date: mm dd dd yy 6 Site #: 213 Survey Method: tandem separate Start Water Temp: (edgewater) 17.5 (main chann Search Area Length: Search Area Weather: Sky: Overcast Partly Overcast Clear Photograph # (index to notebook): Number of Frogs Distance Sex Age 2 Age 2 Overcast Clear Overcast Overcast Clear Overcast Overcast	dd b yy hod: tanden y: (edgewater) Length: Ly: Overcast # (index to note	y o 9 S n separat n separat n separat n separat n separat Partly Ov Partly Ov Partly Ov Partly Ov Partly Ov	ite #: 2/3 te Start (main char Search Au vercast Clea Age² (J, A)	Sno Sno	E E E	Dis Area Sea River or Creek	Actual VES Time: 50 Actual VES Time: 50 Discharge: 20 cfs Searched: (m²): Past 24 hrs: Sky: Over r or re or gek Microhabitat Type ⁵	Start Air Ter Start Air Ter Start Air Ter Site Visit: 1 Overcast Partly Overcast Overcast Partly Overcast Partly District Overcast Overca	ion: SFRA - UPSTREAM OF OGILGH CARRY OBSERVERS: VMW ASL Actual VES Time: 50 min. Start Air Temp: 24.5% End Air Temp: 24.5% Charge: ~20 cfs Total Site Length: Subsite Length: Subsite Length: 12 3 4 Past 24 hrs: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Roll/Disc/Card #: Microhabitat Substrate Comments Type Substrate Comments
-	-	and the second	404	17	2,5	3	7	2	by shirt 169-89 saloy
_	_	1	YOY	17	2	دن	7		
-	+		tad w/	41	g	_	2	1	GS 43; 18.0°C; NC 10%; DEF
	000	1	404	217	2,8		7	7	not copland, phons 73-75
CLEID .	- 64 FROM	}	YOY	219	0	۲.	7		11) on from UCD #6 FR
_	Wildry hh-	Commence	404	10	2	4	7	4	not captied
_	@ Top	1	YOY	~ 20	2	_	6	5	71

Fish Present Yes No	Type: Salmonid Centrarchid Cyprinid Culer.	Jackers
Unantafaina & Lifestage (A I T F) tree frog hullfrog	tree frog bullfrog western pond turtle	garter snake J Other
Other Species Observed:		ti Couchii (not costund)
Curci operato		slp - mothers: (99): nan saland
Comments.		1/n ← : (£)
		Markey 189
		69: 404
		XXX : 4 12,564 to
		(I): millsite -> 1
		(F): :: 1
QA/QC (initials): Date:		(73)(75): 404 @ 68 W

Distance - distance from bottom of site/subsite to frogs

² Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= 40 mm), snout-vent length

³ Activity - (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

River or Creek Habitat – (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, (6) step-pool, (7) other

Microhabitat - (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater, (8) pool tail-out, (9) riffle, (10) exposed bank,

⁶ Dominant Substrate - (1) silt/clay/mud, (2) sand, (3) gravel/pebble, (4) cobble, (5) boulder, (6) bedrock, (7) small woody debris, (8) large woody debris, (9) aquatic vegetation, (10) margin vegetation, (11) other (11) protected bank, (12) other

aloyd

70

Foothill Yellow-Legged Frog River and Creek Visual Encounter Survey Data Sheet <u>Tadpoles</u>

urvey Me /ater Ten /earch Ara /eather: /hotograpl Group Letter I	urvey Method: tandem separate Vater Temp: (edgewater) 17.5°C earch Area Length: Veather: Sky: Overcast Partly Ove hotograph # (index to notebook): Group Distance ² Letter ¹ Distance ² No. of Tadpoles ³	Ove	Start time: 1000 (main channel) 170°C Search Area Width: From Shore Water Shore Cmain channel) 170°C Wind: 1	ch Area Width: Clear Wind: Inv Clear Wax. Shore Shore Start I line: [200] Wind: Inv Wax. Depth Company Co	Complete Complete	krea	Discharge: ~ ~ ~ Cfs Total Area Searched: (m²): r Ideal Past 24 hrs: Sky: Cfs Tadpole Stage² Stage³ Stage³ Avg. Tadpole Stage³ Stage³ Tadpole Tu³	Sky: C	Tota Vercast Par Algae	Total Site Length: Site Visit: 1 Partly Overcast (Roll/Di Roll/Di 6 % D 6 % D 6 % D 7	2 Clear sc/Card i	Subsite Length: 3 4 Wind: Inclement Faux #: #: Micro- Micro- Habitat Habitat Habitat	LF V J H.	Ideal Water Temp.
A		_	0.2	20	0	4	43 43	11	10	20	4	2		18.
roup Lette istance – o lo. of Tad rea. If tad umber of t istance Fr the cente noreline, r	distance from bot distance from bot poles – Estimate dpole counts are of the group. If the group om Shore – For an er of the group. If eccord an average r Depth – Max de r Dept	Group Letter – if multiple groups of tadpoles at a site/subsite Distance – distance from bottom of site/subsite Distance – distance from bottom of site/subsite No. of Tadpoles – Estimate the total number of tadpoles for the area. If tadpole counts are determined by number/meter, convert number of tadpoles/m² to number of tadpoles/site/subsite Distance From Shore – For an aggregation of tadpoles, measure to the center of the group. If tadpoles are dispersed along the shoreline, record an average distance from the water's edge. Max. Water Depth – Max. depth at tadpole location	pole pole ibsit	the 8 onvert 9	locity – locity – locity – locity – locity – locity – s. rt – g. TL – minant vel/peb ody del	nneasure where tadpo nage (1) no legs, (2) (4) legs fully grown (ge or Field Stage (e.g average total length of Substrate – (1) silt/el- ble, (4) cobble, (5) bo bris, (8) large woody	oles are located bles are located or rear legs, (3) 1, but with tail, (3) 2, GS 36 or FS of tadpoles ay/mud, (2) sand oulder, (6) bedry debris (9) aquat	eear legs and b) mixed l, (3) l, (3) sock, (7) small in vegetation	11 N (3 d b) b c s s s s s s s s s s s s s s s s s s	Microhabitat – (1) i (3) scour pool, (4) h boulder/sedge, (7) o other River or Creek Hat gradient riffle, (3) r step-pool, (7) other	II Microhabitat – (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater, (8) pool tail-out, (9) riffle, (10) other 12 River or Creek Habitat (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, (6) step-pool, (7) other	pool, (2) connot pool, (5) side changed in the side of	nected side pool, annel, (6) (9) riffle, (10) (2) high (16) (6)	9 9 9
Herpetofauna & Lifestage (A J T E) Other Species Observed:	0 1 2			tree frog			western pond turtle	d turtle	garte	garter snake	Other			

QA/QC (initials):

Date:

Foothill Yellow-Legged Frog River and Creek Visual Encounter Survey Data Sheet <u>Juveniles/Subadults and Adults</u>

Water Temp: (edgewater) 6.5 \(\) (main channel) \(\) 17 \(\) (pool) search Area Length: Search Area Width: Weather: \(Sky: \) Overcast \(\) Partly Overcast \(\) Clear \(\) Wind: Incleme Photograph \(\) (index to notebook):	n separar) 6.5°C	(main cha Search A	ime	nd Tim	Disa 1 Sea	Time: cfs	Otal Site I Site V Partly Ove	Fotal Site Length: Site Visit: 1 2 3 4 Partly Overcast Clear Wind: Inclement Fair Ideal Roll/Disc/Card #:
Number Oistance	Sex (M/F)	Age ²	Snout-Vent Length (mm)	Activity ³	River or Creek Habitat ⁴	Microhabitat Type ⁵	Dominant Substrate ⁶	Comments
70								
Distance – distance from bottom of site/subsite to frogs Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= 40 mm), snout-vent length Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other River or Creek Habitat – (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, (6) step-pool, (7) other Microhabitat – (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater	ttom of site/ (<= 39 mm) e, (2) baskin low gradier ide pool, (2)	subsite to frog), A = Adult (1g, (3) hiding, nt riffle, (2) hig) connected sic	s = 40 mm), snout-ve (4) calling, (5) swimush gradient riffle, (3) the pool, (3) scour pool	nt length ming, (6) foraging run, (4) glide, (5) ol, (4) backwater p	, (7) amplexus, (8) fi main channel pool, (oating, (9) underwat (6) step-pool, (7) othe	er, (10) other er (10) other (7) edgewater, (8) poo	Distance – distance from bottom of site/subsite to frogs Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= 40 mm), snout-vent length Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other River or Creek Habitat – (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, (6) step-pool, (7) other Microhabitat – (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater, (8) pool tail-out, (9) riffle, (10) exposed bank, (12) other
Dominant Substrate – (1) silt	t/clay/mud,	(2) sand, (3) g	ravel/pebble, (4) cobbl Tvpe: Salmonid	ble, (5) boulder, (6) bed	6) bedrock, (7) small wood chid Cyprinid	woody debris, (8) la	rge woody debris, (9)	Dominant Substrate – (1) silt/clay/mud, (2) sand, (3) gravel/pebble, (4) cobble, (5) boulder, (6) bedrock, (7) small woody debris, (8) large woody debris, (9) aquatic vegetation, (10) margin vegetation, (11) other The Summary of the state
a & Li s Obse	e (A J	T E)	tree frog	bullfrog	western pond turtle	nd turtle	garter snake	Other (Mg) Reed to vive
Comments:							phoros	1 > 1 > 1/2 > 1/2 > 1/2 > 1/2 > 1/2
								The state of the s

QA/QC (initials):

Date:

TE

=

Foothill Yellow-Legged Frog River and Creek Visual Encounter Survey Data Sheet <u>Juveniles/Subadults and Adults</u>

Survey Method: tan Survey Method: tan Water Temp: (edgew Search Area Length: Weather: Sky: Oven Photograph # (index to	0 0	n separa) 17° C Partly O	te Sta (main cha Search / vercast Cla	Start Time: 0855 End Time: 0945 (main channel) 1700 (pool) Total Area recast Clear Wind: Inclement Fair Ideal)	bsite #: 7.706 River Nam : 0855 End Time: 09 70c (pool) Total # Wind: Inclement Fair Idea)	Dis Dis	Cime:	Total Site V Site V ast Partly Ove	Obtain Start Air Temp: 17° Cotal Site Length: Site Visit: 1 2 3 Partly Overcast Clear W Roll/Disc/Card #:	Observers: WW FOU SUBSITE Length: Subsite Length: Wind: Inclement Fair Ideal ard #:	eal
Number of Frogs	Distance ¹	Sex (M/F)	Age^2 (J, A)	Snout-Vent Length (mm)	Activity ³	River or Creek Habitat ⁴	Microhabitat Type ⁵	Dominant Substrate ⁶		Comments	
D											
								ş.			
Distance – d Age – J = Ju Activity – (1 River or Cree Microhabitat (11) protecte	Distance – distance from bottom of site/subsite to frogs Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) River or Creek Habitat – (1) low gradient riffle, (2) high Microhabitat – (1) isolated side pool, (2) connected side (11) protected bank, (12) other Dominant Substrate – (1) sit/clav/mud (2) sand (3) gradient Substrate – (1) sit/clav/mud (3) sand (3) sand (3) gradient Substrate – (1) sit/clav/mud (3) sand (3	om of site/s <= 39 mm) , (2) baskin ow gradien ow gradien de pool, (2) r clav/mud	subsite to frog b, A = Adult (g, (3) hiding, t riffle, (2) hi connected si	Distance – distance from bottom of site/subsite to frogs Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= 40 mm), snout-vent length Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) River or Creek Habitat – (1) low gradient riffle, (2) high gradient riffle, (3) run, (4); Microhabitat – (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) bad (11) protected bank, (12) other	t length ning, (6) foraging un, (4) glide, (5) l, (4) backwater ple. (5) boulder. (6)	s, (7) amplexus, (8) fl main channel pool, (oool, (5) side channel	Distance – distance from bottom of site/subsite to frogs Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= 40 mm), snout-vent length Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= 40 mm), snout-vent length Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other River or Creek Habitat – (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, (6) step-pool, (7) other Microhabitat – (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater (1) sil/clav/mud. (2) sand. (3) gravel/pebble. (4) cobble. (5) boulder. (6) bedrock. (7) small woody debris. (8) large woody de	r, (10) other) edgewater, (8) pool	tail-out, (9) riff	Distance – distance from bottom of site/subsite to frogs Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= 40 mm), snout-vent length Age – J = Juvenile/Subadult (<= 39 mm), A = Adult (>= 40 mm), snout-vent length Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other River or Creek Habitat – (1) low gradient riffle, (2) high gradient riffle, (3) run, (4) glide, (5) main channel pool, (6) step-pool, (7) other Microhabitat – (1) isolated side pool, (2) connected side pool, (3) scour pool, (4) backwater pool, (5) side channel, (6) boulder/sedge, (7) edgewater, (8) pool tail-out, (9) riffle, (10) exposed bank, (11) other Dominant Substrate – (1) silf/clav/mud. (2) sand. (3) gravel/pebble. (4) cobble. (5) boulder. (6) bedrock. (7) small woody debris. (8) large woody debris. (9) aquatic vegetation. (10) margin vegetation. (111) other	7
Fish Present Herpetofaun: Other Specie	Fish Present Ves No Herpetofauna & Lifestage (A J T E)	No ge (A J	Т Е)	Type: Salmoni		chid Cyprinid western pond turtle	inid Other:		Other		
Comments:				tree frog	Centrarchid		To turne	garter snake			
				tree frog	bullfr		To the first	garter snake	: (50):	botton - uls	
				tree frog	bullfr			garter snake		hotor -> uls	
				tree frog	bullfir		AT WHITE	garter snake		hotton -> uls midsib -> uls midsib -> uls	
				tree frog	bullfr		AT THE PER PER PER PER PER PER PER PER PER PE	garter snake		11111	

QA/QC (initials):

Date:

Foothill Yellow-Legged Frog River and Creek Visual Encounter Survey Data Sheet <u>Juveniles/Subadults and Adults</u>

Sex (M/F)	Age^2	Length (mm)	Activity ³	Creek Habitat ⁴	Microhabitat Type ⁵	Dominant Substrate ⁶	Comments
						g	
Number of Frogs Distance (M/F	Sex (M/F)		Age ² (J, A)	Age ² (J, A)	Age ² Length (J, A) (mm) Activity ³	Age ² Length Creek (J, A) (mm) Activity ³ Habitat ⁴	Age ² Length Creek Microhabitat (J, A) (mm) Activity ³ Habitat ⁴ Type ⁵

QA/QC (initials):

Date:

Appendix B: Site Photographs



Photo 1. Bottom of site 120a, view upstream.

8/31/09



Photo 2. Top of site 120a, view downstream.

8/31/09

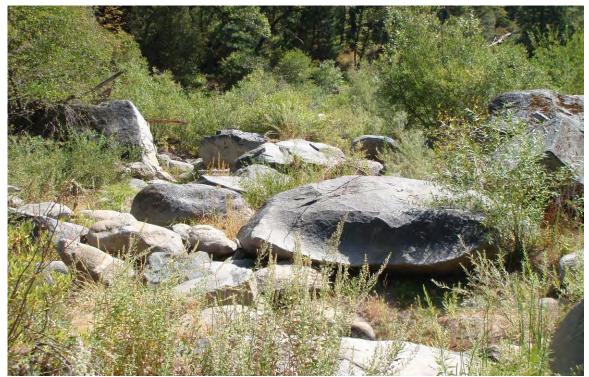


Photo 3. Top of site 120b, view upstream.





Photo 4. Subsite 120b, showing small area containing remaining shallow pools.



Photo 5. Top of site 120c, view upstream.

8/31/09



Photo 6. Subsite 120c, view upstream from midsite.

8/31/09



Photo 7. Site 124R, bottom of site looking upstream.

8/31/09



Photo 8. Tadpole (Gosner stage 37) observed at Site 124R.

8/31/09



Photo 9. Bottom of site 213R, view upstream.



Photo 10. Tadpole (Gosner stage 43) observed at Site 213R.



Photo 11. Young-of-the-year FYLF (1 of 6) observed at Site 213R.



Photo 12. Site 213R, view from midsite looking downstream.



Photo 13. Bottom of Subsite 220a, view upstream.



Photo 14. Subsite 220a, view upstream from midsite.



Photo 15. Subsite 220b, view upstream from bottom of site.



Photo 16. Subsite 220b, view downstream from top of site.



Photo 17. Subsite 220c, view upstream from midsite.

9/01/09



Photo 18. Subsite 220c, view downstream from midsite.