January 2022

2021 Surveys for Foothill Yellow-Legged Frog El Dorado Hydroelectric Project, FERC No. 184

Prepared for:

EL DORADO IRRIGATION DISTRICT
2890 MOSQUITO ROAD
PLACERVILLE, CALIFORNIA 95667

Prepared by:

KLEINFELDER/GANDA
2601 MISSION STREET, SUITE 600
SAN FRANCISCO, CALIFORNIA 94110

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1.0 INTRODUCTION

The El Dorado Irrigation District (District) owns and operates the El Dorado Hydroelectric Project (Project 184) in El Dorado, Amador, and Alpine counties, California, as licensed by the Federal Energy Regulatory Commission (FERC). Per the amphibian monitoring requirements of the FERC license for this Project, the District monitors populations of foothill yellow-legged frog (*Rana boylii*; FYLF) within the Project watersheds at five-year intervals. The specific monitoring requirements for FYLF are defined in the Project 184 Foothill Yellow-legged Frog Monitoring Plan (Plan; EID 2007), which was approved by FERC on September 19, 2007. The District contracted Kleinfelder to conduct 2021 FYLF population surveys at monitoring sites specified in the Plan; results of these surveys are reported herein.

2.0 METHODS

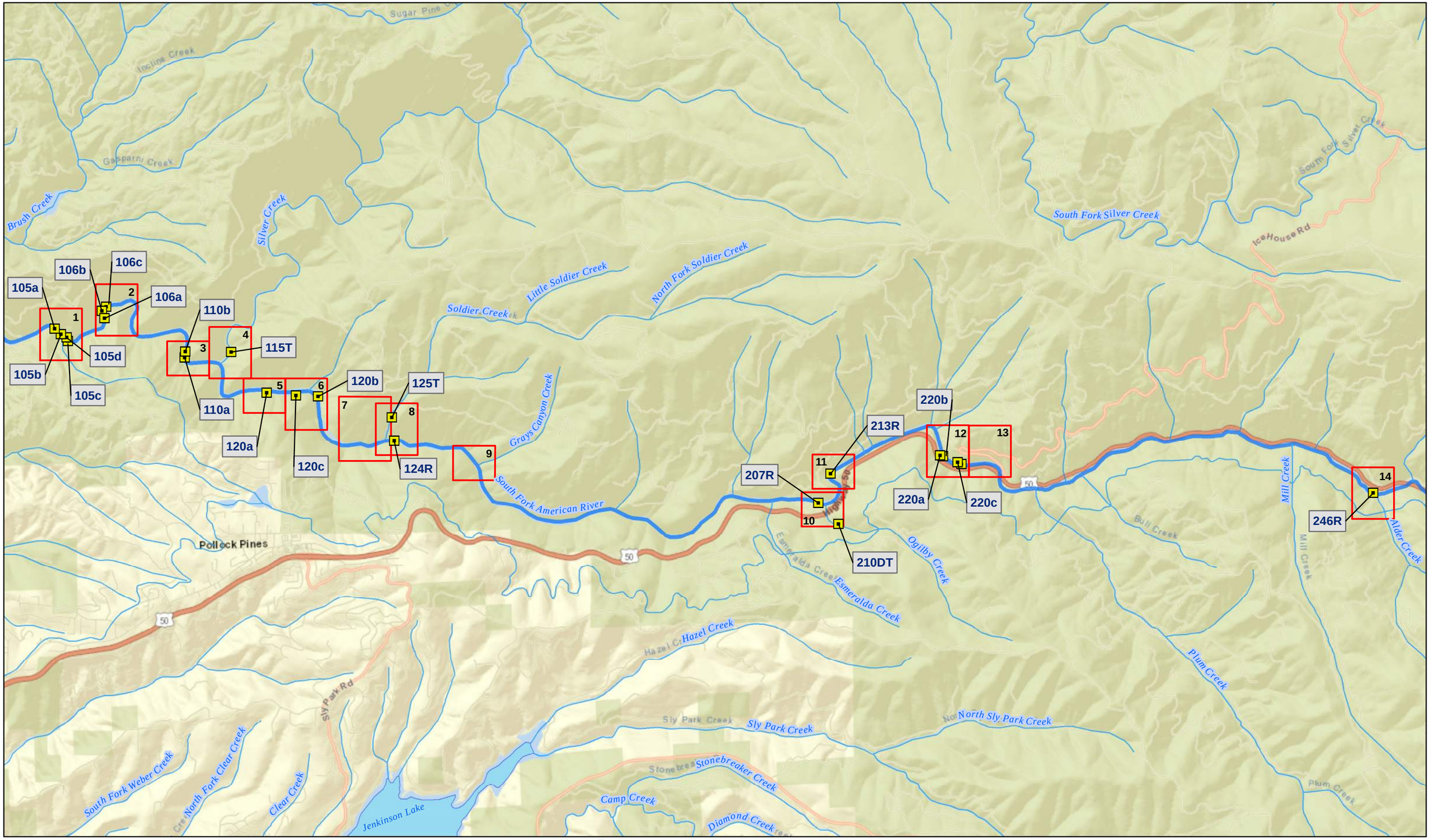
2.1 Survey Sites

Surveys for FYLF were conducted at 12 sites (and associated subsites) identified in the Plan including nine mainstem sites: 105R, 106R, 110R, 120R, 124R, 207R, 213R, 220R, and 246R along the South Fork American River (SFAR), and three tributary sites: Silver Creek (115T), Ogilby Creek (210DT), and Soldier Creek (125T). An overview of the Study Area and survey sites is presented in Figure 2.1-1.

2.2 Habitat Assessments

Previous habitat assessments for FYLF sites were conducted in 2002, 2004, 2005, 2007, 2011, and 2016, (ECORP 2002, 2005; GANDA 2007, 2008, 2012, 2017). Habitat assessments were prepared based on guidance in *A Standardized Approach for Habitat Assessments and Visual Encounter Surveys for the Foothill Yellow-Legged Frog* (*Rana boylii*) (Seltenrich and Pool 2002). Key habitat parameters recorded during habitat assessments included: amphibian habitat type (e.g., cobble/boulder bar); general river habitat type; river and bank gradient; percent aquatic and terrestrial cover; terrestrial and aquatic substrate; and, margin, emergent, and submerged vegetation. Site measurements were determined using a digital rangefinder. Habitat assessment efforts for 2021 consisted of reviewing the 2016 assessments and noting any changes.

Representative habitat photographs were taken at all sites. Photographs were taken of upper (upstream), middle, and lower (downstream) portions of all sites and subsites when possible. Representative photographs of each site are provided in Appendix A. Aerial photographs with site delineations are provided for each site in Appendix B.



KLEINFELDER
Bright People. Right Solutions.

Figure 2.1-1: EID FYLF Suvey Sites

El Dorado County, California

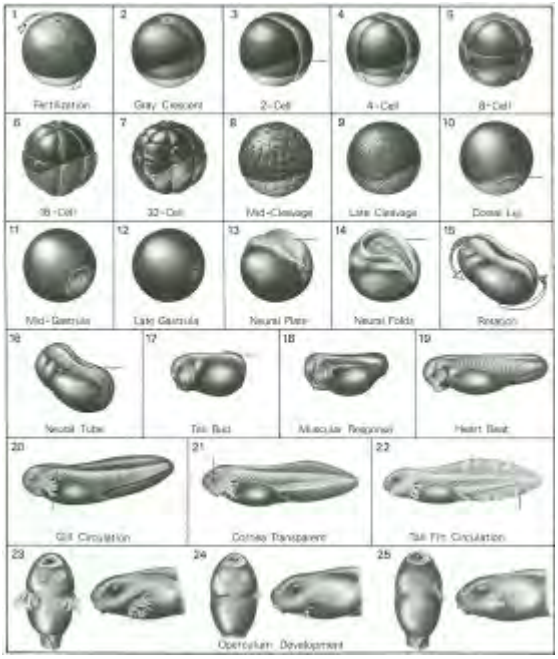
2.3 Visual Encounter Surveys

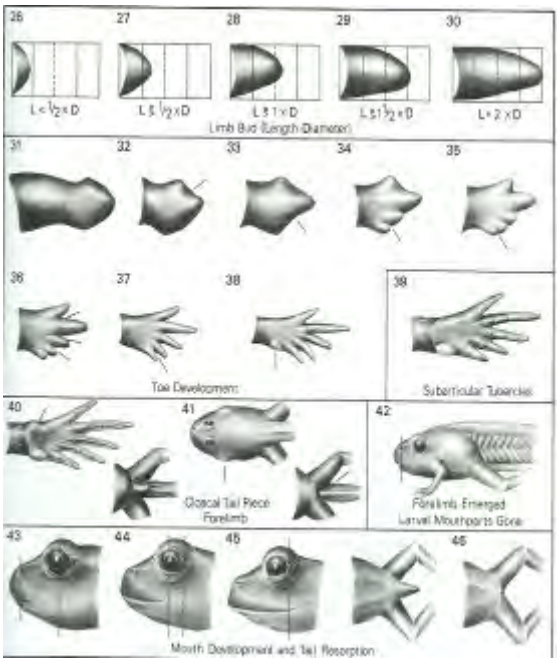
Visual Encounter Surveys (VES) were conducted according to Seltenrich and Pool (2002). All VES were conducted between approximately 0800 and 1800 hours. Tributary surveys extended up to 1,000 feet (305 m) from the confluence of the SFAR, if suitable habitat was present. During egg mass and tadpole surveys, each survey crew included one snorkeling surveyor. Polarized sunglasses and Plexiglas™ viewing boxes were used to reduce glare and increase visibility of aquatic habitats. Care was taken to minimize disturbance to frogs and aquatic habitats.

Survey data were recorded onto Visual Encounter Survey Datasheets for each subsite surveyed. Data parameters collected for FYLF egg masses included: number of egg masses, distance from bottom of site, distance from shore, depth of egg mass, maximum water depth, egg mass orientation, flow orientation, surface velocity, velocity at egg mass, egg mass attachment substrate, substrate at egg mass, egg mass width, egg mass shape, egg mass color, percent of silt on egg mass, Gosner stage, microhabitat, river and creek habitat, water temperature, and photo number. Data parameters collected for tadpoles included: distance from bottom of site, substrate, number of tadpoles in each group, distance from shore, maximum water depth, water velocity, Gosner stage, average total length, percent algae, percent detritus, dominant substrate, microhabitat, water temperature, and photo number.

Data parameters collected for juvenile and adult FYLF included: number of frogs, distance from bottom of site/substrate, sex, age, SUL (snout-urostyle length), photo number, weight, condition, activity, river or creek habitat, microhabitat, and dominant substrate. Juvenile frogs were defined as frogs $\leq$ 39 millimeters (mm) SUL. Adults were defined as frogs $\geq$ 40 mm SUL.

Developmental stage of egg masses and larvae were recorded using the Gosner (1960) table of anuran development (Figure 2.2-1). This information enables estimation of egg laying dates, oviposition periods, and rates of tadpole development. The timing of surveys, as specified in the Plan, is determined by a combination of river flow levels and water temperature (i.e., initial egg mass surveys conducted when SFAR water temperature measured at the powerhouse has reached 12˚C and river flows are less than 150 cubic feet per second [cfs]). Four rounds of VES (two egg mass surveys, one tadpole survey, and one metamorph survey) were conducted pursuant to the Plan. Surveys at all monitoring sites were conducted on the same calendar day using two crews of two biologists each. One crew descended down Soldier Creek (125T) and surveyed all mainstem sites downstream of the confluence (124R, 120R, 115T, 110R, and 106R) to the Akin Powerhouse. A second crew surveyed sites 246R, 220R, 213R, 207R, and the Akin Powerhouse site (105R). Silver Creek (115T), Ogilby Creek (210DT), and Soldier Creek (125T) were surveyed at least once during the season.





3.0 RESULTS

3.1 Habitat Assessments

The SFAR is a moderate- to steep-gradient river that flows west, generally paralleling Highway. The SFAR within the study area is approximately 26.7 kilometers (16.6 miles) long from the Alder Creek confluence (Site 246R) to Akin Powerhouse (Site 105R). Upland habitat along the SFAR is generally characterized as foothill hardwood/conifer, consisting of ponderosa pine (*Pinus ponderosa*), oak (*Quercus* spp.), and incense cedar (*Calocedrus decurrens*). Common shrub species include mountain misery (*Chamaebatia foliolosa*), whitethorn (*Ceonothus cordulatus*), poison oak (*Toxicodendron diversilobum*) and manzanita (*Arctostaphylos* spp.). Common riparian species include white alder (*Alnus rhombifolia*), bigleaf maple (*Acer macrophyllum*), willow (*Salix* spp.) and dogwood (*Cornus* spp.). The elevation of the survey area ranges from 575 meters (m) (1,880 feet [ft]) at the Akin Powerhouse (Site 105R) to 1,060 m (3,480 ft) at the SFAR and Alder Creek confluence (Site 246R). This section describes pertinent habitat features at sites surveyed in previous years and reports changes observed during 2021.

3.1.1 Site 105R – SFAR at Akin Powerhouse

Site 105R is located near Akin Powerhouse at approximately 575 m (1,880 ft) elevation. This site includes four subsites (105a, 105b, 105c, and 105d) and is approximately 221 m in total length. Changes in habitat noted at this site in 2021 (since the last habitat assessment

in 2016) included increases in siltation and sedimentation (likely resulting from the 2014 King Fire) and in margin and edgewater vegetation.

Subsite 105a is located downstream of Akin Powerhouse (Photo 1, Appendix A; Map 1, Appendix B). The site length is approximately 96 m and consists of a left bank, low-gradient lateral bar. Aquatic substrate consists primarily of boulder (50%) and cobble (20%), with some bedrock (15%), gravel (5%), sand (5%), and silt (5%); substrate is moderately embedded. Water velocity was typically low throughout the shallow 5-10 centimeter (cm) edgewater habitat present mostly near the downstream portion of the subsite during 2021 surveys. Suitable habitat width extended an average of 2 m out from the shore. Exposed cobble and boulder in edgewater areas provided habitat complexity and basking sites for FYLF. Flocculent material and interstitial spaces in the substrate provided abundant aquatic cover. Submerged vegetation, mostly algae, was minimal (5%) throughout the subsite. Margin vegetation, composed mostly of willow, alder, sedge, and Himalayan blackberry (*Rubus armeniacus*), had increased since the 2016 survey and covered approximately 50-60 percent of the river margin. Emergent vegetation and riparian canopy were sparse; each covering less than 10 percent of the wetted area.

Subsite 105b is located along a left bank lateral bar that is 39 m in length (Photo 2, Appendix A; Map 1, Appendix B). This subsite is located immediately downstream of Akin Powerhouse. Aquatic substrate consists of cobble (40%), boulder (40%), gravel (10%), sand (5%), and silt (5%). Edgewater areas were generally restricted to within approximately 0.5 m of shore, due to deep water and relatively high water velocities. Margin vegetation, including overhanging vegetation, had increased since the 2016 surveys, and covered between 30 to 50 percent of the river margin. Emergent vegetation was approximately 10 percent. Basking sites for FYLF were reduced due to dense vegetation and deep water. Gaps in the substrate, algae, and detritus provided a moderate amount (30%) of aquatic cover.

Subsite 105c is located at the pool tail-out upstream of Akin Powerhouse and consists of a left bank sandbar 56 m in length (Photo 3, Appendix A; Map 1, Appendix B). The aquatic substrate is primarily silt and sand (60%), with relatively minor amounts of cobble (20%), boulder (10%), and gravel (10%). The edgewater portion of the site was approximately 20 m in length during 2021 surveys. A relatively large main channel pool is located immediately adjacent to the sandbar, which restricted edgewater habitat to a width of about 2 m during 2021 surveys. Beyond 2 m from shore, water depth continued to increase. The relatively high embeddedness of the aquatic substrate and limited aquatic vegetation resulted in low availability of aquatic cover. Exposed cobble and boulders were present at the base of the pool just downstream of the sandbar; however, few basking sites occur along the sandbar.

Subsite 105d is located at the pool tail-out upstream of Akin Powerhouse (Photo 4, Appendix A; Map 1, Appendix B). The site consists of a 30-m long, right bank boulder/sedge margin. The aquatic substrate is composed primarily of boulder (50%) with lesser amount of cobble (20%), silt and sand (20%), and gravel (10%). Shallow, low velocity edgewater areas generally extended less than 1 m from shore during 2021 surveys.

Areas with low water velocities were generally restricted to backwaters formed by boulders. Outside of these small, protected areas, water velocities increased substantially in association with the adjacent riffle. Sedge (*Carex* spp.), blackberry, and young willows were abundant (70%) along the river margin. Only minimal amounts of emergent and submerged vegetation were present (10%). Interstitial spaces in the substrate provided a moderate amount of aquatic cover (30%). Exposed boulders provide adequate basking sites for FYLF.

3.1.2 Site 106R – SFAR upstream of Akin Powerhouse

Site 106R is located on the SFAR upstream of the Akin Powerhouse at an elevation of 579 m (1,900 ft). The total length of this site is 284 m. Three subsites (106a, 106b, and 106c) were established during the habitat assessment conducted in 2007. Changes in habitat noted at this site in 2021 included increases in siltation and sedimentation (likely resulting from the 2014 King Fire).

Subsite 106a is located along a 62 m-long low-gradient left bank lateral boulder bar (Photo 5, Appendix A; Map 2, Appendix B). Aquatic substrate consists of boulder (80%), cobble (15%), and sand (5%). Substrate embeddedness is low (<25%). Edgewater habitat was relatively shallow (avg. depth 20 cm), with low velocities during 2021 surveys. Margin vegetation (60%) was primarily sedge and willow, with no emergent or submerged vegetation. Aquatic cover (20%) consisted primarily of gaps between substrates. Terrestrial cover was 40 percent and consisted mostly of vegetation and substrate gaps. Overhanging vegetation was moderate (50%) and consisted primarily of sedges.

Subsite 106b is 111 m in length and includes main channel pool, side channel, and pool tail-out habitats (Photo 6, Appendix A; Map 2, Appendix B). This subsite is located on the right bank of a split channel and includes an unnamed tributary confluence that intersects the site approximately 45 m from the bottom. It has a low gradient boulder/sedge margin with aquatic substrate consisting of bedrock (50%), boulder (15%), cobble (15%), gravel (15%), and sand (5%). Large inputs of hillslope-borne substrates (angular cobbles and gravels) were present in the side channel portion of this subsite during 2021 surveys, presumably the result of runoff and mass-wasting from adjacent denuded hillslopes following the 2014 King Fire. The side channel had noticeably aggraded since the 2016 habitat assessment such that depths were shallower (and the side channel was even dry later in the summer). Substrate embeddedness was moderate to high (25-50%). Edgewater habitat occurred throughout portions of the subsite and was relatively shallow (avg. depth 10 cm). Margin vegetation (50%) was made up of sedge, alder, and willow. Emergent vegetation (10%) consisted of sedge and there was sparse submerged vegetation (5%). Aquatic cover (15%) consisted primarily of gaps between substrates. Terrestrial cover was relatively low (10%) and consisted mostly of gaps between substrate. Overhanging vegetation (30%) consisted of alder and willow.

Subsite 106c is 111 m in length and located on the left bank in the upstream portion of the site (Photo 7, Appendix A; Map 2, Appendix B). It is a low-gradient lateral bar with a sand bar at the top. Aquatic substrate consists of bedrock (5%), boulder (60%), cobble (20%),

gravel/pebble (5%), and sand (10%). Substrate embeddedness is moderate (25-50%) with relatively low margin vegetation (20%) of grass and sedge. Emergent and submerged vegetation was absent from the subsite during 2021 surveys. Aquatic (40%) and terrestrial (40%) cover both consisted mainly of gaps between substrates. Little to no overhanging vegetation was present. Edgewater habitat was located throughout the subsite with an average depth of approximately 30 cm.

3.1.3 Site 110R – SFAR downstream of Silver Creek

Site 110R is located on the SFAR approximately 0.5 km downstream of the confluence with Silver Creek, at an elevation of 610 m (2,000 ft). The total site length is 115 m and includes two subsites: 110a and 110b. Changes in habitat noted at this site in 2021 included increases in siltation and margin/emergent vegetation.

Subsite 110a is 35 m in length and consists of a right bank, low-gradient boulder/sedge margin, situated near the upstream edge of a cobble/boulder point bar (Photo 8, Appendix A; Map 3, Appendix B). The subsite also includes a small bedrock island located about 10 m from the right bank. The aquatic substrate is predominantly bedrock (30%), sand (35%), and silt (25%), with a small amount of cobble (5%) and boulder (5%). Due to the presence of high amounts of sand and silt, aquatic substrates are highly embedded. Shallow (<30 cm) low-velocity edgewater areas occurred throughout the subsite during 2016 surveys. Sedges and young willows occurred along approximately 80 percent of the river margin. Increased sediment deposition and a dense patch of cattails (*Typha* sp.) rooted in deeper sediments was evident along the upper 10 m of the subsite in 2021 (emergent vegetation was otherwise absent from the rest of subsite). Interstitial spaces in the substrate, flocculent material, silt and algae provided moderate aquatic cover.

Subsite 110b is 80 m long and consists of a right bank, low-gradient side channel (Photo 9, Appendix A; Map 3, Appendix B). The aquatic substrate is moderately embedded and consists of a mixture of boulder (40%), cobble (20%), sand (20%), silt (10%), gravel (<10%), and bedrock (<10%). Margin vegetation, sedges, and willows occurred along approximately 30 percent of the side channel during 2021 surveys. Submerged vegetation, primarily green filamentous algae, occurred within approximately 50 percent of the subsite. Interstitial spaces in the substrate, algae, and flocculent material provided abundant (~80%) aquatic cover. Exposed boulders and cobbles, within and adjacent to the side channel, provided abundant basking sites.

3.1.4 Site 115T – Silver Creek

Site 115T encompasses an approximately 305 m (1,000 ft)-long section of Silver Creek, a low-gradient, right bank tributary to the SFAR (Photo 10, Appendix A; Map 4, Appendix B). The site extends from the confluence with the SFAR, at an elevation of 620 m (2,034 ft) upstream to approximately 634 m (2,080 ft). At the lower end of the site, near the confluence with SFAR, Silver Creek is divided into two separate channels: a main channel and a secondary channel. Most of the flow travels down the main channel which consists of riffle/run habitat and small cascades. The secondary channel has relatively low flow and consists of pool, run, and glide habitats. Amphibian habitat is abundant within shallow

areas of the main channel, and along the margins of both banks and the secondary channel. The aquatic substrate is composed primarily of boulder and cobble, with lesser amounts of gravel, silt, and bedrock. Aquatic vegetation is generally sparse; except for localized sedge clumps that occur as partially submerged boulder/sedge islands. Numerous shallow, slow-moving side pools, edgewater areas, and isolated algae-filled pools were present throughout the site during 2021 surveys. Aquatic cover and terrestrial cover were both abundant, consisting primarily of interstitial crevices, scattered sedge clumps, and overhanging willows. Canopy cover was minimal (<10%), creating relatively exposed conditions throughout much of the site. Abundant basking sites were present on exposed rocky surfaces. Slightly more sand and silt were noted in 2021, as the 2014 King Fire appeared to have burned especially hot throughout most of the Silver Creek watershed.

3.1.5 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 (2,250 ft). The total site length is 352 m and includes three subsites: 120a, 120b, and 120c. Changes in habitat noted at this site in 2021 included some increases in siltation and sedimentation and burning/consumption of several key logs and other large woody debris present in the channel (resulting from the 2014 King Fire).

Subsite 120a is 82 m long and consists of a left bank side channel and boulder/sedge margin situated on a boulder/cobble lateral bar (Photo 11, Appendix A; Map 5, Appendix B). The aquatic substrate consists of a mixture of boulder (40%), cobble (20%), and sand (20%), with some silt (10%) and gravel (10%). Sedges, grass, and forbs occur along about 20 percent of the channel margin. Submerged vegetation was observed within 30 to 40 percent of the subsite during 2021 surveys. Algae, interstitial cracks, and silt provided moderate (40%) aquatic cover. A variety of basking sites, primarily exposed cobbles and boulders, were present throughout the subsite. Overhanging vegetation (<10%) and riparian canopy (20%) provided little shade during mid-day; however, due to the north-facing aspect of the canyon in this area, the subsite was shady in the late summer for a portion of the day.

Subsite 120b is 95 m in length and consists of a side channel and pool tail-out located on a right bank boulder/cobble point bar (Photo 12, Appendix A; Map 6, Appendix B). High-gradient cascade/pool habitat is present adjacent to the subsite. The side channel is comprised of a series of connected pools. The aquatic substrate is primarily boulder (50%), with relatively high amounts of silt (30%), some cobble (20%), and trace amounts of sand and gravel. The embeddedness of the substrate is moderate. Edgewater habitat is essentially absent along the main channel of the SFAR, due to high gradient and associated deeper water and higher velocities present at this location. Some large woody debris and larger logs in the channel and on the subsite margins had been burnt or consumed by the 2014 King Fire. Margin vegetation included sedges, cattails, grasses, and forbs during 2021 surveys. Emergent vegetation was lacking (<10%); however, a small amount (20%) of submerged vegetation (algae, rooted aquatic vegetation) was present. Gaps in the substrate, algae, silt, and aquatic vegetation provided a moderate amount (30%) of aquatic cover. Exposed boulders and cobble along the side channel and main channel provided suitable

basking sites for FYLF. Overhanging vegetation (<20%) and riparian canopy (10%) provided little shade during mid-day.

Subsite 120c is 175 m in length and consists of a left bank side channel (Photo 13, Appendix A; Map 6, Appendix B). At high flow levels, the side channel is a high-gradient riffle; however, at base flow levels (~50 cfs), the side channel habitat changes to a series of connected and isolated pools. The aquatic substrate is predominantly boulder (40%) and cobble (30%), with sand (20%) and some silt (10%). Vegetation including sedges, forbs, and grasses occurs along approximately 20 percent of the side channel. There was very little (<10%) emergent vegetation within the subsite during 2021 surveys. Submerged vegetation, primarily algae, covered 40 to 50 percent of the substrate surfaces. Aquatic cover (50%) consisted of interstitial spaces in the substrate, and under algae and silt. Overhanging vegetation (10%) and riparian canopy (20%) provided little shade during mid-day; however, due to the canyon's north-facing aspect, the subsite was shady in the late summer for a portion of the day.

3.1.6 Site 124R – SFAR at confluence with Soldier Creek

Site 124R is located on the left bank of the SFAR across from the confluence with Soldier Creek at an elevation of 755 m (2,480 ft) (Photo 14, Appendix A; Maps 7-8, Appendix B). The site is 144 m in length and includes several isolated pools separated by large boulders. Aquatic substrate is predominantly boulder (80%) with some cobble (15%) and sand (5%). There is sparse vegetation at the site, comprised mainly of sedges, with no emergent vegetation. Submerged vegetation, primarily algae, covered 40 to 50 percent of the substrate surfaces during 2021 surveys. Aquatic cover (60%) consisted of interstitial spaces in the substrate, and under algae and silt. There was minimal overhanging vegetation (5%) and riparian canopy (10%); however, as with most left bank sites along this reach of the SFAR, the site is shaded during late summer surveys due to its north-facing aspect. There were no changes in habitat noted in 2021 since the habitat assessment conducted in 2016; however, evidence of the 2014 King Fire was present throughout adjacent hillslopes.

3.1.7 Site 125T – Soldier Creek

Site 125T includes a 305 m (1,000 ft)-long section of Soldier Creek, a right bank tributary to the SFAR (Photo 15, Appendix A; Maps 7-8, Appendix B). The site extends from the from the confluence with the SFAR at an elevation of 755 m (2,480 ft) to the bottom of a waterfall at 855 m (2,804 ft) elevation. Soldier Creek is a moderate-gradient perennial creek, dominated by cascade and plunge pool habitat. The aquatic substrate is composed primarily of boulder and bedrock, with smaller amounts of cobble, sand, and silt. Fine sediment deposition was approximately 10 percent higher in 2021 as a result of the 2014 King Fire which burned directly in the Soldier Creek drainage. Woody debris, silt/flocculent material, and spaces between substrate provided a moderate amount of aquatic cover. The riparian canopy consisted of alder, dogwood, and conifers that provided areas of sun and shade throughout the day. Many logs and other pieces of large woody debris in the channel and on the margins of this site had been burned or consumed by the King Fire. Exposed banks (primarily bedrock), boulders, and woody debris provided adequate basking sites. Soldier Creek was not surveyed in 2021 due to the Caldor Fire.

3.1.8 Site 207R – SFAR at Ogilby Creek

Site 207R is located on the SFAR downstream of Ogilby Creek at an elevation of 988 m (3,240 ft) (Photo 16, Appendix A; Map 10, Appendix B). The site is 150 m in length (492 ft) and ends at the confluence with Ogilby Creek. The site has low river gradient on the left bank and includes a side channel. The site has a high amount of margin vegetation (70%) composed predominantly of sedge, willows, and elephant ears (*Darmera peltata*). Emergent vegetation (10%) consists of primarily sedge and elephant ears, but submerged vegetation is 30 percent, consisting mostly of algae and rooted aquatic plants. Aquatic cover (30%) occurs throughout the site and includes aquatic vegetation and gaps between substrate. Terrestrial cover (40%) consists mostly of substrate gaps and some vegetation. Willows and sedges make up the overhanging vegetation (30%) and riparian canopy (10%) is mostly conifer, willow, and alder. Average edgewater depth was 25 cm during 2021 surveys, and occurred throughout the site. This site is located just upstream of the Bridal Veil Falls Campground and is used for recreational activities, including picnicking, swimming, and fishing. In 2021, the confluence of Ogilby Creek contained a greater amount of gravel/cobble deposition, with shallower edgewater habitats and lower water velocities in comparison to 2016.

3.1.9 Site 210DT – Ogilby Creek

Site 210DT is a 305 m (1,000 ft)-long section of Ogilby Creek from the confluence with the SFAR to just below the El Dorado Canal (Photo 17, Appendix A; Map 10, Appendix B). Ogilby Creek is a diverted left bank tributary to the SFAR that passes through a 160-m-long steel and concrete culvert under Highway 50. Elevation ranges from 930 m (3,050 ft) at the confluence with the SFAR to 1,100 m (3,610 ft) at the top of the site. Channel gradient is moderate in the lower section but higher on the south (upstream) side of Highway 50. This upper section of the creek includes several cascades and bedrock sections. Aquatic substrate consists primarily of boulder and cobble with areas of bedrock. A moderate amount of emergent vegetation was present during 2021 surveys, consisting of sedges, horsetail (*Equisetum* sp.), grasses, and forbs. Vegetation, gaps in the substrate, and woody debris provide a relatively high amount of aquatic cover. Margin vegetation, boulders, and woody debris provided abundant terrestrial cover. Most of the creek channel is shaded by riparian vegetation. In 2021, several large, fallen trees occurred just below the culvert along with a large log jam upstream of the culvert. As noted, the confluence of Ogilby Creek contained a greater amount of gravel/cobble deposition, with shallower edgewater habitats and low water velocities in comparison to 2016.

3.1.10 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) (Photo 18, Appendix A; Map 11, Appendix B). The site is 105 m long and consists of a low-gradient cobble/gravel point bar. The aquatic substrate is composed of a mixture of cobble (40%), boulder (35%), with some gravel (10%), and silt/sand (15%). Aquatic substrates are moderately embedded. A relatively wide area of suitable breeding habitat (i.e., shallow, low velocity edgewater areas with appropriate substrates) occurs along the entire length of the site. In general, the width of suitable habitat averaged 4 to 5 m from shore during 2021 surveys. Habitat

complexity was relatively low due to the limited amount of exposed aquatic substrate. Vegetation along the margin of the point bar consisted primarily of sedges and willow saplings. Emergent or submerged vegetation (30%) was present, and overhanging vegetation and riparian canopy cover was slightly increased (20%) from previous years. A moderate amount of aquatic cover (30%) was provided by spaces in the substrate and flocculent material. Exposed substrate along the shoreline provided sufficient basking sites. Other than increased vegetation, there were no changes in habitat noted in 2021 from the habitat assessment conducted in 2016.

3.1.11 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 are established within the site: 220a, 220b, and 220c. The total site length is 286 m. Other than increased margin and emergent vegetation, no changes in habitat were noted in 2021 since the habitat assessment conducted in 2016.

Subsite 220a is 102 m in length and located on the left bank of the SFAR on a low-gradient, boulder-dominated lateral bar (Photo 19, Appendix A; Map 12, Appendix B). The aquatic substrate is boulder dominated (40%) with equal amounts of gravel (20%) and sand (20%), and some cobble (15%) and silt (<5%). The substrate is highly embedded which reduced the amount of aquatic cover. Vegetation along the river margin consists primarily of sedges and willow saplings. A higher amount of emergent vegetation (50%) was present during 2021 surveys. Submerged vegetation was negligible (<10%) and riparian canopy was absent. Overhanging vegetation increased (50%) from previous years' surveys. Suitable habitat consisting of shallow, low-velocity edgewater habitat occurred throughout the length of the subsite. Flocculent material, woody debris, and interstitial spaces between substrate provided moderate (30%) aquatic cover.

Subsite 220b is 112 m in length and consists of a low-gradient, right bank cobble/boulder lateral bar (Photo 20, Appendix A; Map 12, Appendix B). The aquatic substrate is moderately embedded, and consists of a mixture of cobble (40%), boulder (30%), and gravel (20%), with a small amount of sand (10%). Gaps in the substrate provide the primary source of aquatic cover. Willow saplings and sedges were very high and occurred along approximately 90 percent of the river margin during 2021 surveys. Submerged and emergent vegetation were present (20 and 50%, respectively), and overhanging vegetation was also high (70%) along the subsite. Riparian canopy was minimal (<10%). Shallow, low-velocity edgewater habitat was present throughout the site, which extended approximately 4 m from shore.

Subsite 220c is 72 m long and consists of primarily of boulder/sedge habitat situated along the margin of an island formed by a split channel (Photo 21, Appendix A; Map 12, Appendix B). The subsite is located on the right bank of the left channel. The aquatic substrate is comprised of cobble (30%), boulder (50%), and gravel (10%) with a small amount of sand (10%). The substrate is moderately embedded, although to a lesser extent than subsites 220a and 220b. Sedges and willow saplings were abundant (90%) along the channel margin during 2021 surveys and notably increased since previous years. Emergent

and submerged vegetation were sparse (30 and 20%, respectively) within the subsite; and overhanging vegetation (40%) and riparian cover (10%) were present. Gaps in the substrate, flocculent material, and aquatic vegetation provided a low amount (20%) of aquatic cover. Shallow, low-velocity edgewater habitat occurred along the entire length of the subsite.

3.1.12 Site 246R – SFAR at Alder Creek

Site 246R is located immediately downstream of the confluence of Alder Creek and SFAR at an elevation of 1,060 m (3,480 ft) (Photo 22, Appendix A; Map 14, Appendix B). The site is about 130 m (427 ft) long and located along the right riverbank. The site is comprised of a cobble/boulder lateral bar with lower gradient in the lower half and moderate to high gradient in the upper half. The aquatic substrate consists of cobble (30%), boulder (30%), gravel (20%), and sand (20%). The prevalence of gravel and sand results in highly embedded substrates. Vegetation, primarily willow saplings and sedges, was abundant (80%) along the river margin during 2021 surveys. Emergent and submerged vegetation were negligible, but overhanging vegetation (50%) was much increased from previous years' surveys. Shallow (avg. depth was 20 cm), low-velocity edgewater areas occurred throughout the length of the site. Gaps between substrate and detritus appeared to provide a low amount (20%) of aquatic cover. This site receives regular recreational use, including fishing and swimming. Other than increased vegetation, there were no changes in habitat noted in 2021 since the habitat assessment conducted in 2016.

3.2 Visual Encounter Survey Results

Results of the 2021 VES are described in two sections: 1) by site (Sec. 3.2.1) and 2) by FYLF life stage (Sec. 3.2.2). Section 3.2.4 summarizes VES results for efforts conducted between 2002 and 2021. Visual encounter survey datasheets are provided in Appendix C.

3.2.1 Site-specific Results

In the following sections, the details of the 2021 surveys are provided for each site and subsite. In 2021, FYLF were observed only at site 220b (two egg masses) (Photos 23-25, Appendix A; Table 3.2.1-1).

3.2.1.1 Site 105R – SFAR at Akin Powerhouse

No FYLF life stages were observed at Site 105R during surveys in 2021.

3.2.1.2 Site 106R – SFAR upstream of Akin Powerhouse

No FYLF life stages were observed at Site 106R during surveys in 2021.

3.2.1.3 Site 110R – SFAR downstream of Silver Creek

No FYLF life stages were observed at Site 110R during surveys in 2021.

3.2.1.4 Site 115T – Silver Creek

No FYLF life stages were observed at Site 115T during surveys in 2021.

Table 3.2.1-1. Summary of 2021 Visual Encounter Survey Results for FYLF in the Study Area.

Site name	Site #	Round 1 June 3	Round 2 June 24-25	Round 3 July 15-16	Round 4 canceled due to Caldor Fire
SFAR at Akin Powerhouse	105a	—	0	0	—
	105b	—	0	0	—
	105c	—	0	0	—
	105d	—	0	0	—
SFAR upstream of Akin Powerhouse	106a	—	0	0	—
	106b	—	0	0	—
	106c	—	0	0	—
SFAR downstream of Silver Creek	110a	—	0	0	—
	110b	—	0	0	—
Silver Creek	115T	—	0	—	—
SFAR upstream of Silver Creek	120a	—	0	0	—
	120b	—	0	0	—
	120c	—	0	0	—
SFAR at Soldier Creek	124R	0	0	0	—
Soldier Creek [a]	125T	—	—	—	—
SFAR downstream of Ogilby Creek	207R	—	0	0	—
Ogilby Creek	210DT[a]	—	—	0	—
SFAR upstream of Ogilby Creek	213R	—	0	0	—
SFAR at Maple Grove	220a	0	0	0	—
	220b	2 egg masses	0	0	—
	220c	0	0	0	—
SFAR at Alder Creek	246R	0	0	0	—

[a] Soldier Creek was not surveyed in 2021 due to the Caldor Fire.

3.2.1.5 Site 120R – SFAR upstream of Silver Creek

No FYLF life stages were observed at Subsite 120R during surveys in 2021.

3.2.1.6 Site 124R – SFAR at confluence with Soldier Creek

No FYLF life stages were observed at Site 124R during surveys in 2021.

3.2.1.7 Site 125T – Soldier Creek

Surveys were not conducted at Site 125T in 2021 due to the Caldor Fire.

3.2.1.8 Site 207R – SFAR downstream of Ogilby Creek

No FYLF life stages were observed at Site 207R during surveys in 2021.

3.2.1.9 Site 210DT – Ogilby Creek

No FYLF life stages were observed at Site 210DT during surveys in 2021.

3.2.1.10 Site 213R – SFAR upstream of Ogilby Creek

No FYLF life stages were observed at Site 213R during surveys in 2021.

3.2.1.11 Site 220R – SFAR at Maple Grove

Two FYLF egg masses were observed at Site 220R during surveys in 2021 (Photos 23-25, Appendix A).

3.2.1.12 Site 246R – SFAR at Alder Creek

No FYLF life stages were observed at Site 246R during surveys in 2021.

3.2.2 VES Results by FYLF Life Stage

Locations of FYLF observed in 2021 at established monitoring sites and incidentally between sites are included with site maps provided in Appendix B.

3.2.2.1 Egg Masses

Two egg masses were observed in 2021 located at Site 220b (Photos 23-25, Appendix A). They were found attached to the downstream side of the same boulder and recorded at Gosner stage 19. Subsequent surveys at this location yielded no additional egg masses or tadpoles. The egg masses were located 4.2 m from shore with a maximum water depth of 58 cm and 3 cm/second (cm/s) water flow. Water temperature at the oviposition site was 17.5°C. Based on the observed developmental stage and the date of observation, it is estimated that oviposition occurred eight days prior on, or about, May 25-26. It should be noted that this estimate is based on standardized rates of development. Predicting oviposition dates for late Gosner stages becomes more difficult because environmental factors can affect rates of development as embryos hatch and mature.

3.2.2.2 Tadpoles

No tadpoles were observed during the 2021 surveys.

3.2.2.3 Young-of-the-Year

No young-of-the-year (YOY) were observed during 2021 surveys.

3.2.2.4 Juveniles

No juveniles were observed during 2021 surveys.

3.2.2.5 Adults

No adults were observed during 2021 surveys.

3.2.3 Incidental FYLF Observations on the SFAR

No incidental FYLF observations were made during 2021 surveys.

3.2.4 Summary of FYLF VES Results Conducted From 2002-2021.

During the seven years (2002, 2004, 2005, 2007, 2011, 2016, and 2021) of amphibian surveys on the SFAR, a total of 48 egg masses, 3,674 tadpoles (in 131 groups), 286 YOY, 34 juveniles, and 87 adults have been observed (Table 3.2.4-1).

Table 3.2.4-1. Summary of Visual Encounter Survey Results Conducted From 2002-2021.

	FYLF Life Stage				
Survey Year	**Egg Masses**	**Tadpoles (# of groups)**	**Young-of-the-year (YOY)**	**Juveniles**	**Adults**
2002	0	118 (5)	12	14	24
2004	24	1,822 (61)	151	6	38
2005	12	695 (19)	15	1	12
2007	5	1,015 (42)	108	11	9
2011	4	21 (3)	0	1	2
2016	1	3 (1)	0	1	2
2021	2	0	0	0	0
Total	48	3,674 (131)	286	34	87

4.0 DISCUSSION

4.1 Interannual Comparison of Water Year Types and Oviposition Periods

Based on snow survey data from the California Department of Water Resources and the water year categories specified in the FERC license for Project No. 184, the SFAR experienced a critically dry water year in 2021 (CDWR 2021). During previous FYLF survey years, water year types were dry in 2004, above normal in 2005, critically dry in 2007, wet in 2011, and below normal in 2016 (Figure 4.1-1). During these years, FYLF surveys conducted on the SFAR allowed an estimation of oviposition periods by backdating the presence of egg masses based upon their developmental stage and typical inter-stage progression.

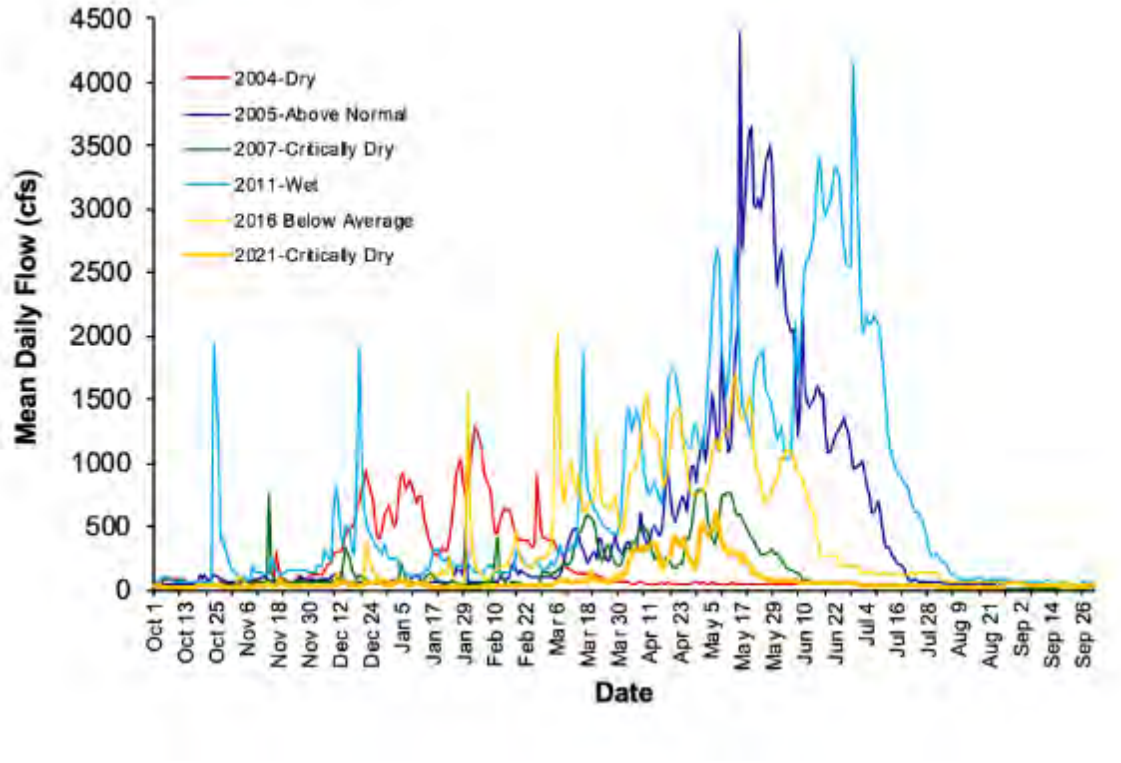


Figure 4.1-1. Mean daily flow (cfs) on the South Fork American River during FYLF survey years from 2004-2021 (measured at gaging station A-12 at Kyburz Diversion Dam).

In 2021, SFAR flows remained below 100 cfs throughout much of the critically dry water year, and peaked at 603 cfs (average daily flow) on May 6 (Figure 4.1-1). Based on the developmental stage of the two egg masses observed in 2021, the oviposition period occurred during May 25-26 when flows were approximately 89 cfs (Figure 4.1-2). In general, oviposition occurred earlier on the SFAR during dry (2004) and critically dry (2007 and 2021) water years, and later during above-normal (2005), wet (2011), and below normal (2016) water years (Figure 4.1-2). Although the oviposition period was estimated from only two egg masses, this oviposition period represents the shortest duration observed for all survey years between 2004-2021. Oviposition periods appeared to vary in duration across years, with the egg laying period lasting approximately 36 days in 2004, 26 days in 2005, 16 days in both 2007 and 2011, 3 days in 2016, and two days in 2021. In 2021, survey efforts were not completed on June 3 due to an injury requiring emergency response. The final survey round was canceled due to the Caldor Fire.

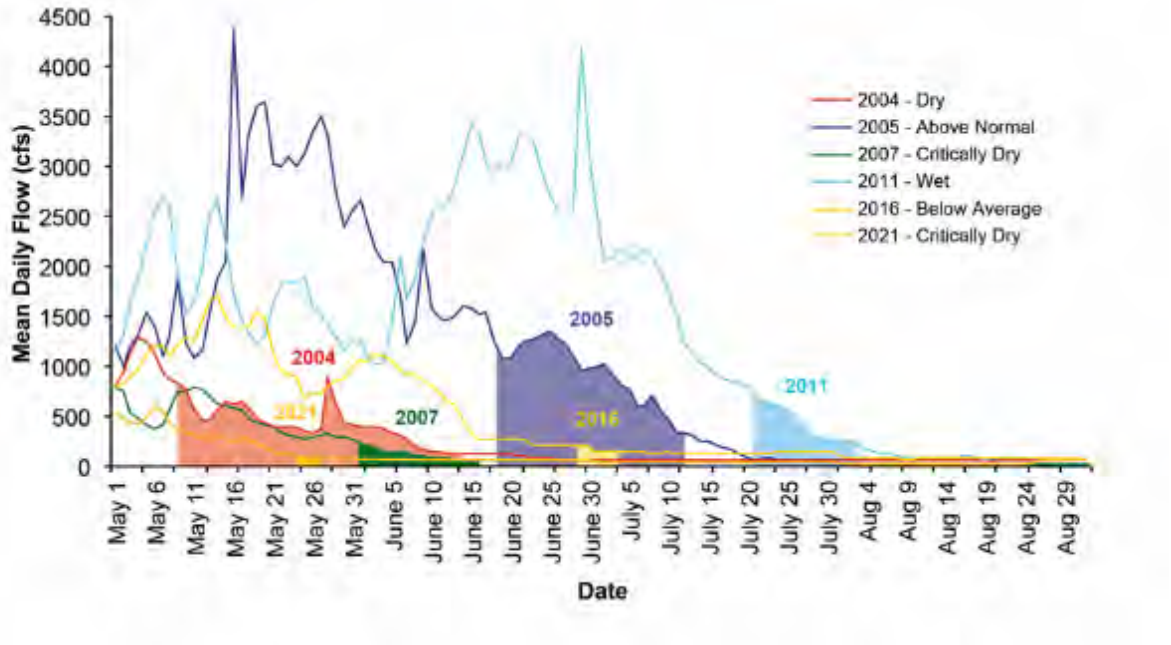


Figure 4.1-2. Mean daily flow (cfs) on the South Fork American River and estimated FYLF oviposition periods (represented by the shaded areas under the hydrographs) between 2004-2021.

5.0 SUMMARY AND CONCLUSIONS

Three survey rounds (two egg mass surveys and one tadpole survey) were conducted within the Study Area between June 3 and July 16, 2021. The fourth survey round (metamorph survey) was canceled due to the Caldor Fire. Surveys occurred at Sites 105R, 106R, 110R, 120R, 124R, 207R, 213R, 220R, and 246R. In addition, two tributaries (Ogilby Creek [Site 210DT] and Silver Creek [Site 115T]) were surveyed at least once during the survey effort; Soldier Creek [Site 125T] was not surveyed in 2021 due to the Caldor Fire. Two egg masses were observed at Site 220b, which was the only survey site where FYLF reproduction was confirmed in 2021. No other FYLF (including incidental observations between sites) were observed during 2021 surveys. The 2021 oviposition period occurred from approximately May 25-26, which represents the earliest onset of oviposition and the shortest duration oviposition period since surveys were first conducted in 2002.

6.0 LITERATURE CITED

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Appendix A: Representative Site and FYLF Photographs

June 24, 2021.

June 24, 2021.

June 24, 2021.

June 24, 2021.

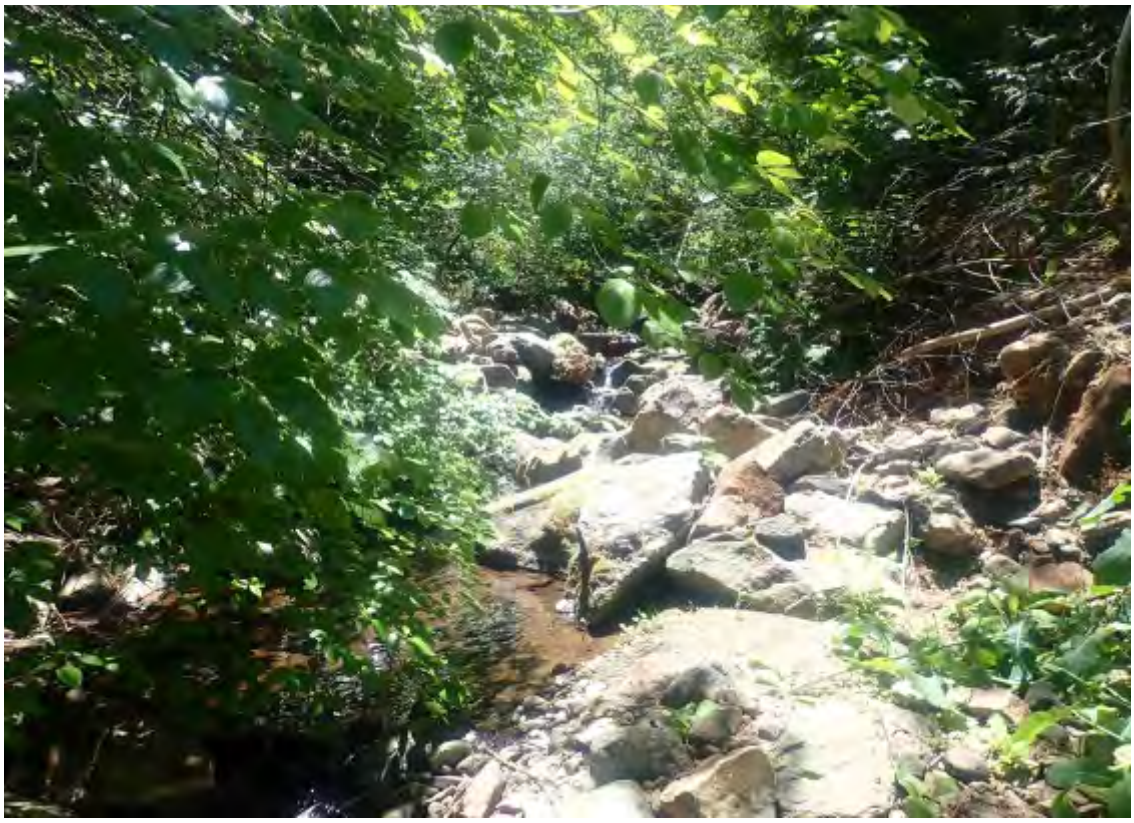
June 24, 2021.

June 24, 2021.

June 24, 2021.

This site was not surveyed in 2021 due to the Caldor Fire.

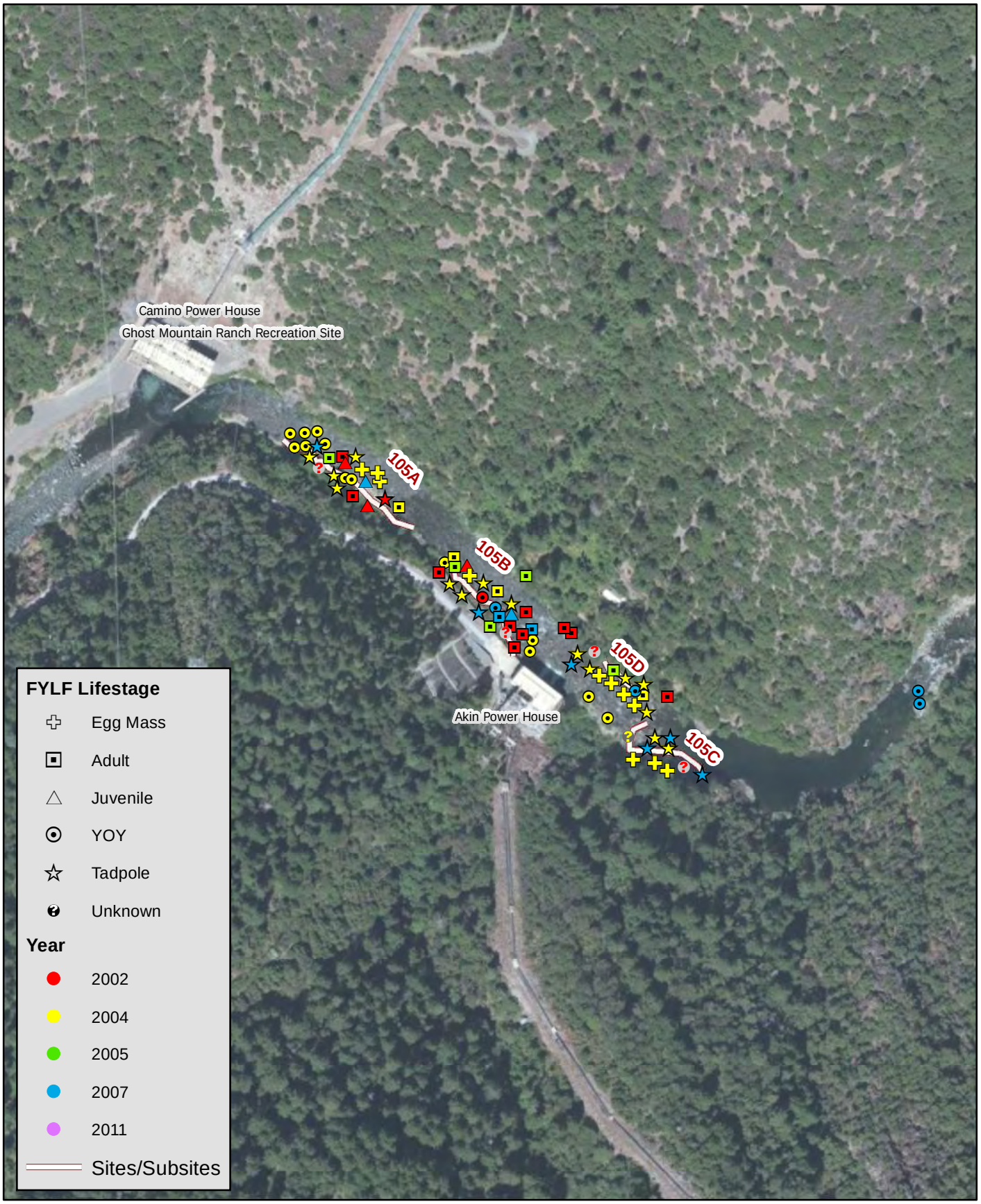
July 16, 2021.



July 16, 2021.

Photo 23. Site 220b, oviposition site (indicated by red arrow) of egg masses "A" and "B", June 25, 2021.

Appendix B: Aerial Photographs of Survey Sites and FYLF Observations



Map 1
Sites 105A, 105B, 105C, 105D

El Dorado County, California

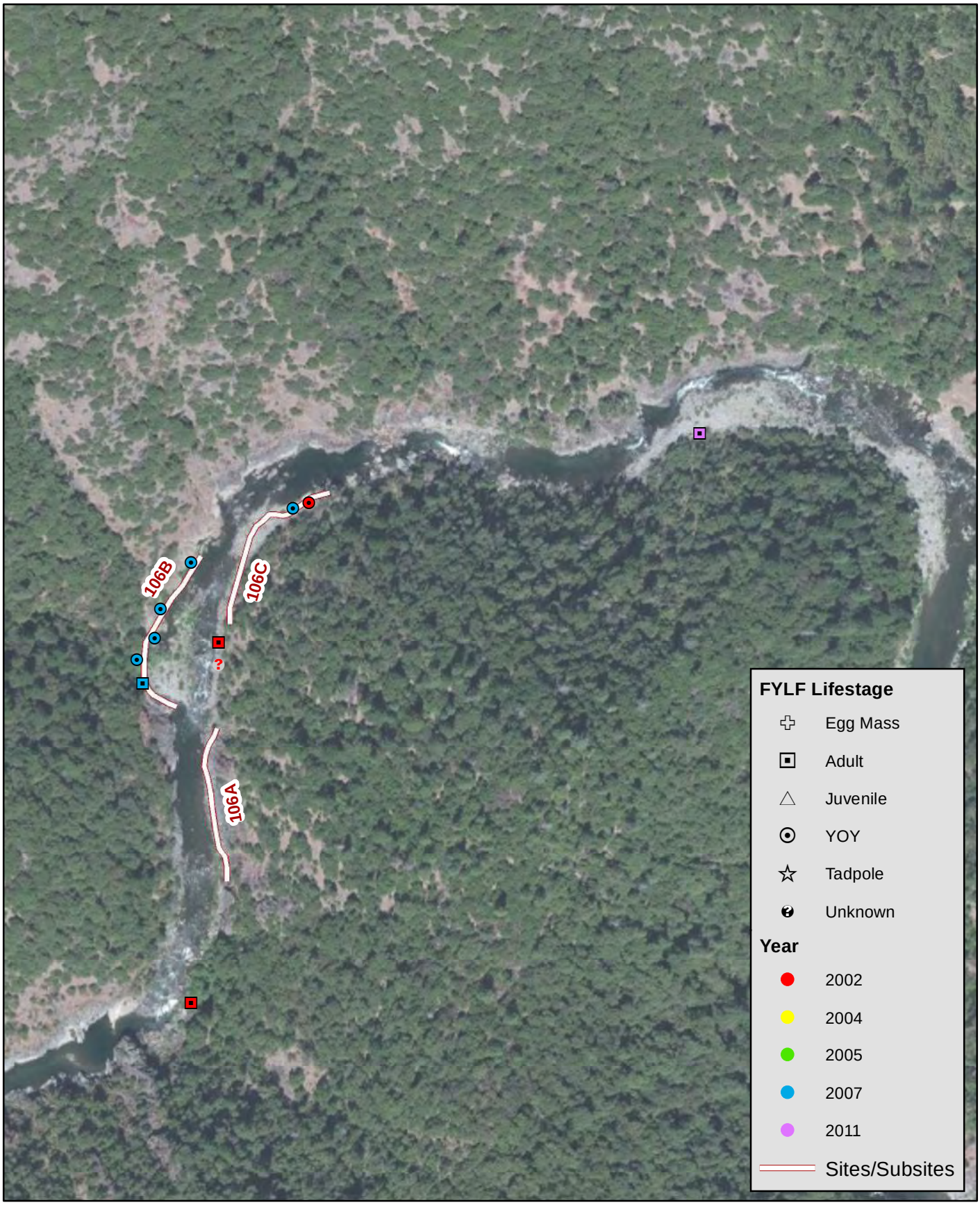
Project Location

0 125 250 Feet

0 50 100 Meters

N

KLEINFELDER
Bright People. Right Solutions.



Map 2
Sites 106A, 106B, 106C

El Dorado County, California

0 125 250 Feet

0 50 100 Meters

N

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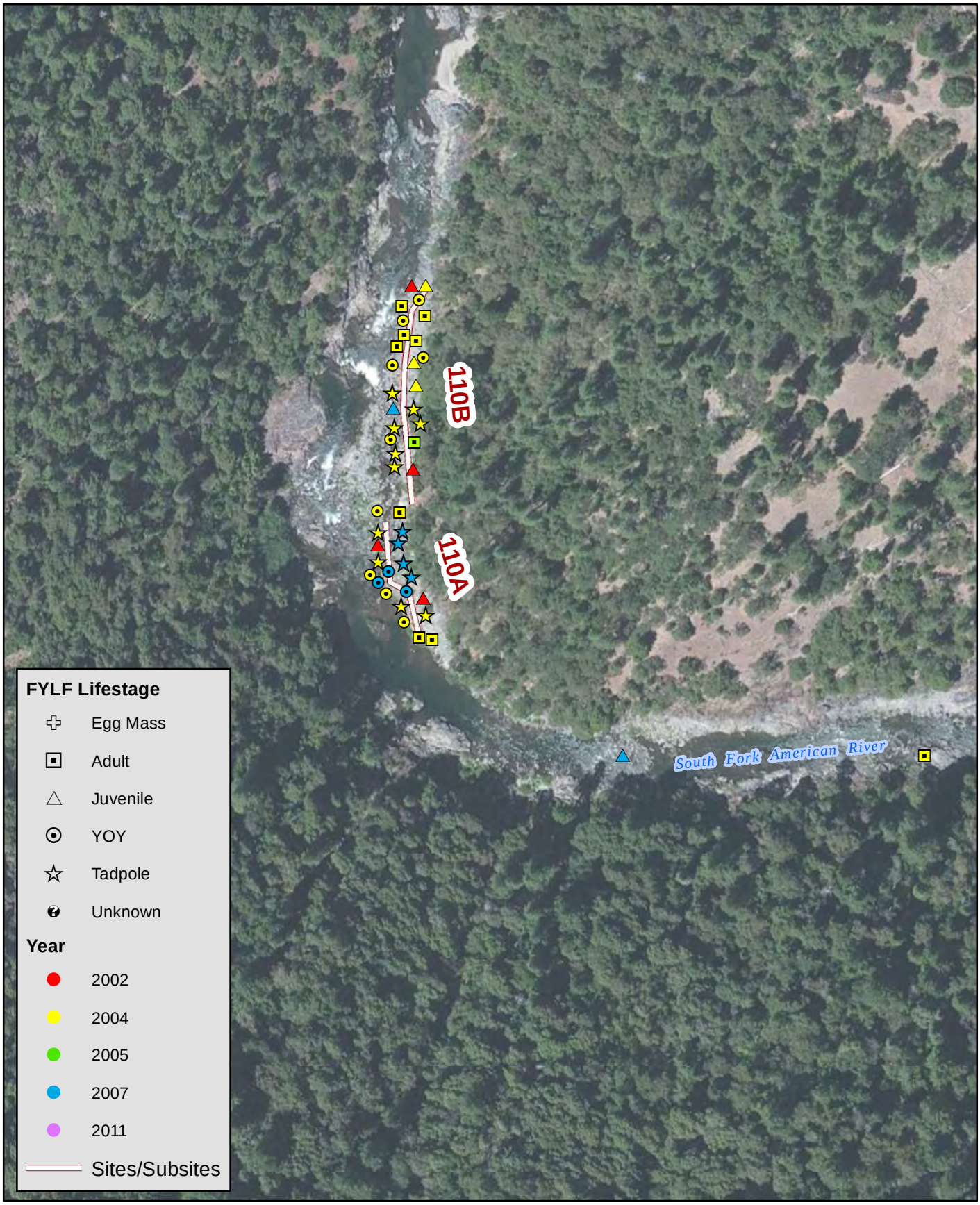

Map 3
Sites 110A, 110B

El Dorado County, California

0 125 250 Feet

0 50 100 Meters

N

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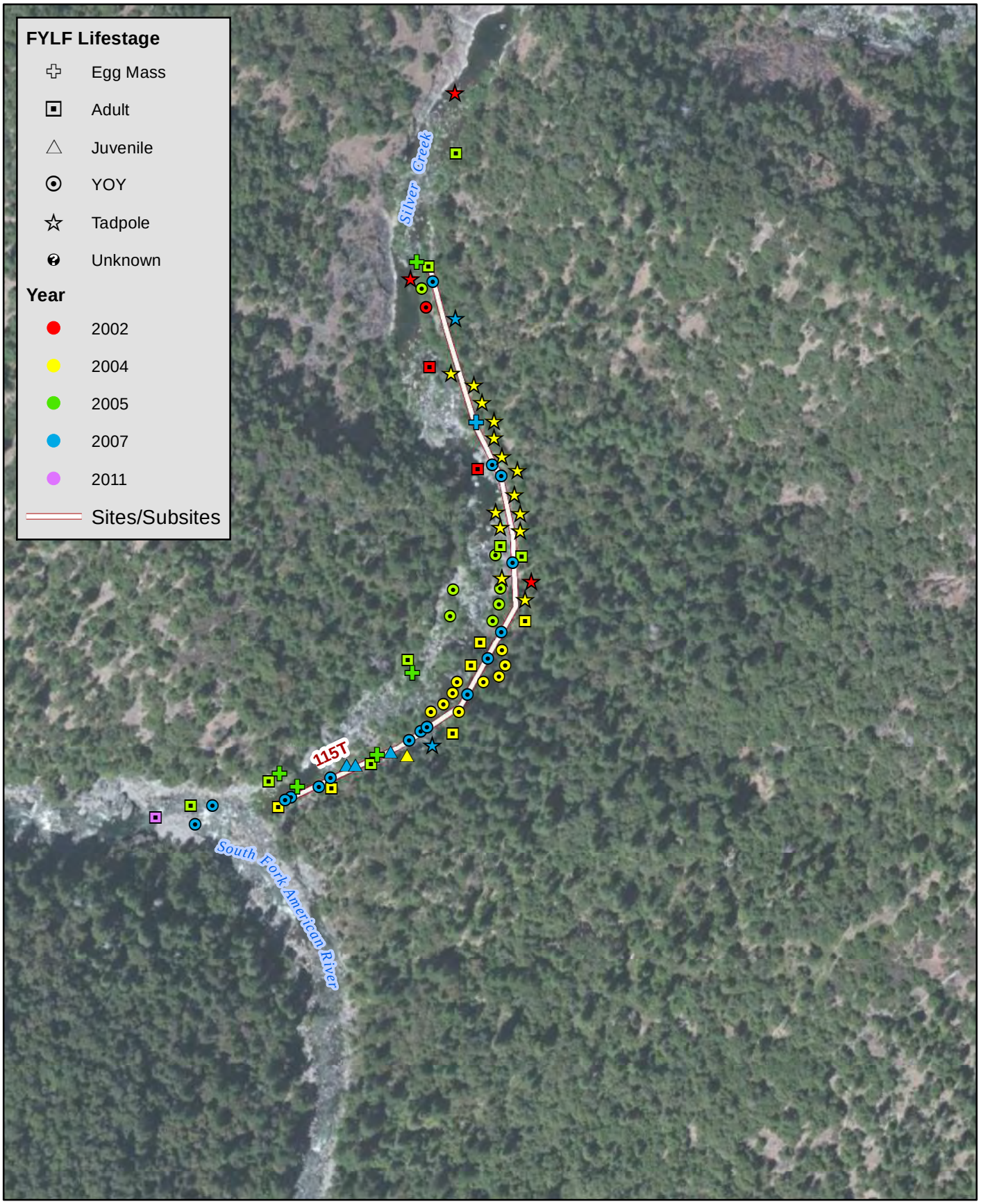

Map 4
Site 115T

El Dorado County, California

Project Location

0 125 250 Feet

0 50 100 Meters

N

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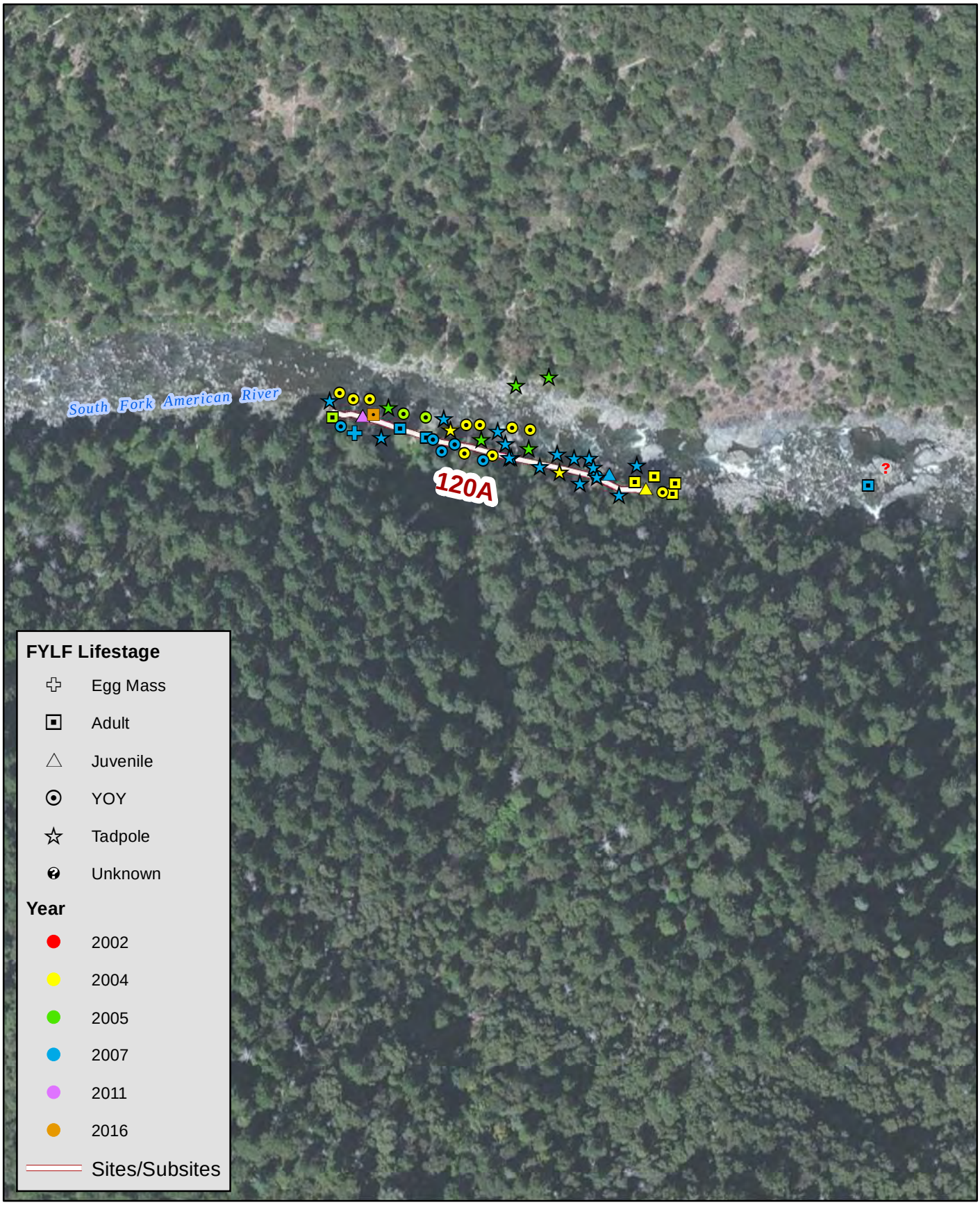

Map 5
Site 120A

El Dorado County, California

0 125 250 Feet

0 50 100 Meters

N

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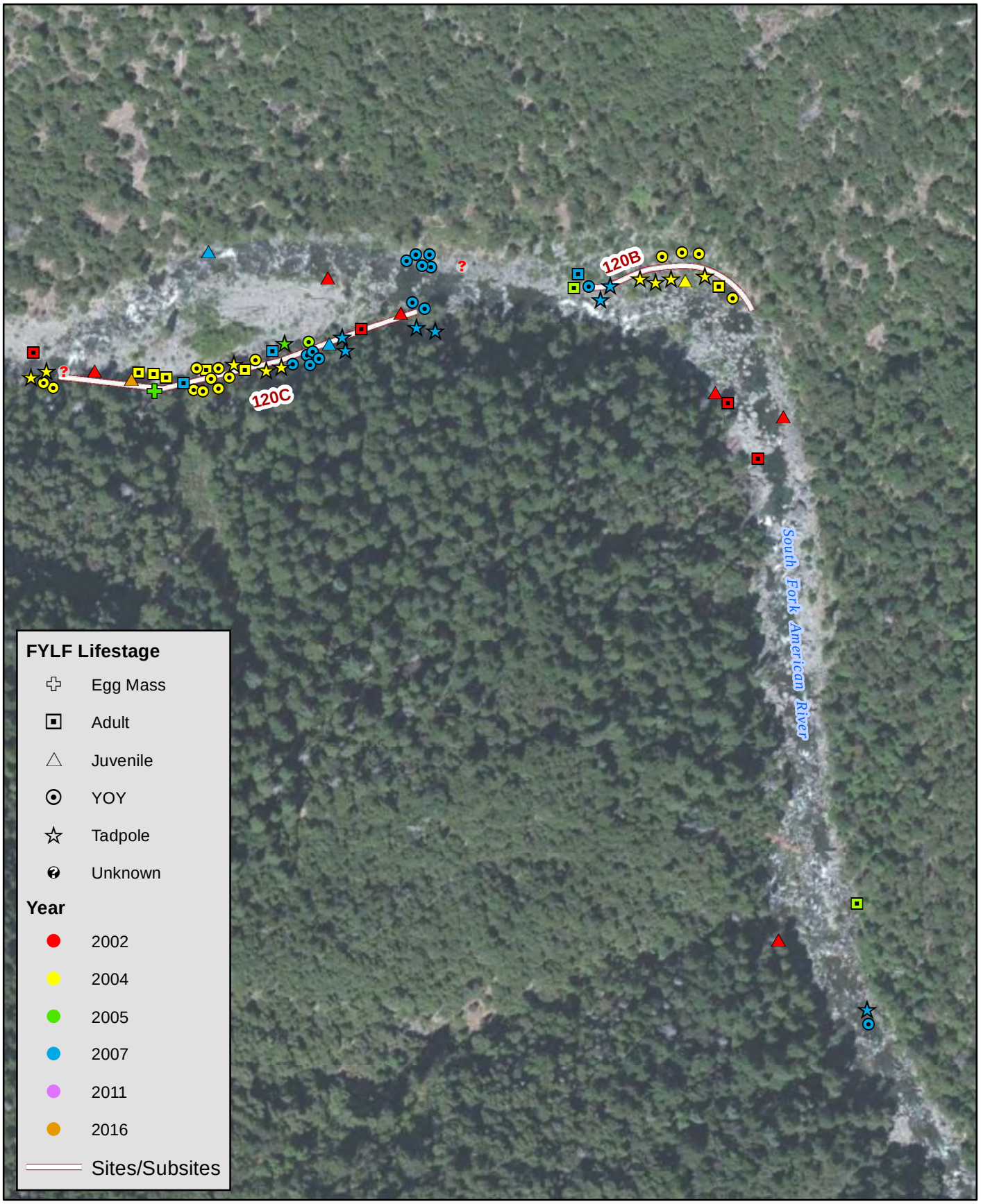

Map 6
Sites 120B, 120C

El Dorado County, California

Feet
0 125 250

Meters
0 50 100

N

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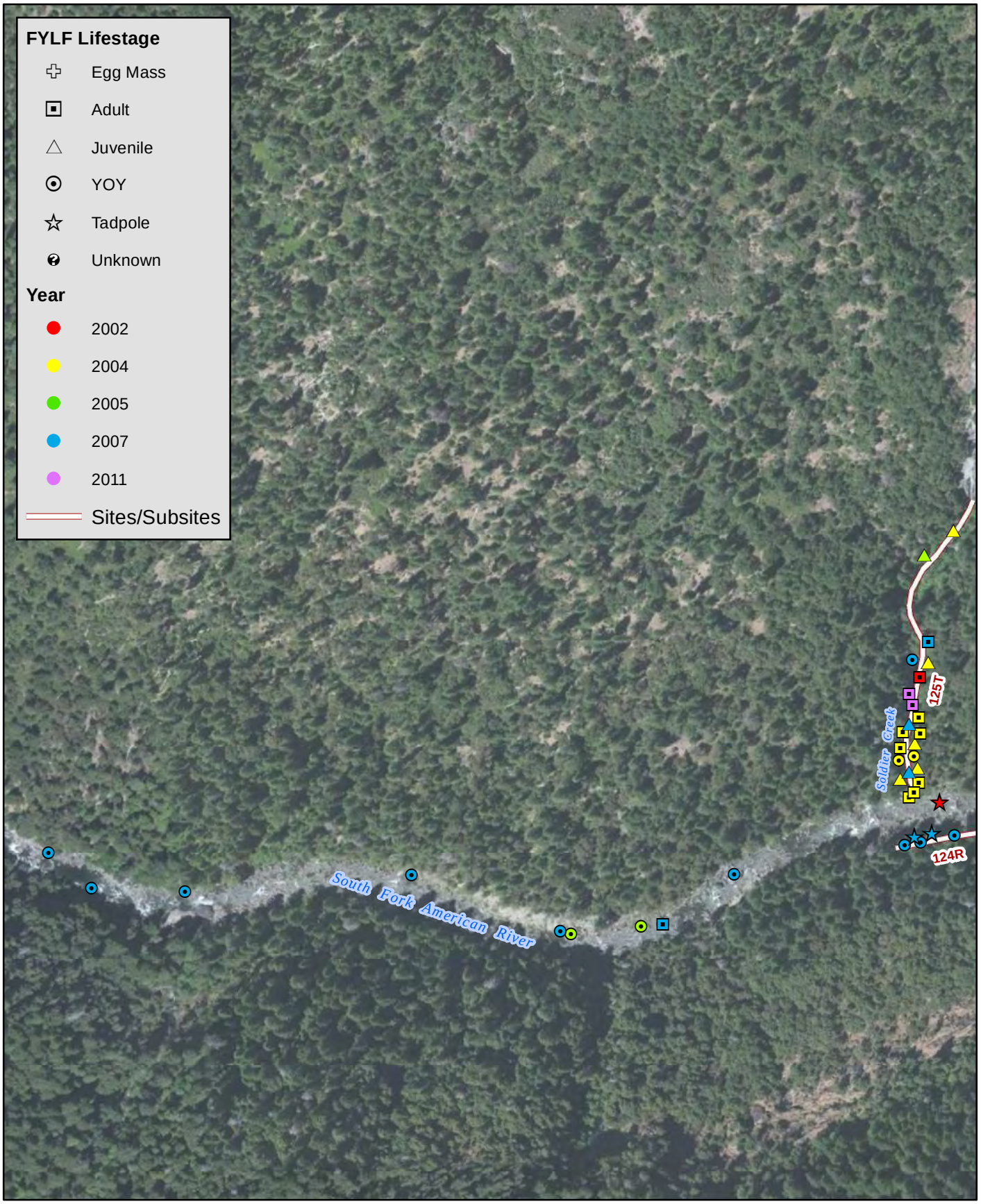

Map 7
South Fork American River

El Dorado County, California

Project Location

Feet
0 125 250

Meters
0 50 100

N

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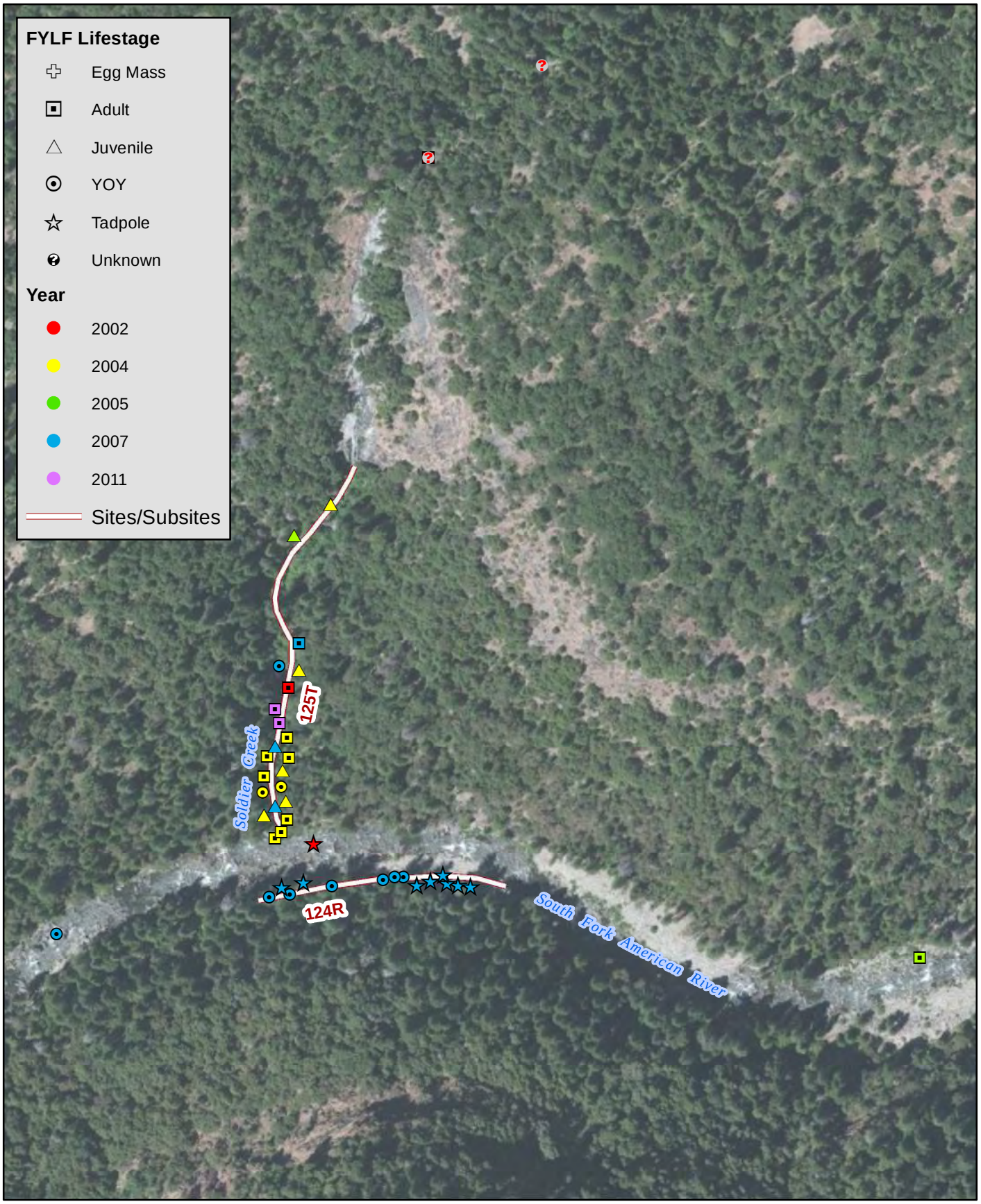

Map 8
Sites 124R, 125T

El Dorado County, California

Feet
0 125 250

Meters
0 50 100

N

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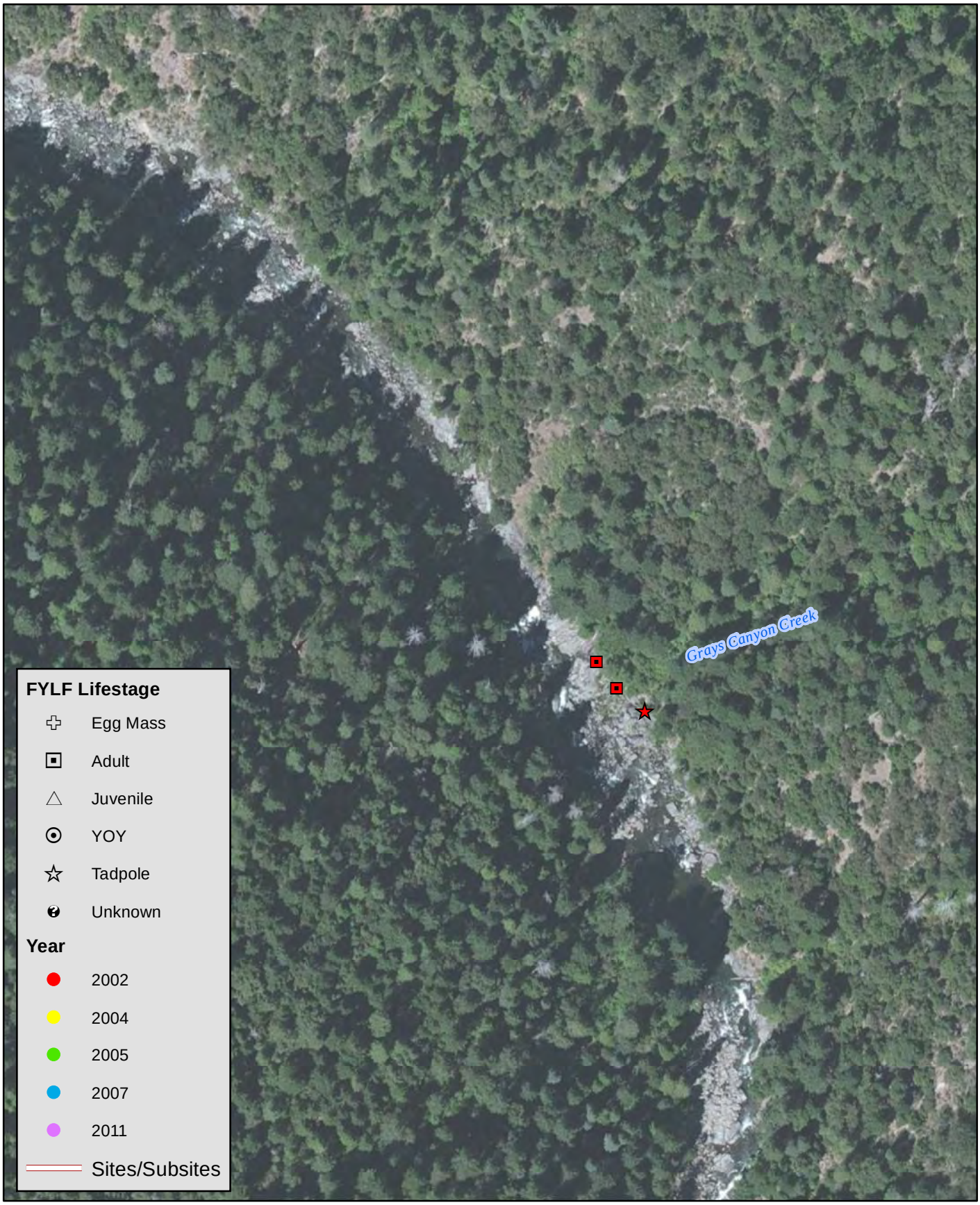

Map 9
Site 130A

El Dorado County, California

0 125 250 Feet

0 50 100 Meters

N

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Map 10
Sites 207R, 210DT

El Dorado County, California

Project Location

0 125 250 Feet

0 50 100 Meters

N

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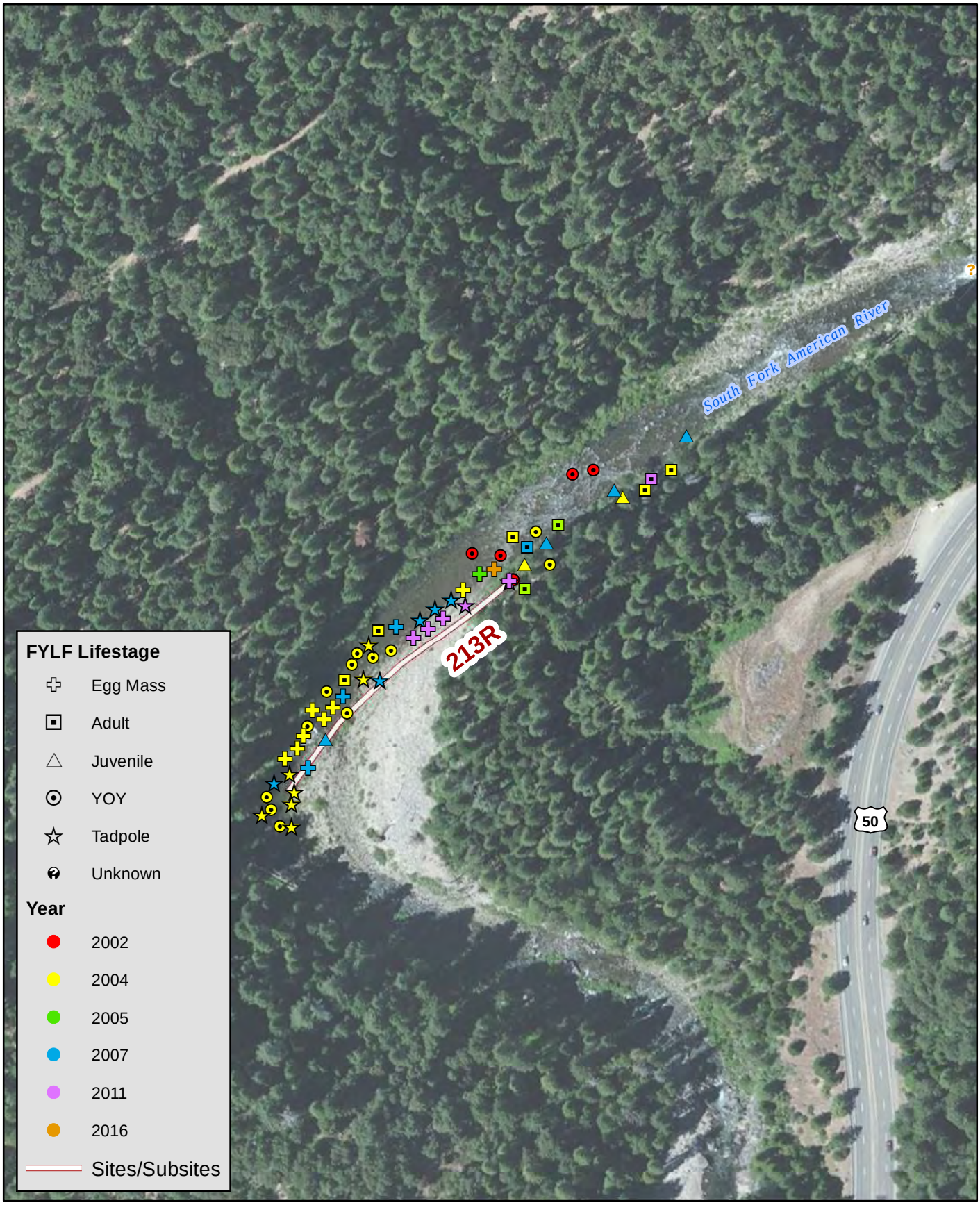

Map 11
Site 213R

El Dorado County, California

0 125 250 Feet

0 50 100 Meters

N

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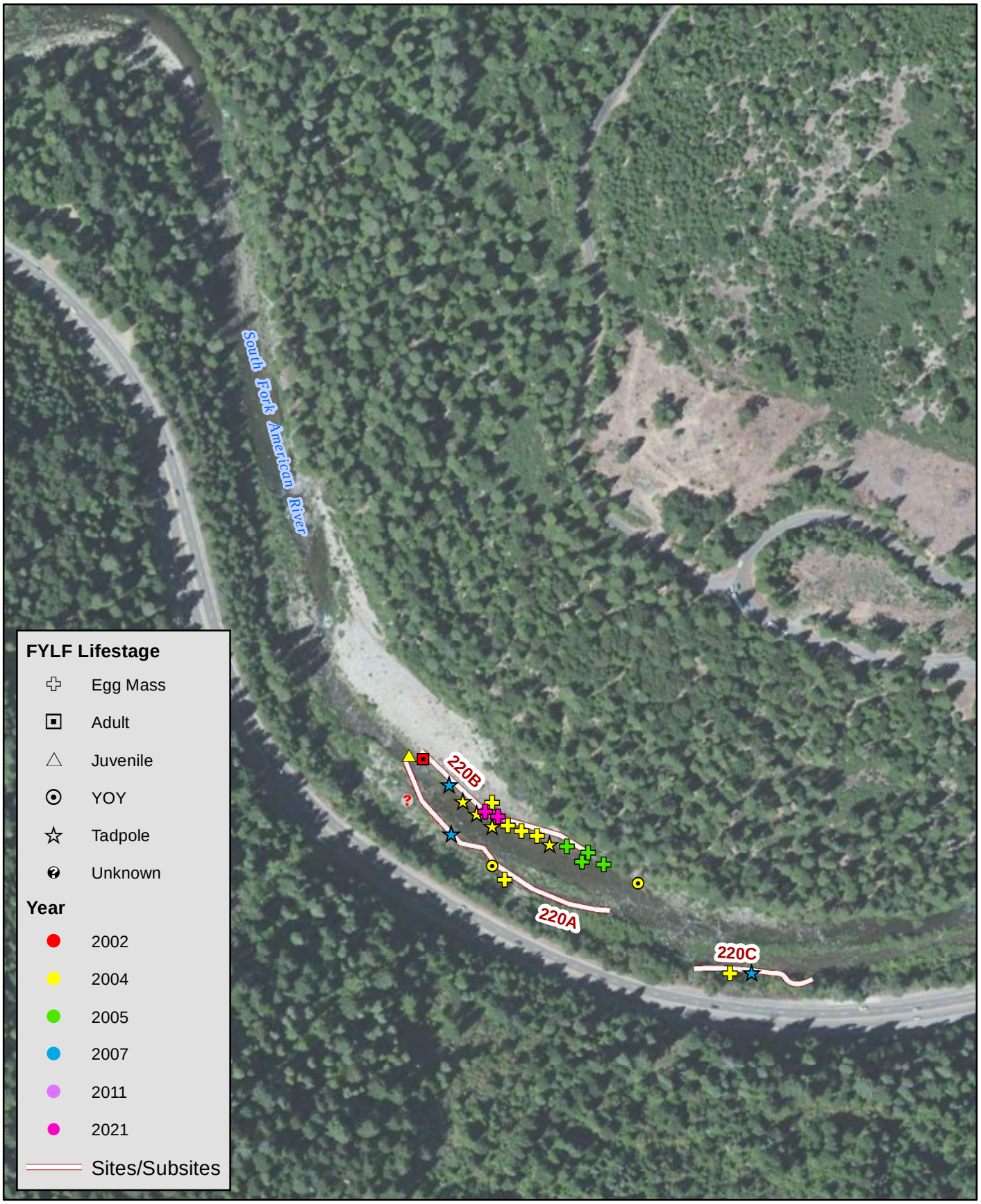
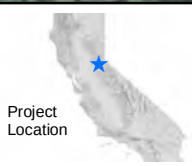


Map 12
Sites 220A, 220B, 220C

El Dorado County, California

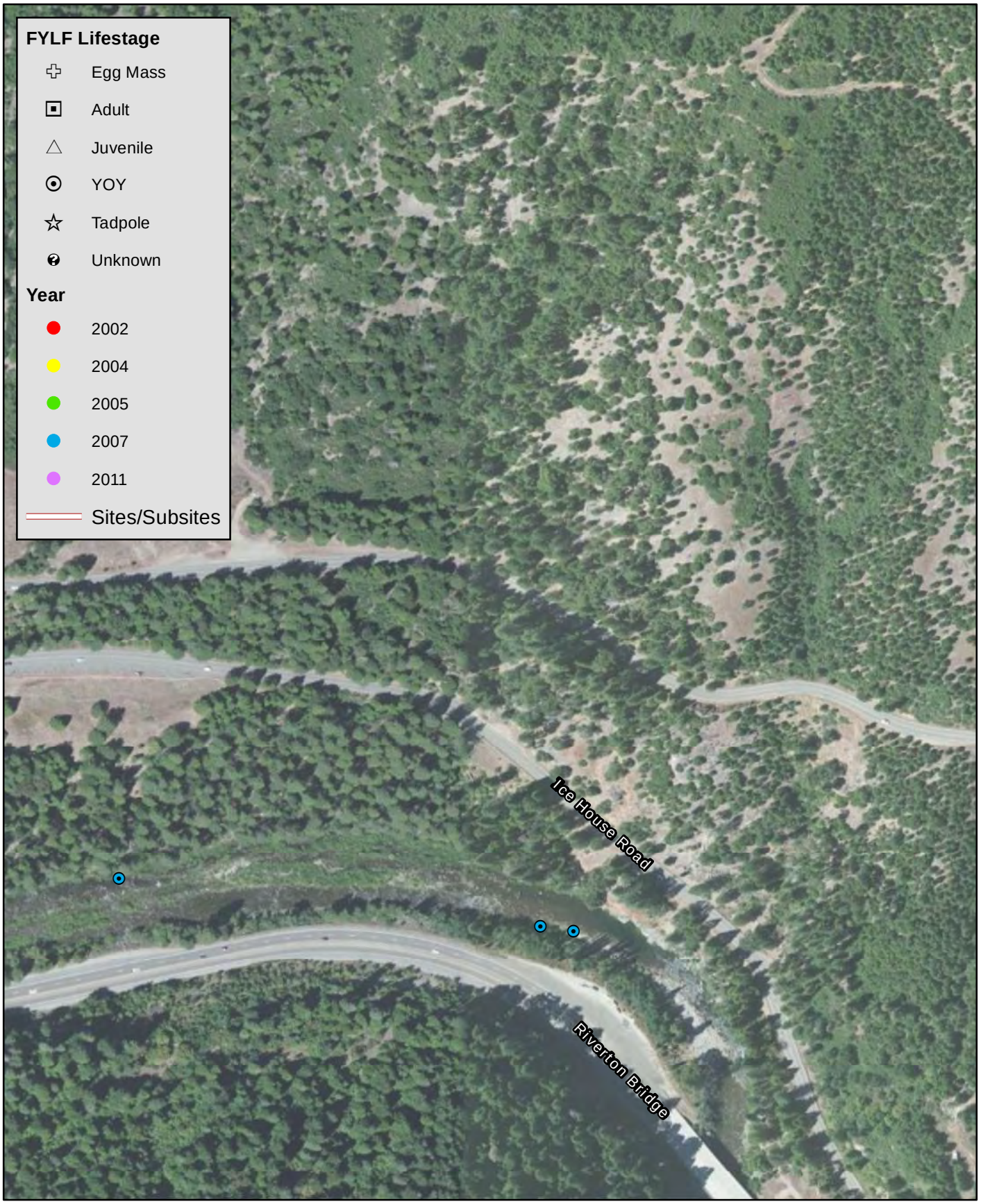


Feet
0 125 250

Meters
0 50 100

N

KLEINFELDER
Bright People. Right Solutions.



Map 13
South Fork American River

El Dorado County, California

Feet
0 125 250

Meters
0 50 100

N

KLEINFELDER
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Map 14
Site 246R

El Dorado County, California

Project Location

0 125 250 Feet

0 50 100 Meters

N

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Appendix C: Visual Encounter Survey Datasheets

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 25 yy 21 Site #: 105 Subsite #: 105A River Name/Location: SFAR @ Ackn PH Observers: KM CBS
Survey Method: tandem separate Start Time: 1300 End Time: 1315 Actual VES Time: 15 min. Start Air Temp: 32.5 End Air Temp: 32.5
Water Temp: (edgewater) 19 (main channel) 19 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
	NO	EGG OBS.														

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: YOY + JUV
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: _____

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 105 Subsite #: 105A River Name/Location: SF American River @ Akin PH Observers: KDW

Survey Method: tandem separate Start Time: 1515 End Time: 1535 Actual VES Time: 20 min. Start Air Temp: 31 End Air Temp: 31

Water Temp: (edgewater) 22.5 (main channel) 22 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —

Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____

Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____

Comments: – VERY RAPID WATER CONDITIONS, OUTFLOW FROM AKIN PH
– RMW 13 PHOTO

QA/QC (initials): _____ Date: _____

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

Date: mm 6 dd 25 yy 21 Site #: 105 Subsite #: 105B River Name/Location: SFAR @ AKIN PH Observers: KM CBS
Survey Method: tandem separate Start Time: 1315 End Time: 1325 Actual VES Time: 10 min Start Air Temp: 32.5 End Air Temp: 32.5
Water Temp: (edgewater) 19 (main channel) 19 (pool) — Flow: 63 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast (Clear) *Wind:* Inclement Fair (Ideal) Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present (Yes) No Type: Salmonid Centrarchid (Cyprinid) Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: _____
– CRAYfish

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 105 Subsite #: 105B River Name/Location: SF American River @ Akin PH Observers: KMW
Survey Method: tandem (separate) Start Time: 1536 End Time: 1546 Actual VES Time: 10 mins Start Air Temp: 31 End Air Temp: 31
Water Temp: (edgewater) 23 (main channel) 22 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m²): —
Weather: *Sky:* Overcast Partly Overcast (Clear) *Wind:* Inclement (Fair) Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
Ø	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present (Yes) No Type: Salmonid Centrarchid (Cyprinid) Other: ____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
– KW 14-16 habitat
– very turbid from Akin PH outflow

QA/QC (initials): ____ Date: ____

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

Date: mm 6 dd 25 yy 21 Site #: 105 Subsite #: 105C River Name/Location: SFAR @ Akin PH Observers: KSM CBS
Survey Method: tandem separate Start Time: 1330 End Time: 1340 Actual VES Time: 10 min. Start Air Temp: 32.5 End Air Temp: 32.5
Water Temp: (edgewater) 19 (main channel) 19 (pool) — Flow; 63 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF	OBS.							

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____T. elegans____T. sirtalis____T. atratus____Unk_____
Comments: _____

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 105 Subsite #: 105C River Name/Location: SF AMERICAN RIVER @ RAIN PH Observers: KMW

Survey Method: tandem separate Start Time: 1547 End Time: 1600 Actual VES Time: 13 min Start Air Temp: 31 End Air Temp: 31

Water Temp: (edgewater) 24 (main channel) 22 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —

Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____

Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____

Comments: ~~KMW~~

- WATER CLEAR U/S OF RAIN PH

QA/QC (initials): _____ Date: _____

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

Date: mm 6 dd 25 yy 21 Site #: 105 Subsite #: 105 D River Name/Location: SFAR @ Akin PH Observers: LMW CBS
Survey Method: tandem separate Start Time: 1340 End Time: 1355 Actual VES Time: 15 min. Start Air Temp: 32.5 End Air Temp: 32.5
Water Temp: (edgewater) 19 (main channel) 19 (pool) — Flow: 63 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF	OBS.	—						

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: _____

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 105 Subsite #: 105D River Name/Location: SF American River @ Acin PH Observers: KM

Survey Method: tandem separate Start Time: 1602 End Time: 1613 Actual VES Time: 11 min Start Air Temp: 31 End Air Temp: 31

Water Temp: (edgewater) 23 (main channel) 22 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —

Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF	OBS.							

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____

Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___

Comments: _____

KM 18-19 habitat

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 106 Subsite #: 106A River Name/Location: SFAR u/s OF AKIN PH Observers: KMN JED
Survey Method: tandem separate Start Time: 1620 End Time: 1630 Actual VES Time: 10 min Start Air Temp: 24 End Air Temp: 24
Water Temp: (edgewater) 22 (main channel) 21 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FYCF		OBS.	—	—	—	—	—	—	—	—	—	—	—	—

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
- photo both, top

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 106 Subsite #: 106A River Name/Location: SF American River u/s of Observers: KSW JED
Survey Method: tandem separate Start Time: 1630 End Time: 1635 Actual VES Time: 5 min Start Air Temp: 27 End Air Temp: 26
Water Temp: (edgewater) 25 (main channel) 23 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm); snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present (Yes) No Type: Salmonid Centrarchid (Cyprinid) Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: – KSW 89-90 habitat
– crayfish

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 106 Subsite #: 106B River Name/Location: SFAR u/s of AKIN PH Observers: KMW JED
Survey Method: tandem separate Start Time: 1607 End Time: 1617 Actual VES Time: 10 min. Start Air Temp: 24 End Air Temp: 24
Water Temp: (edgewater) 22 (main channel) 21 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FYLF		OBS.												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:

- KMW 21 : BOTT → u/s
- CANYON WRENS (3)
- CRAYFISH

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 106 Subsite #: 106B River Name/Location: SF American River u/s of Akin PH Observers: KMW JED
Survey Method: tandem separate Start Time: 1621 End Time: 1627 Actual VES Time: 6 min. Start Air Temp: 27 End Air Temp: 27
Water Temp: (edgewater) 25 (main channel) 23 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m²): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	FYLF obs.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present (Yes) No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: _____
- Sampling
- KMW '88 habitat

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 106 Subsite #: 106C River Name/Location: SFAR u/s OF Alin PH Observers: KMW JED
Survey Method: tandem separate Start Time: 1353 End Time: 1604 Actual VES Time: 11 min. Start Air Temp: 24 End Air Temp: 24
Water Temp: (edgewater) 24 (main channel) 21 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FYLF	OBS.	—												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: ____
Herpetofauna & Life Stage tree frog TAOS bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: ~150 m u/s in side pool (~50 tads)
KMW 18 Top → D/S
19 Bott → U/S

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 106 Subsite #: 106C River Name/Location: SF American River u/s of AFIN PH Observers: KMW JED
Survey Method: tandem separate Start Time: 1607 End Time: 1620 Actual VES Time: 13 min. Start Air Temp: 27 End Air Temp: 27
Water Temp: (edgewater) 24 (main channel) 23 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: – crayfish.
KMW 86-87 photos

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 110 Subsite #: 110A River Name/Location: SFAR D/S OF SILVER CREEK Observers: KMW JED
Survey Method: tandem separate Start Time: 1408 End Time: 1420 Actual VES Time: 12 min. Start Air Temp: 24 End Air Temp: 24
Water Temp: (edgewater) 22 (main channel) 22 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FYLF	OBS.	—												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
- MERGANSERS
- KMW & JED → D/S

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 110 Subsite #: 110A River Name/Location: SF American River D/S of Silver Creek Observers: KW JED
Survey Method: tandem separate Start Time: 1420 End Time: 1440 Actual VES Time: 20 min Start Air Temp: 25 End Air Temp: 25
Water Temp: (edgewater) 25.5 (main channel) 23 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
Ø	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: KW 82

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 110 Subsite #: 110B River Name/Location: SFAR D/S of Silver Creek Observers: KSW JED
Survey Method: tandem separate Start Time: 1420 End Time: 1430 Actual VES Time: 10 min Start Air Temp: 24 End Air Temp: 24
Water Temp: (edgewater) 22 (main channel) 22 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
0	NO	FYLF		OBS.												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: YOY + SUC
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 110 Subsite #: 110B River Name/Location: SF AMERICAN RIVER D/S OF SILVER CREEK Observers: KDW JED
Survey Method: tandem separate Start Time: 1440 End Time: 1450 Actual VES Time: 10 min. Start Air Temp: 25 End Air Temp: 25
Water Temp: (edgewater) 26 (main channel) 23 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: KW 83 photo

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 115T Subsite #: — River Name/Location: SILVER CREEK Observers: KRV JED
Survey Method: tandem separate Start Time: 1320 End Time: 1400 Actual VES Time: 40 min. Start Air Temp: 32.5 End Air Temp: 32.5
Water Temp: (edgewater) 21 (main channel) 20 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): —Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___T. elegans___T. sirtalis___T. atratus___Unk___
Comments: KRV 74-76 habitat

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 120 Subsite #: 120A River Name/Location: SFAR u/s of Silver Creek Observers: JED KMW
Survey Method: tandem separate Start Time: 1242 End Time: 1300 Actual VES Time: 18 min Start Air Temp: 28°C End Air Temp: 28°C
Water Temp: (edgewater) 22 (main channel) 22 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
D	NO FYLF	OBS.														

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: Juv + YOY
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
- BLACK-HEADED GROSBEAK, CRAYFISH
- KMW 5-6 DOTT → u/s

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 120 Subsite #: 120A River Name/Location: SFAR DOWNSTREAM OF SILVER CREEK Observers: KW JED
Survey Method: tandem separate Start Time: 1145 End Time: 1200 Actual VES Time: 15 min Start Air Temp: 32 End Air Temp: 32
Water Temp: (edgewater) 23.5 (main channel) 21.5 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: JUV + YOY
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: KW 71-72 photos.

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 120 Subsite #: 120B River Name/Location: SFAR u/s OF SILVER CREEK Observers: KMW JED
Survey Method: tandem separate Start Time: 1055 End Time: 1115 Actual VES Time: 20 min. Start Air Temp: 29 End Air Temp: 29
Water Temp: (edgewater) 21 (main channel) 21 (pool) 20 Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FYLF		OBS.												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: - SCELOPORUS, CRAYFISH

KMW 99: BOTT → u/s
98: POOLS
97: top → o/s

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 120 Subsite #: 120B River Name Location: STAR upstream of Silver Creek Observers: KM JED
Survey Method: tandem separate Start Time: 1050 End Time: 1105 Actual VES Time: 15 min. Start Air Temp: 29 End Air Temp: 29
Water Temp: (edgewater) 20.5 (main channel) 20.5 (pool) 22 Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present (Yes) No Type: Salmonid Centrarchid Cyprinid Other: YOY + JUV, spotted dace
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: – KM 67-68 photos.
– many pools dried up from last survey

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 120 Subsite #: 120C River Name/Location: SFAR u/s of Silver Creek Observers: KMW JED
Survey Method: tandem separate Start Time: 1128 End Time: 1148 Actual VES Time: 20 min Start Air Temp: 27 End Air Temp: 24
Water Temp: (edgewater) 22 (main channel) 20.5 (pool) 21 Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
ϕ	NO	FYLF	OBS.													

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: PIKEMINNOW. MORT 2" (NO FRENUM)
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
- KMW 200 MP → D/S
201 pikeminnow
202 Butt → u/s
- crayfish
- increasing clouds, thunder

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 120 Subsite #: 120C River Name/Location: STAR upstream of Silver Creek Observers: KM JED
Survey Method: tandem separate Start Time: 1111 End Time: 1130 Actual VES Time: 19 min Start Air Temp: 29 End Air Temp: 30
Water Temp: (edgewater) 22 (main channel) 20.5 (pool) 21 Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm); snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: YOY + JUV
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: 1 JUV ~ 20 cm SVL

KM 69-70 photos.

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 3 yy 21 Site #: 124R Subsite #: — River Name/Location: SFAR @ Soldier Creek Observers: KMW IAC
Survey Method: tandem (circled) separate Start Time: 0905 End Time: 0925 Actual VES Time: 20 min Start Air Temp: 23 End Air Temp: 23
Water Temp: (edgewater) 20 (main channel) 19 (pool) — Flow: 68 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m²): —
Weather: *Sky*: Overcast Partly Overcast Clear (circled) *Wind:* Inclement Fair Ideal (circled) Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FY	LF	OBS.	—	—	—	—	—	—	—	—	—	—	—	—

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes (circled) No Type: Salmonid Centrarchid Cyprinid (circled) Other: ______
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
– mergansers
– wmw 22 bott → u/s
18/19 top → u/s, d/s

QA/QC (initials): ________ Date: ________

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 24 yy 21 Site #: 124R Subsite #: — River Name/Location: SFAR @ Soldier Creek Observers: KMV JED
Survey Method: tandem separate Start Time: 0900 End Time: 0930 Actual VES Time: 30 min. Start Air Temp: 24°C End Air Temp: 24°C
Water Temp: (edgewater) 22 (main channel) 21 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
ϕ	NO	FYLF	OBS.													

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: YOY, JUV
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii 1J T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: 1 MTLKED SUCKER ~6" L ~25 cm SVL hunting underwater
KMV: 91-92 view u/s, d/s @ top
93 midsite
94 bott → u/s
- dead crayfish

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 15 yy 21 Site #: 124R Subsite #: — River Name/Location: SFAR @ Soldier Creek Confluence Observers: KMW JED
Survey Method: tandem separate Start Time: 0900 End Time: 0920 Actual VES Time: 20 min Start Air Temp: 24 End Air Temp: 26
Water Temp: (edgewater) 21 (main channel) 20.5 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): —Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present (Yes) No Type: Salmonid Centrarchid Cyprinid Other: JUV + YOY
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: — DEAD, crayfish molts.
KMW 64-66 photos.

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 25 yy 21 Site #: 207R Subsite #: — River Name/Location: SFAR @ Ogilby Creek Observers: KMW CBS
Survey Method: tandem separate Start Time: 1120 End Time: 1145 Actual VES Time: 25 min Start Air Temp: 29 End Air Temp: 29
Water Temp: (edgewater) 19 (main channel) 19 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	No	FyLF	OBS.	—												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: _____
- DEAD CRAYfish

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 207R Subsite #: — River Name/Location: SF American River o/s of Ogilby Creek Observers: KAV
Survey Method: tandem separate Start Time: 1250 End Time: 1315 Actual VES Time: 25 min. Start Air Temp: 29.5 End Air Temp: 29.5
Water Temp: (edgewater) 22.5 (main channel) 21.5 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: VW 5-7 bott → uls, habitat e top

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 210 DT Subsite #: — River Name/Location: Ogilby Creek, SF American Observers: KMW
Survey Method: tandem separate Start Time: 1320 End Time: 1400 Actual VES Time: 40 min Start Air Temp: 29.5 End Air Temp: 29.5
Water Temp: (edgewater) — (main channel) 14 (pool) — Flow: — cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast (Clear) *Wind:* Inclement Fair (Ideal) Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF	OBS.							

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes (No) Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: _____

- FLOWING TO RIVER
- LB ARTIFICIAL INFLOW CAUSING EROSION + SEDIMENT INPUT @ ~50m U/S OF CULVERT HWY 50
- KMW 8-12 habitat photos.

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 25 yy 21 Site #: 213R Subsite #: — River Name/Location: SFAR u/s of Oilby Creek Observers: KMN CBS

Survey Method: (tandem) separate Start Time: 1030 End Time: 1055 Actual VES Time: 25 min. Start Air Temp: 27 End Air Temp: 27

Water Temp: (edgewater) 19 (main channel) 17.5 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m[2]): —

Weather: *Sky*: Overcast Partly Overcast (Clear) *Wind:* Inclement Fair (Ideal) Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	No	FYLF		OBS.												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: (Yes) No Type: Salmonid Centrarchid (Cyprinid) – YOY + Juv Other: ____

Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____

Comments:

– photos u/s, d/s btt + top
– pero crayfish

QA/QC (initials): ________ Date: ________

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

Date: mm 7 dd 16 yy 21 Site #: 213R Subsite #: — River Name/Location: SF American River R/S of Ogilby Creek Observers: KMW

Survey Method: tandem separate Start Time: 1205 End Time: 1230 Actual VES Time: 25 min Start Air Temp: 29.5 End Air Temp: 29.5

Water Temp: (edgewater) 23 (main channel) 21.5 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —

Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	No FyLF obs.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present (Yes) No Type: Salmonid Centrarchid Cyprinid Other: _____

Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____

Comments: KMW 04 both → u/s

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 4 dd 5 yy 21 Site #: Subsite #: 250A River Name/Location: SFEK Observers: KGB MG

Survey Method: (tandem) separate Start Time: 1000 End Time: 1050 Actual VES Time: 50 Start Air Temp: 24 End Air Temp: 24

Water Temp: (edgewater) 18.5 (main channel) 18 (pool) Flow: 89 cfs Subsite Length (m): Search Area Width (m): Total Search Area (m²):

Weather: Sky: Overcast Partly Overcast (Clear) Wind: Inclement Fair (Ideal) Site Visit: (1) 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orientation[4]	Flow Orientation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attachment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø																

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side, (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble, (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached, (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 - 50%, (4) 51 - 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: (Yes) No Type: Salmonid Centrarchid Cyprinid Other: YOY

Herpetofauna & Life Stage: tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___

Comments:

QA/QC (initials): ______ Date: ______

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 25 yy 21 Site #: 220 Subsite #: 220A River Name/Location: SFAR - @ MAPLE GROVE Observers: KMW CBS
Survey Method: tandem separate Start Time: 0920 End Time: 0935 Actual VES Time: 15 min. Start Air Temp: 23.5 End Air Temp: 23.5
Water Temp: (edgewater) 19.5 (main channel) 18 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FYLF	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: (Yes) No Type: Salmonid Centrarchid Cyprinid Other: DEAD SUCKER, ~8"
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
- DEAD CRAYFISH
- NO TADS OBSERVED AT EM A + B

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 220 Subsite #: 220A River Name/Location: SF AMERICAN RIVER @ MAPLE GROVE Observers: KMV

Survey Method: tandem separate Start Time: 1127 End Time: 1150 Actual VES Time: 23 min Start Air Temp: 28 End Air Temp: 28

Water Temp: (edgewater) 23 (main channel) 21 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —

Weather: *Sky*: Overcast Partly Overcast Clear *Wind*: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____

Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___

Comments: – KMV 303 both → n/s

– Crayfish

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 3 yy 21 Site #: Subsite #: 220B River Name/Location: [illegible] Observers: [illegible] KBM

Survey Method: tandem separate Start Time: 1000 End Time: 1035 Actual VES Time: 25 Start Air Temp: 24° End Air Temp: [illegible]

Water Temp: (edgewater) 19° (main channel) 17.5 (pool) Flow: ____ cfs Subsite Length (m): ____ Search Area Width (m): ____ Total Search Area (m²): ____

Weather: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orientation[4]	Flow Orientation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attachment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
220B-A	1	*	4.2	52	58	2	5	3	3	4	9	2	19	17.5	0854[illegible]	Same rock as B
220B-B	1	*	4.2	49	58	2	5	3	3	4	11	2	19	17.5	– 412	" " " A (upstream one)

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side, (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble, (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached, (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: YOY

Herpetofauna & Life-Stage: tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____

Comments:

* = UTM = [illegible] / 7308[illegible] from [illegible] @ Top of Site

QA/QC (initials): ________ Date: ________

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 25 yy 21 Site #: 220 Subsite #: 220B River Name/Location: SFAR @ MAPLE GROVE Observers: KMW CBS
Survey Method: tandem separate Start Time: 0935 End Time: 0950 Actual VES Time: 15 min Start Air Temp: _____ End Air Temp: _____
Water Temp: (edgewater) 19.5 (main channel) 18 (pool) — Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
A	NO	FYLF		OBS.												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____T. elegans____T. sirtalis____T. atratus____Unk____
Comments: _____

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 220 Subsite #: 220B River Name/Location: SF AMERICAN RIVER @ MAPLE CREEK Observers: KMW
Survey Method: tandem separate Start Time: 1105 End Time: 1125 Actual VES Time: 20 min. Start Air Temp: 28 End Air Temp: 28
Water Temp: (edgewater) 24 (main channel) 21 (pool) 24.5 Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —
Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	NO FYLF OBS.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ___ bullfrog ___ western pond turtle ___ garter snake: T. couchii ___ T. elegans ___ T. sirtalis ___ T. atratus ___ Unk ___
Comments: _____
– NO TADPOLES OBS. NEAR EGG MASSES
– CRAYFISH
– KMW 296-302 photos

QA/QC (initials): _____ Date: _____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 3 yy 21 Site #: ____ Subsite #: 220e River Name/Location: SFAL Observers: MBS VBB

Survey Method: (tandem) separate Start Time: 1035 End Time: 1055 Actual VES Time: 20 Start Air Temp: 24° End Air Temp: 24°

Water Temp: (edgewater) 19.5 (main channel) 18 (pool) ____ Flow: 89 cfs Subsite Length (m): ____ Search Area Width (m): ____ Total Search Area (m²): ____

Weather: Sky: Overcast Partly Overcast (Clear) Wind: Inclement (Ideal) Site Visit: (1) 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orientation[4]	Flow Orientation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attachment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø																

[1] Egg Mass Letter - assign egg mass an individual letter (A-Z)
[2] Distance - distance from bottom of site/subsite to egg mass
[3] Max. Water Depth - total depth at egg mass location
[4] Egg Mass Orientation - (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation - (1) into flow, (2) sheltered from flow, (3) along side, (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass - flow in water column next to mass
[7] Egg Mass Attachment Substrate - (1) sand, (2) gravel/pebble, (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached, (8) other
[8] % Silt on Egg Mass - (1) none, (2) < 25%, (3) 25 - 50%, (4) 51 - 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: (Yes) No Type: Salmonid Centrarchid Cyprinid Other: YOY

Herpetofauna & Life Stage: tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____

Comments:

No FYLF or EM observed

QA/QC (initials): ________ Date: ________

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 25 yy 21 Site #: 220 Subsite #: 220C River Name/Location: SFAR @ MAPLE GROVE Observers: IGM CBS
Survey Method: tandem separate Start Time: 0952 End Time: 1005 Actual VES Time: 13 min Start Air Temp: 29 End Air Temp: 29
Water Temp: (edgewater) 18 (main channel) 17 (pool) ~ Flow: 63 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m^2): —
Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FYLF		OBS.	—	—	—	—	—	—	—	—	—	—	—	—

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: Yes No Type: Salmonid Centrarchid Cyprinid Other: _____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments: _____

QA/QC (initials): _____ Date: _____

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

Date: mm 7 dd 16 yy 21 Site #: 220 Subsite #: 220C River Name/Location: SFAY @ MAPLE GROVE Observers: KMW

Survey Method: tandem separate Start Time: 1045 End Time: 1100 Actual VES Time: 15 min Start Air Temp: 28 End Air Temp: 28

Water Temp: (edgewater) 20.5 (main channel) 20 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —

Weather: *Sky:* Overcast Partly Overcast Clear *Wind:* Inclement Fair Mild Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
Ø	NO FYLF OBS								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present (Yes) No Type: Salmonid Centrarchid Cyprinid Other: _____

Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____

Comments: _____

QA/QC (initials): _____ Date: _____

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

Date: mm 6 dd 3 yy 21 Site #: [illegible] Subsite #: ____ River Name/Location: [illegible] Observers: [illegible]
Survey Method: tandem separate Start Time: [illegible] End Time: [illegible] Actual VES Time: [illegible] Start Air Temp: [illegible] End Air Temp: [illegible]
Water Temp: (edgewater) [illegible] (main channel) [illegible] (pool) ____ Flow: [illegible] cfs Subsite Length(m): ____ Search Area Width(m): ____ Total Search Area (m²): ____
Weather: Sky: Overcast Partly Overcast Clear Wind: Inclement Fair Ideal Site Visit: (1) 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0									

[1] Distance – distance from bottom of site/subsite to frogs or use UTM
[2] Age – J = Juvenile (< 39 mm), A = Adult (> 40 mm (snout-urevscle length
[3] Condition – gravid, spent, healthy
[4] Activity – (1) sitting in shade, (2) basking, (3) hiding, (4) calling, (5) swimming, (6) foraging, (7) amplexus, (8) floating, (9) underwater, (10) other

Fish Present Yes / No Type: Salmonid Centrarchid Cyprinid Other: [illegible]
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
[illegible]

QA/QC (initials): ____ Date: ____

Foothill Yellow-Legged Frog
River and Creek Visual Encounter Survey Data Sheet
Egg Masses

Date: mm 6 dd 25 yy 21 Site #: 246R Subsite #: — River Name/Location: SFAR @ Alder Creek Observers: KMW CBS
Survey Method: (tandem) separate Start Time: 0845 End Time: 0900 Actual VES Time: 15 min. Start Air Temp: 20.5 End Air Temp: 20.5
Water Temp: (edgewater) 15.5 (main channel) 15 (pool) — Flow: 67 cfs Subsite Length (m): — Search Area Width (m): — Total Search Area (m²): —
Weather: *Sky*: Overcast Partly Overcast (Clear) *Wind:* Inclement Fair (Ideal) Site Visit: 1 2 3 4 5 6 7 8

Egg Mass Letter[1]	No. of Egg Masses	Dist.[2] (m)	Dist. from Shore (m)	Depth of Egg Mass (cm)	Max. Water Depth[3] (cm)	Egg Mass Orient-ation[4]	Flow Orien-tation[5]	Surface Velocity (cm/sec)	Velocity at Egg Mass[6] (cm/sec)	Egg Mass Attach-ment Substrate[7]	Egg Mass Width (cm)	% Silt on Egg Mass[8]	Gosner Stage[9]	Water Temp (°C)	Photo #	Comments
Ø	NO	FY	LF	OBS.												

[1] Egg Mass Letter – assign egg mass an individual letter (A-Z)
[2] Distance – distance from bottom of site/subsite to egg mass
[3] Max. Water Depth – total depth at egg mass location
[4] Egg Mass Orientation – (1) upstream, (2) downstream, (3) shore side, (4) stream side, (5) on top of substrate, (6) underneath substrate
[5] Flow Orientation – (1) into flow, (2) sheltered from flow, (3) along side (4) eddy current, (5) over top, (6) no flow
[6] Velocity at Egg Mass – flow in water column next to mass
[7] Egg Mass Attachment Substrate – (1) sand, (2) gravel/pebble (3) cobble, (4) boulder, (5) bedrock, (6) woody debris, (7) detached (8) other
[8] % Silt on Egg Mass – (1) none, (2) < 25%, (3) 25 – 50%, (4) 51 – 75%, (5) > 75%
[9] Gosner Stage (e.g., GS15)

Fish Present: (Yes) No Type: (Salmonid) RBT Centrarchid (Cyprinid) Other: ____
Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____
Comments:
– song sparrow nest

QA/QC (initials): ________ Date: ________

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

Date: mm 7 dd 16 yy 21 Site #: 246R Subsite #: — River Name/Location: SF American River d/s of ALDER CREEK Observers: KMW

Survey Method: tandem separate Start Time: 0900 End Time: 0930 Actual VES Time: 25 min. Start Air Temp: 26.5 End Air Temp: 26.5

Water Temp: (edgewater) 23 (main channel) 21.5 (pool) — Flow: 42 cfs Subsite Length(m): — Search Area Width(m): — Total Search Area (m^2): —

Weather: *Sky*: Overcast Partly Overcast Clear *Wind:* Inclement Fair Ideal Site Visit: 1 2 3 4 5 6 7 8

No. of Frogs	Distance[1] or UTM	Sex (M/F)	Age[2] (J, A)	SUL (mm)	Weight (g)	Condition[3]	Activity[4]	Photo #	Comments
0	No FYLF obs.								

[1] Distance – distance from bottom of site/subsite to frogs or use UTM

[2] Age – J = Juvenile (≤ 39 mm), A = Adult (≥ 40 mm), snout-urostyle length

[3] Condition – gravid, spent, healthy

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

Fish Present Yes No Type: Salmonid Centrarchid Cyprinid Other: _____

Herpetofauna & Life Stage tree frog ____ bullfrog ____ western pond turtle ____ garter snake: T. couchii ____ T. elegans ____ T. sirtalis ____ T. atratus ____ Unk ____

Comments: KMW photo-butt → u/s

QA/QC (initials): _____ Date: _____