



Scoring Matrix for Ranked Preliminary List of Viable Actions

Reference Number	Description of Action	Deal Killer (No/ Maybe)	Estimated HET Contribution	Reference for Estimated HET Contribution	EVALUATION CRITERIA																	Summary	
					(a) Feasibility Score	(b) Scale Score	(c) Sustainability Score	(d) Cost Effective Score	(e) Minimal Intervention Score	(f) Separation-Genetic Score	(g) Separation-Catastrophe Score	(h) Time to Implement Score	(i) Local/Political Support Score	(j) VSP/ESA Consistency Score	(k) Balance of Benefits Score	(l) Resource Consistency Score	(m) Available Stocks Score	(n) Action Taken by Others Score	(o) Other FR Species Score	(p) Adverse Effects-spp Score	(q) Adverse Effects-cult. Score	Total Score	Norm. Total (100)
B-2	Phase 2 of the Battle Creek Restoration project.	Maybe	1,250-2,500	Kier & Associates 1999	5	5	4	4	4	5	4	4	4	5	5	4	4	2	4	5	5	73	100.00
NS-64, NS-65, NS-84b, NS-83, NS-89	Adult & juvenile passage at Daguerre Point Dam, Yuba River Narrows spawning habitat w/ segregation weir, backwater, side-channel, and riparian/floodplain habitat, Deer Creek Habitat Expansion Project in the	Maybe	≥2,000	Questionnaire	5	5	4	4	4	5	5	3	3	5	4	4	4	4	3	5	5	72	98.63
NS-5, NS-1, NS-76, NS-77, NS-3, NS-10	Paynes Crossing, supplement flow, Edwards Dam Juvenile Bypass, Valley Floor Channel Project, modify ag diversions to provide passage and reduce entrainment in Antelope Creek.	No	≥500	DFG - Historical	5	4	4	4	4	4	2	3	5	4	5	5	4	4	4	5	4	70	95.89
NS-84 b	Rehabilitate Yuba River Narrows spawning habitat with segregation weir in the lower Yuba River.	Maybe	≥2,000	Questionnaire	5	4	3	4	3	5	5	4	3	4	4	4	4	4	3	5	5	69	94.52
NS-14	Iron Canyon Fish Ladder Rehabilitation Project in Big Chico Creek.	No	1,000	DFG - Historical	5	4	4	5	4	4	2	5	5	3	4	5	4	2	2	5	5	68	93.15
NWC-6, NWC-25	Clear Creek gravel supplementation, processing tailings and restoring floodplain habitat.	Maybe	5,264	Questionnaire	5	4	3	4	2	4	5	4	4	4	4	5	4	3	3	4	5	67	91.78
NS-67c	Upper Yuba River - Habitat Restoration (w/out passage above other dams).	Maybe	500 (Middle Yuba)	UYRSP Team 2006	5	3	4	3	4	4	5	2	3	4	5	3	4	3	2	5	5	64	87.67
NS-55	Develop dedicated instream water (Orange Cove water right purchase) in Mill Creek; lower Mill Creek Watershed Restoration Project.	No	1,900	Questionnaire	5	3	3	3	4	3	1	4	4	3	4	4	5	3	4	4	5	62	84.93
NS-35, NS-37a, NS-37b, NS-44	Supplement flows, construct fish ladders at Cone-Kimball and Stanford-Vina Diversions, Floodplain Project in lower Deer Creek.	No	1,000	DFG - Historical and GRANDTAB	5	3	4	3	4	3	1	3	4	3	4	4	5	3	4	4	5	62	84.93
SBW-19	Segregation weir in the Sacramento River at the Anderson-Cottonwood Irrigation District (ACID) Dam.	Maybe	7,500	Cramer Fish Sciences	5	3	3	4	3	5	4	3	2	3	4	4	4	5	1	4	5	62	84.93
NS-90	Trap-and-haul project on the North Fork Feather River.	Maybe	500-2,500	Payne & Associates 2004 (FERC)	3	4	2	1	1	5	5	2	2	4	5	3	4	5	1	4	5	56	76.71

Habitat Expansion Agreement for Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead



Reference Number	Description of Action	Deal Killer (No/Maybe)	Estimated HET Contribution	Reference for Estimated HET Contribution	EVALUATION CRITERIA																	Summary	
					(a) Feasibility Score	(b) Scale Score	(c) Sustainability Score	(d) Cost Effective Score	(e) Minimal Intervention Score	(f) Separation-Genetic Score	(g) Separation-Catastrophe Score	(h) Time to Implement Score	(i) Local/Political Support Score	(j) VSP/ESA Consistency Score	(k) Balance of Benefits Score	(l) Resource Consistency Score	(m) Available Stocks Score	(n) Action Taken by Others Score	(o) Other FR Species Score	(p) Adverse Effects-spp Score	(q) Adverse Effects-cult. Score	Total Score	Norm. Total (100)
NS-94 a	Trap-and-haul program around Englebright Dam for the North Yuba River above New Bullards Bar Reservoir.	Maybe	Unknown		2	4	2	1	1	5	5	2	3	4	5	3	4	4	1	4	5	55	75.34
NS-91	Trap-and-haul project on the Middle Fork Feather River.	Maybe	natural barrier; unknown	DWR 2007 (FERC Report)	2	3	2	1	1	5	5	2	2	4	5	3	4	5	1	4	5	54	73.97
NS-94 c	Trap-and-haul program around Englebright Dam for the Middle Yuba River in combination with increased	Maybe	≥500	UYRSP Team 2006	2	3	2	1	1	5	5	2	3	4	5	3	4	4	1	4	5	54	73.97
B-15	Trap-and-haul program on the Sacramento River at Shasta Dam.	Maybe	Unknown		2	4	2	1	1	5	5	2	3	4	5	3	4	2	1	5	4	53	72.60
NWC-10	Trap-and-haul program in Clear Creek at Whiskeytown Dam.	Maybe	Unknown		2	2	2	1	1	5	5	2	2	4	5	3	4	5	1	4	4	52	71.23
NS-94 b	Trap-and-haul program around Englebright Dam for the North Yuba River below	Maybe	Unknown		2	2	2	1	1	5	5	2	3	3	5	3	4	4	1	4	5	52	71.23
NS-93	Trap-and-haul program on the Middle Fork (and possibly North Fork) of the American River.	Maybe	Unknown		2	4	2	1	1	5	5	2	3	4	5	3	1	2	1	4	5	50	68.49

HEA Evaluation Criteria Scoring Rationale

Section 4.1.1 of the HEA identifies that “the Licensees shall use the...non-exclusive and non-prioritized Evaluation Criteria to screen potential habitat expansion action(s) and develop a preliminary list of viable actions.” To assist the HEA Steering Committee in developing a Preliminary List of Viable Actions, scores were applied to the actions in the Short List of Potential Actions to develop a Ranked Preliminary List of Viable Actions. A scale of 1 to 5 was used to score how each action met each of the 17 HEA Evaluation Criteria. No zero values were used in this scoring process. If an action fully met a criterion, it was given a score of 5. If an action failed to meet a criterion, it was given a score of 1. The intermediate degree to which actions did or did not meet a criterion determined a 2, 3, or 4 value.

- (a) Feasibility – The primary components of this criterion are technical feasibility, support by accepted science, and proven methodology (i.e., not experimental). If an action met the three primary components of criterion (a), it was given a score of 5; if one or two of the components were not met, the action scored a 3; if none of the three components was met, the action scored a 1.
- (b) Scale – The primary components of this criterion are the estimated contribution to the Habitat Expansion threshold (HET), representing amount of habitat gain; benefits provided to the three habitat types identified in the goal of the HEA (i.e., spawning, rearing, and adult holding habitat); and the type of habitat expansion (i.e., increase in habitat versus enhancement of existing habitat). Actions resulting in a large gain of potential spawners, an increase in habitat, and benefits to all three habitat types received a 5; actions resulting in a moderate gain of potential spawners and addressing at least one habitat type either through increased or enhanced habitat received a 3; actions with a low gain of potential spawners and poor habitat quality received a 1.
- (c) Sustainability – The lifespan and the degree to which a project was self-sustaining (i.e., requiring a minimum amount of maintenance) are the primary components of this criterion. Actions that provided a solution with a long lifespan and minimal maintenance throughout the lifespan of the action received a 5; actions that provided limited-term solutions, required annual maintenance, and/or relied on long-term agreements received a 3; actions with a short lifespan and requiring a high degree of maintenance received a 1.
- (d) Cost Effective – The estimated net increase in the population related to the total cost of the action and annual operations and maintenance (O&M) costs are the primary components of this criterion. Actions estimated to have low capital and O&M costs along with a moderate to high contribution to the HET received a 5; actions with moderate capital and/or O&M costs and with a low to moderate contribution to the HET received a 3; actions with high capital and high O&M costs that outweigh the potential contribution received a 1.

- (e) Minimal Intervention – Actions were scored based on the level of human intervention required for fish to reach habitat during the lifespan of the action. Self-sustaining actions that required no maintenance received a 5; actions that required minimal to moderate annual O&M and no handling of fish received a 3; actions that required intensive handling of fish along with high O&M received a 1.
- (f) Separation (Genetic) – The actions were scored based on the degree to which they would provide for the spatial segregation of fall-run and spring-run Chinook salmon. Actions that would provide spatial separation between fall-run and spring-run either by volitional passage into the upper watershed or by a physical barrier received a 5; actions that would promote spatial separation by addressing spring-run life history strategies (e.g., springtime flows) received a 3; actions that would not provide or promote spatial separation received a 1.
- (g) Separation (Catastrophe) – The actions were scored based on the degree to which they would provide for protection against catastrophic events (e.g., volcanic eruption or wildfire) potentially impacting existing independent, self-sustaining spring-run populations in Mill, Deer, and Butte Creeks. If an action is within a watershed that is outside the predicted range of large-scale catastrophic events (e.g., eruption of Mt. Lassen or Mt. Shasta) it received a 5; if an action is within a watershed that is in the range of a smaller-scale catastrophic event (e.g., wildfire) it received a 3; if an action is within a watershed supporting an independent, self-sustaining population (i.e., Mill, Deer, or Butte Creek) it received a 1.
- (h) Time to Implement – If the action could begin implementation (i.e., receive permits and break ground) within approximately 5 years, it received a 5; if the action could begin implementation within approximately 5 to 10 years, it received a 3; if an action would likely take more than 10 years to begin implementation, it received a 1.
- (i) Local/Political Support – If support for an action was anticipated from all HEA signatories and local stakeholders, it received a 5; if the action had some support, but also some known opposition from either HEA signatories or local stakeholders, it received a 3; if an action had substantial opposition and little or no support from HEA signatories or local stakeholders, it received a 1.
- (j) VSP/ESA Consistency – The actions were scored based on the degree to which they were consistent with the VSP (viable salmonid populations) concept. Because there are four components to the VSP concept (i.e., abundance, productivity, biological diversity, and spatial structure), actions anticipated to contribute to all four components were given a score of 5; contribution to three components was given a score of 4; contribution to two components was given a score of 3; and contribution to one component was given a score of 2. If an action was not anticipated to contribute to any of the VSP components, it was given a score of 1.
- (k) Balance of Benefits – If an action was anticipated to have equal benefits to both spring-run Chinook and steelhead, it received a score of 5; actions with moderately more benefits to spring-run than steelhead received a score of 3; actions

specifically targeting spring-run and providing no benefit to steelhead received a score of 1.

- (l) Resource Consistency – There are five primary components to this criterion: water supply, public safety, flood control, recreation, and power production. Actions that would not negatively affect any of these components received a score of 5. For each component the action could adversely affect, the score was reduced by 1.
- (m) Available Stocks – If an action would occur in a watershed with an independent, self-sustaining population it received a 5; actions in watersheds with extant, remnant populations received a 4; actions in watersheds where a population could be re-established via straying from a nearby watershed received a 3; actions in watersheds where a population could be re-established via straying from more distant streams, increasing time to realize benefits, received a 2; actions in watersheds where the population would need to be re-established by inter-basin transfer of fish received a 1.
- (n) Action Taken by Others – Actions that were not likely to be taken by others within the foreseeable future (e.g., approximately 5 years) received a 5; actions with potential to be taken by others within the foreseeable future received a 3; actions likely to be taken by others within the foreseeable future received a 1.
- (o) Other Feather River Species – Actions that would provide identifiable benefits to the entire community of fishes native to the Feather River received a 5; actions that would provide benefits to some of the native fishes received a 3; those that would provide benefits to only spring-run Chinook and steelhead received a 1.
- (p) Adverse Effects (Listed Species) – If an action was not expected to adversely affect listed species or their Critical Habitat, it received a 5. If an action could result in minimal impacts that could be mitigated, it received a 3. If an action could cause impacts that could not be mitigated, it received a 1.
- (q) Adverse Effects (Cultural) – If an action was not expected to adversely affect historic or cultural resources, it received a 5. If an action could result in minimal impacts that could be mitigated, it received a 3. If an action could cause impacts that could not be mitigated, it received a 1.