

2 Description of Proposed Action and Alternatives, Revised

This chapter describes the specific elements of the new alternative (Alternative 3). It includes revisions to the project description; modifications to the location, timing, and type of activities; and changes in certain design elements. All revised figures are provided at the end of the chapter.

Section 2.3. Development of Alternatives

Page 2-2

The action alternatives analyzed in the EA/DEIR specified that material excavated from Riverine Rehabilitation areas would be placed on upslope areas within the project boundary. Public comments and information from Reclamation's Value Engineering Study resulted in development of Alternative 3. This alternative was developed in part to take advantage of the excavated material and adjacent dredge tailing deposits as a potential source of coarse sediment (gravel generally 3/8 inch to 6 inches in diameter) that could be incorporated into other channel rehabilitation projects along the Trinity River.

Under Alternative 3, excavated materials would be processed on site and transported off site over a 5-year period. To comply with the Surface Mining and Reclamation Act (SMARA), construction activities associated with "fine tuning" the constructed alluvial features would occur over this 5-year period in response to changes to the channel resulting from various flows. For example, flows in the Trinity River and/or Weaver Creek could result in changes to alluvial features associated with the Weaver Creek delta that may need to be modified to meet TRRP objectives. The lead agencies also identified the opportunity to dispose of excavated material on the left bank of the Trinity River.

Section 2.4. Project Setting

Page 2-3

The development of Alternative 3 required expansion of the site boundary to accommodate an alternative access route to the activity areas on the downstream (west side) of the project site. Revised Figure 2.1b illustrates the changes in the site boundary under Alternative 3. This figure also shows the location of the boundary with respect to the Caltrans right-of-way (ROW) for State Route 299 (SR 299).

Section 2.5. Description of Project Site

Page 2-4

Alternative 3 adds three activity areas within the project boundary. An additional upland area (U-4) has been added in the general vicinity of Indian Creek (Revised Figure 2-1a). This area was added to reduce offsite transport of excavated materials. The remaining two areas are characterized as dredge tailing deposits (T-1 and T-2) on Revised Figure 2.1b. Areas T-1 and T-2 are incorporated into Alternative 3 as potential sources of alluvial material. This alternative also includes processing and transport of alluvial materials to off-site locations. After the EA/DEIR was issued, the TRRP identified an existing access

road adjacent to Weaver Creek that provides a direct connection to SR 299. This road segment is shown on Revised Figure 2.1b. This figure also identifies an alternative access route across Weaver Creek (X-3) that is incorporated into Alternative 3. Table 2-1 has been revised to include the new activity areas.

REVISED TABLE 2-1.
INDIAN CREEK ACTIVITY AREAS

| ACTIVITY AREA | ACTIVITY AREA SIZE (ACRES) ^A | TREATMENT AREA (ACRES) ^A | RIVER RIGHT/LEFT | GEOMORPHIC FEATURES |
|----------------------|---|-------------------------------------|------------------|--|
| R-1 | <u>12.47</u> | <u>5.42</u> | Right | Functional riparian berm, minimal floodplain |
| R-2 | 2.12 | 1.40 | Left | Minimal floodplain |
| R-3 | 6.12 | <u>2.55</u> | Left | Indian Creek delta, minimal floodplain |
| R-4 | 2.55 | 0.84 | Left | Functional riparian berm |
| R-5 | 2.34 | 1.78 | Left | Island, elevated point bar |
| R-6 | 1.51 | 1.21 | Left | Floodplain |
| R-7 | 1.54 | 0.50 | Left | Minimal floodplain |
| R-8 | 12.09 | 11.96 | Right | Functional riparian berm, side channel, floodplain |
| R-9 | 2.17 | 2.11 | Right | Weaver Creek delta |
| R-10 | 0.10 | 0.10 | Right | Wetland, tailings deposit |
| <u>T-1</u> | <u>1.13</u> | <u>1.13</u> | Right | <u>Dredge Tailing Deposit</u> |
| <u>T-2</u> | <u>3.90</u> | <u>3.90</u> | Right | <u>Dredge Tailing Deposit</u> |
| U-1 | 0.77 | 0.77 | Right | Terrace, floodplain |
| U-2 | 1.90 | 1.90 | Right | Terrace, floodplain |
| U-3 | 5.23 | 5.23 | Right | Terrace, upland hillslope |
| <u>U-4</u> | <u>0.81</u> | <u>0.81</u> | <u>Left</u> | <u>Terrace, upland hillslope</u> |
| X-1, X-2, <u>X-3</u> | <u>0.19</u> | 0.19 | Right/Left | Trinity River, Weaver Creek crossings |
| Existing Roads | 16.96 | 16.96 | Right | N/A |
| New Roads | <u>12.62</u> | <u>12.62</u> | Right | N/A |
| C-1 | 0.44 | 0.44 | Right | N/A |
| C-2 | 1.00 | 1.00 | Left | N/A |

**REVISED TABLE 2-1.
INDIAN CREEK ACTIVITY AREAS**

| ACTIVITY AREA | ACTIVITY AREA SIZE (ACRES) ^A | TREATMENT AREA (ACRES) ^A | RIVER RIGHT/LEFT | GEOMORPHIC FEATURES |
|---------------|---|-------------------------------------|------------------|---------------------|
| C-3 | 0.54 | 0.54 | Left | N/A |
| C-4 | 0.22 | 0.22 | Left | N/A |
| C-5 | 0.52 | 0.52 | Left | N/A |

^a Area calculated from project GIS

SECTION 2.5.2. UPLAND AREAS U

Page 2-9

An additional Rehabilitation Area (U-4) has been added, as shown on Revised Figure 2.1a and in Revised Table 2-1. This area would be available to place excavated material on the left side of the Trinity River in the general vicinity of the SR 299 crossing of Indian Creek.

SECTION 2.5.4. DREDGE TAILINGS – T

Page 2-10

Dredge tailings were distributed adjacent to the Trinity River in conjunction with bucket-line dredge operations that occurred prior to construction of the Trinity River Division (TRD) of the Central Valley Project (CVP). These dredge operations resulted in the excavation and eventual backfill of alluvial reaches of the Trinity River from about 1890 to the 1940s. The tailings are characterized by layers of well-sorted rocks (cobble to boulder size) intermixed with lenses of silt and sand. These deposits provide a source of alluvial material for a variety of applications throughout Trinity County. Fine-textured sediments (silt and sand) may be used in concrete or for landscaping purposes. Gravel and cobble-sized material (3/8 inch to 6 inches in diameter) may be used in-river to provide material for fish habitat and spawning. Large rocks may be used for landscaping.

Section 2.6. Description of Alternatives

Page 2-10

This section describes Alternative 3, including modifications to the location, timing, and type of activities described in the EA/DEIR.

Page 2-11

Table 2-2 has been revised to include new activities incorporated into Alternative 3.

REVISED TABLE 2-2
INDIAN CREEK REHABILITATION ACTIVITIES

| LABEL | ACTIVITY TYPE |
|--------------|---|
| A | Recontouring |
| B | Berm removal |
| C | Constructed floodplain (2,000 cfs) |
| D | Constructed floodplain (4,500 cfs, <u>6,000 cfs</u>) |
| E | Side channel (3,000 cfs, 1,000 cfs) |
| F | High-flow side channel (6,000 cfs) |
| G | Alcove (450 cfs, 6,000 cfs) |
| H | In-channel bar and bank excavation (450 cfs) |
| I | Delta excavation |
| J | Placement of excavated materials |
| K | Staging/use areas |
| L | Roads, existing |
| M | Roads, new |
| N | Crossings (Trinity River, Weaver Creek) |
| O | Revegetation |
| <u>P</u> | <u>Processing of alluvial material</u> |
| <u>Q</u> | <u>Off-site transport of alluvial material</u> |

cfs = cubic feet per second

Pages 2-11 to 2-12

Activities C and D (Floodplain Construction – 2,000 cfs, 4,500 cfs, 6,000 cfs)

- Floodplain activities are those that lower the floodplain or the river's edge to be in communication with the river at prescribed flows. These activities include lowering of historic floodplains (which are now terraces above the river) so that they are frequently inundated again. Vegetation will be cleared and earth excavated to meet design elevations for periodic inundation (2,000 cfs bench, 4,500 cfs bench and 1.5-year flow [approximately 6,000 cfs] bench). Floodplains will be constructed to ensure submergence by 6 to 12 inches of water at designated river flows.
- The 2,000 cfs bench will be excavated to provide 6 to 12 inches of inundation during river flows of 2,000 cfs. These treatment areas will provide important rearing and slow-water habitat during outmigration of salmonids. They will also provide low points that may allow the river to move

(meander) and thereby provide the historical habitat variability required to support rapid growth of native fishes.

- The 4,500 cfs floodplain will provide rearing and slow water habitats for juvenile salmonids during intermediate flows.
- The 1.5-year recurrence flow below Grass Valley Creek is approximately 6,000 cfs. Consequently, the 1.5-year constructed floodplain will be 6 to 12 inches deep at 6,000 cfs. Initially, these treatment areas will rely on natural recruitment of native riparian vegetation. It is anticipated that these areas may revegetate with a diverse assemblage of native vegetation, or they will be revegetated in a patchy mosaic as topographical diversity and vegetation cover develop over time. The ability to adjust floodplain topography during the 5-year construction period will allow maximum adaptive flexibility to meet project objectives.

Page 2-12

Activities E and F (Side Channels – 300 cfs, 1,000 cfs, 6,000 cfs)

- Modifications to existing topographic features (side channels) will reconnect the Trinity River with its floodplain at targeted flows. Side channels constructed for 1,000 cfs flows will provide off-channel, low-velocity habitat for a variety of aquatic organisms, including juvenile salmonids. Side channels constructed to convey flow at 6,000 cfs will provide similar benefits to aquatic organisms and will help to maintain low-water alcove habitat areas that are typically located at their downstream ends, but will be limited by the frequency and duration of these flows.
- Side channels will be constructed to leave a small berm at the upstream and downstream ends to minimize impacts to water quality during construction. These small berms will be removed by equipment at the end of construction or left in place for removal by subsequent high flows.
- A 300 cfs year-round, low flow side-channel will be constructed to provide habitat for juvenile salmonids. If constructed, this habitat will provide low-velocity rearing habitat for fry/juvenile life stages of salmonids. It will also provide a transition between other habitats that are flow dependent (e.g., floodplains).
- Side channels will be monitored during the 5-year project time frame so that timely adjustments can be made to ensure the best long-term functionality.

Page 2-14

Activities P (Processing of Alluvial Materials)

Alluvial materials will be processed on-site. Processing will consist of sorting these materials using a portable screening plant capable of sorting silt/sand, gravel/cobble, and oversize (boulders) size fractions. It is expected that the majority of on-site processing would take place in the first year of the project (summer 2007). In addition to the screening plant, mechanized equipment will be required for processing operations (e.g., front-end loaders/excavators, scrapers, and dump trucks). Grading will be required to ensure adequate space for the screening plant, collection piles, and staging areas.

Depending on the quality of the alluvial material, a wash process may be necessary. If a wash process is used, one or more settling basins will be constructed concurrently with the excavation of the 300 cfs low-flow side channel within Activity Area R-8. If additional capacity is required beyond that provided by the

side channel, the settling basins would later be reclaimed by backfilling with appropriately sized on-site alluvial materials to conform with grade requirements. These backfill materials would also assist in stabilizing any depositional material that results from processing activities.

Page 2-14

Activities Q (Off-site Transport of Select Material)

Select alluvial materials excavated from Activity Area 8 will be transported to off-site locations using common construction practices (e.g., transfer/dump trucks). All material removed from within the project boundary will be transported to an authorized location identified by the TRRP. Movement of materials off-site will be conducted within the 5-year project construction time frame.

SECTION 2.6.6. ALTERNATIVE 3

Page 2-33

Alternative 3 is similar to the Proposed Action in many respects. The following shows whether riverine rehabilitation activities would remain the same, be modified, or be excluded in the various riverine activity areas under Alternative 3:

- R-1. No change.
- R-2. No change.
- R-3. The level of activity at this area has been reduced because geomorphic changes will continue to occur at the mouth of Indian Creek regardless of the activity. Consequently, activity at R-3 is limited to berm removal on the left bank of the Trinity River downstream of Indian Creek. Berm removal would provide an opportunity for the Indian Creek delta to shift in response to changes in the flow and sediment regimes. Such shifts would result in changes to the location and type of alluvial deposits at the mouth of Indian Creek. Berm removal downstream of Indian Creek's delta would allow tributary flows to augment routing of bed load along the mainstem Trinity without requiring mechanical activities to modify the deltaic deposit at the mouth of Indian Creek. Revised Figure 2.5c illustrates berm removal at this area.
- R-4. No change.
- R-5. An interdisciplinary review of this activity area weighed the relative merits and duration of the expected final condition of this area compared to the impacts that would result from in-channel excavation. As a result, this activity area has been excluded from this alternative, and no in-channel excavation would occur.
- R-6. No change.
- R-7. No change.
- R-8. Activity in this area has been modified to include construction of a side channel that would be functional at 300 cfs (low-flow conditions). The 1,000 cfs side channel would not be constructed. A floodplain surface would be constructed to function at 6,000 cfs. A 4,500 cfs floodplain surface would not be constructed. As materials are transported off-site each year, contouring and floodplain functionality would be maintained. Revised Figure 2.5h illustrates activities upstream of the Weaver Creek delta. In addition to floodplain surfaces, this figure

illustrates the location and configuration of a 300 cfs side channel on the right side of the Trinity River.

- R-9. The level of activity in this area has been reduced because geomorphic changes will continue to occur at the mouth of Weaver Creek regardless of the activity. Under this alternative, vegetation removal would occur at this area; however, no excavation of alluvial material is proposed. As materials are transported off-site each year, contouring and floodplain functionality would be maintained. Revised Figure 2.5i illustrates the modified activities at this area.
- R-10. No Change.

This alternative includes three new activity areas, and modifies activity areas required for processing, transport, and disposal of excavated materials. These activity areas include:

- T-1. This area encompasses dredge tailing deposits located between R-8 and U-3. These deposits could provide a source of alluvial material suitable for gravel enhancement projects proposed for the Trinity River in conjunction with the TRRP. Material excavated from this activity area would be processed and transported within 5 years to suitable off-site locations for use in future riverine rehabilitation projects. Figure 2.6c illustrates the location and maximum extent of excavation proposed for activity areas T1 and T2.
- T-2. This area encompasses dredge tailing deposits located adjacent to R-10 and R-8. These deposits could provide a source of alluvial material suitable for gravel enhancement projects proposed for the Trinity River in conjunction with the TRRP. Material excavated from this activity area would be processed and transported within 5 years to suitable off-site locations for use in future riverine rehabilitation projects.
- Access Road – Weaver Creek. An existing road parallel to Weaver Creek east of SR 299 would be reconstructed to provide access to the project site and egress for subsequent removal of alluvial materials to off-site locations. The existing road grade would be enhanced by minimal grading, removal of invasive vegetation (Himalayan blackberry), and placement of aggregate surfacing as required. The access would be used and maintained during the 5-year life of the project.
- X-3 – Alternative Weaver Creek Crossing. Vehicular traffic will require a crossing of Weaver Creek in order to access activity areas R-8, R-9, R-10, U-3, T-1, and T-2. The crossing will be built concurrently with the reconstruction of the access road. Figure 2.9 illustrates several options that could be used for this crossing.
- U-3. The size of this activity area has been slightly reduced under Alternative 3. The amount of material that may be disposed of on-site would be reduced in proportion to the amount of material that would be excavated from R-8, T-1, and T-2. Revised Figure 2.6c illustrates the overall reduction in alluvial material that could be disposed of at this location.
- U-4. This area will provide flexibility to place excavated materials within the boundary of the site above the 100-year floodplain of the Trinity River. Excavated material from activity areas on the left bank of the river could be placed at U-4 to reduce off-site transport costs.

Activity P, processing of alluvial materials, would occur in conjunction with the excavation activities proposed at R-8, T-1 and T-2. Construction of the 300 cfs side channel would provide the containment basin required for screening and processing of these materials. Any topographic features required to meet

water quality requirements (e.g., settling ponds) will be constructed within activity areas R-8, T-1, T-2, or U-3.

Table 2-7 summarizes the activities included in Alternative 3.

TABLE 2-7
SUMMARY OF ALTERNATIVE 3 – ACTIVITY AREAS

| ACTIVITY AREA (ACRES) | TREATMENT AREA (ACRES) ¹ | VOLUME (CUBIC YARDS) ² | POTENTIAL ACTIVITY |
|---------------------------|-------------------------------------|-----------------------------------|-----------------------------|
| <u>R-1</u> (12.47) | <u>3.0</u> | <u>15,000</u> | <u>B</u> |
| <u>R-2</u> (0.20) | <u>0.2</u> | <u>0^a</u> | <u>A, B, G</u> |
| <u>R-3</u> (2.55) | <u>0.7</u> | <u>4,000</u> | <u>B</u> |
| <u>R-4</u> (2.55) | <u>0.8</u> | <u>4,300</u> | <u>B</u> |
| <u>R-6</u> (1.51) | <u>1.5</u> | <u>0</u> | <u>Vegetation removal</u> |
| <u>R-7</u> (1.54) | <u>0.7</u> | <u>2,100</u> | <u>D</u> |
| <u>R-8</u> (12.09) | <u>11.6</u> | <u>67,000</u> | <u>D, E</u> |
| <u>R-9</u> (2.17) | <u>2.4</u> | <u>0</u> | <u>Vegetation removal</u> |
| <u>R-10</u> (0.10) | <u>0.10</u> | <u>500</u> | <u>Excavate tailings, P</u> |
| <u>T-1</u> | <u>1.13</u> | <u>11,000</u> | <u>Excavate tailings, P</u> |
| <u>T-2</u> | <u>3.90</u> | <u>37,000</u> | <u>Excavate tailings, P</u> |
| <u>Subtotal R & T</u> | <u>21.0</u> | <u>140,400</u> | |
| <u>U-1</u> (0.77) | <u>0.77</u> | <u>7,500</u> | <u>J</u> |
| <u>U-2</u> (0.19) | <u>0.19</u> | <u>7,500</u> | <u>J</u> |
| <u>U-3</u> (5.23) | <u>5.23</u> | <u>56,850</u> | <u>J</u> |
| <u>U-4</u> (0.81) | <u>0.81</u> | <u>8,300</u> | <u>J</u> |

TABLE 2-7
SUMMARY OF ALTERNATIVE 3 – ACTIVITY AREAS

| ACTIVITY AREA (ACRES) | TREATMENT AREA (ACRES) ¹ | VOLUME (CUBIC YARDS) ² | POTENTIAL ACTIVITY |
|---------------------------------|-------------------------------------|-----------------------------------|--|
| <u>X-1, X-3</u> (0.15) | <u>0.15</u> | <u>500</u> | <u>Trinity River, Weaver Creek Crossings</u> |
| <u>Subtotal U & X</u> | <u>7.15</u> | <u>80,650</u> | |
| <u>Existing Roads</u> (3.73) | <u>3.73</u> | <u>N/A</u> | <u>L</u> |
| <u>New Roads</u> (5.80) | <u>5.80</u> | <u>N/A</u> | <u>M</u> |
| <u>C-1</u> (0.44) | <u>0.44</u> | <u>N/A</u> | <u>K</u> |
| <u>C-2</u> (1.00) | <u>1.00</u> | <u>N/A</u> | <u>K</u> |
| <u>C-3</u> (0.54) | <u>0.54</u> | <u>N/A</u> | <u>K</u> |
| <u>C-4</u> (0.22) | <u>0.22</u> | <u>N/A</u> | <u>K</u> |
| <u>C-5</u> (0.52) | <u>0.52</u> | <u>N/A</u> | <u>K, R</u> |

¹Area calculated from project GIS

²Provided by TRRP

³Quantity balanced within activity area

The common activities described on page 2-14 of the EA/Draft EIR are included as part of Alternative 3. The following text supplements the Water Use section on page 2-14 of the EA/DEIR.

On-site water sources (e.g., Trinity River) will be used to process alluvial materials. Water will be used in the sorting process to ensure that the gravel/cobble size fraction is washed in accordance with TRRP specifications for spawning gravel. Water will also be used for dust abatement during ongoing processing and transport of alluvial materials.

Page 2-16

Design Elements

The following design elements apply to Alternative 3.

Hydraulics

Alternative 3 would occur in part of an area that FEMA has designated as Special Hazard Zone AE and X, as described in Section 3.4 of the EA/Draft EIR. Based on this information, Reclamation used the HEC-RAS model described in Revised Appendix G of this document to ensure that this alternative meets the following design criteria: “follow the County’s floodplain ordinance,” and “implementation of any

action alternative would not increase the flood risk for the community.” Alternative 3 addresses these criteria by removing alluvial material to off-site locations to the extent possible, thereby reducing the requirement to place material below the 100-year flood elevations in Zones AE and X.

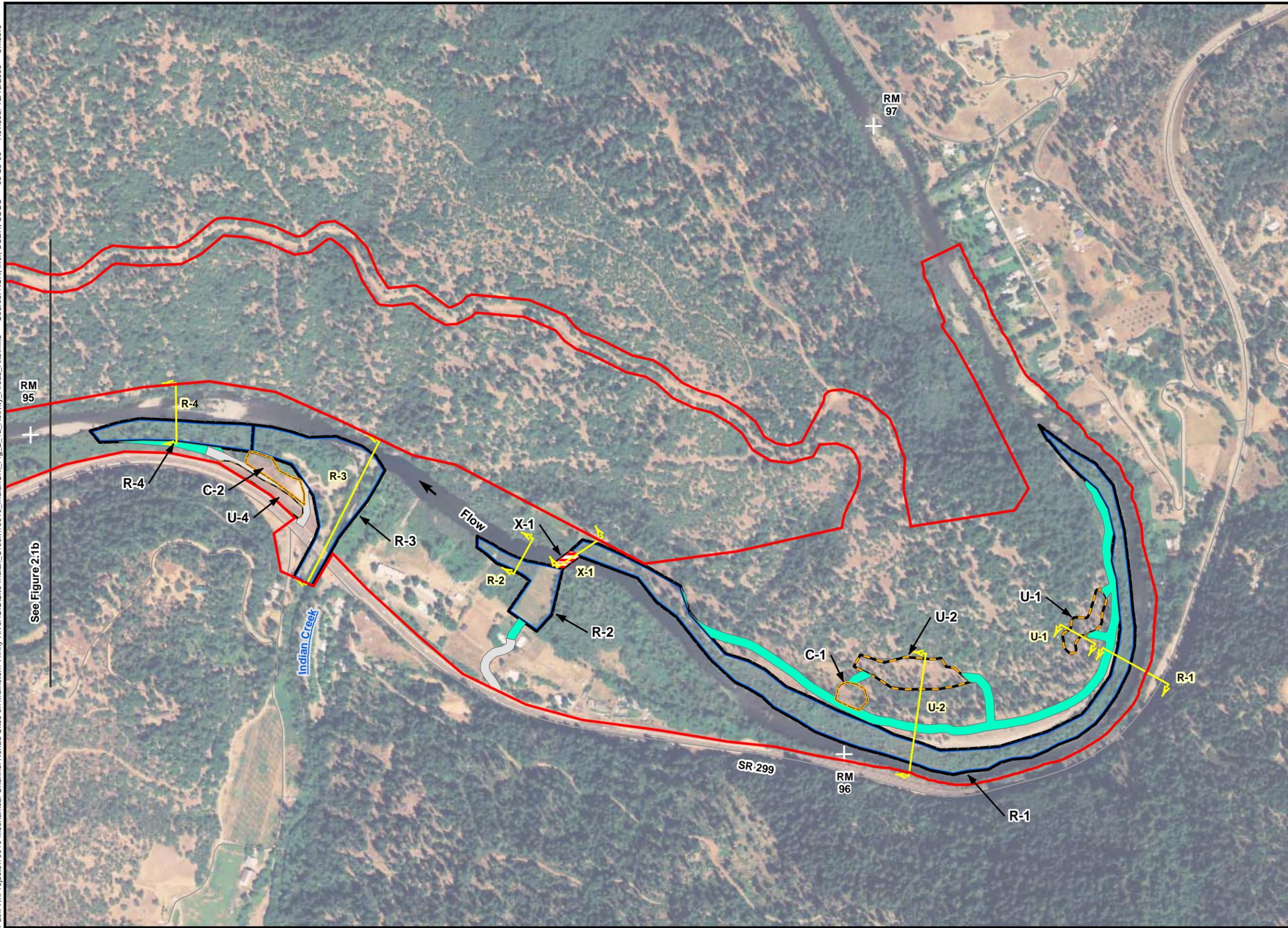
A fundamental design criterion considered in developing Alternative 3 consists of inundating the designed floodplain surface with water approximately 6 inches deep at the proper design flow. For example, the 6,000 cfs floodplain in R-8 would be inundated with 6 inches of water during Trinity River flows of 6,000 cfs. In addition, the floodplain surfaces were designed to ensure adequate sloping of the bank toward the river to ensure drainage and minimize the opportunity for stranding juvenile salmonids.

Roadway Approaches

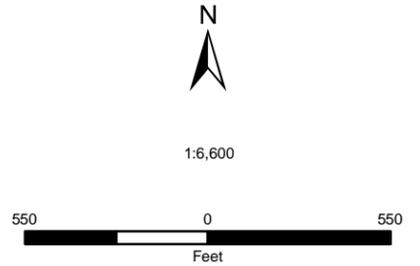
Alternative 3 would use the access road that parallels Weaver Creek east of SR 299. This access road will require reconstruction within the Caltrans right-of-way. In addition to construction activities, this alternative will require more than 8,000 truck trips to remove processed material to off-site locations. This traffic will be staged over the 5-year project duration, with up to 30 trucks per day hauling materials offsite, generally between June 1 and September 15th. Traffic control measures will be applied in accordance with requirements of the Caltrans encroachment permit.

Staging and Transport of Alluvial Materials

In addition to identified staging areas (C), activity areas R-8, R-9, T-1, T-2, and U-3 could be used as temporary staging areas prior to transport of processed material to off-site locations. These areas could also be used for temporary stockpiles of sorted material, as well as staging for trucks required for transport efforts.



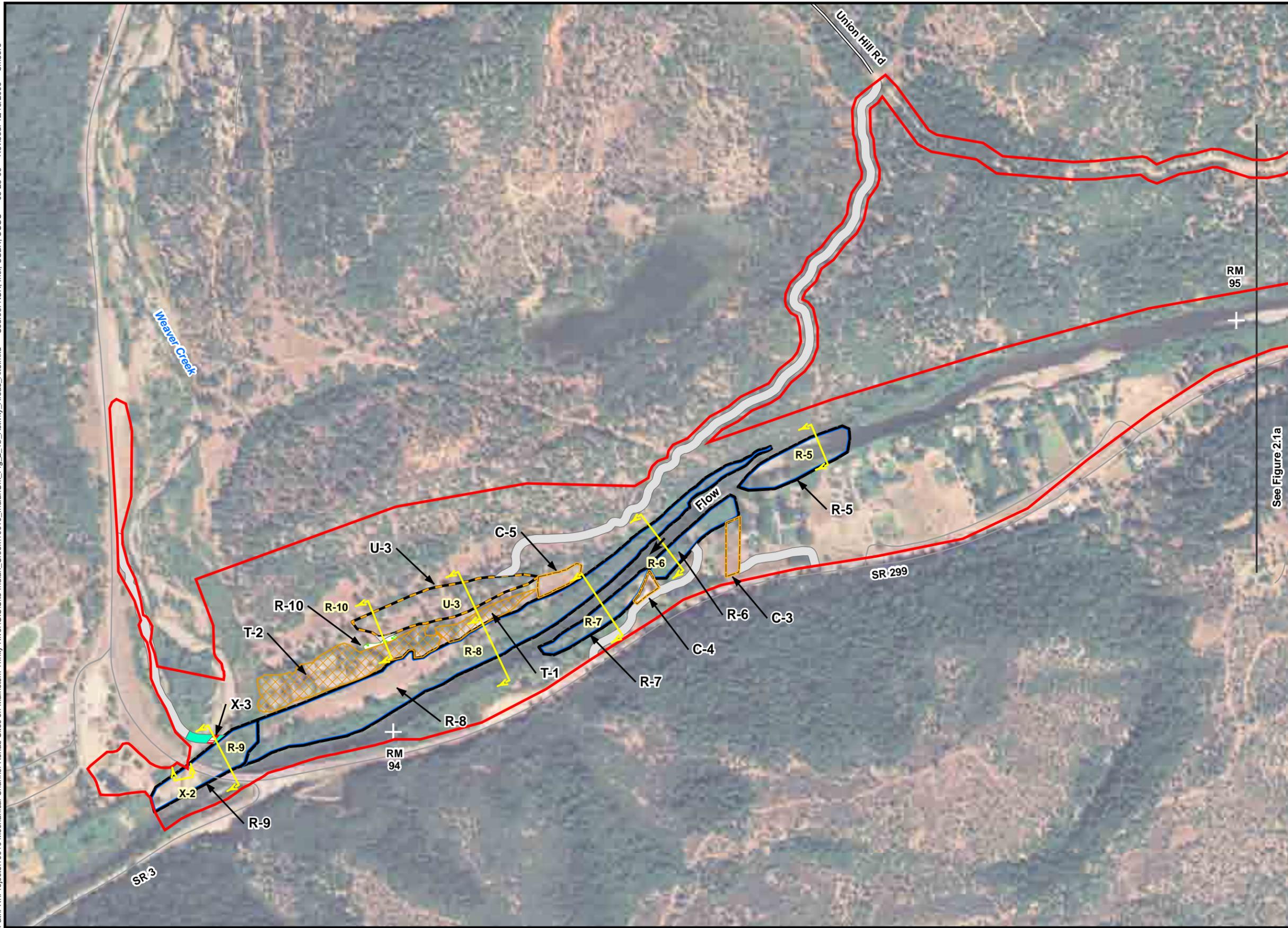
- Site Boundary (329.21 acres)
 - River Mile (RM)
 - Cross Section
 - Match Line
 - Access Road - Existing (8.76 acres)
 - Access Road - New (5.31 acres)
 - Staging (C) (2.46 acres)
 - Crossing (X) (0.19 acre)
- Rehabilitation Area**
- Upland (U) (6.66 acres)
 - Riverine (R) (43.17 acres)
 - Wetland Enhancement (R) (0.1 acre)
 - Tailings Removal and Processing (T) (4.89 acres)



Aerial photography:
July 2005

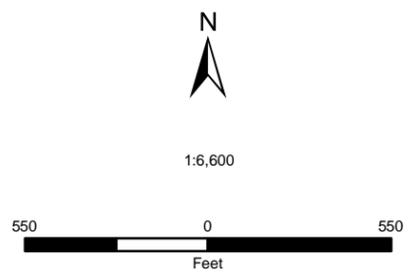
Indian Creek Rehabilitation Site: Trinity River Mile 93.7 to 96.5

Path: R:\Projects\10010 Mechanical Channel Rehab Sites on Mainstem Trinity River\GIS\Site-Indian_Creek\10010_IndianCk_Fig.2.1b_Activity_Areas_Alt3.mxd Source: NSR, Inc.; USBR; USGS 05-25-06 Revised: 12/18/2006 bmoore



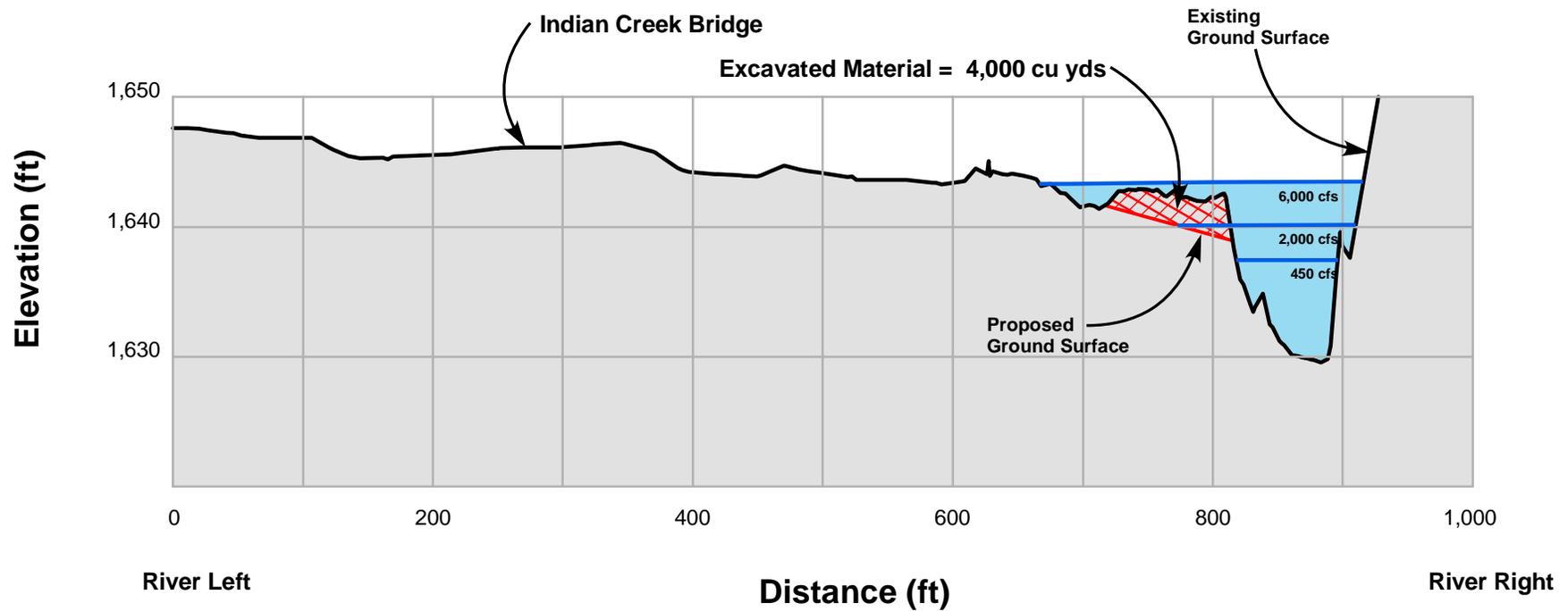
- Site Boundary (329.21 acres)
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 - Match Line
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 - Access Road - New (5.31 acres)
 - Staging (C) (2.46 acres)
 - Crossing (X) (0.19 acre)
- Rehabilitation Area**
- Upland (U) (6.66 acres)
 - Riverine (R) (43.17 acres)
 - Wetland Enhancement (R) (0.1 acre)
 - Tailings Removal and Processing (T) (4.89 acres)

See Figure 2.1a



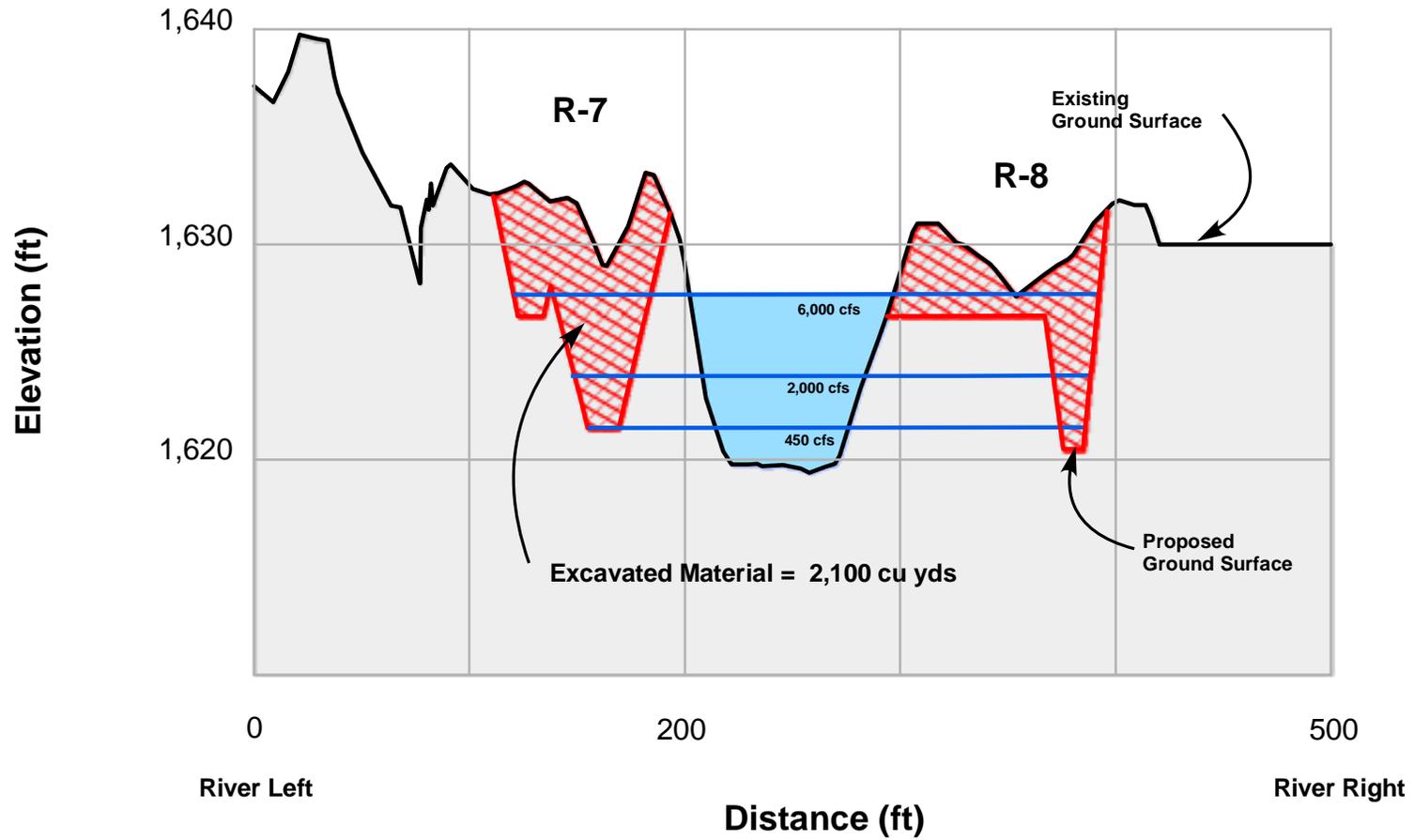
Aerial photography: July 2005

R-3 Cross Section



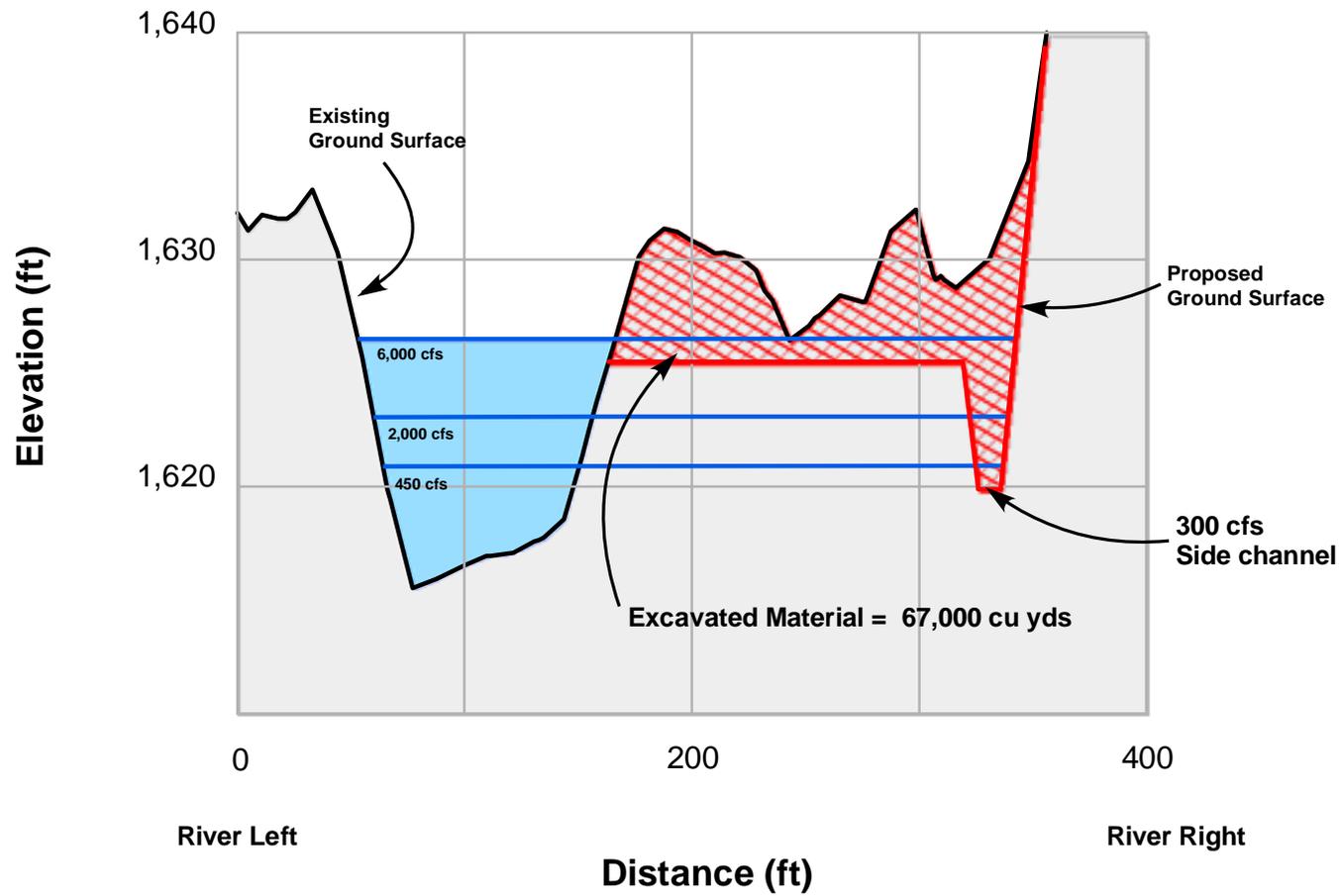
Note: Not to scale
Shown for comparative purposes

R-7 Cross Section



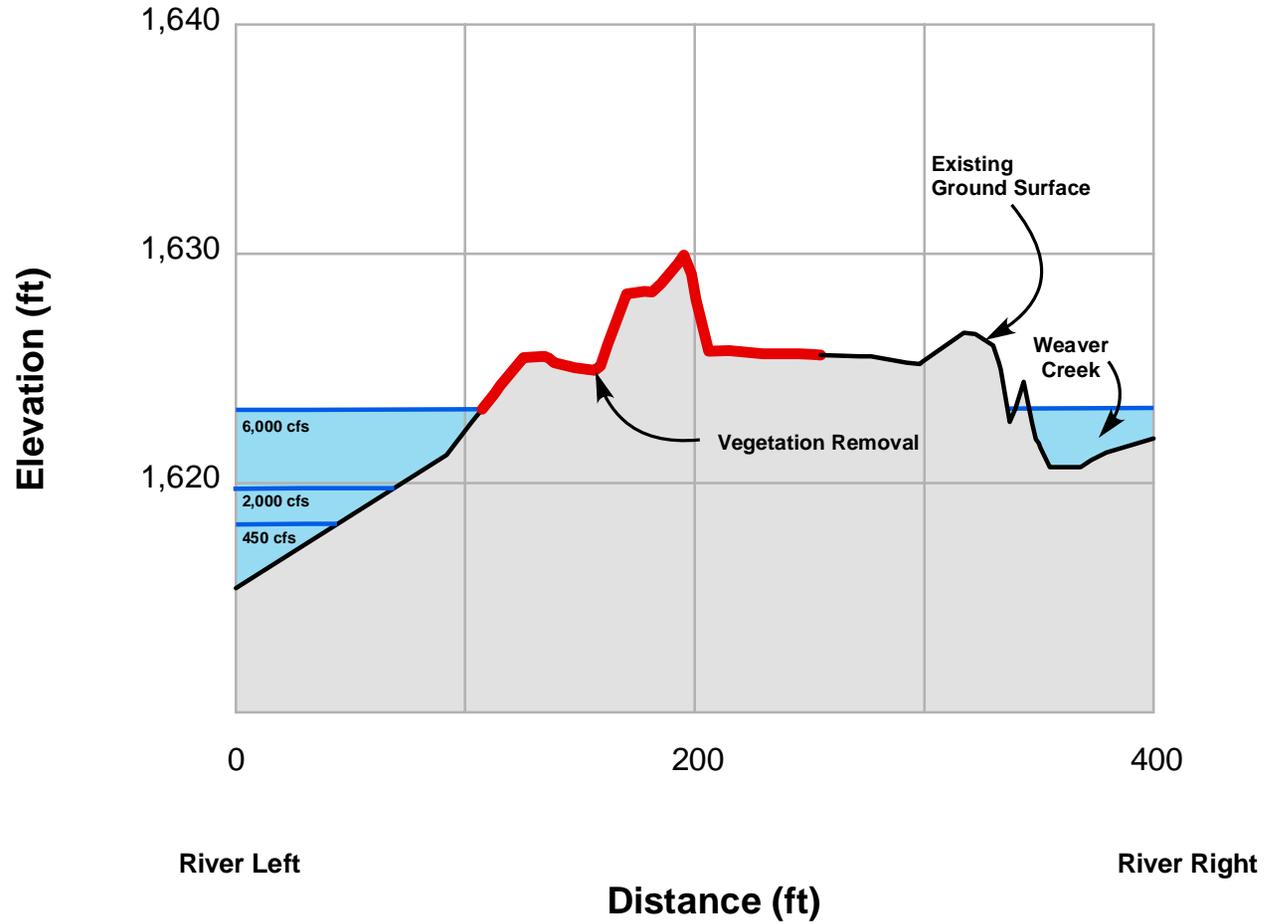
Note: Not to scale
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R-8 Cross Section



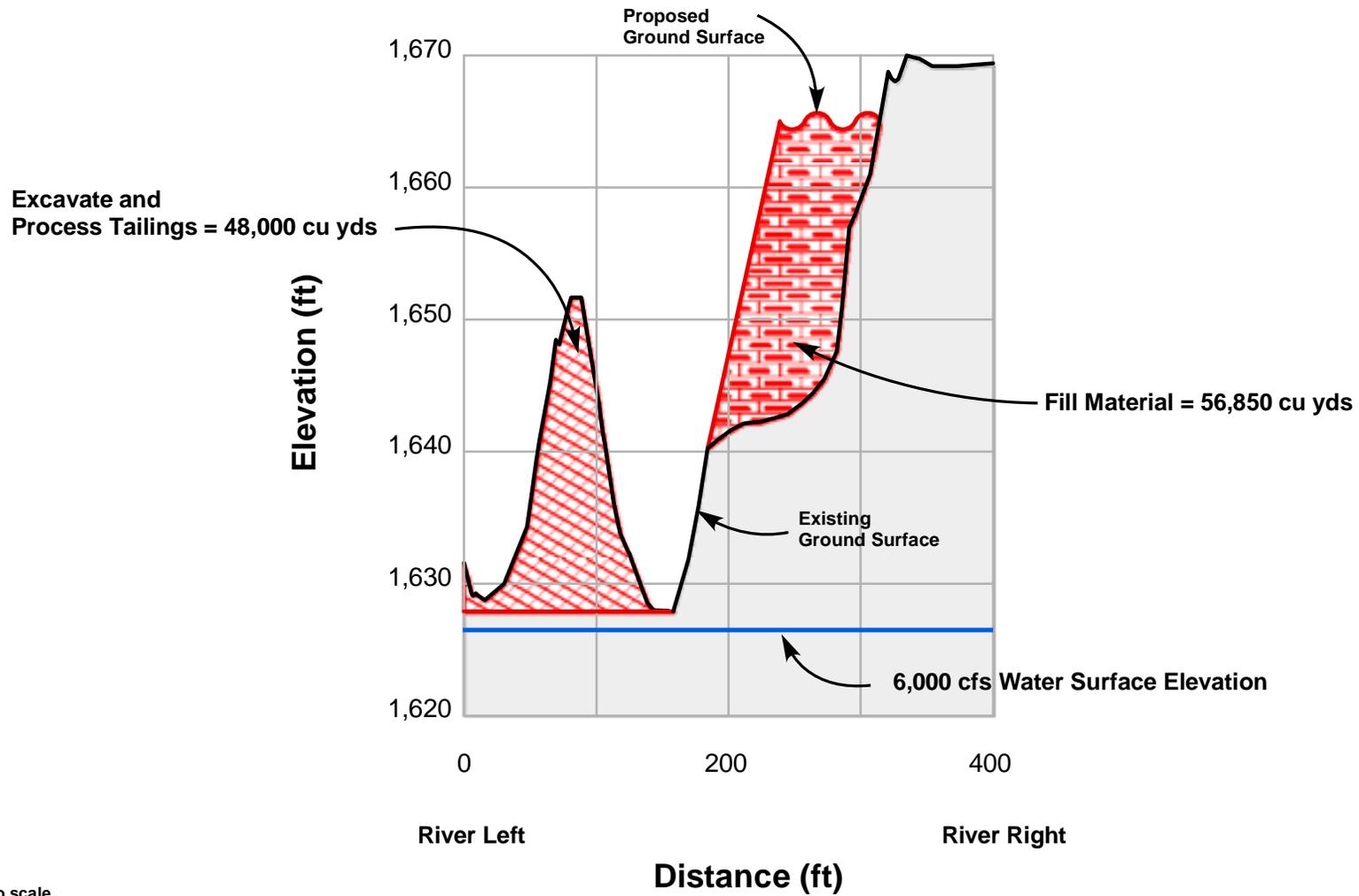
Note: Not to scale
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R-9 Cross Section



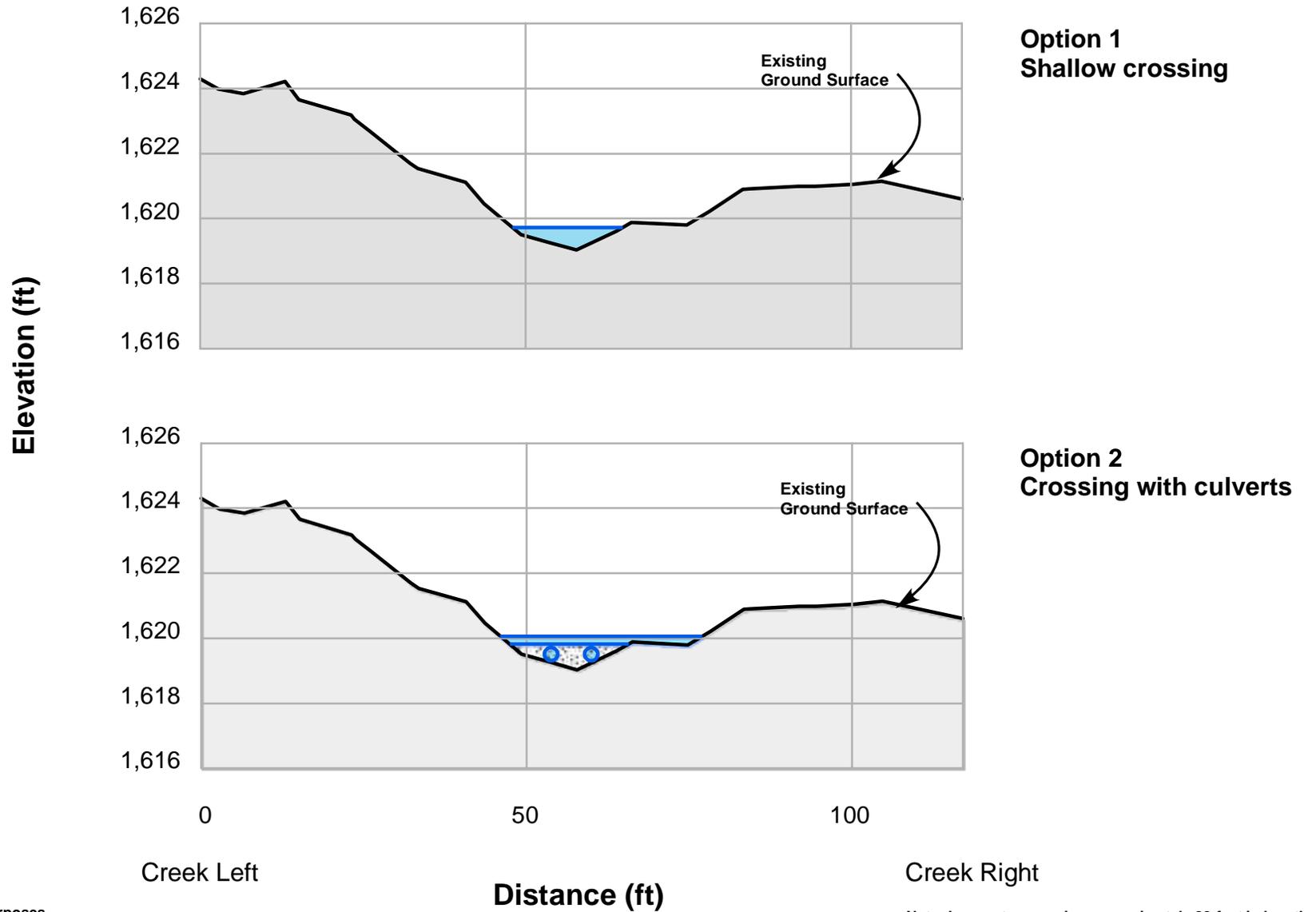
Note: Not to scale
Shown for comparative purposes

T-1, T-2 and U-3 Cross Sections



Note: Not to scale
Shown for comparative purposes

X-3 Cross Section Weaver Creek



Note: Not to scale
Shown for comparative purposes

Note: Low water crossing approximately 20 feet in length.

Figure 2.9
X-3 Cross Section Profile of Proposed Weaver Creek Crossing