

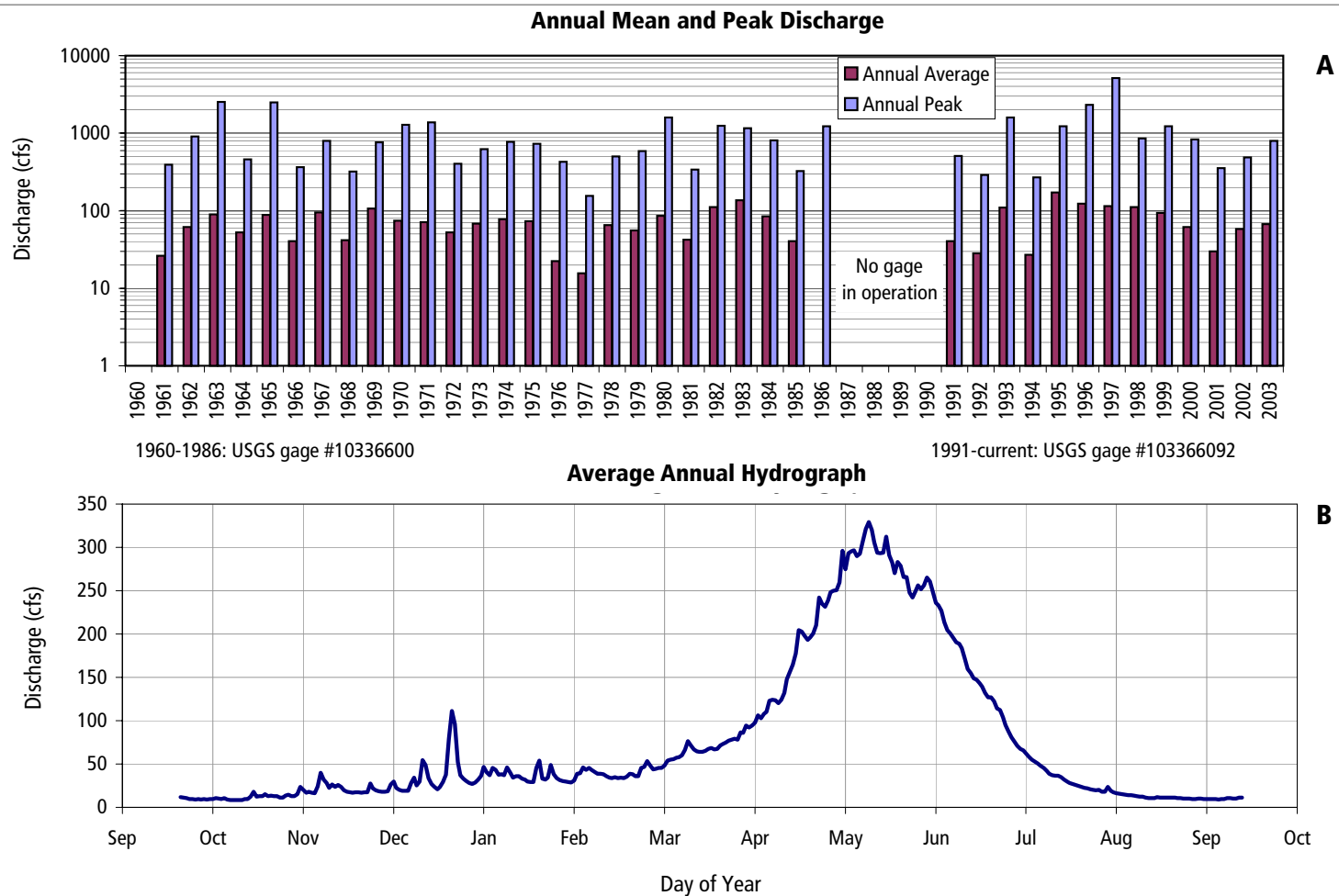
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*Figure 3a: Upper Truckee River Soils* Legend and soil descriptions found on Figure 3b.

## Soil Types

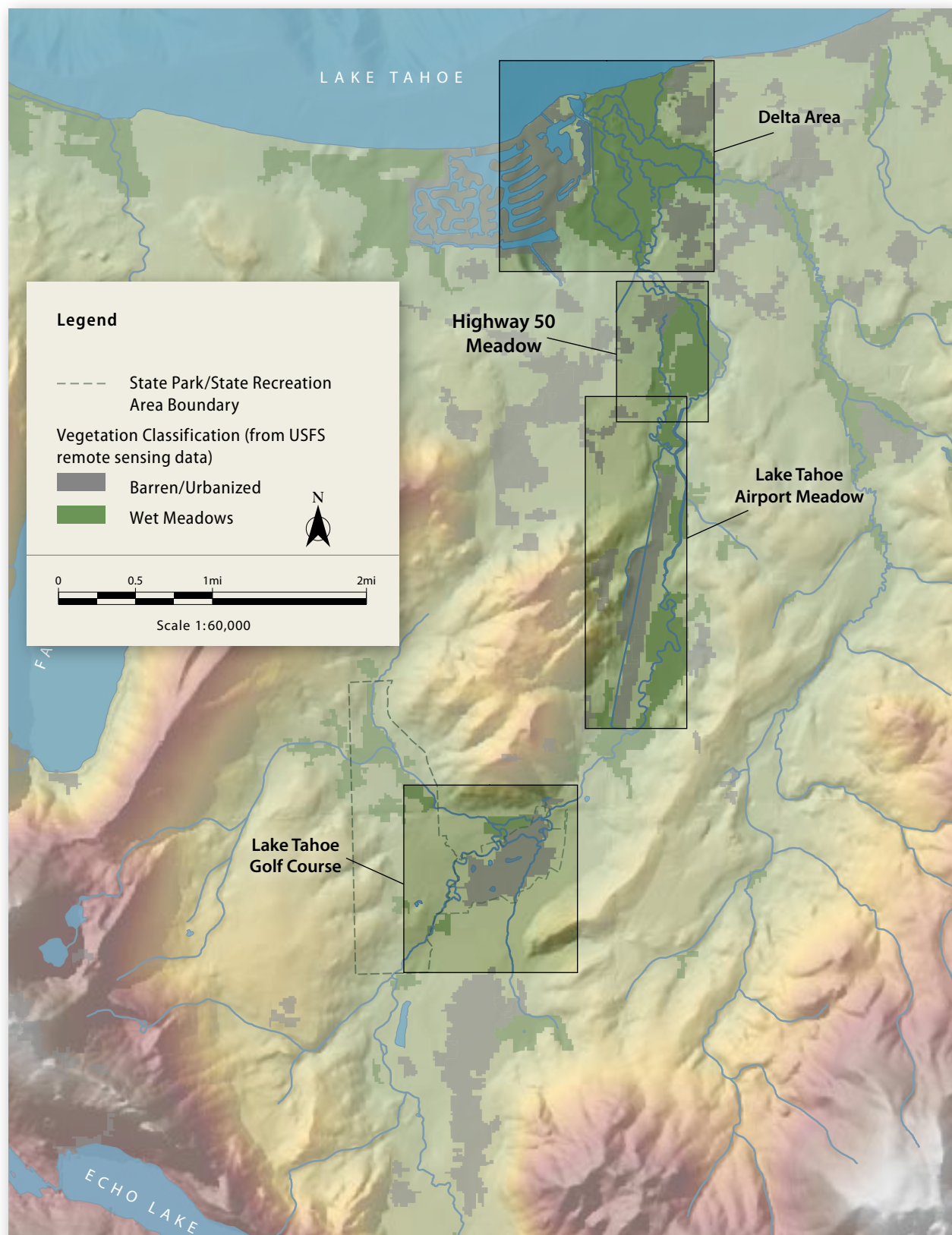
	Ca	Cagwin Series	The Cagwin series consists of gently rolling to very steep, somewhat excessively drained soils that are 20 to 40 inches deep over granitic material, or grus.
	Co	Celio Series	The Celio series consists of poorly drained soils that are 40 to 60 inches deep over a very gravelly hardpan strongly cemented with silica.
	Eb	Elmira Series	The Elmira series consists of nearly level to moderately steep, somewhat excessively drained soils that are underlain by sandy granitic alluvium or highly weathered till.
	Fd	Fill Land	Fill land is sandy material dredged from the Upper Truckee Marsh to form a pad for urban development, mainly in the Upper Truckee Marsh area.
	Ge	Gefo Series	The Gefo series consists of nearly level to moderately steep, somewhat excessively drained soils that are underlain by sandy granitic alluvium.
	Gr	Gravelly Alluvial Land	Gravelly Alluvial Land consists of small areas of recent gravelly alluvium adjacent to stream channels and in meadows.
	Ja	Jabu Series	The Jabu series consists of nearly level to moderately steep, well drained to moderately well drained soils that are about 40 inches deep over a dense fragipan.
	Lo	Loamy Alluvial Land	Loamy Alluvial Land consists of small areas of recent alluvium adjacent to stream channels and in meadows.
	Mh	Marsh	Marsh is in the Upper Truckee Marsh and in very poorly drained and in ponded meadows.
	Mk	Meeks Series	The Meeks series consists of level to very steep, somewhat excessively drained, stony soils that are 40 to 71 inches deep over a hardpan cemented with silica.
	Px	Pits and Dumps	Pits and Dumps consists of sand and gravel pits, refuse dumps, and rock quarries.
	Rx	Rock Land	Rock land is in areas of granitic, metamorphic, and volcanic rocks.
	Tc	Tallac Series	The Tallac series consists of gently sloping to steep, well drained and moderately well drained soils that are 40 to 70 inches deep over a weakly silica cemented hardpan.
	Tr	Toem Series	The Toem series consists of strongly sloping to very steep, excessively drained soils that are 8 to 20 inches deep over decomposed granitic material.





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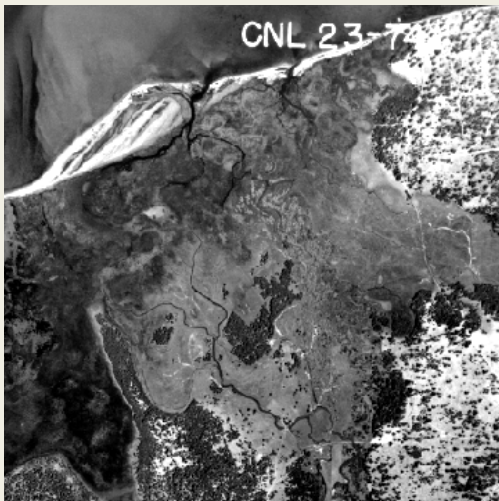
**FIGURE 3.2:** Hydrology summary for Upper Truckee River at Meyers using data from USGS gages #10336600 and #103366092. A: Annual mean discharge and annual peak discharge for years of record (1961-1986, 1991-2003). The average annual discharge was calculated to be 72 cfs. B: Average annual hydrograph based on 38 years of daily streamflow data.







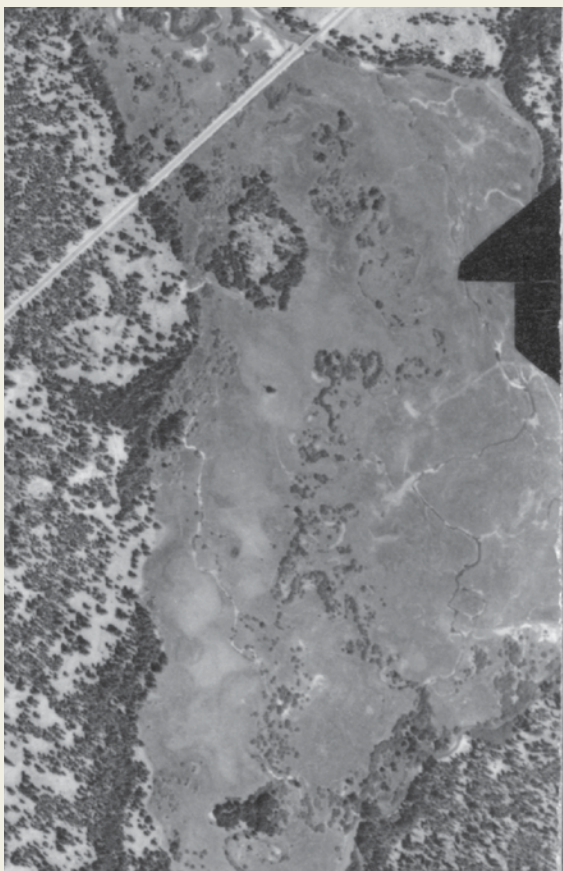
Construction of the Tahoe Keys (early 1960's)



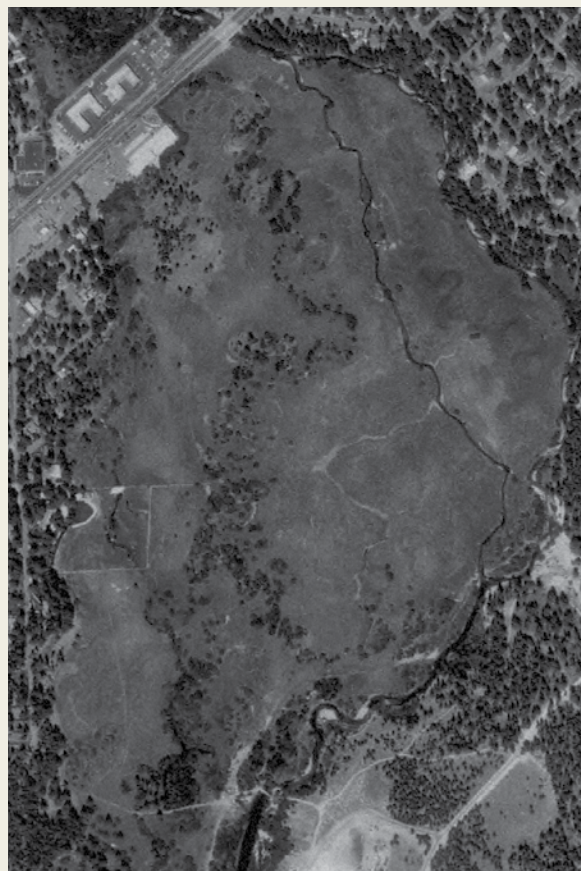
UTR Delta 1940



UTR Delta 1998



1940

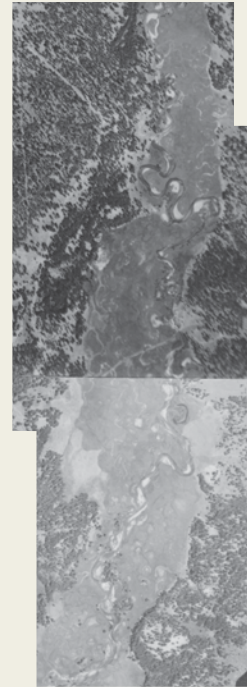


1998





Airport Construction, 1960's



1940 Aerial

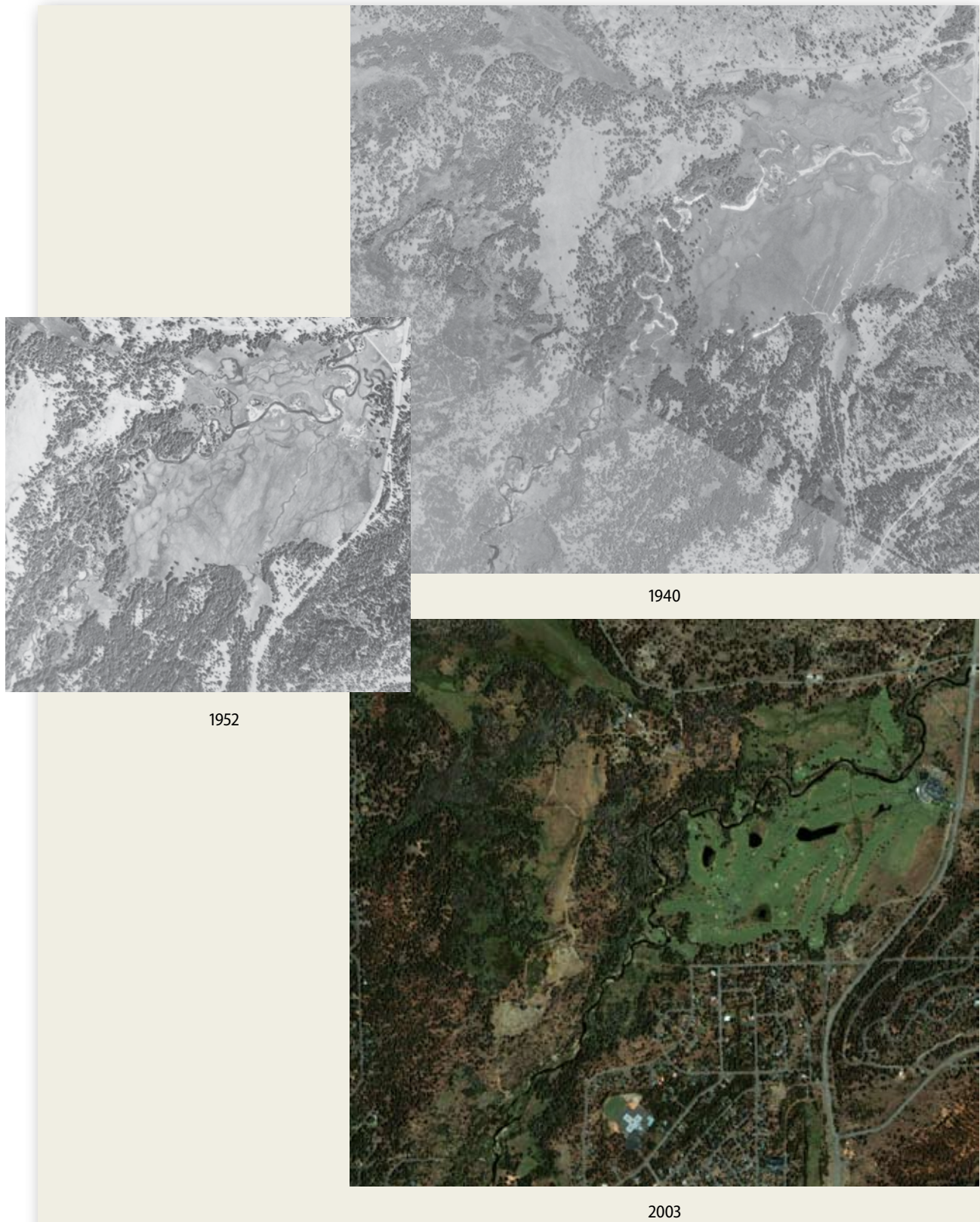


Airport Construction, 1960's

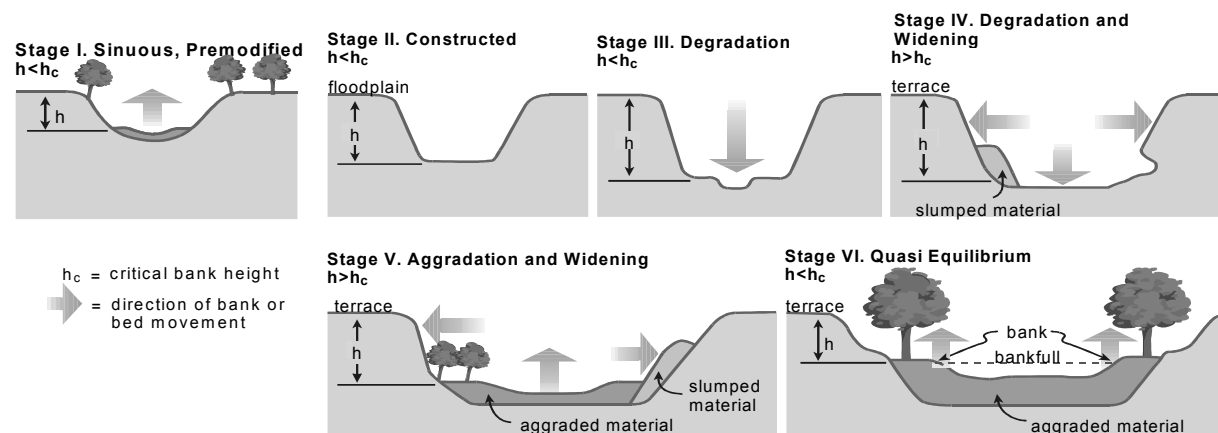


1998 Aerial









**Figure 4-5. Six stages of channel evolution from Simon and Hupp (1986) and Simon (1989) identifying Stages IV and V as those dominated by bank widening.**

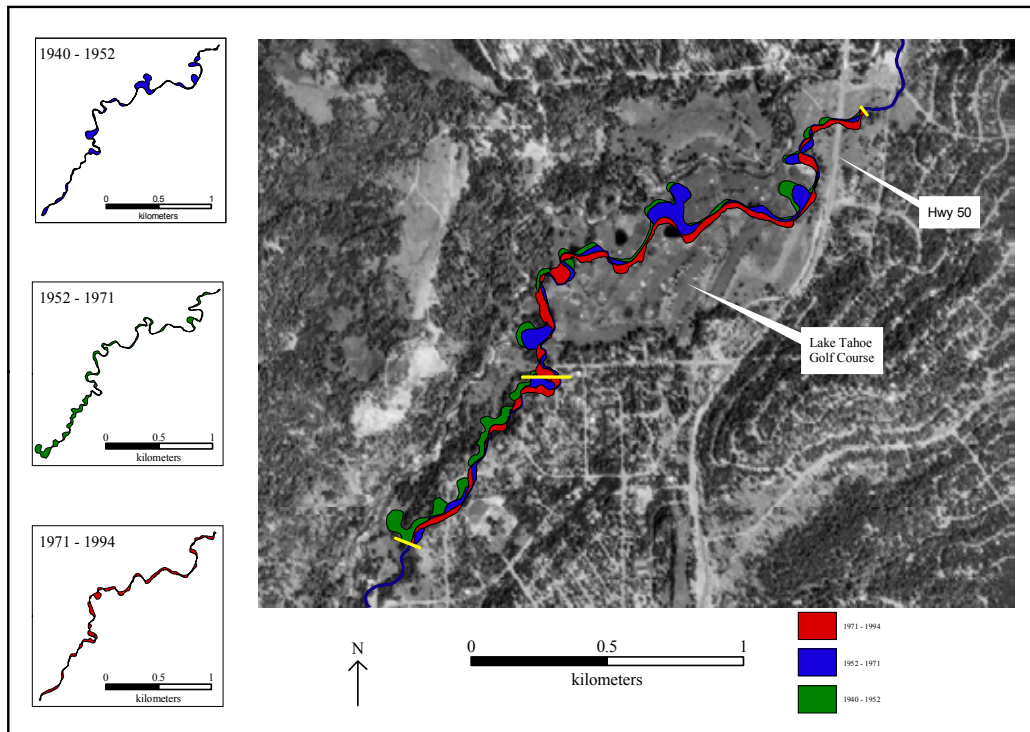
**Table 4-3. Time periods of polygons used in Upper Truckee River area analysis.**

Polygon number	Start date	End date	Duration (y)
1	1940	1952	12
2	1952	1971	19
3	1971	1994	23

Sinuosity decreased initially during the record period, but has risen slightly in the 1971 to 1994 period. Over the 53-year period, the length of the Upper Truckee River in this reach has decreased 26%. The channel length and ratio of channel length to valley length (sinuosity) for each of the four periods are summarized in Table 4-4 and illustrated in Figure 4-10.

**Table 4-4. Upper Truckee River channel-lengths.**

Year	Length (m)	Channel length / valley length
1940	4720	1.54
1952	3950	1.29
1971	3370	1.10
1994	3500	1.14
Valley distance	3070	-

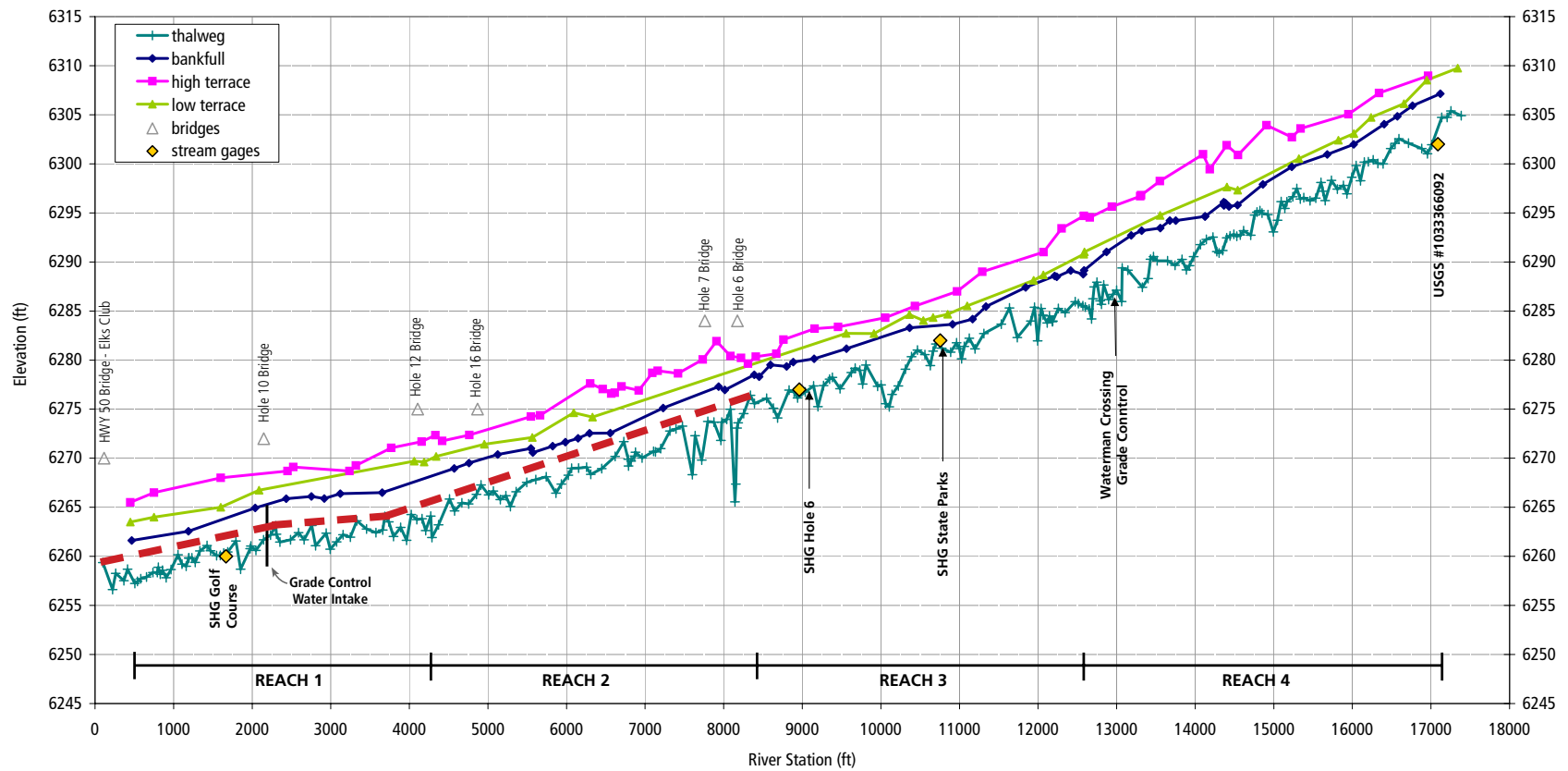


**Figure 4-9. Map of polygons resulting from analysis of time-series channel centerlines along a reach of the Upper Truckee River.**





Upper Truckee River  
SH+G 2003 Longitudinal Profile, Reaches 1 - 4



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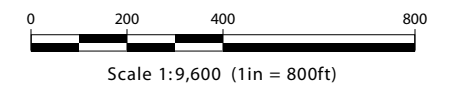
FIGURE 2.5: Longitudinal profile of Upper Truckee River from Elks Club Highway 50 crossing to Meyers Highway 50 crossing (Reaches 1-4). Bankfull, low terrace and high terrace features were also surveyed in the field.

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*Figure 13: Longitudinal Profile* Longitudinal profile from SH+G (2004). Red dashed line represents average bed slope within the project area. Note high slope in upper portion of project area, and low slope in middle portion of project area.



*Figure 14: Conceptual Project Overview*



**Legend**

- Approximate Project Area
- State Park/ Recreation Area boundary

**Restored Channel**

- Existing river channel
- Historic channel
- New channel construction
- Channel bed grade control

**Golf Course**

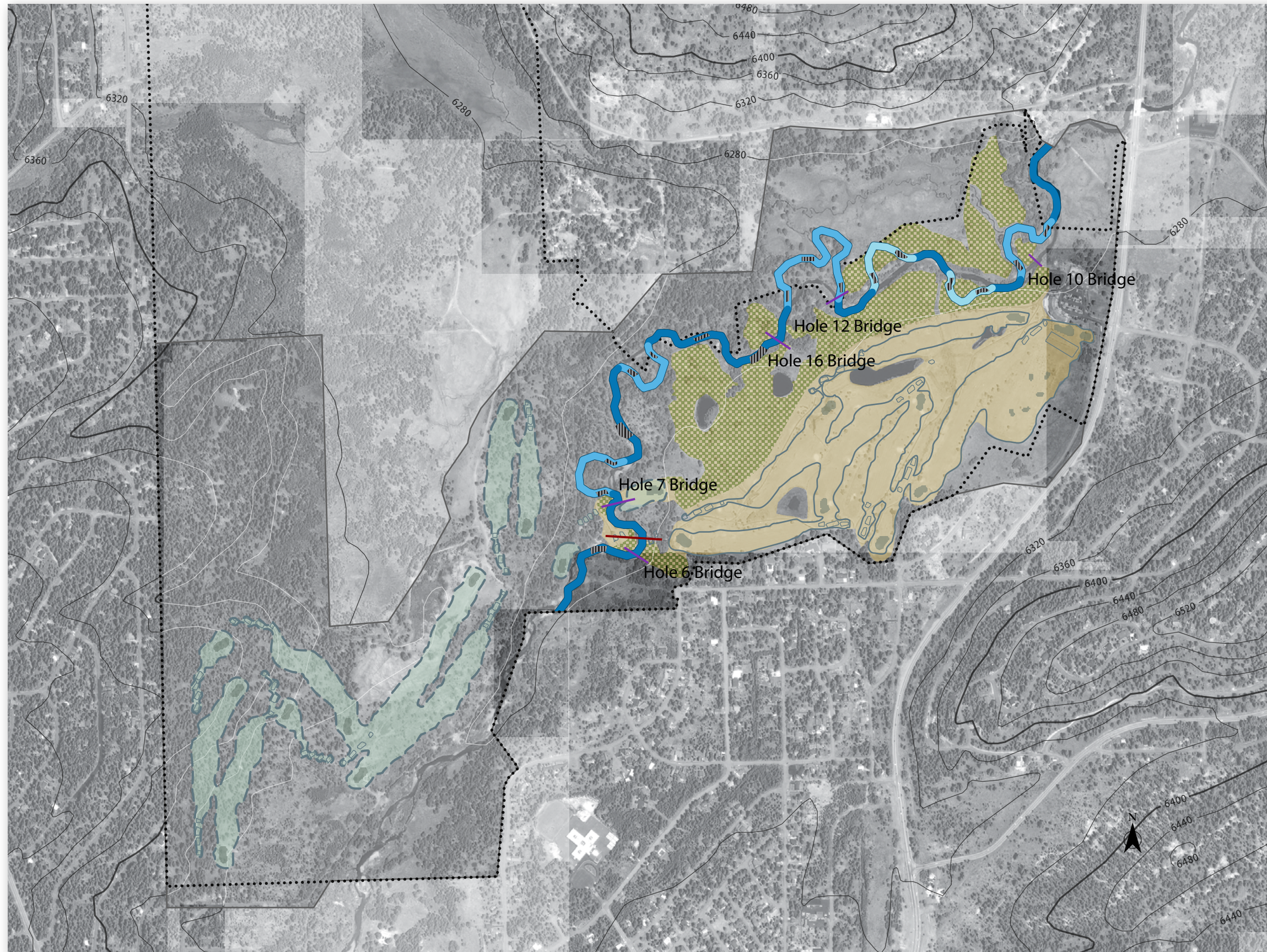
- Present golf course to remain
- Habitat restoration of present golf course
- Golf course: holes to be retained
- Golf course: relocated holes

**Bridges**

- Bridges to be removed
- Potential New Bridge Location

**Notes**

Riparian habitat and meadow restoration will also occur in portions of the existing channel that will be abandoned. Other restoration measures are recommended for the upper portion of the project area (see details on Figures 15-17).





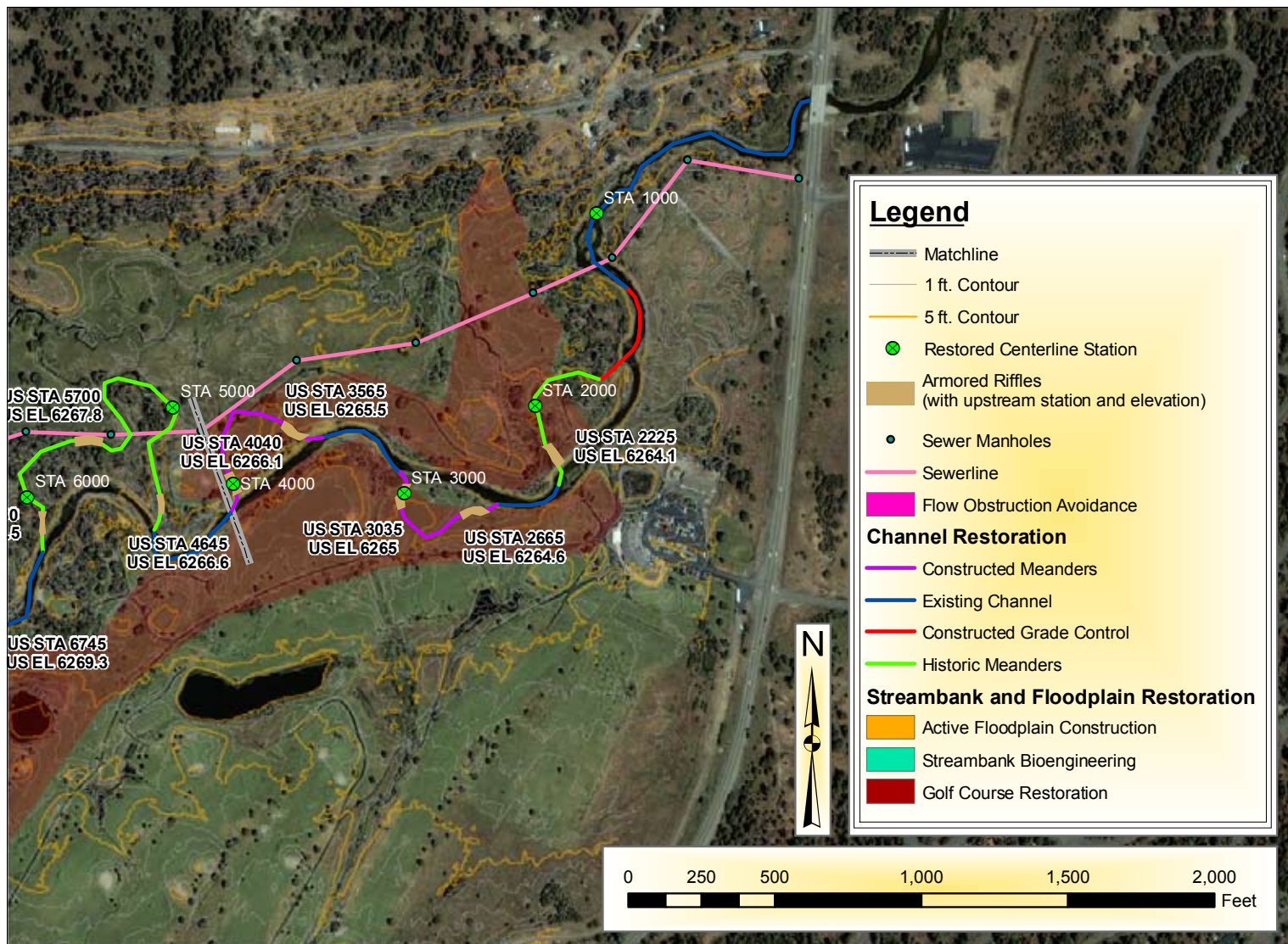


Figure 15: Lower Reach Project Details

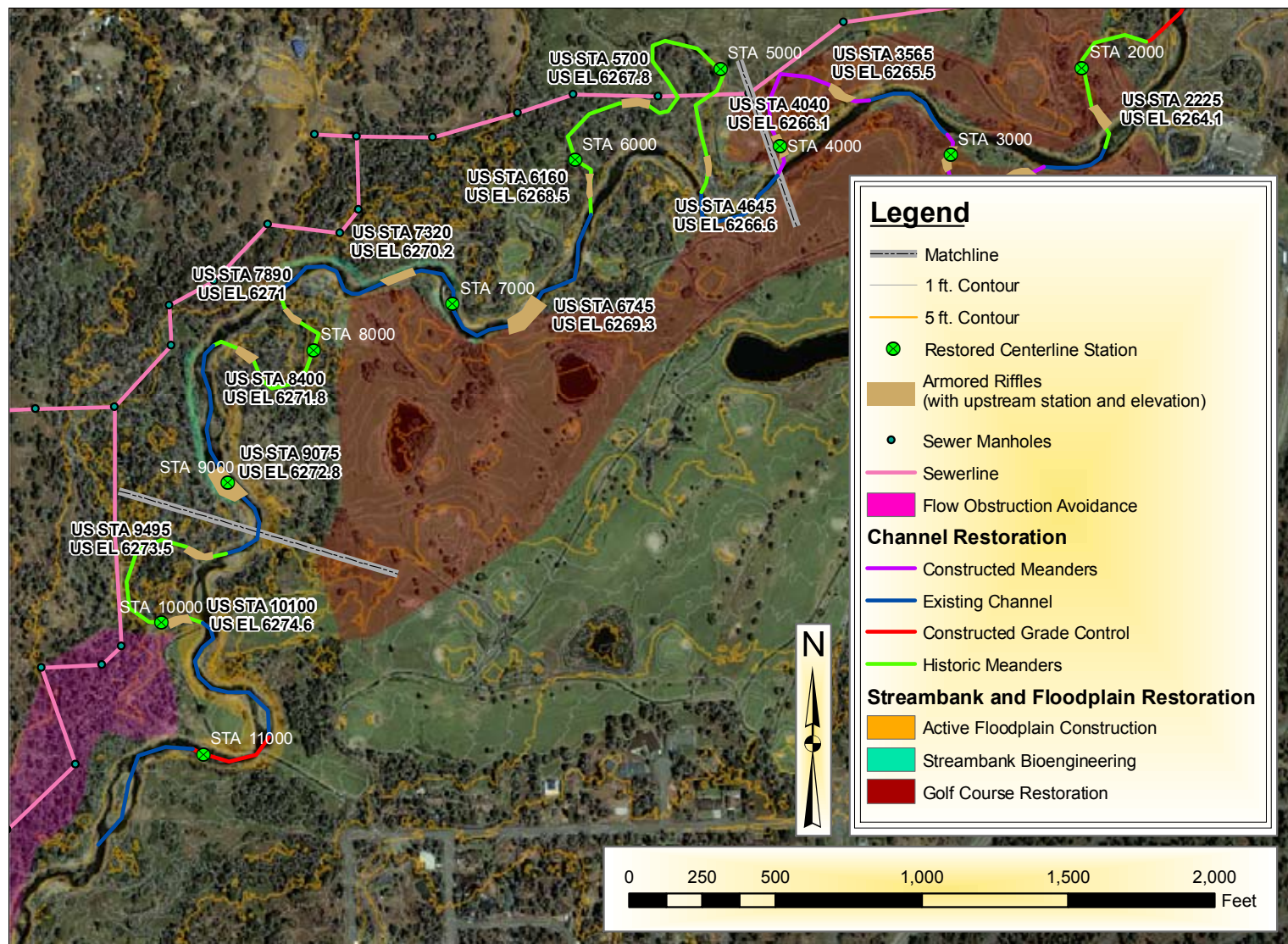
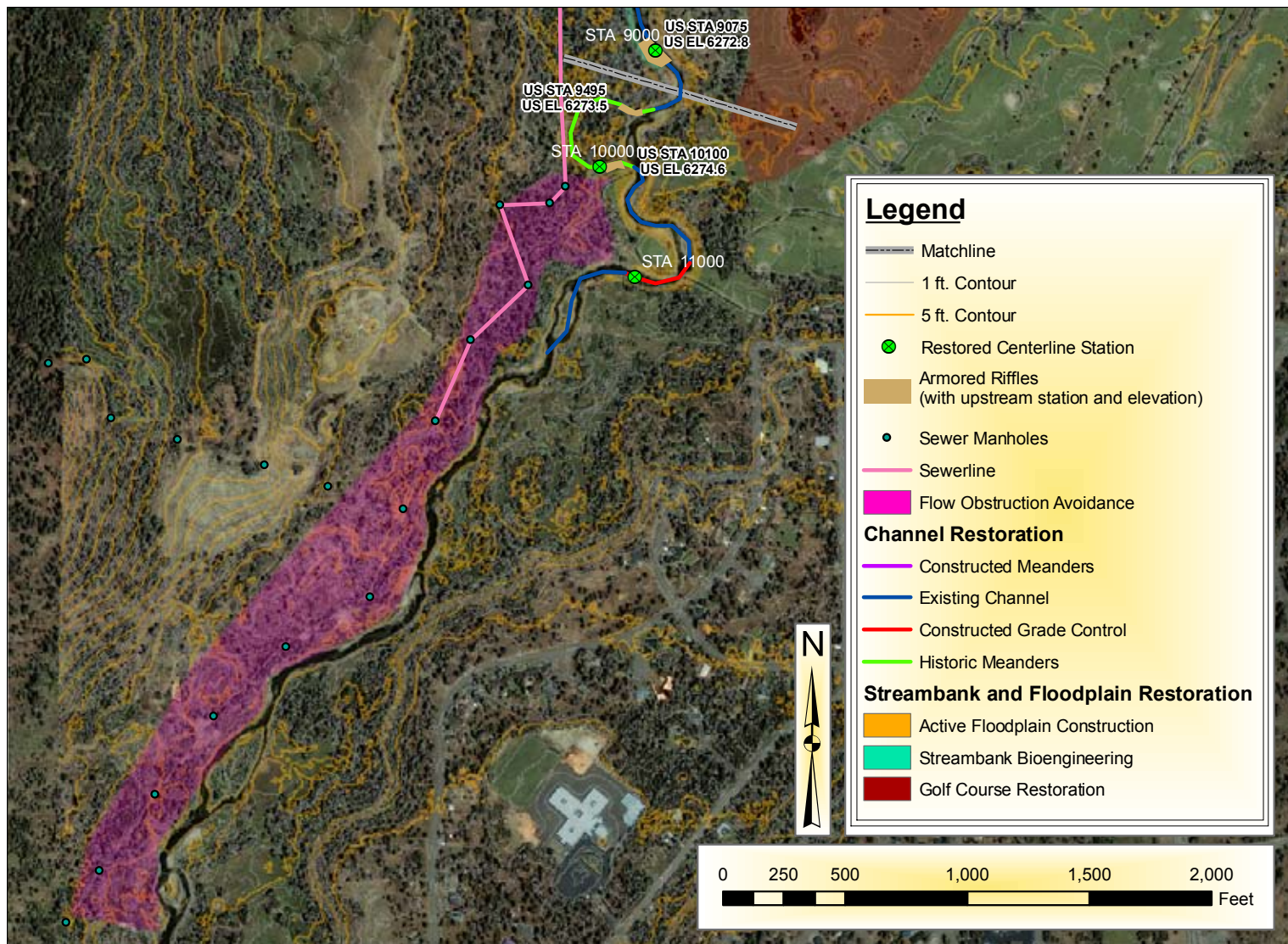


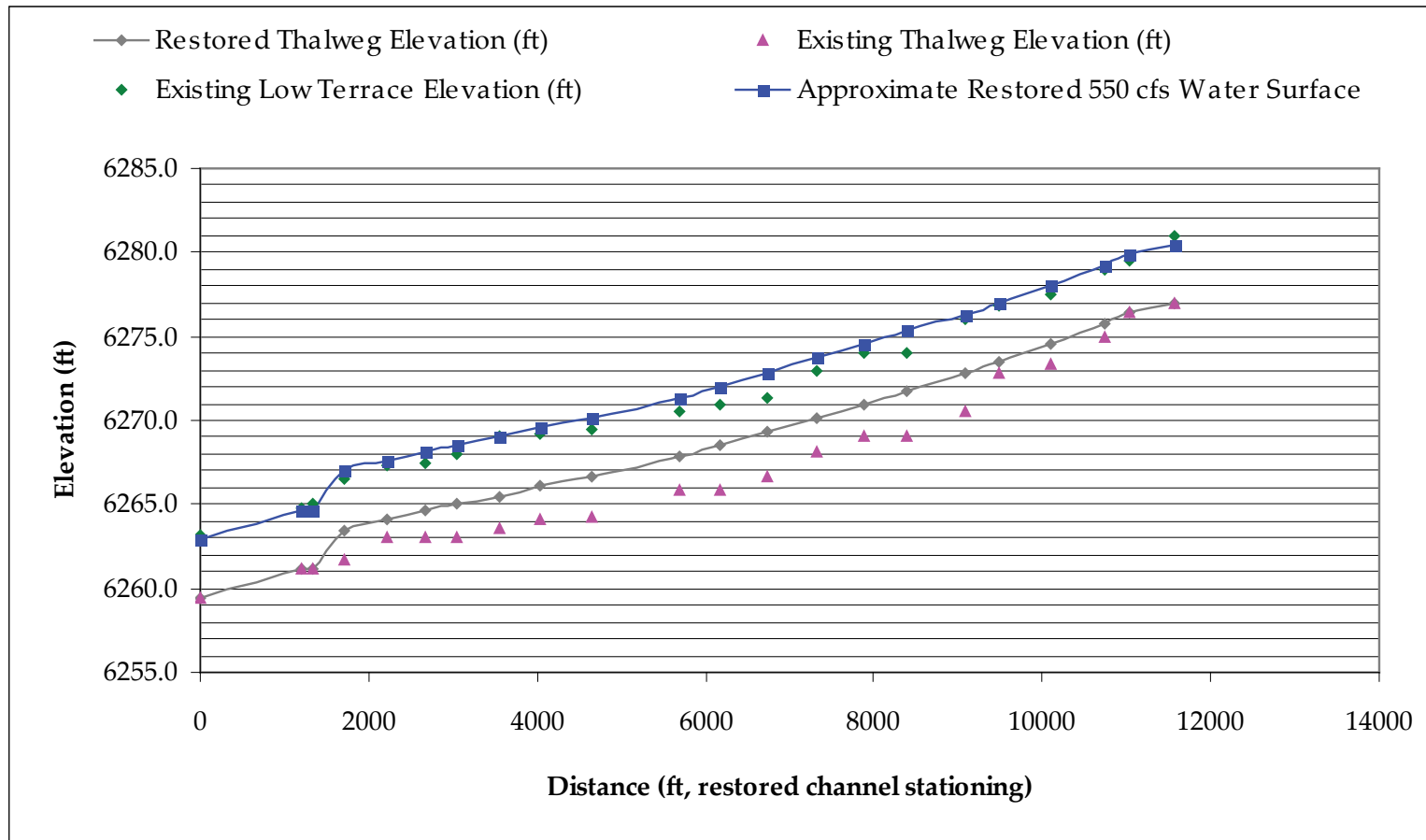
Figure 16: Middle Reach Project Details





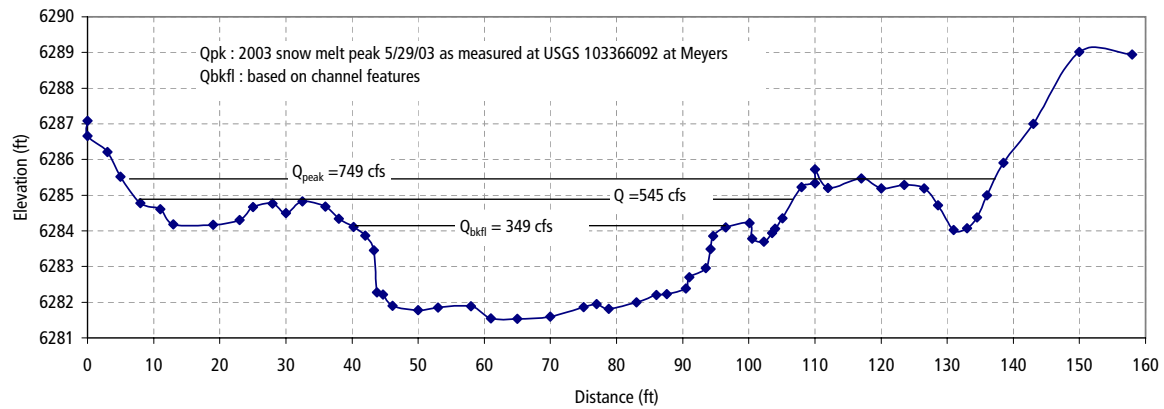
*Figure 17: Upper Reach Project Details*





## SH+G STATE PARKS GAGE

### Channel Cross-section at Gage and Key Channel Features

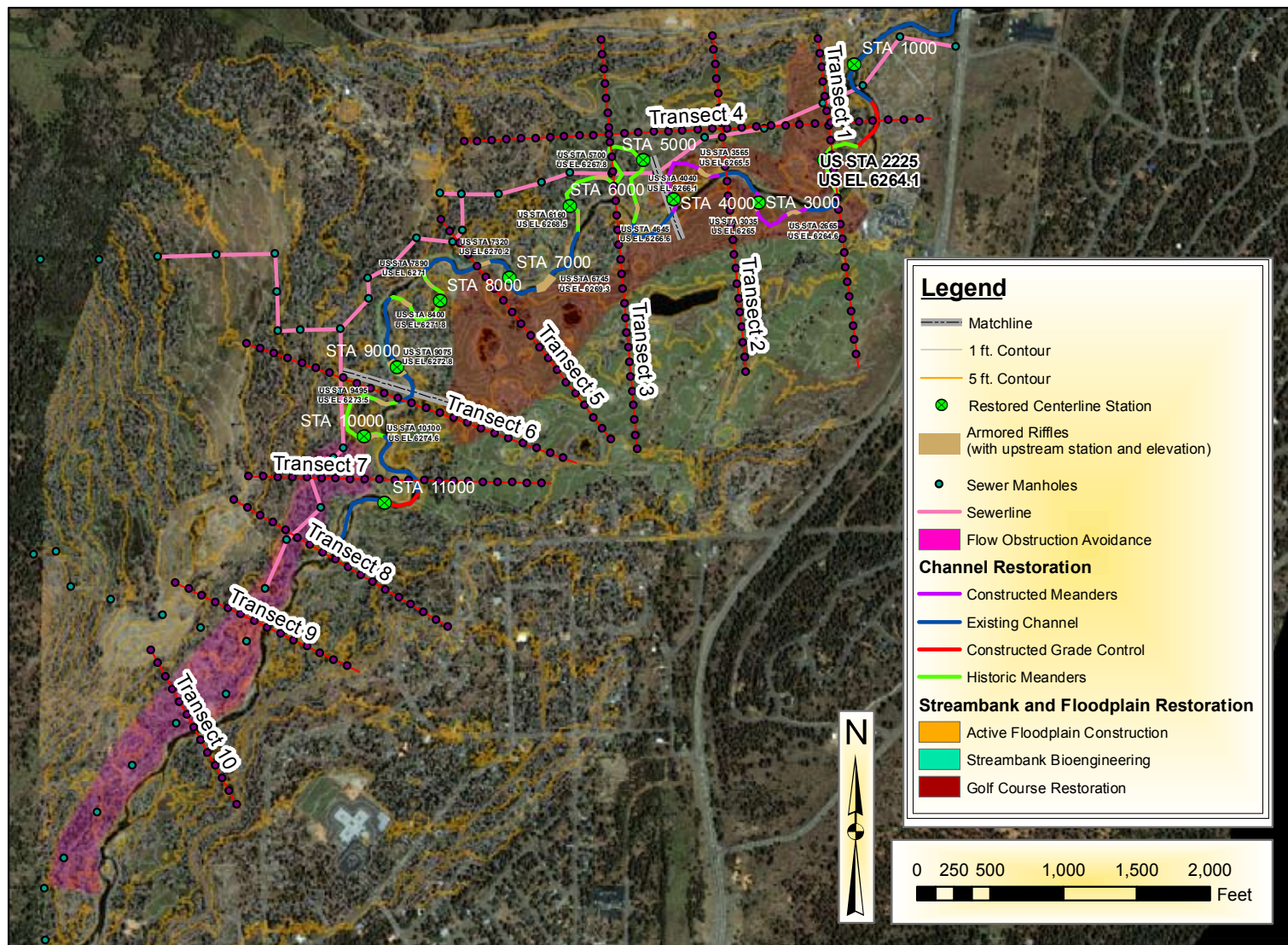


### Photo of Channel at Gage Looking Upstream



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**FIGURE 3.18B:** Channel cross-section surveyed at location of SH+G State Parks gage by California State Parks in September, 2003. Key channel features were identified in the field and associated discharge was calculated using depth gage data.



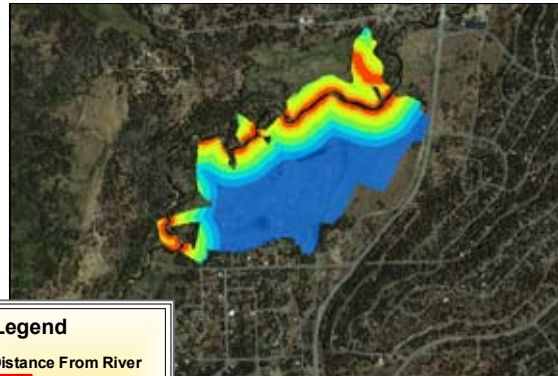
*Figure 20: Transect Locations* Tics are 100 ft markers, with stationing starting from the left side facing downstream.



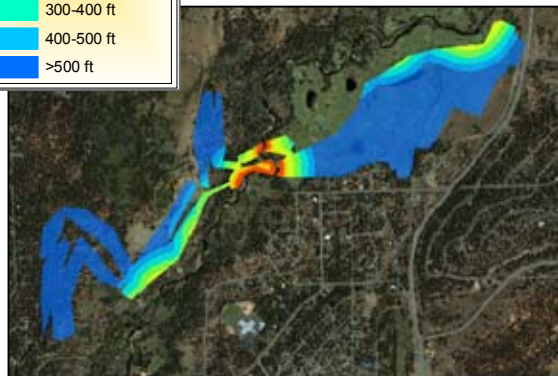
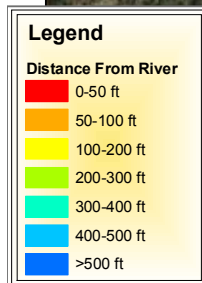


*Figure 21: Upper Truckee Transects, 550cfs Estimated changes in  
water surface elevation, plotted on valley sections (Figure 20).*

## Distance From River

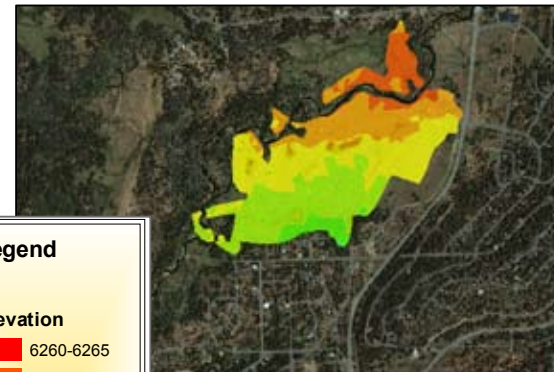


Existing Course

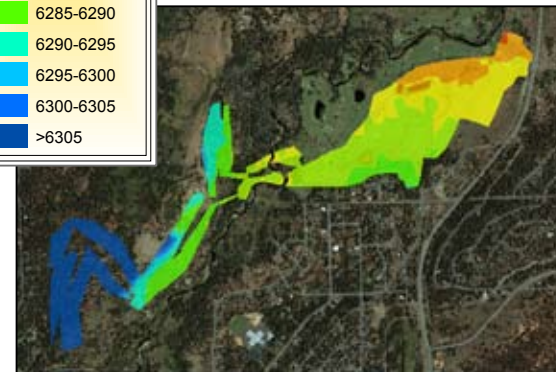
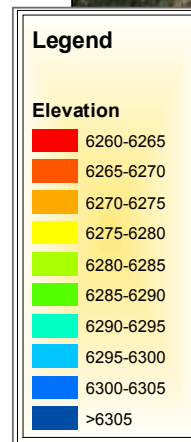


Proposed Course

## Elevation



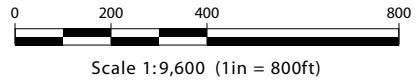
Existing Course



Proposed Course



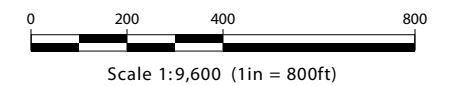
*Figure 23: Existing vegetation. Based partially upon mapping in SHG (2004), with additional field study and aerial imagery interpretation.*



- Legend**
- H, River and Ponds
  - B, Gravel and cobble bars
  - MF, Mesic forb
  - W/MF, Willow scub/Mesic forb
  - OM, Obligate sedge wetland
  - OM/MF/LP or JP, Spring complex
  - WM, Wet meadow
  - W/WM, Willow/Wet meadow
  - W, Willow scrub
  - MM, Mesic meadow
  - MM/WM, Mesic meadow/ Wet meadow
  - W/MM, Willow/Mesic meadow
  - LPM, Lodgepole Pine - mesic type
  - LPD, Lodgepole Pine - dry type
  - LPD/DM, Lodgepole Pine/Dry meadow
  - JP, Jeffrey Pine
  - JP/DM, Jeffrey Pine/Dry meadow
  - DM, Dry meadow
  - RDM, Revegetation dry meadow
  - SDM, Sagebrush dry meadow
  - D, Developed Areas
  - Trees with DBH larger than 30"

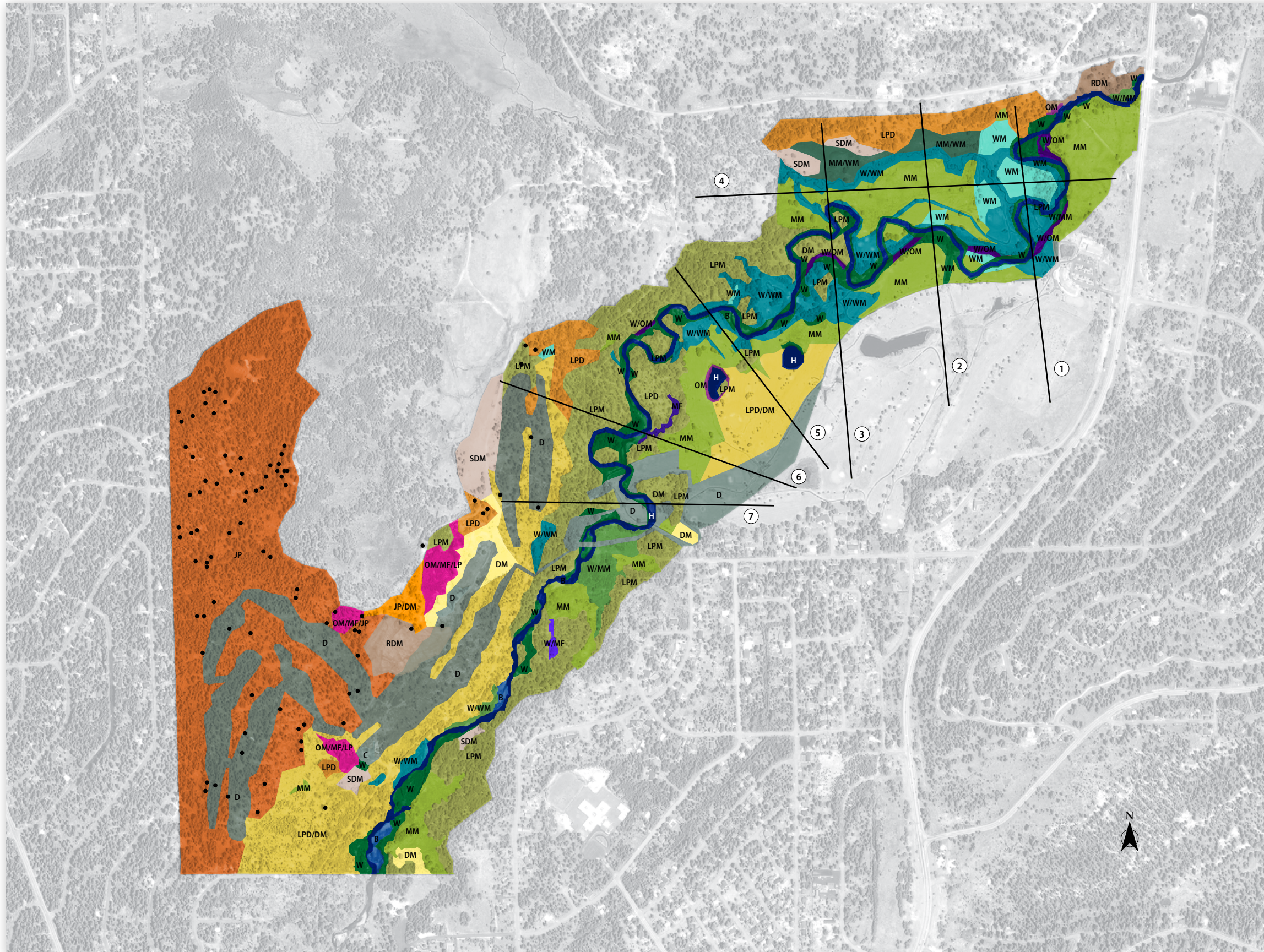


*Figure 24: Predicted post-project  
vegetation. Based upon restored 550 cfs  
stage shown in Figure 21 and assumptions  
described in text.*

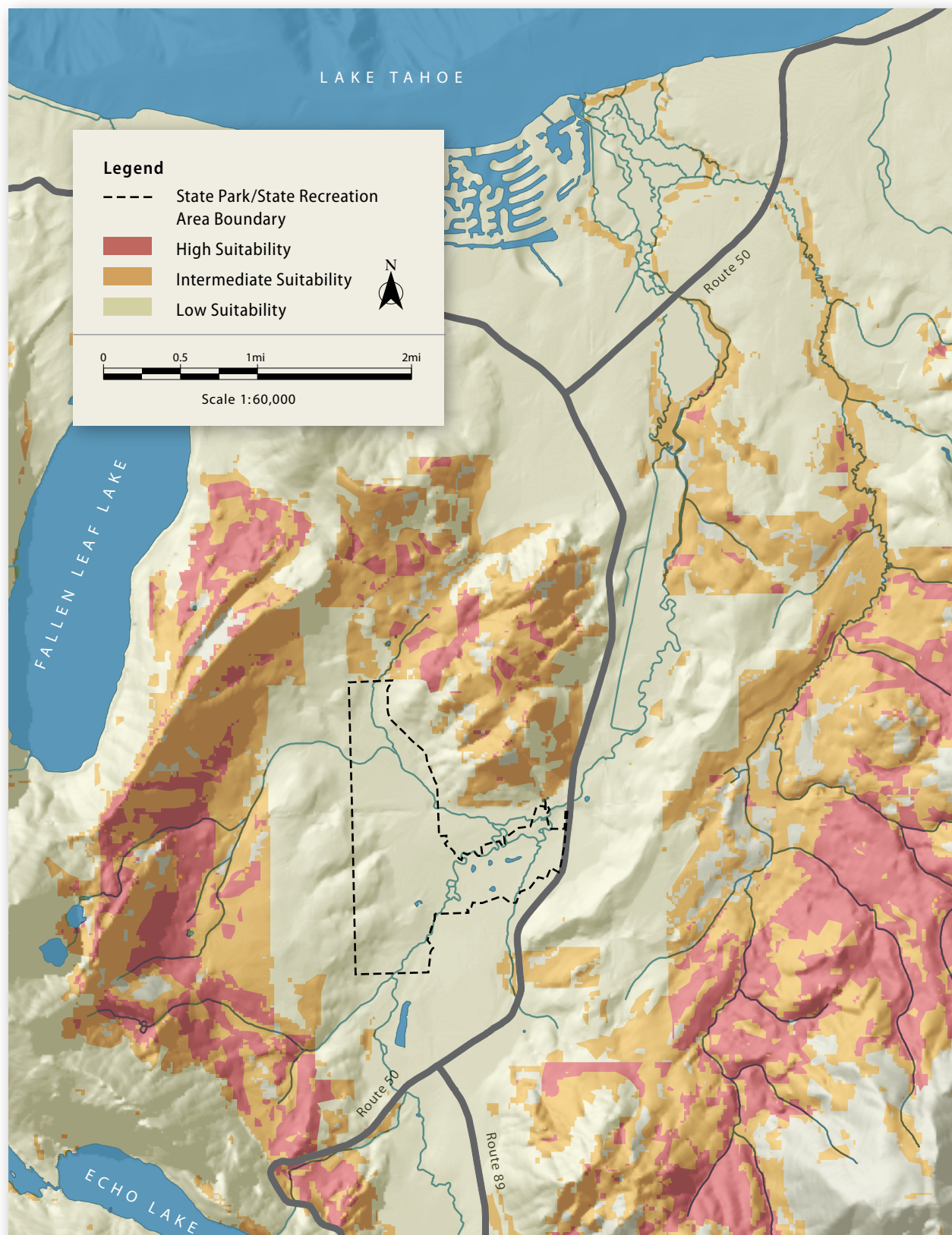


#### Legend

- H, River and Ponds
- B, Gravel and cobble bars
- MF, Mesic forb
- W/MF, Willow scub/Mesic forb
- W/OM, Abandoned channel segments
- OM, Obligate sedge wetland
- OM/MF/LP or JP, Spring complex
- WM, Wet meadow
- W/WM, Willow/Wet meadow
- W, Willow scrub
- MM, Mesic meadow
- MM/WM, Mesic meadow/ Wet meadow
- W/MM, Willow/Mesic meadow
- LPM, Lodgepole Pine - mesic type
- LPD, Lodgepole Pine - dry type
- LPD/DM, Lodgepole Pine/Dry meadow
- JP, Jeffrey Pine
- JP/DM, Jeffrey Pine/Dry meadow
- DM, Dry meadow
- RDM, Revegetation dry meadow
- SDM, Mountain sagebrush scrub
- D, Developed Areas
- Trees with DBH larger than 30"
- ① Transect number







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**Figure 25: Goshawk Habitat Suitability** Based on TRPA modeling of habitat suitability.



