



## APPENDIX C: STUDY REACH MAPS, SUMMARIES, AND RECOMMENDATIONS

This appendix provides summary information and maps for each of the study reaches. Maps include vegetation types and locations of features such as litter areas, storm drain outfalls, culvert crossings, access trails, artificial bank treatments, and erosion areas. A brief description and selected photographs are also provided, along with tables summarizing stream channel data and vegetation characteristics. For each study reach, a table is also provided that lists appropriate types of improvement measures for the reach and describes where within the reach the measures should be applied. Measures identified for implementation at the reach-scale will typically require additional detailed site-level design work and engineering to determine specific locations and combinations of treatment techniques.

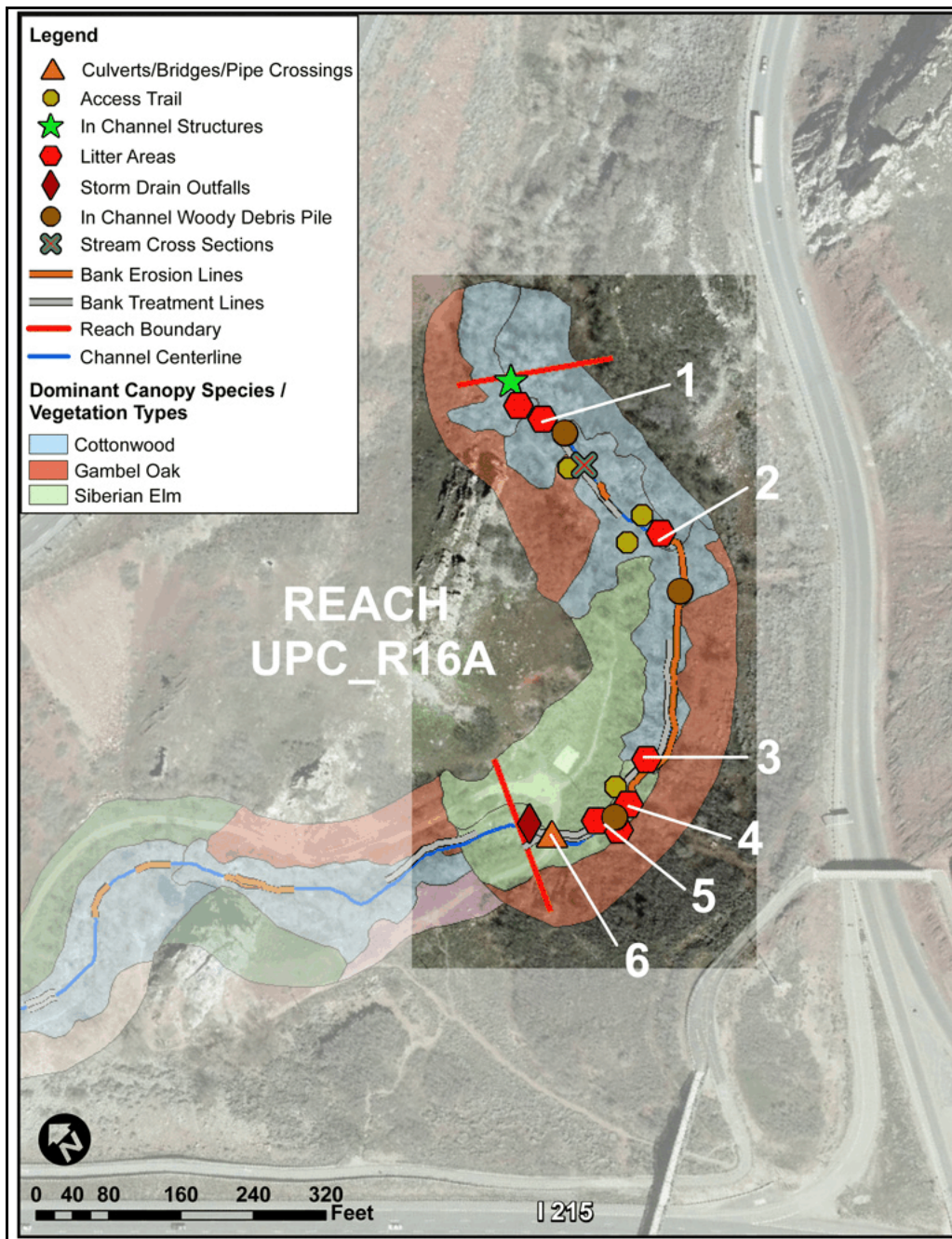
Approximate cost estimates for the items identified in the recommendations tables are provided in Appendix D. The recommendations and prioritizations included in this appendix are not intended to be exhaustive; as priorities evolve and funding becomes available for specific study reaches or treatment techniques, it may be appropriate to implement measures not included in the tables.

The summaries in this appendix are not intended to comprehensively provide all the information collected for each study reach; rather, they are meant as a reference that provides a brief characterization and overview of existing conditions, issues, and recommendations for each assessed study reach.



## UPC\_R16A: UPPER SUICIDE ROCK

This reach extends from the upstream boundary of the study area to the concrete flume structure above Suicide Rock. The channel has been affected by highway fill, diking, and historic diversions. Cottonwood and willow density and age-class diversity are excellent in portions of the reach. The 70-foot-long flume structure constricts the channel and floodplain to a width of about 7 feet. Trout were noted in this reach during field assessments.



### Issues affecting riparian function:

- invasive plants (Siberian elm, tree of heaven, burdock, spurge, cheatgrass, whitetop)
- poor revegetation/stabilization practices
- poorly designed bank revetment
- eroded access trails
- limited understory cover
- trash

### Constraints/opportunities:

- management and ownership ill-defined
- confined/cut off by freeways





REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
667	0.017	boulder, cobble, gravel	not assessed	rip rap, concrete	occasionally present	absent	occasionally present

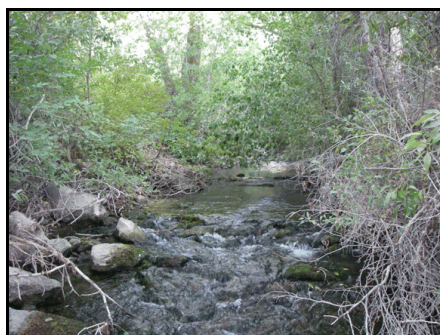
VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
cottonwood	26-75	51-100+	6-50	moderate/none	moderate/dense
Gambel oak	26-75	26-75	6-50	moderate/none	moderate/sparse
Siberian elm	51-75	26-75	6-50	high/moderate	moderate/sparse

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
low	low	low	none

**Priorities identified  
by stakeholders:**

- no reach-specific items identified

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Revegetation (understory)	within vegetation type(s)
Stream cleanup	points 2 and 5 on map
Mechanized trash removal	points 1, 2, 3, 4, 5 on map
Slope stabilization	along highway fill slope
Remove/replace concrete flume	point 6 on map
Access control/trail stabilization	reach-scale

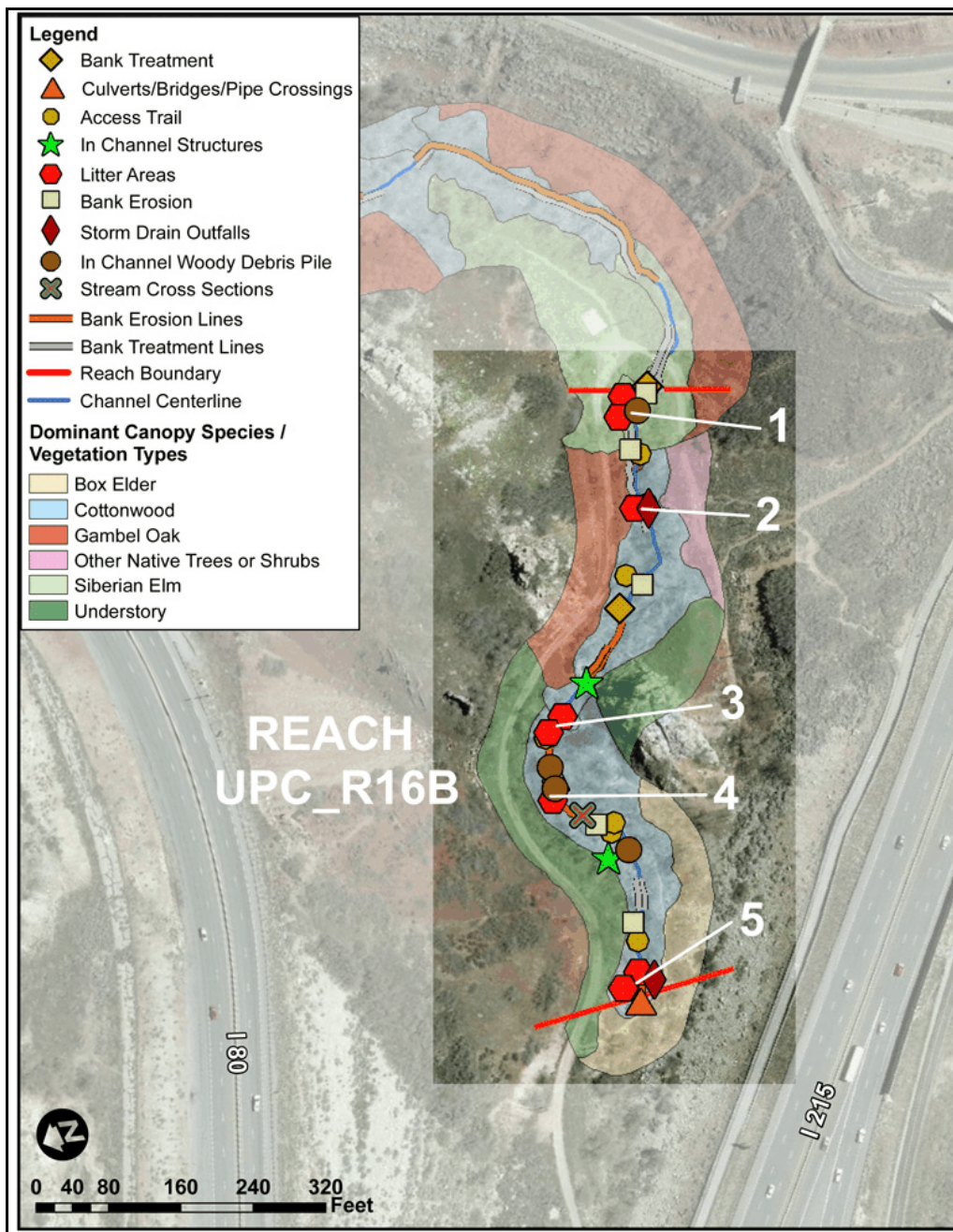






## UPC\_R16B: LOWER SUICIDE ROCK

This reach includes various infrastructure remnants from the historic Parleys Canyon Reservoir and aqueduct that occupied this site from about 1880 to 1950. Graffiti artists paint the rock outcrop and concrete structures in the reach, and people access the I-215 culvert to “shoot the tube” here. Cottonwood and willow density and age-class diversity are excellent in portions of the reach.



### Issues affecting riparian function:

- invasive plants (Siberian elm, Russian olive, whitetop, cheatgrass, burdock, spurge, houndstongue)
- eroded access trails
- soil compaction from foot traffic
- obsolete/degraded pipes and concrete
- trash and graffiti

### Constraints/opportunities:

- management and ownership ill-defined
- confined/cut off by freeways







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
832	0.037	boulder, cobble, gravel	sand/silt	concrete, stone or brick wall	occasionally present	occasionally present	occasionally present/abundant

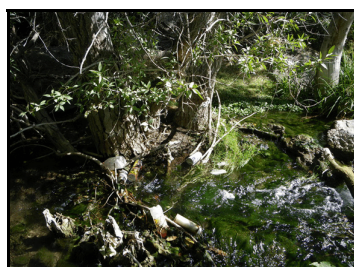
VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
box elder	26–50	26–50	26–50	moderate	sparse
cottonwood	26–50	51–75	26–50	low/moderate	moderate
Gambel oak	26–50	26–50	26–50	high	sparse
other native trees or shrubs	6–25	51–75	26–50	moderate	absent
Siberian elm	51–75	51–75	6–25	moderate	moderate
understory	1–25	6–50	26–75	moderate/high	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50–100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
high	low	low	low

### Priorities identified by stakeholders:

- no reach-specific items identified

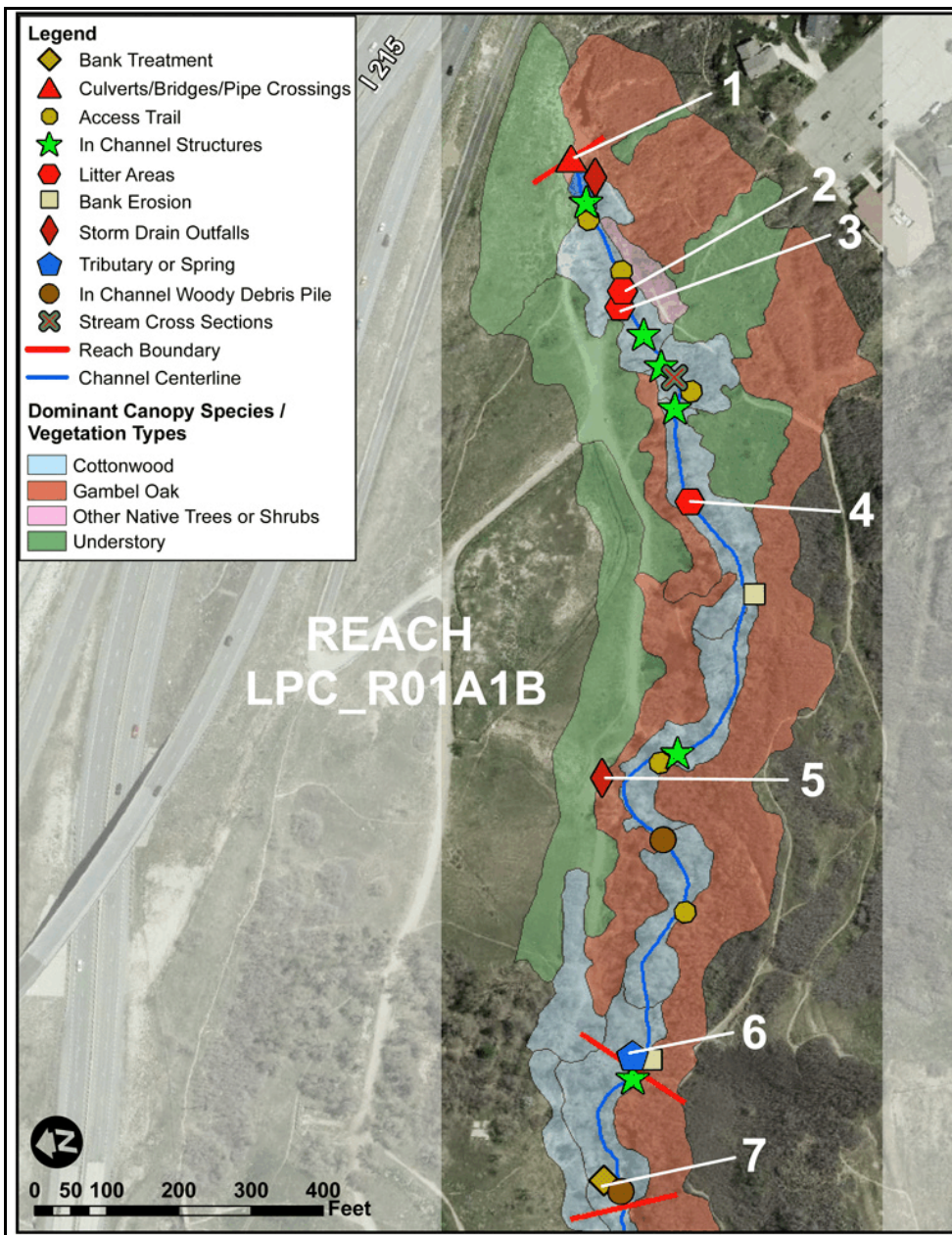
RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Stream cleanup	points 1, 3, 5 on map
Mechanized trash removal	points 1, 2, 4, 5 on map
Storm drain improvement	points 2 and 5 on map
Biotechnical slope stabilization	point 5 on map
Access control/trail stabilization	reach-scale
Runoff management	north side access road





## LPC\_R01A1B: UPPER PARLEYS PARK

This reach extends from the I-215 culvert outlet to a large ponded area (LPC\_R01B) created by a major woody debris jam. This ponded area and the pool at the upstream culvert outlet receive heavy dog use. Cottonwoods are the dominant streamside tree species. Fill slopes above the I-215 culvert outlet lack vegetation and runoff has been poorly managed. Eroded access points are frequent in this reach, and near-stream understory cover is less than 6% through the majority of the reach. A tributary spring channel enters from the north near the downstream end of the reach.



### Issues affecting riparian function:

- invasive plants (nine species)
- lack of understory cover
- eroded access trails/trail proximity
- soil compaction from dog/human foot traffic
- poor runoff management
- poor revegetation/stabilization practices
- fill encroachment
- storm drain outfall erosion
- graffiti and trash

### Constraints/opportunities:

- good educational/interpretive opportunities
- part of continuous 4,200-foot corridor
- minimal infrastructure
- heavy use area
- willing volunteers





REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
1708	0.026	cobble, gravel	boulder, sand/silt	concrete, rip rap	absent	abundant	occasionally present

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
cottonwood	26-100+	26-100+	0-50/76-100+	none to majority	absent to moderate
Gambel oak	76-100+	6-25/51-75	0/26-50	none/moderate	absent/moderate
other native trees or shrubs	0	76-100+	0	none	moderate
understory	0-25	0-50	51-100+	low to majority	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
moderate	none	high	none

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Revegetation (understory)	within vegetation type(s)
Biotechnical slope stabilization	points 1 and 7 on map
Access control/trail stabilization	reach-scale
Storm drain improvement	point 5 on map
Stream/graffiti cleanup	point 1 on map
Mechanized trash removal	points 2, 3, 4 on map
Runoff management	point 1 on map and reach-scale
Fill removal	point 5 on map
Restoration/protection of spring	point 6 on map

### Priorities identified by stakeholders:

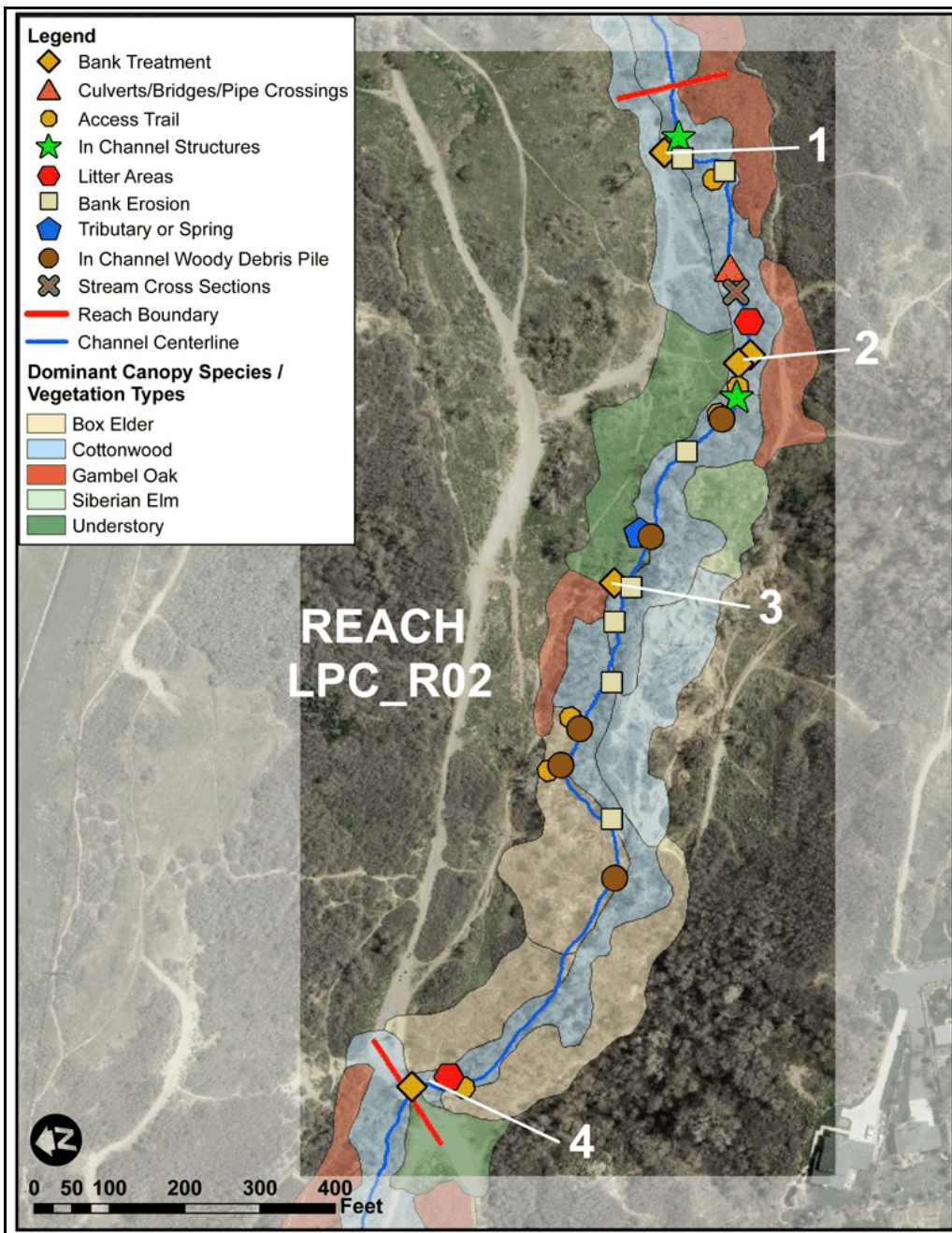
- promote/restore natural stream dynamics
- limit water access for dogs to eastern pool only
- emphasize resource protection within 50 feet of AHWL
- maintain current levels of access for people/dogs
- improve upstream water quality





## LPC\_R02: MIDDLE PARLEYS PARK

This reach encompasses the central portion of the park and includes the BMX bike jump area and a wooden footbridge. Existing rip rap bank treatments lack vegetation. The channel is influenced by several small user-built rock weirs; pools in the reach contain fine sediments that cloud the water when disturbed. Several small springs are present on the south side of the channel.



### Issues affecting riparian function:

- invasive plants (nine species)
- limited understory cover
- eroded access trails/trail proximity
- soil compaction from dog/human foot traffic
- poor revegetation practices
- fill encroachment into floodplain
- disturbance from flood control equipment
- trash (pipes, concrete chunks)

### Constraints/opportunities:

- part of continuous 4,200-foot corridor
- minimal infrastructure
- heavy use area
- willing volunteers





REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
1659	0.019	boulder, cobble, gravel	boulder, sand/silt	rip rap, stone or brick wall	absent	occasionally present	occasionally present

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
box elder	51-100+	51-100+	1-25/76-100+	moderate/majority	absent
cottonwood	51-100+	26-100+	0-50/76-100+	none/moderate/majority	absent
Gambel oak	76-100+	6-75	0/26-75	none/high	moderate/absent
Siberian elm	76-100+	6-25	26-50	high	absent
understory	6-25	6-50	76-100+	majority/none	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
low	none	low	low

### Priorities identified by stakeholders:

- promote/restore natural stream dynamics
- maintain existing BMX area
- revegetate slope at footbridge and other bare banks
- maintain current levels of access for people/dogs
- implement PHNP plan (MGB&A et al. 2010a) recommendations

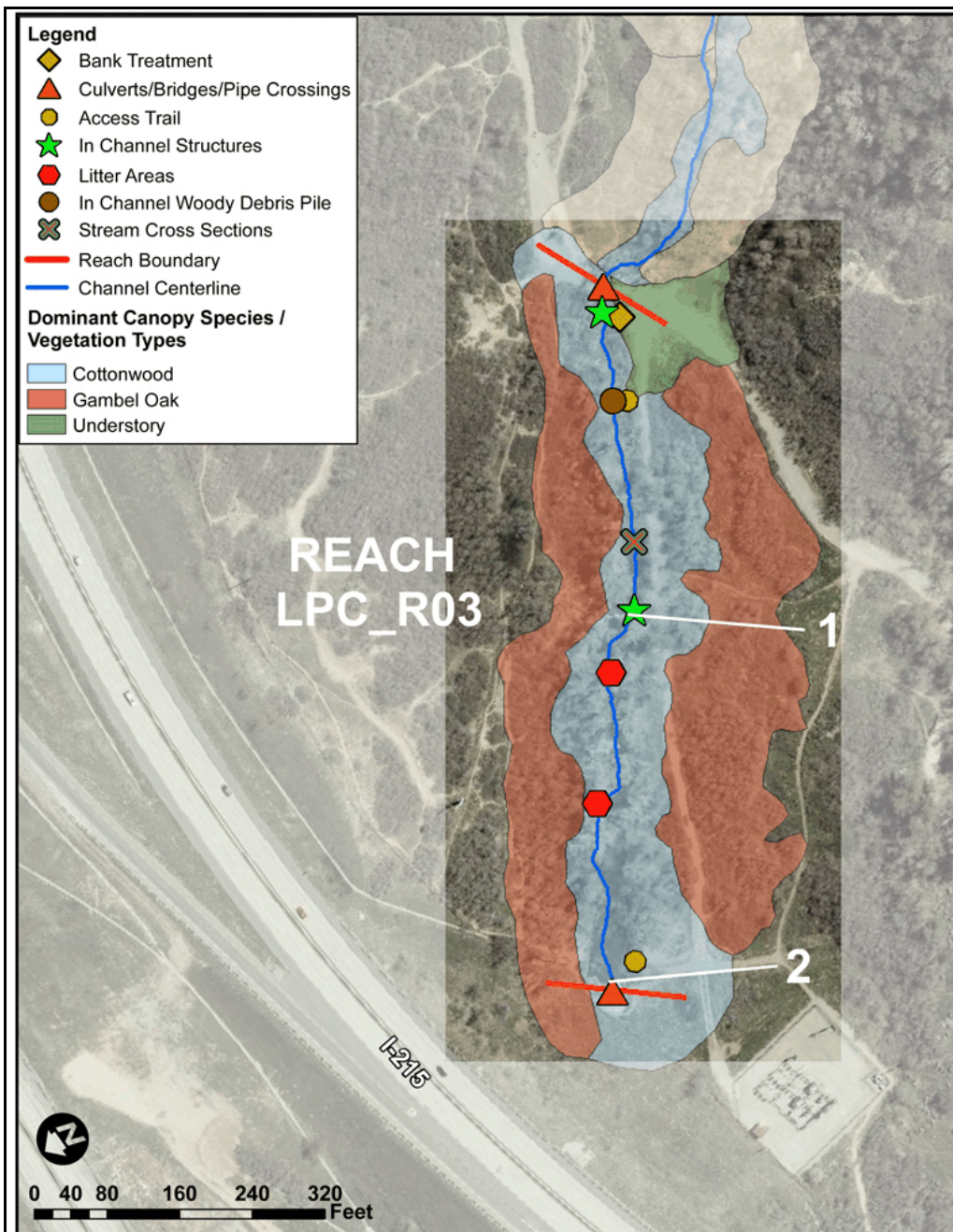
RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Revegetation (understory)	within vegetation type(s)
Rip rap retrofit	points 1, 2, 3, 4 on map
Access control/trail stabilization	reach-scale
Mechanized trash removal	near points 2 and 4 on map
Fill removal/slope flattening	central portion of reach
Bank stabilization	reach-scale
Restoration/protection of springs	reach-scale





## LPC\_R03: LOWER PARLEYS PARK

In this reach, a gravel road on the south side of the channel provides access to metal debris grate structures and to the power sub-station. The stream appears to have been historically straightened and dredged in this reach, restricting floodplain width and connectivity. Pools are present at the box culvert at the top of the reach and at the grated inlet to the I-80 culvert at the bottom of the reach.



### Issues affecting riparian function:

- invasive plants (six species)
- limited understory/shrub cover
- eroded access trails/trail proximity
- soil compaction from dog/human foot traffic
- poor revegetation practices
- flood control dredging/access

### Constraints/opportunities:

- access to power substation must be retained
- park users are potential volunteer labor force
- part of continuous 4,200-foot corridor
- good educational/interpretive opportunities





REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
815	0.010	cobble, gravel	cobble, gravel	rip rap	absent	absent	occasionally present

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
cottonwood	76-100+	6-25	6-25	moderate	sparse
Gambel oak	76-100+	0/26-50	0/26-50	high/none	sparse/dense
understory	6-25	6-25	76-100+	majority	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
none	moderate	low	moderate

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Revegetation (understory)	within vegetation type(s)
Revegetation (shrub)	within vegetation type(s)
Access control/trail stabilization	reach-scale
Floodplain re-establishment	south side of channel
Retrofit/remove metal grate structure	point 1 on map
Safety/aesthetic improvements at pipe inlet	point 2 on map

### Priorities identified by stakeholders:

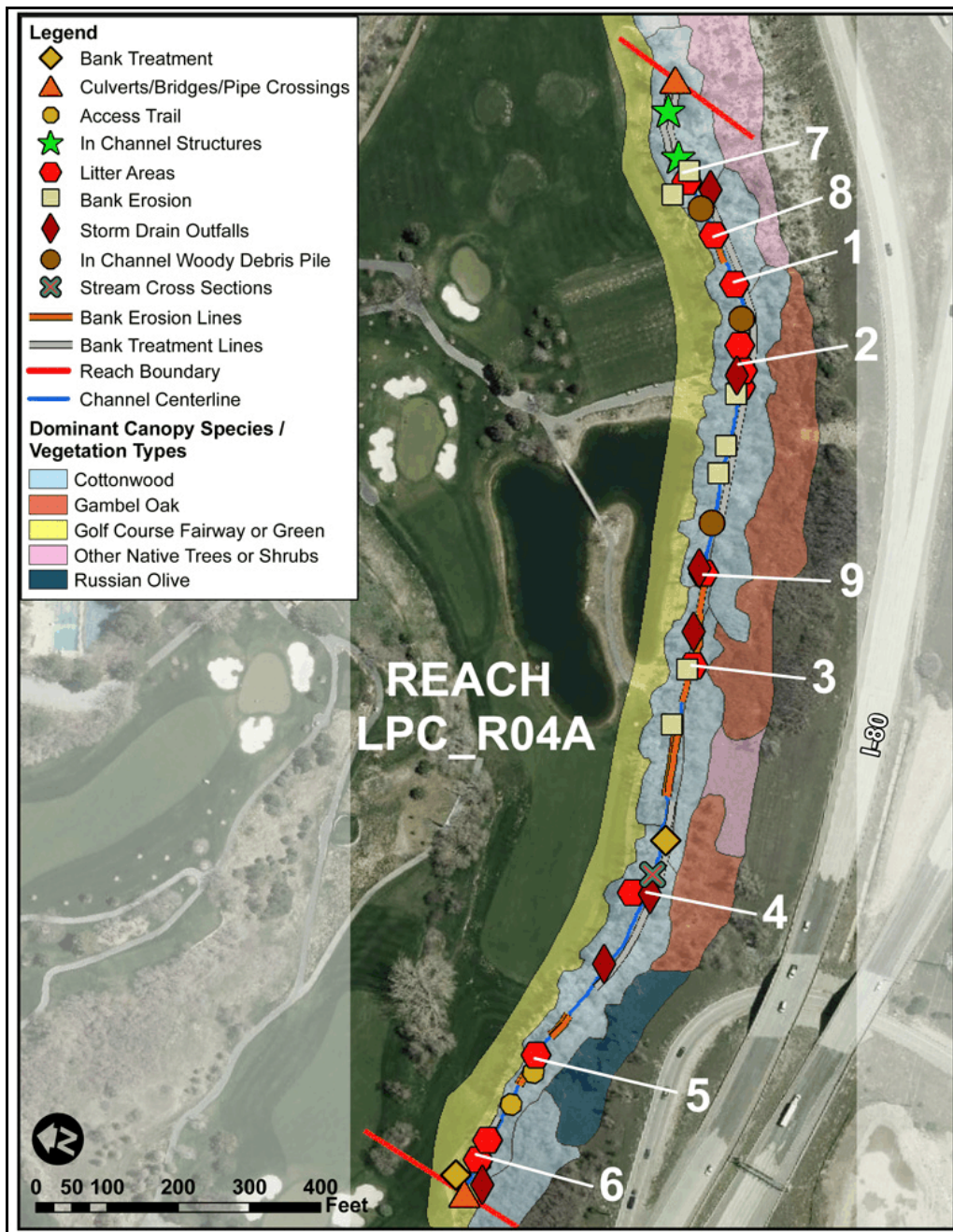
- promote/restore natural stream dynamics
- maintain current levels of access for people/dogs
- implement PHNP plan (MGB&A et al. 2010a) recommendations
- limit water access for dogs to two existing pools only
- safety
- maintain vegetation on banks





## LPC\_R04A: COUNTRY CLUB - ABOVE 2300 EAST

This reach includes the eastern portion of the Country Club golf course starting at the I-80 culvert outlet. The channel is straight and constricted between the highway fill slope and the developed golf course. A concrete weir diversion structure is present near the top of the reach. Much of the south bank is protected with gabion baskets that appear to be old and in fair condition.



### Issues affecting riparian function:

- invasive plants (eight species)
- storm drain outfall erosion
- gabions
- fill encroachment
- scour below concrete weir
- trash
- mowing practices

### Constraints/opportunities:

- tightly confined by fill
- culverts limit connectivity







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
1681	0.017	cobble	sand	gabions, rip rap, concrete	occasionally present	occasionally present	occasionally present/abundant

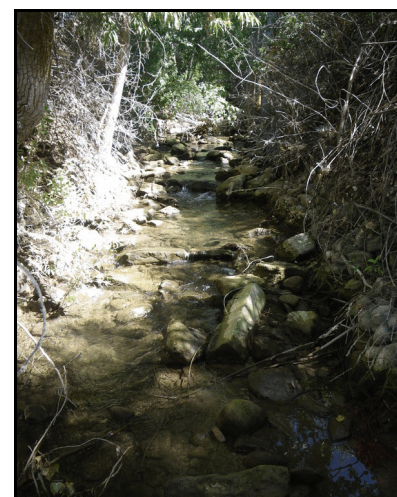
VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
cottonwood	51-100+	6-75	0/6-75	moderate/high	absent to moderate
Gambel oak	76-100+	26-75	26-50	moderate/none	moderate/absent
Golf Course Fairway or Green	1-5	0	76-100+	none	absent
other native trees or shrubs	6-25	51-75	1-5/51-75	moderate/low	absent
Russian olive	26-50	6-25	76-100+	majority	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
high	none	low	none

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(5)
Revegetation (canopy/shrub)	within vegetation type(5)
Restoration of native understory plants	within vegetation type(5)
Stream cleanup	points 1, 2, 3, 4, 5, 6 on map
Mechanized trash removal	points 2, 7, 8, 9 on map
Replace concrete diversion weir	point 7 on map
Storm drain improvement	points 2 and 6 on map
Gabion basket and rip rap retrofit	points 7 to 9; near points 4 and 6
Biotechnical slope stabilization	near point 8; point 9 to 3
Establish "no-mow" buffer	reach-scale
Avoid placing grass clippings on banks	reach-scale

### Priorities identified by stakeholders:

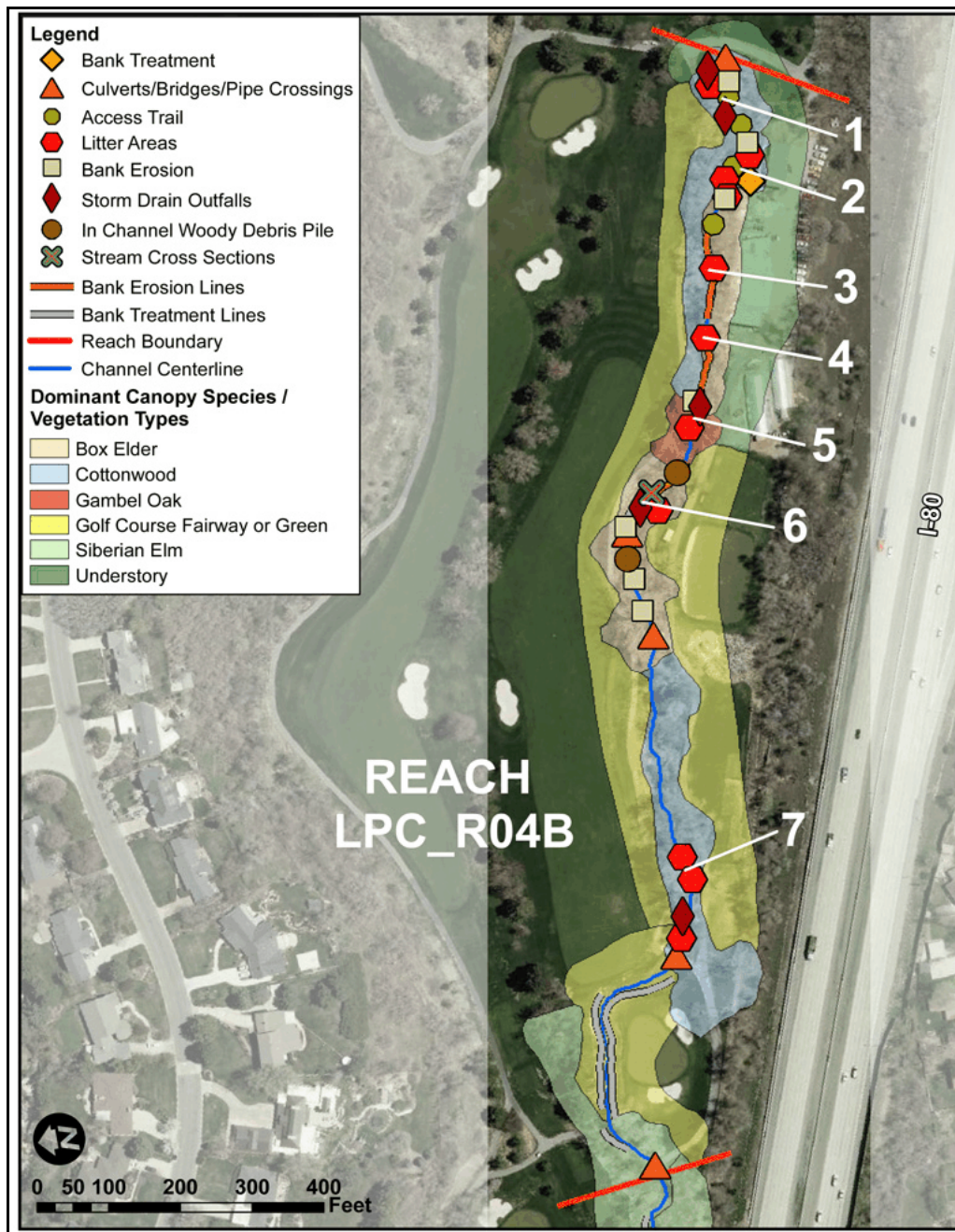
- no-mow buffer to improve filtration
- restore native understory/shrubs to improve habitat





## LPC\_R04B: COUNTRY CLUB - BELOW 2300 EAST

This reach is located near the golf course maintenance facility. Three bridges cross the channel in the reach, and paved golf cart paths parallel the channel on both sides. At the western end of the reach, the stream was recently daylighted and now flows in a grassy, unshaded, boulder-lined channel. Significant amounts of concrete rubble and other trash items are present near the maintenance buildings.



### Issues affecting riparian function:

- invasive plants (five species)
- limited shrub cover
- infrastructure proximity
- lack of canopy cover
- eroded access trails
- fill encroachment
- poor stabilization practices
- mowing practices
- trash

### Constraints/opportunities:

- paved trails limit floodplain width
- good access







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
1741	N/A	cobble	gravel, sand	rip rap, concrete, stone or brick wall	occasionally present	occasionally present	occasionally present

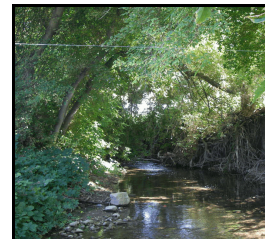
VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
box elder	26-75	6-50	1-5/76-100+	moderate/high	absent/sparse
cottonwood	26-75	6-50	51-75	moderate/high	absent/sparse
Gambel oak	76-100+	26-50	51-75	high	sparse
golf course fairway or green	0	0-5	76-100+	none	absent
Siberian elm	26-50	6-25	76-100+	high	sparse
understory	6-25	0	6-25	none	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
high	high	low	moderate

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Revegetation (canopy)	adjacent to daylighted channel
Revegetation (shrub)	within vegetation type(s)
Restoration of native understory plants	adjacent to daylighted channel
Bank/slope stabilization	eastern portion of reach
Stream cleanup	points 2, 6, 7 on map
Mechanized trash removal	points 1, 2, 3, 4, 5, 7 on map
Storm drain improvement	points 1 and 5 on map
Access trail reclamation/stabilization	reach-scale
Implement storm water BMPs	maintenance area
Establish "no mow" buffer	western portion of reach
Replace crossings with full-span structures	two crossings south of point 6 on map

### Priorities identified by stakeholders:

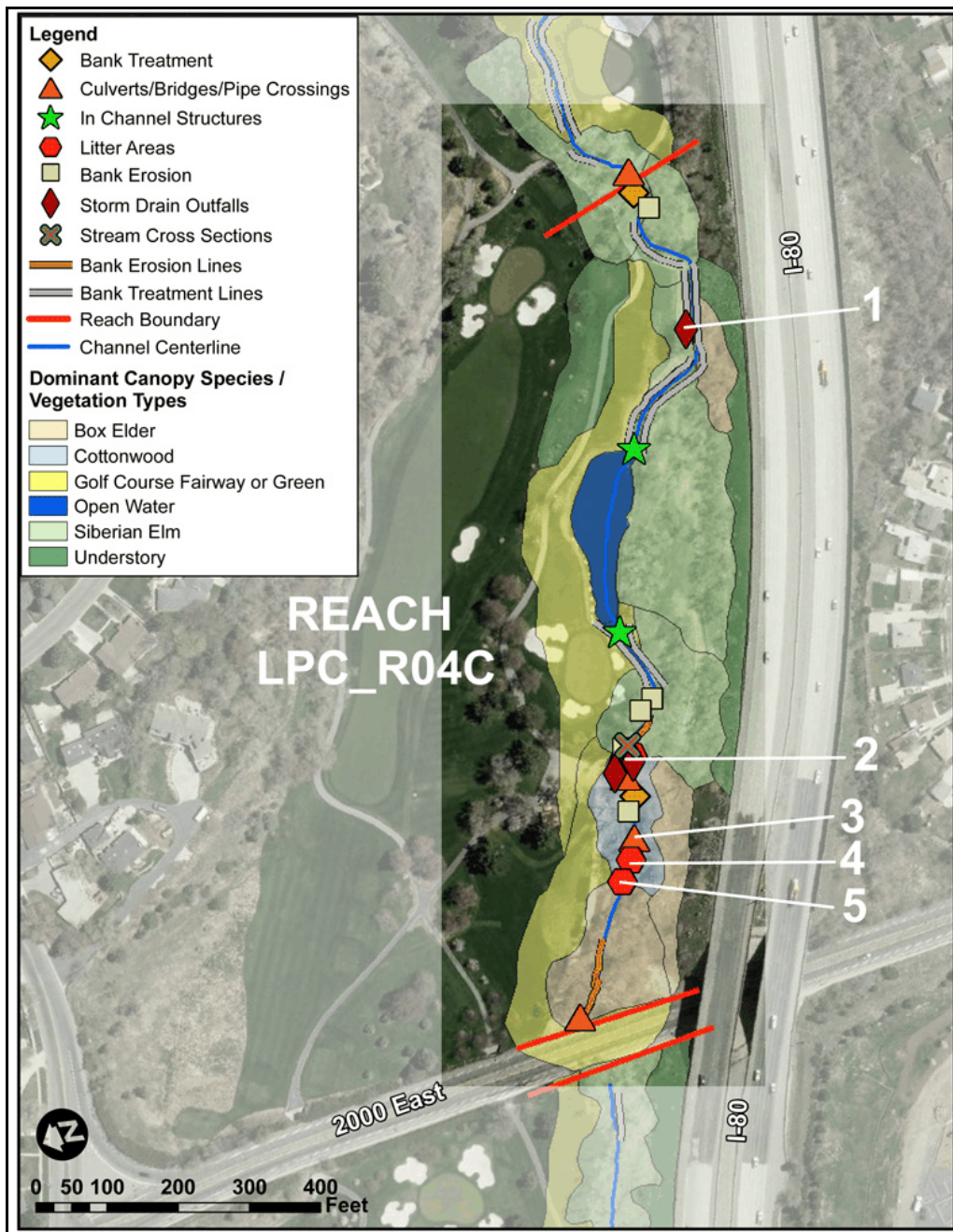
- no-mow buffer to improve filtration
- restore native understory/shrubs to improve habitat





## LPC\_R04C : COUNTRY CLUB - ABOVE 2000 EAST

The channel flows through a large pond in this reach. Above the pond, banks have been stabilized with concrete slabs and rip rap. In the western portion of the reach, banks show evidence of considerable root zone scour and toe erosion. This is the only reach in the study area where invasive saltcedar was noted as present; immediate control is recommended. Siberian elm dominates much of the canopy cover in the reach.



### Issues affecting riparian function:

- invasive plants (11 species, including saltcedar)
- unprotected storm drain outfalls
- low bank/root zone erosion
- bank scalloping from lack of woody plants
- limited shrub/canopy cover
- canopy dominated by invasive species
- fill encroachment

### Constraints/opportunities:

- somewhat buffered from freeway







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
1314	N/A	cobble, gravel	sand/silt	rip rap, concrete, stone or brick wall	occasionally present	absent	absent

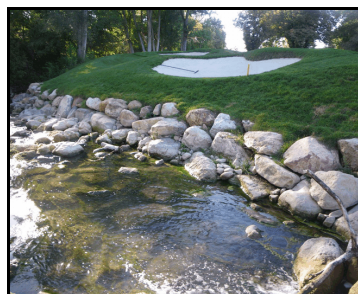
VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
box elder	26-75	6-75	51-75	moderate/high	sparse/absent
cottonwood	51-75	26-50	51-75	majority	sparse
golf course fairway or green	0	6-25	51-75	moderate/none	absent
Siberian elm	26-75	6-50	26-100+	high/majority	sparse/absent
understory	0/6-25	6-25	51-100+	moderate/none	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
moderate	low	moderate	low

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Revegetation (canopy)	within vegetation type(s)
Revegetation (shrub)	within vegetation type(s)
Mechanized trash removal	points 2, 4, and 5 on map
Storm drain improvement	points 1 and 2 on map
Bank stabilization	eastern and western portions of reach
Grade control	eastern and western portions of reach
Remove obsolete bridge	point 3 on map
Rip rap retrofit	near point 2 on map

### Priorities identified by stakeholders:

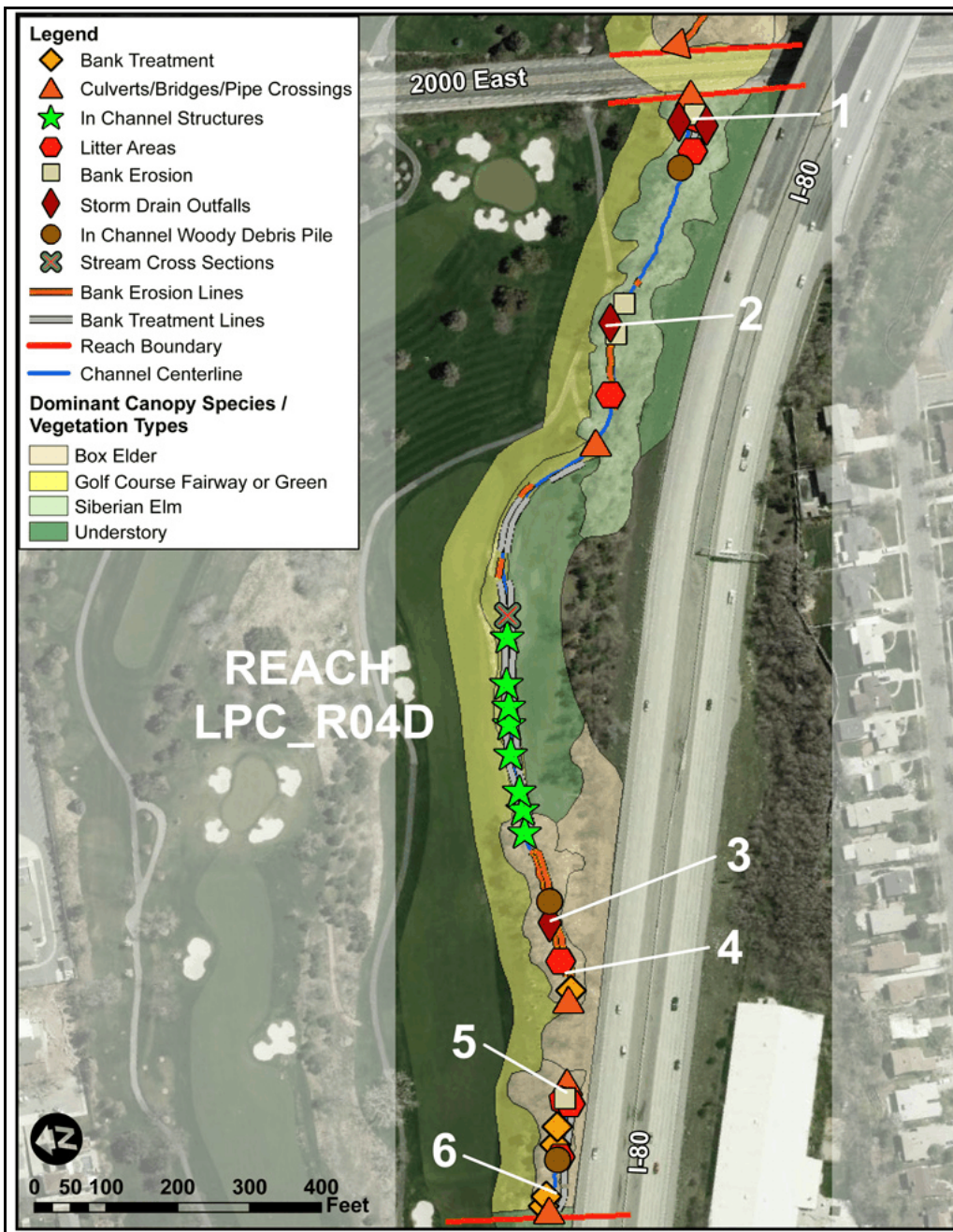
- control of noxious weeds, especially salt cedar
- no-mow buffer to improve filtration
- restore native understory/shrubs to improve habitat





## LPC\_R04D: COUNTRY CLUB - BELOW 2000 EAST

In the central portion of this reach, the stream was recently daylighted and now flows in a constructed boulder-lined channel vegetated with bluegrass. Just below the reach, a portion of stream adjacent to the freeway was recently piped. The fill slopes above this new pipe are the only place in the study area where yellow star-thistle was noted; immediate control is recommended.



### Issues affecting riparian function:

- invasive plants (nine species including yellow star-thistle)
- deposition/clogging at culvert inlet
- unprotected storm drain outfalls
- lack of shrub/canopy cover
- limited native understory cover
- unvegetated gabions
- trash

### Constraints/opportunities:

- channel relatively unconfined in daylighted section







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
1523	N/A	cobble, gravel	boulder, sand/silt	gabions, rip rap, concrete, asphalt chunks	occasionally present	occasionally present	occasionally present

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
box elder	26-50/76-100+	6-75	26-75	moderate	moderate/sparse
golf course fairway or green	0/6-25	0/6-25	76-100+	none/low	absent
Siberian elm	51-75	51-75	76-100+	high	moderate
understory	0-25	1-25	51-100+	high/moderate	sparse/absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
low	low	low	moderate

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Revegetation (canopy/shrub)	along recently daylighted channel
Restoration of native understory plants	along recently daylighted channel
Culvert outlet protection	point 1 on map
Stream cleanup	points 1 and 5 on map
Mechanized trash removal	point 4
Storm drain improvement	points 1, 2, 3 on map
Gabion basket retrofit	points 5 and 6 on map
Slope flattening/bank stabilization	near point 3 on map
Establish "no mow" buffer	along recently daylighted channel

### Priorities identified by stakeholders:

- monitor/control noxious weeds, especially yellow star-thistle
- no-mow buffer to improve filtration
- restore native understory/shrubs to improve habitat





## LPC\_R04E: COUNTRY CLUB - ABOVE 1700 EAST

This is a confined, isolated reach surrounded by fill slopes and roads. Vegetation is dominated by invasive species. Portions of the banks have been hardened with grouted rock and grouted gabions that are generally in poor condition and are being undercut.



### Issues affecting riparian function:

- invasive plants (eight species)
- unprotected storm drain outfalls
- limited native understory cover
- fill encroachment
- poor stabilization practices
- trash, graffiti

### Constraints/opportunities:

- tightly confined between fill and freeway
- culverts limit connectivity
- difficult to access







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
731	0.016	cobble, gravel	sand/silt	gabions, rip rap, concrete, asphalt chunks	occasionally present	absent	occasionally present

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
Gambel oak	26-50	6-25	76-100+	high	sparse
Siberian elm	26-75	26-75	26-50/76-100+	high/majority	absent to moderate
understory	0/6-25	0/6-25	51-100+	moderate/high	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
low	moderate	low	moderate

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Restoration of native understory plants	within vegetation type(s)
Stream cleanup	near points 3, 5, 7 on map
Mechanized trash removal	points 2, 4, 6, 8 on map
Storm drain improvement	points 5 and 8 on map
Biotechnical slope stabilization	north of point 2 on map
Gabion basket retrofit	point 1 on map
Bank stabilization	reach-scale
Grade control	reach-scale
Retrofit concrete wingwall protection	near point 8 on map

### Priorities identified by stakeholders:

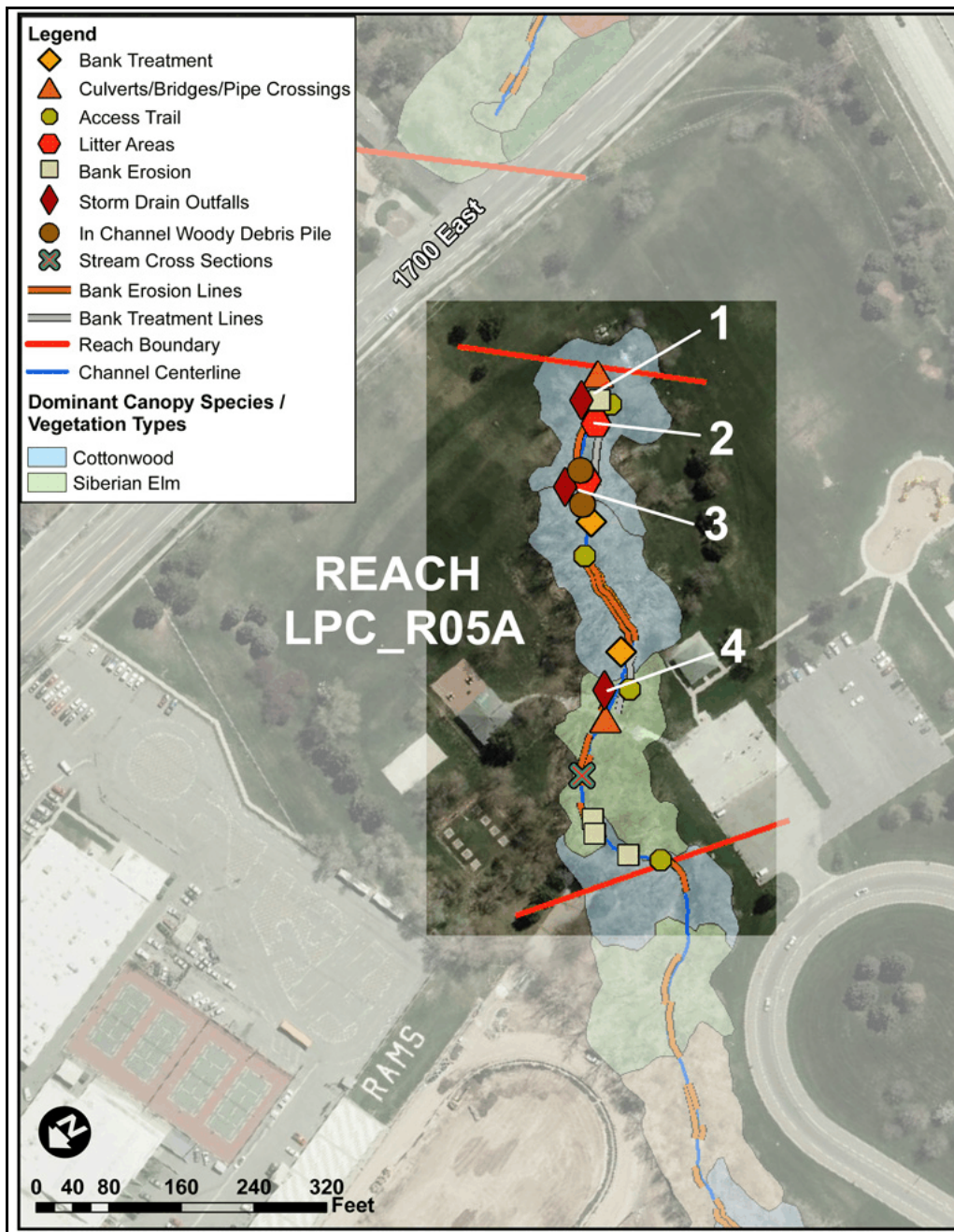
- restoration of native understory to improve habitat





## LPC\_R05A: UPPER SUGAR HOUSE PARK

This is the easternmost reach of Parleys Creek within Sugar House Park. Canopy cover from native trees is good, although Siberian elm is also very common. Bank stability is affected by root zone scour and compaction from foot traffic, and the channel is relatively wide and shallow. A blue footbridge crosses the channel midway through the reach.



### Issues affecting riparian function:

- invasive plants (four species)
- foot compaction/bank erosion
- eroded access trails
- storm drain outfalls
- limited native understory cover
- low bank/root zone erosion
- trash, graffiti

### Constraints/opportunities:

- good educational/interpretive opportunities
- heavy use area







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
619	0.013	cobble, gravel	sand/silt	rip rap	occasionally present	abundant	occasionally present

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
cottonwood	26-100+	26-75	26-75	high/moderate	sparse/absent
Siberian elm	51-75	26-50	26-50	high	absent

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
low	low	low	moderate

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control <sup>a</sup>	within vegetation type(s)
Restoration of native understory plants <sup>a</sup>	within vegetation type(s)
Stream cleanup <sup>a</sup>	points 2 and 3 on map
Retrofit concrete headwall protection	point 1 on map
Storm drain improvement <sup>a</sup>	points 1, 3, 4 on map
Bank stabilization (toe protection/shrub planting) <sup>a</sup>	reach-scale
Grade control	reach-scale
Access control/trail stabilization <sup>a</sup>	reach-scale
Establish "no mow" buffer <sup>a</sup>	reach-scale

<sup>a</sup> Identified as a priority by the Sugar House Park Authority (Hemphill 2010).

### Priorities identified by stakeholders:

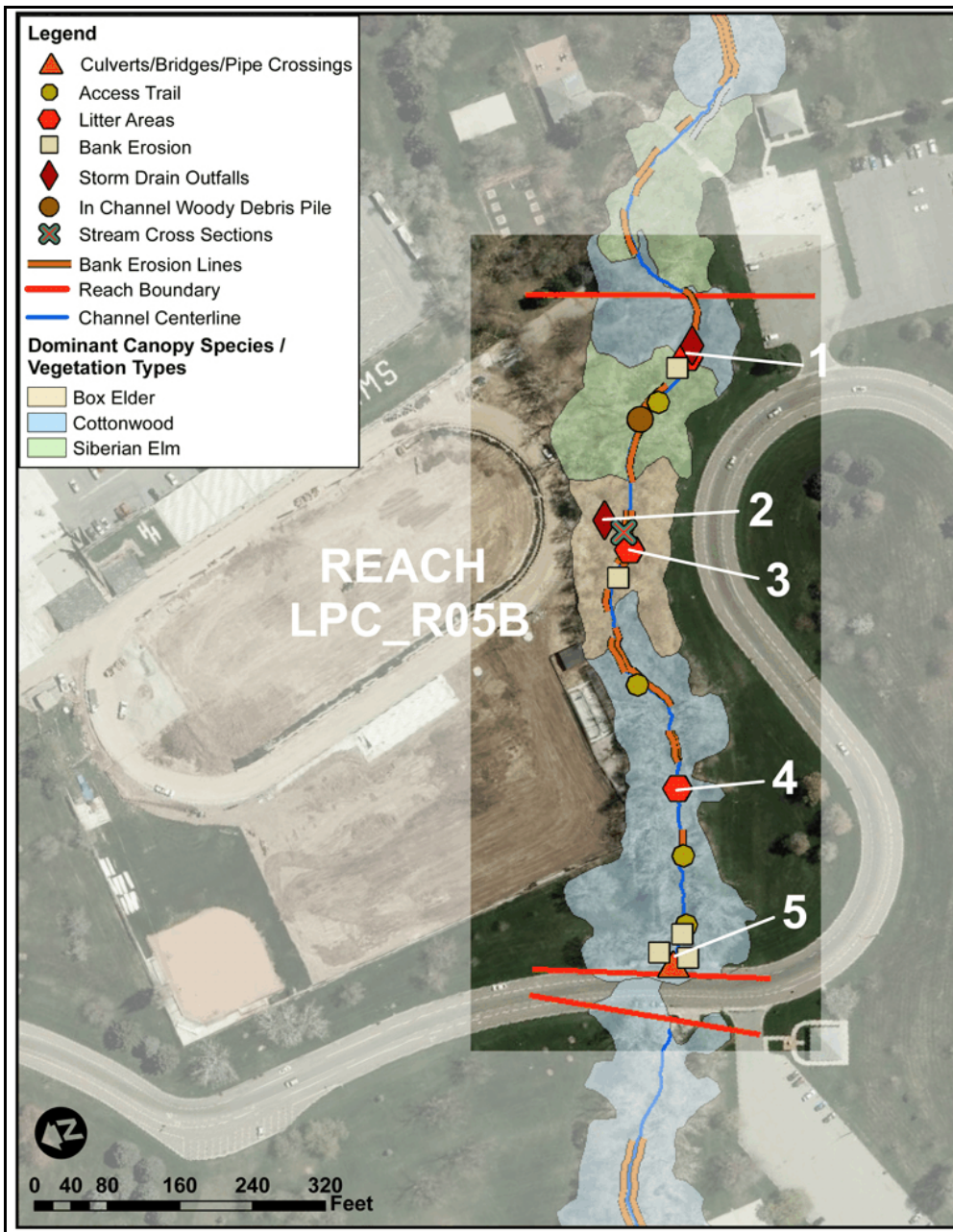
- define stream access points
- restore native understory
- improve stream stability near point 1 on map
- other priorities noted in table and footnote





## LPC\_R05B: SUGAR HOUSE PARK - NEAR HIGHLAND HIGH TRACK

The channel becomes narrower in this reach relative to LPC\_R05A, but otherwise is quite similar in character. Several well-developed gravel bars are present. Fill material for the track facility constrains floodplain width on the north bank in the downstream part of the reach. Native shrub cover is very good in this reach, but banks show evidence of root zone scour and scalloping.



### Issues affecting riparian function:

- invasive plants (six species)
- foot compaction/bank erosion
- eroded access trails
- storm drain outfalls
- fill encroachment
- limited native understory cover
- low bank/root zone erosion
- trash, graffiti

### Constraints/opportunities:

- good educational/interpretive opportunities
- heavy use area
- potential may exist to expand forested width





REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
793	0.011	cobble, gravel	sand/silt	none	occasionally present	occasionally present	absent

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
box elder	51-75	51-75	6-25	moderate	sparse
cottonwood	26-50	51-75	26-75	moderate	sparse
Siberian elm	76-100+	51-75	26-50	high	sparse

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
low	none	high	moderate

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control <sup>a</sup>	within vegetation type(s)
Restoration of native understory plants <sup>a</sup>	within vegetation type(s)
Stream cleanup <sup>a</sup>	points 1, 3, 4 on map
Storm drain improvement <sup>a</sup>	points 1 and 2 on map
Bank stabilization (toe protection) <sup>a</sup>	reach-scale
Grade control <sup>a</sup>	reach-scale
Access control/trail stabilization <sup>a</sup>	reach-scale
Establish "no mow" buffer <sup>a</sup>	reach-scale
Culvert replacement/headwall retrofit <sup>a</sup>	point 5 on map

<sup>a</sup> Identified as a priority by the Sugar House Park Authority (Hemphill 2010).

### Priorities identified by stakeholders:

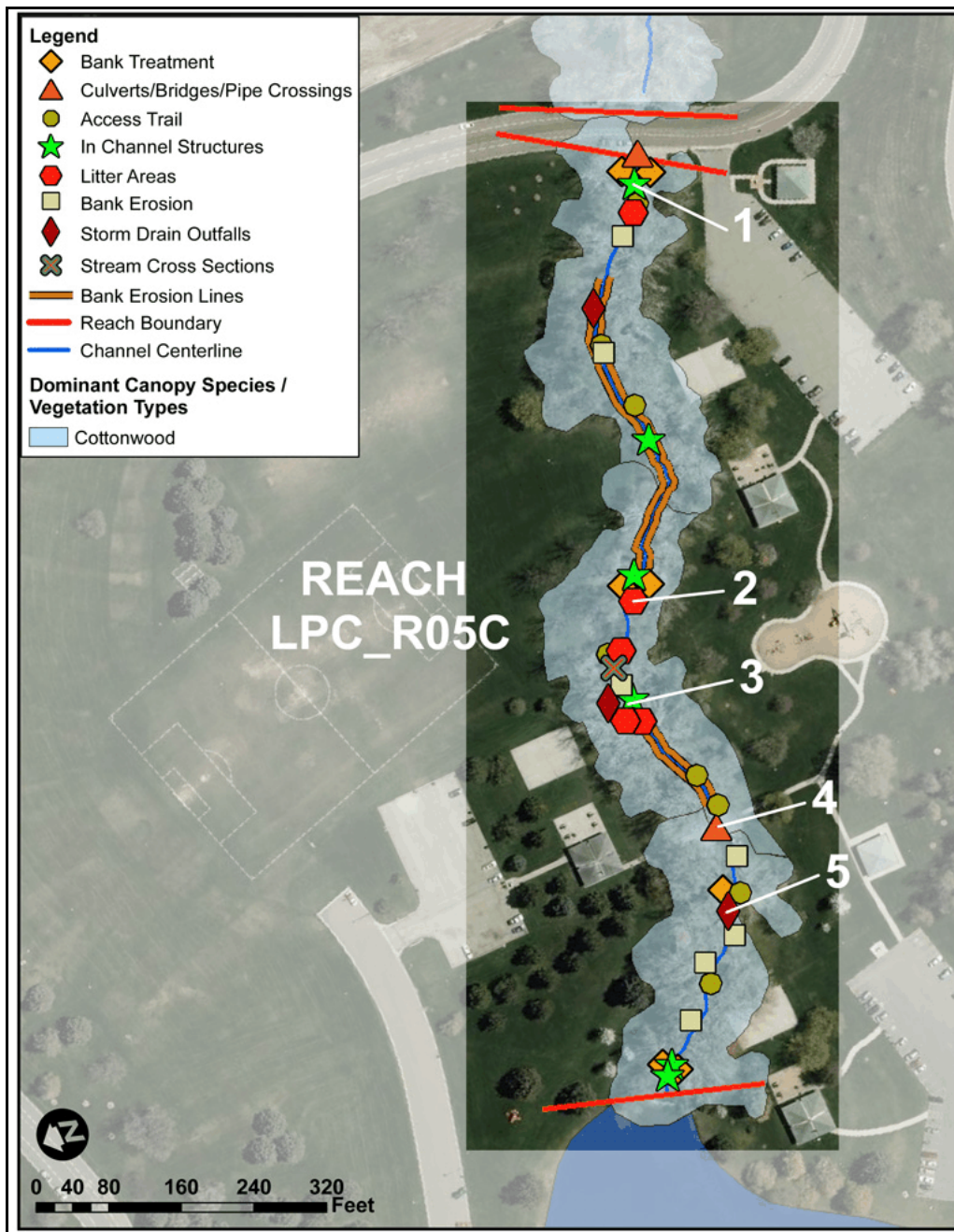
- define stream access points
- restore native understory
- other priorities noted in table and footnote





## LPC\_R05C: MIDDLE SUGAR HOUSE PARK

In this portion of the park, the character of riparian corridor becomes less natural than upstream. Developed picnic facilities are present, and mowed turf lines the banks. Canopy cover is good and is dominated by native cottonwood trees. Aesthetics are affected by various streambed and bank hardening structures made of concrete, grouted rock, and rip rap.



### Issues affecting riparian function:

- invasive plants (Siberian elm, burdock)
- foot compaction/bank erosion
- eroded access trails
- storm drain outfalls
- lack of native understory cover
- limited shrub cover
- low bank/root zone erosion
- trash, graffiti

### Constraints/opportunities:

- good educational/interpretive opportunities
- heavy use area







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
1147	0.015	gravel	sand/silt	rip rap, concrete, asphalt chunks	mostly absent	absent	absent

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
cottonwood	51-75	6-75	51-100+	moderate	absent/sparse

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
low	low	low	low

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control <sup>a</sup>	within vegetation type(s)
Restoration of native understory plants <sup>a</sup>	within vegetation type(s)
Culvert replacement/outlet protection <sup>a</sup>	point 1 on map
Stream cleanup <sup>a</sup>	near points 1 and 3 on map
Mechanized trash removal	points 2 and 3 on map
Replace crossing with full-span structure	point 4 on map
Storm drain improvement	point 5 on map
Access control/trail stabilization <sup>a</sup>	reach-scale
Bank stabilization (toe protection/shrub planting) <sup>a</sup>	reach-scale
Grade control/retrofit existing bed structures <sup>a</sup>	reach-scale
Establish "no mow" buffer <sup>a</sup>	reach-scale

<sup>a</sup> Identified as a priority by the Sugar House Park Authority (Hemphill 2010).

### Priorities identified by stakeholders:

- define stream access points
- restore native understory
- other priorities noted in table and footnote





## LPC\_R05D: SUGAR HOUSE PARK - BELOW POND

This is a short, isolated stream reach between the pond and the 1300 East culvert. Existing concrete bank protection near the top of the reach provides limited benefit in terms of aesthetic, filtration, or floodplain storage functions. Siberian elm is common in the canopy and shrub layers. Bed material is coarser than upstream reaches, and slope is relatively high.



### Issues affecting riparian function:

- invasive plants (Siberian elm, Russian olive, burdock, thistle)
- eroded access trails
- limited native understory cover
- concrete bank protection

### Constraints/opportunities:

- short reach
- disconnected by culverts
- heavy use area







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
176	0.026	cobble, gravel, silt	sand/silt	rip rap, concrete	absent	occasionally present	occasionally present

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
cottonwood	76-100+	51-75	26-50	high	moderate

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
none	low	none	low

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control <sup>a</sup>	within vegetation type(s)
Restoration of native understory plants <sup>a</sup>	within vegetation type(s)
Culvert outlet protection <sup>a</sup>	point 1 on map
Replace concrete with biotechnical bank stabilization <sup>a</sup>	near points 1 and 2 on map
Access control/trail stabilization <sup>a</sup>	reach-scale
Establish "no mow" buffer <sup>a</sup>	reach-scale
Naturalize and revegetate banks of pond near inflow area	point 3 on map

<sup>a</sup> Identified as priority by the Sugar House Park Authority (Hemphill 2010).

### Priorities identified by stakeholders:

- define stream access points
- dredge pond
- pond shoreline improvements
- other priorities noted in table and footnote





This reach is an established natural area with trails and interpretive displays that is surrounded by commercial development. Protection for the area was originally facilitated by students at Hawthorne Elementary School, and school children remain involved today. Bed material and streambed structure are heavily influenced by a clay/root mat “shelf” feature in this reach.







REACH CHARACTERISTICS							
LENGTH (feet)	SLOPE (feet/feet)	BED MATERIAL IN RIFFLES	BANK MATERIAL	BANK HARDENING	BAR DEPOSITS	FLAT FLOODPLAIN SURFACES	WOODY DEBRIS IN CHANNEL
803	0.023	cobble, gravel	cobble, sand/silt	rip rap, concrete, asphalt chunks	absent	occasionally present	absent

VEGETATION CHARACTERISTICS					
DOMINANT CANOPY SPECIES / VEGETATION TYPE	PERCENT COVER			INVASIVE SPECIES CLASS	WOODY DEBRIS ON BANKS
	Canopy	Shrub	Understory		
cottonwood	51-100+	26-50	6-50	high/moderate	absent/sparse
introduced/native tree mix	26-50	6-25	76-100+	moderate	absent
other native trees or shrubs	26-50	26-50	51-100+	low/none	absent
Siberian elm	51-75	51-75	51-75	high	sparse

EXISTING INFRASTRUCTURE			
WITHIN 50 FEET OF AHWL		WITHIN 50-100 FEET OF AHWL	
North Bank	South Bank	North Bank	South Bank
low	high	high	moderate

### Priorities identified by stakeholders:

- education/outreach
- define stream access points
- phased restoration with native riparian plants
- revegetate exposed soil/social trails
- bank stabilization and toe protection
- address flood control access

RECOMMENDATIONS	
IMPROVEMENT MEASURE	LOCATION
Invasive plant removal/control	within vegetation type(s)
Revegetation (native understory)	within vegetation type(s)
Biotechnical slope stabilization	north bank between points 1 and 3
Stream cleanup	points 1, 2, 5 on map
Mechanized trash removal	points 1 and 4 on map
Storm drain improvement	points 2 and 3 on map
Resolve erosion at flood control access point	point 7 on map
Access control/trail stabilization	reach-scale
Grade control/retrofit existing bed structures	reach-scale/point 6 on map



