Figure 1 – Location Map

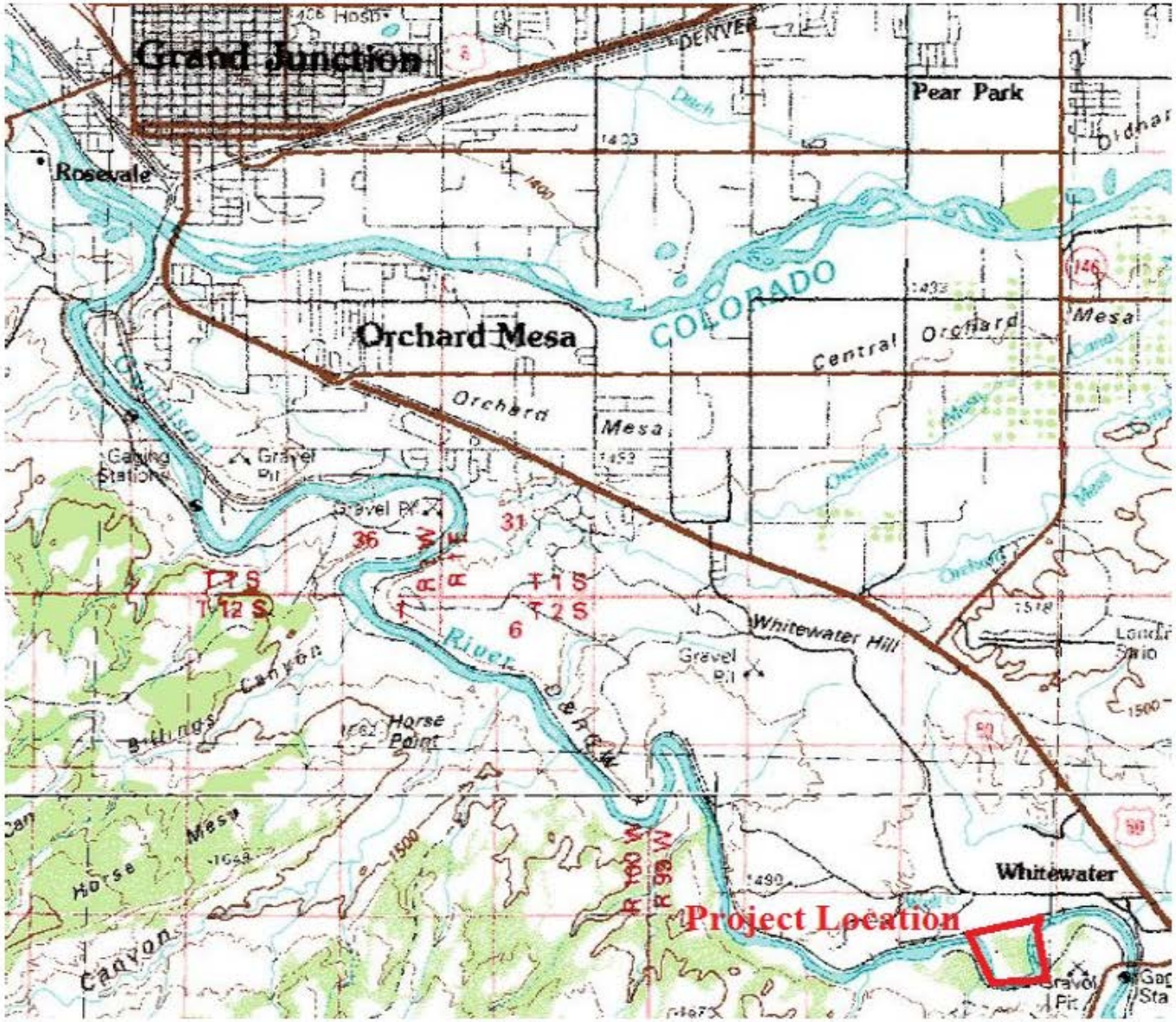
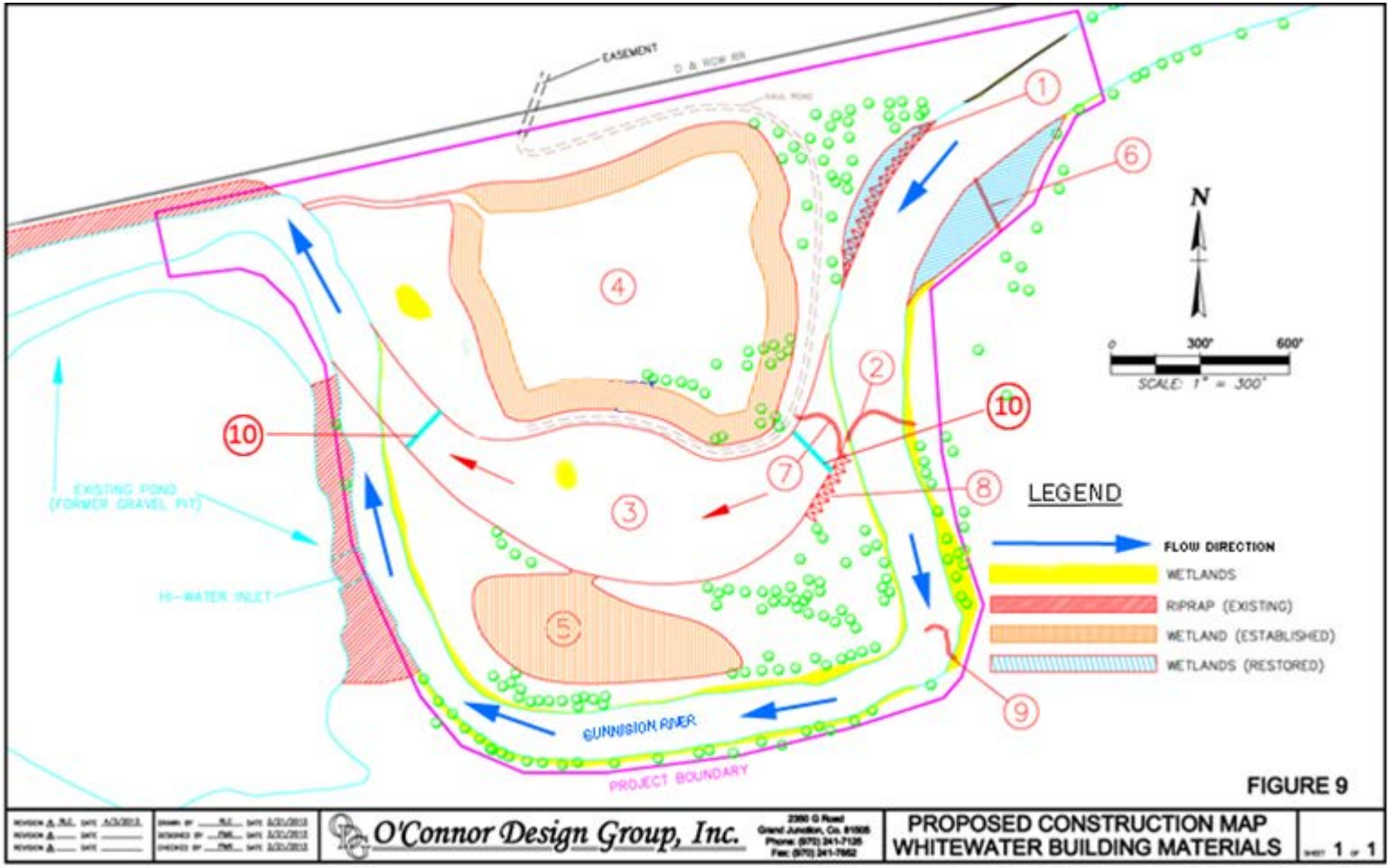
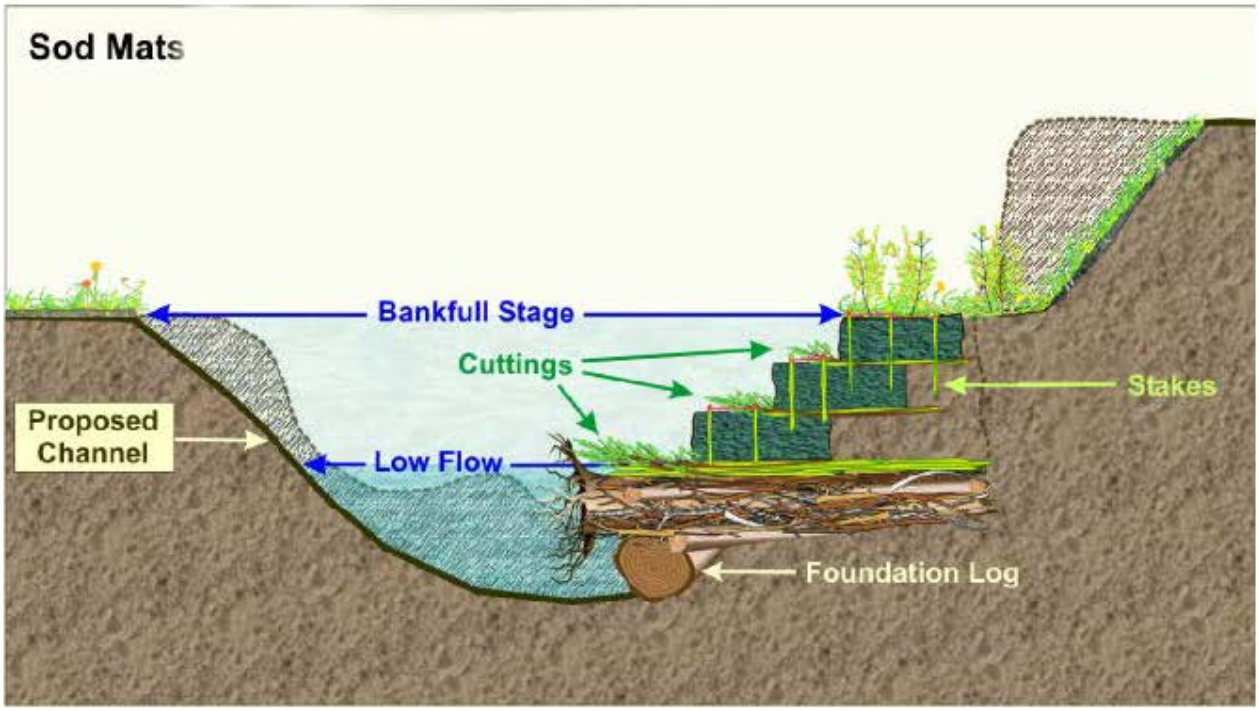


Figure 2 – Proposed Work



1. Toe wood benches	**4. North Pond**	**7. Cross vane**
2. Cross vane	**5. South Pond**	**8. Toe wood benches**
3. New channel	**6. Sill**	**9. J-Hook**
10. Coffer dams		

Figure 3


Sod Mats
Bankfull Stage
Cuttings
Stakes
Proposed Channel
Low Flow
Foundation Log

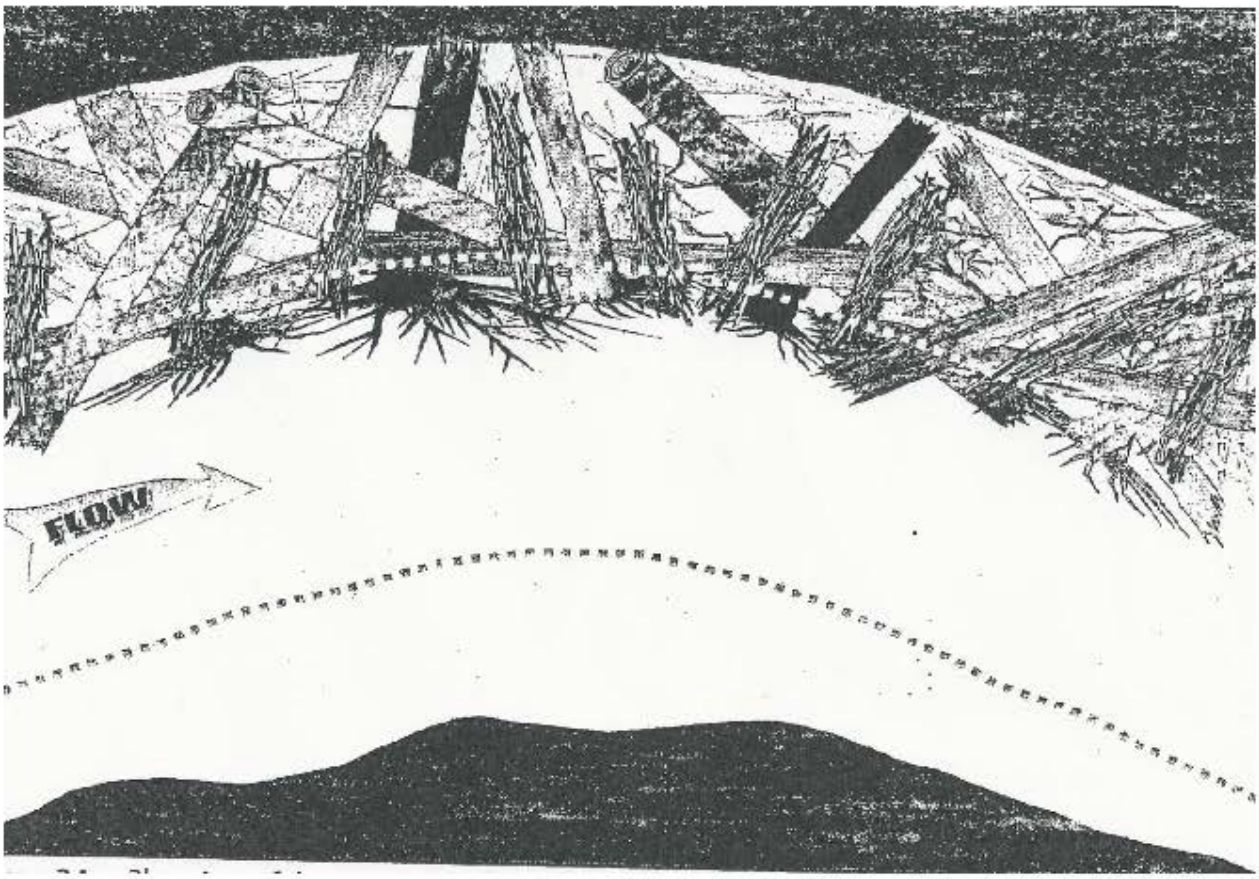
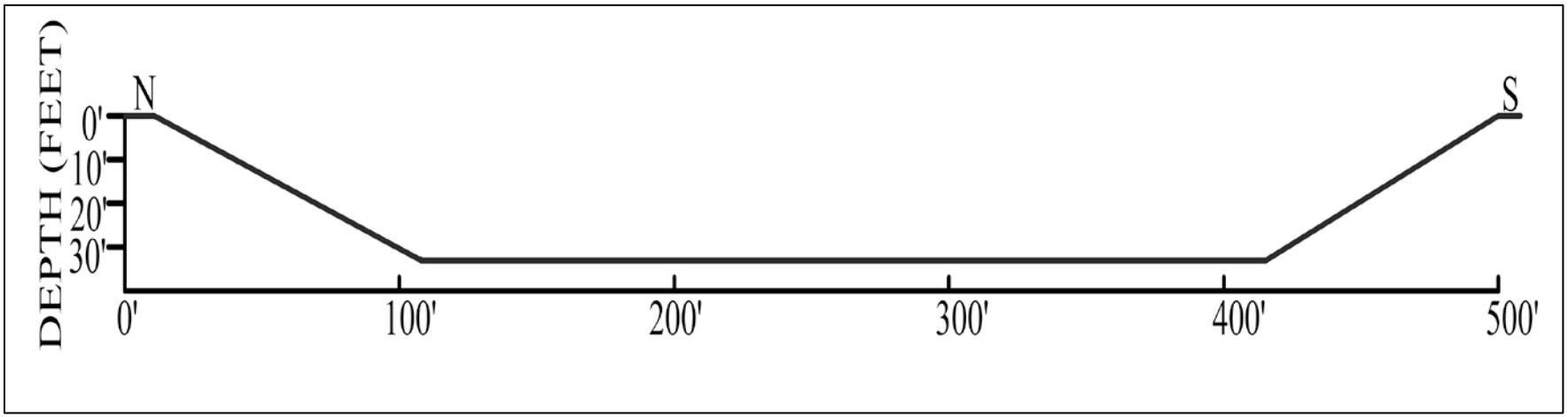

FLOW

Figure 4



Proposed channel cross section at widest point

Figure 5

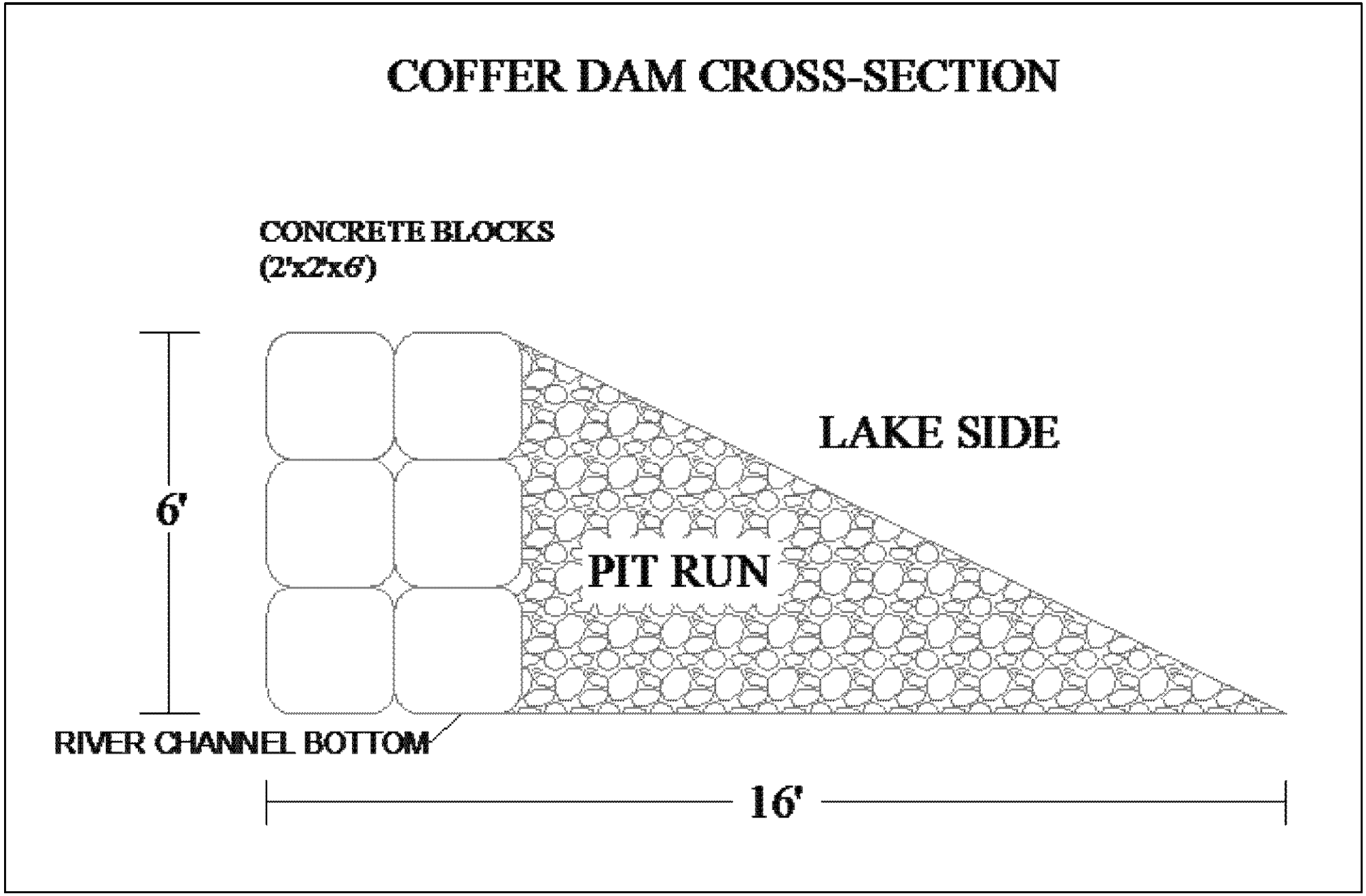

COFFER DAM CROSS-SECTION
CONCRETE BLOCKS
(2'x2'x6')
6'
LAKE SIDE
PIT RUN
RIVER CHANNEL BOTTOM
16'

Figure 6 – Cross Vane Typical Cross Section

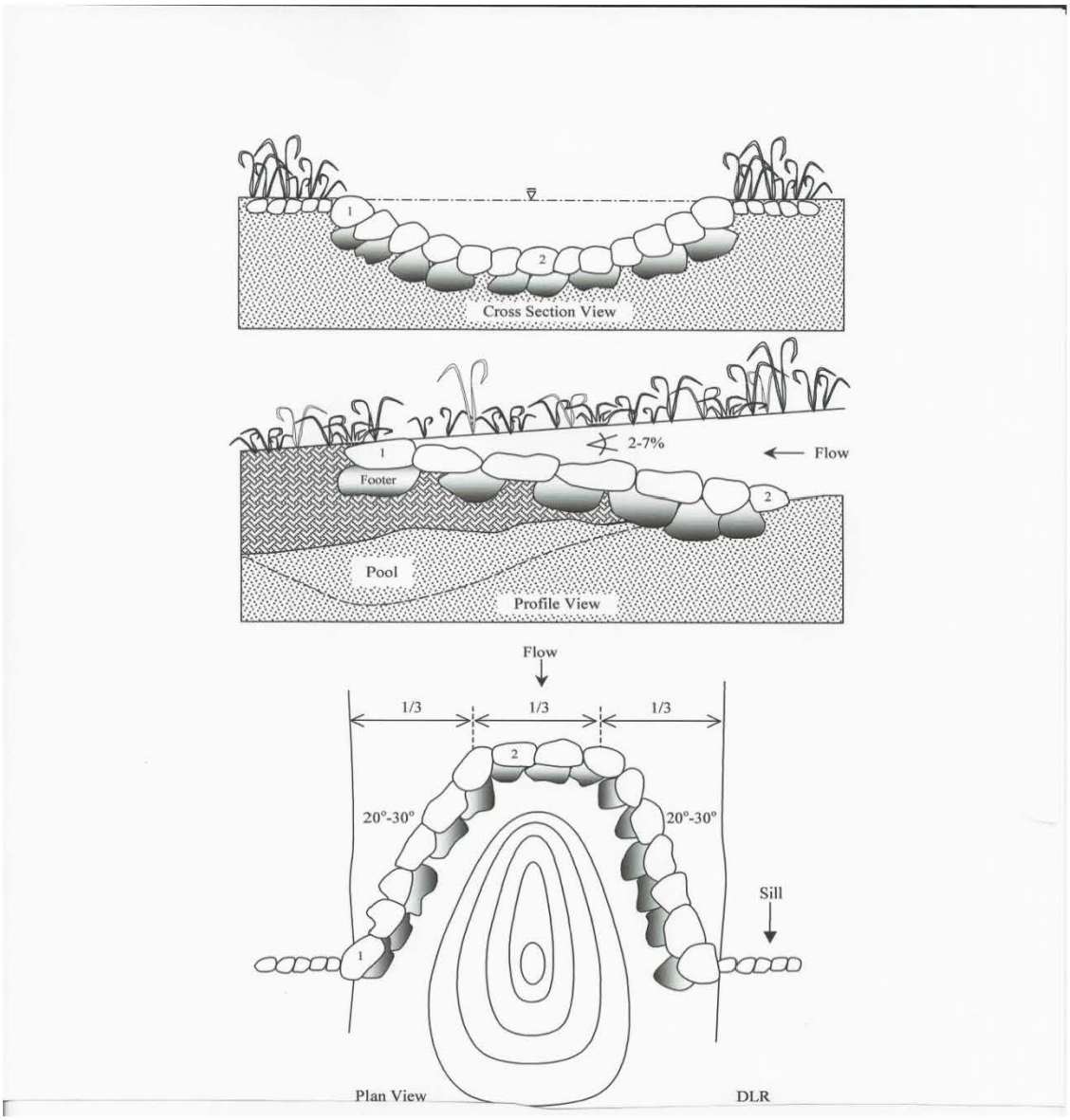


Figure 7

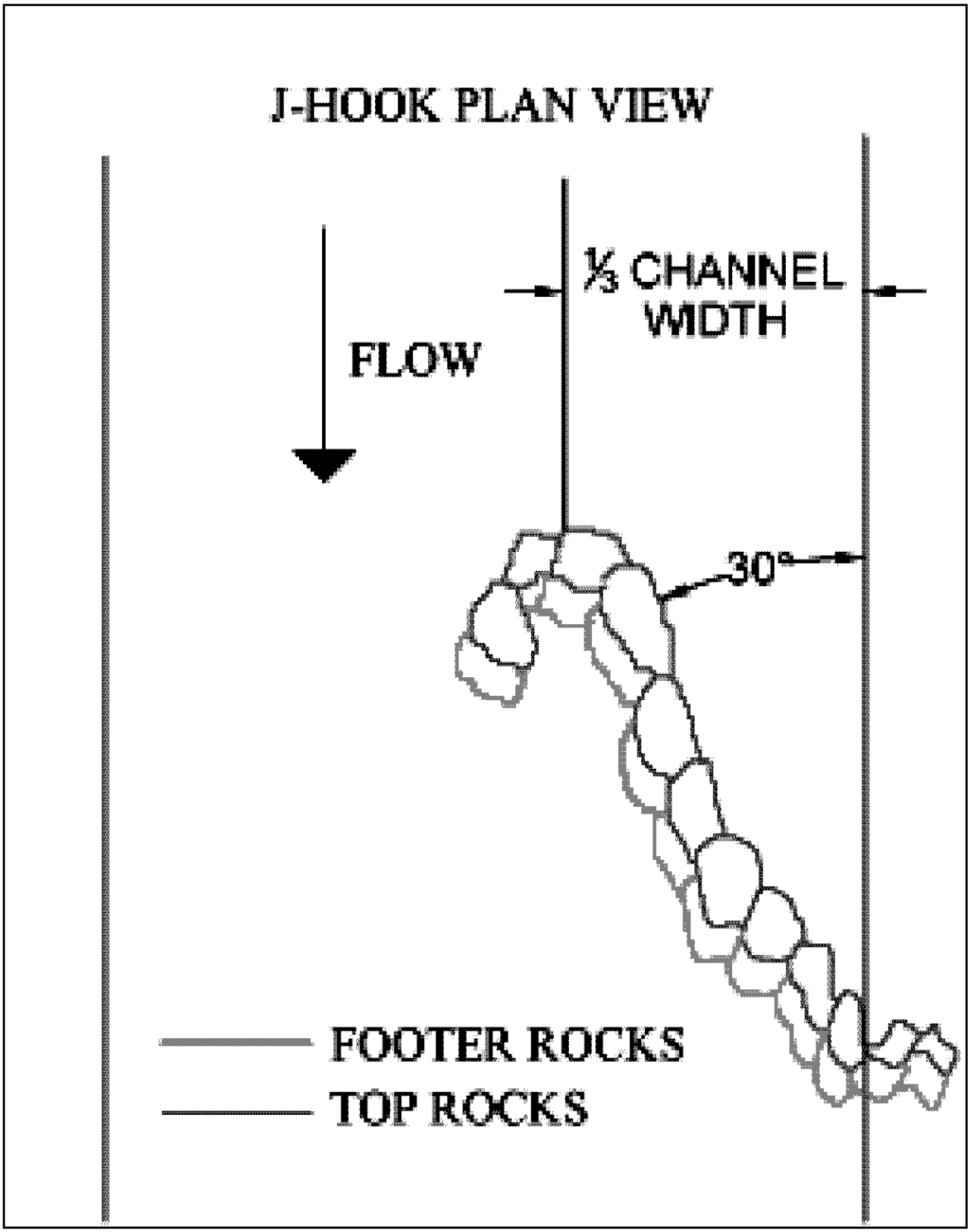

J-HOOK PLAN VIEW
⅓ CHANNEL WIDTH
FLOW
30°
FOOTER ROCKS
TOP ROCKS

Figure 8

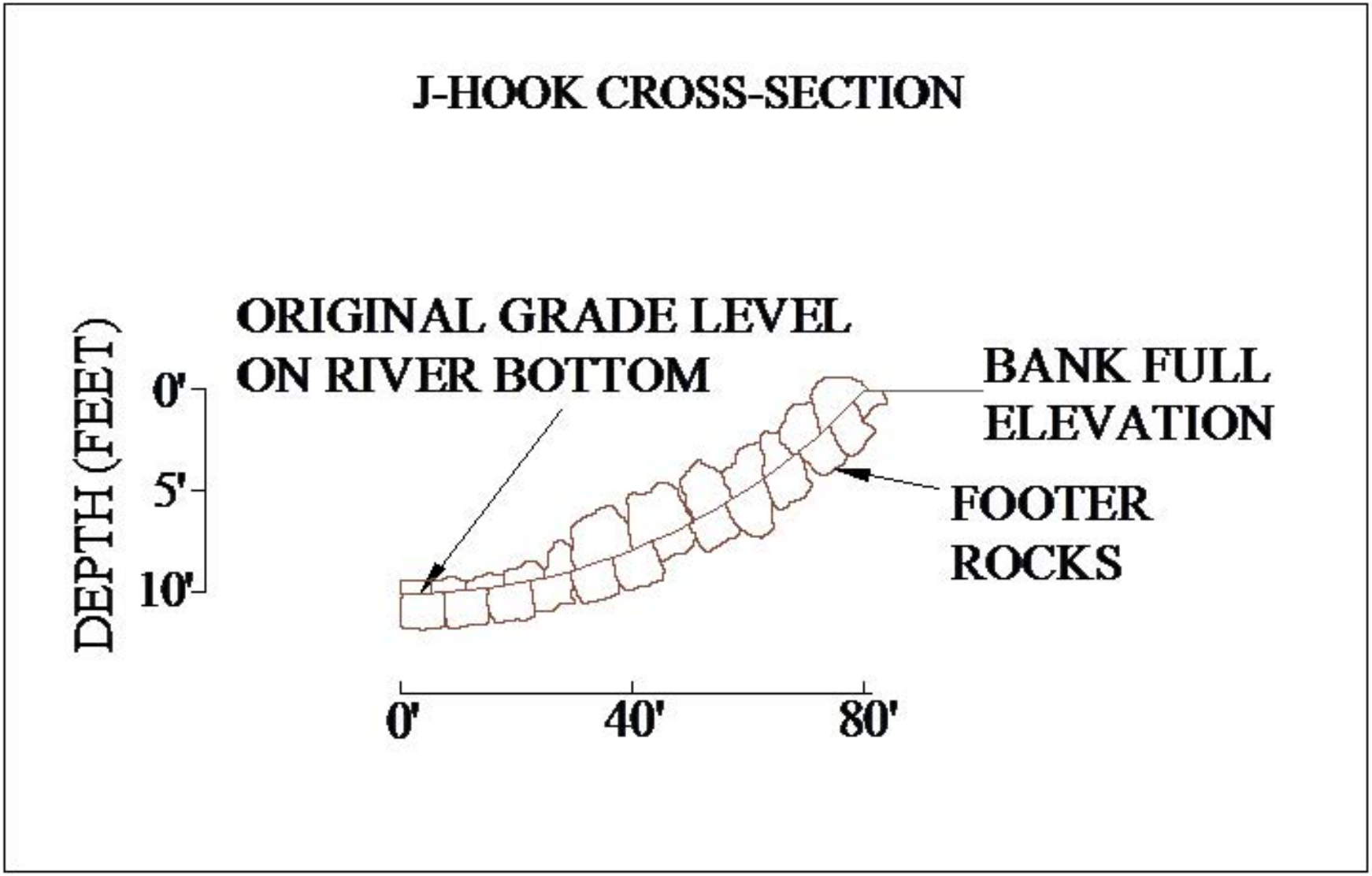

J-HOOK CROSS-SECTION
ORIGINAL GRADE LEVEL
ON RIVER BOTTOM
BANK FULL
ELEVATION
FOOTER
ROCKS
DEPTH (FEET)
0'
5'
10'
0'
40'
80'

Figure 9 - Sill Cross Section

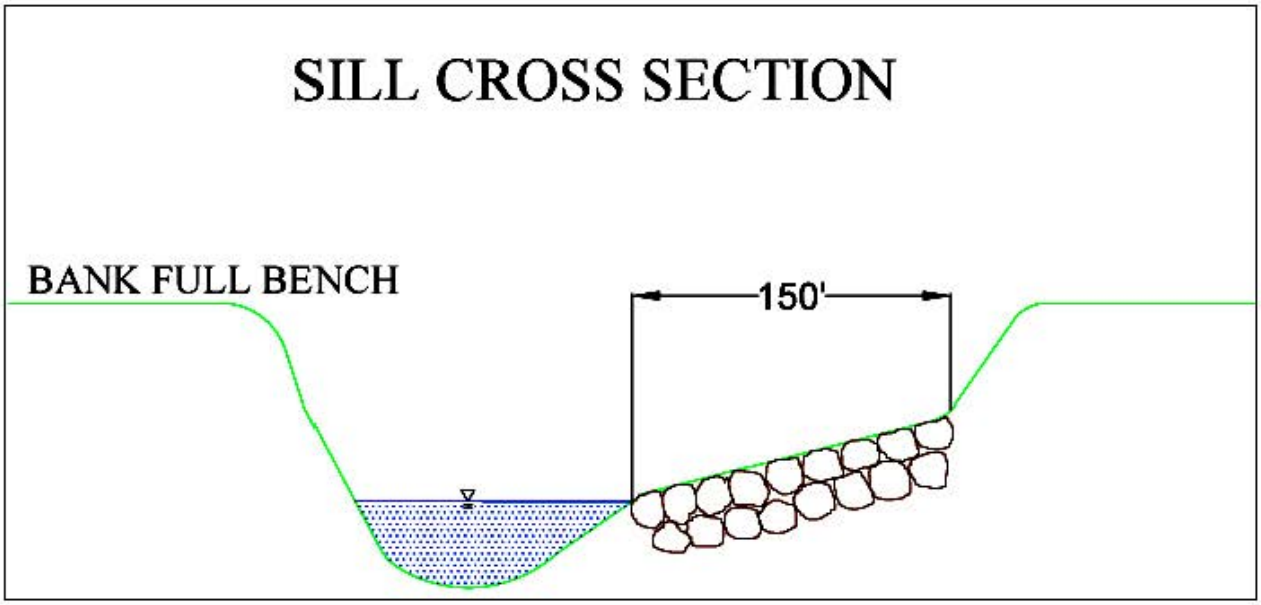


Figure 10

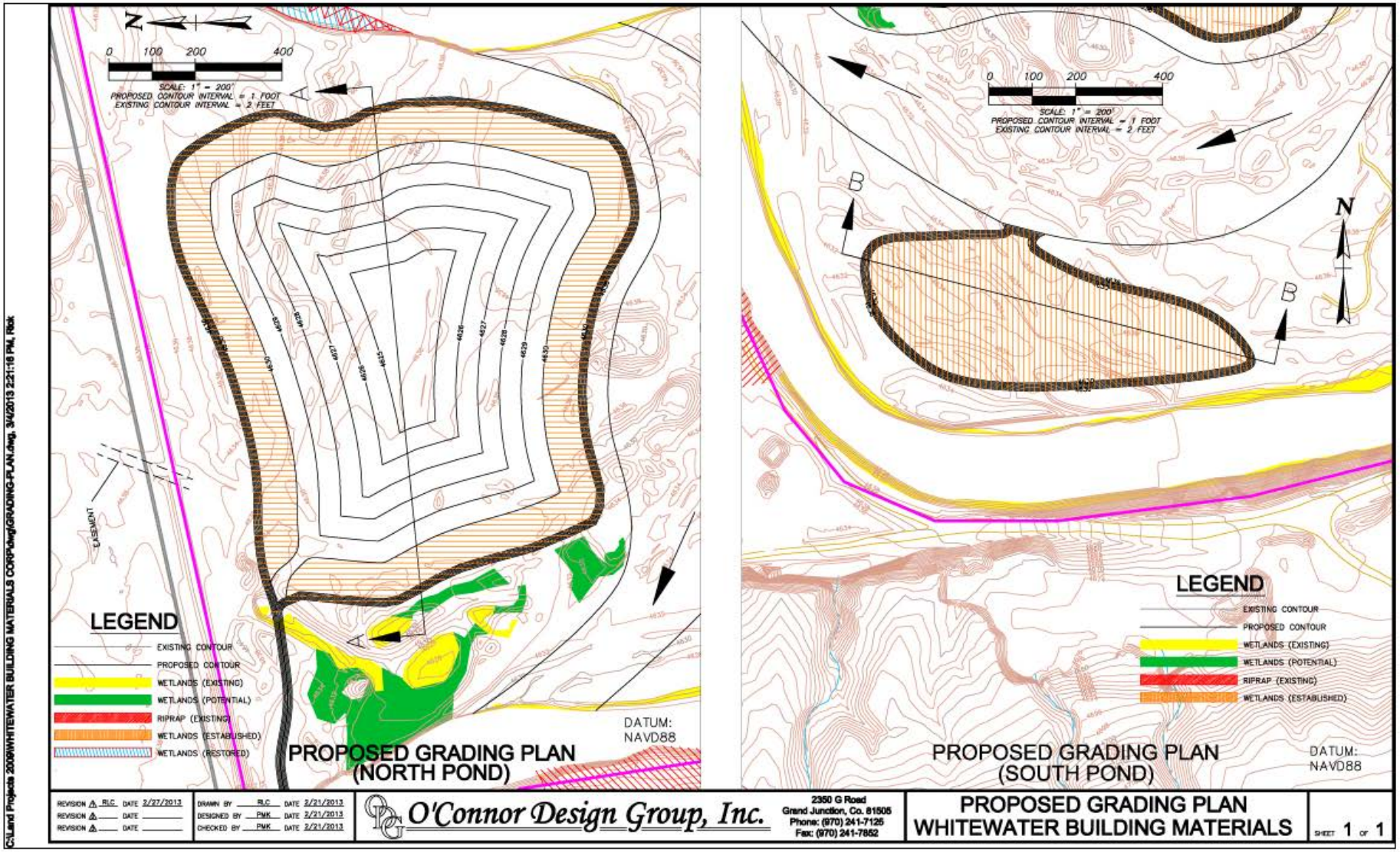

N
0 100 200 400
SCALE: 1" = 200'
PROPOSED CONTOUR INTERVAL = 1 FOOT
EXISTING CONTOUR INTERVAL = 2 FEET
A
A
EASEMENT
LEGEND
EXISTING CONTOUR
PROPOSED CONTOUR
WETLANDS (EXISTING)
WETLANDS (POTENTIAL)
RIPRAP (EXISTING)
WETLANDS (ESTABLISHED)
WETLANDS (RESTORED)
PROPOSED GRADING PLAN
(NORTH POND)
DATUM:
NAVD88
0 100 200 400
SCALE: 1" = 200'
PROPOSED CONTOUR INTERVAL = 1 FOOT
EXISTING CONTOUR INTERVAL = 2 FEET
B
B
N
LEGEND
EXISTING CONTOUR
PROPOSED CONTOUR
WETLANDS (EXISTING)
WETLANDS (POTENTIAL)
RIPRAP (EXISTING)
WETLANDS (ESTABLISHED)
PROPOSED GRADING PLAN
(SOUTH POND)
DATUM:
NAVD88
REVISION 1 RLC DATE 2/27/2013
REVISION 2 DATE
REVISION 3 DATE
DRAWN BY RLC DATE 2/21/2013
DESIGNED BY PMK DATE 2/21/2013
CHECKED BY PMK DATE 2/21/2013
O'Connor Design Group, Inc.
2350 G Road
Grand Junction, Co. 81505
Phone: (970) 241-7125
Fax: (970) 241-7852
PROPOSED GRADING PLAN
WHITEWATER BUILDING MATERIALS
SHEET 1 OF 1
C:\Land Projects 2006\WHITEWATER BUILDING MATERIALS CORP\dwg\GRADING-PLAN.dwg, 3/4/2013 2:21:18 PM, Rick

Figure 11

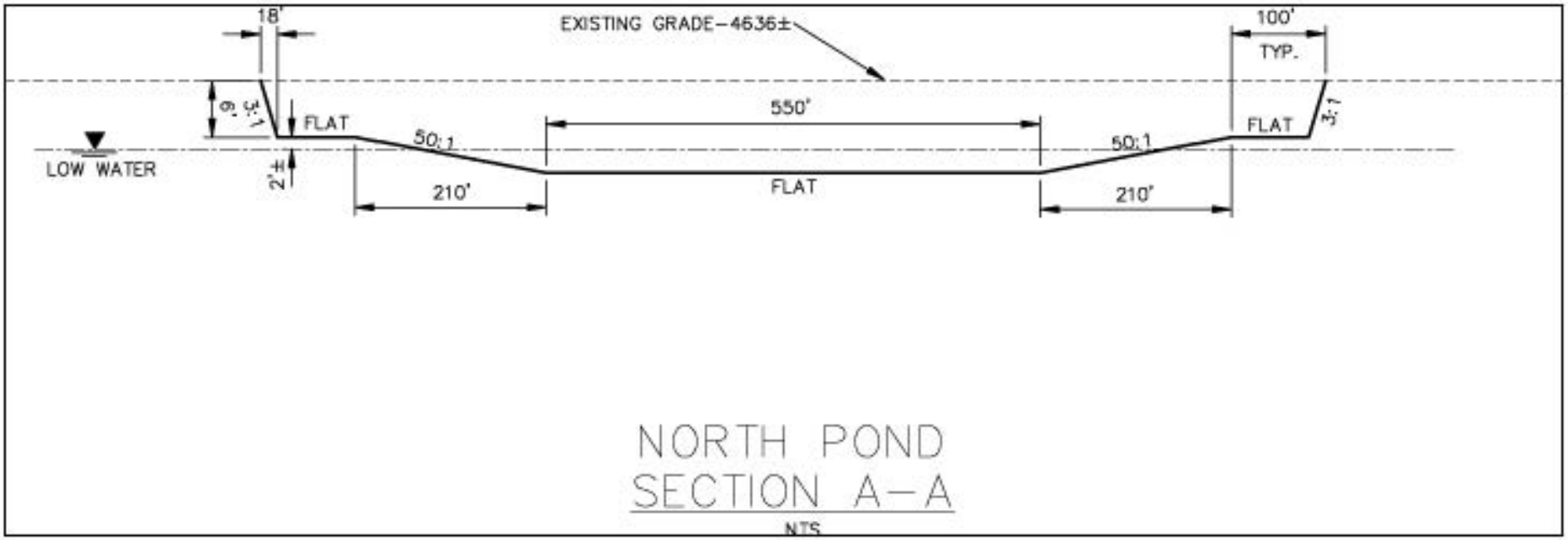

18'
EXISTING GRADE-4636±
100'
TYP.
6'
3:1
FLAT
50:1
550'
50:1
FLAT
3:1
LOW WATER
2'
210'
FLAT
210'
NORTH POND
SECTION A-A
NTS

Figure 12

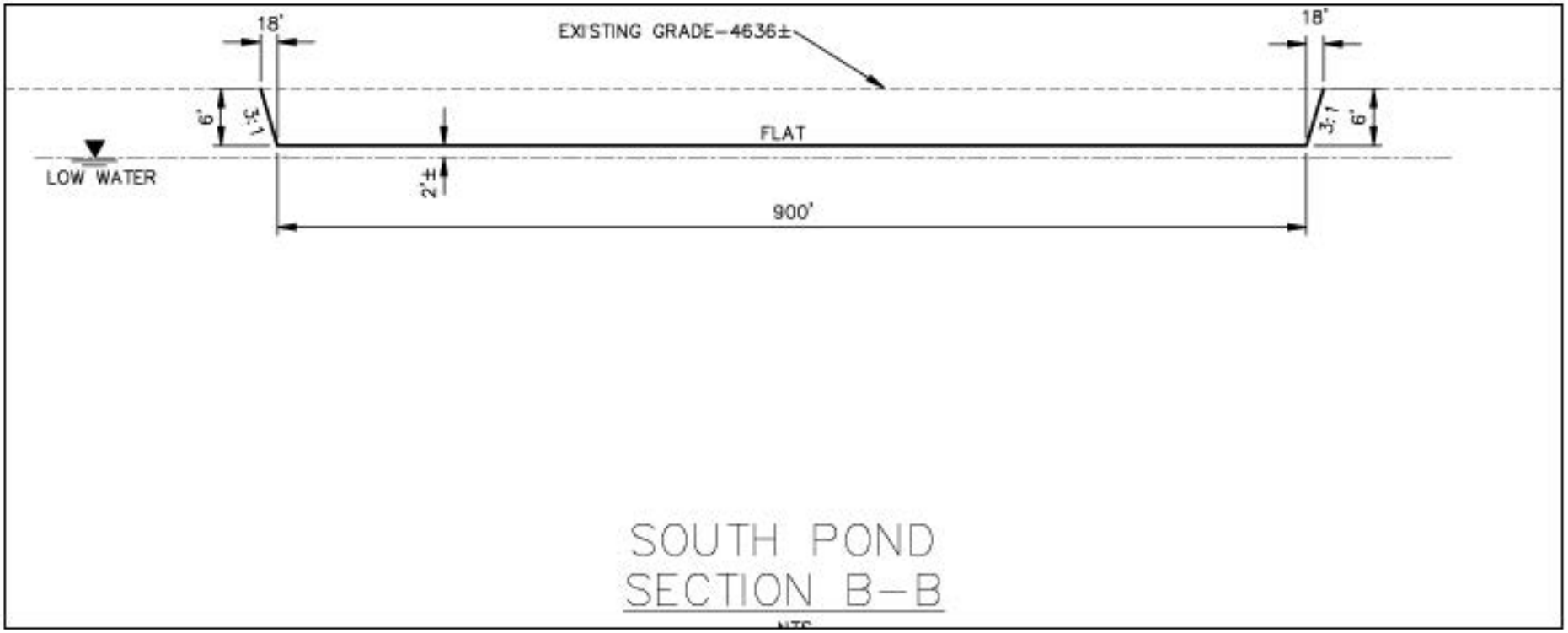

18'
EXISTING GRADE-4636±
18'
6'
3:1
FLAT
3:1
6'
LOW WATER
2'±
900'
SOUTH POND
SECTION B-B

Figure 13

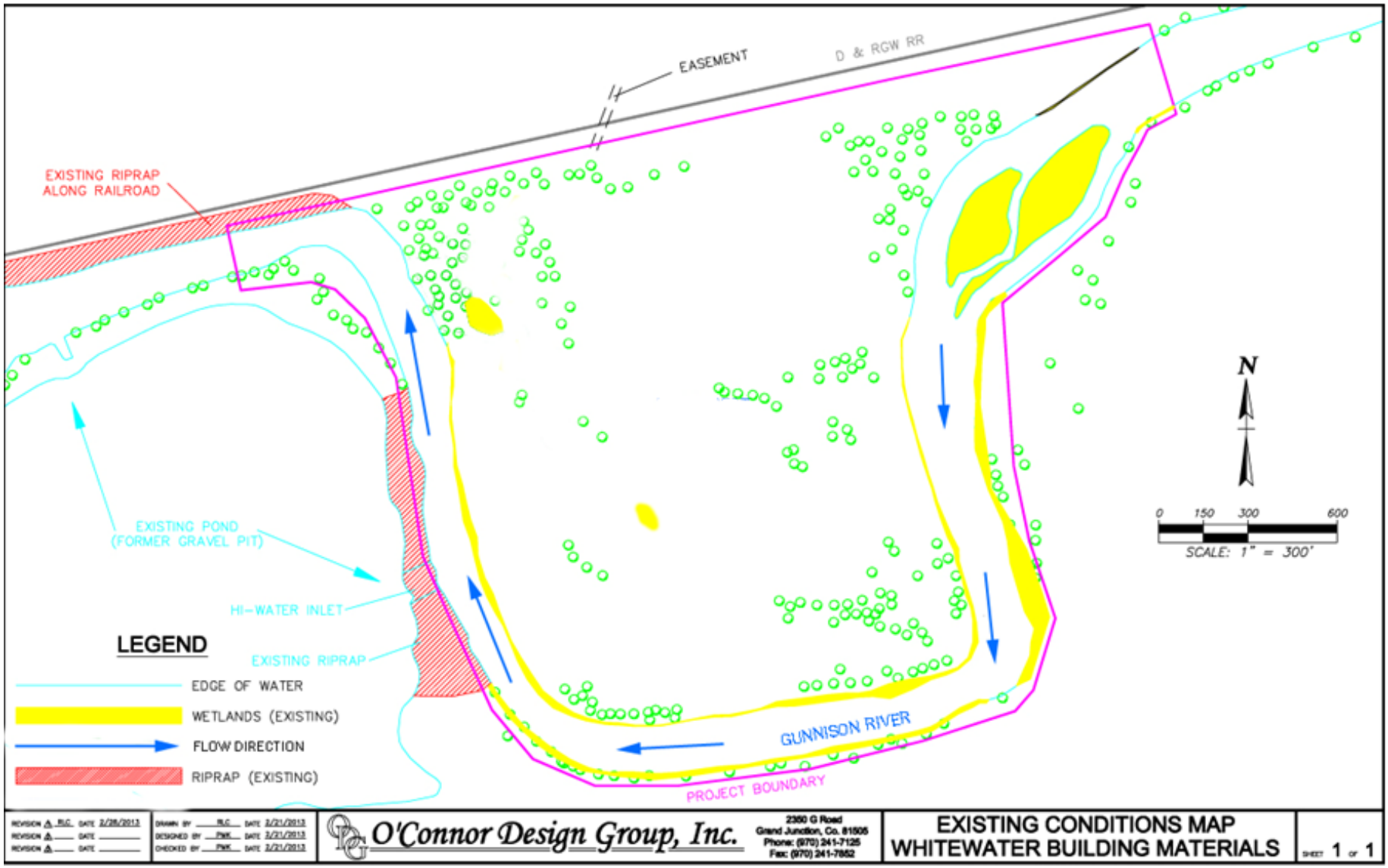

EASEMENT
D & RGW RR
EXISTING RIPRAP
ALONG RAILROAD
EXISTING POND
(FORMER GRAVEL PIT)
HI-WATER INLET
EXISTING RIPRAP
LEGEND
EDGE OF WATER
WETLANDS (EXISTING)
FLOW DIRECTION
RIPRAP (EXISTING)
GUNNISON RIVER
PROJECT BOUNDARY
N
0 150 300 600
SCALE: 1" = 300'
REVISION 1 RLC DATE 2/28/2013
REVISION 2 DATE
REVISION 3 DATE
DRAWN BY RLC DATE 2/21/2013
DESIGNED BY PWK DATE 2/21/2013
CHECKED BY PWK DATE 2/21/2013
O'Connor Design Group, Inc.
2350 G Road
Grand Junction, Co. 81505
Phone: (970) 241-7125
Fax: (970) 241-7852
EXISTING CONDITIONS MAP
WHITEWATER BUILDING MATERIALS
SHEET 1 OF 1

Figure 14

Figure 15 – Alternative 1

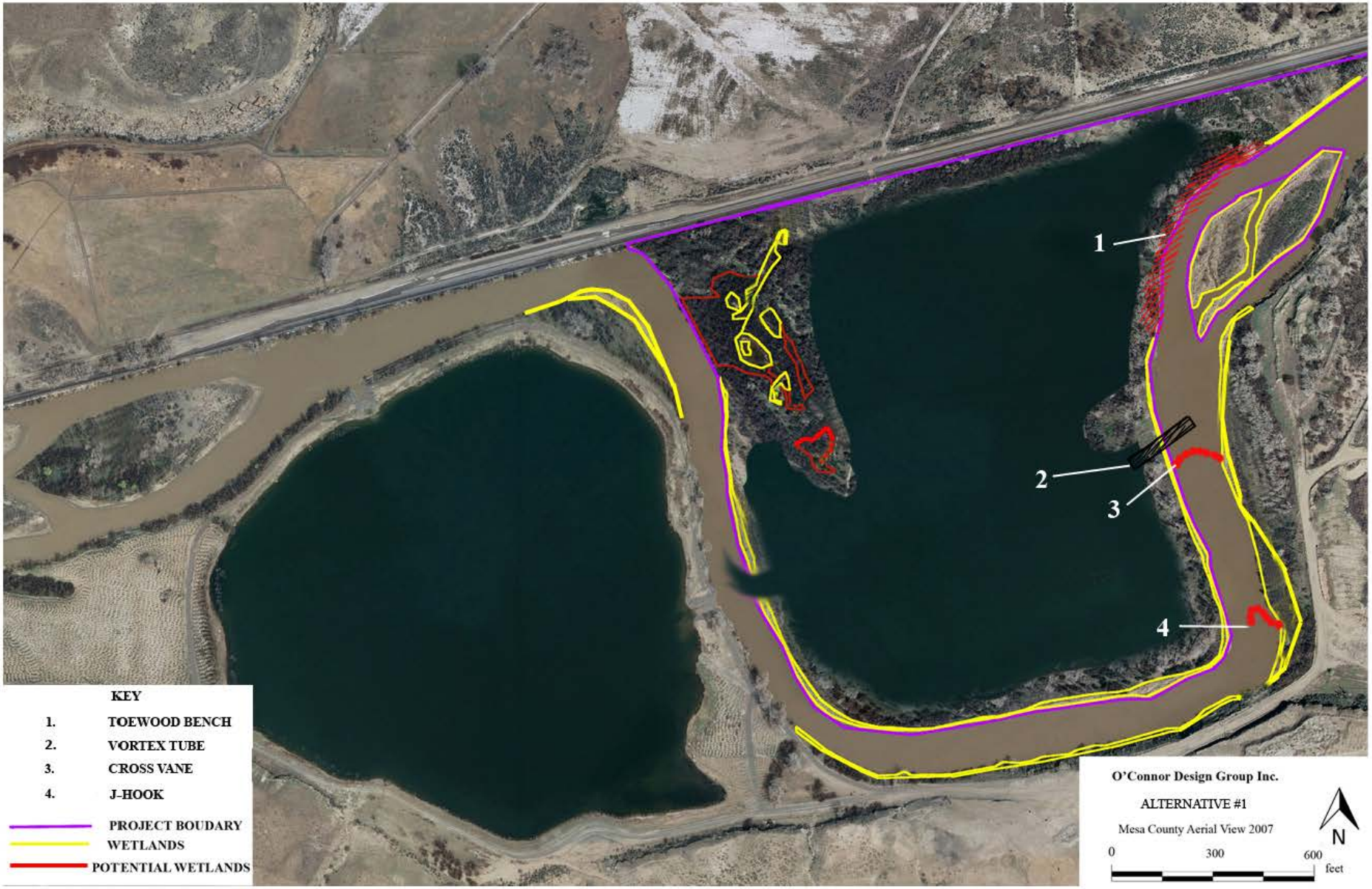


Figure 16 – Vortex Tube Cross Section

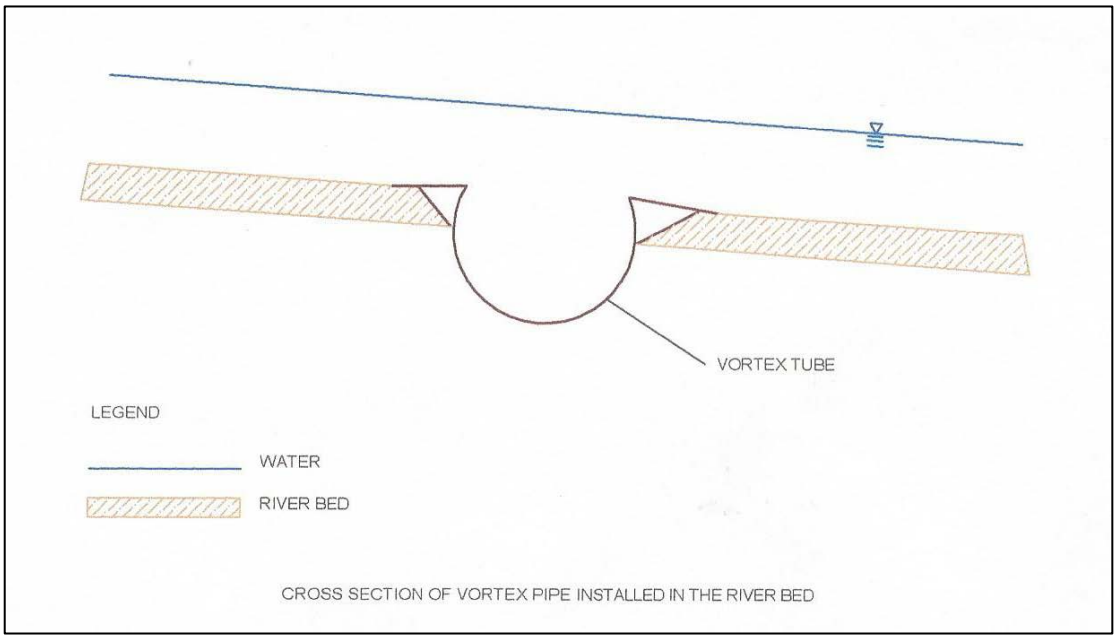


Figure 17 – Alternative 2

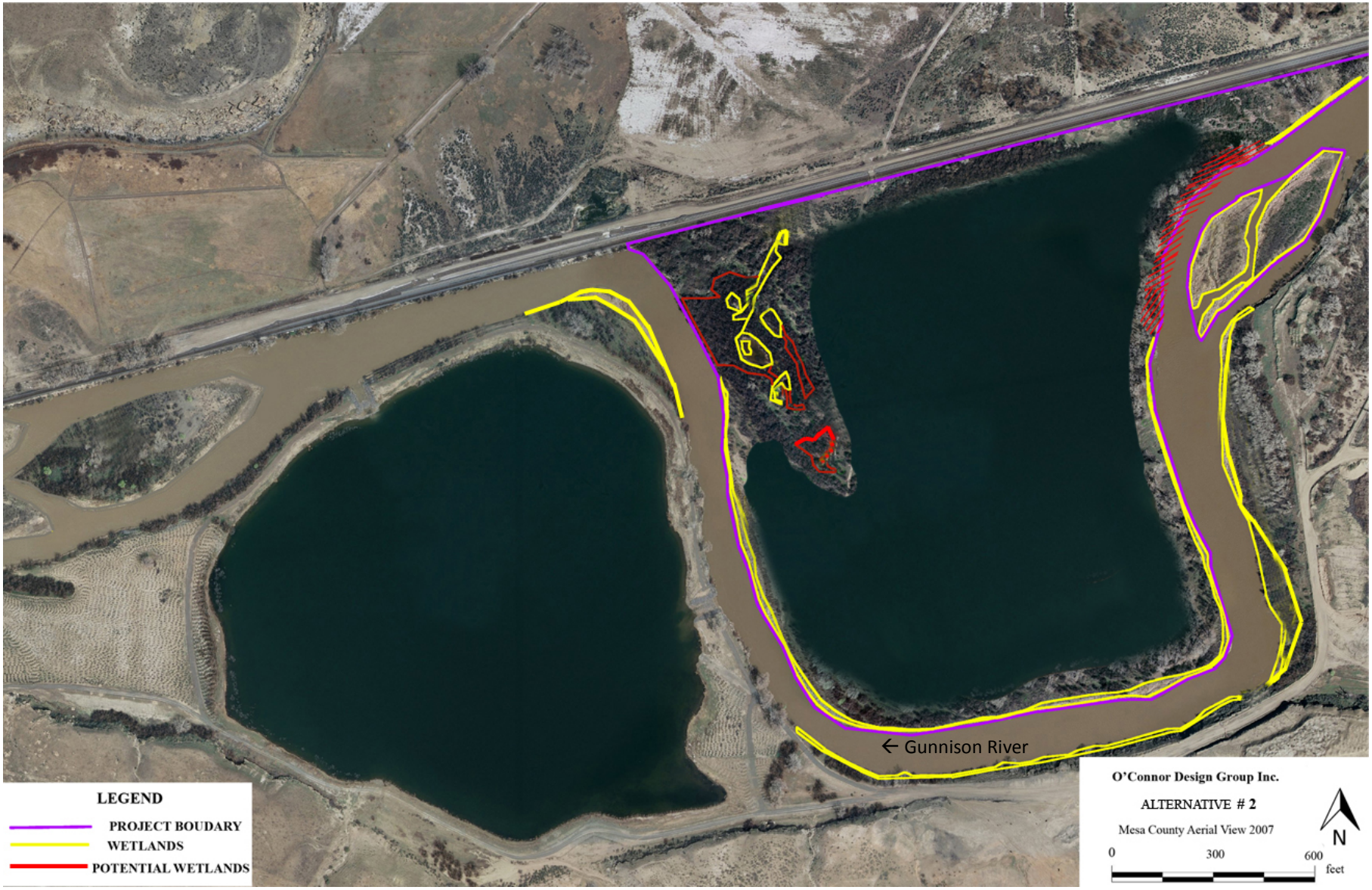


Figure 18 – Wetland Plant List

Swift Horticultural Enterprises, LLC
Swift Horticultural Consulting
High Altitude Lavender
Curtis Swift, Ph.D.
450 Hill Avenue
Grand Junction, CO 81501
970.778.7866
Curtis.Swift@alumni.colostate.edu

January 25, 2013

Wetland Plant list developed for Peter Kearl, O'Connor Design Group.

The following list for the Whitewater Building Materials reclamation/restoration project was developed using the USDA Indicator Status for Obligate Wetland, Facultative Wetland, and Facultative (occurs as either a hydrophyte or non-hydrophyte) plant. Upland plants are included as they will be needed on the flats above the prepared wetlands. The status of these plants as native to western Colorado was verified using Weber & Wittmann, 2001. Colorado Flora: Western Slope, Third Edition. University Press of Colorado. The final list of up to ten species will need to be based on which of these plants are available as seed or plants.

Note: Pole plantings of cottonwood (Populus spp.) collected from the trees currently on site should be planted in groups at random around the developed wetlands. Cuttings taken from the Salix on site will need to be placed in groups in the capillary fringe.

Achnatherum (***Oryzopsis)*** *hymenoides* (Roem. & Schult.) Barkworth - Indian ricegrass

Alopecurus aequalis – Shortawn foxtail

Baccharis salicina Torr. & A. Gray - willow baccharis

Barbarea orthoceras Ledeb. - American yellowrocket

Beckmannia syzigachne (Steud.) - Fernald American sloughgrass

Berula erecta (Huds.) Coville - cutleaf waterparsnip

Bromus hordeaceus L. - soft brome

Callitriche hermaphroditica L. - northern water-starwort

Callitriche heterophylla Pursh - twoheaded water-starwort

Carex douglasii Boott - Douglas' sedge

Carex gynodynama Olney - Olney's hairy sedge syn Carex dioica subsp. Gynocrates

Carex praegracilis W. Boott - clustered field sedge

Carex vulpinoidea Michx.- fox sedge

Crataegus rivularis Nutt. - river hawthorn

Cyperus erythrorhizos Muhl - redroot flatsedge

Diplachne fasciculatirs - Sprangletop

Eleocharis montevidensis – Sand Spikerush

Elymus elymoides (Raf.) - Swezey squirreltail

Equisetum arvense L. - field horsetail

Pleurophis (Hillaria) *jamesii* Torr. - James' galleta

Sagittaria latifolia – Arrowhead

Schoenoplectus pungens – Bulrush

Schoenoplectus acutus - hardstem bulrush

Sheperdia argentea – Silver Buffaloberry

Sporobolus cryptandrus (Torr.) A. Gray sand dropseed

Table 1: Disturbances in River

Site Description	**Impacts to river channel (acres)**	**Impacts to wetlands (acres)**	**Material removed/added (cubic yards)**	**Type**
Islands		2.86	45,000	Dredge (island removal)
Structure #1	0.79		4,500	Fill (logs, sod mats)
Structure #2	0.138	0.002	200	Fill (boulders)
Structure #6	0.09		200	Fill (boulders)
Structure #7	0.13		200	Fill (boulders)
Structure #9	0.89	0.001	200	Fill (boulders)
Inlet to northern pond		0.005	50	Dredge (inlet construction)
TOTAL	2.038	2.868	Dredge = 45,050 Fill = 5,200	

Table 2: Existing and Proposed Wetlands

Site Description	Existing Wetlands (acres)	Proposed Wetlands (acres)	Wetlands Created (acres)	Wetlands Disturbed (acres)
Adjacent to current river channel (northern bank)	1.18	2.15	0.789	0.001
Adjacent to current river channel (southern bank)	2.34	4.18	1.838	0.002
Adjacent to river (upstream islands)	2.86	0		2.86
Abbuting River (inland ponds)	0.280	0.205		0.005
Adjacent to proposed river channel		0.99	0.99	
Adjacent to northern pond		15	15	
Adjacent to southern pond		5.6	5.6	
TOTAL	6.66	28.125	24.217	2.868