

**WETLAND DELINEATION
FOR THE
EAST MAIN STREET/IDAHO MARYLAND ROAD ROUNDABOUT STUDY AREA
CITY OF GRASS VALLEY, NEVADA COUNTY, CALIFORNIA**

Prepared on behalf of:

City of Grass Valley
125 East Main Street
Grass Valley, California 95945
Contact: Tim Kiser, City Engineer

Prepared by:



June 27, 2007

TABLE OF CONTENTS

Introduction	1
Contact Information.....	1
Methods.....	4
Results.....	4
Geology and Soils.....	4
Hydrology	6
Vegetation	6
Waters of the United States	6
References and other Sources.....	9

FIGURES

Figure 1. Site and Vicinity Map.....	2
Figure 2. Aerial Photograph	3
Figure 3. Soils Map.....	5
Figure 4. Site Photos	7

TABLES

Table 1. Waters of the United States.....	6
---	---

APPENDICES

Appendix A. Wetland Data Sheets	
Appendix B. Plant Species Observed within the East Main Street/Idaho Maryland Road Roundabout Study Area	
Appendix C. Wetland Delineation Map	
Appendix D. GIS Files	

**WETLAND DELINEATION
FOR THE
EAST MAIN STREET/IDAHO MARYLAND ROAD ROUNDABOUT STUDY AREA**

INTRODUCTION

On behalf of the City of Grass Valley, North Fork Associates delineated waters of the United States on the approximately 1.81-acre East Main Street/Idaho Maryland Road (EMIM) Roundabout study area in the city of Grass Valley, Nevada County, California. The study area is located in the lower Sierra Nevada at approximately 2,420 to 2,430 feet in elevation. The project site is located northwest of and adjacent to Highway 20/49, approximately ½ mile northeast of the downtown area. It is within Section 26 of Township 16 North, Range 8 East on the Grass Valley 7 ½ minute USGS quadrangles (Figure 1). The approximate latitude and longitude for the center of the study area are 39°13'18.28" north and 121°3'9.55" west.

Most of the study area is paved, supporting existing roadways. Matson Creek runs north to south and crosses East Main. A ditch carrying storm water and urban runoff occurs in the southeast corner of the study area. The ditch contains emergent vegetation, such as cattails.

Adjacent land uses are commercial and include the former location of Hills Flat Lumber Company, a Chevron gas station, and Kubota Tractor store. Highway 49 borders to the study area to the south (Figure 2).

Directions: From Sacramento, head east on Interstate 80. In Auburn, take the Highway 49 exit towards Grass Valley (north). After approximately 23 miles, take the Idaho-Maryland Road exit. Turn left onto Idaho-Maryland Road. End at the intersection of East Main Street and Idaho Maryland Road.

CONTACT INFORMATION

Property Owner

City of Grass Valley
125 East Main Street
Grass Valley, California 95945
Phone: (530) 274-4351
Contact: Tim Kiser, City Engineer

Delineator:

North Fork Associates
110 Maple Street
Auburn, California 95603
Phone: (530) 887-8500
Fax: (530) 887-1250
Contact: Erin Gottschalk

METHODS

Waters of the United States were delineated on June 1, 2007 by Barry Anderson and Erin Gottschalk. The delineation was conducted according to the 1987 Corps Manual (Environmental Laboratory 1987). The EMIM Roundabout study area location falls under the Western Mountains, Valleys and Coast Regional Supplement to the 1987 Corps Manual. This supplement is currently being prepared, but has not yet been released for use.

At the study area, information about vegetation, soils, and hydrology was recorded at two data point locations. Data sheets are located in Appendix A. Information on soils was taken from the Nevada County soil survey (USDA, NRCS 1975). In the field, a Munsell Color (2000) chart was used to determine moist soil colors. A biological resource assessment report was conducted in tandem with this wetland delineation.

Common plant names are used in this document. Appendix B is a list of plants observed during the delineation, along with the scientific name and wetland status of each species. Scientific names follow *The Jepson Manual* (Hickman 1993), as updated by the Jepson Interchange, an online database maintained by the University of California and Jepson Herbaria. The wetland status for species observed was taken from Reed (1988).

A Trimble GeoXH global positioning system (GPS) was used to obtain location information about data points, wetland areas, and other pertinent features. The GPS data were corrected in the office using the nearest available base station. Coastland Civil Engineering supplied a May 2006 aerial photo, which was used to create the wetland delineation map in Appendix C. Appendix D contains a CD ROM with the electronic files in ArcView shape format.

The area around Grass Valley averages about 55 inches of precipitation a year, most of it falling as rain. At the time of the delineation field survey in June, little to no rain had fallen for two weeks prior to the site visit. Rainfall totals for the season were below normal.

RESULTS

Geology and Soils

The EMIM Roundabout study area is situated on Mesozoic granite and volcanic rocks (California Department of Conservation, Division of Mines and Geology 1962).

Two soil units are mapped on the study area (USDA 1975). Refer to Figure 3 for a Soil Map:

- SIC - Sites loam, 9 to 15 percent slopes
- Ao - Alluvial land, clayey

Sites soils are Xeric Haplohumults. Sites loam soils consist of well-drained soils underlain by tilted metasedimentary and metabasic rock. These soils are undulating to steep. The subsoil is about 56 inches of yellowish-red clay loam and red clay, and light clay. Permeability is moderately slow in the subsoil. Runoff is medium.

Alluvial land, clayey is a miscellaneous land type consisting of narrow areas of alluvial material deposited along small stream channels and drainage ways. This moderately well drained to poorly drained material formed in fine-textured alluvium derived dominantly from metabasic

and granitic rock. Permeability is moderately slow to very slow in this land type. Runoff is slow. This land is sometimes flooded during the rainy season.

Hydrology

The EMIM Roundabout study area is in the Upper Bear Watershed (Hydrologic Unit Code 18020126). The main hydrologic feature crossing the study area is Matson Creek, a perennial drainage that runs north to south and crosses East Main Street. This feature is not represented as a blue-line feature on the USGS map and may not have historically been a perennial feature. With an increase in urban runoff, it appears that Matson Creek contains flowing water year-round. Matson Creek drains into Wolf Creek southwest of the study area. Wolf Creek drains into the Bear River at the Nevada/Placer County line. The Bear River drains into the Feather River, which ultimately connects with the Sacramento River at the Yolo/Sutter County line. The EMIM Roundabout study area also supports a roadside ditch that collects storm water and urban runoff.

Vegetation

The study area is a highly disturbed and modified landscape. The majority of the area supports pavement, part of the existing East Main Street and Idaho-Maryland Road intersection. This paved area is devoid of vegetation except for a few ornamental perennials and fruit trees bordering the Chevron parking lot.

A narrow band of emergent vegetation occurs in the ditch in the southeastern corner of the intersection. The ditch is dominated by broad leaf-cattail; other plant species include common monkeyflower, water cress, Brazilian vervain, and smartweed. This habitat is disturbed; the ditch undergoes regular maintenance and the cattails are cut periodically.

A narrow band of riparian vegetation is associated with Matson Creek in the northwestern corner of the intersection. The vegetation is limited to the creek channel and adjacent banks. Species include red willows and Himalayan blackberry.

Waters of the United States

Two categories of waters of the United States have been mapped on the site: perennial stream and ditch. Table 1 is an acreage summary, and Figure 4 shows representative examples. The wetland delineation map is included in Appendix C.

Table 1
Waters of the United States

Type	Acreage
Other waters:	
Perennial Stream (Matson Creek)	0.03
Ditch	0.02
Total Waters of the United States	0.05

Perennial stream

Perennial streams, unlike ephemeral or intermittent streams, flow year-round. They typically exhibit bed-and-bank morphology. One perennial stream, Matson Creek, is located within the study area. It flows from north to south through the western section of the study area. A fifty-foot above ground portion of Matson Creek travels through the area before it enters a culvert on the north side of East Main Street. It then travels for 100 feet in the culvert before leaving the study area on the south side of East Main Street. During the time of the survey, the creek had flowing water. Much of the water is likely coming from urban irrigation and runoff. Water in Matson Creek drains into Wolf Creek, which is hydrologically connected to the Sacramento River. Matson Creek's channel was largely devoid of vegetation, supporting medium-sized rocks, small pebbles, and silt. At the time of our field survey, the creek contained approximately four to six inches deep of flowing water. The ordinary high water mark is approximately 10 feet. The bankside riparian vegetation consists of red willows and Himalayan blackberry (Figure 4b). Paved surfaces are adjacent to the creek banks (Figure 4c).

Ditch

The vegetated roadside ditch in the southeastern corner of the study area serves to carry storm water and urban runoff. It prevents flooding of Highway 49 and the East Main Street/Idaho-Maryland Road intersection. During our site visit on June 1st, the ditch contained a very small (0.5 inch deep) of flowing water; however, by June 11th the ditch was mostly dry. Water from the ditch enters a culvert and crosses under the Highway 49 on/off ramps and ultimately drains into Matson/Wolf Creeks west of the study area. The ditch supports emergent vegetation dominated by cattails (Figure 4a). The ditch undergoes maintenance and the cattails are cut periodically.

REFERENCES AND OTHER SOURCES

- California Department of Conservation, Division of Mines and Geology. 1962. Geologic Map of California, Chico Sheet (1:250,000). Third printing, 1977. Sacramento, California.
- CalWater: California Interagency watershed Map of 1999 (The State of California: The California Spatial Information Library, <http://casil.ucdavis.edu/casil/gis.ca.gov/calwater/>, accessed: 2006).
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1.
- Hickman, J. (ed.). 1993. The Jepson Manual. U.C. Press. Berkeley, CA
- Mitsch, W.J. and J.G. Gosselink. 1993. Wetlands. Van Nostrand Reinhold. New York, NY.
- Munsell Color. 2000. Munsell Soil Color Charts. GretagMacbeth. New Windsor, NY.
- Reed, P.B. 1988. National List of Species that Occur in Wetlands. U.S. Fish and Wildlife Service.
- Richardson, J.L. and M.J. Vepraskas (eds.). Wetland Soils: Genesis, Hydrology, Landscapes, and Classification. Lewis Publishers, Boca Raton, FL.
- Sprecher, S. 1999. Using the NRCS Hydric Soil Indicators with Soils with Thick A Horizons. WRP Technical Notes Collection (TN WRP SG-DE-4.1). Vicksburg, MS.
- Vepraskas, M.J. 1999. Redoximorphic Features for Identifying Aquic Conditions. North Carolina Agricultural Research Service, Technical Bulletin 301. Raleigh, NC.
- Soil Survey Staff. 1992. Keys to Soil Taxonomy, 5th Edition. SMSS Technical Monograph No. 19. Pocahontas Press, Blacksburg, VA.
- University of California. 2007. The Jepson Interchange. University and Jepson Herbaria.
- USDA. 1975. Soil Survey of Nevada County Area, California. Sacramento, California. August 1975 (Reissued August 1993).
- USDA, NRCS. 2003. Field Indicators of Hydric Soils in the United States, Version 4.01. G.W. Hurt, P.M. Whited, and R.F. Pringle (eds.) USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX.

Appendix A
Wetland Data Sheets



ROUTINE WETLAND DETERMINATION FORM

Project/Site:	East Main Street/Idaho Maryland Road Roundabout	Sample Point:	1
Applicant/Owner:	City of Grass Valley	State:	CA
Investigator:	B.Anderson, E. Gottschalk	County:	Nevada
Date:	June 1, 2007	S/T/R:	S 26/ T 16 N/ R 8 E
		Quad:	Grass Valley
		Veg Type:	emergent vegetation

Do normal circumstances exist on the site?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Is the site substantially disturbed (atypical situation)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is the site a potential problem area? (Explain)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION

Dominant Plant Species	% Cover	Status	Non-Dominant Plant Species	% Cover	Status
<i>Typha latifolia</i>	75	OBL	<i>Verbena litoralis</i>	10	FACW*
<i>Mimulus guttatus</i>	30	OBL	<i>Persicaria hydropiperoides</i>	15	OBL
<i>Nasturtium officinale</i>	20	OBL			

Percentage of dominant species that are OBL, FACW, or FAC: 100%

Remarks: Vegetated roadside ditch.

Hydrophytic Vegetation Present: YES NO

HYDROLOGY

Is it the growing season? Yes No
 Inundated? Yes No Saturated? Yes No
 Depth of standing or flowing water: 1/2 inch
 Depth to standing water in pit: _____
 Dept to saturation: _____

Primary Indicators:

- Inundated
- Saturated in Upper 12"
- Water Marks/Drift Lines
- Sediment Deposit
- Algal Matting
- Drainage Patterns in Wetlands

Secondary Indicators

- Oxidized Root Channels in Upper 12"
- Water-Stained Leaves
- Local Soil Survey Data
- Fac Neutral test
- Other

Remarks: Small amount of flowing water - from urban runoff along Highway 49 and across Idaho-Maryland Road.

Wetland Hydrology Present? YES NO

SOILS

Map Unit Name (Series/Phase): Alluvial land, clayey

Taxonomy (Subgroup): N/A

Drainage: slow

Permeability: moderately slow to very slow

Horizon	Depth Inches	Matrix Color	Texture	Redoximorphic Features		
				Abundance/ Size/Contrast	Type	Color

Matches soil description: Yes No

Hydric soil indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Mn or Fe concretions or nodules |
| <input type="checkbox"/> Sulfur odor | <input type="checkbox"/> Redox depletions |
| <input type="checkbox"/> Aquic moisture regime | <input type="checkbox"/> High organic content on surface of sandy soils |
| <input type="checkbox"/> Reducing conditions | <input type="checkbox"/> Organic streaking in sandy soils |
| <input type="checkbox"/> Gleyed or low-chroma (1 or less) matrix | <input type="checkbox"/> Listed on a Hydric soils list |
| <input type="checkbox"/> Matrix chroma of 2 or less with redox features | <input type="checkbox"/> Other |

Remarks: Flowing water and rocks, unable to take soil sample.

Hydric Soils Present? YES NO

WATERS OF THE U.S. DETERMINATION

Hydrophytic Vegetation Present? Yes No

Wetland Hydrology Present? Yes No

Hydric Soils Present? Yes No

Remarks: Vegetated roadside ditch with 4 ft ordinary high water mark.

- Is the point in a wetland? Yes No
 Is the point in other waters? Yes No

Redoximorphic Feature Abbreviations:

Abundance

- F - few
- C - common
- M - many

Size:

- 1 - fine (<2 mm)
- 2 - medium (2-5 mm)
- 3 - coarse (5-20 mm)
- 4 - very coarse (20-75 mm)
- 5 - extremely coarse >76 mm)

Contrast

- f - faint
- d - distinct
- p - prominent



ROUTINE WETLAND DETERMINATION FORM

Project/Site:	East Main Street/Idaho Maryland Road Roundabout	Sample Point:	2
Applicant/Owner:	City of Grass Valley	State:	CA
Investigator:	B.Anderson, E. Gottschalk	County:	Nevada
Date:	June 1, 2007	S/T/R:	S 26/ T 16 N/ R 8 E
		Quad:	Grass Valley
		Veg Type:	riparian

Do normal circumstances exist on the site?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Is the site substantially disturbed (atypical situation)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is the site a potential problem area? (Explain)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION

Dominant Plant Species	% Cover	Status	Non-Dominant Plant Species	% Cover	Status

Percentage of dominant species that are OBL, FACW, or FAC: %

Remarks: Unvegetated stream channel. Bankside vegetation includes Himalayan blackberry, red willow, and tree of heaven.

Hydrophytic Vegetation Present: YES NO

HYDROLOGY

Is it the growing season? Yes No
 Inundated? Yes No Saturated? Yes No
 Depth of standing or flowing water: 4 inches
 Depth to standing water in pit: _____
 Dept to saturation: _____

Primary Indicators:

- Inundated
- Saturated in Upper 12"
- Water Marks/Drift Lines
- Sediment Deposit
- Algal Matting
- Drainage Patterns in Wetlands

Secondary Indicators

- Oxidized Root Channels in Upper 12"
- Water-Stained Leaves
- Local Soil Survey Data
- Fac Neutral test
- Other

Remarks: Flowing water.

Wetland Hydrology Present? YES NO

SOILS

Map Unit Name (Series/Phase): Alluvial land, clayey

Taxonomy (Subgroup): N/A

Drainage: slow

Permeability: moderately slow to very slow

Horizon	Depth Inches	Matrix Color	Texture	Redoximorphic Features		
				Abundance/ Size/Contrast	Type	Color

Matches soil description: Yes No

Hydric soil indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Mn or Fe concretions or nodules |
| <input type="checkbox"/> Sulfur odor | <input type="checkbox"/> Redox depletions |
| <input type="checkbox"/> Aquic moisture regime | <input type="checkbox"/> High organic content on surface of sandy soils |
| <input type="checkbox"/> Reducing conditions | <input type="checkbox"/> Organic streaking in sandy soils |
| <input type="checkbox"/> Gleyed or low-chroma (1 or less) matrix | <input type="checkbox"/> Listed on a Hydric soils list |
| <input type="checkbox"/> Matrix chroma of 2 or less with redox features | <input type="checkbox"/> Other |

Remarks: Flowing water over medium sized rocks, pebbles, and silt - unable to take soil sample.

Hydric Soils Present? YES NO

WATERS OF THE U.S. DETERMINATION

Hydrophytic Vegetation Present? Yes No

Wetland Hydrology Present? Yes No

Hydric Soils Present? Yes No

Remarks: Matson Creek with approximately 10 ft ordinary high water mark.

- Is the point in a wetland? Yes No
- Is the point in other waters? Yes No

Redoximorphic Feature Abbreviations:

Abundance

- F - few
- C - common
- M - many

Size:

- 1 - fine (<2 mm)
- 2 - medium (2-5 mm)
- 3 - coarse (5-20 mm)
- 4 - very coarse (20-75 mm)
- 5 - extremely coarse >76 mm)

Contrast

- f - faint
- d - distinct
- p - prominent

Appendix B
Plant Species Observed within the East Main Street/Idaho Maryland Road (EMIM)
Roundabout Study Area

Plant Species Observed within the EMIM Roundabout Study Area

Common Name	Taxon	Wetland Status
Annual bluegrass	<i>Poa annua</i>	FACW-
Barbed goatgrass	<i>Aegilops triuncialis</i>	-
Broad-leaved cattail	<i>Typha latifolia</i>	OBL
Brook spike-primrose	<i>Epilobium torreyi</i>	FACW
California burclover	<i>Medicago polymorpha</i>	-
California wild grape	<i>Vitis californica</i>	FACW
Common chickweed	<i>Stellaria media</i>	FACU
Common knotweed	<i>Polygonum aviculare</i>	FAC
Common monkeyflower	<i>Mimulus guttatus</i>	OBL
Cotoneaster	<i>Cotoneaster sp.</i>	-
Dense-flower spike-primrose	<i>Epilobium densiflorum</i>	OBL
Few-seed bitter cress	<i>Cardamine oligosperma</i>	FACW
Field hedge-parsley	<i>Torilis arvensis</i>	-
Fig	<i>Ficus carica</i>	-
Goose grass	<i>Galium aparine</i>	FACU
Hairy willow-herb	<i>Epilobium ciliatum</i>	FACW
Hedgehog dogtail	<i>Cynosurus echinatus</i>	-
Himalayan blackberry	<i>Rubus discolor</i>	FACW*
Horsetail	<i>Equisetum sp.</i>	VARIABLES
Italian ryegrass	<i>Lolium multiflorum</i>	FAC*
Italian thistle	<i>Carduus pycnocephalus</i>	-
Perennial sweet pea	<i>Lathyrus latifolius</i>	-
Pineapple-weed	<i>Matricaria discoidea</i>	FACU
Poison hemlock	<i>Conium maculatum</i>	FACW
Prickly lettuce	<i>Lactuca serriola</i>	FAC
Prickly sow-thistle	<i>Sonchus asper</i>	FAC
Queen Anne's lace	<i>Daucus carota</i>	-
Red willow	<i>Salix laevigata</i>	FACW+
Ripgut grass	<i>Bromus diandrus</i>	-
Rose clover	<i>Trifolium hirtum</i>	-
Short-podded mustard	<i>Hirschfeldia incana</i>	-
Sisymbrium	<i>Sisymbrium orientale</i>	-
Slender wild oat	<i>Avena barbata</i>	-
Spanish-clover	<i>Lotus purshianus var. purshianus</i>	-
Sticktight	<i>Bidens sp.</i>	VARIABLES
Summer cottonweed	<i>Epilobium brachycarpum</i>	-
Tree of heaven	<i>Ailanthus altissima</i>	FACU
Venus' needle	<i>Scandix pecten-veneris</i>	-

Common Name	Taxon	Wetland Status
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Water cress	<i>Nasturtium officinale</i>	OBL
Waterpepper	<i>Persicaria hydropiperoides</i>	OBL
Willow lettuce	<i>Lactuca saligna</i>	NI*
Yellow star-thistle	<i>Centaurea solstitialis</i>	-

Appendix C
Wetland Delineation Map

Appendix D
GIS Files

GIS Files are provided to the Corps and are available upon request.