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J. Eugene C. Allen EC Allen 4/26/07
RESPONSIBLE ENGINEER/ANALYST (Printed Name and Signature) DATE

Title: Waters of the U.S. Jurisdictional Determination Report for Yucca Mountain Project - Mina Rail Corridor 4/12/07

Supplier Rev.: 0

Supplier Date: 04/12/07

NVM Nevada Transportation Manager Gene Allen
NE Nevada Engineering Kathy Mrotek

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Parsons Brinckerhoff PBS&J	NN-HC4-00207/ Task 1.1A Information on Wetland and Floodplains	
2. BSC Submittal No.:	Revision:	Title:
V0-A000-NHC4-00207-00023-001	003	Waters of the U.S. Jurisdictional Determination Report for Yucca Mountain Project - Mina Rail Corridor 4/12/07

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Subcontractor:	Item Number/Title/Revision:	Submittal Date:	SRCT No.:
PBS&J	Waters of the U.S. Jurisdictional Determination Report - GIS Data, Map Documents and Pictures Rev 0	April 13, 2007	T07-00021

Section I. Submittal Information (includes above information)

Submittal Description and Revision Summary for Entire Submittal:

This delivery includes a report. It is to provide GIS products and data of water features and wetlands sites used in the preparation of the Waters of the U.S. Jurisdictional Determination Report for Yucca Mountain Project Mina Rail Corridor.

It includes a 3 geodatabases, 2 shapefiles, 9 mxd files used for pictorial representation of Waters of the U.S. and Connected Wetlands, which crosses the Mina Rail Corridor, 9 pdfs of the maps (mxd files), and pictures taken in the field during data collection, and The Waters of the U.S. Jurisdictional Determination Report.

*Note: Attachment1 (PBSJ_Mina_WOUS_Rev0_DataDefinitions) provides the detailed data definition for the "WOUS_Mina" geodatabase.

1. The geodatabase name "WOUS_Mina" contains (5) feature datasets and (1) feature class as described below. The GIS feature classes were used in the demand analysis for the Mina Rail Corridor, and are for the client's use.

   - SyncCtchAll – Abstract: This feature class contains a point representation of other miscellaneous points of interest for the Mina Rail Corridor project.
   - SyncWashEnvr – Abstract: This point feature class represents investigated wash channels.
   - SyncWetlPnt – Abstract: This point feature class represents wetland data points.
   - SyncWetlPoly – Abstract: This polygon feature class represents connected wetlands and uplands along the rail alignment.
   - SyncWshLnEnv – Abstract: This linear feature class represents jurisdictional and non jurisdictional Waters of the U.S. along the Mina rail alignment. Each record contains a width and depth attribute of the wash.
   - PhotoPoints – This point feature class represents locations of the pictures taken for the Mina Rail Corridor.

2. The geodatabase name "WOUS_CRC_Final" contains (1) feature class described below. The GIS feature classes were used in the demand analysis for the Caliente Rail Corridor, and are for the client's use.

   - SyncWshLnEnv – Abstract: This linear feature class represents jurisdictional and non jurisdictional Waters of the U.S. along the Caliente rail alignment. Each record contains a width and depth attribute of the wash.

3. The geodatabase name "Mina" contains (1) feature dataset and (22) feature classes. The feature dataset & feature classes were used for the purpose of creating pictorial figures embedded in the Waters of the U.S Jurisdictional Determination Report. The feature dataset & feature classes in the geodatabase provided were renamed by including a prefix based upon the corresponding chapter title or associated chapter title provided by Bechtel GIS Baseline Data Dictionary. And those feature classes changed or modified were given a new filename and described below.

   - base_minaanno – Received from BSC
   - arrows – This line feature represents the direction in which the wash or wetlands would extend outside of the corridor buffer.
   - base_nafrdoe2e – Received from BSC
   - base_nts2e – Received from BSC
   - econ_wcitye – Received from BSC
   - hydro_hydrobasine – Received from BSC
   - hydro_nvspringu – Received from BSC
   - juris_nvstacoe – Received from BSC
   - juris_wstacoe – Received from BSC
   - juris_wstacoe_modified – This polygon feature was modified by merging together associated counties to its state.
   - Mina_660ftBuffer – This polygon feature represents a 660 foot buffer of each side of the alignment centerline.
   - MinaRoute – This polyline feature represents the Mina Rail Corridor.
   - MinaRouteAnno_north – This annotation feature represents the names of each segment for the northern portion of the alignment.

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- MinaRouteAnno_south – This annotation feature represents the names of each segment for the southern portion of the alignment.
- NRP_WabuskaYard– Received from BSC
- NWIWetlands – Received from BSC
- tran_nvmajore– Received from BSC
- tran_roadnev2e– Received from BSC
- tran_usraile1– Received from BSC
- WabuskaStagingYard – This point feature represents the approximate location of the Wabuska Staging Yard site.
- WalkerLake – This polygon feature delineates the Walker Lake and Weber Reservoir.
- WalkerRiver – This polyline feature delineates the Walker River.
- YuccaMt – This point feature represents the approximate location of Yucca Mountain.

4. 9 maps (mxd) and 9 pdfs of maps used for the Waters of the U.S. Jurisdictional Determination Report.
   - Figure_1 – Overview of the Mina Rail Corridor Alignment Project Location
   - Figure_2 – Overview of the Hydrographic Regions and Areas in relation to the alignment.
   - Figure_3A – Waters of the U.S. crossing the S1, S4, S5 and S6 segments, and the Hydrographic Area of Walk River Basin and Central Region.
   - Figure_3B – Waters of the U.S. crossing the OV1, OV3 and CS6 segments, Waters of the U.S., Hydrographic Areas of Central Region and Death Valley Basin, and the Nevada Test and Training Range.
   - Figure_3C – Waters of the U.S. crossing the CS6 segment, the Hydrographic Areas of Death Valley Basin, and the Nevada Test and Training Range.
   - Figure_4 – Connected Wetlands, Uplands and Walker River (WOUS ID #1) crossing the S1, S4, S5 and S6 segments, Wetlands and Non Wetlands Data Points for the Schurz By-Pass segment.
   - Figure_5A – National Wetlands Inventory Database and Photo points for the Mina Rail Corridor (North).
   - Figure_5B – National Wetlands Inventory Database and Photo points for the Mina Rail Corridor (Central).
   - Figure_5C – National Wetlands Inventory Database and Photo points for the Mina Rail Corridor (South).

5. In the \Phase4_MinaRev0\Pictures\Pictures1\picture_Mina1.shp: There were a total of 846 jpg files. Pictures were taken in the field during the 1st phase of data collection. Each original picture then includes a thumbnail with filename "small" and a watermarked picture stamped with Latitudes/Longitudes, date and time picture was taken has filename "tag".

6. In the \Phase4_MinaRev0\Pictures\Pictures2 \picture_Mina2.shp: There were a total of 159 jpg files. Pictures were taken in the field during the 2nd phase of data collection. Each original picture then includes a thumbnail with filename "small" and a watermarked picture stamped with Latitudes/Longitudes, date and time picture was taken has filename "tag".

7. The Waters of the U.S. Jurisdictional Determination Report is a preliminary jurisdictional determination of non-wetland Waters of the United States and wetlands, which was conducted along the proposed and alternative rail segments within the Mina Rail Corridor. The jurisdictional determination was conducted on public and accessible private lands pursuant to Section 404 of the Clean Water Act (CWA) and in compliance with U.S. Army Corps of Engineers (USACE) guidance.

Special Instructions:

Section II. Data File Information (Add lines below if needed for additional files. Indicate "Last item" or "End of list" on last line used.)

Filename	Rev.	File Size	Description (File description and revision summary for file)	Application and Version/ Add-in or Extension and Version
Mina.mdb	0	188,452 KB	Mina is the name of the ESRI geodatabase being delivered. Within this geodatabase are (23) feature class files.	ArcGIS 9.1

Subcontractor: PBS&J			Item Number/Title/Revision: Waters of the U.S. Jurisdictional Determination Report - GIS Data, Map Documents and Pictures Rev 0	Submittal Date: April 13, 2007	SRCT No.: T07-00021
WOUS_Mina.mdb	0	1,232 KB	WOUS_CRC is the name of the ESRI geodatabase being delivered. Within this geodatabase are (5) feature datasets and (1) feature class files: SyncCtchAll_Dataset, SyncWashEnvr_Dataset, SyncWetlPnt_Dataset, SyncWetlPly_Dataset, SyncWshLnEnv_Dataset, and PhotoPoints	ArcGIS 9.1	
WOUS_CRC_Final.mdb	0	1,244 KB	WOUS_CRC is the name of the ESRI geodatabase being delivered. Within this geodatabase is (1) feature class file: SyncWshLnEnv_Dataset	ArcGIS 9.1	
(Folder) Phase4_MinaRev0\Pictures\picture_Mina1.shp	0	219,136 KB	For the Mina segment there are a total of 846 pictures in JPEG format.	Corel PHOTO-PAINT 8.0 Image	
(Folder) Phase4_MinaRev0\Pictures\picture_Mina2.shp	0	41,062.4 KB	For the Mina segment there are a total of 159 pictures in JPEG format.	Corel PHOTO-PAINT 8.0 Image	
Figure_1.mxd	0	265 KB	Mina Rail Corridor Project Location	ArcGIS 9.2	
Figure_2.mxd	0	538 KB	Hydrographic Regions and Areas	ArcGIS 9.2	
Figure_3A.mxd	0	483 KB	Mina Rail Corridor Waters of the U.S. S1, S4, S5, S6 Segments	ArcGIS 9.2	
Figure_3B.mxd	0	268 KB	Mina Rail Corridor Waters of the U.S. OV1, OV3, and CS6 Segments	ArcGIS 9.2	
Figure_3C.mxd	0	263 KB	Mina Rail Corridor Waters of the U.S. CS6 Segment	ArcGIS 9.2	
Figure_4.mxd	0	745 KB	Mina Rail Corridor Wetlands Schurz By-Pass Segment	ArcGIS 9.2	
Figure_5A.mxd	0	588 KB	Mina Rail Corridor Dry Lakes (North)	ArcGIS 9.2	
Figure_5B.mxd	0	306 KB	Mina Rail Corridor Dry Lakes (Central)	ArcGIS 9.2	
Figure_5C.mxd	0	192 KB	Mina Rail Corridor Dry Lakes (South)	ArcGIS 9.2	
Figure_1.pdf	0	2,147 KB	Mina Rail Corridor Project Location	Adobe Acrobat 7.0 Professional	
Figure_2.pdf	0	2,218 KB	Hydrographic Regions and Areas	Adobe Acrobat 7.0 Professional	
Figure_3A.pdf	0	1,648 KB	Mina Rail Corridor Waters of the U.S. S1, S4, S5, S6 Segments	Adobe Acrobat 7.0 Professional	
Figure_3B.pdf	0	4,370 KB	Mina Rail Corridor Waters of the U.S. OV1, OV3, and CS6 Segments	Adobe Acrobat 7.0 Professional	
Figure_3C.pdf	0	672 KB	Mina Rail Corridor Waters of the U.S. CS6 Segment	Adobe Acrobat 7.0 Professional	
Figure_4.pdf	0	952 KB	Mina Rail Corridor Wetlands Schurz By-Pass Segment	Adobe Acrobat 7.0 Professional	
Figure_5A.pdf	0	960 KB	Mina Rail Corridor Dry Lakes (North)	Adobe Acrobat 7.0 Professional	
Figure_5B.pdf	0	1,172 KB	Mina Rail Corridor Dry Lakes (Central)	Adobe Acrobat 7.0 Professional	
Figure_5C.pdf	0	1,190 KB	Mina Rail Corridor Dry Lakes (South)	Adobe Acrobat 7.0 Professional	

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YMP WOUS Report_April 12, 2007_Revision 0_SRCT-07-00021.pdf	0	23,445 KB	Waters of the U.S. Jurisdictional Determination Report for Yucca Mountain Project Mina Rail Corridor	Adobe Acrobat 7.0
PBSJ_Mina_WOUS_Rev0_DataDefinitions.doc	0	116 KB	Data Definitions for Mina Rail Corridor Waters of the U.S. GIS Features	Microsoft Word Document
			----------Last Item----------	

Section III. Metadata

☒ **GIS Metadata** All GIS data is preferred in ArcGIS9.1 UTM, NAD1983, Zone11, Feet.	Projection: NAD 1983 UTM Zone 11N
	Datum: D_North_American_1983, Semimajor Axis: 6378137.00 Semiminor Axis: 6356752.3141403561 Inverse Flattening: 298.25722210100002
	Zone: 11N
	Units: Feet
☐ **CAD Metadata** CAD drawings are preferred in **Bentley MicroStation V8 and/or InRoads** and should adhere to established **CAD standards.**	Level descriptions:
	Scale:
	Units of Measurement:
	Horizontal and Vertical Datum:

Section IV. Data Screening (Completed by BSC personnel)

Suitable for Review?	Screener Name:	Signature:	Date:
☒ Yes* ☐ No	Cathy Stettler	Cathy Stettler	4/16/07

*If "Yes", Data Storage Location: nvtdata\PB\Phase1\07-00021 Mina WOUS Rev 0 04-12-07

Comments: *(Justification for rejecting submittal is **required**; other comments are optional.)*

Section V. STR Disposition of Submittal

Process for Review?	** If "No", date returned:	Comments:
☐ Yes ☐ No**		

STR Name:	Signature:	Date:
EUGENE C. ALLEN	E C Allen	4/16/07

KAH 4/16/07

Waters of the U.S.
Jurisdictional Determination Report
for
Yucca Mountain Project
Mina Rail Corridor

Prepared for:

Parsons Brinckerhoff
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and

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Prepared by:

PBS&J
2270 Corporate Circle, Suite 100
Henderson, Nevada 89074

April 2007

CONTENTS

TABLES

APPENDICES

ACRONYMS/ABBREVIATIONS

CFR	Code of Federal Regulations
CWA	Clean Water Act
DOE	Department of Energy
DOQQ	Digital Orthophoto Quarter-Quadrangle
EIS	Environmental Impact Statement
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GIS	Geographic Information System
GPS	Global Positioning System
MRC	Mina Rail Corridor
NRCS	Natural Resources Conservation Service (formerly SCS)
NWI	National Wetlands Inventory
OBL	Obligate
OHWM	Ordinary High Water Mark
PC	Personal Computer
SCS	Soil Conservation Service
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
WOUS	Waters of the United States
WRN	Walker River North

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) is studying two corridors in Nevada for possible construction of a rail line to transport spent nuclear fuel and high-level radioactive waste to a proposed repository at Yucca Mountain, Nevada. The corridors, both 0.25 mile-wide, are referred to as the Caliente and Mina corridors. DOE may eventually select one alignment within one of these corridors for the rail line. This report identifies and examines potential waters of the United States (WOUS), including adjacent wetlands, for the Mina Rail Corridor (MRC).

A field survey of potential WOUS, including adjacent wetlands, was conducted along the proposed and alternative rail segments within the MRC. The survey was conducted on public and private lands pursuant to Section 404 of the Clean Water Act (CWA) and Executive Order 11990 – Protection of Wetlands, and in compliance with U.S. Army Corps of Engineers (USACE) guidance. This jurisdictional determination report will be used to support the Environmental Impact Statement (EIS) analyzing alternative rail alignments within the corridor and for the CWA Section 404 permit application.

Ephemeral lakes (playas), springs and wells within the MRC were investigated for potential isolated wetlands. This report will also be used to support a wetlands assessment in compliance with 10 Code of Federal Regulations (CFR) 1022, Compliance with Floodplain-Wetlands Environmental Review. Please note that all figures can be found in Appendix A.

2.0 PROJECT DESCRIPTION

The MRC originates at the terminus of the Union Pacific Railroad (UPRR) at the Fort Churchill Siding near Wabuska, Nevada. From that point, the corridor extends southeastward along various alternate alignments where it would terminate at the Yucca Mountain site near the southwest corner of the Nevada Test Site (Figure 1). The project would consist of the construction of a single track rail line, a siding near Hawthorne, Nevada (Hawthorne Siding), and operational interface areas with the UPRR mainline. The corridor evaluated for WOUS and adjacent wetlands is 0.25 mile wide and includes common segments and segments with alternative alignments.

In addition to the areas that were surveyed within the MRC, two other sites have been surveyed for potential WOUS and adjacent wetlands. These sites include a potential staging yard area approximately 2 miles east of Wabuska, Nevada and a potential crossing of the Walker River approximately 5.5 miles upstream of Schurz, Nevada. These sites have since been eliminated from consideration in the MRC analysis and the results of the surveys are not included in this report. However, the associated data collected during the surveys are included in the electronic ARCGIS file that accompany this report.

The MRC is described in terms of common segments and alternative alignments. Each common segment and alternative alignment is assigned an alpha-numeric identifier based on geographic location and includes the following:

Segment Identifier	Location
S	Schurz Bypass
MCS	Mina Common Segment
MN	Montezuma
BC	Bonnie Claire
OV	Oasis Valley
CS	Common Segment

3.0 SITE DESCRIPTION

General descriptions of the soils, hydrology, and vegetation communities found within the MRC are provided in this section. The project area lies within the Great Basin and Mojave Desert. The Great Basin is a triangular shaped area between the Rocky Mountains (to the east) and the Sierra Nevada Mountains (to the west). The Great Basin includes the Great Salt Lake in Utah, and portions of the Mojave Desert, and Death Valley in California. The Great Basin is also known as the "basin and range" area since it consists primarily of a series of alternating basins (valleys with interior drainage) and mountain ranges. Hydrographically isolated basins or valleys are separated by north-south trending mountains. Parts of the Mojave Desert consist of external drainage and are considered the transition area from the hotter Sonoran Desert to the south and the higher Great Basin to the north.

3.1 Soils

General descriptions of soil series are available from the Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service (SCS)), U.S. Department of Agriculture (USDA). The predominant soil series found throughout the MRC are briefly described below.

The MRC consists mainly of Bango, Dia, Dithod, East Fork, Hawsley, Hough, Panta, and Typic Torriorthents soil series. The Bango soil series is a very deep, well drained soil formed from alluvium over lacustrine deposits. This soil series is found on lake-plain terraces. Slope gradients generally range from 0 to 2 percent (USDA 1985). The Dia soil series is a very deep, somewhat poorly drained soil that formed in mixed alluvium. This soil is found on low stream terraces, alluvial fans, lake plains, and flood plains. Slope gradients generally range from 0 to 2 percent (USDA 1980). The Dithod soil series is a very deep, somewhat poorly drained soil that formed in mixed alluvium. This soil is found on low stream terraces, alluvial flats, and flood plains. Slope gradients generally range from 0 to 2 percent (USDA 1980).

The East Fork soil series is a very deep, somewhat poorly drained soil that formed in mixed alluvium, mainly basalt, andesite, tuff, and granitic rocks. These soils are found on low stream terraces, alluvial flats, and flood plains. Slope gradients generally range from 0 to 2 percent (USDA 1980). The Hawsley soil series is a very deep, somewhat excessively drained soil formed from alluvium and water-reworked eolian (erosion and/or deposition accomplished by wind) deposits with mixed parent material. Slope gradients generally range from 0 to 15 percent (USDA 1985).

The Hough soil series is a very deep well drained soil that formed in eolian-modified alluvial and lacustrine sediment derived from intrusive and extrusive igneous rocks. This soil occurs on lake plains, terraces, and alluvial fans. Slope gradients generally range from 0 to 2 percent (USDA 1980). The Orizaba soil series is a very deep, somewhat poorly drained soil that formed in alluvium and lacustrine material from mixed parent material. These soils are found in alluvial flats and playas. Slope gradients generally range from 0 to 2 percent (USDA 1980). The Panta, and Typic Torriorthents soil series is a very deep, somewhat excessively drained soil that formed in alluvium, lacustrine, and eolian deposits. This soil type is mostly located on lake-plain terraces. Slope gradients generally range from 0 to 2 percent (USDA 1985).

Hydric soil types can indicate the presence of wetlands. Soils classified as hydric are saturated, flooded, or ponded long enough to develop anaerobic conditions that favor growth of hydrophytic vegetation. The majority of the soils mapped within the MRC are not classified as hydric by the NRCS (USDA 2006).

3.2 Hydrology

Hydrology characteristics are defined by watershed. A watershed is a geographic area drained by a single major stream, river, or lake. It is bounded by a divide that separates it from adjacent watersheds. A watershed is also referred to as a hydrographic region or drainage basin.

Nevada has been divided into 14 hydrographic regions or basins (Division of Water Resources 1971). As shown in Figure 2, the MRC crosses three of these regions – Walker River Basin, Central Region, and Death Valley Basin. These regions are further divided into hydrographic areas (valleys) and sub-areas based on unique hydrologic characteristics such as differences in surface flows.

The surface hydrology in the Central Region is characterized by internally draining sub-areas and therefore is considered an intrastate basin. The Walker River Basin receives drainage from out of state sub-areas, and Death Valley Basin drains externally to an interstate river system and so are considered interstate basins. Regulations promulgated by the USACE (33CFR 328.3) define interstate waters and their tributaries as waters of the U.S. In the absence of adjacent wetlands, the USACE jurisdiction to regulate placement of fill or dredged material into those waters extends to the ordinary high water mark (OHWM) (33 CFR 328.4). For the USACE to exert jurisdiction over streams, lakes, and wetlands within intrastate basins there must be an alternative connection, other than the tributary system, to interstate or foreign commerce. Examples of alternative connections include recreation, fish or shellfish, or industrial use by industries involved in interstate commerce. Table 1 lists the hydrographic regions and areas which each segment of the MRC crosses.

Table 1. Hydrographic Region and Area Designations within the Mina Rail Corridor

MRC Segment	Region and Area	Hydrographic Regions Intrastate or Interstate
Walker River Basin		
S5	Rawhide Flats, Walker Lake Valley - Schurz Subarea	Interstate
S6	Rawhide Flats, Walker Lake Valley - Schurz Subarea	Interstate
S4	Walker Lake Valley - Schurz Subarea	Interstate
S1	Walker Lake Valley - Schurz Subarea	Interstate
MCS1	Walker Lake Valley- Whiskey Flat / Hawthorne Subarea	Interstate
Central Region		
MCS1	Soda Spring Valley West, Soda Spring Valley East, Rhodes Salt Marsh Valley, Columbus Salt Marsh Valley, Big Smoky Valley Tonopah Flat	Intrastate
MN1	Big Smoky Valley Tonopah Flat, Clayton Valley, Alkali Spring Valley	
MN1/MN3	Alkali Spring Valley, Clayton Valley, Lida Valley	Intrastate
MN2/MN3	Big Smoky Valley Tonopah Flat, Alkali Spring Valley	Intrastate
MN3	Alkali Spring Valley	Intrastate
MN2	Alkali Spring Valley, Lida Valley, Stonewall Flat	Intrastate
MCS2	Lida Valley	Intrastate
BC2, BC3	Lida Valley, Sarcobatus Flat	Intrastate
CS5	Sarcobatus Flat	Intrastate

MRC Segment	Region and Area	Hydrographic Regions Intrastate or Interstate
Death Valley Basin		
CS5	Oasis Valley	Interstate
OV1	Oasis Valley	Interstate
OV3	Oasis Valley	Interstate
CS6	Oasis Valley, Crater Flat, Fortymile Canyon Jackass Flats	Interstate

Ephemeral and intermittent washes dominate the stream types in the arid southwestern United States. Due to the arid conditions of the desert, the project area is generally dry except during and immediately following storm events. Normally dry washes and playa surfaces may be inundated for hours following summer storms and weeks following winter storms.

3.3 Vegetation

The transition zone between the Great Basin Desert and the Mojave Desert generally occurs north of Beatty, Nevada along segment CS5. The majority of the MRC is located north of the transition zone within the Great Basin Desert. Only approximately 50 miles of the MRC, from the proposed repository at Yucca Mountain to segment CS5, is located within the Mojave Desert.

Plant species typical of the Mojave Desert dominate the vegetative landscape at low elevations along the southern end of the MRC. Low-elevation valleys, alluvial fans, and large washes are dominated by white bursage (*Ambrosia dumosa*), creosotebush (*Larrea tridentata*), Nevada jointfir (*Ephedra nevadensis*), littleleaf ratany (*Krameria erecta*), and pale wolfberry (*Lycium pallidum*). Low-elevation hillsides are dominated by similar species, with the addition of shadscale (*Atriplex confertifolia*), California buckwheat (*Eriogonum fasciculatum*), and spiny hopsage (*Grayia spinosa*) (DOE 2002).

At middle elevations, along the MRC segments north of CS5, species typical of the Great Basin are dominant. Ridge tops and slopes are dominated by blackbrush (*Coleogyne ramosissima*), heathgoldenrod (*Ericameria teretifolius*), Nevada jointfir, broom snakeweed (*Gutierrezia sarothrae*), green ephedra (*Ephedra viridis*), and California buckwheat. On some steep north-facing slopes, big sagebrush (*Artemisia tridentata*) is predominant (DOE 2002).

Some common non-native plant species present in the MRC include red brome (*Bromus madritensis rubens*), cheatgrass (*Bromus tectorum)*, Russian thistle (*Salsola* spp.), tumble mustard (*Sisymbrium altissimum*), halogeton (*Halogeton glomeratus*), and Arabian schismus (*Schismis arabicus*).

Riparian (streambank) and wetland vegetation occur along the top of the channel bank where the MRC crosses the Walker River. Typical riparian and wetland species include hardstem bulrush (*Scirpus acutus*), sand bar willow (*Salix exigua*), and Baltic rush (*Juncus balticus*). These wetland and riparian vegetative communities are further described in Section 4.2.2.

4.0 WATERS OF THE U.S. DETERMINATION

As required by Section 404 of the CWA, the USACE regulates the discharge of dredged or fill material into WOUS. The term "waters of the U.S." applies to the jurisdictional limits of the authority of the USACE, as defined in 33 CFR 328.3, and typically includes streams, lakes and adjacent wetlands. For purposes of this report, ephemeral and perennial streams are referenced as WOUS, while wetlands are referenced separately.

The MRC would cross the Walker River approximately 22 miles upstream of Schurz, in northwest Nevada. The Walker River flows into Walker Lake, which is a terminal (no outlet) lake. The lake formed in a sink in a topographically closed basin from surface water drainage. The headwaters of the Walker River originate from snowmelt in the Sierra Nevada Mountain Range located in California (USGS 2006). The MRC would also cross tributaries to the Amargosa River near the southern limit of the corridor. The corridor segments within these interstate hydrographic regions are listed in Table 1.

The limits of USACE jurisdiction extend to the OHWM. If wetlands are found adjacent to a WOUS, then USACE jurisdiction extends to the limits of the wetland. The OHWM is generally defined as the clear, natural line on the shore or channel bank established by water fluctuations. In arid stream systems, the USACE has proposed a definition of ordinary high water based on physical features, including development of a channel bed and bank resulting from the most frequent or repeating hydrologic discharges. Techniques for identifying and determining limits of the USACE jurisdiction are provided in the *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* (USACE 2004) and *Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest* (USACE 2001).

Segments of the MRC that are within interstate hydrographic regions (see Table 1) were surveyed for WOUS and adjacent wetlands by PBS&J in September and October 2006 and February 2007. Additionally, segments of the MRC within the Central intrastate basin that intersect ephemeral lakes (playas) or other potential wetlands, as indicated by the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) database, were surveyed for the occurrence of hydrophytic vegetation. The focus of the field surveys was to delineate wetland areas and identify a definable channel bed and bank and determine the OHWM of washes in the project area.

The field survey corridors were provided by Bechtel-SAIC as geographic information system (GIS) electronic shape files. The MRC shapefiles, USGS topographic maps, and site-specific aerial photography electronic files were uploaded to a tablet personal computer (PC) with a global positioning system (GPS) and ArcPad© software for reference in the field. The tablet PC included an ArcPad© application customized by PBS&J to store, organize, and manage the data collected in the field. The application design emulates the standardized USACE wetlands data collection form and another form with OHWM indicators for delineating ephemeral washes in arid stream systems. Both electronic forms included fields for collecting vegetation, soils, hydrology, and geomorphology data at each WOUS and wetland, and for recording photographs at each site. Data entry fields from these forms are listed in Appendix D.

Informational resources were reviewed prior to the field survey to assist in locating and identifying potential WOUS. Aerial photography (digital ortho-photo quarter-quadrangle (DOQQ) and site-specific aerial photography) and U.S. Geological Survey (USGS) topographic maps were used to identify drainage patterns and washes in the project area. The aerial photographs used were taken throughout 1993, 1994, 1998,1999, and 2007. The images were combined to show the entire MRC alignment. The *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* (USACE 2004) and *Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest* (USACE 2001) were used as guidance for identifying and determining limits of the USACE jurisdiction. Delineations of wetlands adjacent to WOUS were performed using the USACE 1987 *Wetland Delineation Manual*.

4.1 Waters of the U.S. – Ephemeral and Perennial Streams

4.1.1 Methods

In an arid region, fluvial geomorphology principles provide a basis for understanding channel formation/evolution, bed and bank morphology, and sediment arrangement within arid streams. Stream channel form, cross-section, gradient, and watershed conditions control the type, size, and shape of the stream. These principles were used to identify an OHWM. The OHWM was identified by first determining areas on the land surface that were definitively above or below the OHWM (USACE 2004). Strong evidence of non-jurisdictional conditions is represented by features that are consistently above the OHWM such as rock varnishing, desert pavement, developed soils, and upland plant species, whereas conditions such as cobble bars, gravel sheets, in-stream sand ripples, particulate distribution, and desiccation/mud cracks are features below the OHWM (USACE 2004).

The horizontal extent of jurisdiction in ephemeral streams is based on flow from small to moderate storm events under normal conditions. The *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* discusses the potential for using vegetation patterns to assist in identifying an OHWM in the arid southwest because of the close association between riparian vegetation and stream hydrology. Therefore, the presence of riparian species was used to indicate that a wash received more frequent flows associated with smaller storm events and to more accurately determine the extent of WOUS.

In general, vegetation communities and plant species identified in ephemeral washes throughout the MRC Route varied little, if any, from vegetation found on the adjacent uplands. Riparian vegetation in an arid environment can be divided into three wetness classes: (1) hydroriparian areas are perennially saturated; (2) mesoriparian areas are seasonally moist; and (3) xeroriparian areas are predominantly dry with infrequent flood events (USACE 2004). The common wetness class identified within the MRC is xeroriparian. Mesoriparian and hydroriparian areas occur along the Walker River channel.

Each potential WOUS, represented as a blue line on the topographic map or a channelized feature in the aerial photography, was located in the field and a location data point was recorded with the tablet PC GPS unit. If WOUS indicators were present (definable channel bed and bank, OHWM, and applicable vegetation), the electronic data collection form was completed. The GPS unit was used to document points along the WOUS to create a continuous line (wash line) throughout the corridor. The dominant vegetative species, hydrologic characteristics, width of channel bed, and approximate depth of the OHWM were documented. If the channel width varied throughout the corridor, an average width was recorded. Generally, the width at the location of the rail alignment was recorded. Photographs were taken at each wash preliminarily determined to be WOUS.

4.1.2 Results

A total of 24 ephemeral washes were identified as likely WOUS within the MRC. Widths of the washes ranged from 1 to 15 feet, with average and median widths of 3.5 and 2.0 feet, respectively.

The Walker River was recorded as a perennial stream where the MRC would cross the river. At the time of the survey (February 2007), the average width of the river was 40 feet and the average depth was 3 feet. No ephemeral washes or perennial streams were identified within the Hawthorne Staging Yard Site.

No ephemeral streams having characteristics of WOUS were found on the portion of MCS1 that crosses the Walker River hydrographic basin. That portion of the MRC crosses two small playas (Figure 5A) that have no hydrologic connection to tributaries of the Walker Lake or other drainages in that basin.

The locations of each WOUS are shown on Figures 3A through 3C. WOUS segments occurring within the MRC are highlighted in blue. Connections to interstate tributaries are not shown for all WOUS; however, all WOUS have been determined to connect to interstate waters. Widths and depths of each WOUS found are listed in Table 2. Corridor segments not shown in the figures or listed in the table did not have WOUS identified during the field surveys. Jurisdiction will ultimately be decided by the USACE relative to each WOUS identified.

Table 2. Waters of the U.S. Identified within the Mina Rail Corridor

MRC Segment	WOUS ID #	Figure #	Width at OHWM (feet)	Approximate Depth at OHWM (inches)
Perennial Streams				
S1, S4, S5, S6	1	3A, 4	40	36
Ephemeral Washes				
S1, S4	2A	3A	3	1
S1, S4	2B	3A	2	1
S1, S4	3	3A	6	1
S1, S4	4A	3A	2	2
S1, S4	4B	3A	1	2
S1	5A	3A	6	1.5
S4	5B	3A	3	1
S4	5C	3A	2	1
S1	6	3A	9	1.5
OV3	7	3B	2	2
OV1	8	3B	6	1
OV1	9	3B	8	6
CS6	10	3B	2	2
CS6	11	3B	2	2
CS6	12	3B	15	6
CS6	13	3B	1	1
CS6	14	3B	3	3
CS6	15	3B	2	2
CS6	16	3B	1.5	2
CS6	17	3B	2	2
CS6	18	3B	2	2
CS6	19	3B	5	2
CS6	20	3B	1.5	1
CS6	21	3B	1.5	1
CS6	22	3C	3	2
CS6	23	3C	2	2
CS6	24	3C	2	2
CS6	25	3C	2	2

4.2 Wetlands

Wetlands include areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3(b)). Wetlands normally exhibit three general parameters – wetland hydrology, hydrophytic vegetation, and hydric soils. Evidence of each of these three parameters are typically required to positively identify a wetland.

In addition to the three parameters discussed above, a jurisdictional wetland must be immediately adjacent to, or have a conceivable, periodic surface water connection to other WOUS to meet the definition of adjacent wetland in 33 CFR 328.3. Unvegetated perennial or intermittent stream channels with an ordinary high water mark, as well as open water areas such as lakes are examples of areas typically considered to be WOUS by the USACE. Jurisdiction will ultimately be decided by the USACE relative to each of the wetlands identified within the project area.

4.2.1 Methods

The identification and delineation of the wetland within the MRC was performed using all available information during field efforts conducted in September and October 2006 and February 2007. The wetland area is called Walker River North (WRN) crossing.

Aerial photographs taken throughout 1993, 1994, 1998, 1999, and 2007 and USGS topographic maps were examined for the presence of known and potential water features in and adjacent to the entire MRC; including both interstate and intrastate hydrographic regions. Available NWI mapping and the dataset of springs provided by Bechtel-SAIC were also reviewed to locate potential wetland habitat along the MRC in all hydrographic regions.

Delineations of wetlands adjacent to WOUS in the interstate hydrographic regions were performed within the MRC using the routine method as described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Additional guidance for delineations was taken from the *Draft Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2005). The indicator status of vegetation species was derived from the *National List of Plant Species That Occur in Wetlands: Intermountain Region (Region 8)* (USFWS 1988). Wetlands were classified using the U.S. Fish and Wildlife Service Classification system (Cowardin et al. 1979).

The USACE Wetlands Delineation Manual requires the simultaneous presence of hydrophytic vegetation, wetland hydrology, and hydric soils during the growing season to positively delineate an area as a wetland. According to the delineation manual, to be considered a wetland an area must remain inundated or saturated to the surface continuously for a minimum of five percent of the growing season (Environmental Laboratory 1987). The WRN wetland delineated along the Walker River was based on climate data for the growing season in the Wabuska area. According to the Natural Resources Conservation Service (NRCS), the growing season in that area extends from May 10th to October 1st (144 days) (NRCS 2002). This translates into a requirement of seven consecutive days of soil saturation.

Wetland boundaries were primarily established using the resource grade GPS unit and ArcPad© on the tablet PC. The accuracy of the GPS unit ranges from approximately 1 to 15 feet. Wetland boundaries of each wetland polygon were then evaluated in the office and shifted as needed to best conform to the signature observed on the aerial photography. Wetland boundaries were not marked with surveyors ribbon or pin flags in the field.

4.2.2 Results

A total of 9 sample points were collected (see data forms in Appendix C) and a total of approximately 16.91 acres of wetland area identified (Table 3). All of the wetlands identified were connected to WOUS. Note that the U.S. Army Corps of Engineers will make the final jurisdictional determinations. Figure 4 depicts wetlands identified within the MRC at the WRN crossing. Select site photographs from representative WOUS and wetlands are included in Appendix B. All site photographs and MRC collected data are included with the electronic ArcGIS files.

All wetlands identified within the MRC occur along and adjacent to the Walker River where the MRC would cross the river (Figure 4).

Table 3. Summary of Wetlands within the Mina Rail Corridor

Wetland ID	Sample Point(s)[a]	Figure No.	Photo No.[b]	USFWS Classification[c]	Connected vs. Isolated	Size (acres)
WRN 1	WT-1, WT-2, WT-9	4	10, 11, 12	PSS	Connected	11.30
WRN 2	WT-5, WT-6	4	11, 12, 13	PSS	Connected	5.11
WRN 3	WT-7, WT-8	4	11, 13	PEM	Connected	0.09
WRN 4	WT-3, WT-4	4	14, 15	PSS	Connected	0.41
				APPROXIMATE TOTAL[d]		16.91

[a]See Appendix C. [b]See Appendix B. [c]Based on Cowardin et al. 1979. PEM = Palustrine emergent; PSS = Palustrine scrub-shrub. [d]The Corps of Engineers will make the final jurisdictional determination.

According to the USFWS National Wetlands Inventory (USFWS 2005), ephemeral lakes (playas) that occur along the MRC are classified as freshwater emergent wetlands, freshwater forested/shrub wetlands, or lakes (see Figures 5A through 5C). Playas not classified as such, are designated as "other". Although these designations are utilized for this report, they are not supported by actual conditions observed at the playas during field surveys. No wetlands were observed at any of the playas that occur along the MRC. The playas are generally void of vegetation with sparse stands of upland desert shrubs occurring along the playa edges. The most common shrubs identified along the playa edges were shadscale (*Atriplex confertifolia*), Cooper's wolfberry (*Lycium cooperi*) and black greasewood (*Sarcobatus vermiculatus*). No vegetation classified as Facultative (FAC) or Facultative Wetland (FACW) by the USFWS (USFWS 1988) was observed within the playa or along the playa edges. Photographs were taken to support this conclusion and can be found in Appendix B. Figures 5A, 5B, and 5C in Appendix A depict the location of each photograph taken.

In addition to the playas, four springs were identified within or adjacent to the MRC and investigated for potential isolated wetlands. One spring (Kinkaid Spring) is located just west of the large playa in Soda Springs Valley (Figure 5A). Three additional unnamed springs are located west of Goldfield, NV (Figure 5C).

Kinkaid Spring consists of a small depressional area (approximately 40 feet x 100 feet) with similar characteristics as the playas in the area; dry, sandy soils with upland vegetation along the edges. Five saltcedar (*Tamarix ramosissima*) shrubs were identified with the upland vegetation along the edges, however no other species classified as Facultative (FAC) or Facultative Wetland (FACW) by the USFWS (USFWS 1988) were identified (Photo 25). This spring does not have hydrophytic vegetation, hydric soils, or indicators of wetland hydrology and therefore can not be classified as a wetland.

Two of the three unnamed springs near Goldfield, NV no longer exist. Photographs were taken at the presumed locations of the springs to support this conclusion (Photo 26 and 27). The third spring is located on the western boundary of the MRC. Existing infrastructure suggests that this spring was active in the past, however, no water or wetland vegetation was identified during the field survey. Upland vegetation (specifically, rubber rabbitbrush (*Chrysothamnus nauseosus*) and big sagebrush) dominates and occurs throughout the site (Photo 28). None of the three springs in this area have associated isolated wetlands.

Vegetation

According to the USFWS classification for wetlands (Cowardin et al. 1979), all of the wetlands within the project area are classified as palustrine emergent and palustrine scrub-shrub wetlands. Though plant species composition varied among wetland polygons, the most prevalent hydrophytic herbaceous species encountered were inland saltgrass (*Distichlis spicata*) and baltic rush (*Juncus balticus*). In scrub-shrub wetlands the most prevalent hydrophytic shrub species encountered were saltcedar and sandbar willow. A complete list of plant species and their indicator status identified in, and immediately adjacent to wetlands, are listed in Table 4.

Table 4. Indicator Plant Species Identified in Wetlands or Adjacent Uplands within the Mina Rail Corridor

Scientific Name	Common Name	USFWS 1988 Region 8 Indicator Status*
Artemisia tridentata	Big sagebrush	Not listed
Atriplex confertifolia	Shadscale	Not listed
Atriplex lentiformus ssp. torreyi	Big saltbush	FACW
Bromus tectorum	Cheatgrass	Not listed
Chrysothamnus nauseosus	Rubber rabbitbrush	Not listed
Distichlis spicata	Inland saltgrass	FAC+
Elymus elymoides	Squirreltail	UPL
Elymus trachycaulus	Creeping wild-rye	FAC+
Grayia spinosa	Spiny hopsage	Not listed
Hordeum jubatum	Foxtail barley	FAC
Juncus balticus	Baltic rush	FACW
Leymus triticoides	Beardless wild-rye	FAC+
Lycium cooperi	Coopers Wolfberry	Not listed
Populus fremontii	Fremont's cottonwood	FACW
Salsola tragus	Russian thistle	Not listed
Sarcobatus vermiculatus	Black greasewood	FACU
Scirpus acutus	Hardstem bulrush	OBL
Sporobolus airoides var. wrightii	Alkali sacaton	FAC
Tamarix ramosissima	Saltcedar	FACW
Thamnosa montana	Turpentinebroom	Not listed
Typha latifolia	Broadleaf cattail	OBL

*FACU=Facultative Upland; FAC=Facultative; FACW=Facultative Wetland; OBL=Obligate (USFWS 1988).

Hydrology

The hydrology of the WRN wetlands is directly linked to the Walker River (Figure 4). All of the wetlands are immediately adjacent to the Walker River, and the primary source of hydrology is overbank flooding and groundwater associated with the river. Another source of hydrology is from surface runoff. Primary indicators of wetland hydrology for the WRN crossing are, soil saturation, drainage patterns, soil surface cracks, water marks, and drift lines. If a primary indicator of wetland hydrology is not present, two secondary indicators are required to confirm wetland hydrology. Secondary indicators of wetland

hydrology observed were mud casts (i.e., livestock pugging) and oxidized root channels in the upper 12 inches of the soil.

Soils

Soils found in the WRN wetlands of the MRC consist of: Appian loam sand, Dithod-Sagouspe-Dia complex, Fallon fine sandy loam, and badland. The Appian loam sand is very deep, well drained soil. The Dithod-Sagouspe-Dia complex is comprised of 30 % Dithod loam, 30% Sagouspe sandy loam, 30% Dia loam, and the remaining 10% is East Fork soils. These are very deep, somewhat poorly drained soils. This soil is known to have a high water table from May through July. The Fallon fine sandy loam is classified as a hydric soil and is a very deep, somewhat poorly drained soil, with a high ground water table from April through September. The final soil in the area is badland soil, which is mostly barren of vegetation and has a high wind and water erosion potential (USDA 1981).

During September and October 2006 and February 2007 field surveys, the soils within the MRC were generally found to be comprised of silty clay material. Hydric soil indicators observed within the corridor included aquic moisture regime, sulfidic odor, gleying, chroma of 1, and chroma of 2 with mottles. Chroma refers to the strength of the color of the soil and is determined by use of the *Munsell Color Book* (Munsell Color 1975). Mottles are spots of different color or shades of color interspersed within the dominant color of a soil layer. They usually result from the presence of periodic reducing soil conditions. Soils with a chroma of '1' or a chroma of '2' with mottles are normally saturated for significant duration during the growing season and indicate a hydric soil.

Table 5 provides more specific information on the hydrology, vegetation, soils, and wetland boundaries of wetlands identified within the MRC .

Table 5. Summary Information of Wetland Polygons within the Mina Rail Corridor

Wetland ID	*Dominant Vegetation*	*Hydrology Indicators*	*Hydric Soil Indicators*	*Boundary Notes*	*General Remarks**
WRN-1	*Salix exigua* *Tamarix ramosissima*	Drainage patterns, evidence of ponding, mud casts (livestock), mud cracks	Low chroma with mottles	Wetland boundary clearly defined by river channel and change to upland plant species, greasewood and turpentinebroom.	The hydrology for this wetland is derived from overbank flow and/or groundwater associated with the Walker River. Large distinct drainage channels that connect to the river occur throughout the wetland. A distinct change in elevation and vegetation occurs along the entire boundary. This wetland is adjacent to the Walker River.
WRN-2	*Salix exigua*	Drainage patterns, evidence of ponding, mud casts (livestock), mud cracks	Low chroma with mottles	Wetland boundary clearly defined by river channel and change to upland plant species, greasewood and turpentinebroom.	The hydrology for this wetland is derived from overbank flow and/or groundwater associated with the Walker River. Distinct drainage channels (1-2 feet wide) that connect to the river occur throughout the wetland. This wetland is a monoculture of the obligate plant species, sandbar willow. It is adjacent to the Walker River.
WRN-3	*Juncus balticus* *Distichlis spicata*	Depressional topography, mud casts (livestock)	Low chroma, aquic moisture regime (assumed)	Wetland bounded to the east by WRN-2 and to the west by a change to upland plant species, greasewood, rabbitbrush and big saltbush.	This is a small depressional wetland adjacent to the larger wetland to the east (WRN-2). This wetland is primarily composed of inland saltgrass with smaller pockets of Baltic rush. Sand-bar willow does not occur in this wetland. It is connected to WRN-2 and eventually the Walker River.
WRN-4	*Distichlis spicata* *Juncus balticus*	Depressional topography, mud casts	Low chroma with mottles	Boundary is based on a change in elevation, and to upland plant species, greasewood and rabbitbrush. Bounded to the northwest by WRN-2.	This is a small depressional wetland with distinctly different characteristics than the wetland (WRN-1) adjacent to it. The hydrology of this wetland is derived from overbank flooding through WRN-1. This wetland has connectivity to the Walker River via drainage channels.

**Discussions of jurisdiction are preliminary. The Corps of Engineers will make the final jurisdictional determinations.*

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Appendix A
Figures

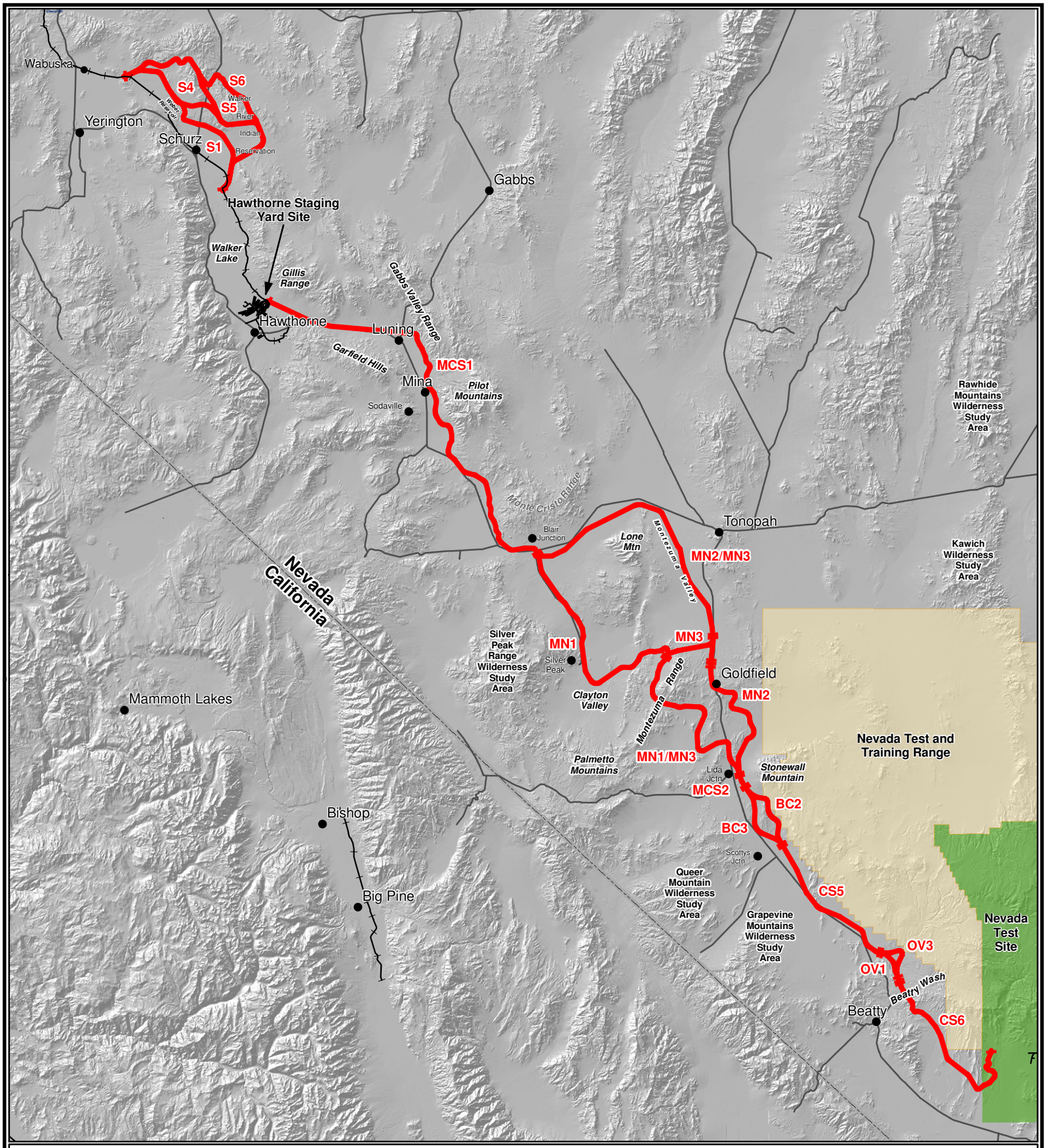


Figure 1
Mina Rail Corridor Project Location

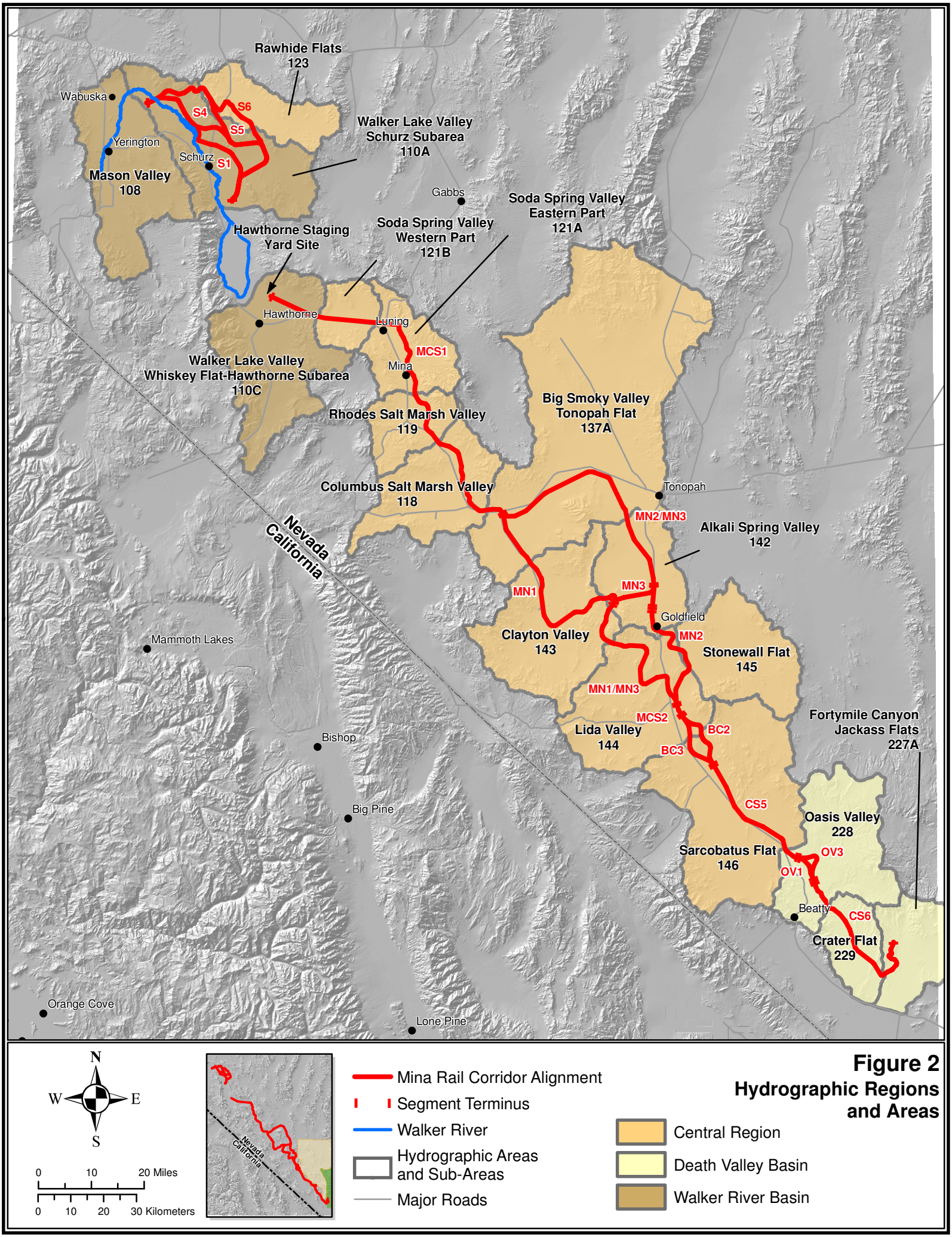


Figure 2
Hydrographic Regions and Areas

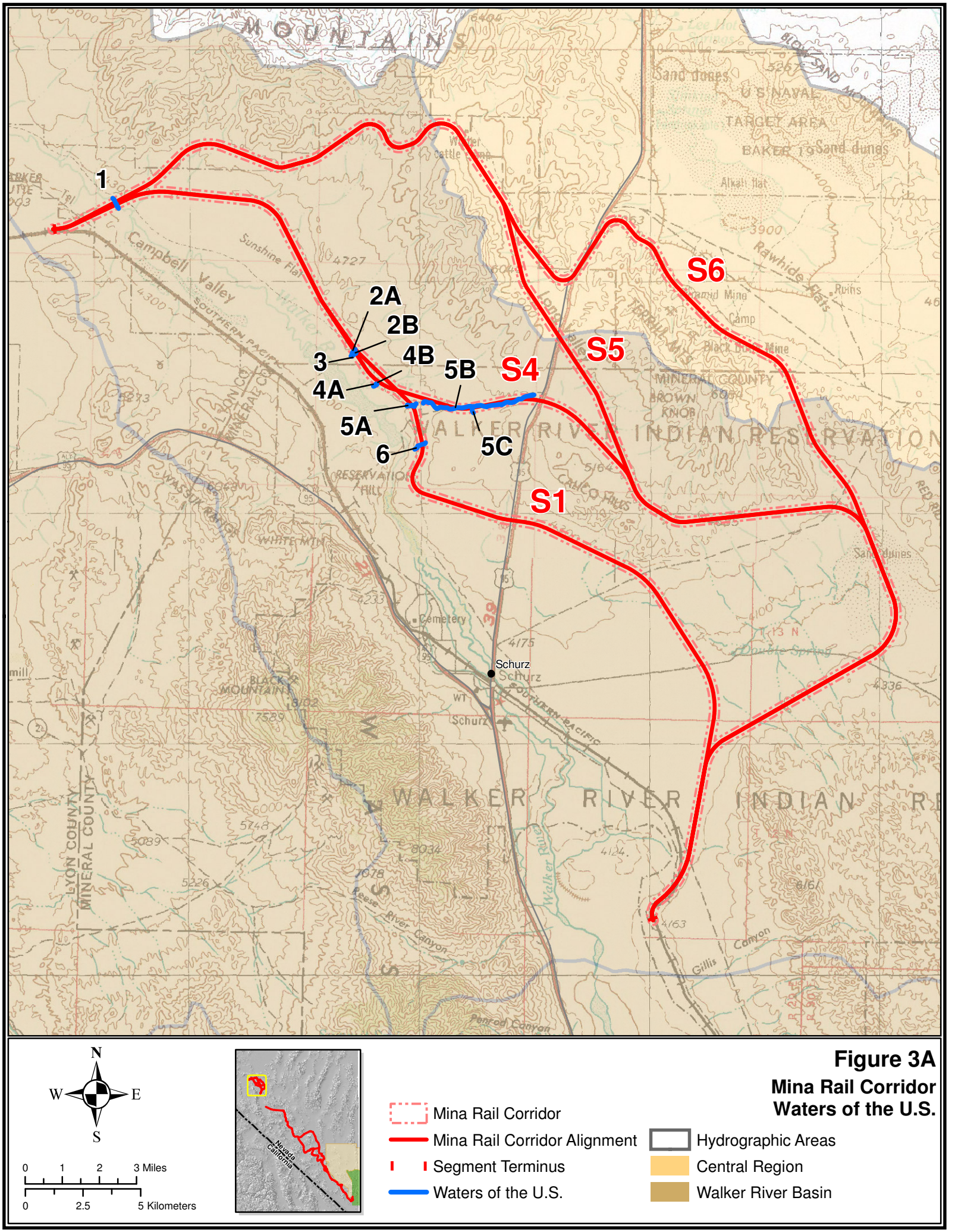


Figure 3A
Mina Rail Corridor
Waters of the U.S.

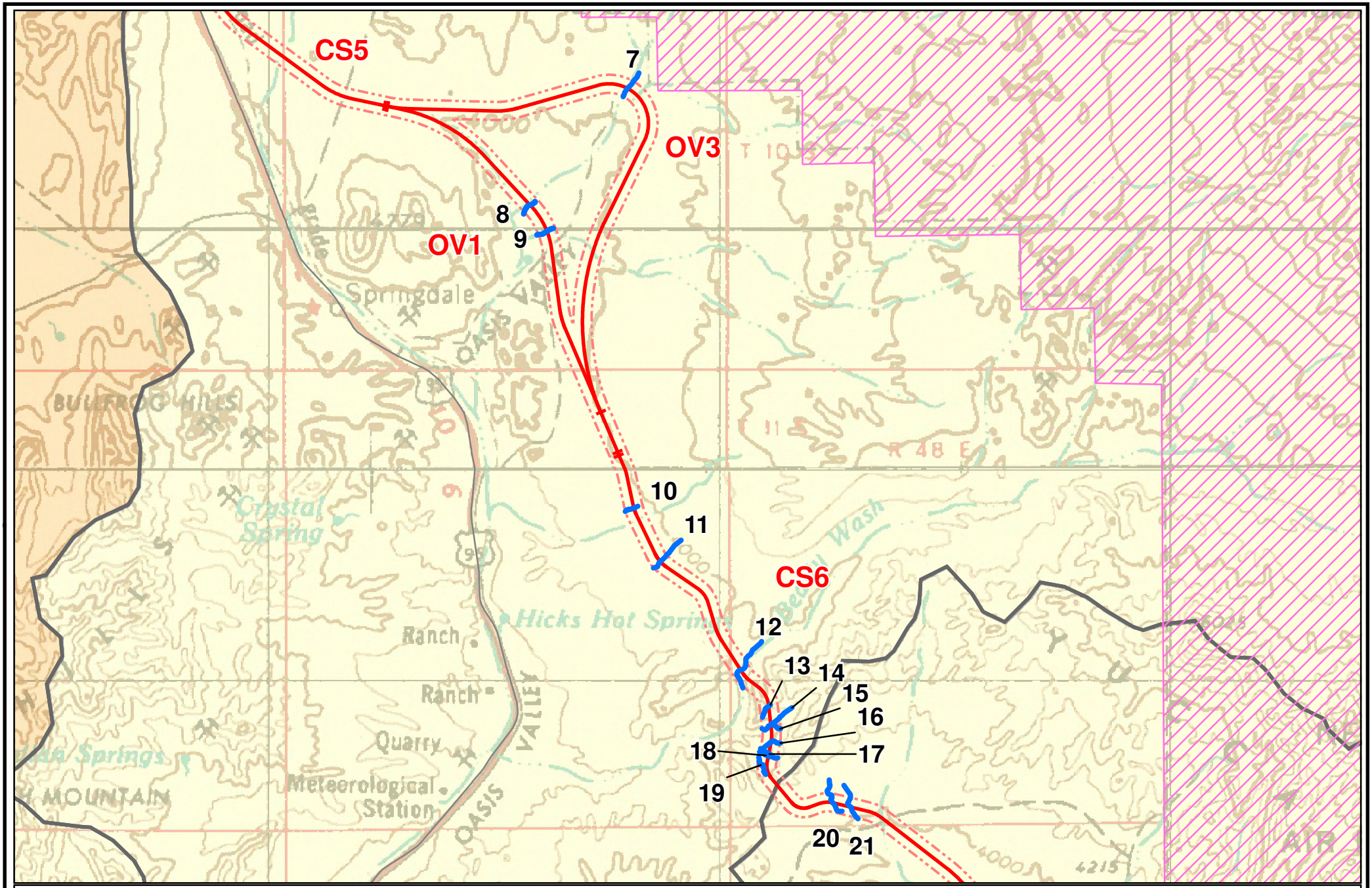


Figure 3B
Mina Rail Corridor
Waters of the U.S.

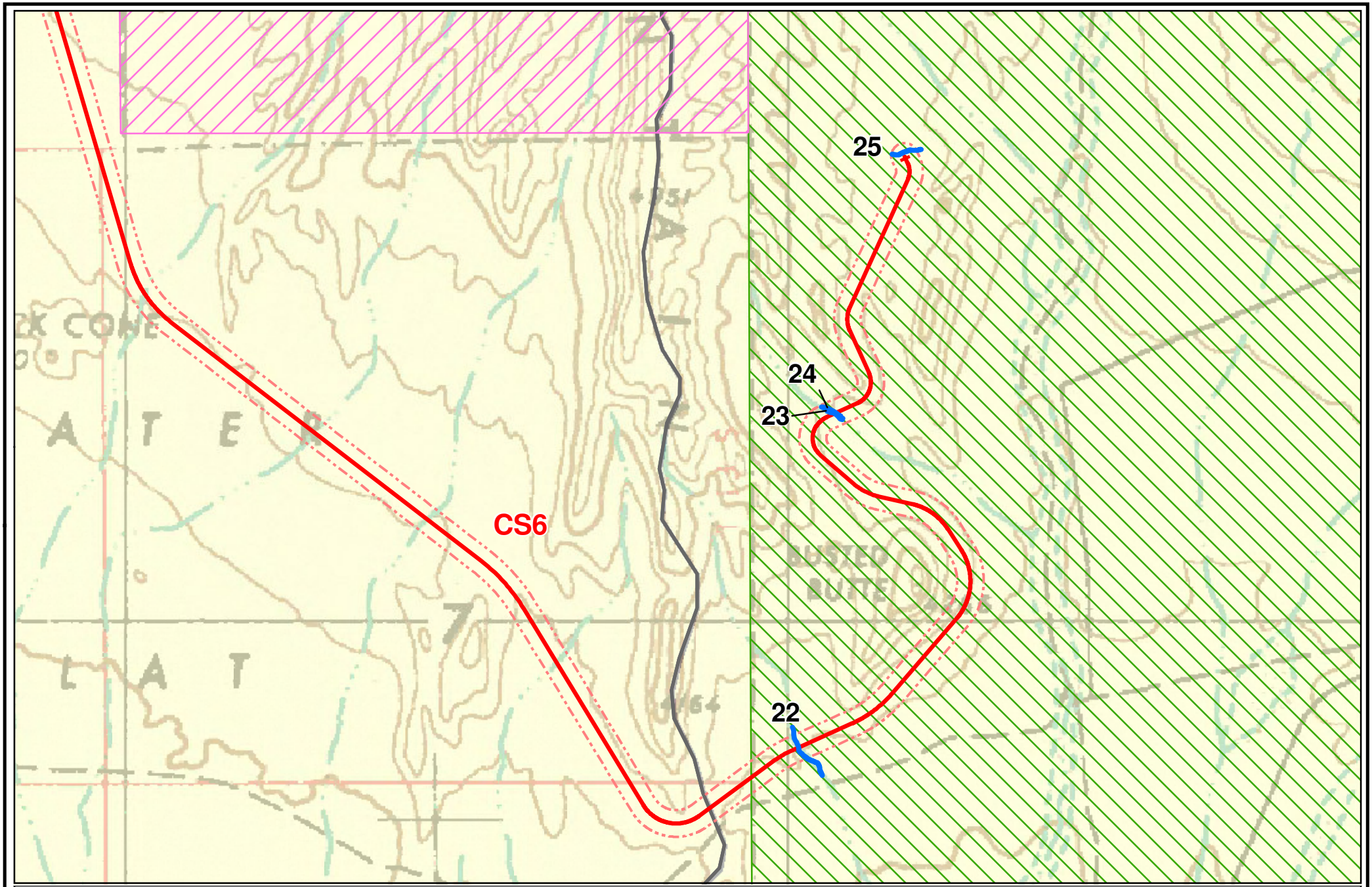
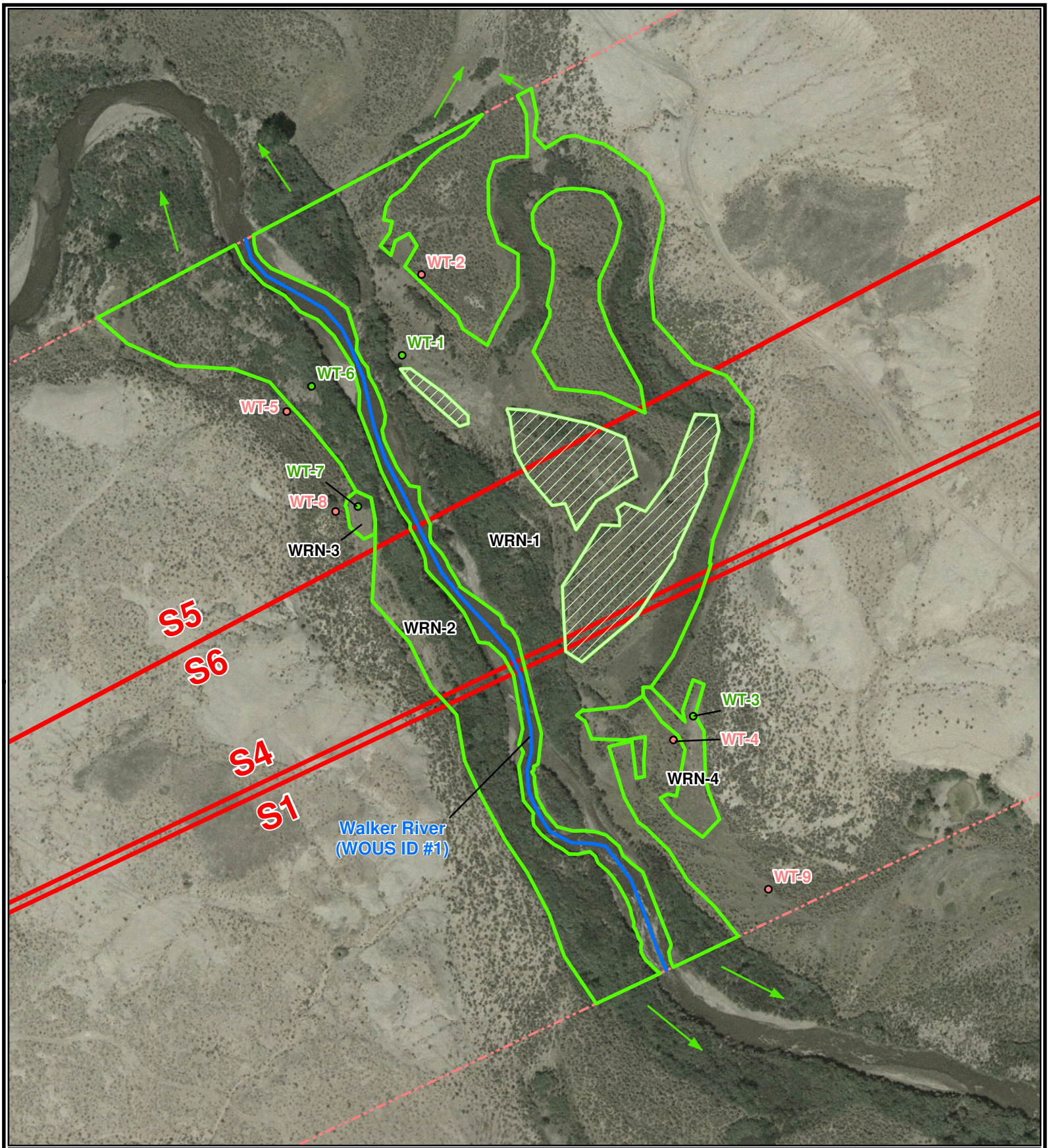


Figure 3C
Mina Rail Corridor
Waters of the U.S.



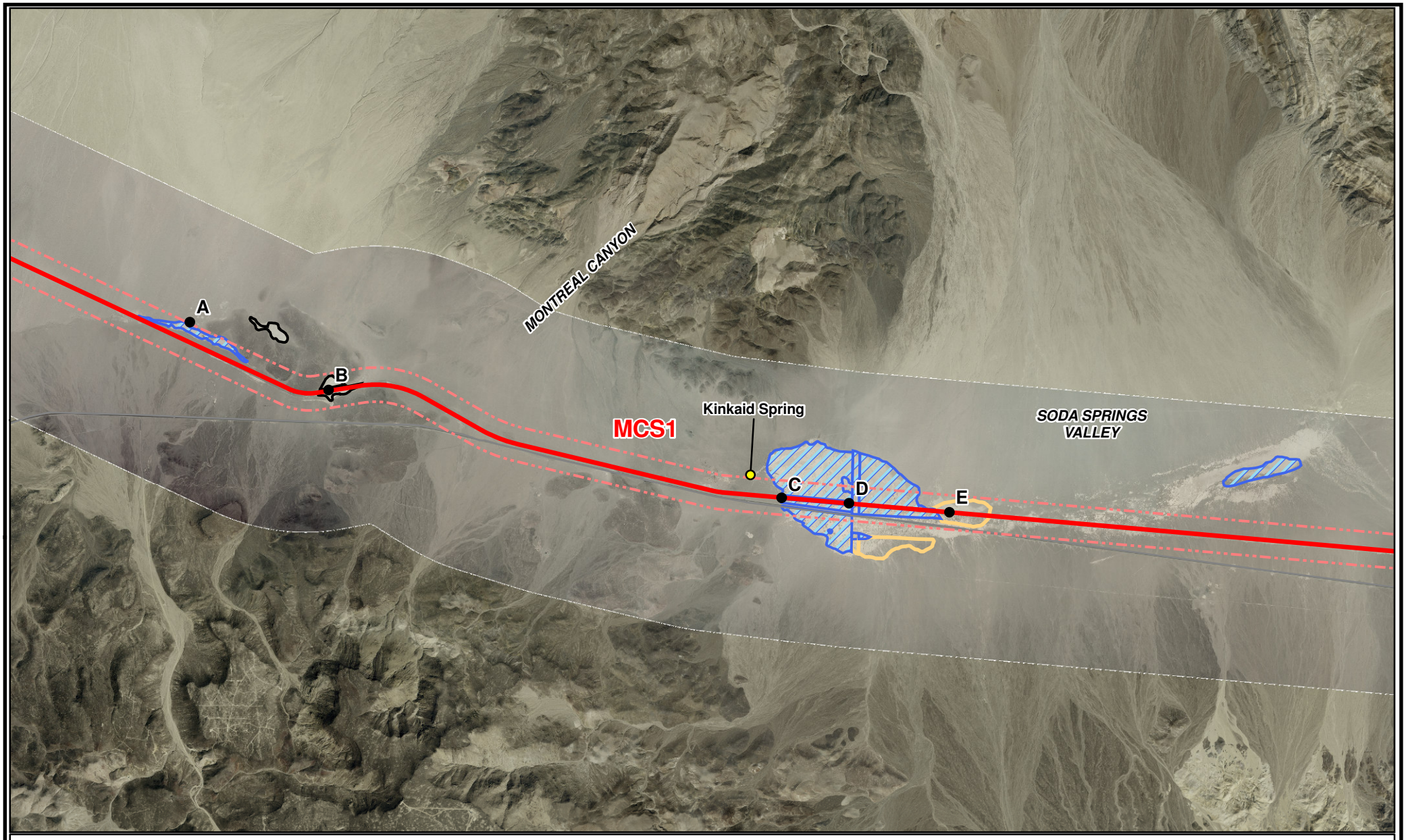
N
W E
S

0 120 240 Feet
0 0.02 0.04 Miles

Nevada
California

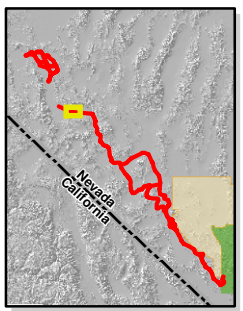
Mina Rail Corridor
Mina Rail Corridor Alignment
Connected
Upland
WRN-1 Wetlands Identifier
Wetlands Extends
Waters of the U.S.
Non Wetlands Data Points
Wetlands Data Points

Figure 4
Mina Rail Corridor
Wetlands
Schurz By-Pass Segment



N
W E
S

0 0.5 1 Miles
0 0.6 1.2 Kilometers



Legend

- Mina Rail Corridor
- Mina Rail Corridor Alignment
- A Photo Points
- Spring

National Wetlands Inventory Database

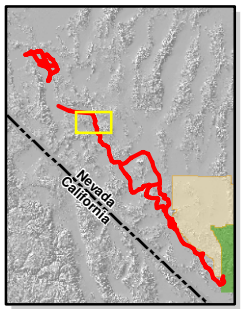
Wetlands Classification

- Freshwater Forested/Shrub Wetland
- Lake
- Other

Figure 5A
Mina Rail Corridor
Dry Lakes (North)

N
W E
S

0 0.7 1.4 2.1 Miles
0 2 4 Kilometers

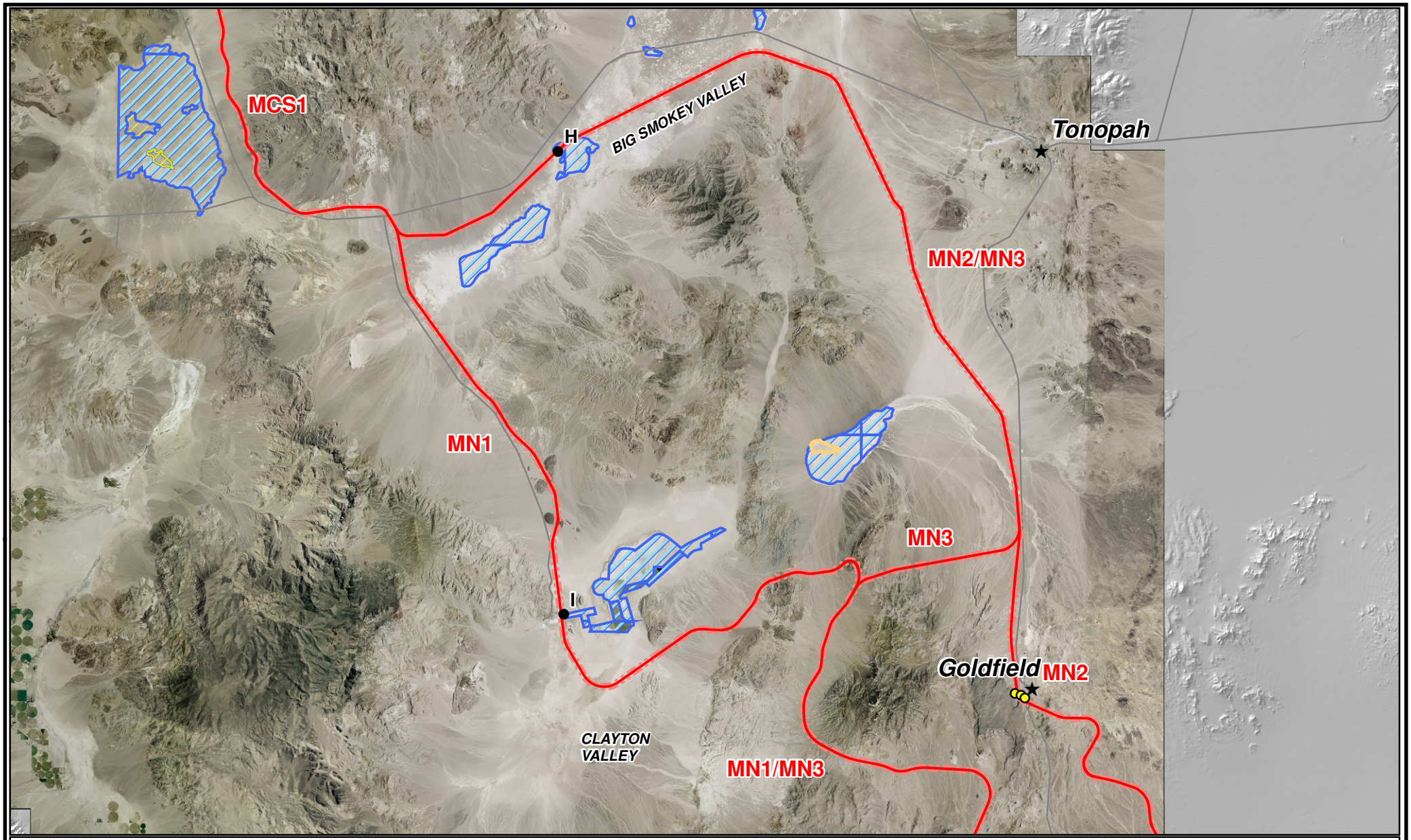


Legend

Mina Rail Corridor
Mina Rail Corridor Alignment
F Photo Points

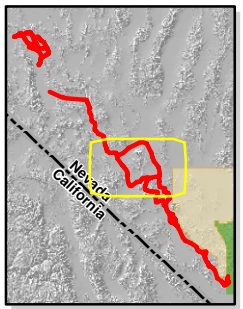
National Wetlands Inventory Database
Wetlands Classification
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Lake

Figure 5B
Mina Rail Corridor
Dry Lakes (Central)



N
W E
S

0 2 4 6 Miles
0 3 6 Kilometers



Legend

- Mina Rail Corridor
- Mina Rail Corridor Alignment
- H Photo Points
- Spring

National Wetlands Inventory Database

Wetlands Classification

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Lake

Figure 5C
Mina Rail Corridor
Dry Lakes (South)

Appendix B

Example Site Photographs

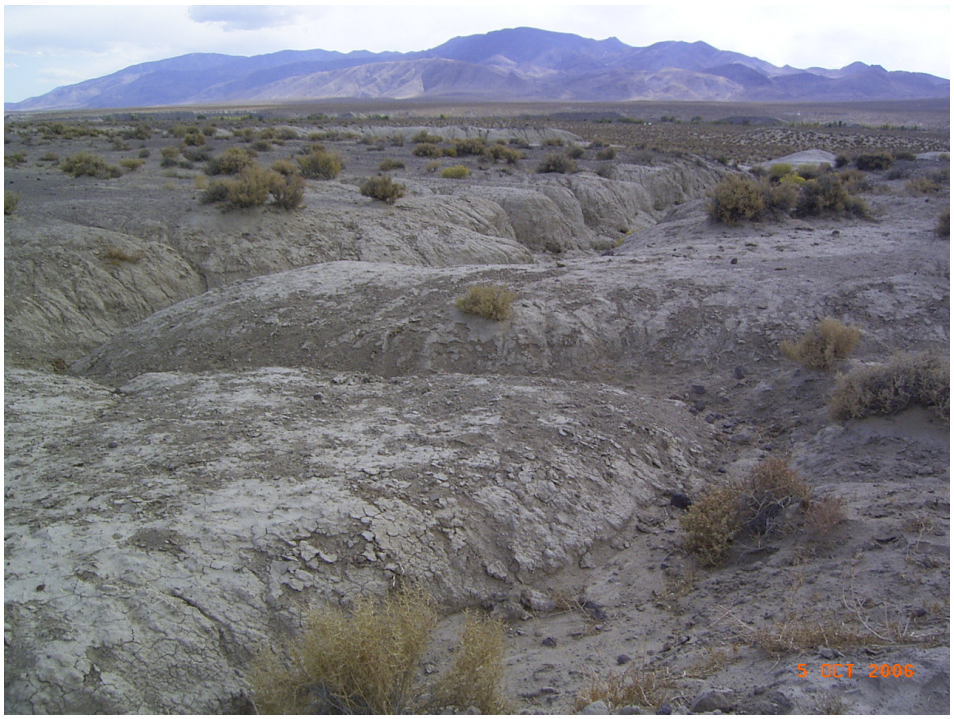


Photo 1. Photograph of WOUS 2A looking SW (downstream) towards the Walker River.

Photo 2. Photograph of WOUS 2B looking NE (upstream) from southern buffer of Mina Rail Corridor.

Photo 3. Photograph of WOUS 3 looking NE (upstream) from southern buffer of Mina Rail Corridor.

Photo 4. Photograph of WOUS 4A looking NE (upstream) from southern buffer of Mina Rail Corridor.

Photo 5. Photograph of WOUS 4B looking SW (downstream) from centerline of Mina Rail Corridor.

Photo 6. Photograph of WOUS 5A looking SW (downstream) from northern buffer of Mina Rail Corridor.

Photo 7. Photograph of WOUS 5B looking east (upstream).

Photo 8. Photograph of WOUS 5C looking north (downstream) towards Mina Rail Corridor.

Photo 9. Photograph of WOUS 6 looking SW (downstream) from centerline of Mina Rail Corridor.

Photo 10. Photograph of wetland WRN-1 looking SW from sample point WT-2. Upland species (*Atriplex lentiformis*) in foreground. *Salix exigua* and *Tamarix ramosissima* wetland in background.

Photo 11. Photograph looking NE from hill above the western bank of the Walker River at the northern crossing. The small wetland WRN-3 can be seen as an open circular area on the extreme left side of the photo. Wetlands WRN-1 and WRN-2 are the large shrub-dominated wetlands directly adjacent to the river channel.

Photo 12. Photograph looking SE from hill above western bank of the Walker River at the northern crossing. WRN-2 is the wetland in the foreground and WRN-1 is the wetland in the background, on the eastern side of the river.

Photo 13. Photograph looking SE from sample point WT-7, showing the border between wetland WRN-3 (foreground) and wetland WRN-2 (to the left). Upland vegetation is seen to right (south).

Photo 14. Photograph of wetland WRN-4 looking north from sample point WT-3.

Photo 15. Photograph of wetland WRN-4 looking south from sample point WT-3.

Photo 16. Photograph from Photopoint A (Figure 5A) looking east across an ephemeral lake east of Soda Springs Valley.

Photo 17. Photograph from Photopoint B (Figure 5A) looking north across an ephemeral lake towards Montreal Canyon. The ephemeral lake is located east of Soda Springs Valley.

Photo 18. Photograph from Photopoint C (Figure 5A) looking east along a historic rail bed with ephemeral lakes on either side. Ephemeral lakes are located in Soda Springs Valley. Upland vegetation dispersed throughout.

Photo 19. Photograph from Photopoint D (Figure 5A) looking north across an ephemeral lake in Soda Springs Valley.

Photo 20. Photograph from Photopoint E (Figure 5A) looking north across ephemeral lake in Soda Springs Valley.

Photo 21. Photograph from Photopoint F (Figure 5B) looking NE at ephemeral lake located southeast of Luning, NV. Upland vegetation occurs on edges of playa.

Photo 22. Photograph from Photopoint G (Figure 5B) looking east-northeast at ephemeral lake east of Mina. Mina Rail Corridor is between the ephemeral lake and the mountains.

Photo 23. Photograph from Photopoint H (Figure 5C) looking SE across an ephemeral lake towards Big Smokey Valley.

Photo 24. Photograph from Photopoint I (Figure 5C) looking NE across an ephemeral lake located in the northern section of Clayton Valley.

Photo 25. Photograph of Kinkaid Spring, located just west of the large playa in Soda Springs Valley.

Photo 26. Photograph of the location of an unnamed spring near Goldfield, NV. The spring was not found during the field surveys.

Photo 27. Photograph of the location of an unnamed spring near Goldfield, NV. The spring was not found during the field surveys.

Photo 28. Photograph of an unnamed spring near Goldfield, NV. Infrastructure suggests that a spring historically existed here, however no water or wetland vegetation was found during the field surveys.

Appendix C

Wetland data forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/16/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Salix exigua*	S	OBL	9			
2	*Tamarix ramosissima*	S	FACW	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2 = 100%

Remarks:
Another *Salix sp* in area; however, not dominant *Salix exigua* follows large drainage patterns (channels) to river.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Overbank flow, evidence of ponding, large distinct drainage patterns that connect with the river, higher elevation than surrounding area, pugging (massive)

Mud cracks with pugging.

SOILS

Map Unit Name (Series and Phase): Fallon fine sandy loam, saline-alkali
Drainage Class: Somewhat Poorly Drained
Taxonomy (Subgroup): Aquic Xerofluvents
Field Observations Confirm Mapped Type? ____ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10 YR 2/2	5 YR 5/8	Few / Faint	Loam
3-13	B	10 YR 3/2	5 YR 5/8	Few / Faint	Loam

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No		
Wetland Hydrology Present?	X	Yes	____	No		
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland?	X Yes ____ No

Remarks:

Area hammered by cows.
Upland boundary is clearly defined (higher gradient section above the river bank).

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/16/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Distichlis spicata*	H	FAC+	9			
2	*Atriplex lentiformis ssp. torreyi*	S	FAC-	10			
3	*Sarcobatus vermiculatus*	S	FACU	11			
4	*Thamnosa montana*	S	Not Listed	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/4 = 25%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)

Depth to Free Water in Pit: - (in.)

Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Floodplain – Some over bank flow possible, but no drainage patterns.
Evidence of cattle but no pugging.

SOILS

Map Unit Name (Series and Phase): Fallon fine sandy loam, saline-alkali
Drainage Class: Somewhat Poorly Drained
Taxonomy (Subgroup): Aquic Xerofluvents
Field Observations Confirm Mapped Type? ____ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-13		10 YR 2/2	2.5 YR 4/6	Few / Faint	Loam

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
X Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? ____ Yes X No
Wetland Hydrology Present? ____ Yes X No
Hydric Soils Present? X Yes ____ No

Is this Sampling Point Within a Wetland? ____ Yes X No

Remarks:
Higher elevation than surrounding area.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/16/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Distichlis spicata*	H	FAC+	9			
2	*Juncus balticus*	H	FACW	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2 = 100%

Remarks:
No *Salix exigua* in this wetland.
All grazed *Distichlis spicata* and *Juncus balticus*

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Extensive pugging and drainage patterns throughout that lead to the river.

SOILS

Map Unit Name (Series and Phase): Fallon fine sandy loam, saline-alkali
Drainage Class: Somewhat Poorly Drained
Taxonomy (Subgroup): Aquic Xerofluvents
Field Observations Confirm Mapped Type? ____ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-13		10 YR 3/2	2.5 YR 4/8	Very Few / Faint	Loam

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? X Yes ____ No
Wetland Hydrology Present? X Yes ____ No
Hydric Soils Present? X Yes ____ No

Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:
Separate wetland with distinctly different characteristics than WRN-1; however, this wetland is connected to and drains into WRN-1."

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/16/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-4

VEGETATION

	Dominant Plant Species	Stratum	Indicator
1	*Artemisia tridentata*	S	Not Listed
2	*Chrysothamnus nauseosus*	S	Not Listed
3	*Atriplex lentiformis ssp. torreyi*	S	FAC-
4	*Sarcobatus vermiculatus*	S	FACU
5	*Distichlis spicata*	H	FAC+
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/5 = 20%

Remarks:
Upland vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
No pugging, no mud cracks, no evidence of hydrology.
Higher elevation than adjacent 'wetland'.

SOILS

Map Unit Name (Series and Phase): Fallon fine sandy loam, saline-alkali
Drainage Class: Somewhat Poorly Drained
Taxonomy (Subgroup): Aquic Xerofluvents
Field Observations
Confirm Mapped Type? ____ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-13	A	10 YR 3/2	None	N/A	Loam

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? ____ Yes X No
Wetland Hydrology Present? ____ Yes X No
Hydric Soils Present? ____ Yes X No

Is this Sampling Point Within a Wetland? ____ Yes X No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/17/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-5

VEGETATION

	Dominant Plant Species	Stratum	Indicator
1	*Atriplex lentiformis ssp. torreyi*	S	FAC-
2	*Distichlis spicata*	H	Not Listed
3	*Sarcobatus vermiculatus*	S	FACU
4	*Chrysothamnus nauseosus*	S	Not Listed
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 0/4 = 0%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Above apparent over-bank flooding area.
Cows evident, but no pugging – No Hydrology.

SOILS

Map Unit Name (Series and Phase):	Dithod-Sagouspe-Dia complex	Drainage Class:	Somewhat Poorly Drained
Taxonomy (Subgroup):	Fluvaquentic Haploxerolls-Aquic Xerofluvents- Fluvaquentic Haploxerolls	Field Observations Confirm Mapped Type?	Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-13		10 YR 3/2	None	N/A	Loam

Hydric Soil Indicators:

____ Histosol	____ Concretions
____ Histic Epipedon	____ High Organic Content in surface Layer in Sandy Soils
____ Sulfidic Odor	____ Organic Streaking in Sandy Soils
____ Aquic Moisture Regime	____ Listed on Local Hydric Soils List
____ Reducing Conditions	____ Listed on National Hydric Soils List
____ Gleyed or Low-Chroma Colors	____ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	____ Yes	X No	
Wetland Hydrology Present?	____ Yes	X No	
Hydric Soils Present?	____ Yes	X No	Is this Sampling Point Within a Wetland? ____ Yes X No

Remarks:

West bank of Northern Crossing (Northern limit of buffer).

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/17/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-6

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Salix exigua*	S	OBL	9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/1 = 100%

Remarks:
All *Salix exigua* - nothing else.
Wetland boundary defined by this species.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Mud cracks and pugging, definite overbank flow – drainage channels 1-2 feet wide throughout.

SOILS

Map Unit Name (Series and Phase):	Dithod-Sagouspe-Dia complex	Drainage Class:	Somewhat Poorly Drained
Taxonomy (Subgroup):	Fluvaquentic Haploxerolls-Aquic Xerofluvents- Fluvaquentic Haploxerolls	Field Observations Confirm Mapped Type?	Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-7	A	7.5 YR 3/2	2.5 YR 4/8	Few / Distinct	Silty clay loam
7-16	B	10 YR 5/3	None	N/A	Sand

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks:

Layer of course sand at 7" and below. Water likely retained in the surface layer due to soil texture of the surface layer and the change in soil pore size in the second soil layer.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No		
Wetland Hydrology Present?	X	Yes	____	No		
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland?	X Yes ____ No

Remarks:

Approximately 50-75 feet from river channel.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/17/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-7

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Distichlis spicata*	H	FAC+	9			
2	*Juncus balticus*	H	FACW	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2 = 100%

Remarks:
No *Salix exigua.*

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Evidence of flooding, lower elevation than Western bank. Some pugging.

SOILS

Map Unit Name (Series and Phase):	Dithod-Sagouspe-Dia complex	Drainage Class:	Somewhat Poorly Drained
Taxonomy (Subgroup):	Fluvaquentic Haploxerolls-Aquic Xerofluvents- Fluvaquentic Haploxerolls	Field Observations Confirm Mapped Type?	Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16		7.5 YR 3/2	5 YR 4/6	Common / Faint	Silty clay loam

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks:
Significant organic content and streaking; however, not sandy soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No	
Wetland Hydrology Present?	X	Yes	____	No	
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:
This is a small wetland polygon is adjacent to WRN2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/17/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-8

VEGETATION

	Dominant Plant Species	Stratum	Indicator
1	*Chrysothamnus nauseosus*	S	Not Listed
2	*Sarcobatus vermiculatus*	H	FACU
3	*Distichlis spicata*	H	FAC+
4	*Atriplex lentiformis ssp. torreyi*	S	FAC-
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/4 = 25%

Remarks:
One Russian Olive in the area. Not dominant though.
(*Elaeagnus angustifolia*) = FAC

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
No hydrology. No drainage patterns. Evidence of cows but no pugging
2nd bank above river.

SOILS

Map Unit Name (Series and Phase):	Dithod-Sagouspe-Dia complex	Drainage Class:	Somewhat Poorly Drained
Taxonomy (Subgroup):	Fluvaquentic Haploxerolls-Aquic Xerofluvents- Fluvaquentic Haploxerolls	Field Observations Confirm Mapped Type?	Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10 YR 3/2	None	N/A	Sandy loam

Hydric Soil Indicators:

____ Histosol	____ Concretions
____ Histic Epipedon	____ High Organic Content in surface Layer in Sandy Soils
____ Sulfidic Odor	____ Organic Streaking in Sandy Soils
____ Aquic Moisture Regime	____ Listed on Local Hydric Soils List
____ Reducing Conditions	____ Listed on National Hydric Soils List
____ Gleyed or Low-Chroma Colors	____ Other (Explain in Remarks)

Remarks:
Not Hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	____ Yes X No	
Wetland Hydrology Present?	____ Yes X No	
Hydric Soils Present?	____ Yes X No	Is this Sampling Point Within a Wetland? ____ Yes X No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: NV Rail Corridor – Mina Route – Northern River Crossing	Date: 10/17/06
Applicant/Owner: Bechtel – SAIC	County: Lyon
Investigator: PBS&J (DB & SG)	State: NV

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	X	No	Plot ID: WT-9

VEGETATION

	Dominant Plant Species	Stratum	Indicator
1	*Sarcobatus vermiculatus*	S	FACU
2	*Distichlis spicata*	H	FAC+
3	*Atriplex lentiformis ssp. torreyi*	S	FAC-
4	*Chrysothamnus nauseosus*	S	Not Listed
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/4 = 25%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches? (Moist)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Slight pugging. Small drainage features.
Slightly higher in elevation than wetland to the North.

SOILS

Map Unit Name (Series and Phase): Fallon fine sandy loam, saline-alkali
Drainage Class: Somewhat Poorly Drained
Taxonomy (Subgroup): Aquic Xerofluvents
Field Observations Confirm Mapped Type? ____ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10 YR 3/2	5 YR 4/6	Few Common / Faint	Silt loam

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	____	Yes	X	No	
Wetland Hydrology Present?	X	Yes	____	No	
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland? ____ Yes X No

Remarks:

East bank – Southern buffer
Had 2 of 3 parameters, but vegetation was clearly upland.

Appendix D

Data Collection Fields

Waters of the U.S. Determination

Main Page tab:

- Waters of the U.S.
- Project / Site
- County
- State
- Collector
- Company
- Unit Name

Is the Site Significantly Disturbed (Atypical Situation)

Dominant Plant Species

- Common Name
- Scientific Name
- Location
- Density (% Cover)
- Type
- Stratum
- Indicator

- Photo ID

Geomorphology tab:

Flow Type

- Channelized
- Sheet Flow
- Debris Flow

Stream Type

- Discontinuous
- Ephemeral
- Alluvial Fan
- Anastomosing
- Single Thread Channel
- Multi Threaded Channel

OHWM Indicators

- Bed / Bank
- Bed Width (in.)
- OHWM Depth (in.)

Wetlands Determination

Vegetation tab:

- Project / Site
- Do normal Circumstances Exist on the Site?
- Is the Site Significantly Disturbed (Atypical)?
- Is the Area a Potential Problem Area?
- Collector
- Company
- Unit Name

- Dominant Plant Species
- Scientific Name / Common Name
- Stratum
- Indicator
- Percent of Dominant Species (OBL, FACW, or FAC)

Hydrology tab:

- Recorded Data Available (Describe in Remarks)
- Stream, Lake, or Tide Gauge
- Aerial Photographs
- Other
- Depth of Surface Water
- Depth to Free Water in Pit
- Depth to Saturated Soil

Primary Indicators:

- Inundated
- Saturated in Upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- Oxidized Root Channels in Upper 12'
- Water Stained Leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other (Explain in Remarks)

Soils tab:

- Map Unit Name (Series and Phrase)
- Taxonomy (Subgroup)
- Drainage Class
- Field Observations / Confirm Mapped Type

Profile Description

- Depth (in.)
- Horizon
- Matrix Colors (Munsell Moist)
- Mottle Abundance / Contrast
- Texture, Concretions, Structure, etc.

Hydric Soil Indicators

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- Aquic Moisture Regime
- High Organic Content in Surface Layer
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils
- Listed on National Hydric Soils
- Other (Explain in Remarks)

WETLANDS DETERMINATION

- Hydrophytic Vegetation Present
- Wetland Hydrology Present
- Hydric Soils Present
- Is this Sampling Point within a Wetland

Photos tab:

- Photo ID