In accordance with Washington City Zoning Ordinance 29-2-103(15), the Wetlands Delineation Plan is included in this section. Upon request, color photos will be made available by the State of Utah School and Institutional Trust Lands Administration.

WETLAND DELINEATION AND WATERS OF THE U.S. IDENTIFICATION

MILE POST 13
Washington County, Utah

Township 42 South, Range 14 West, Sections: 6, 7, and 18
Township 42 South, Range 15 West, Sections: 12 and 13

July 2003

Submitted to:
Alliance Consulting
2303 North Coral Canyon Blvd
Suite 201
Washington City, UT 84780-0576

Prepared by:
Jaime White, Leslie Watson
Michael Baker Jr., Inc.
6955 Union Park Center, Suite 370
Midvale, Utah 84047

Baker

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Alliance Consulting of Washington City, Utah, contracted Michael Baker Jr., Inc. (Baker) of Midvale, Utah, to conduct a wetland delineation and waters of the U.S. identification on an approximately 700 acre parcel of land located in Washington City, Utah. The land is owned by the State of Utah School and Institutional Trust Lands Administration and is expected to be developed into a mix of light commercial/manufacturing and residential in the near future. The property is bordered by Interstate 15 (I-15) to the north, Washington Black Ridge to the east, Telegraph Street to the south, and newer residential subdivisions to the west. The property is referred to as Mile Post 13.

The purpose of this investigation is to determine the jurisdictional wetland boundaries and special aquatic sites within the project area. Waters of the U.S. specific to this project are drainages and washes. Jurisdictional wetlands, which are a subset of special aquatic sites, are regulated by the U.S. Army Corps of Engineers (ACOE) under the authority of the Clean Water Act (CWA). The ACOE has the authority to approve all jurisdictional wetland delineations and waters of the U.S. identifications and issue relevant permits for actions involving dredging, filling, and/or excavating within jurisdictional wetlands or other waters of the U.S.

The wetland delineation was conducted according to guidelines and procedures outlined in the 1987 Corps of Engineers Manual. Dry washes/drainages with defined bed and banks (marked changes in vegetative communities or evidence of scour) were identified as jurisdictional. Soil survey, aerial photographs and topographic maps were utilized to locate prospective wetland areas within the study site. Pertinent characteristics of the vegetation, soils and hydrology of all wetlands identified in this report were studied in the field to support the conclusions of this delineation.

Total jurisdictional wetlands delineated: 0.2 acres

Total jurisdictional dry washes/drainages identified: 19 along the northern boundary combining to one at the southern boundary.

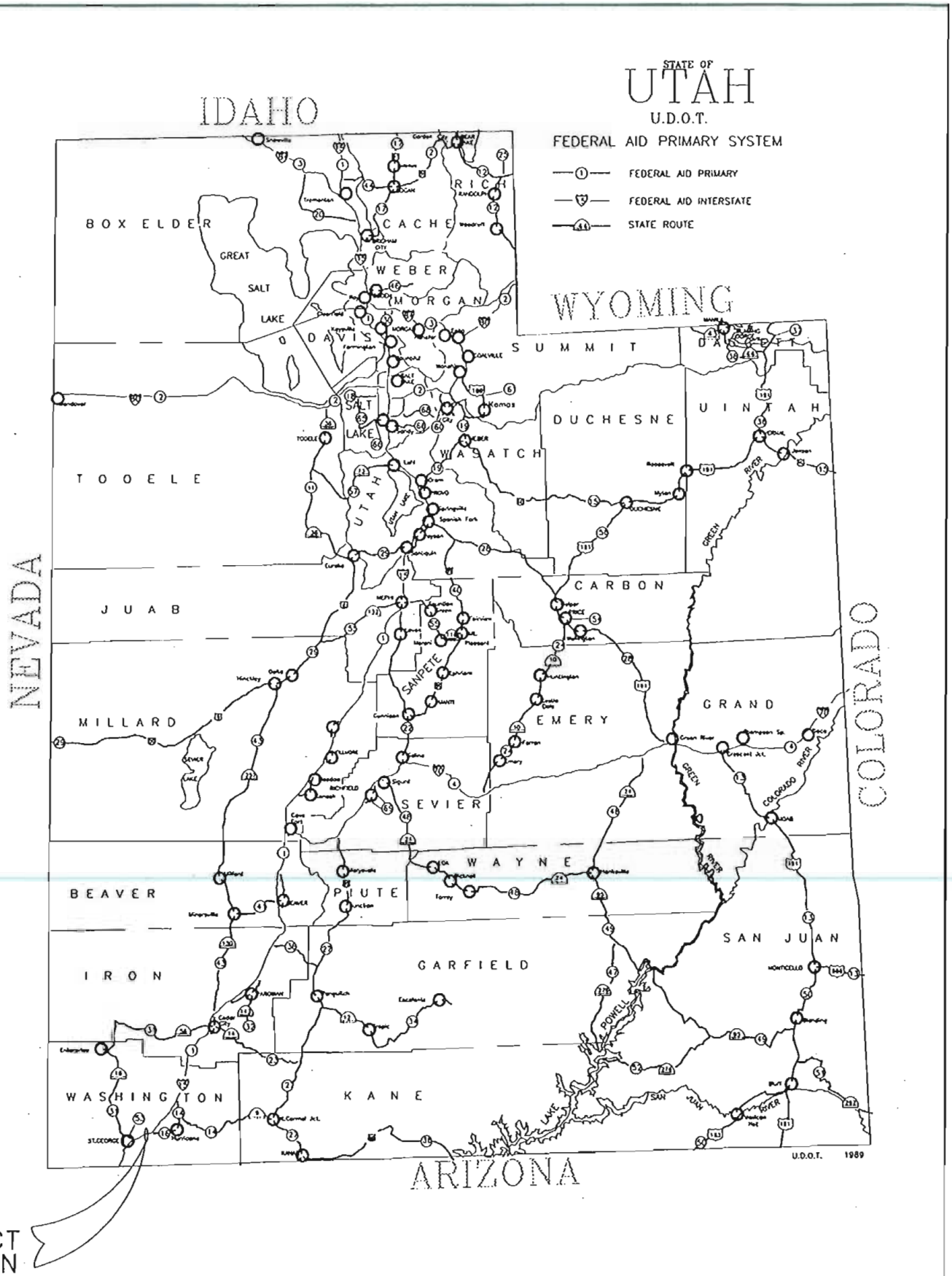
1.0 INTRODUCTION

Alliance Consulting of Washington City, Utah, is performing site engineering on an approximately 700 acre parcel of land located in Washington City, Utah. The land is owned by the State of Utah School and Institutional Trust Lands Administration and is expected to be developed into a mix of light commercial/manufacturing and residential in the near future. The property is bordered by I-15 to the north, Washington Black Ridge to the east, Telegraph Street to the south, and newer residential subdivisions to the west.

The purpose of this report is to identify wetland areas and waters of the U.S. that could be potentially impacted by the proposed Mile Post 13 Project as per Section 404 of the Clean Water Act (CWA). The wetland delineation results and waters identification from field and database investigations are included in this report.

2.0 SITE AREA DESCRIPTION

Located in the Colorado Plateau, the project site is south of I-15, approximately one mile northeast of Washington City in Washington County, Utah (see Figure 1 and Appendix A for a map of the project area). Along the eastern boundary of the property is Washington Black Ridge, a Cenozoic lava flow outcrop. Telegraph Street is the southern boundary and along the



DATE: 6-23-03
JOB NUMBER: 4028
SCALE: NONE
DRAWN BY: M.W.B.
CHECKED BY:

2303 N Coral Canyon Blvd., Suite 201
Washington, Utah 84780-0577
Tel (435) 673-8060
Fax (435) 673-8065
ALLIANCE CONSULTING
A Planning and Engineering Firm

LOCATION MAP
FOR
MILE POST 13 INTERCHANGE
CITY OF WASHINGTON
WASHINGTON COUNTY, UTAH

DRAWING NAME: UTAH
SHEET 1 OF 1 SHEETS

western boundary are developments associated with population growth in Washington City. Grapevine Pass Wash and numerous smaller tributaries traverse the property from north to south (site is sloped from north to south). Grapevine Pass Wash is a tributary to the Virgin River, which is southeast of the property. Upland mesas between the dry washes are dominated by a creosote scrub-shrub plant community.

The project occurs in the following legal description, Washington County, SLB&M (See Figure 1):

Township	Range	Section
42 S	14 W	6, 7, 18
42 S	15 W	12, 13

3.0 METHODS

Project area field investigations were completed May 27 and 28, and July 7, 2003. Jaime White, Kristin Preece and Leslie Watson performed the field investigations by walking through the project area including property boundaries.

3.1 Dry Washes/Drainages

The field investigation identified nineteen dry washes, which are considered waters of the U.S., and one scrub-shrub wetland. The 19 dry washes are located along the northern portion of the property and the scrub-shrub wetland is located in the southeast corner, approximately 100 yards west of Telegraph Street. These 19 dry washes all have evidence of bed, bank and scour, and vary in depth from a few inches to approximately eight feet deep. All washes converge to a single crossing under Telegraph Street in a large concrete box culvert. Table 1 summarizes the major dry washes/drainages identified on site. A site map identifying jurisdictional drainages is included in Appendix A.

Table 1: Waters of the United States

Channel #	Dimension[1]	Description
1	7' by 6"	Sand and fine gravel bed with few rocks in the channel form from the outflow of an 84" culvert under I-15 (see Photograph 1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
2	3' by 4"	Sand and fine gravel bed with few rocks (see Photograph1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
3	3' by 4"	Sand and fine gravel bed with few rocks in channel (see Photograph2). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.

4	12' by 1"	Deposited material forming small sand and gravel bars in the channel with few rocks (see Photograph 3). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events. Existing 60" culvert exhibiting severe erosion.
5	3' by 4"	Sand and fine gravel bed with few rocks (see Photograph 1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
6	3' by 4"	Sand and fine gravel bed with few rocks (see Photograph1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
7	3' by 4"	Sand and fine gravel bed with few rocks (see Photograph 1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
8	3' by 4"	Sand and fine gravel bed with few rocks (see Photograph 1. Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events
9	9' by 1"	Deposited material forming small sand and gravel bars in the channel with few rocks (see Photograph 3). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
10	3' by 3"	Deposited material forming small sand and gravel bars in the channel with few rocks (see Photograph 1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
11	3' by 3"	Sand and fine gravel bed with few rocks (see Photograph1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
12	5' by 4"	Sand and fine gravel bed with few rocks (see Photograph1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
13	5' by 4"	Sand and fine gravel bed with few rocks (see Photograph1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
14	3' by 3"	Sand and fine gravel bed with few rocks (see Photograph1). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.
15	10' by 8"	Deposited material forming small sand and gravel bars in the channel with few rocks (see Photograph 3). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events.

16	8' by 6"	Deposited material forming small sand and gravel bars in the channel with few rocks (see Photograph 2). Limited amounts of vegetation may establish temporarily in the stream channel between surface flow events. Some channel scouring evident in relation to erosion resistant rock outcrops.
17	6' by 6"	Sand and fine gravel bed with few rocks form the channel (see Photograph 4). Shrubs and herbaceous plants are well established in portions of the channel and along banks.
18	12' by 24"	Sand and fine gravel bed with few rocks form the channel (see Photograph 5). Herbaceous plants, shrubs and trees are well established in portions of the channel and along banks.
19	15' by 24"	Sand and fine gravel bed with few rocks form the channel (see Photograph 5). Herbaceous plants, shrubs and trees are well established in portions of the channel and along banks.
20	23' by 30"	Stream channel and ordinary high water mark 3-8 feet below the bank (see Photograph 4 20-ft to 40-ft wide channel). Silt, sand and gravel are deposited in the channel during surface water flows. Some vegetation may establish and persist in the stream channel between surface flows.
21	20' by 18"	Stream channel and ordinary high water mark 3-8 feet below the bank (see Photograph 4 20-ft to 40-ft wide channel). Silt, sand and gravel are deposited in the channel during surface water flows. Some vegetation may establish and persist in the stream channel between surface flows.
22	20' by 18"	Stream channel and ordinary high water mark 3-8 feet below the bank (see Photograph 4 20-ft to 40-ft wide channel). Silt, sand and gravel are deposited in the channel during surface water flows. Some vegetation may establish and persist in the stream channel between surface flows.
23	9' by 12"	Stream channel and ordinary high water mark 3-8 feet below the bank (see Photograph 4 20-ft to 40-ft wide channel). Silt, sand and gravel are deposited in the channel during surface water flows. Some vegetation may establish and persist in the stream channel between surface flows.
24	32' by 6"	Stream channel and ordinary high water mark 3-8 feet below the bank (see Photograph 4 20-ft to 40-ft wide channel). Silt, sand and gravel are deposited in the channel during surface water flows. Some vegetation may establish and persist in the stream channel between surface flows.
25	12' by 24" +	Concrete box under Telegraph Street. Box measures 12 feet wide and contains a fair amount of sediment (3 – 4 feet). Inlet to box is 6 feet tall, outlet is 8 feet tall. (Photograph 7)

Note 1: Dimension is width in feet by depth in inches.

Photograph 1 Typical Water of the US

Photograph 2 Typical Water of the US

Photograph 3 Typical Water of the US (14-ft to 20-ft wide channel)

Photograph 4 Typical Water of the US

Photograph 5 Typical Water of the US

Photograph 6 Typical Water of the US

Photograph 7 Typical Water of the US

3.2 Wetlands

The Field investigation began along the northern boundary of the property and proceeded west towards Interstate 15. The field team walked the parcel's major dry washes following surface water flow patterns. Two sample data points are located near the southeastern quadrant of the property. These data points are associated with a scrub-shrub wetland located along the edge of Grapevine Pass Wash. Copies of these data sheets are included in Appendix B and are summarized in Table 2.

Table 2 Sample Data Point Summary

I.D.	Location	**Vegetation**	Hydrology	Soils	Wetland	Description
1	Grapevine Pass Wash	Yes	Yes	No	Yes	Palustrine scrub-shrub wetland associated with a spring
2	Grapevine Pass Wash	No	No	No	No	Upland

General procedures used in the delineation follow guidelines in the 1987 Corps of Engineers Manual (USACOE, 1987), which requires delineation of wetland areas based on three

parameters: vegetation, soils, and hydrology. All three parameters must exhibit wetland characteristics for an area to be included within a jurisdictional wetland boundary. Research at the study site included complete documentation of all three components at the two sample data points. The data sheets are included in Appendix B.

Dominant plant species (with 20% relative cover or greater) were identified at each data point and their cover estimates were recorded. These species are listed on the data forms and assigned a wetlands status rating based on Region 8 indicators (Reed, 1988).

Soils were identified using the Soil Survey of Washington County Area, Utah (USDA, 1977) (see Appendix D). Soils were not excavated due to cobbly/rocky layers and inability to dig.

Aerial photographs and the Harrisburg Junction, Utah 7.5-minute quadrangle maps were used to gain an understanding of the topography and hydrology in the study corridor. Hydrologic conditions were assessed using typical hydrological indicators, current conditions at the time of the surveys and recorded data from government agencies and private consultants.

National Wetland Inventory (NWI) maps prepared by the U.S. Fish and Wildlife Service were not available for the study area. The United States Geological Survey (USGS) has not released these maps for public use.

4.0 FIELD SURVEY RESULTS

As previously discussed, a total of two sample points were surveyed within the study area for wetland vegetation, hydrology and hydric soil characteristics (see Table 2). From the data collected at these two sample points, a total of one wetland area was identified. The identified wetland (Table 3) consists of palustrine scrub shrub wetlands. The wetland, data points, and other waters of the U.S. are illustrated in Appendix A at the end of this report.

Table 3 Wetland Types

Group/Wetland Plot #	Corresponding Data Points	Wetland Type	Apparent Source of Hydrology
1	1 and 2	Scrub-shrub	Spring on hillside

Other waters of the U.S. identified on site consisted of dry washes/drainages. Nineteen dry washes/drainages with defined bed and banks (marked changes in vegetative communities or evidence of scour) were identified as jurisdictional. All drainages flow towards the main channel of Grapevine Pass Wash. Grapevine Pass Wash crosses the property's southern boundary under Telegraph Street through a single concrete box culvert. Past roadway construction associated with I-15 appears to have altered flow patterns in the area. The smaller drainages appear to collect on site runoff while the larger drainages convey flows from North of I-15 on the property and eventually to Grapevine Pass Wash.

4.1 Vegetation

The project is located in a transition zone between the Mohave Desert and Great Basin Desert and contains vegetation from both plant communities. Most of the project area can be classified as scrub-shrub desert uplands highly dissected by dry washes. The scrub-shrub wetland

located on the property is dominated by tamarisk (*Tamarix aphylla*) and desertwillow shrubs (*Chilopsis linearis*) with cattails (*Typha latifolia*) and yerba mensa (*Anemposis californica*) dominating the herbaceous layer. Most of the vegetation is dense and the shrubs are from 4-15 feet tall. Typical of most desert wetland settings, wetland plants are limited by the extent of reliable hydrology, creating a well-defined boundary for the wetland area.

Typical upland plants on the property are a variety of sagebrush species (*Atermesia spp.*), fourwing saltbush (*Artiplex canescens*), shadscale (*Artiplex confertifolia*), yucca species (*Agave spp.*), green joint-fir (*Ephedra viridis*), winterfat (*Ceratoides lanata*), galleta grass (*Hilaria jamesii*), foxtail chess (*Bromus rubens*), cheat grass (*Bromus tectorum*), storksbill (*Erodium cicutarium*) and Fremont poplar (*Populus fremontii*). During years when adequate precipitation occurs at the right time, other plants are also visible. These plants maintain a seed bank or remain dormant until favorable growing conditions transpire.

4.2 Wildlife

Wildlife observed in the project area during the field review were a variety of reptiles, birds and mammals. These included blacktail jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus auduboni*), Ord's kangaroo rat (*Dipodomys ordii*), common raven (*Corvis corax*), Lucy's warbler (*Vermivora luciae*), Gambel's quail (*Callipepla gambelii*), and house sparrows (*Passer domesticus*). There is an active common raven nest in a Fremont poplar tree near the northern edge of the property.

4.3 Soils

According to soil maps obtained from the Natural Resource Conservation Service (NRCS) (USDA, 1977), there are seven soil series represented in the study area. These seven soils are listed below and further described in portions of the soil survey in Appendix D at the end of this report.

Badland (BA)

Eroded land – Shalet complex, warm (EB)

Gullied Land (GA)

Junction fine sandy loam, 2 to 5 percent slopes (JaC)

Pintura loamy fine sand, hummocky, 1 to 10 percent slopes (PoD3)

Stony Colluvial Land (SY)

Winkel gravelly fine sandy loam, 1 to 8 percent slopes (WBD)

None of the soils identified in the study area are listed on the Utah or National Hydric Soils Lists.

4.4 Hydrology

The property is located in the Virgin River watershed. Grapevine Pass Wash and other dry washes associated with ephemeral streams are located within the property boundaries. These dry washes and ephemeral streams are all tributaries to the Virgin River and only contain

surface water in response to rainfall. A small spring provides the water source for the scrub-shrub wetland located within the property boundary.

4.2.1 Surface Water

The primary sources of surface water in the study area are intermittent streams. There are 19 dry washes/drainages along the northern boundary that contribute to surface water. All streams are tributaries to Grapevine Pass wash. Grapevine Pass Wash crosses Telegraph Street at a single location.

4.2.2 Groundwater

Data concerning depth to seasonal high water table are not provided because most soils in the soil survey area are sufficiently deep over the water table that the water table doesn't affect their use (USDA, 1977). However, in the wetland areas the water table is at or near the ground surface.

4.2.3 Direct Precipitation

The average amount of precipitation in the area is between 6-8 inches of annual rainfall. Most of the precipitation occurs during the winter months with brief periods of monsoons during the month of August.

5.0 CONCLUSIONS

Jurisdictional waters of the U.S., including wetlands identified on site are one scrub/shrub wetland area (0.2 acres), and the dry washes/drainages as described in Table 1 and as shown on the map in Appendix A.

6.0 REFERENCES

Anderson, B. 1996. Desert Plants of Utah. Utah State University Extension, Logan, Utah.

Cronquist, A., A.H. Holmgren, N.H. Holmgren and James L. Reveal. 1972. Intermountain Flora. Vascular Plants of the Intermountain West, USA. Volume One. Hafner Publishing Co., Inc. New York, 270 pp.

Munsell Soil Color Charts: 1994 Revised Edition, GretagMacbeth, New Windsor, NY.

Reed P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands: Utah. U.S. Fish and Wildlife Service. NERC-88/18.44.

State of Utah School and Institutional Trust Lands Administration Website:
http://www.utahtrustlands.com/development/current_projects/regions/St._George.htm

United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) October 1977. Soil Survey of Washington County Area, Utah.

United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) 1985. Hydric Soils of Utah. Salt Lake City, Utah.

USACOE. 1987. Corps of Engineers Wetlands Delineation Manual. Wetlands Research Program Technical Report Y-87-1 (on-line-edition). Environmental Laboratory, U.S. Army Corps of Engineers, Waterways Experiment Station, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, 92 pp. plus appendices.

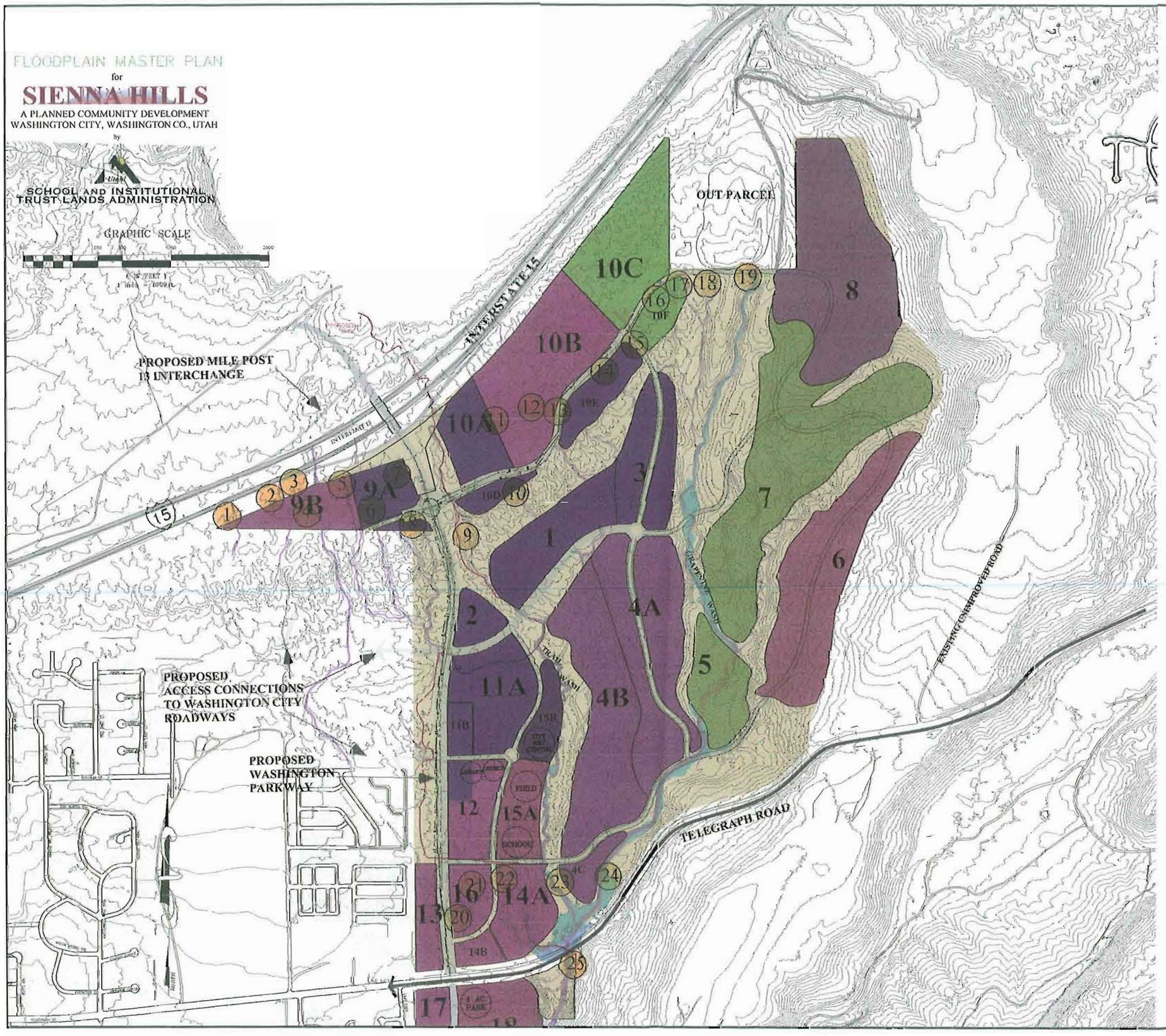
APPENDIX A JURISDICTIONAL WATERS OF THE U.S. MAP

FLOODPLAIN MASTER PLAN
for
SIENNA HILLS
A PLANNED COMMUNITY DEVELOPMENT
WASHINGTON CITY, WASHINGTON CO., UTAH
by

SCHOOL AND INSTITUTIONAL TRUST LANDS ADMINISTRATION

GRAPHIC SCALE

(IN FEET)
1 inch = 1000 ft.



LAND USE LEGEND 08-09-04

NEIGHBORHOOD	LAND USE	ACRES	UNITS	SQ. FT.
1.	RESIDENTIAL	17.7	88	770,800
2.	MIXED USE	4.9		212,600
3.	RESIDENTIAL	15.6	78	678,400
4.A	RESIDENTIAL	33.2	166	1,447,600
4.B	RESIDENTIAL	35.0	175	1,524,000
4.C	RESIDENTIAL	4.3	21	187,400
5.	RESIDENTIAL	12.9	38	560,200
6.	RESIDENTIAL	35.7	107	1,558,500
7.	RESIDENTIAL	57.6	172	2,509,600
8.	RESIDENTIAL	48.4	242	2,108,800
9.A	FREEWAY COMMERCIAL	10.1		438,300
9.B	FREEWAY COMMERCIAL	10.0		437,400
	LODGING (ROOMS)		200	
10.A	FREEWAY COMMERCIAL	11.1		484,100
10.B	FREEWAY COMMERCIAL	32.5		1,417,200
10.C	FREEWAY COMMERCIAL	25.3		1,104,100
10.D	FREEWAY COMMERCIAL	3.2		139,700
10.E	FREEWAY COMMERCIAL	7.9		344,600
10.F	FREEWAY COMMERCIAL	5.4		235,400
	LODGING (ROOMS)		600	
11.A	RESIDENTIAL	16.2	81	707,300
11.B	MIXED USE	3.2		137,600
12.A	RESIDENTIAL	9.3	46	404,400
12.B	MIXED USE	2.4		105,300
13.	COMMERCIAL	6.2		268,700
14.A	RESIDENTIAL	11.4	182	495,000
14.B	COMMERCIAL	3.0		129,700
15.A	TOWNHOME	9.5	67	414,600
15.B	MIXED USE	6.2		269,100
16.	RESIDENTIAL	6.6	106	289,400
17	COMMERCIAL	9.2		402,700
			TOTALS	
		ACRES	UNITS	SQ. FT.
	LODGING (ROOMS)		800	
	COMMERCIAL	125.3		5,459,600
	RESIDENTIAL	313.4	1559	13,654,200
	MIXED USE	16.6		724,600
	DEVELOPABLE AREA	455.3		19,838,400

LEGEND:

- FLOODPLAIN
- FREEWAY RELATED COMMERCIAL
- NEIGHBORHOOD COMMERCIAL
- MIXED USE
- MULTI FAMILY
- TOWNHOME
- SINGLE FAMILY MEDIUM DENSITY
- SINGLE FAMILY LOW DENSITY
- OPEN SPACE (PRESERVE, TRAILS, RECREATION FACILITIES)
- TRAIL

DATE:
JOB NO
SCALE:
DRAWN
CHECKED

ALLIANCE ENGINEERING

FLOODPLAIN MASTER PLAN
FOR
SIENNA HILLS

DRAWING
4028 PCD

FI
1

APPENDIX B ROUTINE WETLAND DETERMINATION DATA SHEETS

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Trust land – Mile Post 13	Date	5/28/03
Applicant / Owner	Alliance Consulting	County	Washington
Investigator	Jaime White; Kristin Preece; Leslie Watson	State	UT
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	Grapevine Wash
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Chilopsis linearis (Desert willow)	S	FAC	9		
2 Typha spp (Cat tail)	H	OBL	10		
3 Anemopsis californica (Yerba mansa)	H	OBL	11		
4 Tamarix ramosissima (Salt cedar)	S	FACW	12		
5			13		
6			14		
7			15		
8			16		

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

Remarks

Source of water is a small spring on the hillside. Wetland wetlands upslope to spring.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☒ 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
- ☐ 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)

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Trust Land - Mile Post 13	Date	5/28/03
Applicant / Owner	Alliance Consulting	County	Washington
Investigator	Jaime White, Kristin Pearce, Layla Wahba	State	UT
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	Grapevine Wash
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Artemesia spp (Sage)	S	NI	9		
2 Larrea tridentata (Creosote)	S	UPL	10		
3 Chrysothamnus nauseosus (Rubber rabbitbrush)	S	NI	11		
4			12		
5			13		
6			14		
7			15		
8			16		

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

Remarks Scrub-shrub uplands dominated by sage and creosote

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	___	(in)
Depth to Free Water in Pit	___	(in)
Depth to Saturated Soil	___	(in)

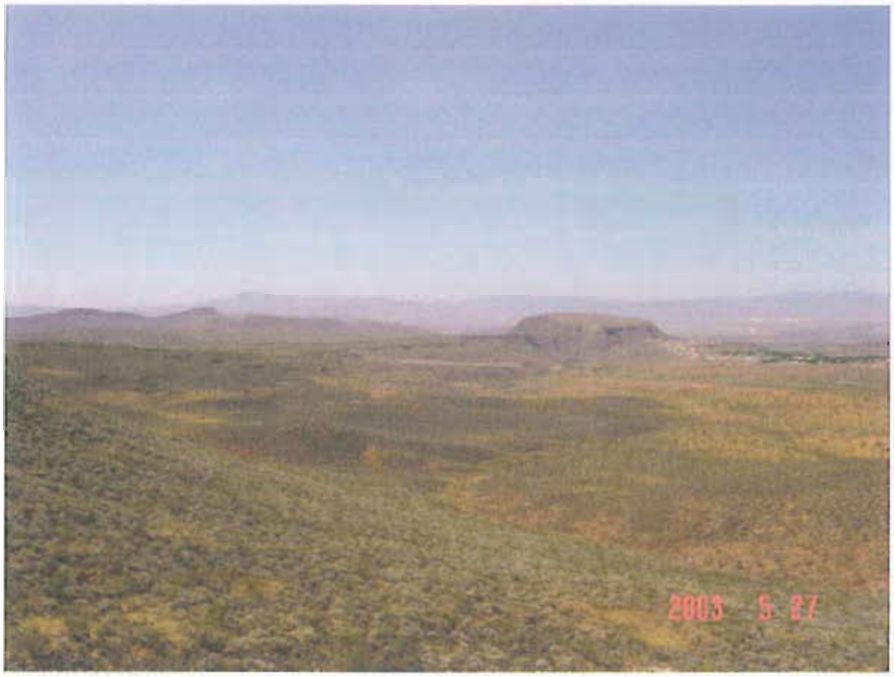
WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ 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)

APPENDIX C EXISTING CONDITIONS-PHOTOGRAPHS MAY 27 & 28, 2003

Photograph 1: Overview Project Study Area Southeast



Photograph 2: Overview Project Study Area South

Photograph 3: Project Study Area Southwest

Photograph 4: Typical Dry Wash/Drainage

Photograph 5: Tributary to Grapevine Pass Wash

Photograph 6: Typical wash South of I-15

Photograph 7: Grapevine Pass Wash near Telegraph Street, facing North

Photograph 8: Box culvert under Telegraph Street, facing South

Photograph 9: Wetland along Grapevine Pass Wash, Sample Data Point No. 1

Photograph 10: Wetland along Grapevine Pass Wash

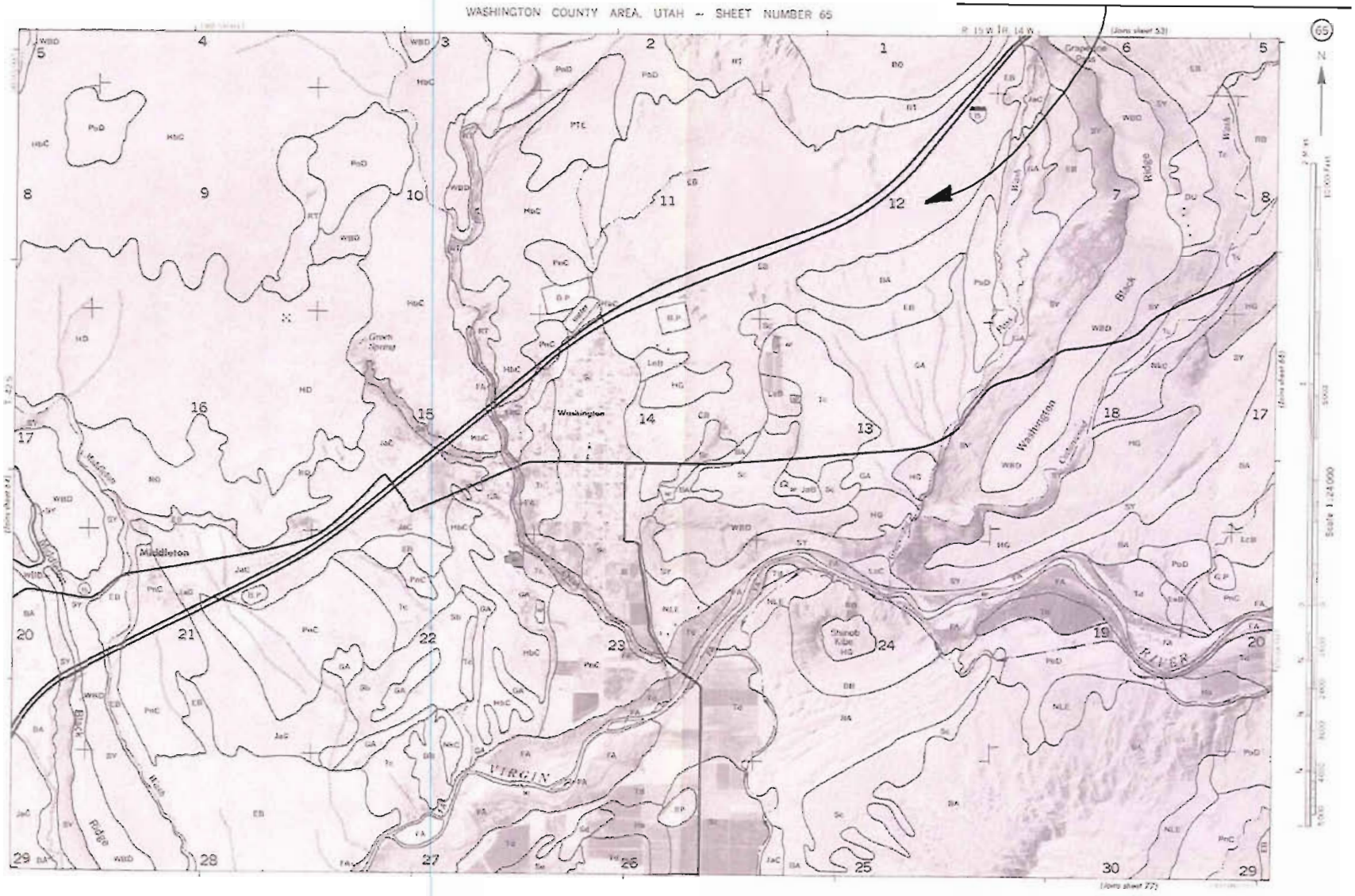
APPENDIX D WASHINGTON COUNTY AREA SOIL SURVEY

SOIL SURVEY OF

Washington County Area, Utah

United States Department of Agriculture
Soil Conservation Service and
United States Department of the Interior
Bureau of Land Management and
National Park Service
In cooperation with
Utah Agricultural Experiment Station

APPROXIMATE PROJECT LOCATION



percent mostly the minor Chilton, Magotsu, Motoqua, Menefee, and Quazo soils and Rock land.

Collbran soils are on mountain side slopes. They are deep, well-drained soils that have a surface layer of brown very cobbly clay loam and a subsoil of dark-brown or reddish-brown clay or clay loam.

Tacan soils are on mountain side slopes. They are deep, well-drained soils that have a surface layer of reddish-brown very stony sandy loam and a subsoil of red very gravelly fine sandy clay loam.

Nehar soils are on alluvial fans and rolling hills. They are deep, well-drained soils that have a surface layer of brown very stony sandy loam and a subsoil of reddish-brown stony clay, yellowish-red stony sandy clay, and yellowish-red very stony sandy clay loam.

This association is used for range, recreation, and wildlife habitat.

15. Paunsaugunt-Kolob-Dalcan association

Somewhat excessively drained and well drained, nearly level to very steep, shallow to deep gravelly silt loams, fine sandy loams, and cobbly loams; on mountains

This association is mainly in the mountain area of Zion National Park. Smaller areas are on Kanarra Mountain and West Mountain. Slopes are dominantly 5 to 30 percent but range from 0 to 60 percent. The Paunsaugunt, Kolob, and Detra soils formed in material weathered dominantly from limestone. The Dalcan soils formed in material weathered from basalt.

The native vegetation is dominantly bromegrass, Kentucky bluegrass, slender wheatgrass, Gambel oak, big sagebrush, serviceberry, squawapple, snowberry, pinyon pine, juniper, and ponderosa pine. Elevation is 6,000 to 8,000 feet. The climate is moist subhumid or dry subhumid. Average annual precipitation is 16 to 18 inches, the average annual temperature is 42° to 50° F, and the frost-free period is 70 to 120 days.

This association makes up about 4 percent of the survey area. It is about 25 percent Paunsaugunt soils, 20 percent Kolob soils, 10 percent each of Dalcan soils and Detra soils, and 35 percent the minor Kinesava and Hogg soils, Kolob variant soils, Paunsaugunt variant soils, and Rock outcrop.

Paunsaugunt soils are on mountain side slopes. They are shallow, somewhat excessively drained soils. The surface layer is dark grayish-brown gravelly silt loam, and the subsurface layer is dark grayish-brown very gravelly loam. Limestone bedrock is at a depth of 10 to 19 inches.

Kolob soils are on mesa tops and on mountain side slopes. They are deep, well-drained soils that have a surface layer of dark-brown fine sandy loam and a subsoil of dark-brown and reddish-brown clay loam and gravelly and very gravelly clay loam. Bedrock is at a depth of 40 to 60 inches.

Dalcan soils are on lava flows on mountain foot slopes. They are moderately deep, well-drained soils that have a surface layer of dark-brown cobbly loam and a subsoil of dark-brown cobbly silty clay loam and very cobbly clay loam and brown very cobbly clay. Basalt bedrock at is a depth of 21 to 34 inches.

This association is used for range, wildlife habitat, and recreation.

Descriptions of the Soils

This section describes the soil series and mapping units in the Washington County Area. Each soil series is described in considerable detail and then, briefly, each mapping unit in that series. Unless specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second, detailed and in technical terms, is for scientists, engineers, and others who need to make thorough and precise studies of the soils. Unless otherwise stated, the colors given in the descriptions are those of a dry soil. The profile described in the series is representative of mapping units in that series. If the profile of a given mapping unit differs from the one described for the series, the differences are stated in describing the mapping unit, or they are differences that are apparent in the name of the mapping unit.

As mentioned in the section "How This Survey Was Made," not all mapping units are in a soil series. Badland, for example, does not belong to a soil series, but nevertheless, is listed in alphabetic order along with the soil series.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit are the capability unit symbol and the names of the range site and wildlife suitability group to which the mapping unit has been assigned. The pages for the descriptions of each capability unit and range site to which each soil has been assigned can be found by referring to the "Guide to Mapping Units" at the back of this survey.

The approximate acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary at the end of the survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*12*).[2]

Badland

Badland (BA) consists of nearly barren, multicolored beds of actively eroding shale, shale interbedded with sandstone, and shale interbedded with layers of gypsum. The landscape is rolling and severely dissected, and channels of intermittent streams form a branching pattern.

Included with this land type in mapping are small areas of shallow soils in drainageways.

Runoff is very rapid. The sediment potential is high during intense thunderstorms in summer.

Badland supports only a sparse stand of vegetation. It is used mainly for esthetic purposes. Capability unit VIIIs-3, nonirrigated; wildlife suitability group 4444; range site not assigned.

[2] Italic numbers in parentheses refer to Literature Cited, p. 135.

plain near New Harmony. These soils formed in mixed, noncalcareous or slightly calcareous alluvium weathered from coarse-grained acid igneous rock and some basalt. Slopes are short and convex, and they range from 2 to 5 percent. Elevation is 5,000 to 5,400 feet. The native vegetation is meadow sedges and grasses. Average annual precipitation is about 15 inches, average annual air temperature is 45° to 52° F, and the frost-free period is 140 to 150 days. Draper soils commonly are associated with Lavate and Naplene soils.

In a representative profile the surface layer is dark-gray loam about 7 inches thick. The underlying material is dark grayish-brown sandy loam and grayish-brown or brown loam to a depth of 60 inches.

Permeability is moderate. Available water capacity is 8 to 11 inches to a depth of 5 feet. Roots penetrate to a depth of 5 feet or more.

Draper soils are used for irrigated pasture, apples, and native meadow pasture.

Representative profile of Draper loam, 2 to 5 percent slopes, in an area of pasture one-half mile southwest of New Harmony, 2,030 feet north and 875 feet west of the southeast corner of sec. 21, T. 38 S., R. 13 W.:

Ap—0 to 7 inches, dark-gray (10YR 4/1) loam, black (7.5YR 2/1) when moist; moderate, medium, subangular blocky structure that parts to moderate, very fine, granular; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; few fine and many very fine tubular pores; 15 percent gravel 2 to 3 millimeters in diameter; slightly acid; clear, smooth boundary.

C1—7 to 11 inches, dark grayish-brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) when moist; weak, medium, subangular blocky structure that parts to moderate, fine, granular; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few fine and many very fine tubular pores; 15 to 20 percent gravel 2 to 4 millimeters in diameter; slightly acid; clear, smooth boundary.

C2—11 to 36 inches, grayish-brown (10YR 5/2) loam, very dark brown (10YR 2/2) when moist; moderate, fine, subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine and many very fine tubular pores; 15 percent gravel 2 to 4 millimeters in diameter; neutral; gradual, smooth boundary.

C3—36 to 60 inches, brown (7.5YR 5/2) loam, dark brown (7.5YR 3/2) when moist; very fine, distinct, yellowish-brown (10YR 5/6) mottles; weak, fine, subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 15 to 20 percent gravel 2 to 5 millimeters in diameter; neutral.

Gravel ranges from 2 to 5 millimeters in diameter. The profile ranges from slightly acid to mildly alkaline. It is generally noncalcareous but is slightly calcareous in places. The average annual soil temperature at a depth of 20 inches is 45° to 57° F, and the average summer temperature is 65° to 70°.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5 when dry and 2 or 3 when moist, and chroma of 1 or 2. It is loam that is marginal to sandy loam. It ranges from 7 to 12 inches in thickness.

The C horizon has value of 4 to 6 when dry and 2 to 4 when moist and chroma of 1 or 2. It is sandy loam, loam, or sandy clay loam, and in many places it is stratified.

Draper loam, 2 to 5 percent slopes (DrB).—This soil is on alluvial fans and on the flood plain of North Ash Creek near Harmony. Runoff is slow, and the hazard of erosion is none to slight. Depth to the water table is 36 to 60 inches.

Included with this soil in mapping are small areas of a soil that is similar to Draper loam but has a calcareous layer at a depth of about 30 inches; a deep, well-drained gravelly clay loam soil that has a dark-colored surface layer more than 20 inches thick; and noncalcareous, poorly drained silty clay loam soils in small swales.

This Draper soil is used for irrigated pasture, native meadow pasture, and, in small areas, apples. The native vegetation is slender wheatgrass, muttongrass, tufted hairgrass, sedges, edible valerian, and peavine. Capability unit IIw-1, irrigated; Semiwet Meadows range site; wildlife suitability group 1242-I.

Dune Land

Dune land (DU) consists of sand-sized particles that are drifted and piled up by the wind. The dunes are actively shifting, so that no soil horizons have developed. Slopes are short and broken. Runoff is very slow.

Very little vegetation occurs on these areas, except for short-lived annual grasses. Capability unit VIIIs-6, nonirrigated; wildlife suitability group 4444; range site not assigned.

Eroded Land

Eroded land consists of stratified shale and gypsum. Slopes are gently rolling to steep and are strongly dissected. Erosion is active, and sediment production is high.

The native vegetation is sparse and is dominated by shrubs and forbs. Scattered juniper and pinyon trees are at the higher elevations. Eroded land is mapped only with Shalet soils.

Eroded land-Shalet complex (EA).— This complex is about 60 percent Eroded land and 35 percent Shalet clay loam, 2 to 60 percent slopes. The Shalet soil is in protected swales and on side slopes intermingled with Eroded land. The Shalet soil has the profile described as representative of the Shalet series. Included in mapping, and making up about 5 percent of the acreage, are areas of Schmutz loam.

The soils in this complex are used for wildlife habitat and range. The native vegetation is a very sparse stand of galleta, blackbrush, desert almond, Mormon tea, and pricklypear. Capability unit VIIe-R3, nonirrigated; Shalet soil in Southern Semidesert Shallow Loam range site and wildlife suitability group 4343; Eroded land in wildlife suitability group 4444 and range site not assigned.

Eroded land-Shalet complex, warm (EB).— This complex is about 80 percent Eroded land and 20 percent Shalet clay loam, warm, 2 to 20 percent slopes. The gently sloping Shalet soil is in swales intermingled with Eroded land. Included in mapping are small areas of Badland.

The Shalet soil has a profile similar to the one described as representative of the Shalet series. The average annual air temperature is 59° to 67° F, the frost-free period is about 195 days, and the elevation is 2,600 to 3,600 feet.

The soils in this complex are used mainly for range. The native vegetation is a very sparse stand of galleta, cholla cactus, blackbrush, desert almond, and pricklypear. Capability unit VIIe-C3, nonirrigated; Shalet soil in Southern Desert Stony Loam range site and wildlife suitability group 4343; Eroded land in wildlife suitability group 4444 and range site not assigned.

Esplin Series

The Esplin series consists of shallow, well-drained soils

that are underlain by an indurated carbonate-cemented hardpan. These soils are on old basalt flows and alluvial fans. They formed in material weathered from basalt and in alluvium washed from basalt, limestone, quartzite, and shale. Slopes range from 0 to 3 percent. Elevation is 3,800 to 4,600 feet. The native vegetation is desert shrubs, forbs, grasses, and cactus. Average annual precipitation ranges from 10 to 13 inches, average annual air temperature is 52° to 56° F, and the frost-free period is 160 to 170 days. Esplin soils are commonly associated with Pastura soils.

In a representative profile the surface layer is reddish-brown loam about 3 inches thick. The subsoil is dark-red and yellowish-red clay loam and silty clay loam about 7 inches thick. The substratum is light reddish-brown silt loam about 8 inches thick. A carbonate-cemented hardpan is at a depth of about 18 inches.

Permeability is moderate above the hardpan. Runoff is medium, and the hazard of erosion is moderate. Available water capacity, above the hardpan, is 2 to 3 inches. The water supplying capacity is 3 to 5 inches. Roots penetrate as far down as the hardpan.

Esplin soils are used for range.

Representative profile of Esplin loam, 0 to 2 percent slopes, in an area of the Pastura-Esplin complex, 0 to 10 percent slopes, in an area of range about three-fourths mile southwest of Frog Hollow Dam, 400 feet south and 300 feet west of the northeast corner of sec. 26, T. 42 S., R. 13 W.:

A1—0 to 3 inches, reddish-brown (5YR 4/4) loam, yellowish red (5YR 3/6) when moist; moderate, very fine, granular structure; soft, friable, slightly sticky and slightly plastic; common fine and few medium roots; many vesicular pores; about 10 percent of the surface is covered with fragments of basalt gravel and the hardpan; noncalcareous; moderately alkaline; clear, smooth boundary.

B2t—3 to 7 inches, dark-red (2.5YR 3/6) clay loam, dark red (2.5YR 3/6) when moist; weak, coarse, prismatic structure that parts to moderate, medium, subangular blocky; very hard, firm, sticky and plastic; common fine and medium roots; common fine and few medium interstitial pores; common moderately thick clay films in pores and on faces of peds; noncalcareous; moderately alkaline; clear, smooth boundary.

B3ca—7 to 10 inches, yellowish-red (5YR 4/6) light silty clay loam, yellowish red (5YR 3/6) when moist; moderate, medium, subangular blocky structure; hard, friable, sticky and plastic; common fine and medium roots; common fine and few medium interstitial pores; strongly calcareous, lime occurs as accretions and veins; strongly alkaline; clear, wavy boundary.

C1ca—10 to 18 inches, light reddish-brown (5YR 6/4) silt loam, yellowish red (5YR 5/6) when moist; weak, medium, subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; common fine and few medium interstitial pores; strongly calcareous, lime occurs as accretions and veins; strongly alkaline; abrupt, smooth boundary.

C2cam—18 inches, indurated carbonate-cemented hardpan.

Depth to the hardpan ranges from 13 to 20 inches. Gravel covers 3 to 80 percent of the soil surface. The average annual soil temperature at a depth of 20 inches is 54° to 58° F, and the average summer soil temperature is 71° to 76°. The profile is mildly alkaline to strongly alkaline.

The A1 horizon has hue of 5YR or 7.5YR, value of 4 to 6 when dry and 3 or 4 when moist, and chroma of 2 to 6. It is loam or fine sandy loam.

The B2t horizon has hue of 2.5YR, 5YR, or 7.5YR; value of 3 to 5 when dry and 3 or 4 when moist; and chroma of 2 to 6. It is clay loam or sandy clay loam.

Esplin soils in the Washington County Area are mapped only with Pastura soils.

Fluvaquents and Torrifluvents, Sandy

Fluvaquents and Torrifluvents, sandy (FA), is on flood plains of the Virgin River, mainly in the area of Hurricane and St. George. This mapping unit is about 60 percent Fluvaquents and 40 percent Torrifluvents. Fluvaquents are in swales and oxbows, and Torrifluvents are on slightly higher terraces and benches, mostly along the edges of the flood plain. Included in mapping are small areas of Tobler fine sandy loam, Tobler silty clay loam, and Riverwash.

Fluvaquents are deep, somewhat poorly drained and poorly drained soils that formed in sandy alluvial deposits derived from sandstone, limestone, and shale. Slopes range from 0 to 2 percent. Elevation is 2,500 to 3,000 feet. The native vegetation is sedges, wiregrass, and cattails. Average annual precipitation is 8 to 11 inches, average annual temperature is 57° to 67° F, and the frost-free period is 190 to 205 days.

Fluvaquents are dominantly fine sand but are commonly stratified with fine sandy loam, silt loam, and loamy fine sand.

Depth to the water table fluctuates with the water level of the river. During periods of high runoff, many areas of Fluvaquents are flooded for short periods of time. High runoff can occur in winter, in spring, or late in summer. Permeability is rapid. Runoff is slow, and the hazard of erosion is severe.

Torrifluvents are deep, well drained and moderately well drained soils that formed in alluvial deposits derived from sandstone, limestone, and shale. Slopes range from 0 to 3 percent. Elevation is 2,500 to 3,000 feet. The native vegetation is Kentucky bluegrass, galleta, saltgrass, red willow, and black willow. Average annual precipitation is 8 to 11 inches, average annual temperature is 57° to 67° F, and the frost-free period is 190 to 195 days.

Torrifluvents are dominantly loamy fine sand and fine sandy loam stratified with silt loam and loam.

Depth to the water table fluctuates with the water level of the river, but normally it is more than 40 inches. Permeability is rapid. Runoff is slow, and the hazard of erosion is moderate to severe.

These soils are suited to limited use for grazing and wildlife habitat. Capability unit VIIw-07, nonirrigated; Semi-wet Stream Bottoms range site; wildlife suitability group 4424.

Gullied Land

Gullied land (GA) consists of areas that are so cut by gullies that any soil profiles have been destroyed. These areas support little or no vegetation and have no value for farming. Most have shallow soil material, but leveling is not practical. Gullied land is suited to limited use for grazing and wildlife habitat. Capability unit VIIIe-E, nonirrigated; wildlife suitability group 4444; range site not assigned.

Hantz Series

The Hantz series consists of well-drained soils on alluvial flood plains. These soils formed in mixed alluvium derived from limestone, shale, and sandstone. Slopes are 0

soft, very friable, slightly sticky and nonplastic; 50 percent cobbles and gravel; strongly calcareous, lime is disseminated; moderately alkaline; clear, smooth boundary.

C1—2 to 10 inches, light-brown (7.5YR 6/4) cobbly sandy loam, dark brown (7.5YR 4/4) when moist; massive; soft, very friable, slightly sticky and nonplastic; 35 percent cobbles and gravel; strongly calcareous, lime is disseminated; moderately alkaline; clear, wavy boundary.

C2—10 to 22 inches, light-brown (7.5YR 6/4) very cobbly sandy loam, brown (7.5YR 5/4) when moist; massive; soft, very friable, slightly sticky and nonplastic; 50 percent cobbles and gravel; coating of gypsum on cobbles and pebbles; strongly calcareous, lime is disseminated; moderately alkaline; gradual, wavy boundary.

C3—22 to 60 inches, pink (7.5YR 7/4) very cobbly sandy loam, light brown (7.5YR 6/5) when moist; single grained; loose, very friable, nonsticky and nonplastic; 65 percent cobbles and gravel; coating of gypsum on cobbles and pebbles; strongly calcareous, lime is disseminated; moderately alkaline.

The soil ranges from 40 to 60 inches or more in thickness. It is 35 to 80 percent cobbles and gravel. It is moderately alkaline to strongly alkaline. The average annual soil temperature at a depth of 20 inches is 59° to 67° F, and the average summer soil temperature is 78° to 83°.

The A horizon has value of 5 or 6 when dry. It is cobbly fine sandy loam, cobbly sandy loam, or gravelly sandy loam.

The C horizon has hue of 7.5YR or 5YR and chroma of 3 to 5. It ranges from cobbly or very cobbly very sandy loam to very gravelly sandy loam.

Isom cobbly sandy loam, 3 to 30 percent slopes (IAF).—This rolling soil is on dissected hills and alluvial fans. Runoff is medium, and the hazard of erosion is moderate to high. Roots penetrate to a depth of 40 inches or more.

Included with this soil in mapping are small areas of Nikey sandy loam, 3 to 15 percent slopes, and a shallow very gravelly sandy loam soil on ridge crests.

This Isom soil is used for range. The native vegetation is creosotebush, Mormon tea, cholla cactus, galleta, Indian ricegrass, and cheatgrass. Capability unit VIIs-C4, nonirrigated; Southern Desert Stony Loam range site; wildlife suitability group 4343.

Ivins Series

The Ivins series consists of somewhat excessively drained soils on desert benches or terraces. These soils formed in sandy eolian deposits derived from sandstone and shale. Slopes range from 1 to 5 percent. Elevation is 2,800 to 3,800 feet. The native vegetation is desert shrubs, forbs, and grasses. Average annual precipitation ranges from 8 to 11 inches, average annual air temperature is 57° to 67° F, and the frost-free period is 170 to 195 days. Ivins soils are commonly associated with Junction, Pintura, and Tobler soils.

In a representative profile the soil is red loamy fine sand to a depth of about 24 inches. This is underlain by dark-red or red and pink sandy clay loam or dark-red sandy clay to a depth of about 64 inches.

Permeability is rapid to a depth of 24 inches and moderately slow below. Available water capacity is 6 to 9 inches to a depth of 5 feet. The water supplying capacity is 5 to 6 inches. Roots penetrate to a depth of 5 feet or more.

Ivins soils are used for range and irrigated crops.

Representative profile of Ivins loamy fine sand, about 1 mile west of Ivins turnoff on Highway 91, 150 feet north of highway, 1,200 feet north and 200 feet east of the south quarter corner of sec. 6, T. 42 S., R. 16 W.:

A1—0 to 4 inches, red (2.5YR 4/8) loamy fine sand, yellowish red (5YR 3/6) when moist; weak, thin, platy structure; soft, very friable; common fine and very fine roots; few fine tubular and many fine interstitial pores; mildly alkaline; clear, smooth boundary.

C—4 to 24 inches, red (2.5YR 4/8) loamy fine sand, yellowish red (5YR 3/6) when moist; single grained; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine and few tubular pores; moderately alkaline; gradual, slightly wavy boundary.

IIB21tb—24 to 30 inches, dark-red (2.5YR 3/8) sandy clay loam, dark red (10YR 3/6) when moist; weak, medium and coarse, prismatic structure; very hard, friable, sticky and plastic; few very fine roots; common fine and very fine pores; few thin clay films on faces of peds; mildly alkaline; irregular, wavy boundary.

IIB22tb—30 to 39 inches, dark-red (2.5YR 3/6) light sandy clay, dark red (10YR 3/6) when moist; moderate, medium and coarse, prismatic structure; extremely hard, firm, sticky and very plastic; few very fine roots; common very fine and fine and few medium pores; many thin clay films on faces of peds and in pores; peds are slightly calcareous, lime is disseminated and in soft irregular accretions and veins that are strongly calcareous; mildly alkaline; clear, wavy boundary.

IIB3cab—39 to 64 inches, red (2.5YR 4/6) and pink (5YR 7/4) sandy clay loam, dark red (2.5YR 3/6) and reddish yellow (5YR 6/6) when moist; weak, medium, prismatic structure that parts to moderate, subangular blocky; very hard, firm, sticky and plastic; few very fine roots, mostly in upper part; few very fine pores; few stones and cobbles that increase in amount with increasing depth; strongly calcareous, lime coatings on faces of peds and in irregular nodules and veins.

The loamy fine sand material ranges from 18 to 39 inches in thickness. The average annual soil temperature at a depth of 20 inches is 59° to 68° F, and the average summer soil temperature is 77° to 82°.

The A and C horizons have hue of 2.5YR or 5YR, value of 4 or 5 when dry, and chroma of 6 to 8.

The IIB2tb horizon has hue of 2.5YR or 10YR and chroma of 4 to 8. The IIB3cab horizon has hue of 2.5YR or 5YR, value of 3 to 7 when dry and 3 to 6 when moist, and chroma of 4 to 6.

A weak, thin, carbonate-cemented hardpan is at a depth of about 50 inches in some places.

Ivins loamy fine sand (Ib).—This soil is on desert benches or terraces that are capped with sandy eolian deposits. Slopes range from 1 to 5 percent. This soil has the profile described as representative of the series. Runoff is slow, and the hazard of erosion is moderate.

Included with this soil in mapping are small areas of Pintura loamy fine sand, 1 to 5 percent slopes; Tobler fine sandy loam; and Ivins loamy fine sand, hummocky.

This Ivins soil is used mainly for range and irrigated alfalfa and small grain. Capability units IIIs-06, irrigated, VIIs-C6, nonirrigated; Southern Desert Sand range site; wildlife suitability groups 2242-I and 4343.

Ivins loamy fine sand, hummocky (Ic).—This soil is on desert benches or terraces that are capped with sandy eolian deposits. Slopes range from 1 to 5 percent. This soil has a profile similar to the one described as representative of the series, but hummocks 18 to 36 inches high are on the surface. Runoff is slow, and the hazard of soil blowing is severe.

Included with this soil in mapping are small areas of Pintura loamy fine sand, 1 to 5 percent slopes, and Dune land, which makes up about 2 percent of the mapped areas.

This Ivins soil is used for range. Capability unit VIIs-C6, nonirrigated; Southern Desert Sand range site; wildlife suitability group 4343.

Junction Series

The Junction series consists of well-drained soils on

alluvial fans and flood plains and in desert valleys. These soils formed in alluvium washed from sandstone and shale. Slopes range from 1 to 5 percent. Elevation is 2,700 to 3,400 feet. The native vegetation is desert shrubs, forbs, and grasses. Average annual precipitation is 8 to 11 inches, average annual air temperature is 57° to 67° F, and the frost-free period is 190 to 195 days. Junction soils are commonly associated with Pintura, St. George, and Tobler soils.

In a representative profile the soil is red fine sandy loam to a depth of 60 inches or more. The profile is mildly alkaline.

Permeability is moderately rapid. Available water capacity is 6 to 8 inches to a depth of 5 feet. The water supplying capacity is 5 to 6 inches. Roots penetrate to a depth of 60 inches or more.

Junction soils are used for irrigated crops and range.

Representative profile of Junction fine sandy loam, 1 to 2 percent slopes, about 4.5 miles south of Washington, in the SE¼NW¼ sec. 12, T. 43 S., R. 15 W.:

A1—0 to 2 inches, red (2.5YR 5/6) fine sandy loam, red (2.5YR 4/6) when moist; weak, fine, granular structure; soft, very friable, nonsticky and nonplastic; few very fine and few medium roots; few very fine pores; noncalcareous; mildly alkaline; clear, wavy boundary.

C1—2 to 9 inches, red (2.5YR 5/6) fine sandy loam, red (2.5YR 4/6) when moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine pores; moderately calcareous, lime is disseminated; mildly alkaline; gradual, smooth boundary.

C2—9 to 21 inches, red (2.5YR 5/6) fine sandy loam, red (2.5YR 4/6) when moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; moderately calcareous, lime is disseminated; mildly alkaline; gradual, smooth boundary.

C3—21 to 32 inches, red (2.5YR 5/6) fine sandy loam, red (2.5YR 4/6) when moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots, few fine and very fine pores; few fine white gypsum crystals; moderately calcareous, lime is disseminated; mildly alkaline; clear, smooth boundary.

C4—32 to 60 inches, red (2.5YR 5/6) fine sandy loam, red (2.5YR 4/6) when moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few fine and very fine pores; many fine white gypsum crystals less than 1 millimeter in diameter; 10 percent shale fragments less than 1 inch in size; moderately calcareous, lime is disseminated; mildly alkaline.

The average annual soil temperature at a depth of 20 inches is 59° to 67° F, and the average summer soil temperature is 77° to 82°. The profile is mildly alkaline to moderately alkaline.

The A horizon has hue of 2.5YR or 5YR, value of 4 to 6 when dry and 4 when moist, and chroma of 4 to 6. It is dominantly fine sandy loam, but in places it is light fine sand 1 inch to 6 inches thick. It is noncalcareous to moderately calcareous.

The C horizon has hue of 5YR or 2.5YR, value of 4 to 6 when dry and 3 or 4 when moist, and chroma of 4 to 8. It ranges from fine sandy loam to loamy fine sand. In places it is 10 to 15 percent gravel. The lower part of the C horizon has few to many gypsum crystals less than 5 millimeters in diameter. It is moderately calcareous to strongly calcareous.

Junction fine sandy loam, 1 to 2 percent slopes (JaB).—This soil is on alluvial fans and in desert valleys. It has the profile described as representative of the series. Runoff is slow, and the hazard of erosion is moderate.

Included with this soil in mapping are small areas of Tobler fine sandy loam; Pintura loamy fine sand, 1 to 5 percent slopes; and Harrisburg fine sandy loam, 1 to 5 percent slopes.

This Junction soil is used for irrigated alfalfa, small grain, sugar beet seed, sorghum silage, and pasture and for range. The native vegetation is creosotebush, Mormon tea, Indian ricegrass, galleta, and cholla cactus. Capability units IIe-0, irrigated, VIIe-C, nonirrigated; Southern Desert Loam range site; wildlife suitability groups 1242-I and 4343.

Junction fine sandy loam, 2 to 5 percent slopes (JaC).—This soil is on alluvial fans and desert slopes (fig. 2). Runoff is slow, and the hazard of erosion is moderate.

Included with this soil in mapping are small areas of Junction fine sandy loam, 1 to 2 percent slopes; Harrisburg fine sandy loam, 1 to 5 percent slopes; and Tobler fine sandy loam.

This Junction soil is used for irrigated alfalfa, small grain, sugar beet seed, sorghum silage, and pasture and for range. The native vegetation is creosotebush, Mormon tea, Indian ricegrass, galleta, and cholla cactus. Capability units IIIe-0, irrigated, VIIe-C, nonirrigated; Southern Desert Loam range site; wildlife suitability groups 2242-I and 4343.

Kinesava Series

The Kinesava series consists of well-drained soils on mesa tops and mountain side slopes in Zion National Park. These soils formed in material weathered from limestone and some sandstone. Slopes range from 2 to 25 percent. Elevation is 6,200 to 8,000 feet. The native vegetation is dominantly Gambel oak, snowberry, peavine, big sagebrush, and grasses. Average annual precipitation is 16 to 18 inches, average annual air temperature is 42° to 45° F, and the frost-free period is 90 to 120 days. Kinesava soils are commonly associated with Detra, Kolob, and Paunsaugunt soils.

In a representative profile the surface layer is dark grayish-brown, dark-brown, and brown fine sandy loam about 31 inches thick. The subsoil is brown sandy clay loam and yellowish-red and reddish-yellow clay to a depth of 60 inches.

Permeability is moderately slow. Available water capacity is 8 to 10 inches to a depth of 5 feet. The water supplying capacity is 14 to 16 inches. Roots penetrate to a depth of 60 inches or more or to bedrock at a depth of 42 to 60 inches.

Kinesava soils are used for recreation, wildlife habitat, and range.

Representative profile of Kinesava fine sandy loam, 2 to 15 percent slopes, in an area of Kinesava-Detra fine sandy loams, 2 to 15 percent slopes, in Zion National Park in the area of Deer Trap Mountain, about 1,800 feet north and 400 feet east of the southwest corner of sec. 13, T. 41 S., R. 10 W.:

A11—0 to 5 inches, dark grayish-brown (10YR 4/2) fine sandy loam, very dark grayish brown (10YR 3/2) when moist; moderate, fine, granular structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; few fine and very fine vesicular pores; mildly alkaline; clear, smooth boundary.

A12—5 to 25 inches, dark-brown (7.5YR 4/2) fine sandy loam, dark brown (7.5YR 3/2) when moist; slightly hard, very friable, nonsticky and nonplastic; weak, medium, subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine roots; common medium and few fine tubular pores; mildly alkaline; gradual, wavy boundary.

A13—25 to 31 inches, brown (7.5YR 4/2) fine sandy loam, dark brown (7.5YR 3/3) when moist; moderate, medium, subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine roots; common fine and very fine tubular pores; mildly alka-

derosa pine, juniper, pinyon pine, muttongrass, serviceberry, bitterbrush, and squaw-apple. Capability unit VIIs-L, nonirrigated; Mountain Shallow Loam (Ponderosa Pine) range site; wildlife suitability group 3242.

Paunsaugunt-Kolob association (PG).— This association is about 60 percent Paunsaugunt gravelly silt loam, 10 to 30 percent slopes; 30 percent Kolob cobbly fine sandy loam, 8 to 12 percent slopes; and 10 percent other soils and Rock outcrop. The Paunsaugunt soil is on ridges and steep side slopes. The Kolob soil is on mesa tops.

The Paunsaugunt soil has the profile described as representative of the Paunsaugunt series. The Kolob soil has a profile similar to the one described as representative of the Kolob series, but slopes are 8 to 12 percent and the surface is cobbly.

Included with these soils in mapping are small areas of Kolob silt loam, brown variant, 10 to 30 percent slopes; a deep very gravelly loam soil on north-facing foot slopes; and Rock outcrop, which is about 2 percent of the areas.

The soils in this association are used mainly for recreation, wildlife habitat, and range. The native vegetation is ponderosa pine, pinyon pine, juniper, serviceberry, bitterbrush, Indian ricegrass, muttongrass, and dryland sedge. Paunsaugunt soil in capability unit VIIs-L, nonirrigated; Mountain Shallow Loam (Ponderosa Pine) range site; wildlife suitability group 3242. Kolob soil in capability unit VIe-L, nonirrigated; Mountain Stony Loam (Summer Precipitation) range site; wildlife suitability group 2141.

Paunsaugunt Variant

The Paunsaugunt variant consists of shallow, well-drained soils that are underlain by bedrock at a depth of 10 to 18 inches. These soils are on mesa tops and ridgetops in Zion National Park. They formed in material weathered from limestone. Slopes range from 2 to 8 percent. Elevation is 6,900 to 7,400 feet. Average annual precipitation is 16 to 18 inches, average annual air temperature is 42° to 45° F, and the frost-free period is 90 to 120 days. Paunsaugunt variant soils are commonly associated with Paunsaugunt and Kolob soils.

In a representative profile the surface layer is dark-brown cobbly silt loam about 2 inches thick. The subsoil is brown cobbly light silty clay loam and reddish-brown very cobbly silty clay about 10 inches thick. Limestone bedrock is at a depth of about 12 inches.

Permeability is moderately slow. Runoff is slow, and the hazard of erosion is moderate. Aviailable water capacity is 1.5 to 3 inches. The water supplying capacity is 3 to 6 inches. Roots penetrate as far down as bedrock.

Paunsaugunt variant soils are used for recreation, wildlife habitat, and range.

Representative profile of Paunsaugunt cobbly silt loam, clayey subsoil variant, 2 to 8 percent slopes, in an area of the Paunsaugunt-Rock outcrop complex, 2 to 30 percent slopes, about three-fourths mile southeast of Lava Point Lookout in Zion National Park, in the NW¼SE¼ sec. 31, T. 39 S., R. 10 W.:

A1—0 to 2 inches, dark-brown (7.5YR 3/2) cobbly silt loam, very dark brown (7.5YR 2/2) when moist; weak, medium, subangular blocky structure that parts to moderate, medium, granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine and few medium roots; common very fine and fine pores; 30 percent cobbles and gravel; mildly alkaline; abrupt, smooth boundary.

B1—2 to 4 inches, brown (7.5YR 4/2) cobbly light silty clay loam, dark brown (7.5YR 3/2) when moist; moderate, medium, subangular blocky structure; hard, firm, slightly sticky and plastic; common fine and medium and few coarse roots; common very fine and fine pores; 25 percent cobbles and gravel; mildly alkaline; abrupt, smooth boundary.

B2t—4 to 12 inches, reddish-brown (5YR 4/4) very cobbly silty clay, dark reddish brown (5YR 3/4) when moist; moderate, medium, subangular blocky structure; very hard, very firm, very sticky and very plastic; common fine, medium, and coarse roots; common fine and medium pores; 80 percent cobbles and gravel; common moderately thick clay films on faces of peds and in pores; mildly alkaline; abrupt, smooth boundary.

R—12 inches, fractured limestone bedrock.

Depth to bedrock ranges from 10 to 18 inches. The profile is noncalcareous throughout. The average annual soil temperature at a depth of 20 inches is 44° to 49° F, and the average summer soil temperature is 62° to 65°.

The A horizon has value of 3 or 4 when dry and 2 or 3 when moist. It is 30 to 50 percent cobbles and gravel.

The B2t horizon has hue of 7.5YR or 5YR and chroma of 2 to 4. It is 25 to 50 percent cobbles and gravel in the upper 2 to 4 inches and is 60 to 80 percent in the lower part.

Paunsaugunt variant soils in the Washington County Area are mapped only with Rock outcrop.

Paunsaugunt-Rock outcrop complex, 2 to 30 percent slopes (PKE).— This complex is about 50 percent Paunsaugunt cobbly silt loam, clayey subsoil variant, 2 to 8 percent slopes; 25 percent Paunsaugunt gravelly silt loam, 10 to 30 percent slopes; 15 percent Rock outcrop; and 10 percent other soils. The Paunsaugunt variant soil is gently sloping to sloping and is on narrow mesas and ridges. The Paunsaugunt soil is steep and is on side slopes.

Included with these soils in mapping are small areas of Kolob cobbly fine sandy loam, 2 to 8 percent slopes, and Kolob fine sandy loam, 20 to 50 percent slopes.

The soils in this complex are used for range, wildlife habitat, and recreation. The native vegetation is ponderosa pine, manzanita, bitterbrush, Gambel oak, serviceberry, Indian ricegrass, and tall native bluegrass. Capability unit VIIs-L; Paunsaugunt soils in Mountain Shallow Loam (Ponderosa Pine) range site and wildlife suitability group 3242; Rock outcrop in wildlife suitability group 4444 and range site not assigned.

Pintura Series

The Pintura series consists of somewhat excessively drained soils on desert slopes and mountain side slopes in the south-central part of the survey area. These soils formed in windblown sand weathered from sandstone. Slopes range from 1 to 10 percent. Elevation is 2,600 to 3,600 feet. The native vegetation is desert shrubs and grasses. Average annual precipitation is 8 to 11 inches, average annual air temperature is 57° to 67° F, and the frost-free period is 190 to 195 days. Pinture soils commonly are associated with Mespun, Ivins, Tobler, and Toquerville soils.

In a representative profile the soil is reddish-yellow loamy fine sand and fine sand to a depth of 65 inches or more.

Permeability is rapid. Much of the area has deposits of windblown sand in hummocks that range from 10 to 36 inches high. Available water capacity is 3 to 6 inches to a depth of 5 feet. The water supplying capacity is 3 to 5 in-

ches. Roots penetrate to a depth of 5 feet or more.

Pintura soils are used for range.

Representative profile of Pintura loamy fine sand, hummocky, 1 to 10 percent slopes, in an area of range on Sand Mountain, 75 feet southwest of the northeast corner of sec. 36, T. 42 S., R. 14 W.:

C1—0 to 3 inches, reddish-yellow (5YR 6/8) loamy fine sand, yellowish red (5YR 5/8) when moist; single grained; loose, nonsticky and nonplastic; common fine and very fine roots; mildly alkaline; diffuse, smooth boundary.

C2—3 to 65 inches, reddish-yellow (5YR 6/8) fine sand, yellowish red (5YR 5/8) when moist; single grained; loose, nonsticky and nonplastic; few fine roots; mildly alkaline.

Depth to bedrock is 40 to more than 60 inches. The profile ranges from neutral to strongly alkaline and from noncalcareous to moderately calcareous. It is 0 to 15 percent gravel. The average annual soil temperature at a depth of 20 inches is 59° to 68° F.

The C horizon has hue of 5YR or 2.5YR, value of 4 to 6 when dry and 3 to 5 when moist, and chroma of 4 to 8. It is loamy fine sand, fine sand, loamy sand, and, in places, sandy loam below a depth of 40 inches.

Pintura loamy fine sand, 1 to 5 percent slopes (PnC).—This undulating soil is on desert slopes. It has a profile similar to the one described as representative of the series, but it is not so sloping. Runoff is very slow, and the hazard of erosion is slight to moderate.

Included with this soil in mapping are small areas of Tobler fine sandy loam; Harrisburg fine sandy loam, 1 to 5 percent slopes; Toquerville fine sand, 2 to 20 percent slopes; and Ivins loamy fine sand, hummocky.

This Pintura soil is used for range. Capability units IIIs-06, irrigated, VIIs-C6, nonirrigated; Southern Desert Sand range site; widlife suitability groups 4343 and 2242-I.

Pintura loamy fine sand, hummocky, 1 to 10 percent slopes (PoD3).—This soil is on hummocky desert slopes and mountain side slopes. It has the profile described as representative of the series. Runoff is very slow, and the hazard of erosion is moderate to severe.

Included with this soil in mapping are small areas of Toquerville fine sand, 2 to 20 percent slopes, and Pintura loamy fine sand that has slopes of 10 to 20 percent. Also included is Dune land, which makes up about 5 percent of the area.

This Pintura soil is used for range. The native vegetation is sand sage, snakeweed, creosotebush, blackbrush, Indian ricegrass, galleta, and cactus. Capability unit VIIs-C6, nonirrigated; Southern Desert Sand range site; wildlife suitability group 4343.

Pintura-Toquerville complex, 1 to 20 percent slopes (PTE).—This complex is on mountain side slopes. It is about 50 percent Pintura loamy fine sand, hummocky, 1 to 10 percent slopes; 40 percent Toquerville fine sand; 2 to 20 percent slopes; and 10 percent other soils and Rock outcrop. The Pintura soil is on the leeward side of ridges and the lower parts of slopes, where wind tends to deposit drifting sand. The Toquerville soil is on the windward side of ridges, ridgetops, and blown-out areas. The Toquerville soil has the profile described as representative of the Toquerville series.

Included with these soils in mapping are small areas of a soil that is similar to this Toquerville soil but is 20 to 40 inches deep over sandstone bedrock; Ivins loamy fine sand, hummocky; and a very shallow sandy soil that is less than 10 inches deep over sandstone bedrock. Also included are areas of Rock outcrop, which make up about 2 percent of the mapped area.

The soils in this complex are used for range. The native vegetation is sand sagebrush, Mormon tea, Indian ricegrass, galleta, blackbrush, and cholla cactus. Capability unit VIIs-C6, nonirrigated; Southern Desert Sand range site; wildlife suitability group 4343.

Quazo Series

The Quazo series consists of shallow, well-drained soils that are underlain by bedrock at a depth of 11 to 20 inches. These soils are on mountain side slopes in the northwestern part of the survey area. They formed in material weathered from acid igneous rock. Slopes range from 30 to 70 percent. Elevation is 3,700 to 6,700 feet. The native vegetation is big sagebrush, pinyon pine, juniper, cliffrose, and Nevada bluegrass. Average annual precipitation ranges from 12 to 14 inches, average annual air temperature is 46° to 56° F, and the frost-free period is 120 to 170 days. Quazo soils commonly are associated with Dagflat and Motoqua soils.

In a representative profile the surface layer is brown very gravelly sandy loam about 2 inches thick. The subsoil is brown and reddish-brown gravelly sandy clay loam about 16 inches thick. Bedrock is at a depth of about 18 inches.

Permeability is moderate. Runoff is medium, and the hazard of erosion is moderate. Available water capacity is 1 inch to 2 inches. The water supplying capacity is 2 to 4 inches. Roots penetrate as far down as bedrock.

Quazo soils are used for range and wildlife habitat.

Representative profile of Quazo very gravelly sandy loam, 30 to 70 percent slopes, in an area of Quazo-Motoqua very gravelly sandy loams, 30 to 70 percent slopes, on the upper part of Beaver Dam Wash, 1,400 feet south and 1,300 feet east of the northwest corner of sec. 1, T. 39 S., R. 19 W.:

A1—0 to 2 inches, brown (10YR 5/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) when moist; moderate, thick, platy structure that parts to moderate, very fine, subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few fine and medium and common very fine vesicular pores; 55 percent gravel; neutral; abrupt, smooth boundary.

B1—2 to 3 inches, brown (10YR 5/3) gravelly sandy clay loam, very dark grayish brown (10YR 3/2) when moist; weak, thin, platy structure that parts to strong, very fine, subangular blocky; slightly hard, friable, sticky and plastic; few fine and very fine roots; few fine and very fine pores; 40 percent gravel; neutral; abrupt, smooth boundary.

B21t—3 to 9 inches, brown (10YR 5/3) gravelly sandy clay loam, dark brown (7.5YR 4/2) when moist; moderate, coarse, subangular blocky structure that parts to moderate, very fine, subangular blocky; very hard, firm, sticky and plastic; few fine and very fine roots; few fine and common very fine pores; 40 percent gravel; neutral; clear, wavy boundary.

B22t—9 to 18 inches, reddish-brown (5YR 5/4) gravelly sandy clay loam, reddish brown (5YR 4/4) when moist; moderate, coarse, prismatic structure that parts to moderate, fine, subangular blocky; extremely hard, firm, sticky and plastic; few medium, fine, and very fine roots; few fine and common very fine pores; 45 percent gravel; neutral; gradual, wavy boundary.

R—18 inches, somewhat weathered, extrusive, acid igneous bedrock.

Depth to bedrock ranges from 11 to 20 inches. The profile ranges from 35 to 70 percent gravel and cobbles, and more than half of the gravel is less than ¼ inch in diameter. The average annual soil temperature at a depth of 20 inches is 47° to 58° F. The profile ranges

Springerville clay, 0 to 5 percent slopes (SrC).— This soil is on short fans and in valleys. Runoff is medium, and the hazard of erosion is moderate.

Included with this soil in mapping are small areas of Clovis fine sandy loam, 1 to 5 percent slopes, and Bond sandy loam, 1 to 10 percent slopes.

This Springerville soil is used for nonirrigated wheat and range. The native vegetation is scattered juniper, pinyon pine, galleta, black grama, and Indian ricegrass. Capability unit IVe-V, nonirrigated; Southern Upland Loam range site; wildlife suitability group 2242.

Stony Colluvial Land

Stony colluvial land (SY) consists of unconsolidated colluvial land covered with stones and rock fragments that accumulate on slopes and at the base of slopes, mainly by gravity. Shale bedrock is at a variable depth, but generally at a depth of less than 12 inches. There are a few small areas of shallow soils. Slopes are 30 to 70 percent. Erosion is moderate, and sediment production is low to medium, depending on the vegetative cover.

Most areas have a cover of grasses, shrubs, and forbs. Pinyon pine and juniper are at the higher elevations. Capability unit VIIs-R3, nonirrigated; Southern Semidesert Malpai range site; wildlife suitability group 4343.

Tacan Series

The Tacan series consists of well-drained soils on north- and east-facing mountain side slopes in the Kolob Canyon part of Zion National Park. These soils formed in alluvium and colluvium derived from sandstone, siltstone, and shale. Slopes range from 30 to 70 percent. Elevation is 5,000 to 6,300 feet. The native vegetation is mainly Gambel oak, snowberry, pinyon, juniper, shrubs, and grasses. Average annual precipitation is 14 to 15 inches, average annual air temperature is 45° to 52° F, and the frost-free period is 120 to 160 days. Tacan soils are commonly associated with Collbran, Mathis, and Menefee soils.

In a representative profile the surface layer is reddish-brown very stony sandy loam about 8 inches thick. The subsoil is red very gravelly heavy fine sandy clay loam about 18 inches thick. The substratum is red gravelly and very gravelly fine sandy clay loam to a depth of 60 inches.

Permeability is moderate. Available water capacity is 5 to 6 inches to a depth of 5 feet. The water supplying capacity is 6 to 9 inches. Roots penetrate to a depth of 5 feet.

Tacan soils are used for recreation, wildlife habitat, and range.

Representative profile of Tacan very stony sandy loam, 30 to 70 percent slopes, in an area of range in the Kolob Canyon section of Zion National Park, about 1,320 feet east and 2,125 feet north of the southwest corner of sec. 34, T. 38 S., R. 12 W.:

A1—0 to 8 inches, reddish-brown (2.5YR 4/4) very stony sandy loam, dark reddish brown (2.5YR 3/4) when moist; weak, very fine and fine, granular structure; soft, very friable, nonsticky and nonplastic; few fine and common very fine roots; few fine and common very fine pores; 50 percent cobbles and stones; moderately alkaline; clear, smooth boundary.

B2t—8 to 26 inches, red (2.5YR 4/6) very gravelly heavy fine sandy clay loam, dark reddish brown (2.5YR 3/5) when moist; strong, fine and medium, subangular blocky structure; very hard, firm, sticky and plastic; few medium, fine, and very fine roots; few fine and medium and common very fine pores; few thin clay films on faces of peds; 50 percent gravel and cobbles; mildly alkaline; gradual, wavy boundary.

C1—26 to 48 inches, red (2.5YR 5/6) gravelly fine sandy clay loam, dark red (2.5YR 3/6) when moist; massive; very hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; few fine and common very fine pores; 30 percent gravel and cobbles; mildly alkaline; gradual, wavy boundary.

C2—48 to 60 inches, red (2.5YR 5/6) very gravelly fine sandy clay loam, dark red (2.5YR 3/6) when moist; massive; very hard, friable, sticky and slightly plastic; few very fine roots; few fine and common very fine pores; 50 percent gravel and cobbles; few small lime veins below a depth of 57 inches; mildly alkaline.

Depth to bedrock ranges from 40 to more than 60 inches. The profile is generally noncalcareous in a the A and B horizons and ranges from noncalcareous to strongly calcareous in the C horizon. Rock fragments on the soil surface range from 10 to 25 percent stones and cobbles. The average annual soil temperature at a depth of 20 inches is 50° to 54° F, and the average summer soil temperature is 65° to 70°.

The A horizon has hue of 7.5YR, 5YR, or 2.5YR; value of 4 or 5 when dry and 3 or 4 when moist; and chroma of 2 to 4. It is dominantly very stony sandy loam, but it ranges to very fine sandy loam. It is 2 to 8 inches thick. It ranges from 40 to 70 percent rock fragments.

The B2t horizon has hue of 2.5YR or 5YR, value of 4 or 5 when dry and 3 or 4 when moist, and chroma of 3 to 6. It ranges from very gravelly heavy fine sandy clay loam to light clay loam that is 35 to 60 percent gravel and cobbles. It ranges from 14 to 19 inches in thickness.

The C horizon is similar in color to the B2t horizon. It ranges from very gravelly fine sandy loam to light clay loam and is 20 to 70 percent gravel and cobbles.

Tacan very stony sandy loam, 30 to 70 percent slopes (TAG).— This soil is on medium-length, east-facing mountain side slopes. Runoff is medium, and the hazard of erosion is moderate.

Included with this soil in mapping are small areas of Mathis very stony loamy fine sand, 20 to 50 percent slopes, of a shallow sandy loam, and of Rock outcrop, which makes up about 5 percent of the mapped area.

This Tacan soil is used for recreation, wildlife habitat, and range. The native vegetation is Gambel oak, live oak, serviceberry, big sagebrush, Indian ricegrass, Nevada bluegrass, juniper, and pinyon pine. Capability unit VIIs-V4, nonirrigated; Upland Stony Loam (Pinyon-Juniper) Summer Precipitation range site; wildlife suitability group 3242.

Tobish Series

The Tobish series consists of well-drained soils on mountain side slopes and old alluvial fans. These soils formed in material weathered from sandstone and shale. Slopes range from 5 to 30 percent. Elevation is 4,100 to 5,000 feet. The native vegetation is desert shrubs and grasses. Average annual precipitation ranges from 10 to 13 inches, average annual air temperature is 48° to 57° F, and the frost-free period is 160 to 170 days. Tobish soils are commonly associated with Yaki soils.

In a representative profile the surface layer is brown very cobbly clay loam about 1 inch thick. The subsoil is dark-brown cobbly clay loam, brown gravelly clay loam, and yellowish-red gravelly clay and sandy clay loam. Bedrock is at a depth of about 35 inches.

Permeability is slow. Available water capacity is 4 to 5 inches. The water supplying capacity is 4 to 6 inches. Roots penetrate as far down as bedrock.

Winkel Series

The Winkel series consists of shallow, well-drained soils that are 11 to 19 inches deep over an indurated carbonate-cemented hardpan. These soils are on basalt mesa tops and low mountain side slopes in the central part of the survey area. They formed in calcareous material weathered from basalt, limestone, and wind-deposited sand. Slopes range from 1 to 30 percent. Elevation is 2,800 to 4,000 feet. The native vegetation is desert shrubs, grasses, and cactus. Average annual precipitation ranges from 8 to 11 inches, average annual air temperature is 57° to 61° F, and the frost-free period is 190 to 195 days. Winkel soils are commonly associated with Curhollow, Harrisburg, and Pastura soils.

In a representative profile the surface layer is reddish-brown gravelly fine sandy loam about 6 inches thick. The underlying layer is light reddish-brown very gravelly or very cobbly fine sandy loam about 10 inches thick. A carbonate-cemented hardpan is at a depth of about 16 inches.

Permeability is moderate above the hardpan. Available water capacity, above the hardpan, is 1 inch to 2 inches. The water supplying capacity is 2 to 4 inches. Roots penetrate as far down as the hardpan.

Winkel soils are used for range and wildlife habitat.

Representative profile of Winkel gravelly fine sandy loam, 1 to 8 percent slopes, in an area of range 1¾ miles north and 1 mile east of St. George, in the NW¼NE¼ sec. 17, T. 42 S., R. 15 W.:

A11—0 to 1 inch, reddish-brown (5YR 5/4) gravelly fine sandy loam, reddish brown (5YR 4/4) when moist; weak, fine, granular structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; few fine and medium pores; 20 percent gravel and cobbles; moderately calcareous, lime is disseminated; strongly alkaline; abrupt, smooth boundary.

A12—1 inch to 6 inches, reddish-brown (5YR 5/4) gravelly fine sandy loam, reddish-brown (5YR 4/4) when moist; weak, medium, platy structure that parts to fine, granular; slightly hard, very friable, nonsticky and nonplastic; common fine roots; common very fine, fine, and medium pores; 15 percent gravel and cobbles; moderately calcareous, lime is disseminated; strongly alkaline; clear, smooth boundary.

C1ca—6 to 12 inches, light reddish-brown (5YR 6/4) very gravelly fine sandy loam, reddish-brown (5YR 4/4) when moist; massive; slightly hard, very friable, nonsticky and nonplastic; common fine roots; common fine and medium pores; 50 percent gravel and cobbles; moderately calcareous, lime is disseminated; strongly alkaline; clear, wavy boundary.

C2ca—12 to 16 inches, light reddish-brown (5YR 6/4) very cobbly fine sandy loam, reddish-brown (5YR 4/4) when moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; few fine and medium pores; 65 percent cobbles and gravel that are fragments of the Ccam horizon; moderately calcareous, lime is disseminated; strongly alkaline; abrupt, wavy boundary.

C3cam—16 to 20 inches, indurated carbonate-cemented hardpan.

Depth to the hardpan ranges from 11 to 19 inches. The profile is moderately alkaline or strongly alkaline. The average annual soil temperature at a depth of 20 inches is 59° to 63° F.

The A horizon has hue of 10YR, 7.5YR, or 5YR; value of 5 or 6 when dry and 3 to 5 when moist; and chroma of 2 to 6. It is gravelly and very gravelly fine sandy loam or gravelly loam that is 20 to 70 percent gravel and cobbles.

The Cca horizon has hue of 7.5YR or 5YR, value of 4 to 8 when dry and 4 to 6 when moist, and chroma of 4 to 6. It is gravelly and very gravelly fine sandy loam or gravelly, very gravelly, or very cobbly loam. It ranges from 20 to 80 percent cobbles and gravel. The C horizon ranges from moderately calcareous to strongly calcareous.

Winkel gravelly fine sandy loam, 1 to 8 percent slopes (WBD).—This soil is on basalt mesa tops in the south-central part of the survey area. It has the profile described as representative of the series. Runoff is slow, and the hazard of erosion is moderate.

Included with this soil in mapping are small areas of Bermesa fine sandy loam, 1 to 10 percent slopes; Harrisburg fine sandy loam, 1 to 5 percent slopes; a soil that is very shallow over basalt bedrock; and Lava flows.

This Winkel soil is used for range. The native vegetation is creosotebush, blackbrush, galleta, buckwheat, Mormon tea, and cholla cactus. Capability unit VIIs-C4, nonirrigated; Southern Desert Stony Loam range site; wildlife suitability group 4343.

Winkel-Rock outcrop complex, 8 to 30 percent slopes (WCF).—This complex is on basalt mesa tops and low mountain side slopes. It is about 65 percent Winkel gravelly fine sandy loam, 8 to 30 percent slopes; 25 percent Rock outcrop; and 10 percent other soils. Rock outcrop occurs as basalt or limestone bedrock intermingled with the Winkel soil. Runoff is slow, and the hazard of erosion is severe.

The Winkel soil has a profile similar to the one described as representative of the Winkel series, but slopes are 8 to 30 percent and depth to the hardpan is only 11 to 16 inches.

Included with these soils in mapping are small areas of Bermesa fine sandy loam, 1 to 10 percent slopes; Curhollow gravelly fine sandy loam, 2 to 10 percent slopes; and Cinder land.

The soils in this complex are used for range and wildlife habitat. Capability unit VIIs-C4, nonirrigated; Winkel soil in Southern Desert Stony Loam range site and wildlife suitability group 4343; Rock outcrop in wildlife suitability group 4444 and range site not assigned.

Yaki Series

The Yaki series consists of shallow, well-drained soils that are 10 to 20 inches deep over bedrock. These soils are on mesas and mountain side slopes. They formed in material weathered from limestone and shale. Slopes range from 3 to 35 percent. Elevation is 3,500 to 5,000 feet. The native vegetation is desert shrubs and grasses. Average annual precipitation ranges from 10 to 13 inches, average annual air temperature is 52° to 57° F, and the frost-free period is 160 to 170 days. Yaki soils are commonly associated with Tobish and Zukan soils.

In a representative profile the surface layer is brown loam and very cobbly loam about 8 inches thick. The underlying material is brown cobbly loam and pinkish-white very cobbly loam to a depth of 19 inches. Limestone bedrock is at a depth of 19 inches.

Permeability is moderately rapid. Available water capacity is 1 inch to 2 inches. The water supplying capacity is 2 to 4 inches. Roots penetrate as far down as bedrock.

Yaki soils are used for range.

Representative profile of Yaki very cobbly loam, 3 to 35 percent slopes, in an area of the Yaki-Zukan complex, 1 to 35 percent slopes, in an area of range about 1 mile southeast of Hurricane School, 825 feet south and 500 feet east of the center of sec. 2, T. 42 S., R. 13 W.:

A11—0 to 2 inches, brown (7.5YR 5/4) very cobbly loam, dark brown (7.5YR 4/4) when moist; weak, fine, granular structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; 50 percent cobbles over the surface; moderately calcareous, lime is disseminated; strongly alkaline; abrupt, smooth boundary.

TABLE 9.—*Classification of soil series*

Series	Family	Subgroup	Order
Bermesa	Loamy-skeletal, mixed, thermic	Petrocalcic Paleargids	Aridisols.
Bond	Loamy, mixed, mesic	Lithic Ustollic Haplargids	Aridisols.
Caval	Coarse-loamy, mixed, mesic	Typic Haplustolls	Mollisols.
Cave	Loamy, mixed, thermic, shallow	Typic Paleorthids	Aridisols.
Chilton	Loamy-skeletal, mixed (calcareous), mesic.	Ustic Torriorthents	Entisols.
Clovis	Fine-loamy, mixed, mesic	Ustollic Haplargids	Aridisols.
Collbran	Fine, montmorillonitic, mesic	Aridic Argiustolls	Mollisols.
Curhollow	Loamy-skeletal, mixed, mesic, shallow	Ustollic Paleorthids	Aridisols.
Dagflat	Fine-loamy, mixed, mesic	Aridic Argiustolls	Mollisols.
Dalcan	Clayey-skeletal, montmorillonitic	Pachic Argiborolls	Mollisols.
Detra	Fine-loamy, mixed	Pachic Argiborolls	Mollisols.
Draper	Fine-loamy, mixed, mesic	Cumulic Haplustolls	Mollisols.
Esplin	Loamy, mixed, mesic, shallow	Petrocalcic Ustollic Paleargids	Aridisols.
Hantz	Fine, mixed (calcareous), thermic	Typic Torrifluvents	Entisols.
Harrisburg	Coarse-loamy, mixed, thermic	Typic Paleorthids	Aridisols.
Hobog	Loamy-skeletal, mixed, thermic	Lithic Calciorthids	Aridisols.
Hogg	Fine, mixed	Mollic Eutroboralfs	Alfisols.
Ildefonso	Loamy-skeletal, mixed, mesic	Ustollic Calciorthids	Aridisols.
Isom	Loamy-skeletal, carbonatic, thermic	Typic Torriorthents	Entisols.
Ivins	Sandy over loamy, mixed, nonacid, thermic.	Typic Torriorthents	Entisols.
Junction	Coarse-loamy, mixed (calcareous), thermic.	Typic Torrifluvents	Entisols.
Kinesava	Fine, mixed	Pachic Paleborolls	Mollisols.
Kolob	Clayey-skeletal, montmorillonitic	Typic Argiborolls	Mollisols.
Kolob variant	Clayey-skeletal, montmorillonitic	Typic Argiborolls	Mollisols.
Lavate	Fine-loamy, mixed, mesic	Aridic Argiustolls	Mollisols.
LaVerkin	Fine-loamy, mixed, thermic	Typic Calciorthids	Aridisols.
Leeds	Fine-loamy, mixed (calcareous), thermic	Typic Torrifluvents	Entisols.
Magotsu	Clayey, montmorillonitic, mesic, shallow	Petrocalcic Paleustolls	Mollisols.
Mathis	Sandy-skeletal, mixed, mesic	Ustic Torriorthents	Entisols.
Menefee	Loamy, mixed (calcareous), mesic, shallow.	Typic Ustorthents	Entisols.
Mespun	Mixed, mesic	Ustic Torripsamments	Entisols.
Mokiak	Loamy-skeletal, mixed, mesic	Aridic Argiustolls	Mollisols.
Motoqua	Loamy-skeletal, mixed, mesic	Lithic Argiustolls	Mollisols.
Naplene	Fine-silty, mixed (calcareous), mesic	Ustic Torrifluvents	Entisols.
Nehar	Clayey-skeletal, mixed, mesic	Ustollic Haplargids	Aridisols.
Nikey	Coarse-loamy, mixed, thermic	Typic Calciorthids	Aridisols.
Palma	Coarse-loamy, mixed, mesic	Ustollic Haplargids	Aridisols.
Pastura	Loamy, mixed, mesic, shallow	Ustollic Paleorthids	Aridisols.
Paunsaugunt	Loamy-skeletal, mixed	Lithic Haploborolls	Mollisols.
Paunsaugunt variant	Clayey-skeletal, mixed	Lithic Haploborolls	Mollisols.
Pintura	Mixed, thermic	Typic Torripsamments	Entisols.
Quazo	Loamy-skeletal, mixed, mesic	Lithic Ustollic Haplargids	Aridisols.
Redbank	Coarse-loamy, mixed (calcareous), mesic	Ustic Torrifluvents	Entisols.
Renbac	Clayey-skeletal, mixed, thermic	Lithic Haplargids	Aridisols.
St. George	Coarse-silty, mixed (calcareous), thermic	Typic Torrifluvents	Entisols.
Schmutz	Fine-loamy, gypsic, mesic	Ustic Torrifluvents	Entisols.
Shalet	Loamy, mixed (calcareous), mesic, shallow	Typic Torriorthents	Entisols.
Spenlo	Fine-loamy, mixed, mesic	Ustollic Haplargids	Aridisols.
Springerville	Fine, montmorillonitic, mesic	Typic Chromusterts	Vertisols.
Tacan	Loamy-skeletal, mixed, mesic	Ustollic Haplargids	Aridisols.
Tobish	Fine, mixed, mesic	Ustollic Haplargids	Aridisols.
Tobler	Coarse-loamy, mixed (calcareous), thermic.	Typic Torrifluvents	Entisols.
Toquerville	Mixed, thermic	Lithic Torripsamments	Entisols.
Tortugas	Loamy-skeletal, carbonatic, mesic	Lithic Haplustolls	Mollisols.
Vekol	Fine, mixed, thermic	Typic Haplargids	Aridisols.
Veyo	Clayey-skeletal, montmorillontic, mesic, shallow.	Petrocalcic Ustollic Paleargids	Aridisols.
Welring	Loamy-skeletal, carbonatic, mesic	Lithic Ustic Torriorthents	Entisols.
Winkel	Loamy-skeletal, mixed, thermic, shallow	Typic Paleorthids	Aridisols.
Yaki	Loamy-skeletal, carbonatic, mesic	Lithic Calciorthids	Aridisols.
Zukan	Loamy, mixed (calcareous), mesic	Lithic Torriorthents	Entisols.

SUBGROUP: Great groups are divided into subgroups, one that represents the central (typic) segment of the group, and others, called intergrades, that have properties of the group and also one or more properties of another great group, suborder, or order. Subgroups may also be made in those instances where soil properties intergrade outside of the range of any other great group, suborder, or order. The names of subgroups are derived by placing one or more adjectives in front of the name of the great group. An example is *Typic Haplustolls* (a typical

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
ATTENTION OF

October 14, 2003

Regulatory Branch (200350531)

Mr. Deloss Hammon, P.E.
Alliance Consulting
2303 North Coral Canyon Boulevard
Suite 201
Washington, Utah 84780-0576

Dear Mr. Hammon:

I am responding to your request dated September 23, 2003 for a Department of the Army permit to discharge of dredged and fill material in waters of the United States for borrow areas for roadway construction material on Utah School and Institutional Trust Lands (SITLA) property and for the City of Washington parkway and trail. These projects are also associated with the Utah Department of Transportation new milepost 13 interchange on Interstate 15 authorized by nationwide general permit number 14 (reference number 200250184). The work is located in Sections 6, 7 and 18, Township 42 South, Range 14 West, Washington County, Utah. Jurisdictional wetlands will not be filled or disturbed.

Based on the information provided, the proposed discharges of dredged or fill material in the Cottonwood Wash and various unnamed ephemeral tributaries are authorized by Nationwide Permit number 14 for linear transportation projects (roadway and trail crossings) and number 44 mining activities (borrow areas for aggregate). The borrow areas are also considered as activities required for the I-15 interchange, and the Washington road and trail. The work must comply with the terms and conditions listed on the enclosed nationwide permit information sheets. **Upon completion of the authorized work, the permittees must sign and return the enclosed compliance certification as required by General Condition 14.**

This verification is valid until October 31, 2006 or until the nationwide permit is modified or expires, whichever comes first. This nationwide permit is currently scheduled to expire on March 18, 2007.

This verification is also subject to the permittees' compliance with the following special conditions:

1. To document pre- and post-project construction conditions, you shall submit pre-construction photos of the project sites prior to project implementation and post-

construction photos of the project sites within 60 days after project completion;

2. The permittees shall avoid any disturbance or alteration of any springs or seeps and any drainages originating from such features;

3. Diversion channels, primarily around borrow areas, shall be stabilized using natural design techniques such as re-vegetating with native plant species; mimicking nearby natural channel morphology, avoidance of scour, etc., to the maximum extent practicable;

4. Upon completion of the transportation projects and use of the borrow areas for aggregate, the SITLA shall provide this office with its plan for restraining the borrows areas or the new use of these borrow areas;

5. The permittees shall monitor the various road and trail crossings of the ephemeral drainages for channel degradation (e.g., downstream scour, and report proposed solutions to this office;

6. An individual Department of the Army permit will likely be required for the future residential, commercial, and/or institutional development on the remaining SITLA property. Buffer zones adjacent to waters of the United States restricting human development are important in protecting and maintaining the physical and biological integrity of such waters. The permittees, especially the SITLA, shall explore the possibility of establishing such zones, with legally binding instruments e.g., conservation easement or deed restriction, within the remaining 70± acre parcel at this location and report their findings and proposals to this office within six months of the date of this letter;

7. At all road and trail crossings of waters of the United States, the permittees shall implement and properly maintain best management practices (e.g., silt fencing, to control sediment releases; and

8. The permittees may need approval for the work from the Utah Division of Water Rights under the state stream channel alteration permit program. Contact Mr. Chuck Williamson at (801) 538 7377 for more information.

We have assigned number 200305031 to this action. Please refer to this number in any further correspondence concerning these projects. If you have any questions, please contact me at e-mail address, Grady.McNure@usace.army.mil, or telephone number 435-986-3979.

Sincerely,

Grady L. McNure
Chief, St. George Regulatory Office
321 North Mall Drive, Suite L 101
St. George, Utah 84790-7310

Enclosures

COMPLIANCE CERTIFICATION

Verification Number: 200350531

Nationwide Permit Number:

Name of Permittee:

Utah School and Institutional Trust Lands

City of Washington, Utah

Date of Issuance: October 14, 2003

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

St. George Regulatory Office
321 North Mall Drive, Suite L 101
St. George, Utah 84790 7310

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of the permit your authorization may be suspended, modified, or revoked.

* * * * * * * * *

I hereby certify that the work authorized by the above-referenced permit, including all the required mitigation, was completed in accordance with the terms and conditions of the permit verification.

Signatures of Permittees Date

U S Army Corps of Engineers
Sacramento District

Nationwide Permit Summary

33 CFR Part 330; Issuance of Nationwide Permits – January 15, 2002, including Correction – February 13, 2002

14. Linear Transportation Projects. Activities required for the construction, expansion, modification, or improvement of linear transportation crossings (e.g., highways, railways, trails, airport runways, and taxiways) in waters of the US, including wetlands, if the activity meets the following criteria:

a. This NWP is subject to the following acreage limits:

(1) For linear transportation projects in non-tidal waters, provided the discharge does not cause the loss of greater than ½-acre of waters of the US; or

(2) For linear transportation projects in tidal waters, provided the discharge does not cause the loss of greater than 1/3-acre of waters of the US.

b. The permittee must notify the District Engineer in accordance with General Condition 13 if any of the following criteria are met:

(1) The discharge causes the loss of greater than 1/10-acre of waters of the US; or

(2) There is a discharge in a special aquatic site, including wetlands.

c. The *notification* must include a compensatory mitigation proposal to offset permanent losses of waters of the US to ensure that those losses result only in minimal adverse effects to the aquatic environment and a statement describing how temporary losses will be minimized to the maximum extent practicable.

d. For discharges in special aquatic sites, including wetlands, and stream riffle and pool complexes, the *notification* must include a delineation of the affected special aquatic sites.

e. The width of the fill is limited to the minimum necessary for the crossing.

f. This permit does not authorize stream channelization, and the authorized activities must not cause more than minimal changes to the hydraulic flow characteristics of the stream, increase flooding, or cause more than minimal degradation of water quality of any stream (see General Conditions 9 and 21).

g. This permit cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars; and

h. The crossing is a single and complete project for crossing waters of the US. Where a road segment (i.e., the shortest segment of a road with independent utility that is part of a larger project) has multiple crossings of streams (several single and complete projects) the Corps will consider whether it should use its discretionary authority to require an Individual Permit. (Sections 10 and 404)

Note: Some discharges for the construction of farm roads, forest roads, or temporary roads for moving mining equipment may be eligible for an exemption from the need for a Section 404 permit (see 33 CFR 323.4).

A. General Conditions. The following general conditions must be followed in order for any authorization by an NWP to be valid:

☐ **1. Navigation**. No activity may cause more than a minimal adverse effect on navigation.

☐ **2. Proper Maintenance**. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

☐ ***3. Soil Erosion and Sediment Controls***. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

☐ **4. Aquatic Life Movements**. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

☐ **5. Equipment**. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

☐ **6. Regional and Case-By-Case Conditions**. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

☐ **7. Wild and Scenic Rivers** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agencies in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

☐ **8. Tribal Rights** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

☐ **9. Water Quality.**

☐ (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR, 330.4(c)).

☐ (b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs).

This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

☐ **10. Coastal Zone Management** *In certain states,* an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).

☐ **11. Endangered Species**

☐ (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

☐ (b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfms.noaa.gov/prot_res/overview/es.html respectively.

☐ **12. Historic Properties** No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR Part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

☐ **13. Notification**

☐ (a) Timing, where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

☐ (1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

☐ (2) If notified in writing by the District or Division Engineer that an Individual Permit is required; or

☐ (3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

☐ (b) Contents of Notification: The notification must be in writing and include the following information:

☐ (1) Name, address, and telephone numbers of the prospective permittee;

☐ (2) Location of the proposed project;

☐ (3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);

☐ (4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));

☐ (5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed;

☐ (6) For NWP 14 (Linear Transportation Projects), The PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable;

☐ (7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing;

☐ (8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee;

☐ (9) For NWP 29 (Single-Family Housing), the PCN must also include:

☐ (i) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;

☐ (ii) A statement that the single-family housing activity is for a personal residence of the permittee;

☐ (iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring ½-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than ½-acre in size, formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

☐ (iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

☐ (10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

☐ (i) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. *Minor deviations are* authorized, provided the approved flood control protection or drainage is not increased,

☐ (ii) A delineation of any affected special aquatic sites, including wetlands, and,

☐ (iii) Location of the dredged material disposal site.

☐ (11) For NWP 33 (Temporary Construction Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources.

☐ (12) For NWPs 37, 38, and 41, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site.

☐ (13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed.

☐ (14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal both individually and cumulatively.

☐ (15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed.

☐ (16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities).

☐ (17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work, and

☐ (18) For activities that may affect historic *properties listed in, or eligible for listing in,* the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

☐ (c) Form of Notification. The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(18) of General Condition 13. A letter containing the requisite information may also be used.

☐ (d) District Engineer's Decision. In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are *minimal. If the District Engineer* determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee

and include any conditions the District Engineer deems necessary. The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

❑ If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then the District Engineer will notify the applicant either:

❑ (1) that the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an Individual Permit.

❑ (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level, or

❑ (3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the US will occur until the District Engineer has approved a specific mitigation plan.

❑ (e) Agency Coordination. The District Engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

❑ For activities requiring notification to the District Engineer that result in the loss of greater than ½-acre of waters of the US, the District Engineer will provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to NMFS within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

❑ (f) Wetland Delineations. Wetland delineations must be prepared in accordance with the current method required by the Corps (For NWP 29 see paragraph (b)(9)(iii) for parcels less than ½-acre in size). The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

❑ **14. Compliance Certification**. Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

❑ (a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;

❑ (b) A statement that any required mitigation was completed in accordance with the permit conditions; and (c) The signature of the permittee certifying the completion of the work and mitigation.

☐ **15. Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g., if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre).

☐ **16. Water Supply Intakes.** No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

☐ **17. Shellfish Beds.** No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

☐ **18. Suitable Material.** No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Any material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the CWA).

☐ **19. Mitigation.** The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

☐ (a) The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site).

☐ (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

☐ (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland impacts requiring a PCN, unless the District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands as compensatory mitigation, with preservation used only in exceptional circumstances.

☐ (d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, ½-acre of wetlands cannot be created to change a ½-acre loss of wetlands to a ¼-acre loss associated with NWP 39 verification. However, ½-acre of created wetlands can be used to reduce the impacts of a ½-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

☐ (e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

☐ (f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

☐ (g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

☐ (h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

[ ] **20. Spawning Areas.** Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

[ ] **21. Management of Water Flows.** To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

[ ] **22. Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

[ ] **23. Waterfowl Breeding Areas.** Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

[ ] **24. Removal of Temporary Fills.** Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

[ ] **25. Designated Critical Resource Waters.** Critical resource waters include NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

[ ] (a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

[ ] (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

[ ] **26. Fills Within 100-Year Floodplains.** For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

[ ] (a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e., five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

[ ] (b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

[ ] (c) The permittee must comply with any applicable FEMA approved state or local floodplain management requirements.

[ ] **27. Construction Period** - For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project).

[ ] For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps.

[ ] For projects that have been verified by the Corps, an extension of a Corps approved completion date may requested. This request must be submitted at least one month before the previously approved completion date.

B. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other Federal, state or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

C. Regional Conditions for Nationwide Permits - Sacramento District

I. Regional Conditions to be applied across the entire Sacramento District

[ ] **1.** Nationwide Permits 14, 29, 39, 40, 41, 42, and 44 are withdrawn from used in histosols, including fens. For the used of all other nationwide permits in fens, project proponents are required to notify the Corps using the notification or PCN procedures of the nationwide permit program (General Condition 13). This will be a "Corps only" notification.

[ ] **2.** For all activities using any existing and proposed nationwide permits, mitigation that is required by special condition must be completed before or concurrent with project construction. Where project mitigation involves the use of a mitigation bank or in-lieu fee, payment must be made to the bank or fee-in-lieu program before commencing construction of the permitted activity.

[ ] **3.** For all nationwide permits requiring notification, except 27, the applicant must provide a written statement to the district engineer explaining how avoidance and minimization of loses of waters of the United States were achieved on the project site.

II. Regional conditions to be applied in California and Nevada

[ ] All existing and proposed nationwide permits are suspended in the Lake Tahoe Basin in favor of using General Permit 16.

III. Regional conditions to be applied in Utah

[ ] For use of any nationwide permit with the following attributes, notification of the Corps of Engineers' Utah Regulatory Office using the "Notification" procedures of the Nationwide Permit Program (General Condition 13) is required, except where certain nationwide permits are restricted and can not be used as indicated in each category. This will be a "Corps only" notification.

[ ] 1. All activities that will affect waters of the U.S. below the elevation 4217 feet msl adjacent to the Great Salt Lake and below 4500 feet msl adjacent to Utah Lake.

[ ] 2. Bank stabilization in a perennial stream that would affect more than 100 feet of stream length as measured from the upstream portion of the affected bank to the downstream section, narrow the cross-section of the stream, substantially reduce the riparian vegetation, or increase velocities.

[ ] 3. All activities that will affect springs. A spring is an aquatic feature caused by ground water being discharged to the surface, creating wetland and/or stream characteristics. Nationwide Permits 14, 16, 18, 29, 33, 36, 40, 42, 43, and 44 can not be used in spring areas.

U S Army Corps of Engineers
Sacramento District

Nationwide Permit Summary

33 CFR Part 330; Issuance of Nationwide Permits – January 15, 2002, including Correction – February 13, 2002

44. Mining Activities. Discharges of dredged or fill material into:

(i) Isolated waters; streams where the annual average flow is 1 cubic foot per second or less, and non-tidal wetlands adjacent to headwater streams, for aggregate mining (i.e., sand, gravel, and crushed and broken stone) and associated support activities;

(ii) Lower perennial streams, excluding wetlands adjacent to lower perennial streams, for aggregate mining activities (support activities in lower perennial streams or adjacent wetlands are *not authorized by this NWP*); *and/or*

(iii) Isolated waters and non-tidal wetlands adjacent to headwater streams, for hard rock/mineral mining activities (i.e., extraction of metalliferous ores from subsurface locations) and associated support activities, provided the discharge meets the following criteria:

a. The mined area within waters of the US, plus the acreage loss of waters of the US resulting from support activities, cannot exceed ½-acre;

b. The permittee must avoid and minimize discharges into waters of the US at the project site to the maximum extent practicable, and the *notification* must include a written statement detailing compliance with this condition (i.e., why the discharge must occur in waters of the US and why additional minimization cannot be achieved);

c. In addition to General Conditions 17 and 20, activities authorized by this permit must not substantially alter the sediment characteristics of areas of concentrated shellfish beds or fish spawning areas. Normally, the water quality management measures required by General Condition should address these impacts;

d. The permittee must implement necessary measures to prevent increases in stream gradient and water velocities and to prevent adverse effects (e.g., head cutting, bank erosion) to upstream and downstream channel conditions;

e. Activities authorized by this permit must not result in adverse effects on the course, capacity, or condition of navigable waters of the US;

f. The permittee must use measures to minimize downstream turbidity;

g. Wetland impacts must be compensated through mitigation approved by the Corps;

h. Beneficiation and mineral processing for hard rock/mineral mining activities may not occur within 200 feet of the ordinary high water mark of any open waterbody. Although the Corps does not regulate discharges from these activities, a CWA Section 402 permit may be required;

i. All activities authorized must comply with General Conditions 9 and 21. Further, the District Engineer may require water quality management measures to ensure the authorized work results in minimal adverse effects to water quality;

j. Except for aggregate mining activities in lower perennial streams, no aggregate mining can occur within stream beds where the average annual flow is greater than 1 cubic foot per second or in waters of the US within 100 feet of the ordinary high water mark of headwater stream segments where the average annual flow of the stream is greater than 1 cubic foot per second (aggregate mining can occur in areas immediately adjacent to the ordinary high water mark of a stream where the average annual flow is 1 cubic foot per second or less);

k. Single and complete project: The discharge must be for a single and complete project, including support activities. Discharges of dredged or fill material into waters of the US for multiple mining activities on several designated parcels of a single and complete mining operation can be authorized by this NWP provided the ½-acre limit is not exceeded, and

Notification: The permittee must notify the District Engineer in accordance with General Condition 13. The *notification* must include: (1) A description of waters of the US adversely affected by the project; (2) A written statement to the District Engineer detailing compliance with paragraph (b), above (i.e., why the discharge must occur in waters of the US and why additional minimization cannot be achieved); (3) A description of measures taken to ensure that the proposed work complies with paragraphs (c) through (f), above; and (4) A reclamation plan (for aggregate mining in isolated waters and non-tidal wetlands adjacent to headwaters and hard rock/mineral mining only).

This NWP does not authorize hard rock/mineral mining, including placer mining, in streams. No hard rock/mineral mining can occur in waters of the US within 100 feet of the ordinary high water mark of headwater streams. The terms "headwaters" and "isolated waters" are defined at 33 CFR 330.2(d) and (e), respectively. For the purposes of this NWP, the term "lower perennial stream" is defined as follows: "A stream in which the gradient is low and water velocity is slow, there is no tidal influence, some water flows throughout the year, and the substrate consists mainly of sand and mud." (Sections 10 and 404)

A. General Conditions. The following general conditions must be followed in order for any authorization by an NWP to be valid:

☐ **1. Navigation.** No activity may cause more than a minimal adverse effect on navigation.

☐ **2. Proper Maintenance.** Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

☐ **3. Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

☐ **4. Aquatic Life Movements.** No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

☐ **5. Equipment.** Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

☐ **6. Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

☐ **7. Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status, unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

☐ **8. Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

☐ **9. Water Quality.**

☐ (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).

☐ (b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs).

This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

☐ **10. Coastal Zone Management.** In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).

☐ **11. Endangered Species**

☐ (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

☐ (b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfmls.noaa.gov/prot_res/overview/es.html respectively.

☐ **12. Historic Properties**. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR Part 325 Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

☐ **13. Notification**

☐ (a) Timing, where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

☐ (1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer, or

☐ (2) If notified in writing by the District or Division Engineer that an Individual Permit is required, or

☐ (3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

☐ (b) Contents of Notification. The notification must be in writing and include the following information:

☐ (1) Name, address and telephone numbers of the prospective permittee.

☐ (2) Location of the proposed project.

☐ (3) Brief description of the proposed project, the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.).

☐ (4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(b)).

☐ (5) For NWP 7 (Outfall Structures and Maintenance) the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed.

☐ (6) For NWP 14 (Linear Transportation Projects) The PCN must include: 1. compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable.

☐ (7) For NWP 21 (Surface Coal Mining Activities) the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing.

☐ (8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee.

☐ (9) For NWP 29 (Single-Family Housing), the PCN must also include:

> ☐ (i) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;
>
> ☐ (ii) A statement that the single-family housing activity is for a personal residence of the permittee;
>
> ☐ (iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring ½-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than ½-acre in size formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));
>
> ☐ (iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed.

☐ (10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

> ☐ (i) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;
>
> ☐ (ii) A delineation of any affected special aquatic sites, including wetlands, and;
>
> ☐ (iii) Location of the dredged material disposal site.

☐ (11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources;

☐ (12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;

☐ (13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed.

☐ (14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

[ ] (d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, 1 acre of wetlands cannot be created to change a 1-acre loss of wetlands to a 2-acre loss associated with NWP 39 verification. However, 1 acre of created wetlands can be used to reduce the impacts of a 1-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

[ ] (e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to, reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams, and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

[ ] (f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

[ ] (g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

[ ] (h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

[ ] 20. **Spawning Areas**. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

[ ] 21. **Management of Water Flows**. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

[ ] 22. **Adverse Effects From Impoundments**. If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

[ ] 23. **Waterfowl Breeding Areas**. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

☐ **24. Removal of Temporary Fills** Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

☐ **25. Designated Critical Resource Waters** Critical resource waters include, NOAA designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

☐ (a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

☐ (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer *may authorize* activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

☐ **26. Fills Within 100-Year Floodplains.** For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

☐ (a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

☐ (b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

☐ (c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.

☐ **27. Construction Period** For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project).

☐ For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps.

☐ For projects that have been verified by the Corps, an extension of a Corps approved completion date may requested. This request must be submitted at least one month before the previously approved completion date.

B. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

C. Regional Conditions for Nationwide Permits - Sacramento District

I. Regional Conditions to be applied across the entire Sacramento District:

☐ 1. Nationwide Permits 14, 29, 39, 40, 41, 42, and 44 are withdrawn from used in histosols, including fens. For the used of all other nationwide permits in fens, project proponents are required to notify the Corps using the notification or PCN procedures of the nationwide permit program (General Condition 13). This will be a "Corps only" notification.

☐ 2. For all activities using any existing and proposed nationwide permits, mitigation that is required by special condition must be completed before or concurrent with project construction. Where project mitigation involves the use of a mitigation bank or in-lieu fee, payment must be made to the bank or fee-in-lieu program before commencing construction of the permitted activity.

☐ 3. For all nationwide permits requiring notification, except 27, the applicant must provide a written statement to the district engineer explaining how avoidance and minimization of loses of waters of the United States were achieved on the project site.

II. Regional conditions to be applied in California and Nevada:

☐ All existing and proposed nationwide permits are suspended in the Lake Tahoe basin in favor of using General Permit 16.

III. Regional conditions to be applied in Utah

[ ] For use of any nationwide permit with the following attributes, notification of the Corps of Engineers' Utah Regulatory Office, using the "Notification" procedures of the Nationwide Permit Program (General Condition 13) is required, except where certain nationwide permits are restricted and can not be used as indicated in each category. This will be a "Corps only" notification.

[ ] 1. All activities that will affect waters of the U.S. below the elevation 4217 feet msl adjacent to the Great Salt Lake and below 4489 feet msl adjacent to Utah Lake.

[ ] 2. Bank stabilization in a perennial stream that would affect more than 100 feet of stream length as measured from the upstream portion of the affected bank to the downstream section, narrow the cross-section of the stream substantially, reduce the riparian vegetation, or increase velocities.

[ ] 3. All activities that will affect springs. A spring is an aquatic feature caused by ground water being discharged to the surface, creating wetland and or stream characteristics. Nationwide Permits 12, 16, 18, 29, 33, 36, 40, 42, 43, and 44 can not be used in spring areas.