

3.2.5 Water Resources

3.2.5.1 Surface Water

The following discussion of surface water resources is taken from Dugway Proving Ground (2003a). DPG is located within portions of four surface water drainage areas: Skull Valley, Dugway Valley-Government Creek area, Fish Springs Flat area, and the Great Salt Lake Desert. The Skull Valley drainage basin covers about 560,000 acres from Lookout Pass northward to the southwestern shore of the Great Salt Lake (Hood and Waddell 1968). About 9,600 acres of the drainage area lie within DPG. Surface water runoff within this portion of the drainage area predominately flows to the northeast towards the center of Skull Valley.

The Dugway Valley-Government Creek drainage area covers about 570,000 acres. Dugway Valley is separated from the Government Creek area by a topographic divide that extends from Simpson Mountains northwest to Simpson Buttes and Camels Back Ridge. Northwest from Camels Back Ridge, the two valleys merge into the Great Salt Lake Desert. About 290,000 acres of this drainage area lies within DPG. The general direction of surface water runoff in the DPG portion of this drainage area is to the northwest toward the Great Salt Lake Desert. There are local deviations from this general flow direction caused by local variations in topography. The Old River Bed, located along DPG's southern boundary, is a prominent trench crossing the divide between the Sevier Desert drainage and the Great Salt Lake Desert drainage. The river that formed the trench was a connecting link between two major parts of Lake Bonneville during the Pleistocene (Stephens and Sumsion 1978).

The Fish Springs Flat drainage area covers about 380,000 acres from a topographic high area connecting Swasey Mountain and the Little Drum Mountains northwest to the Great Salt Lake Desert (Bolke and Sumsion 1978). The general direction of surface water runoff in the DPG portion of this drainage area is to the northwest toward the Great Salt Lake Desert.

Western and northwestern portions of DPG lie within the Great Salt Lake Desert and cover about 470,000 acres. Surface water drainage is internal within the Great Salt Lake Desert (Gates and Kruer 1981).

Natural surface water features on DPG include surface water drainages, springs, ponds, playas, and wetlands. Constructed surface water features include wastewater lagoons, evaporation ponds, an excavated pond, a bermed pond, and roadside ditches. There are also 10 guzzlers that have been installed, augmenting the natural drinking water supply for wildlife. Both natural and constructed surface water features located at DPG are shown in Figure 3.2.5.1 and described below.

Baker Sewage Lagoon - perennial, constructed, 1.1 acres, located in Baker, receives domestic wastewater from Baker, enclosed by a fence.

Black's Pond - perennial, constructed, 2.0 acres, located northwest of Ditto, excavated depression that intercepts groundwater, includes wetland.

Bitter Springs - intermittent, natural, 0.59 acres at the northern seep and 0.17 acres at the southern seep, located in Cedar Mountains, northern seep is not considered a wetland, a second seep identified southeast of the northern seep area.

Cane Springs – perennial, natural, 0.029 acres at the spring and 0.25 acres of wetland, located in Cedar Mountains, the wetland area includes one spring, two seeps, and a perennially saturated drainage.

Carr Facility Sewage Lagoon - perennial, constructed, 1.5 acres, located in Carr, receives domestic wastewater from Carr, enclosed by a fence.

Cedar Springs - perennial, natural, unknown acreage, located in Cedar Mountains.

Ditto/Avery/Michael Army Airfield Sewage Lagoons - perennial, constructed, three cells of 0.66 acres each, receives domestic wastewater from Ditto/Avery/Michael Army Airfield, enclosed by a fence.

DPG Playa - intermittent, natural, 485,000 acres, located in western and northwestern portions of DPG, covered annually with a shallow layer of storm water runoff and snowmelt, regarded as a “special aquatic

site” because it is a mudflat and has special ecological characteristics that can be easily disrupted, migrating shore birds may feed on brine flies and brine shrimp found at the playa.

Downwind Grid Playa - intermittent, natural, unknown acreage, located in the Downwind Grid.

English Village Wastewater Treatment Facility - perennial, constructed, three cells of 3.15 acres each and a discharge area of 0.9 acres, located south of Fries Park, receives domestic wastewater from English Village and Fries Park, enclosed by a fence, pond and runoff area for effluent located west of the lagoon.

Government Creek - ephemeral, natural, surface area is variable, located in the vicinity of Ditto and Carr.

Hazardous Waste Management Unit 33 Sewage Lagoon, North Baker Test Facility - ephemeral, constructed, 0.63 acres, located in Baker, used for disposal of sanitary and laboratory waste from various facilities in Baker, inactive since 1997, enclosed by chain-link fence.

Hazardous Waste Management Unit 47 Sewage Lagoon, South of Fries Park - ephemeral, constructed, eastern lagoon 12 acres and western lagoon 9 acres, located south of Fries Park, receives sanitary waste from English Village and Fries Park, eastern and western lagoons inactive, surrounded by a single cable-wire fence.

Hazardous Waste Management Unit 51 Evaporation Pond - ephemeral, constructed, 0.74 acres, located southwest of Carr, originally used to dispose of liquids from the Defensive Test Chamber and decontamination system, retrofitted with a double liner and leachate detection system between 1987 and 1988, inactive, surrounded by a chain-link fence.

Hazardous Waste Management Unit 58 Evaporation Pond – ephemeral, constructed, 0.15 acres, located southeast of Carr, originally used to dispose of decontaminated waste solutions, retrofitted with a double liner, leachate detection system, and berms between 1986 and 1988, inactive, surrounded by a chain-link fence.

Hazardous Waste Management Unit 158 Evaporation Pond - ephemeral, constructed, 1.2 acres, located north of Ditto, designed to receive and evaporate liquid waste from Hazardous Waste Management Unit 162, surrounded by a chain-link fence.

Mustang Springs - perennial, natural, 0.15 acres, located in Cedar Mountains, includes a small pond with an adjacent wetland area.

North Fish Springs - perennial, natural, unknown acreage, located north of Fish Springs National Wildlife Refuge, dependent on flow from Fish Springs National Wildlife Refuge.

Old River Bed - ephemeral, natural, surface area is variable, located southwest of Camels Back Ridge, remnant of an ancient drainage.

Orr Springs - perennial, constructed, natural, 0.04 spring and 0.03 pond acreage, located in Cedar Mountains, a well is located downgradient from the spring that taps groundwater, a pipe carries water from the well to a circular pond, the pond is not considered a wetland.

Redden Springs - perennial, natural, unknown acreage, located along the western boundary of DPG.

Roadside Ditches - ephemeral, constructed, surface area is variable, located along constructed roadways predominantly in developed portions of DPG.

Stagecoach Canyon Springs - perennial, natural, unknown acreage, located at the northern end of Granite Peak.

Unnamed Drainages - ephemeral, natural, surface area is variable, located throughout DPG, well-defined drainages are predominantly located along mountains and in the Dugway Valley-Government Creek drainage area.

Wilson Hot Springs - perennial, natural, unknown acreage, located along the southern boundary of DPG, contains thermal springs and discharges to the surface through six dome-shaped vents. The Nature Conservancy and Utah Department of Natural Resources (1993) identified Wilson Hot Springs as one of 16 noteworthy natural areas or special features on DPG. Given what is now known about the site, it would certainly be elevated several notches from the 1993 listing (electronic communication, J. Banta USFWS, comment on Draft Final INRMP, December 13, 2006). Several current NRO studies have analysed temperature and water quality aspects at Wilson Hot Springs.

In undeveloped portions of DPG, surface water runoff occurs as overland flow or moves through natural drainages. Surface water that flows overland in an arid region spreads as a thin, continuous layer over a large area rather than being concentrated into well-defined drainage channels. Government Creek is one of the most well-defined natural drainages at DPG. The drainage enters DPG along the southeastern boundary and trends northwestward passing to the west of Carr and through Ditto. The drainage loses definition west of Ditto.

In the developed portions of DPG, surface water runoff generally moves via roadside ditches. In general, these ditches are not interconnected. Storm water sewers are located in portions of Avery, Baker, and Ditto. The storm sewers outfall into nearby drainage ditches or into Government Creek.

Several thermal springs are located in the vicinity of DPG's southern boundary. Fish Springs National Wildlife Refuge, located south of DPG's southern boundary, covers about 18,000 acres and includes five major springs, several lesser springs, and seep flow from a faultline at the base of the eastern front of the Fish Springs Mountain Range (Fish Springs National Wildlife Refuge 1994). Groundwater that discharges at the refuge is saline, with temperatures ranging from 71 to 81° Fahrenheit (F) (Banta 1996, personal communication in Dugway Proving Ground 2003a). Wilson Hot Springs is located along DPG's southern boundary and contains six dome-shaped vents trending northeast to southwest that discharge very saline groundwater. In July 1967 the temperature of the hottest measured spring in the group was 141 °F at the edge of the pool and 168 °F in the center of the pool. Temperature probes have been placed in the various springs and are currently collecting temperature data. The estimated rate of groundwater discharge is 0.223 cubic feet per second. Big Springs is located about one mile southeast of Wilson Hot Springs, south of DPG's southern boundary. Both springs appear to be associated with the fault zone that has been identified at the refuge. Groundwater that discharges at Big Springs is similar in temperature to that found at the refuge (Mundorff 1970). The proposed Nevada water project that would tap into the Carbonate Aquifer could potentially have negative impacts to the springs near Fish Springs National Wildlife Refuge.

